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The Republic of Bulgaria

Building Regulatory Capacity for Renewable Energy Sources

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ABBREVIATIONS AND ACRONYMS

BEERECL	Bulgarian Energy Efficiency and Renewable Energy Credit Line
BGN	Bulgarian Lev
CCL	Climate Change Levy (Great Britain)
CEER	Council of European Energy Regulators
CHP	Combined Heat and Power, cogeneration
CO_2	Carbon Dioxide
EEG	Renewable Energy Sources Act (Germany)
ERRA	Energy Regulator's Regional Association
ESMAP	Energy Sector Management Assistance Program
ESO	Electricity System Operator (in Bulgarian, Електроенергиен Системен Оператор Еад – ЕСО ЕАД)
EU	European Union
EU ETS	European Union Emission Trading System
GB	Great Britain: includes England, Scotland and Wales
GC	Green Certificate
GO	Guarantee of Origin
GSE	Gestore dei Servizi Elettrici, the body managing RES support schemes in Italy
GW	Gigawatt = 1,000 MW (unit of power/ capacity)
GWh	Gigawatt hour = 1,000 MWh (unit of energy)
kW	Kilowatt = 1,000 Watts (unit of power/ capacity)
kWh	Kilowatt hour = 1,000 Watt hours (unit of energy)
MAP	Market Incentive Program (Germany)
MEP	Environmental Quality of Electricity Production scheme, "Milieukwaliteit Elektriciteits Productie" in the Netherlands
MW	Megawatt = 1,000 kW (unit of power/ capacity)
MWh	Megawatt hour = 1,000 kWh (unit of energy)
NEK	National Electricity Company, the Transmission Asset Owner and Public Supplier (in Bulgarian, Националната електрическа компания ЕАД – НЕК ЕАД)
NREAP	National Renewable Energy Action Plan
PV	Photovoltaic
PPA	Power Purchase Agreement
REB	Regulating Energy Tax levy, "Regulerende Energie Belasting" (Netherlands)
REEEP	Renewable Energy and Energy Efficiency Partnership

REFIT	Renewable Energy Feed-In Tariff
REGO	Renewable Electricity Guarantee of Origin
REKK	Regional Center for Energy Policy Research
RES	Renewable Energy Sources
RES-E	Electricity from Renewable Energy Sources
RO	Renewable Obligation (Great Britain)
ROC	Renewable Obligation Certificate (Great Britain)
SDE	Stimulation for Sustainable Energy Generation program, "Ontwerpbesluit stimulering duurzame energieproductie" (Netherlands)
SEWRC	State Energy and Water Regulatory Commission (in Bulgarian, ДЪРЖАВНА КОМИСИЯ ЗА ЕНЕРГИЙНО И ВОДНО РЕГУЛИРАНЕ – ДКЕВР)
SG	State Gazette
SME	Small or Medium Enterprise
SO	System Operator
TED	Training Education Development
TNA	Training Needs Analysis
TSO	Transmission System Operator
TTL	Task Team Leader
TW	Terawatt = 1,000 GW (unit of power/ capacity)
TWh	Terawatt hour = 1,000 GWh (unit of energy)
UK	United Kingdom: Includes England, Scotland, Wales and Northern Ireland

EXECUTIVE SUMMARY

Introduction

With accession to the European Union on January 1, 2007, Bulgaria is facing the daunting task of increasing the share of renewable energy sources (RES) in its final energy consumption to the binding target of 16% in 2020 consistent with the EU Energy Policy. The Government of Bulgaria has accorded a high priority to this goal. Through its State Energy and Water Regulatory Commission (SEWRC), the government requested World Bank support to assist SEWRC in building and strengthening RES-related capacity as well as establishing an operationally effective regulatory framework for RES based on international best practice. This support was provided under a grant from the Energy Sector Management Assistance Program (ESMAP), a global technical assistance partnership administered by the World Bank. This report documents the results of the technical assistance.

Project Objectives

The main objective of the technical assistance was to progress the development of Bulgaria's RES market through establishing a secure and stable regulatory basis, administered by an adequately skilled and organized regulatory body, SEWRC, the regulator of the energy sector in Bulgaria.

RES installations require financial and regulatory support to compete with conventional technologies. In order to meet the RES target set by the EU Renewables Directive 2009/28 at 16% of total national energy consumption by 2020, Bulgaria needs to develop its regulatory schemes and programs.

A number of key areas are addressed in this report:

- Support mechanisms for renewable electricity;
- Transmission access for renewable electricity;
- Renewable Electricity Guarantees of Origin (REGOs);
- Support mechanisms for renewable heat;
- Institutional capacity of SEWRC; and
- Communications strategy for SEWRC.

Support Mechanisms for Renewable Electricity

Production of renewable electricity is supported in Bulgaria through feed-in tariffs called preferential tariffs. These were introduced through primary legislation in the Energy Act and secondary legislation in the 2007 Law on Renewable and Alternative Energy Sources.

The review of the existing status of Bulgaria's renewable electricity industry and RES-related legislation, combined with the analysis of international experience, suggest that a system of feed-in tariffs is likely to continue to be the most appropriate mechanism for supporting renewable electricity in Bulgaria. Within

Europe, feed-in tariffs are seen to be the most cost-effective and efficient mechanism at present and they have a proven track record – for example in Germany, Denmark, and Spain. They are particularly suitable for Bulgaria, where the competitive market is not highly developed and investors are likely to require security in order to proceed. Feedback from the first workshop conducted under the project, attended by SEWRC and potential investors, confirmed the opinion that the feed-in tariff mechanism remains the most appropriate choice for Bulgaria.

Mechanism for tariff setting and recovery in Bulgaria. The level of the tariff each year is determined by SEWRC following a number of requirements:

- The total tariff must be at least 80% of the previous year's average electricity sale price plus a premium.
- The price should give an appropriate rate of return on investment, depending on the risks associated with the technology.
- The price varies by technology and some performance and size criteria.
- The premium cannot be less than 95% of the premium of the previous year.

Regional suppliers are required to purchase all the electricity from renewable sources connected to the distribution system in their region. Nationally, the public supplier and transmission asset owner (NEK) purchases all transmission connected renewables. Suppliers recover the cost of purchasing the electricity from their customers through regulated tariffs. In the past, this has meant that in each region consumers needed to pay different tariffs depending on the amount of renewable energy produced in their region. So, those in areas with high wind or solar resources would end up paying more. However, SEWRC has recently introduced a nationwide equalization scheme through NEK. The costs of supporting RES is paid by all consumers of electricity in Bulgaria, but is not recovered on exported power. This is in keeping with international practice and reflects the national basis of the targets.

Positive feedback from investors suggested that the level of the tariff was considered appropriate, although investors raised a number of concerns about the existing mechanism that may be restricting RES development. These issues include:

- **Tariff Level Risk:** The tariff may change each year by up to 5% of the premium and however much the regulated electricity price changes. These tariff changes apply to all projects, existing and new.
- **Political Risk:** There is no guarantee that future administrations will honor current commitments.
- **Currency Risk:** The tariffs are in Bulgarian Leva (BGN), but loans are available on better terms in Euro and many project costs are in Euro. The Lev is closely pegged to the Euro, but investors may still see this as a risk.

Combined, these risks may make it more difficult for a project to achieve financing, and mean that developers and lenders take a conservative view of project income. This will lead to the developers requiring higher levels of support overall and result in higher costs to consumers.

There is also a significant risk to SEWRC that if renewable technology prices fall considerably, new projects would be viable at lower tariffs. SEWRC would be unable to reduce the tariff because of the restrictions, and the fact that existing generators have much higher initial costs and still need a return on their investment. This means new projects would be oversupported and customers may end up paying excessively as the overfunded technology is rapidly developed.

It is recommended to replace the current system with a guaranteed level of support over a contracted period of between 15 and 25 years, reflecting the lifetime of a project. This is closer in line with international best practice for feed-in tariffs (for example Germany, Spain and France). Projects becoming operational in different years can get different levels of support reflecting the evolving relative economics.

This change would address both the tariff level risk and the political risk, as the project developers would be guaranteed an income based on their production for the period of their contract with the regional supplier.

Training workshops have revealed mixed views on the appropriateness of longer term contracts for purchase of renewable energy which would in effect fix the revenue stream for the life of the project. Investors were found to support the move but SEWRC was more cautious. This would be a significant departure from the current Bulgarian system of annual reviews for all renewable plant which places both market and regulatory risk on the project. Notwithstanding these complications, long-term contracts are recommended as they would support a more bankable system and would also reduce the risk of overcompensation that exists in the current model.

There was extensive discussion of the Euro to Lev exchange rate issue with a range of stakeholders. It was generally viewed as undesirable to change to a Euro-linked system for a number of reasons. In particular, it would be difficult to accommodate such a change under the current legislation, and there was a perceived risk that any large shift in the relative values could lead to budgeting issues. The general view within SEWRC was that this risk was better covered by investors and appropriately compensated in the preferential price. However, it is recommended that with the political and tariff level risks addressed through long-term contracts, developers will be better able to manage exchange rate risk.

Transmission Access for Renewable Electricity

Connection and access to the network is a significant issue for renewables in many countries, including Bulgaria. It is important that variable generation is allowed to connect in order to enable renewable targets to be met. However, it is also important that security of the system is maintained as new variable plant is connected, which behaves in a different way from conventional plant. Variable renewables are typically smaller in size and further from demand centers, so they are more likely than conventional plant to require network reinforcement to connect.

Transmission connection is seen by developers as one of the most significant issues for renewable generation in Bulgaria. It was raised as a significant issue during the first workshop, and as a result it was covered in more detail in the second workshop.

Extensive reinforcement to the network is required to connect renewables in areas of high wind/solar resource (even if projects connect to the distribution networks, transmission reinforcement may well be required to take the power to areas of demand). Legislation provides a fixed timetable for the processing of connection requests but this bears little relationship to what is feasible or practical - particularly in the face of the current rush of applications - and no guidance is provided as to how the queue should be managed. In addition, the application process places almost no constraint on requests for connection and the land use planning regulations place the connection offer as a precondition to planning consent.

As a result, the system operator, ESO, has been flooded with requests for connections, well in excess of the maximum demand of the Bulgarian system. ESO has no possibility of meeting such requests and the procedure for dealing with them is opaque. Developers see NEK and ESO as having no incentive to connect their sites in a timely manner because of these delays and the lack of information.

- **Timescales to connect:**

  There has been a tendency in most European countries, including Bulgaria, for operators to reinforce the network only when planned projects require it. The timescales required for these deep reinforcements are typically much longer than the timescales to build new renewable generation, placing a barrier in the way of deployment. In the case of Bulgaria, the requirement on NEK and the public distribution companies to conform to project timescales may result in the companies being in breach through no fault of their own as the timescales are too short for the work required.

  To balance the requirements of network owners and producers, strategic advance reinforcement of the network could be combined with timescales that reflect required reinforcement work.

- **Managing "renewable zones":**

  The development of wind in clusters of smaller sites (for example in the North East on the Black Sea coast) may make it difficult for the transmission system planners to determine the optimum level of reinforcement. If they opt for a high level of reinforcement and the sites are not developed then they have invested unnecessarily. However, it is much more economic to strengthen the system in a single phase rather than multiple small increments.

  Ireland has attempted to manage this difficulty by adopting a wind "group processing" approach, which processes the reinforcement and connection process for wind in clusters of generation. However, this approach has been unpopular with the developers as there can be significant delays in connection of sites and no guaranteed timescales.

  A more pragmatic approach has been taken by France and Demark. There the governments have identified favorable areas for renewable energy development to both renewable energy developers and system operators. It may also be appropriate to grant the system operator the ability to restrict connections in certain regions or to delay connection until appropriate reinforcements are made.

- **Ensuring commitment from the producer:**

  It may be appropriate to impose obligations on producers when they obtain a contract for connection to help discourage speculative applications. It may be appropriate for this security deposit to be linked to the capacity of the proposed project, rather than reinforcement costs.

  There is a circular element to the application process as applicants have to have a preliminary contract with NEK to apply for a design visa. This means they are applying for a capacity before they have a fixed design. It may therefore be appropriate to introduce a second stage for all applicants, providing further technical details once they have approvals.

  An illustrative example of this process might be:

  1. Applicant provides complete initial application to NEK/ Distribution Company based on preliminary project design.
  2. NEK/ Distribution Company produce an initial contract based on preliminary design. This should include a provisional connection date dependent on the project receiving consents and taking into account the timescales required for reinforcement work.
  3. Initial contract signed.
  4. Applicant obtains necessary consents to build project.
  5. Applicant submits to NEK/ Distribution Company their final design and schedule, based on consents.
  6. NEK/ Distribution Company produce a revised final contract taking into account the revised project specification. At this stage the applicant may be required to provide an appropriate security deposit and NEK is required to commit to a connection date.
  7. Final contract signed.
  8. NEK/ Distribution Company proceeds with connecting the site.

- **Allowing producers to make informed decisions:**

  If they have sufficient information about suitable sites for development, potential developers can make informed choices about where to site projects. Therefore it may help to control applications if the system operator publishes detailed reports each year about where the constraints are in the system and new sites are likely to take longer to connect and where there is spare capacity available and projects can proceed more rapidly.

  Another way to reduce speculative applications may be to publish a regularly updated list of all applications received to connect, including their location, status and the proposed connection dates. This will help potential applicants to make an informed choice of where to locate their plant. An additional benefit is that it will help all market participants correctly understand how production in Bulgaria might develop in the future, and plan accordingly.

- **Appropriate charging for connection:**

  Connection costs that are linked to the full costs of grid reinforcements will create a barrier for variable renewables, particularly those that are further from the main demand centers. Most European countries, like Bulgaria, have a shallow connection regime, where only the direct costs of connection are included in the charge and not the associated reinforcement work. In any case, consumers meet the costs for connecting renewables, whether through preferential prices or through system charges. If reinforcement costs must be met up front by producers, this would be a barrier to entry and many otherwise viable projects would be unable to proceed. Therefore it seems most appropriate for Bulgaria to maintain its current shallow connection charging regime.

- **Point of connection:**

  At present the Renewable and Alternative Energy Sources and Biofuels Act specifies that the connection point should be the point closest to the transmission or distribution grid. This may not be the most suitable connection point, or the presence of other producers or potential producers in the area may make an alternative solution more appropriate.

  If the intent of the law is to ensure that renewable producers are not charged for a more expensive solution, a pragmatic approach may be to charge the producer a fixed fee based on the cost of connection at the nearest point on the grid, but to allow the system operator to propose an alternative solution that may be better for the system as a whole. The producer pays the same fee and any additional costs of connection are socialized along with the reinforcement costs.

Operation of the network is also affected by the addition of variable renewable generation. Less predictable output means there can be a requirement for additional ancillary services. In addition, renewables can typically only be dispatched down rather than up, reducing their controllability by the system operator. They also have different capabilities to provide grid services when compared to conventional plant. As previously stated, it is important that security of the system is maintained as new plant is connected.

- **Balance Responsibility**

  Different European states have taken different views on the appropriateness of putting balance responsibility on renewable generators. However, all states with feed-in tariffs have chosen not to require renewable generators to balance themselves. Renewables are generally not well able to balance themselves in the unregulated traded market as they are typically smaller than conventional plant. Also in Bulgaria there is no option currently to trade intra-day, which would leave renewable producers fully exposed to the balancing market and to “spill” and “top-up” prices. If variable renewables were exposed to the balancing mechanism in this way then they would require additional support through the preferential price premium.

  Feed-in tariffs have been successful in many countries precisely because they provide protection from the risks in the traded market and balancing mechanism. It is therefore not recommended to require renewables to balance and this responsibility should remain with ESO.

Having said this, it is reasonable that producers should give ESO the information that they need to balance correctly. This may include giving forecasts of next-day production and notification of a requirement to shut down (e.g. due to planned or unplanned maintenance or high winds).

The requirement for this information may depend on the size of the producer, and it may not be appropriate to place the same requirements on a single 1MW turbine that would be imposed on a 500MW wind farm.

- **Access Rights**

  Unusually among European countries, the Bulgarian system does not provide firm access to the network. This means that industry participants face a risk of being constrained down without compensation. This includes renewable producers who are paid for their metered energy at preferential prices.

  It may be that current participants view this as an acceptable risk within preferential prices. However, as the market develops this may change, particularly if in the future large numbers of variable producers might mean that ESO is required to constrain certain producers (e.g. in the event of high wind conditions at low demand times).

- **Grid Codes**

  Renewable generators have different capabilities to provide system services than conventional plant. Grid codes and standards are typically based on historical practice and are therefore designed for large conventional plant. Appropriate changes may be needed to account for the different operational characteristics of renewable plant.

  There is an increasing requirement for wind and other variable energy to behave more controllably when required. For this reason it is important that as wind, CHP and other variable generation takes an increasing role in the generation portfolio, it must be able to interact with, and react to, the grid in ways that make it possible for the system operator to manage disturbances.

  Denmark, Germany, and Ireland have some of the most rigorous requirements for wind turbines, primarily due to the comparatively high penetration of wind in these jurisdictions. These requirements have been unpopular with some wind developers as they increase the costs associated with wind generation. In particular, where the codes are implemented retrospectively, they require additional expenditure, which would not have been anticipated when the turbine was constructed. It is therefore recommended that any changes impact only new plant rather than those already connected.

  It is recommended that the system operator considers defining separate grid codes for new wind generation plant connecting to the system to take into account their operational characteristics and their ability to offer services to the network in terms of forecasting, power controllability, power quality and fault ride-through capability. These new codes should be devised under the supervision of SEWRC and in consultation with developers to ensure that they do not provide an undue barrier to new development but do support good management of the energy system.

REGOs

Bulgaria is required under EU legislation to introduce a system for Guarantees of Origin for energy from RES (REGOs). REGOs can essentially be used as a mechanism for accrediting RES and avoid double counting for other support mechanisms. They can therefore form a valuable tool for SEWRC to streamline and monitor the process of RES development in Bulgaria.

Article 19 of the Renewable and Alternative Energy Sources and Biofuels Act lays down the legal basis for issuing REGOs, complying with EU Directives. Following Directive 2009/28/EC, the current status of EU legislation was reviewed on the matter of REGOs. The results of this review include recommendations on the implementation of the REGO scheme, a comparison of Bulgaria's legal provisions against new EU legislation, and an outline of a revised ordinance for REGOs accompanied with implementation guidelines.

Support Mechanisms for Renewable Heat

In Bulgaria, heat is generally supplied through heat networks or individual consumers using gas, coal, oil or wood fuel. There is no single network like electricity, but many different sources. SEWRC set the prices for heat energy supplied through heat networks under the Ordinance on Regulating Heat Prices. However, there is no special support or incentivization for renewable heat energy. Bulgaria may find it difficult to meet the target of 16% of final energy consumption from renewable sources unless it encourages heat generation from renewables.

It is therefore recommended that Bulgaria should consider making a policy decision to support renewable heat generation. The earlier this is introduced, the more likely it is that the target will be met. Having considered the various options available to Bulgaria in implementing a renewable heat support mechanism, a two-stage approach is recommended:

Stage 1: Requirement for heat network operators to purchase heat from renewable sources at a preferential price and distribute it in their network, paid for by heat network users with some national equalization scheme. This is relatively simple to legislate for and administrate.

Stage 2: Replace the incentive for producers connected to a heat network with a wider national preferential price for renewable heat, paid for by a levy on the supply of fossil fuel for heat to equalize the cost among all consumers. This is more complex as it has a much wider application and requires more administration to collect the levy. However, this would spread the costs more evenly among consumers (avoiding distortions in the heat market) and allow renewable technology applications to be supported that are not connected to transmission networks.

SEWRC Capacity

SEWRC's organizational structure was reviewed with regard to departmental and staff responsibilities for RES development.

It has been concluded that SEWRC has made excellent progress since its formation and is further advanced in its RES capacity development than might have been

expected. A number of initiatives that might be recommended for introduction at this stage of organizational development were found to have already been adopted by SEWRC, indicating an advancement and awareness beyond expectations. SEWRC has made considerable progress, including the development of a renewable electricity support mechanism, feed-in tariffs and a REGO system, and is learning as much from the experience of doing it in practice as from formal training or capacity building.

- **Organizational structure**

  No need was found for organizational change to better deliver the RES objectives of SEWRC. The overall structure of the RES team appears broadly similar to other regulators of similar size and evolution. Additionally, the structure appears to be subject to internal review to ensure it remains appropriate; if this mechanism is not currently a formal one it is recommended that it should be adopted as such.

- **Capacity**

  Overall, the Commission's staff was found to be coping well with the demands to date. The right mix of skills seems to have been sourced at the right times to enable work to be successfully completed. The challenge for SEWRC will be to continue this going forward. It is recommended that SEWRC consider adopting a formal process for succession planning to ensure it is not compromised in its ability to deliver should key individuals leave the organization. Consideration should also be given to the adoption of a flexible resource strategy to appoint temporary assistance if needed.

- **Training**

  It is in areas of detail that SEWRC needs assistance, not general principles – in particular on questions of interpretation and implementation of the requirements in the EU Directive. Less benefit is likely to come from general training courses than from either tailored courses or through sharing experience. Discussing issues with others in a similar position could be very useful. Experience sharing within Europe with organizations that have the same remit and similar legal obligations to SEWRC in relation to meeting the targets set by the EU is likely to be most beneficial.

  It is recommended that SEWRC should consider undertaking a formal skills analysis and training needs analysis (TNA) to identify gaps and shortfalls in skill sets across all individuals in the RES Department. Following this a training strategy should be adopted and a training plan developed to implement the strategy. Key to the success of the training strategy will be ensuring capacity development is secured within the organization rather than within individuals so loss of key staff members does not unduly disadvantage the Commission.

- **Experience sharing**

  It has been noted that SEWRC is already taking advantage of opportunities to share experience with external organizations. It is recommended that collaborative networks between SEWRC staff members and twinned organizations be formalized at a personal level and at an institutional level to prevent loss of momentum and contacts should key individuals leave SEWRC.

Consideration should also be given to establishing twinning arrangements with another EU regulator. SEWRC has benefited from such arrangements in the past, albeit at a more general level. The Commission has an existing relationship with Spain; a country that has made considerable progress with renewables and might be willing to re-establish the former relationship, perhaps on a more informal basis. There could be benefits to secondments or resource 'swaps' between regulatory authorities in Europe.

SEWRC should also consider participation in regulatory forums such as CEER and ERRA; these organizations offer formal training and informal links with other members, providing invaluable networking opportunities to discuss approaches to common issues.

If informal contacts are sufficiently developed there could be the opportunity for SEWRC to offer to host discussion groups or support forums, either electronically by web-based applications or through video-conferencing facilities, to promote discussion of relevant issues. Invitees may include other EU regulators who have already answered some of the questions facing SEWRC and who would be willing to share their experiences. Similarly there must be other regulators going through the same process now who might also benefit from discussions and debates on how to resolve issues.

Communications Plan

In order to create an effective Bulgarian RES market, it is necessary to communicate the changes that are taking place within SEWRC and the regulatory framework. SEWRC's perception amongst investors and other key stakeholders can add to investment certainty as much as a stable and continuous price mechanism.

Incorporating more renewables has already had implications on SEWRC's communication with other market players. The legal framework and tariffs established by SEWRC have the potential to change the competitive dynamic. In an effort to win the best possible deal for themselves, the dialogue and demands of each group naturally grows adversarial at times. Market participants can attempt to use the media where they think it will help build their own case.

Energy prices in Bulgaria are amongst the lowest in Europe. They have been held down below those that are required to pay the full cost of the system (including new capacity). This has implications for RES which in absolute terms are currently more expensive than fossil fuels. In Bulgaria, as in most of Eastern Europe, there is still a tendency to view energy as a social product and this means that consumers are reluctant to accept tariff reforms. This makes it difficult politically to allow prices to increase to a level that would cover the costs of all stakeholders.

Consequently, it is very important to broaden the public debate beyond the current narrow focus on tariff rates and make the tone more factual, trying to build understanding and commitment to RES as a means to reduce carbon emissions and increase security of supply. Information about RES, support schemes and certification must also be made available to a range of people, such as builders, architects and general citizens to enable these people to invest in and use these solutions.

This effort requires a definitive communication strategy and careful message management. It is essential for the objectives of this strategy to comply with the needs of SEWRC and the requirements of Directive 2009/28/EC; that is:

Promote awareness of the role of SEWRC: to ensure that SEWRC is a first point of contact in relation to renewable energy matters in Bulgaria.

Facilitate consultation and transparency: To ensure full transparency by involving all partners/stakeholders in the consultation process and encouraging their participation in order to ensure a positive regulatory framework favorable for the promotion of RES, as well as informing them of their obligations under existing regulations.

Ensure protection of consumer rights: To enhance the profile of the Commission by promoting its role in protecting the interests of the consumer and the development of a competitive energy sector. Article 13 of Directive 2009/28/EC asks Member States to facilitate the use of RES in the industrial and residential sectors and in city infrastructure. It defines high level requirements for equipment certification and requires that certification and training schemes for installers will need to be developed (in Article 13 and 14).

Disseminate information about RES: According to Article 14 of the Directive, from December 2010, information on RES, support schemes and certification schemes must be made available to a range of target audiences including professionals (planners, engineers, builders, architects, etc.) and the general citizens through information and guidance programs. In cooperation with the local authorities, the importance of awareness raising is stressed.

The two most important categories of communications, for SEWRC are PR (in particular media relations, and publications) and electronic channels such as website and newsletters. It is recommended that SEWRC act as a mediator and point of liaison for the public and those directly involved in the market development process by employing the following approach:

1. **Traditional Media**: The media has the widest reach and considerable credibility. For this reason the following is proposed:
    - Focused Media Briefings to explain developments and identify issues – rather than providing journalists with direct access to the meetings between stakeholders, which are likely to grow adversarial debating issues the journalists might not understand.
    - Background Notes and Press Releases to ensure that the role of SEWRC, the EU Directive and their implications, and the development of RES is explained in clear, accessible language highlighting in particular how this relates to the consumer.
    - Regular Information Workshops to better inform the journalists of the issues the Commission is working on and to outline progress made, in a quiet environment that enhances mutual understanding.
2. **Web Media**: Best practice in other countries indicates that the internet can be used to convey information in simple, easily accessible language at varying levels of detail to a wide range of users. Factsheets, Leaflets, and Report Summaries can all help explain developments using simple, accessible language and examples relevant to the reader.

3. **Consumer Focus Messaging:** Consumers are concerned that RES is less reliable, relatively expensive and requires incentives. The need to develop a well understood consultation process is important.

Five priorities have been identified for the communication plan:

- Simple information available to journalists, to help them understand the role of the Commission, the introduction of RES and how tariffs are determined.
- Regular briefing workshops for journalists to enable them to better understand the work of the Commission and the challenges it meets.
- Leaflets and FAQs in simple language, including topics on why energy tariffs are going up. Material should be available electronically, and the Commission should consider development of a specific consumer-focused website or a dedicated area of the existing site.
- Greater transparency of procedures for investors, including summaries of larger and more significant documents on website (in the form of briefing papers and factsheets), to help orientate users.
- Preparation of consumer-focused campaigns to help them understand all aspects of RES, including support schemes, REGO Certificates, etc.

Summary of proposed changes to legislation and regulation

Proposed changes developed during the course of this work would have impacts on the following legislation and regulation:

- Energy Act;
- Renewable and Alternative Energy Sources and Biofuels Act;
- Ordinance on Prices for Electric Power;
- Ordinance on Prices for Heat Supply;
- Procedure for Access to the Transmission and Distribution Networks; and
- Grid Code.

Changes impacting legislation would have to be made by Government, and therefore while SEWRC can advise on changes it cannot implement them on its own. The suggested changes that would require legislative and regulatory changes include:

Renewable electricity tariff mechanism:

- Fixed feed-in tariffs for a long-term contracted period (15 – 25 years) once a RES electricity producer is commissioned.
- Projects becoming operational in different years can get different levels of support.

Renewable heat support mechanism:

- Full preferential tariffs system for renewable heat.

Network access – renewable zones:

- Requirement for distribution/transmission companies to review areas where there is greatest renewable resource and plan how to strategically reinforce these areas (to be reviewed and authorized by SEWRC).
- Potential for distribution/transmission companies to recover the costs of strategically reinforcing their network.

Network access – communication:

- Requirement for distribution/transmission companies to make publicly available information about renewable zones, spare capacity on their network, planned development and where there are currently network constraints, so that developers can plan accordingly.

Network access – balancing the needs of producers and network operators:

- Ensuring financial commitment from the producer in advance of connection and removing circularity in current system for connection application.
- Time limit on connection approvals (say, 4 years) so that they expire if not used within a reasonable time period.
- Fix the cost to the producer at connection to the nearest interconnection point on the distribution or transmission system, but allow the system operator to propose an alternative solution that may achieve better results for the system as a whole. The producer pays the same fee and any additional costs of connection are socialized along with the reinforcement costs.

Network responsibility:

- Producers should give ESO the information that they need to balance correctly. This may include forecasts of next-day production and notification of a requirement to shut down. The requirement for this information should depend on the size of the producer (only over 5 MW, say).
- Enable network operators to devise a common grid code that covers wind generators, to control their performance. This should be common to all network operators and should be approved by SEWRC.

Other proposed changes

There are a number of suggested changes that refer specifically to areas in SEWRC's control and can be implemented by SEWRC. Proposals that could be implemented separately by SEWRC include:

REGOs

- Changes to the REGO process to bring it in line with the 2009/28 Directive.

Capacity

- Formal process for succession planning.

- Skills audit and Training Needs Analysis.
- Secondments and "resource swaps" with other regulators.
- Participation in regulatory forums.

Communications

- Making simple material available to journalists and the media to help them better understand the role of SEWRC and how tariffs are determined.
- Regular briefing workshops for journalists on key issues.
- Leaflets and FAQs for the public on key issues like energy prices, possibly on a consumer-focused section of the website.
- Briefing papers and factsheets for investors.

1. INTRODUCTION

1.1 Project Objectives

The main objective of this project was to progress the development of Bulgaria's RES market through establishing a secure and stable regulatory basis, administered by an adequately skilled and organized regulatory body. The regulator of the energy sector in Bulgaria is the State Energy and Water Regulatory Commission (SEWRC), who was the beneficiary of this project.

Over the course of this project, the EU adopted Renewables Directive 2009/28/EC, which significantly increases the requirement for Bulgaria to develop its use of Renewable Energy Sources (RES). Renewable energy is an underdeveloped market. Investment in renewables requires financial and regulatory support to enable a level-playing field with conventional technologies. Bulgaria needs to develop the regulatory schemes and programs to put these legal provisions into practice and to ultimately meet the RES target set by the Renewables Directive at 16% of total national energy consumption by 2020.

1.2 Key Tasks

Specifically, the key tasks of the project were:

- **Task 1 - RES Support:** Recommendations on the development of RES support schemes to ensure compliance with the national RES targets, assessing the benefits of and drawbacks of the various options under Bulgarian conditions (Section 2);
- **Task 2 - REGO Scheme:** Recommendations on the development of accurate, reliable and fraud-resistant systems for issuing guarantees of origin for RES electricity in accordance with the EU Directives (Section 5);
- **Task 3 - Tariff Methodology:** Recommendations for improved tariff setting for RES-based electricity and heat generation to provide sound and predictable price signals to prospective RES investors in line with the national RES targets (Sections 3 and 6 of this report look at renewable electricity and heat respectively);
- **Task 4 - Training:** Workshops to train SEWRC staff in best practice for RES tariff regulation and support systems (Appendix D gives an overview of the outcomes of these workshops);
- **Task 5 - Institutional Capacity:** Recommendations for improving SEWRC's internal organizational design in the area of RES regulation (Section 7); and
- **Task 6 - Communications Strategy:** Recommendations for the development of a communications and public awareness strategy for tasks within SEWRC's authority, targeting key stakeholders and the general public (Section 8).

In addition to these tasks, consideration was also given to mechanisms to improve the transmission access regime for renewables in Bulgaria (Section 4).

1.3 This Report

This report is set out as follows:

- Section 2: Support Mechanisms for Renewable Electricity;
- Section 3: Tariff Methodology for Renewable Electricity;
- Section 4: Transmission Access for Renewable Electricity;
- Section 5: REGO Scheme;
- Section 6: Support Mechanisms for Renewable Heat;
- Section 7: SEWRC Capacity; and
- Section 8: Communications Strategy.

2. SUPPORT MECHANISMS FOR RENEWABLE ELECTRICITY

2.1 Introduction

RES electricity projects require a sound and stable regulatory framework to attract investors. This section reviews the current framework in Bulgaria and the optimum support scheme going forward.

This chapter:

- Provides background on the European legislative requirements and why action is necessary (Section 2.2);
- Presents the results of an international analysis of best practice (Section 2.3);
- Puts this in to the context of the Bulgarian market (Section 2.4); and
- Presents recommendations on the optimum support mechanism for Bulgaria (Section 2.5).

2.2 EU Background

The European Union promotes a shared vision for renewable energy deployment among EU member states through a policy and regulatory framework for renewables. Besides the contribution in energy supply and the environmental benefits, its main goal is to establish a sustainable renewable energy market in order to support industrial and construction activities and maximize the social and economic benefits.

To this end, the EU has set increasingly aggressive targets for renewable energy by 2020. The previous Renewables Directive 2001/77/EC set an overall EU target of 21% (EU-27) electricity production from renewable energy sources by 2010. Bulgaria's share of this target was 11% (2006/108/EC).

At an EU summit in March 2007, heads of state negotiated a binding target of 20% RES in overall final energy consumption by 2020. The new Directive 2009/28 on the promotion of the use of energy from renewable sources introduced a number of changes to the present RES policy regime within the EU. Including:

- Bulgaria's RES target is 16% of final energy consumption by 2020 compared to 9.4% in 2005;
- The Directive extends RES legislation from electricity to include heating and cooling (see Section 6);
- It further proposes a more harmonized REGO scheme (see Section 5); and
- It also included a binding target for at least 10% of transport fuels to be biofuels.

Bulgaria's targets are likely to be challenging, and support mechanisms will need to be carefully designed to ensure Bulgaria can meet these targets whilst

minimizing where possible the costs to final consumers and maximizing the social and economic benefits. Bulgaria also needs to ensure that it has in place the necessary primary and secondary legislation and regulation so that it can meet the other requirements of Directive 2009/28/EC.

The key timescales for Member States to comply with Directive 2009/28/EC are:

- Present National Action Plans on RES by 30 June 2010; and
- Bring into force the laws, regulations and administrative provisions to comply with the Directive by 5 December 2010.

'Energy from renewable sources' that counts towards the national targets includes all energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases. In calculating the contribution of hydropower and wind power, the effects of climatic variation should be smoothed through the use of a normalization rule. Electricity produced in pumped storage units from water that has previously been pumped uphill is not considered to be renewable.

Both small and large hydropower count towards meeting the national targets. However, national support schemes must be compatible with state aid rules. Under the "Community guidelines on state aid for environmental protection", renewable energy sources that are eligible for support include "hydroelectric installations with a capacity below 10 MW", although large hydropower does not qualify for state aid in EU Member States.

A number of reasons have been cited for the exclusion of large hydropower, particularly concerns about large hydro projects causing unacceptable environmental and social impacts. Large hydro is already considered a mature technology and benefits from economies of scale, plus most large hydro is already built and does not require additional support. There is no consensus in EU member states on the definition of small hydropower in support schemes, 10 MW is the most common cut-off but some schemes use a lower figure.

2.3 International Support Mechanisms

Support schemes are intended to assist development of renewable energy to increase their penetration into the energy balance of the country and realize the benefits of renewable technology:

- Local and global environmental benefits;
- Sustainable development and competitiveness;
- Security of energy supply;
- Support to rural economies and regional development;
- Creation of new jobs and business by SMEs;
- R&D actions and industrial activities; and
- Potentially encourage the development of different technologies.

Support schemes are intended to meet the needs of renewable developers by bridging the financial gap between the revenue available from the energy market and the requirements of the renewable energy project. Renewable energy is generally capital intensive and a number of RES technologies currently have higher costs compared to the market price of conventional energy. In these cases, support schemes provide:

- Less market risk;
- Reasonable income to investors; and
- Longer term income security.

Support schemes make it possible to finance renewable projects and allow renewables to compete with fossil fuel technologies and other generation. With the planned expansion of the EU Emission Trading System (ETS) in 2013, more and more companies will see the price of carbon attached to their inputs and outputs. This will improve the competitiveness of RES in the energy market – reducing the requirement for support in the future.

Support mechanisms vary by country, but can be divided into four main types:

- Feed-in tariffs;
- Obligations, normally combined with tradable renewable certificates ("green certificates");
- Competitive tender systems; and
- Fiscal or investment aid.

Table 1 presents a number of European countries and their primary (i.e. most valuable) support mechanisms for RES. These primary mechanisms are often enhanced by secondary support mechanisms where, for example, a certificate scheme or feed-in tariff is operated side by side with a tax on fossil fuels or capital grant schemes.

Table 1: Primary support mechanisms for RES

	Mechanism
Austria	Full feed-in tariff
Bulgaria	Full feed-in tariff
France	Moving from competitive tender to full feed-in tariff
Finland	Investment aid
Germany	Full feed-in tariff
Greece	Feed-in tariff
Ireland	Feed-in tariff with market element
Italy	Green Certificate, feed-in tariff for PV
Netherlands	Feed-in tariff with market element
Portugal	Feed-in tariff and competitive tender

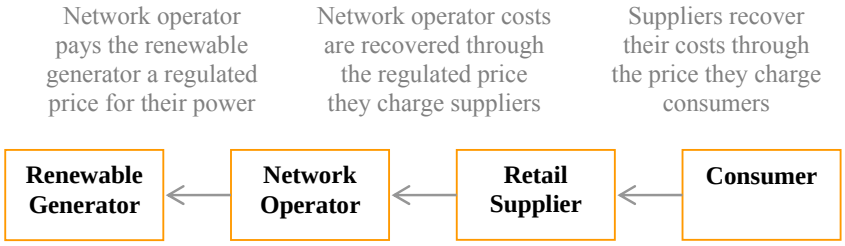
Spain	Feed-in tariff with market element
Sweden	Green Certificate
UK	Green Certificate

2.3.1 Feed-In Tariffs

Feed-in tariffs are the primary support instrument for RES electricity in Europe. In principle, feed-in tariffs signify a premium that is paid to producers of energy from RES on top of the normal energy price.

Feed-in tariffs are generally set at different levels for different technologies, plant sizes, sites, and the type of application. They usually go hand in hand with an obligation on network operators or supply companies to purchase all renewable electricity at these fixed rates. Costs are then passed on to final consumers, normally by a levy on the network tariff. Figure 1 shows a simplified example of this for illustrative purposes.

Figure 1: Simplified example of a feed-in tariff for illustration



Feed-in tariff systems are generally seen as attractive schemes to investors as they provide assurance of profitability with reasonable payback time (assuming the tariff level is appropriate). The long-term stable price is a positive factor in securing financial support from lenders, particularly where the technical risks of RES technologies are limited.

Successful feed-in tariffs need to be:

- Based on country-specific calculations of the threshold for acceptable returns from investment;
- Optimized as output-based revenues (on kWh not kW installed), so that best sites and optimized technology will be used;
- For sufficiently long periods (typically 15 to 25 years) to provide long-term investment security;
- Established in combination with priority access for RES to the grid;
- Accompanied by clear, simple and reliable procedures for securing grid access, permissions, and payments;
- Coherent with other regulations;
- Independent of state subsidies – costs redistributed to consumers;
- Revised regularly for new plants (e.g. annually); and
- Transparent by monitoring the RES electricity fed into the grid.

Table 2: Advantages and Disadvantages of Feed-In Tariff Schemes

Advantages	Disadvantages
• Successful with sufficient tariffs and stable supporting policies. • Long-term certainty for investors. • Long-term perspectives ensure maximized power generation. • Can encourage a high quality of products (equipment). • Driver for industry to reduce costs. • Only paid for electricity generated. • Technology diversity: strategic support for advanced technologies possible. • Administratively simple. • Demonstrated success in deploying large amounts of wind and solar energy (Germany, Denmark and Spain).	• Lower level of competition between producers may not provide enough incentive to drive down costs. • Requires care in setting tariff – too high and renewable energy is excessively rewarded, too low and nothing gets built.

Examples of more advanced feed-in systems include:

- Stepped feed-in tariff – decreases as installed capacity increases (first XMW gets €A/MWh, next YMW gets €B/MWh and so on where A>B);
- Premium tariff – linked to actual electricity market prices;
- Total payments limited to an agreed rate of return.

These systems can be more economically efficient but administrative costs may be higher.

Most feed-in tariff systems are designed with similar rules, although their specific calculation tools take into account local conditions in each country. Investment in RES is capital-intensive, with the cost of the equipment and the expected power generation cost for sites with similar characteristics similar across the whole of Europe. However, an important aspect in the introduction of the feed-in tariff is the gap between the consumer price and the feed-in tariff. In the medium term, this gap may narrow as the price of conventional energy sources increases (linked to the EU ETS, increasing fossil fuel prices and falling reserves) and as the technology and market develops for RES.

A small gap between the consumer price and the feed-in tariff means any additional cost to the final consumers is low (in Germany, this is forecast to be below 3% for the next 20 years) and a significant penetration of RES could be achieved. Where there is a larger gap, such as in Bulgaria, the penetration of various RES should be scheduled progressively and adjusted to account for the allowed additional cost to the final consumers for the duration of the feed-in tariff.

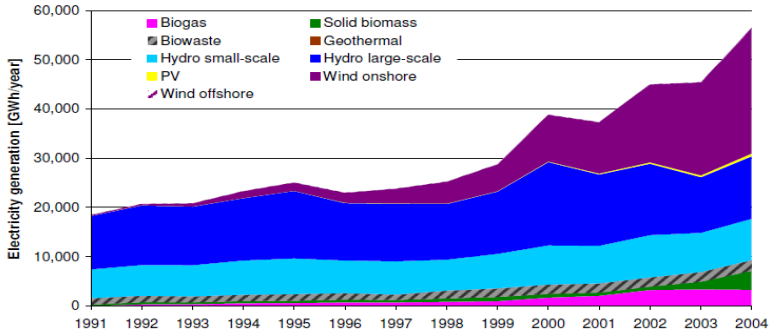
It is important to have a strong data collection and monitoring process for RES applications from the beginning. This enables the regulator and government to evaluate RES policy in terms of the resulting technology uptake and the impact on the additional cost to the consumer. This will allow more targeted assessment of the best mix of technologies to achieve high penetration and optimal benefits with the minimum additional cost to final consumers.

- ***Germany – EEG***

  Germany's previous target for RES under the EU Renewables Directive 2001/77/EC was 12.5% of gross electricity consumption by 2010. Germany's renewable electricity share in 1997 was 4.5%, which increased to 12% by 2006 (estimated at 14% in 2007). Figure 2 shows Germany's renewable electricity generation to 2004.

  Under the new Directive 2009/28, Germany will have to increase its renewables share in final energy consumption from 5.8% in 2005 to 18% in 2020.

Figure 2: Power Generation from Renewable Energy Sources by Type (GWh) in Germany (2006)[1]

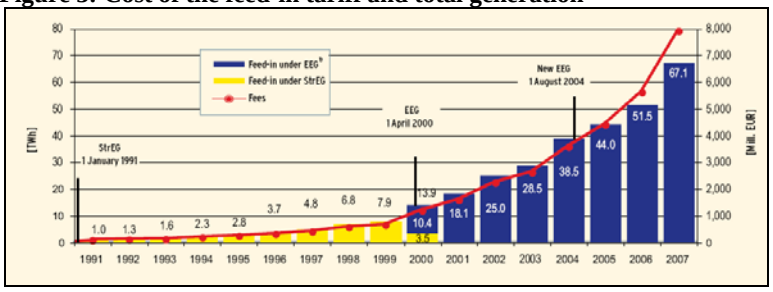


In 2000, Germany's Federal Electricity Feed-In Code was replaced by the Renewable Energy Sources Act (EEG). This was amended on 1 August 2004 aimed at meeting the EU target of at least 12.5% of RES by the year 2010 and increase the share of RES in electricity consumption to at least 20% by the year 2020.

The core elements of the EEG are:

- Priority connection of installations for the generation of electricity from renewable energy and from mine gas to the public electricity supply grid;
- Priority purchase and dispatch of this electricity;
- A consistent fee for this electricity paid by the grid operators, generally for a 20-year period, for commissioned installations. This payment is geared around the costs;
- Nationwide equalization across TSOs of the electricity purchased and the corresponding fees paid; and
- The fee paid for the electricity depends on the energy source and the size of the installation. The rate also depends on the date of commissioning; the later an installation begins operation, the lower the tariff (degression)[2].

Figure 3: Cost of the feed-in tariff and total generation[3]



[1] European Commission, Renewable Energy Country Profiles 2008
[2] Degression is the percentage reduction in the tariff in upcoming years. It serves to reduce the tariff to compensate for expected future price reductions in the capital cost of the RES asset.
[3] Figures for 2007 are provisional. In 2004, fees began to be paid to generators for avoiding utilization. (* Private and public feed-in)

About 54% of the revenue from feed-in tariffs is captured by wind power while 15% is secured by PV installations. The contribution from independent RES generators is relatively high, amounting to 45 TWh in 2006.

The EEG prescribes fixed tariffs which grid operators are obliged to pay for the feed-in of electricity generated from hydro, landfill gas, sewage treatment and mine gas, biomass, geothermal, wind, and solar sources. The minimum payments (differentiated by energy source) vary depending on the size of the installation and the tariff is based on actual generation cost of the respective technology. Table 3 shows tariff rates and conditions for the year 2007.

Table 3: Payment under the Renewable Energy Sources Act

Technology	Specifications	Remuneration in 2007	Duration
Wind (onshore)	No capacity limit	€81.9/MWh for 5 years, then €51.7/MWh	20 years
Wind (offshore)	No capacity limit	€91/MWh for 12 years, then €61.9/MWh	20 years
PV	Prices vary according to type and location	€379.6/MWh – €542.1/MWh	20 years
Biomass and biogas	< 20MW	€80.3/MWh – €109.9/MWh	20 years
Waste wood	No capacity limit	€37.2/MWh	20 years
Landfill gas, sewage gas	No capacity limit	€63.5/MWh – €73.3/MWh	20 years
Untreated biomass	*Additional payments*	*€40/MWh - €60/MWh*	*20 years*
CHP application		*€20/MWh*	*20 years*
Innovative technologies		*€20/MWh*	*20 years*
Wood combustion		*€25/MWh*	*20 years*
Hydro	< 5MW	€66.5/MWh – €96.7/MWh	30 years
	Modernized large hydro < 150MW	Lower levels available	
Geothermal	No limit	€71.6/MWh - €150/MWh	20 years

The guaranteed payment period is 20 calendar years (or for hydropower 15 or 30 years, depending on plant characteristics). The tariff for the year of commissioning remains constant for that generator throughout the 15 or 20 year period, with the exception of wind energy.

Wind Tariffs: Two different rates are paid for electricity generated by wind: for an onshore wind farm, a starting fee is paid for electricity produced for the first five years after commissioning. After these first five years, a lower basic fee is applied. Unusually, low-cost wind energy producers are compensated at lower rates than higher-cost producers, providing strong incentives for the development and operation of renewable energy installations on lower-quality sites. The period of higher fees can be extended according to the wind conditions at the site. Regardless of siting, the total payment period is restricted to 20 years. For offshore wind farms, higher starting fees are paid for 12 years. This period is extended for installations located further from the coastline and erected in deeper water. Wind farms which do not achieve at least 60% of the reference yield at the planned location cannot claim payment under the 2004 law. For coastal sites in particular there are new incentives for so-called "repowering": the replacement of old, smaller installations with modern, more efficient ones. Higher starting tariffs for offshore wind farms will be paid for installations commissioned before 2010.

The tariff rates are adjusted annually for all new plants in order to take account of technological developments and of the economic efficiency of these developments, and to optimize the use of cost reduction potential. The annual decrease for new plants – the level of degression – is defined as set out in Figure 4 and Table 4. The degression annually lowers the payment rates for new installations (except small hydropower plants). Existing plant continue to receive the levels defined when they became operational (except wind as covered previously).

Figure 4: Degression of wind energy (in €cent/kWh)

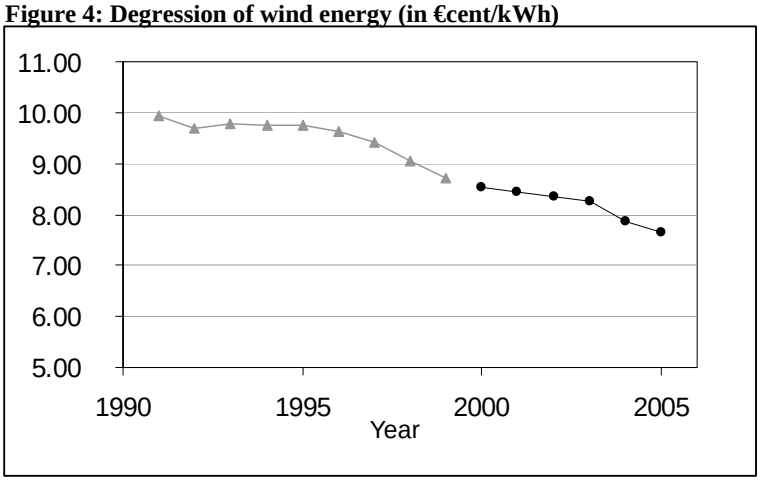


Table 4: Degression by technology under EEG revision

	Level of degression	
	EEG (2000)	EEG (2004)
Hydro	-	1%
Onshore wind	1.5%	2%
Offshore wind	-	2% starting in 2008
PV	5%	5%, for open space installation 6.5%
Geothermal	-	1% starting in 2010
Biomass	-	1.5%
Landfill/sewage plants/mine gas	1%	1.5%

The degression is designed to lead to installations being constructed as quickly as possible, in order to secure a high payment level. This is intended to discourage operators from waiting until installations become cheaper. The EEG is also designed to promote high-quality installations as payment is made per kWh produced, so there is an incentive for operators to run their installations efficiently and with as little interruption of operation as possible, at least during the usual 20-year payment period.

Redistribution: More wind energy is generated in the North of Germany due to higher wind speeds. To prevent regional inequality in electricity cost to consumers, the transmission grid operators undertake a nationwide equalization of the electricity volumes purchased under the Renewable Energy Sources Act (EEG).

Table 5: Positives and Negatives of German Feed-In Tariff Scheme

Positives	Negatives
• Long-term certainty for investors and lenders. • Administratively simple. • Success in deploying large amounts of wind energy, particularly in North. • Great success in PV applications.	• Expensive due to high subsidy/ uptake.

Future Support: Germany's Renewable Energy Sources Act is reviewed every three years. Germany's Ministry for the Environment issued a progress report in July 2007 that lays out recommendations to amend the Renewable Energy Sources Act. The recommended new rules would, if adopted, significantly increase the tariffs for

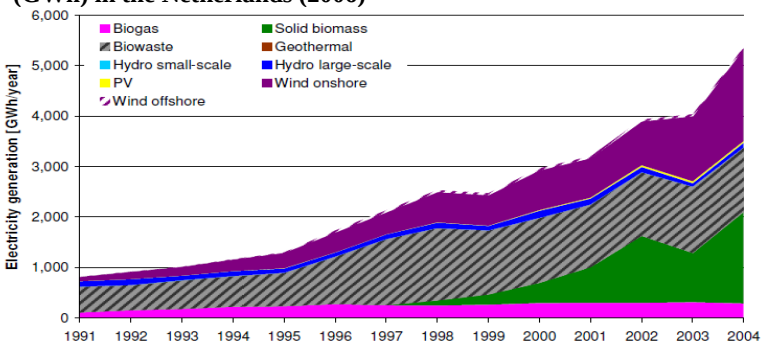
offshore wind energy, hydroelectricity and geothermal energy. The annual degression rate for onshore wind energy, solar/PV and biomass will be reduced.

- ***Netherlands – SDE***

  According to the previous EU Directive 2001/77, the share of renewable electricity in the Dutch market should be 9% of the gross electricity consumption in 2010. In 1997, the RES-E share was 3.5% and by 2006 it had risen to 6.5%.

  Under the new Directive 2009/28, the Netherlands will have to increase its renewables share in final energy consumption from 2.4% in 2005 to 14% in 2020.

Figure 5: Power Generation from Renewable Energy Sources by Type (GWh) in the Netherlands (2006)[4]



In July 2003 the Environmental Quality of Electricity Production scheme (Milieukwaliteit Elektriciteits Productie or MEP scheme) was introduced to encourage investment in sustainable energy. Under the MEP scheme, Dutch producers of renewable electricity feeding into the public grid received a fixed fee per kWh for a guaranteed period of ten years. The subsidy was intended to cover only the proportion of cost that is not covered by the market price for electricity. This is distinct from a standard feed-in tariff as generators receive the variable market price for their energy, plus a fixed feed-in component. The value of the tariff differed for each type of renewable generation. For example, offshore wind received the highest subsidy.

The subsidy was financed by all electricity consumers who pay a levy specifically for this scheme. These tariffs were adjusted annually and tradable certificates are used to claim the feed-in tariffs. A central organization, CertiQ, issued the certificates and EnerQ (set up by the TSO TenneT) paid out their value.

The MEP fee was set to zero for all new renewables projects in August 2006. The former Dutch Economic Affairs Minister Joop Wijn, said that the goal of 9% sustainable electricity by 2010 would be reached with current submitted projects, so there was no need for continued MEP subsidies. This caused objections from the industry

[4] European Commission, Renewable Energy Country Profiles 2008

as investors had expected that the MEP fee would be gradually limited over time and scale, rather than being abolished outright.

In September 2006, Joop Wijn bowed to political pressure and agreed to partially reinstate MEP. €270 million was allocated for new small-scale renewable production projects. The government also promised to make €70 million available to compensate companies that have incurred costs in expectation of receiving subsidies.

In July 2007, the Ministerial Council agreed on the "Stimulation for Sustainable Energy Generation" program ("Ontwerpbesluit stimulering duurzame energieproductie", SDE) to replace MEP. The subsidy system started in April 2008 and broadly follows the structure of the MEP.

Within the SDE, a number of subsidy categories have been defined. Onshore wind, solar PV, biomass, biogas and waste have been eligible for SDE since 2008. Subsidy categories for offshore wind and large-scale biomass are supposed to follow later.

Similar to the MEP, the subsidy level is variable on an annual basis and linked to the actual annual energy market price, therefore representing the difference between the generation cost and market price.[5] The adjustment to the energy price (the base electricity or base gas price) and other factors that have an influence on the energy price form the 'correction level' by which the tariff is changed annually.

The tariff is paid for 15 years for onshore wind, waste and solar PV, and for 12 years for biomass and biogas. Base levels for 2008/2009 are summarized in Table 6.

Table 6: Dutch SDE Levels 2008/2009

Subsidy category	Duration	Tariff level
Onshore wind	15 years	45€/MWh
Biomass	12 years	62€/MWh
Biogas	12 years	79€cent/m^3
Small scale solar PV (0.6kWp-3.5kWp)	15 years	33€/kWh
Waste-to-energy	15 years	4€/MWh

The amount of funding available per category is limited, and installations need to apply to be awarded the subsidy on a first-come-first-served basis. For example for solar PV, the SDE budget is limited to €46million in 2008, which can subsidize 10MW of solar PV.

[5] Where energy prices are higher, subsidies will be lower and vice versa.

Table 7: Positives and Negatives of the Dutch Feed-In Tariff Scheme

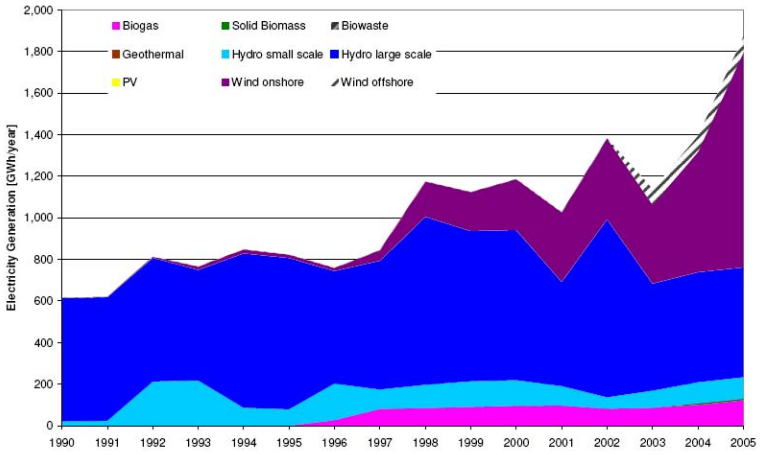
Positives	Negatives
• Long-term certainty once project built. • Market link through electricity prices.	• Vulnerable to political change. • Investment risks with the premium system are higher than with a full feed-in tariff – as the total prices fluctuate with the electricity prices.

- ***Ireland - REFIT***

Ireland's target of renewable electricity to be achieved by 2010 from the previous EU Directive is 13.2% of gross electricity consumption. Nationally, Ireland has set a target of 15% by 2010 and 33% by 2020. Since 1997, the share of renewable electricity increased from 3.6% to 6.9% in 2005.

Under the new Directive 2009/28, Ireland will have to increase its renewables share in final energy consumption from 3.1% in 2005 to 16% in 2020.

Figure 6: Power Generation from Renewable Energy Sources by Type (GWh) in Ireland (2006)[6]



The 2006 Renewable Energy Feed-In Tariff (REFIT) scheme provides support to renewable energy projects over a fifteen year period. Previously there was a competitive tender system for new renewables projects in Ireland.

It is an unusual feature that the developer is obliged to negotiate with the electricity supplier to sell his output. The first stage in the process is that the generator applies for a "letter of offer" from the Department of Communications, Marine and Natural Resources (DCMNR). To get the letter he must have planning permission and a grid connection offer for his project. The letter of offer confirms to

[6] European Commission, Renewable Energy Country Profiles 2008

any electricity supplier (licensed to supply in Eire) that, in return for entering into a power purchase agreement (PPA) with the generator for 15 years, the supplier will receive a "balancing payment" in accordance with the terms of the REFIT scheme.

Applicants in REFIT will be able to contract with any licensed electricity supplier up to the notified fixed prices, which in 2006/07 were:

- Large wind energy (over 5 MW) 5.7 Euro cents per kWh
- Small wind energy (under 5 MW) 5.9 cent per kWh
- Biomass (landfill gas) 7.0 cent per kWh
- Hydro and other biomass technologies 7.2 cent per kWh

These prices are linked to the consumer price index. Suppliers will, in all cases, receive a base payment of 15% of the REFIT Reference Price for large wind per kWh. In addition,

- If the annual published reference price for a Best New Entrant (BNE) plant is lower than the REFIT Reference Price for large wind, then the supplier is paid the difference between the two prices.
- If the supplier has contracted with a generator a price greater than or equal to the REFIT Reference Price for that type of generation, then the supplier will be paid the difference between the REFIT Reference Price for that type of generation and the REFIT Reference Price for large wind.
- If the supplier contracts with the generator at a price lower than the REFIT Reference Price for that type of generation but greater than the REFIT Reference Price for large wind, the supplier receives a payment based on the difference between the PPA price and the REFIT Reference Price for large wind.

The government will fund the money paid under REFIT through a levy on final electricity users. The levy will be based on the type of electricity connection (domestic, SME, large industrial, etc.)

The aim of the scheme is to provide support for "at least" 400 MW of capacity by 2010. However, it has been envisaged as providing up to 700 MW.

Contracts under REFIT are bilateral agreements between the supplier and the generator. Theoretically, under the Single Electricity Market (SEM) – which combines the Irish and Northern Ireland Markets – bilateral PPAs are not generally valid as all energy must be bought and sold through the central pool. Existent contracts entered into prior to February 2007 may be converted into intermediary contracts whereby the supplier acts on behalf of the generator in the pool. Intermediary contracts are also allowed for generators below 10 MW. Outside of this scope, contracts for difference may be an alternative approach.

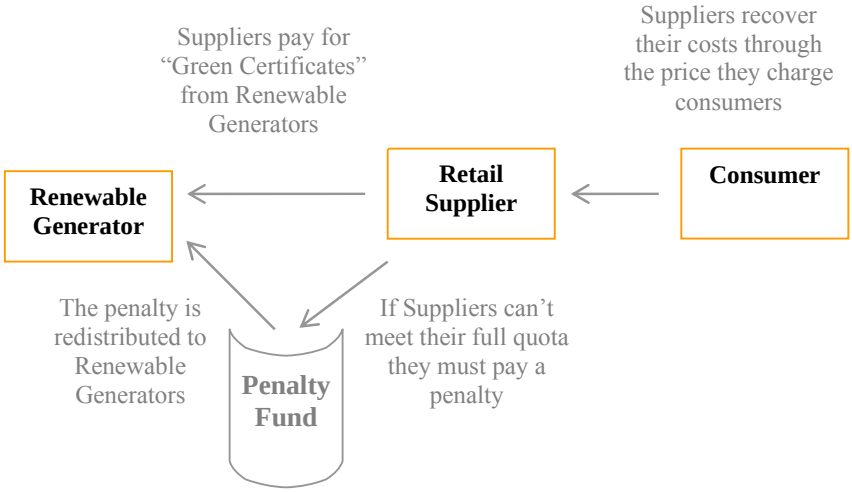
By October 2007, 60 generators had received conditional offers under REFIT with a combined capacity of 600MW but at that stage there were no generators operational under the scheme.

2.3.2 Tradable Green Certificate and Quota Schemes

Tradable green certificate schemes operate under a quota system that imposes a required minimum share of renewables on consumers, suppliers or producers of electricity. Generated electricity from RES is rewarded with a green certificate representing the amount of renewable electricity generated.

A tradable green certificate means the separation of physical electricity from its green value and allows the two components to be sold separately. This enables parties to meet their targets by purchasing a green certificate at a market price.

Figure 7: Simplified example of a quota system for illustration



Green certificates are submitted to an authority to show compliance with the quota requirement.

Key success factors include:

- Parties not meeting targets have to pay a penalty; and
- Non-compliance penalties should be significantly higher than the expected market price.

Table 8: Advantages and Disadvantages of Certificate Schemes

Advantages	Disadvantages
• Market-based solution. • Competition between producers. • Strong incentive to technology cost reduction. • If the system is well designed the targets can be exactly reached. • Payment based on energy produced and used, so incentives are correct.	• Complexity of system. • Risk of supporting only the lower-cost technologies. • Generally does not lead to minimization of social costs. • Price difficult to forecast in illiquid markets. • High administrative costs. • Setting of yearly quotas and fixing of penalties is not simple and will influence outcome.

Examples of more advanced quota systems include:

- Specifying technology bands or introducing additional support schemes for higher-cost technologies will assist in reducing social costs while ensuring different technologies are built; and
- Risks can be reduced by a guaranteed floor price or allowing banking and borrowing of certificates.

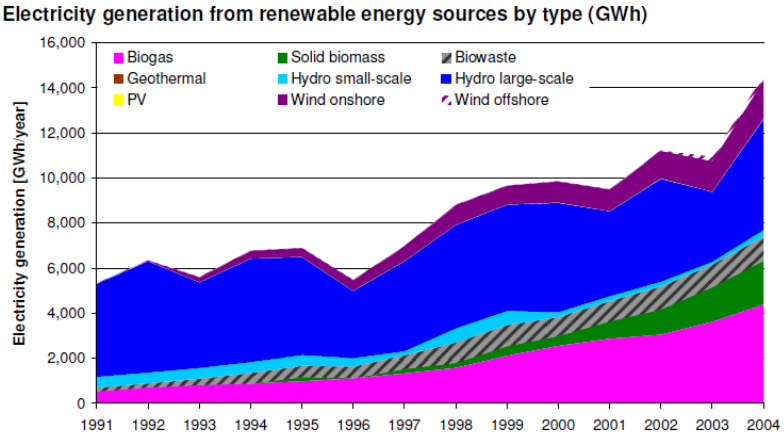
Administrative costs for these schemes are higher.

- ***UK - Renewables Obligation***

  The UK's RES target was 10 % of gross electricity consumption by 2010 under the previous EU Renewables Directive. In 2006, the share of RES in electricity generation reached 4.5%.

  Under the new Directive 2009/28, the UK will have to increase its renewables share in final energy consumption from 1.3% in 2005 to 15% in 2020.

Figure 8: Generation from Renewable Energy Sources by Type (GWh) in the UK (2006)[7]



The primary support mechanism for Renewable Energy in the UK is the Renewables Obligation (RO). Eligible renewable generation is credited with a Renewable Obligation Certificate (ROC) for each unit of output (MWh) produced.

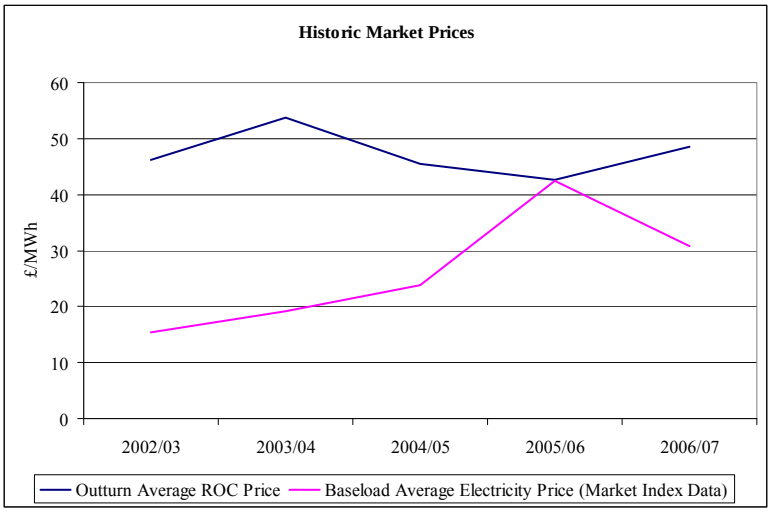
The RO places an obligation on licensed electricity suppliers to present a number of ROCs equivalent to a percentage of the electricity they have supplied, or pay a "buy-out" price for any shortfall. The buy-out price was originally set at £30/MWh in 2002/03, and is index-linked. Funds accumulated from the buy-out are then "recycled" back to those suppliers based on the number of certificates presented. Thus, the value of a ROC is the buy-out price plus the recycle price.

This mechanism means that the market price for ROCs is set by supply of renewable generation and demand (as defined by the obligation). There is a market for ROCs, and they can be traded separately from the electricity produced. The value of ROCs and power over the last 5 years are shown in Figure 9.

It can be seen that ROC prices have typically been greater than power prices over the last 5 years, and so make a significant contribution to the economics of renewable generation projects.

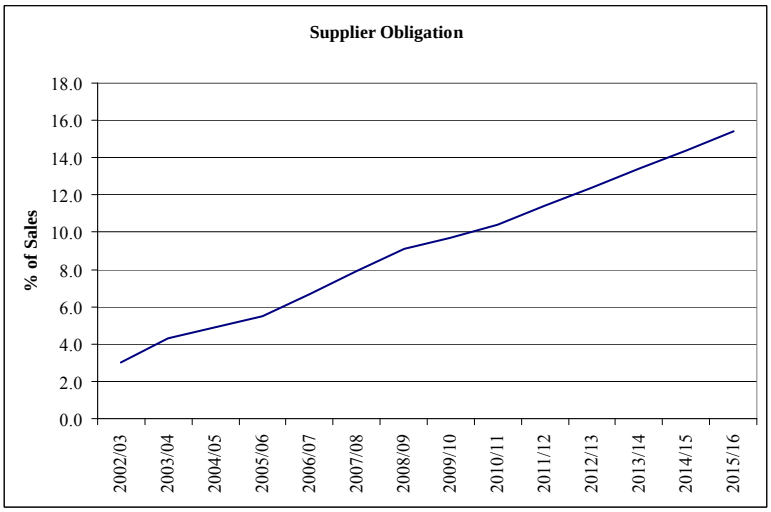
[7] European Commission, Renewable Energy Country Profiles 2008

Figure 9: ROC and Power Prices



The obligation came into force in April 2002, with the level of the obligation increasing every year to 2015. The level of the Supplier Obligation to 2015 is shown in Figure 11.

Figure 10: Renewable Obligation on Suppliers



Although the Renewable Obligation has provided renewable generation with a significant additional income stream, the future income from ROCs is subject to both market and political risk.

Table 9: Positives and Negatives of UK ROC Scheme

Positives	Negatives
• Investors develop low-cost technologies (wind). • Generators can sell ROC and power separately to find best price. • Price link to target: – goes up when renewable energy production low. – goes down as approach target.	• Planning permission delaying projects. • Oversupporting low-cost technologies. • Emerging technologies not supported. • Relatively high social costs. • Risk of "cliff edge" when target met.

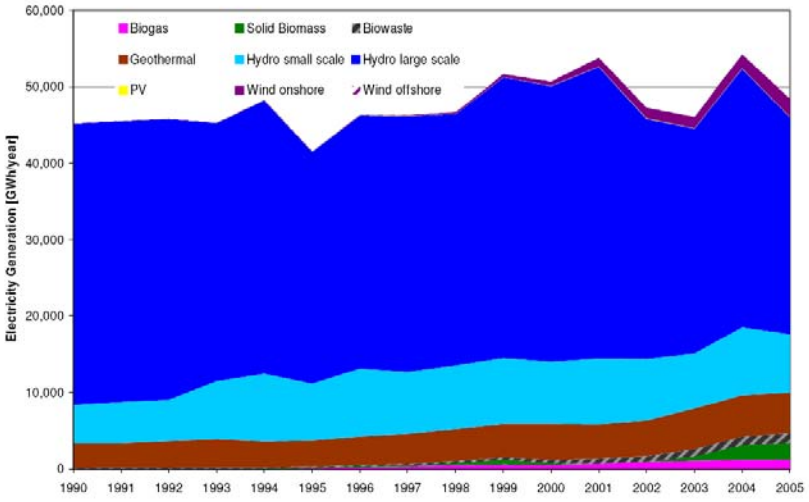
Future support: New policies came into force in April 2009, including the introduction of a "banding" approach where multiple ROCs are provided for some emerging technologies such as offshore wind, wave, and tidal energy. Furthermore, "headroom" levels were introduced to prevent ROC prices crashing if targets are met.

- ***Italy***

Italy's indicative target to be achieved by 2010 under the previous EU Directive was 25% of gross electricity consumption. As a percentage of total electricity consumption the share of RES-E in Italy decreased from 16% in 1997 to 14% in 2005.

Under the new Directive 2009/28, Italy will have to increase its renewables share in final energy consumption from 5.2% in 2005 to 17% in 2020.

Figure 11: Generation from Renewable Energy Sources by Type (GWh) in Italy (2006)[8]



Italy operates a support scheme based on a compulsory quota for electricity from RES and on tradable green certificates (GCs).

[8] European Commission, Renewable Energy Country Profiles 2008

Since 2001, the RES electricity quota obligation has been placed on operators who have produced or imported electricity from non-renewable sources exceeding 100 GWh/yr (electricity from CHP plants, auxiliary service consumption, and exports of energy are excluded). Before the end of the subsequent year, these operators must feed into the Italian grid an amount of RES electricity equaling a minimum quota of this non-renewable electricity. The RES electricity quota was originally 2% but was subsequently raised by 0.35% a year to 3.05% in 2007.

To reduce their obligation, the operators are also allowed to feed imported RES-generated electricity into the Italian grid, but this energy must be certified by a GC (in this case as a form of guarantee of origin certificate). The market price of GCs should thus be determined on the basis of demand by obligated operators versus supply by qualified producers. Qualified RES electricity producers get one GC for each 50 MWh of their production over a term that was formerly eight years but has, since 2006, been extended to twelve years of plant operation. The sale of GCs brings them income in addition to the proceeds from the sale of energy on the wholesale electricity market.

Italy formerly operated a feed-in tariff CIP 6/92 since 1992. This tariff is being phased-out, but links with the new support mechanisms still exist where some plants still receive the tariff under their eight-year guarantee. To avoid double benefit, GCs that would be due to plants already getting CIP 6/92 feed-in tariffs are retained by GSE (Gestore dei servizi elettrici, the body managing all RES support schemes in the country). GSE must sell them at a price fixed every year on the basis of current CIP 6/92 feed-in tariffs, among other things. Since the number of these GCs is still fairly large, qualified renewable producers actually have to sell their own GCs at a price close to, but obviously not greater than, the price fixed for the GSE certificates. The Italian GC price is therefore not left to the mere interplay of supply and demand but is controlled. The price of GCs sold by GSE has been growing steadily in the past few years. Specifically, the price of GSE's GCs relating to 2006 RES production was fixed at €125.28/MWh.

The GSE price has kept up the GC market price as well, thus bringing a reasonably rewarding income to investors in addition to the sale of electricity on the wholesale market. This is especially true for more mature RES technologies, including wind, while other technologies such as photovoltaics have had to be granted special feed-in tariffs to help fund their development.

The certificate life is 3 years. The operators are also guaranteed by the fact that GSE will buy back unsold certificates.

In spite of these financial conditions, which look very favorable in principle, investors have still been unhappy with the way some aspects of Italy's support policies have been implemented. Particularly, they have complained of delays in issuing measures regarding the fixing of future electricity quotas for RES, the setting

of regional targets, establishing a single national procedure for plant permitting, and other actions required by Decree 387 of 29 December 2003. Some investors have even stated they would be content with lower energy and GC prices in exchange for better-defined boundary conditions for their businesses in the long term.

Table 10: Positives and Negatives of Italian Certificate Scheme

Positives	Negatives
• High value.	• Price largely determined by GSE CIP 6/92 price, not the market mechanism. • Uncertainty in the mid- to long-term.

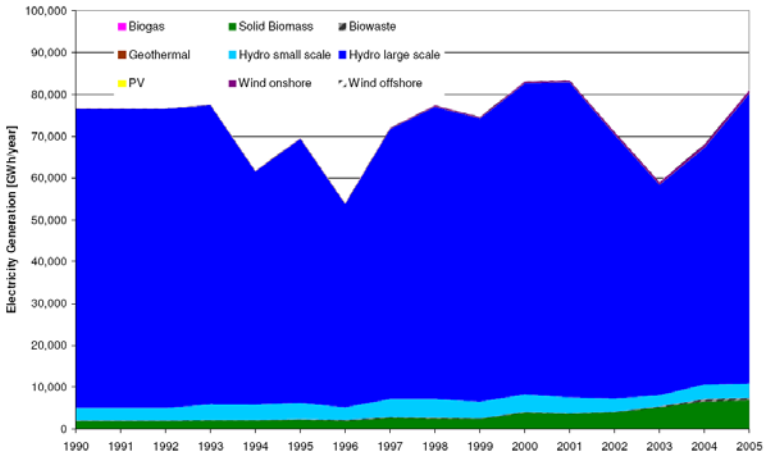
Future Support: Currently there is only one level of support, in the sense that all technologies are equally remunerated. A proposal to introduce variable support with respect to technology maturity is currently under discussion.

- ***Sweden***

The target under the EU Directive for Sweden is to achieve 60% of gross electricity consumption from renewable energy sources by 2010. Electricity consumption from renewable energy sources was 54% in 2005, increased from 49% in 1997.

Under the new Directive 2009/28, Sweden will have to increase its renewables share in final energy consumption from 39.8% in 2005 to 49% in 2020.

Figure 12 Generation from Renewable Energy Sources by Type (GWh) in Sweden (2006)[9]



In May 2003, Sweden introduced its electricity certificates system in order to meet its targets for the production of electricity from renewable energy sources. The objective of the system was to

[9] European Commission, Renewable Energy Country Profiles 2008

increase the production of electricity from renewable energy sources by 10 TWh by 2010, relative to production in 2002. In subsequent years, the objective of the legislation has been expanded, so that it now also includes encouragement of the production of electricity from peat as a fuel in combined heat and power plants.

The Electricity Certificates Act amended by Parliament on 14 June 2006 raised the target level. With effect from 1 January 2007, the target of the act is now to increase the production of electricity from renewable sources by 17 TWh in 2016, relative to 2002. The system was also extended until 2030.

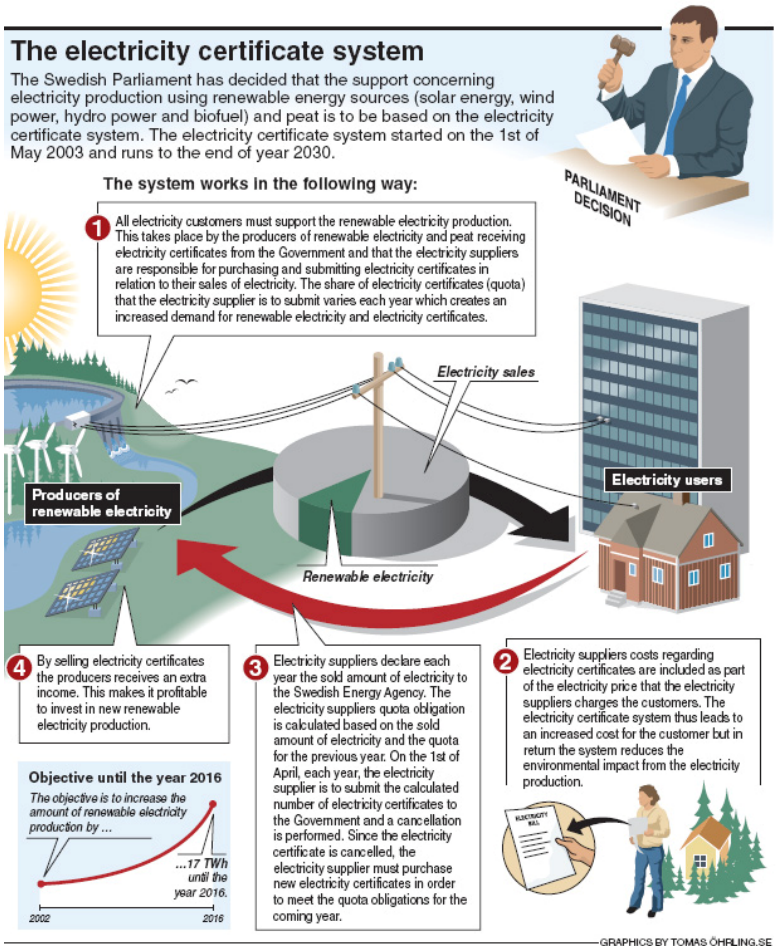
The electricity certificate system is a market-based support system to assist the expansion of electricity production in Sweden from renewable energy sources and peat. One electricity certificate is issued to each approved producer for each produced and metered MWh of electricity from the following energy sources:

- Wind power
- Solar energy
- Wave energy
- Geothermal energy
- Biofuels
- Peat, when burnt in combined heat and power plants
- Hydro power:
    - small scale hydro power which, at the end of April 2003, had a maximum installed capacity of 1,500 kW per production unit
    - new plants
    - resumed operation from plants that had been closed
    - increased production capacity from existing plants
    - plants that can no longer operate in an economically viable manner due to decisions by the authorities or to extensive rebuilding.

In 2006 the quota obligation charge was €29.55 (278 SEK) per certificate (MWh).

The principle of the system is illustrated in Figure 13.

Figure 13: The Swedish electricity certificate system



Source: Swedish Energy Agency (2007)

Table 11: Positives and Negatives of Swedish Certificate Scheme

Positives	Negatives
• Investors keen to develop low-cost technologies. • Generators can sell both ROC and power separately to find best price. • Price link to target: – goes up when renewable energy production low – goes down as approach target	• Risk of oversupporting low-cost technologies. • Emerging technologies not supported. • Relatively high social costs.

2.3.3 Fiscal & Financial Incentives

Fiscal and financial incentives are a very widespread tool to promote renewable energy. Incentives include:

- Tax credits;
- CO_2 or energy tax exemptions;
- Low-interest loans; and
- Financing packages.

The level of incentives is usually technology- or purpose-specific. In some cases the practice is to apply incentives in addition to the main support scheme (feed-in tariffs or quota obligations).

Table 12: Advantages and Disadvantages of Fiscal and Financial Incentives

Advantages	Disadvantages
• Easily linked with existing fiscal and financial structures. • Provides a guaranteed and direct payment. • Can be combined with other measures. • Can be targeted to specific technologies.	• No incentive to reduce technology costs. • May not create longer-term certainty on investments. • Up-front payments can break link with output. • Needs high tax levels to be effective. • Can become "tax havens" reducing the incentive for efficient use. • "Stop and go" in market development, administrative cost.

Investment Aid

As regards EU state aid restrictions, financial incentives for renewable energy schemes are generally allowed up to 40%.

- ***Finland***

  In Finland, renewable energy sources are supported by investment aid and by taxation. Funds are also granted for technology development and commercialization of renewable energy technologies.

  Power plants that use renewable energy can get aid for investments depending on the technology used and the size of the power plant. At maximum, the support can be 30-40% of investments for wind power plants. For larger power plants which combust wood fuels, the support has typically been limited to 5-10% of investments. New hydro plants over 10 MW are excluded from the support scheme. Aid can also be granted to investments related to production of renewable fuels.

  Electricity produced from renewable energy sources can also get direct support (tax refund).

The National Climate and Energy Strategy, which was introduced by the Government in November 2005, proposed some changes to RES support policy in Finland. The strategy does not propose any new support instruments but introduces changes to existing ones. The intent is to direct investment aid to new technology and to sectors outside the emission-trading scheme where the scheme has increased power prices and improved the playing field for RES. The strategy also proposes the abolishment of the tax refund for electricity from industrial wood waste and residues.

- ***Germany – Market Stimulation Program***

  In 1999, the German government introduced the Market Incentive Program (MAP), which offered government grants totaling €203million in 2003 alone for the commercialization and deployment of renewable energy systems. The program earmarks €30million for export promotion. The German government considers MAP to be one of its most effective current renewable energy promotion programs, particularly since funds from the program may be leveraged with other government funds. The program primarily serves the expansion of heat generation from biomass, solar power and geothermal energy.

- ***Germany – Loans and Capital Grant Schemes by the Reconstruction Loan Corporation***

  In addition to the MAP, the Reconstruction Loan Corporation offers and administers several soft loans schemes which have been set up to indirectly support the deployment of RES technologies. Financing programs are open to the private and public sector and focus on various technologies. Most programs offer submarket level interest rates with credit terms varying between ten and twenty years and a redemption-free initial phase.

Table 13: Examples of Loans and Grant Schemes by the Reconstruction Loan Corporation

Preferential Loan Programs	
Technological focus	use of RES and conversion of heating systems; solar power generation; construction and modernization of energy efficient buildings
Eligible parties	Private building sector targeted under SME Program ("KfW-Mittelstandsprogramm"); public sector targeted under Infrastructure Program ("KfW-Infrastrukturprogramm")
Credit terms	10 to 20 years
Redemption-free phase	Varied
Interest rate	1 to 2% below market interest levels
Value	Varied
ERP-Environment and Energy Savings Program (since 1990)	
Technological focus	Traditionally wind power, but recent increase in support for solar PV
Eligible parties	Private companies, freelancers, public-private partnerships
Credit terms	10 to 20 years, maximum of 50% of total capital cost is eligible for funding but loans can be combined with other KfW loans
Redemption-free phase	2 to 5 years
Interest rate	1 to 2% below market interest levels (average in 2006: between 4% and 7%)
Value	€10.7billion between 1990 and 2005
Producing Solar Power (since 2005)	
Technological focus	Small investments in solar PV generation
Eligible parties	Mainly private investors seeking loans for projects up to €50,000
Credit terms	10 to 20 years, 100% of the investment cost can be financed
Redemption-free phase	2 to 3 years
Interest rate	3.6% to 4.15%
Value	€784 million in July 2006

Fiscal incentives

- ***UK – Climate Change Levy***

  The Climate Change Levy (CCL) is a tax on final energy use, set at £4.41/MWh for electricity (in 2007/08), and is currently index-linked. Electricity supplied from renewables or good quality CHP are exempt from CCL, effectively increasing the value of electricity supplied from these sources.

The value of CCL is set by the Treasury each year, and so is not guaranteed over the lifetime of a renewable generation project. Thus, there is some political risk associated with the additional revenue achieved by a renewable generator through CCL.

Unlike ROCs the value of the CCL cannot be traded separately from the electricity with which it was supplied.

- ***Netherlands – Energy Tax Exemption***

  Until 2003, renewable generators were exempt from the Regulating Energy Tax levy (Regulerende Energie Belasting, REB).

  With the introduction of the MEP in 2003, the full exemption from REB for renewable energy was replaced by an obligation to pay half the rate paid by thermal generation. In 2004 the tax rate for renewable electricity was raised again, and by 2005 renewable energy was taxed at the same rate as energy from fossil fuels.

  To compensate for the reduced REB incentive, the subsidy rates in MEP were raised each time the REB tax incentive was lowered.

- ***Germany – Eco-Tax***

  Germany operates an eco-tax which applies to all energy irrespective of generation source. Some generation is subject to reduced rates due to economic, environmental or social considerations, such as CHP, public transport, etc. Electricity from RES is mostly exempt from this tax (except hydropower above 10MW).

  To some extent, revenues from the eco-tax are used to finance the MAP which supports the further development of RES technologies. Most of the tax revenue, however, is used to finance the state pension scheme. In 2005, €0.2billion of a total of €17.8billion tax revenue was allocated to the MAP.

  The first stage of the ecological tax reform was implemented in 1999. Tax levels were increased annually over the period 2000 to 2003. In 2006, the eco-tax scheme was completely reformed. However, this did not affect the tax rates due to its important link to the state pension scheme.

2.3.4 Tender Schemes

Under a tender scheme, the Government requires a specific amount of renewable energy capacity to be developed. It announces a tender competition in which best offers are given a contract. Companies bid competitively. There may be different tenders for different technologies to allow for range of sources. Usually government obliges the network operator to offer supply contracts to the winning bidders. Tenders are either funded from the general budget or from a levy on the network tariff.

Table 14: Advantages and Disadvantages of Tender Schemes

Advantages	Disadvantages
• Competitive element. • Long-term certainty in price. • Low administrative costs. • Payments generally linked to performance. • Technology and location specific tenders can reduce administrative burden (but also reduce competition). • The development of large projects could be combined with industrial activities (e.g. Portugal in wind).	• Amount of projects implemented is very low and successful bidders may not actually develop projects. • Limited competitiveness may strongly reduce efficiency. • A number of countries have phased this scheme out due to poor performance (Ireland, Great Britain, to an extent France).

2.3.5 Cost-Efficiency

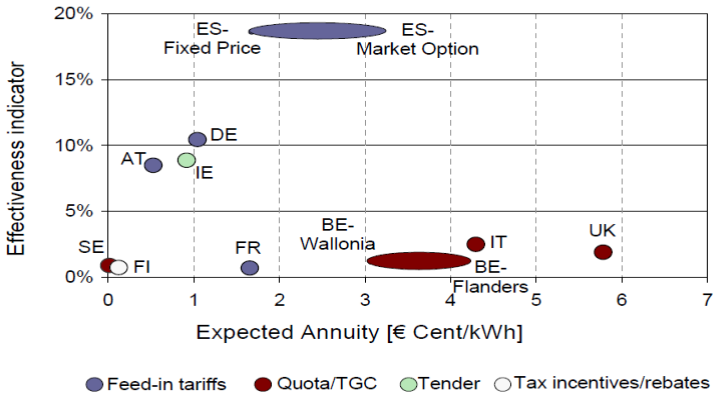
Cost efficiency of RES support schemes is an important feature to determine the viability of a scheme.

In general, the following observations can be made:

- Feed-in tariff schemes provide strategic support for innovation technologies (dynamic efficiency)
- Tradable green certificate schemes put emphasis on static efficiency: preference to technologies with lower costs
- Both are market-oriented schemes and will result in cost-efficient outcomes if designed properly.

The European Union in its Impact Assessment of support schemes for RES developed an effectiveness indicator in relation to the expected annuity of investment. Figure 14 presents the results for wind energy as an example.

Figure 14: Effectiveness indicator for wind energy support schemes in EU member states[10]



The indicators show that both effectiveness and efficiency are currently found to be highest with feed-in tariff schemes. Tradable green certificate schemes currently have a significantly lower effectiveness than feed-in tariffs. Reasons for this include the higher risk premium demanded by investors, administrative costs, and an immature market for certificate trading.

2.4 Bulgaria

This section provides the context for the development of an RES support mechanism for Bulgaria.

2.4.1 Existing status of Bulgaria's RES industry

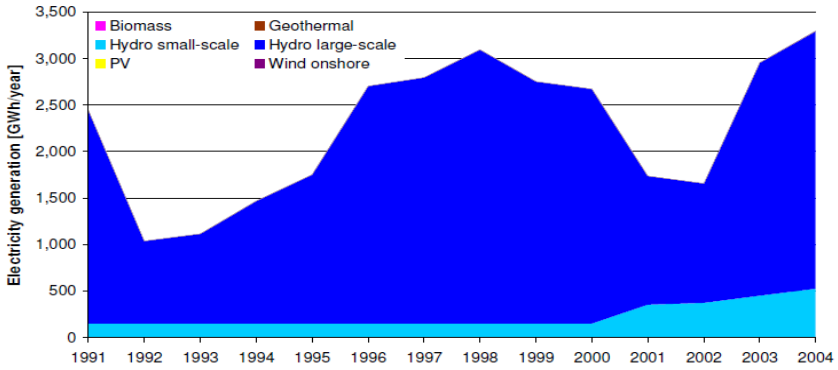
Bulgaria's high capacity and prevailing low energy prices do not favor the development of renewable energy sources without additional support.

In Bulgaria, renewable electricity is predominately hydro power, with a total installed capacity of 1,146 MW and a total share of 9% of the country's overall electricity consumption. There is very little electricity production from wind, geothermal, biomass or photovoltaics. The year 2006/2007 saw the development of an additional 18MW wind, bringing the total wind capacity to 32MW by the end of 2007 with an annual power generation of 40GWh[11]. The construction of small hydro schemes added 22MW of capacity, bringing the amount of small hydro capacity to 200MW. Photovoltaic installations had a capacity of 141kWp by the end of 2007, mainly grid-connected (108kWp on-grid and 33kWp off-grid). During 2008 new PV plants of MW-scale have been installed. The penetration in terms of the actual power generation until 2004 is shown in Figure 15.

Several large scale wind farms and PV plants are now in the planning stage, in particular a 100 MW onshore wind farm planned in Murgash.

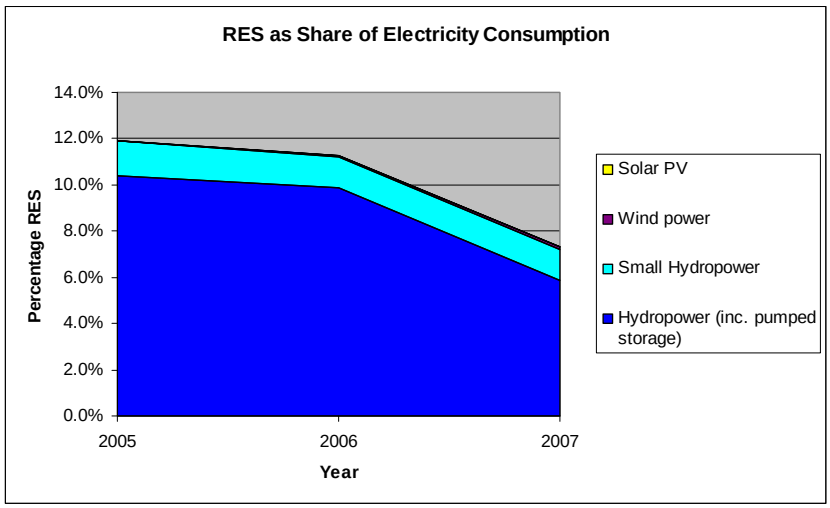
[10] Source: EC Communication - Support for Electricity from Renewable Energy Sources Impact Assessment 2005
[11] Eurobserver

Figure 15: Generation from Renewable Energy Sources by Type (GWh) in Bulgaria (2006)[12]



Since 2005, the share of renewable electricity has been declining as shown in Figure 16. This is due to the high share of hydro power which is very dependent on weather conditions. While Bulgaria's renewable generation level therefore seemingly increased from 1997 to 2006 from 7% to 11%, this was due to high rainfall levels. In 2007, the generation level had fallen by 7.3% (due to low-hydrology year).

Figure 16: Renewable Energy as Share in Electricity Consumption since 2005



Development opportunities for renewable energy in Bulgaria are judged positively. 60% of Bulgaria's land is agricultural and 30% is covered in forest which provides excellent resources for biomass. Potential wind capacity is estimated at 2,200 to 3,400MW. As regards solar power, high potential exists in the East and the South of the country. Geothermal energy is estimated at a potential capacity of around 200MWth.

2.4.2 Bulgarian Legislation

Bulgaria's legislation on RES is set out under the Renewable and Alternative Energy Sources and Biofuels Act (SG No. 49 19.06.2007). Other relevant legislation includes:

[12] European Commission, Renewable Energy Country Profiles 2008

- Energy Act (2006);
- Energy Efficiency Act (2004);
- Ordinance on Setting and Applying Prices and Rates of Electricity (2002); and the
- Regulation for Certification of the Origin of Electric Power Generated by Renewable and/or Combined Generation Sources - Issuance of Green Certificates and Trading (2005).

The Renewables and Alternative Energy Sources and Biofuels Act regulates and aims to promote the production and use of heating and/or cooling power generated from renewable and alternative energy sources, as well as the production and use of biofuels and other renewable fuels in the transport sector.

The following key mechanisms can be identified as support mechanisms to promote renewable energy deployment in Bulgaria:

- Mandatory purchase of electricity for preferential prices, a type of feed-in tariff. Suppliers are required to purchase all renewable energy from generators (except for hydropower installations with a capacity higher than 10MW);
- Electricity is eligible for preferential prices if Guarantees of Origin can be presented (except hydro greater than 10MW);
- Preferential prices are set by SEWRC;
- Renewable energy has priority access to the grid and connection costs are shallow; and
- In order to promote heat from renewable energy sources, Bulgaria is currently implementing the Bulgarian Energy Efficiency and Renewable Energy Credit Line (BEERECL). RES projects are eligible for a 20% grant. Loans worth more than EUR 12.8 million have already been granted.

2.4.3 Preferential Prices

Energy produced by RES in Bulgaria is purchased at preferential prices (a feed-in tariff), as defined by the Regulation on the prices of electrical energy.

In accordance with Section 4, Article 21 of the Law on Renewable and Alternative Energy Sources and Biofuels, the State Commission of Energy and Water Regulation determines annually the preferential prices for the sale of all RES electrical power (except hydro greater than 10 MW).

Section IV
Prices of Electricity Generated from Renewable Energy Sources
Art. 21. (1) Each year no later than 31 March, the State Energy and Water Regulatory Committee shall determine the preferential prices for sale of electricity generated from renewable or alternative energy sources, except for electricity generated by hydroelectric power plants with installed capacity exceeding 10 MW.

(2) The preferential price of electricity generated from renewable energy sources under para. 1 shall be determined at 80 percent of the average sale price for public utilities or end suppliers for the preceding calendar year plus an addition determined by the SEWRC depending to the type of primary energy source as indicated by the relevant ordinance stipulated by Art. 36, para. 3 of the Energy Act.
(3) The addition referred to in para. 2 for the next calendar year may not be less than 95 percent of the addition for the current year.

Preferential prices are determined on the basis of the following criteria:

- The type of technology;
- The installed capacity; and
- The available resources of the primary energy source.

Table 15: Preferential Prices from 1 April 2008

Technology	Scale	Preferential Price
Hydro	≤ 10MW	97.12 BGN/MWh
Wind	≥ 800kW and ≤ 2 250 hrs	185.95 BGN/MWh
	> 800kW and > 2 250 hrs	167.9 BGN/MWh
	< 800kW	139.96BGN/MWh
PV	≥ 5kW	782 BGN/MWh
	> 5kW	718 BGN/MWh
Biomass	Forestry waste	215 BGN/MWh
	Agricultural crop waste	162 BGN/MWh
	Energy Crop	184 BGN/MWh

Secondary legislation in form of the Regulation on Regulation of Prices of Electrical Power implements the legal provisions of the 2007 Act.

According to Article 16 of the Law on Renewable and Alternative Energy Sources, the public supplier and the end service providers are obliged to purchase the entire quantity of electrical power coming from RES.

Art. 16. (1) The public utility company and the end suppliers, respectively, shall purchase the entire quantity of generated electric power, for which there is a certificate of origin in place according to the relevant ordinance referred to in Art. 19, para. 3, except for the contracted quantities in accordance with Chapter Nine, Section VII of the Energy Act or the quantities subject to balancing transactions, as well as the quantities generated for producer's own needs.
(2) The public utility company and the end suppliers, respectively, shall purchase the entire quantity of energy generated from renewable and alternative energy sources, except for the power generated by hydroelectric power plants with installed capacity over 10 MW, at preferential purchase prices according to the relevant ordinance referred to in Art. 36, para. 3 of the Energy Act.

Figure 17: Illustration of Bulgarian feed-in tariff mechanism

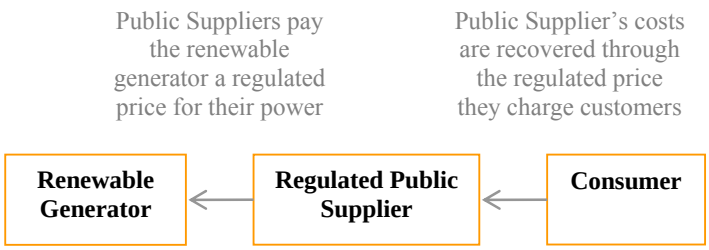


Figure 17 shows a simplified illustration of the Bulgarian feed-in tariff mechanism. It is important to note that this system is dependent on the regulated Public Suppliers to purchase the electricity and recharge the costs to consumers. This means that if a competitive retail market for electricity were to become more established in Bulgaria then the mechanism would need to be changed as the retail market moved away from a regulated approach.

For the power to be purchased, the producer must possess a REGO. As a transitional measure, until a GO has been issued, the public suppliers purchase the entire quantity of electrical power, stated as being produced from a renewable energy source at preferential prices.

Producers with registered GOs provide information required for the next GO certificate and a copy of the invoice provided when the respective quantity of energy was purchased. This information is given to the Commission, at the latest 10 days after the expiry of the previous calendar month.

- ***Other Funding Schemes***

  The European Investment Bank set up the Kozloduy International Fund loan facility to support the development of energy efficiency and renewable energy projects. By end 2007, 102 projects had received approval, including 64 renewable energy projects. The total amount of the grant is a percentage of principal on loan. For renewable energy, this is 20% of the total project costs.

  Furthermore, an Enterprise for Management of Environmental Protection Activities has been set up by the Ministry of Environment and Water to provide interest-free loans for small hydro.

  In addition, renewable energy projects can be funded through the Joint Implementation mechanism under the Kyoto Protocol.

2.5 Recommendations

Bulgaria's target contribution of renewable energy sources in overall final energy consumption by 2020 amounts to 16%. This target is likely to be challenging, and support mechanisms will need to be carefully designed to ensure that Bulgaria can meet them whilst minimizing the costs to final consumers and maximizing the social and economic benefits.

Bulgaria's electricity system already has a significant renewable energy contribution from large-scale hydro and is actively seeking to increase the contribution from other renewable sources as well.

The merits and drawbacks of the main support mechanisms used internationally to promote renewables can be summarized briefly as follows:

- **Feed-In Tariffs**
  - Can be very effective, with a proven track record (Germany, Denmark, Spain, etc.)
  - Less incentive for technology improvement
  - Seen to be most cost-effective and efficient mechanism at present
- **Tradable Green Certificates + Quota**
  - Market-based and linked to the target
  - Can overpay for lowest cost technology
- **Tender Schemes**
  - Highly competitive, low cost
  - Poor success in delivering projects (UK, Ireland, France)
- **Financial and Fiscal Incentives**
  - Simple and attractive to investors
  - Less incentive for technology improvement
  - Work best when combined with other measures

The choice of which support mechanism to use is only part of the challenge, and it is important to ensure that the country-specific processes and methodology make that support attractive to investors in a cost-effective way.

At present Bulgaria has a feed-in tariff mechanism (combined with some other fiscal incentives), although there has been some consideration of moving to a green certificate trading mechanism at a future date. In parallel with this, under the Renewable and Alternative Energy Sources and Biofuels Act, renewable generators have been granted priority access to the transmission/distribution network and "shallow" connection charges.

It is concluded that tradable green certificates are unlikely to be suitable for Bulgaria at present, as the competitive market is not sufficiently developed and investors may not be able to secure a good negotiated price. International experience has shown that fiscal/ tax measures are not normally sufficient alone unless they are onerously high. Tender schemes may be an option for one-of-a-kind projects. However, the number of renewables projects implemented through tender schemes in other countries (UK, Ireland, France) has been relatively low due to the poor margins available to developers through a competitive process compared to the risk of the technology. Therefore it is recommended for Bulgaria to continue with a feed-in tariff scheme that provides a degree of security and rate of return for investors.

A successful workshop on Support Mechanisms was held in Sofia on 10 November 2008 (see Appendix D) with contributions from a range of stakeholders. It was followed up with direct discussion with the Regulatory Commission. This workshop confirmed that the feed-in tariff mechanism was and remains the most appropriate choice for Bulgaria – where the competitive electricity market is not highly developed and investors are likely to require security in order to proceed.

Positive feedback from workshop participants suggested that the tariff level was considered adequate. However, a number of key issues were raised that were considered necessary to be addressed in more detail. These are discussed in Section 3, which considers the tariff methodology for renewable electricity.

3. TARIFF METHODOLOGY FOR RENEWABLE ELECTRICITY

3.1 Introduction

As discussed in Section 2, new Directive 2009/28/EC deals with the promotion of the use of energy from renewable sources, including heating and cooling and transport as well as electricity. The national overall target for the share of energy from renewable sources in gross final consumption of energy in 2020 for Bulgaria is 16% (a binding target).

Member States are required to bring into force the laws, regulations and administrative provisions to comply with this Directive by 5 December 2010. Article 4 on the adoption of national renewable energy action plans takes immediate effect and Member States will be obliged to present a National Renewable Energy Action Plan (NREAP) by 30 June 2010.

Bulgaria's target of 16% of final energy production from renewables is likely to be challenging, and support mechanisms will need to be carefully designed to ensure Bulgaria can meet these targets whilst minimizing where possible the costs to final consumers and maximizing the social and economic benefits.

SEWRC's mandate includes regulating the prices of electricity. The sound design of a tariff methodology is a crucial factor to attract more investment in the Bulgarian RES market. Bulgaria has a number of feed-in tariffs and provisions for these are set out in Art 21 of the 2007 Renewable and Alternative Energy Sources and Biofuels Act. Over the past few years, SEWRC has made excellent progress in setting renewable energy tariffs.

This section considers the ways SEWRC can improve the current tariff setting mechanism. This includes the outcomes of discussion of renewable electricity tariff setting at the second training workshop.

This chapter:

- Describes the current tariff methodology for renewable electricity in Bulgaria (Section 3.2);
- Outlines the key issues with this tariff methodology (Section 3.3); and
- Sets out recommendations for a future approach (Section 3.4).

3.2 Current Position

Renewable electricity in Bulgaria is supported through preferential tariffs for the purchase of electricity produced from renewable energy sources (including hydroelectric plants with an installed capacity of up to 10 MW).

The duration of the contracts was originally 12 years. This has been extended to 25 years for PV and geothermal and 15 years for all other renewables, if producing by 2015.

3.2.1 Setting Tariffs

Since its introduction in 2002, SEWRC has been responsible for setting preferential tariffs. These are set annually by March 31.

The Law on Renewable and Alternative Energy Sources and Biofuels stipulates that the preferential price of the RES electricity shall be set at 80% of the average sale price to domestic consumers in the country (provided by either public or final suppliers) for the previous calendar year, plus a premium determined by SEWRC. The regulation governing the method SEWRC uses to set the premium for preferential prices is the "Ordinance for regulation of electricity prices."

The price varies by technology and some performance and size criteria and the premium cannot decrease to be less than 95% of the premium of the previous year. In order to set the preferential prices for RES electricity, for each technology SEWRC assesses:

- Initial investment costs (Capex);
- Ongoing costs (Opex);
- Expected annual production;
- Economic life of the asset; and
- Required rate of return on investments, taking into account the technical and resource risks inherent in the technology.

SEWRC also has to take into account its duties to promote competition and balance the interests of energy companies and consumers.

Feedback from developers indicates that SEWRC is setting tariffs at the correct level. SEWRC has found it less straightforward to set tariffs for newer technologies, such as river-bed hydro stations and biogas from waste.

Case Study: River-Bed Hydro

Italy's Petrolvilla concluded the first stage of its Middle Iskar Cascade project in Bulgaria in May 2009. Phase one was completed with the launch of the second of nine small hydropower plants (HPPs) on a 30-km stretch of the River Iskar north of the Bulgarian capital Sofia. The project will consist of nine HPPs with a total of 25.7 MW of installed capacity and an average net annual output of 142 GWh. All nine plants are "river-bed" HPPs – a first instance anywhere in the Balkans. As such, they do not depend on diverting river flow and have no impact on water balance.

Cost estimates have risen from the original forecast of €60 million to the current forecast cost of €100 million. The EBRD and Italian-owned Unicredit Bulbank are providing loans, with Petrolvilla providing the rest.

These plants are more costly to build than conventional plant, which has caused some friction with the authorities, with Petrolvilla threatening the project might stop at two HPPs without a rise in feed-in tariffs.

SEWRC was obliged to react quickly, with the tariff rising as of June 1 for

river-bed plants under 5 MW.

SEWRC was able to react promptly to the market in this case, which speaks to the strength of the current system. However, in some respects SEWRC is constrained in its ability to respond to downward movement in prices by the tariff-setting mechanism.

3.2.2 Process for Passing Costs to Consumers

Regional suppliers are required to purchase all the electricity from renewable sources connected to the distribution system in their region. Nationally, the public supplier purchases transmission connected renewables. The payment for renewable electricity is set at the level of preferential prices set annually by SEWRC.

The eight regional electricity suppliers have been unbundled from regional distribution companies, although they are still vertically integrated with the Distribution Network Operators.[13] They have been privatized and are largely owned by three companies:

- Stolichno – owned by CEZ (Czech Republic)
- Sofia Region – owned by CEZ
- Pleven – owned by CEZ
- Plovdiv – owned by EVN (Austria)
- Stara Zagora – owned by EVN
- Varna – owned by E.ON (Germany)
- Gorna Oryahovitsa – owned by E.ON
- The eighth distribution company "Zlatni piasazi - Service" AD is also in private ownership.

The public utility company is the National Electrical Company - Natsionalna Elektricheska Kompania (NEK). NEK purchases wholesale power at regulated prices and sells to transmission connected customers, retail suppliers and distribution companies.

All suppliers recover the cost of purchasing the renewable electricity from their customers through regulated tariffs. In the past, this has meant that in each region consumers needed to pay different tariffs depending on how much renewable power was produced in their region. So, those consumers in areas with high wind or solar resources would end up paying more.

However, SEWRC has recently introduced a nationwide equalization scheme through NEK. The new process is adopted by SEWRC and will become operational in the very near future. It is designed to allow fairer distribution of costs.

[13] The same parent company may own both distribution companies and supply companies, although the companies must be operated independently.

The process involves calculating a price for the purchase of electricity for all conventional energy generators – a "reference market price". The difference between this and the price paid to preferential producers under the feed-in tariff law is the average premium for renewable electricity – the "renewable premium". Both the market reference price and the renewable premium are based on an estimate for the period from July 1 to June 30.

All the distribution companies purchasing power from renewable generators have to pay the preferential price set in the legislation, they then sell the power to NEK. NEK therefore pools all renewable energy along with conventional power. Finally, NEK sells the power back to large customers and to retail suppliers, who pay a price for all energy that includes a renewable premium. This will be charged to end customers in the same way that transmission system costs are currently charged to consumers and therefore will not require a change in primary legislation. SEWRC will be responsible for regulating how these charges are calculated and passed through to consumers.

An additional possibility from this process is that through the greater understanding of the renewable premium, suppliers will be able to include a separation of the premium for renewable electricity in consumer bills. Overall, the process is designed to produce more transparent understanding of the market price in Bulgaria.

The premium is charged on all national consumers of electricity, but not on exported power. SEWRC have requested feedback on the extent that exported electricity prices should include green electricity costs. This component of charging should only be applied within the country itself and should not be charged on exported power.

There is no reason to put a premium on exported power to cover the extra costs of renewables. Compliance with National Targets will be measured against consumption within the country. This cost should therefore be met by consumers within the country. Exported power does not count as part of national consumption.

If Bulgaria becomes assured of meeting its own targets and wishes renewable electricity to be officially transferred to other countries for the purpose of meeting other countries' renewable energy targets, it should be carried out in the form of a statistical transfer between Member States (as described in Article 6 of Directive 2009/28/EC).

This is in line with other Member State policies. At present, no European county appears to put the cost of national support schemes on to exported power. Denmark, Germany, the Netherlands, Italy, Ireland[14], Sweden and the UK allocate the cost of renewable energy based on what is consumed by final customers. In certain cases there are exemptions or compensation for certain large industrial customers.

The current policy of not putting any premium on exported power to cover the costs of national support schemes is therefore in line with European best practice and should not be changed.

[14] In Italy and Ireland, imported electricity that has been verifiably produced from renewable sources can receive support. This is not ordinarily the case for most support schemes.

3.3 Issues

Other than the technology risks and resource risks inherent in renewable technology, there are also specific additional risks for projects taking place in Bulgaria.

- **Tariff Level Risk:** The tariff may change each year by up to 5% of the premium and however much the regulated electricity price changes. These tariff changes apply to all projects, existing and new.

  When projects are seeking financing, this uncertainty of the level of the tariff over the duration of the contract (15 years for most renewables) is likely to lead to a conservative view of the likely project income.

- **Political Risk:** There is no guarantee that future administrations will honor current commitments.

  Bulgarian legislation foresees a change to a "market-based" scheme may happen in the future. Under the Energy Act and the Law on Renewable and Alternative Energy Sources and Biofuels, not later than 31 December 2011, the Minister of Economy and Energy shall prepare and submit for approval by the Council of Ministers a bill on market mechanisms for encouraging production of electricity and heating power from renewable energy sources. This may not necessarily be applicable to all existing producers of energy from renewable energy sources.

  Investors must rely on a reassurance given in Article 158 of the Energy Act, which states that electricity producers should receive an effect "at least equivalent to preferential treatment in respect of the income per unit of electricity produced" in the event of change in the mechanism for promotion of production of electricity from renewable energy sources.

  It is likely that investors will see this as a political risk, with no guarantee that future administrations will honor commitments that may be seen as not sufficiently defined.

  As noted before, most international feed-in tariff schemes offer a guaranteed level of support over the contracted period (e.g. 15 years). These would remain in place even if there was a change in the support scheme.

  An example of this occurring is when the UK changed from a tender based scheme for supporting renewables projects to the current green certificates scheme. The contracts awarded under the original tender scheme (NFFO) are still being paid, even though both old and new projects get green certificates (ROCs). In fact, this has provided an unexpected revenue stream for the government as they have been able to auction off the power and green certificates from the NFFO tender scheme projects, which more than covers the cost of paying the contract price, leaving a surplus to be returned to the government.

- **Currency Risk:** The currency of the tariffs is Lev.

  The Bulgarian Lev is pegged to the Euro, at the rate of 1.95583 Leva = 1 Euro, based on the former Deutsche Mark's fixed exchange rate to Euro.

Since 1997, Bulgaria has been in a system of currency board and all Bulgarian currency in circulation has been backed 100% by the foreign exchange reserves of the Bulgarian National Bank (BNB).

However, it is not possible for investors to borrow long term in Lev, only in Euros. This is a situation that looks likely to continue in the immediate future. Furthermore, Euros are the main currency for purchases of renewable generation plant.

Combined, these risks may make it more difficult for a project to achieve financing, and mean that developers and lenders take a conservative view of project income. This will lead to the developers requiring higher levels of support overall and therefore greater costs to consumers.

There is also a significant risk to SEWRC that if renewable technology prices drop significantly, new projects would be viable at lower tariffs. SEWRC would be unable to reduce the tariff quickly because of the restrictions, and the fact that existing generators had much higher initial costs and still need a return on their investment. This means new projects would be oversupported and customers may end up paying excessively for renewable generation as the oversupported technology is rapidly developed.

3.4 Recommendations

Most international feed-in tariff schemes offer a guaranteed level of support over the contracted period. In Germany and Spain most tariff rates are flat price contracts for 20 years, although some have stepped tariffs to improve financial performance in the earlier years. The rate of support for the life of the contract is set in the year that the plant starts producing and does not change.

It is suggested for Bulgaria to consider a guaranteed level of support over the contract period, set at the date the project becomes operational. Projects becoming operational in different years may receive different levels of support.

This change would address both the tariff level risk and the political risk, as the project developer would be guaranteed an income based on his production for the period of his contract with the regional supplier. With these two risks addressed, developers would be better able to manage any exchange rate risk.

Also, this change would reduce the risk to SEWRC of oversupporting some technologies and leave them better able to respond to changes in the market.

There were mixed views at the workshops on the appropriateness of long-term contracts with a fixed price for purchase of renewable energy. This is a significant departure from the current system of annual reviews for all renewable plant. It must be emphasized however that this would lead to a more bankable system (and hence lower-cost) and would also reduce the risk of overcompensation that exists in the current model.

There was extensive discussion with SEWRC on the Euro to Lev exchange rate issue (see Appendix D).

Two possibilities exist to resolve this. However, neither seems possible under the current interpretation of legislation. These are:

- **Switch to a Euro tariff**

  At present the "Ordinance for regulation of electricity prices" would not allow this.

- **Indexing the tariff scheme more directly to the Euro**

  For example, this could be done in the fixed-term contracts. However, if the tariff can change each year in Lev, then this will provide no protection.

It was generally viewed as undesirable to change to this system for a number of reasons. In particular, it would be difficult to accommodate such a change under the current legislation, and there was a perceived risk that any large shift in the relative values could lead to budgeting issues. The general view from SEWRC was that the risk was better covered by investors and appropriately compensated in the preferential price.

Whilst many investors choose to borrow in Euro, due to the better interest rates, they still have an option to borrow in Lev. Furthermore, the legislation relating to fiscal and accountancy laws in Bulgaria foresee a calculation in Lev, and any change may be difficult.

This viewpoint is understandable. Arguably, investors should be prepared to take the exchange rate risk at a reasonable cost, provided other risks are minimized.

The recommendation is therefore that the currency of the support mechanism remains the Bulgarian Lev.

4. TRANSMISSION ACCESS FOR RENEWABLE ELECTRICITY

4.1 Introduction

Connection and access to the network is a significant issue for renewables in many countries, including Bulgaria.

Transmission connection was raised by developers during the first workshop as one of the most significant issues for renewable generation in Bulgaria, and as a result it was covered in more detail in the second workshop. Network Operators (transmission and distribution) are perceived as having little incentive to connect new sites in a timely manner. Furthermore, the process for managing generators waiting to connect was seen as opaque. Delays in grid connection present a major risk for developers and investors.

It is important that variable generation is allowed to connect in order to enable renewable targets to be met. However, it is also important that security of the system is maintained as new variable plant is connected, which behaves in a different way from conventional plant.

Extensive reinforcement to the network is required to connect renewables in areas of high wind/solar resource (even if projects connect to the distribution networks, transmission reinforcement may well be required to take the power to areas of demand). Bulgarian legislation provides a fixed timetable for the processing of connection requests but this bears little relationship to what is feasible. In addition, the application process places almost no constraint on requests for connection, and the land use planning regulations require the connection offer as a precondition to planning consent. As a result, the system operator, ESO, has been flooded with requests for connections, well in excess of the maximum demand of the Bulgarian system. ESO has no possibility of meeting all such requests and the procedure for managing them is opaque.

As a result of these concerns, the Bulgarian transmission access regime was analyzed in the context of international best practice. This produced a number of recommendations for how the Bulgarian system could be enhanced to improve the transparency and manageability of the process for renewable developers, network asset owners and the system operator.

This chapter:

- Provides background on current practice for connecting renewable producers to the electricity network in Bulgaria, and identifies areas where it is causing problems for various market participants (Section 4.2);
- Considers the current process for ongoing system operation in Bulgaria (Section 4.3)
- Presents the results of an international analysis of best practice (Section 4.4); and
- Outlines recommendations for a future approach (Section 4.6).

4.2 Current Connection Regime in Bulgaria

Renewables present a particular challenge for network operators as they are typically smaller in size and further from demand centers than conventional plant. This means they are more likely than conventional plant to require reinforcement of the network in order to allow them to connect.

4.2.1 Participants Responsible for the Network

There are a number of market participants with responsibility for various sections of the Bulgarian network.

- NEK owns the asset of the transmission network and is responsible for its maintenance, reinforcement and extension as required.
- ESO is the electricity system operator. ESO is also responsible for planning the network and evaluating the impact of new connections.
- The regional distribution companies own and operate the distribution network assets in the seven distribution regions. They include CEZ, EON and EVN.
- SEWRC is the State Energy and Water Regulatory Commission. Among its other functions, the Commission regulates prices charged for connection to the network and also the cost-recovery process for regulated market participants.

4.2.2 Connection Process

When a new producer wishes to connect to the system, it must apply either to NEK or to the relevant regional distribution company. This application is made in a standard form and there is a small application fee to cover some administrative costs. There are no other formal requirements for security payments.

All applications for connection to the transmission system and applications over 5 MW to the distribution system are forwarded to ESO.

ESO gives an opinion on the technical requirements to connect the proposed production plant to the network, based on the capacity of the network and the impact that it will have on the overall network.

The user then signs a preliminary contract with NEK or the relevant distribution company once that connection is specified. SEWRC regulates the tariffs charged for connection to the network. For conventional plant this is not precisely defined and although a shallow approach is envisaged some reinforcement costs can be included.

The application for connection from potential producers must be completed at a relatively early stage in the project development process. The producer must have a contract with NEK or the relevant distribution company and the associated detailed electrical system design requirements in order to apply for construction permission.

The Renewable and Alternative Energy Sources and Biofuels Act (SG No. 49 19.06.2007) sets out a number of obligations specific to connecting producers of energy from renewable sources. These include:

- The transmission company (NEK) and distribution companies are required to give priority to connecting renewable producers.
- The obligation rests on either the distribution company or the transmission company, whichever is closest. They are required to connect the producer to the closest point on the transmission or distribution network (which may not necessarily be the most appropriate point).
- The costs covered by the producer are strictly defined as just covering connection to the grid, with no requirement to meet reinforcement costs.

The Renewable and Alternative Energy Sources and Biofuels Act sets out a rigid timeframe to connect renewable plant from the application date:

- Within 90 days of a complete application, the transmission company (NEK) or relevant distribution company must carry out a survey to determine the requirements for connection and produce a preliminary contract.
- The contract must set out a date for connection, which may not exceed the planned timescale for the producer to bring their plant into operation, typically three years for most renewable plant.

In order to have any opportunity of meeting the timeframe requirements the operators will often need to start work on reinforcements at the same time as the request is submitted. However, at this stage the potential producer will not have received construction permission. There is therefore a significant risk of stranded assets if the transmission company (NEK) or distribution companies carry out reinforcement work ahead of full planning permission.

4.2.3 Large Numbers of Applications

As a result of the current regime that requires projects to apply at a very early stage in their development process there have been a large number of applications. Informal discussions with ESO indicate that these may be in the region of 10,000 MW for wind, although at present the total generation capacity on the entire Bulgarian system is only about 10,500 MW (and maximum demand is only around two-thirds of that). The situation is extreme in certain locations where there are particularly windy conditions. In the North East part of the country, close to the Black Sea, over 3,500 MW of connection requests have been received for an area with only around 7,000 MW peak load and 3,300 MW of minimum load. Upgrades to this region to accommodate wind would require huge redevelopment of the network.

Investors, ESO, NEK and the distribution companies have all indicated frustration at the current arrangements. The transmission and distribution companies are concerned at the number of applications and their ability to

manage them. Investors are frustrated at delays in processing applications that lead to problems in proceeding with their development. The process for managing producers waiting to connect was not well understood by developers and investors, and as a result delays in grid connection are seen as a major risk.

Where contracts for connection have been signed, these have been completed on a pragmatic basis between the two parties.

4.3 System Operation in Bulgaria

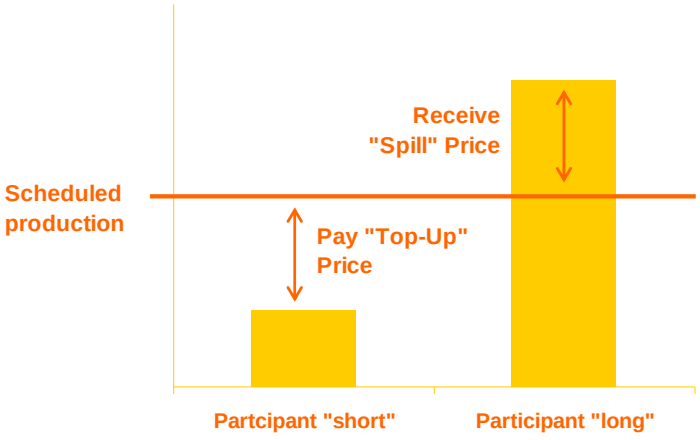
Careful system management is required of any network to ensure that generation always meets demand and the system is stable. ESO is responsible for the day-to-day management of the power system in Bulgaria.

4.3.1 Balance Responsibility

Conventional plants are required to balance in the market. Weekly schedules of contractual positions must be notified to ESO in advance, and these plans must be followed.

ESO is responsible for balancing the overall system. Consumers who have consumed more power than planned or producers who have produced less energy than planned must buy energy from ESO at a "top-up" price. Producers that have produced more energy than planned or consumers that use less than planned receive payment for the difference at a "spill" price. Usually the top-up price is higher than the contract value and the spill price is lower, creating an incentive for participants to balance. This process is illustrated in Figure 18.

Figure 18: Balancing Payments



ESO makes up any difference by purchasing balancing power from Balancing Market Participants. These can be producers or consumers, but in general pumped storage and hydro plant are used to meet peak load and thermal plant provides reserve power.

There is no requirement on renewable producers to balance their position or to forecast production ahead of time. This means that ESO must take a view of their position and take balancing actions accordingly.

4.3.2 Cross-Border Trade

Capacity on the interconnector is allocated by auction. There are annual, monthly and weekly auctions. Daily auctions are planned in the future. The producer provides plans for utilization of the capacity and it is assumed that those plans are fulfilled. There is some capacity that is always available to the system operator for emergency use.

Capacity already allocated but returned to the operator can be re-auctioned at subsequent auctions.

4.3.3 Access Rights

The operator of the system, ESO, may restrict generation where required to by an emergency situation. This is considered a force majeure event and no compensatory payments are made. It applies equally to renewables and conventional plant. Where the interruption is due to the occurrence of (or requirement to prevent) a breakdown, the interruption cannot exceed 48 hours.

4.4 International Experience

This section presents the results of an international analysis. It considers how other European countries have approached similar challenges to those being faced by Bulgaria.

4.4.1 Connection Process

Different countries have developed a variety of methods for managing access to the network.

General Obligation to Connect

A number of European markets simply impose a general condition on transmission companies to connect new renewable capacity. For example:

- **Germany:** No firm timescale for connection. While TSOs are legally obliged to provide sufficient transmission infrastructure in general, enforcement mechanisms are vague and grid upgrade is only obligatory where this is “economically reasonable”. The EEG (feed-in) law obliges transmission companies to give priority connection to the grid for renewables – including upgrading the grid “at reasonable economic expense”, in which case they are required to upgrade the grid “without delay”.
- **Netherlands:** Network operators are legally bound to provide a connection. However, this does not guarantee the timeframe for connection nor possible technical or planning conditions.
- **Italy:** TSO informs the applicant of the Minimum General Technical Solution (MGTS) within 90 days. The actual connection timeframe depends on the requirement for deep reinforcements.
- **Denmark:** Required reinforcements are identified at the point projects apply for development permits. The TSO usually does not

commence construction until the project is consented. This system is not regulated through laws or Codes, so allows the TSO to decide timing of delivery.

- **Sweden:** Holders of network concessions are obliged to connect consumers on reasonable and non-discriminatory terms. Connection to the network can only be denied when there is not enough capacity and, once connected, consumers cannot be denied access.
- **Finland:** Fingrid as the TSO must connect all power generating installations. Fingrid is also involved in the siting and licensing of new generating plant.
- **Norway:** New construction has to be economically justified as producers pay the deep connection costs. Generally, areas with the best wind conditions are located in the northern part of the country and consumers in the south. Constructing new transmission lines has been considered, but so far the economics do not justify the additional cost of building new lines.

Queue Management

Some jurisdictions have instead chosen a queue management system, where producers are assigned positions in a queue based on their date of application.

- **Great Britain:** The system operator has a license obligation to provide a user with an offer of connection within a specified timescale, but the timescale is dependent upon the type of agreement and whether any works are needed to facilitate the connection. This means that for example in the North of Scotland current offers for connection may be as far out as 2018 and be dependent on specific network upgrades proceeding as planned. All reinforcement work is carried out in advance of connection and projects thereafter have firm access to the network. A "connect and manage" approach has been proposed for the future, but is still being debated.
- **France:** connection requests are placed in a queue.

Group Processing

This means that the grid operator puts applicants into a queue and groups them into areas or zones. Reinforcement is then carried out on selected zones to accommodate the applicants in that zone. This can allow for more efficient investment and reduces the risk of stranded assets. However, it can lead to long delays for developers and uncertainty about when (or if) a connection offer will be made for a particular group.

Ireland has adopted a group processing approach for wind generation in particular. This means that the grid operator puts applicants into a queue and groups them into areas or zones. Reinforcement is then carried out on selected zones to accommodate the applicants in that zone. There is no guaranteed timescale for connection. Generation other than wind is treated separately, but also has no firm timescale for connection.

4.4.2 System Operation

Different system operators within Europe have adopted different national approaches to managing producers connecting to their network. A number have adopted specifically defined approaches for variable production such as wind.

Access Rights

In most European jurisdictions, network operators carry out all reinforcement work required prior to connection. From this point access is considered fully "firm" and if a system operator needs to constrain down a particular production plant due to system constraints then the operator will be given a compensatory payment based on either capacity or energy they would have expected to generate in that period.

Denmark, Finland, France, Germany, Great Britain, Italy, Norway and Sweden all offer producers firm connection.

Netherlands has a similar reinforce-then-connect policy under normal circumstances, but can sometimes allow earlier non-firm connection under the "Runback Scenario". Here, where significant grid reinforcements are required that delay the connection of new capacity, the TSO has offered a temporary solution connecting new producers on a non-firm basis. Once reinforcements are completed, the "Runback Scenario" will be cancelled and the parties that used it will have a firm connection agreement.

Ireland has also chosen to allow generation to be connected prior to reinforcement work in some circumstances, and again in this case producers do not have firm access.

Grid Codes for Wind

To help ensure the security of the transmission network, transmission systems will typically have a "grid code", which specifies minimum performance standards required for producers, customers and distribution networks connecting to the grid.

These requirements can differ depending on the type of generation being connected, and if a producer fails to meet the required standard the transmission operator can prevent them from using the network. These codes were generally originally written with conventional generation in mind.

Wind is a form of variable energy that has increasing penetration on energy networks. It also has a number of technical characteristics that differ from conventional energy. In particular:

- Cannot be dispatched upwards, only constrained down;
- Different reactive power characteristics to conventional energy;
- Different fault ride-through capability to conventional energy;
- Correlated generation between sites, dependent on their geographical spread;

- Typically, relatively low load factors compared to conventional generation; and
- Tendency to be further from demand centers.

However, it is important to note that even variable generation can provide a degree of service to the grid when required. Among others, this can include the ability to:

- Continue operating through a voltage or frequency disturbance; and
- Be constrained down and then restart controllably.

In some cases these differing characteristics can be managed through derogations (site specific exemption) from parts of the main grid code. However, as the proportion of wind energy increases, a number of jurisdictions have chosen to apply different grid code specifications to wind. Table 16 shows detail of grid code requirements for a number of European countries.

Table 16: Grid Code Requirements

	Grid Code in place?	Different Grid Code for Wind?	Brief description of approach to wind and to variable generation more generally (if applicable)
Bulgaria	✓	×	
GB	✓	×	
Ireland	✓	✓	Grid code for wind strict and is seen to be rigorously enforced.
France	✓	×	
Germany	✓	✓	Grid codes for wind published by respective TSOs treat wind increasingly like conventional power plants. The key difference concerns the capability of wind turbines to remain connected to the grid during voltage dips (up to 85%) caused by network faults. Wind turbines must also provide a back up voltage support and thus ensure proper operation of protective relays.
Netherlands	✓	×	
Denmark	✓	✓	Strict grid codes related to offshore and onshore wind power connected to distribution and transmission grids, including restrictive requirements for power quality and grid support.
Sweden	✓	✓	Common Nordel requirements for wind.
Finland	✓	✓	
Norway	✓	✓	

At increasing levels of wind penetration, more restrictive planning requirements and improved technical performance of wind turbines may be necessary to reduce grid constraints caused by wind operation.

Balance Responsibility

There are a number of markets where the system operator balances renewable generation - normally because there is a full feed-in tariff.

For example, in Germany, Denmark, and France the TSO is obliged to purchase all renewable power and balance the renewables portfolio. In Italy, "non-predictable" energy such as renewables does not participate in the balancing market, and does not need to meet imbalance costs. Effectively these costs are socialized.

Where there is a significant proportion of variable generation, particularly wind, this has an impact on the price of power in spot and pool markets. High wind generation will tend to lower the price, as less dispatchable generation with higher marginal cost is required; low wind will conversely tend to increase the price as more dispatchable generation is required. This is seen in the Danish and German market where the low marginal cost of wind generation means that high wind volumes displace more expensive generation and lower the overall system cost.

It is important to note that isolating renewables from the traded market through a feed-in tariff does not necessarily isolate the market from the impact of renewable generation. In Germany, a high proportion of wind combined with system constraints mean that when wind generation peaks the interconnected market in the Netherlands is affected.

Balancing Charges

Where imbalance charges are in force, different countries have different methods of calculating and allocating the charges. Normally, these result in a charge to the participant that is different depending on whether that participant is "long" or "short" in the market – in other words, whether they delivered more or less electricity than specified in the schedule. As a general rule this will mean that when a participant is long he will receive a lower price for his electricity than he would have to pay if he were short. Where a dual imbalance pricing regime is employed, the "main" price[15] may be derived from energy balancing actions. The "reverse price"[16] is either determined by reference to a power exchange or is based on the prices of the balancing actions in the reverse direction.

For example, dual imbalance prices are applied in Finland, Great Britain, and Sweden. Germany and Norway have a single imbalance price that applies whether a participant is long or short.

[15] The main price is that applied to imbalance volumes in the same direction as the overall market, e.g. "short" when the market is "short"
[16] The reverse price is that applied to imbalance volumes opposite in direction to the overall market e.g. "short" when the market is "long"

Dual imbalance prices may have an undesirable side effect as they may encourage balancing parties with wind as part of their portfolio to systematically undernotify their generation. This means they will only receive a lower buy price for the unnotified portion, but they are at less risk of being subject to higher prices to buy from the system operator.

On the other hand, a number of countries also have some reserve contract costs and typically these costs are socialized through system charges. Thus, typically, these costs are not targeted and could be considered an advantage for variable renewables.

Imbalance prices often do not strictly reflect cost. Dual imbalance charges can be used as an incentive for balancing parties to manage their position in a more secure way for the system. In a dual price system, imbalance prices calculated on a marginal basis will tend to overrecover when compared to expenditure on balancing actions. For example, in Sweden, this profit is retained by the TSO, whereas in Denmark, the Netherlands and France the profit is socialized or redistributed to parties. In Great Britain, the entire imbalance charging receipts are redistributed to parties and the costs of balancing actions are recovered through Use of System charges.

The following table provides an overview of where the liabilities for imbalance reside for variable renewables in a number of countries.

Table 17: Liabilities for Imbalance

	Are prices different if participant long or short?	Renewable producers pay balancing costs?	Element of balancing that is socialized to users
Bulgaria	Dual Price	×	Cost of balancing RES
GB	Dual Price	✓	Difference income/cost[17]
Ireland	Dual Price	✓	Difference income/cost
France	Dual Price	×	Cost of balancing RES
Germany	Single Price	×	Cost of balancing RES
Netherlands	Dual Price	✓	Cost of contract
Italy	Dual Price	×	Cost of balancing RES
Denmark	Dual Price	×	Cost of balancing RES
Norway	Single Price	✓	Cost of contract[18]
Finland	Dual Price	✓	Cost of contract
Sweden	Dual Price	✓	Cost of contract

[17] In the GB balancing system, calculated imbalance payments are collected or paid to participants and the surplus or deficit in the "pot" is socialized. The actual cost of imbalance to the System Operator (±) is met through a separate socialized payments

[18] The socialized system tariff covers the TSO's costs relating to reserve capacity, system operation, etc. This is primarily paid by consumers. However, in Sweden and Finland, a smaller part of the costs for reserve power is paid by the balance responsible parties themselves. From 2009 this system will be implemented in all four countries. The largest part of the costs for reserve power will, however, still be socialized through the system tariff.

4.5 EU Legislative Background

The Renewables Directive 2009/28/EC recognizes the importance of transmission access for renewable energy and has placed a number of requirements on member states in Article 16.

Grid reinforcements: Member States must develop grid infrastructure to maintain security of the system as it accommodates new renewable electricity production, including:

- Planning and administrative procedures to accelerate authorization for grid infrastructure; and
- Interconnection.

Priority access: Subject to system security, transmission system operators must also:

- Guarantee dispatch of renewable electricity;
- Provide for either priority access or guaranteed access to the grid system for renewable electricity; and
- Give priority to dispatching renewable producers and take appropriate measures to minimize the curtailment of renewable electricity. If there is significant curtailment of renewable production to guarantee security of supply, system operators must report to the regulator on those events and propose corrective steps they will take to prevent inappropriate curtailments.

Network costs: Transmission and distribution system operators must make public their rules on how the costs of technical adaptations (e.g. grid connections and reinforcements) are shared and rules on the implementation of the grid codes. Rules may provide for different types of connection, but must be objective, transparent and non-discriminatory. They must take account of the costs and benefits associated with the connection of renewable producers and the circumstances of regions that are peripheral or have low population density. Member States may choose to allow renewable producers wishing to connect to the grid to issue a call for tender for the connection work.

Member States may choose to require system operators to bear all or part of the costs of connecting renewable producers. Member States must report on measures to improve the rules sharing network costs by 30 June 2011 and every two years thereafter.

Use of system charging: Transmission and distribution tariffs must not discriminate against electricity from renewable energy sources, including in particular electricity from renewable energy sources produced in peripheral regions, such as island regions, and in regions of low population density. These tariffs should reflect realizable cost benefits resulting from the plant's connection to the network, such as from the direct use of the low-voltage grid.

Connection Information: Transmission and distribution system operators must provide any renewable producer wishing to connect to the system with necessary information, including:

- Comprehensive and detailed estimate of costs associated with the connection;
- Reasonable timetable for processing the request for connection; and
- Reasonable indicative timetable for grid connection.

4.6 Recommendations

This section presents a series of recommendations for a future approach in Bulgaria. These recommendations are based on international experience and are intended to promote debate between the relevant market participants. This informed debate should assist SEWRC and the Ministry of Economy and Energy in coming to an optimal solution for Bulgaria.

4.6.1 Connection Process

Connection and access to the network is a significant issue for renewables in many countries, including Bulgaria. The following is recommended to make the process more transparent and the connection process more manageable.

- ***Timescales to connect:***

  Variable renewable plant tends to be comparatively quicker to build than conventional plant. This means that the long timescales required to consent and build the network can significantly delay renewable site development. Development of transmission systems can be contentious, with local objections causing significant delays. Notably, in Italy development planning now takes into account the views of local and regional authorities to attempt to reduce authorization times and speed up reinforcement work.

  There has been a tendency in most European countries, including Bulgaria, for operators to reinforce the network only when planned projects require it. The timescales required for these deep reinforcements are typically much longer than the timescales to build new renewable generation, placing a barrier in the way of RES deployment. In the case of Bulgaria, the requirement on NEK and the public distribution companies to conform to project timescales may result in the companies being in breech through no fault of their own as the timescales are too short for the work required.

  In order to balance the requirements of network owners and producers, strategic advance reinforcement of the network could be combined with timescales to connect that reflect the amount of work required to reinforce the network.

- ***Managing "renewable zones":***

  The development of wind in clusters of smaller sites (for example in the North East on the Black Sea coast) may also make it difficult for the transmission system planners to determine the optimum level of reinforcement required. If they opt for a high level of reinforcement and the wind sites are not developed then they have invested unnecessarily. However, it is much more economic to strengthen the

system in a single phase rather than multiple small increments of reinforcement work.

Ireland has attempted to manage this difficulty by adopting a wind "group processing" approach, which seeks to process the reinforcement and connection process for wind in clusters of generation. However, this approach has been unpopular with the developers as it means that there can be significant delays in connection of sites and no guaranteed timescales.

A more pragmatic approach has been taken by France and Demark. There they have identified favorable areas for renewable energy development and identified them to both renewable energy developers and system operators.

The conclusion is that the system operator should be permitted to strategically reinforce key "renewables zones" and recover these costs through its normal socialized charging, in keeping with the requirement under Article 16 of Directive 2009/28/EC to develop grid infrastructure needed to connect renewables. It may also be appropriate to allow the system operator to restrict or delay connections in certain regions until appropriate reinforcements are made.

- ***Ensuring commitment from the producer:***

  It may be appropriate to impose obligations on producers when they obtain a contract for connection. Pre-connection obligations may be onerous for small projects, particularly if they are linked to the costs of grid reinforcements. However, they may help to discourage speculative applications. It may be appropriate for this security deposit to be linked to the capacity of the proposed project.

  There is a circular element to the application process in Bulgaria as applicants have to have a preliminary contract with NEK to apply for a design visa. This means they are applying for a capacity before they have a fixed idea of the design. It may therefore be appropriate to introduce a second stage for all applicants, providing further technical details once they have approvals to proceed with the build.

  An illustrative example of this process, that is consistent with the requirements of Directive 2009/28/EC, might be:

  1. Applicant provides the complete initial application to NEK or the Distribution Company based on preliminary project design.
  2. NEK or the Distribution Company, working with ESO, produces an initial contract based on preliminary design. This should include a provisional cost and connection date based on timescales required for reinforcement work. However, it will be dependent on the project receiving consents.
  3. Initial contract signed.
  4. Applicant obtains necessary consents to build project.

5. Applicant submits to NEK or the Distribution Company the final design and schedule, based on consents.
6. NEK or the Distribution Company, working with ESO, produces a revised final contract taking into account the revised project specification. At this stage the applicant may be required to provide an appropriate security deposit and NEK or the Distribution Company is required to commit to a connection date.
7. Final contract signed.
8. NEK or the Distribution Company connects the site.

- ***Allowing producers to make informed decisions:***

  If they have sufficient information about suitable sites for development, potential developers can make informed choices about where to site their projects. Therefore it may help to control applications if the system operator publishes detailed reports each year about where the constraints are in the system (where new sites are likely to take longer to connect) and where in the system there is spare capacity available and projects can proceed more rapidly.

  Another way to reduce speculative applications may be to publish a regularly updated list of all applications received to connect, including their location, status and the proposed connection dates. This will help potential applicants to make an informed choice of where to locate their plant. An additional benefit is that it will help all market participants correctly understand how electricity production in Bulgaria might develop in the future, and plan accordingly.

- ***Appropriate charging for connection:***

  Connection costs that are linked to the full costs of grid reinforcements will create a barrier for variable renewables that are further from the main demand centers. Most European countries, like Bulgaria, have adopted a shallow connection regime, where only the direct costs of connection are included in the charge and not the associated reinforcement work.

  In any case, consumers will meet the costs for connecting renewables, whether through preferential prices or through system charges. If reinforcement costs must be met upfront by producers, this would be a barrier to entry and many otherwise viable projects would be unable to proceed.

  Therefore it seems most appropriate for Bulgaria to maintain its current shallow connection charging regime.

- ***Point of connection:***

  At present the Renewable and Alternative Energy Sources and Biofuels Act specifies that the connection point should be the point which is closest to the transmission or distribution grid. This may not be the most suitable connection point, or the presence of other

existing or potential producers in the area may make an alternative solution more appropriate.

If the intent of the law is to ensure that renewable producers are not charged for a more expensive solution, perhaps a pragmatic approach may be to fix the cost to the producer at connection to the nearest interconnection point on the distribution or transmission system, but to allow the system operator to propose an alternative solution that may achieve better results for the system as a whole. The producer pays the same fee and any additional costs of connection are socialized along with the reinforcement costs.

4.6.2 System Operation

Operation of the network is affected by the addition of variable renewable generation.

Less predictable output means there can be a requirement for additional ancillary services. In addition, renewables can typically only be dispatched down rather than up, reducing their controllability by the system operator. They also have different capabilities to provide grid services when compared to conventional plant. As noted previously, it is important that security of the system is maintained as new plant is connected.

- ***Balance Responsibility***

  Different European states have taken different views on the appropriateness of putting balance responsibility on renewable generators. However, all states with feed-in tariffs have chosen not to require renewable generators to balance themselves. Renewables are generally not well able to balance themselves in the unregulated traded market as they are typically much smaller than conventional plant. Also in Bulgaria there is no option currently to trade intra-day, which would leave renewable producers fully exposed to the balancing market and to "spill" and "top-up" prices. If variable renewables were exposed to the balancing mechanism in this way then they would require additional support through the preferential price premium.

  Feed-in tariffs have been successful in many countries precisely because they provide protection from the risks in the traded market or the balancing mechanism. It is therefore not recommended requiring renewables to balance. It is appropriate that this responsibility remains with ESO.

  Having said this, it is reasonable that producers should give ESO the information that they need to balance correctly. This may include giving:

  Forecasts of next-day production; and

  - Notification of a requirement to shut down (e.g. due to planned or unplanned maintenance or high winds);
  - The requirement for this information may depend on the size of the producer, and it may not be appropriate to place the

same requirements on a single 1 MW turbine that would be imposed on a 500 MW wind farm.

- ***Access Rights***

  It is worth highlighting the fact that unlike the European countries considered in the international analysis, the Bulgarian system does not provide firm access to the network. This means that industry participants face a risk of being constrained down without compensation. This includes renewable producers who are paid for their metered energy at preferential prices.

  It may be that current participants view this as an acceptable risk within the preferential prices. However, this view may change as the market develops, particularly if in the future large numbers of variable producers might mean that ESO is required to constrain certain producers (e.g. in the event of high wind conditions at low demand times).

  Article 16 of Directive 2009/28/EC requires that the system operator gives priority or guaranteed access to the network to renewable sources and reports on any significant curtailment of renewables to the regulator. This does not happen in the current system, but it should be required in future.

- ***Grid Codes***

  Renewable generators have different capabilities to provide system services than conventional plant. Grid codes and standards are typically based on historical practice and are therefore designed for large conventional plant. Appropriate changes may be needed to account for the different operational characteristics of renewable plant.

  There is an increasing requirement for wind and other variable energy to behave more controllably when required. The non-controllable nature and insufficient real-time monitoring of distributed generation (particularly wind and CHP) was an additional factor cited by the UTCE as contributing to the difficulty of restoring the grid to normal operating conditions after the disturbances of 4th November 2006 in Europe. For this reason it is important that – as wind, CHP and other variable generation takes an increasing role in the generation portfolio – it must be able to interact with and react to the grid in ways that make it possible for the system operator to control the system and prevent or manage disturbances.

  Denmark, Germany, and Ireland have some of the most rigorous requirements for wind turbines, primarily due to the comparatively high penetration of wind in these jurisdictions. The requirements focus on power controllability, power quality and fault ride-through capability. These rigorous requirements for wind energy have been unpopular with some wind developers as they increase the costs associated with wind generation. In particular, where the codes are implemented retrospectively, they require additional expenditure, which would not have been anticipated when the turbine was

constructed. It is therefore recommended that any changes impact only new plant rather than those already connected.

It is recommended that the system operator considers defining separate grid codes for new wind generation plant connecting to the system – to take into account their operational characteristics and their ability to offer services to the network in terms of forecasting, power controllability, power quality and fault ride-through capability. These new codes should be devised under the supervision of SEWRC and in consultation with developers to ensure that they do not provide an undue barrier to new development but do support good management of the energy system. To be consistent with Directive 2009/28/EC, these codes should be transparent, non-discriminatory, and applied consistently.

5. REGO SCHEME

5.1 Introduction

Renewable Electricity Guarantees of Origin (REGOs) were introduced in the EU under Directive 2001/77 and further refined under Directive 2009/28/EC to facilitate trade in renewable electricity and to increase transparency for consumer choice between electricity produced from renewable and non-renewable energy sources.

Bulgaria is required under EU legislation to introduce a system for Guarantees of Origin (GO) for electricity from renewable energy sources.

Article 19 of the Renewable and Alternative Energy Sources and Biofuels Act lays down the legal basis for issuing REGOs in line with the EU Directives. SEWRC has prepared a draft Ordinance to implement this legislation.

Electricity Disclosure is a requirement implemented in the Electricity Market Directive 2003/54/EC. Under Article 3.6, all suppliers of electricity to final customers have to disclose to their customers the contribution of different energy sources to the portfolio of the supplier in the preceding year. They must also disclose related environmental impact indicators, at least in terms of CO_2 emissions and the production of nuclear waste. The objective of disclosure is to provide consumers with relevant information about power generation and to allow for informed consumer choice, and for choice not to be based on electricity prices alone. In a liberalized market, disclosure requires some sort of tracking of the required attributes from generation to the supplier.

Member states have implemented national legislation on disclosure in different ways, sometimes also allowing for disclosure of differentiated product information (e.g. a green power product and a standard product).

In Bulgaria where there is relatively little competition in the market for electricity at present, this requirement has less potential to allow consumers to make a choice between suppliers, but does at least allow them to understand more precisely the environmental impact of the electricity that they use.

This chapter:

- Reviews the current status of EU legislation on REGOs under the new Renewables Directive (Section 5.2);
- Compares Bulgaria's legal provisions on REGO schemes against EU legislation and legislative developments by assessing current legislative compliance against the Renewables Directive 2009/28/EC, (Section 5.3);
- Presents conclusions about legislative compliance (Section 5.4);
- Outlines recommendations (Section 5.5); and
- Provides draft changes to the rulebook that could help bring the draft REGO Ordinance into closer alignment with EU requirements (Appendix A).

5.2 EU Directive REGO Requirements

The new Directive 2009/28/EC on the promotion of the use of energy from renewable sources introduces a number of changes to the previous RES policy regime within the EU. With regard to GO, the new Directive introduces the following points:

- Member States are required to ensure that a GO is issued in response to a request from a producer of electricity from RES, and that these are not double-counted (Art 15.2). In addition, Member States:
  - May arrange for REGO to be issued for heating or cooling from RES (Art 15.2); and
  - May choose not to provide support or subsidies to the production of energy which is awarded a GO (Art 15.2).
- A GO expires after twelve months (Art 15.3).
- Member States or designated competent bodies must ensure that GOs are accurately and reliably issued, transferred and cancelled, and that these are fraud-resistant (Art 15.4, Art 15.5).
- Designated competent bodies shall be independent, and have non-overlapping geographical responsibilities (Art 15.4).
- GO must specify:
  1. Energy source, and the start and end dates of its production (Art 15.6(a));
  2. Whether it relates to electricity or heating and/or cooling (Art 15.6(b));
  3. The identity, location, type and capacity of installation (Art 15.6(c));
  4. Details of any investment support schemes (Art 15.6(d));
  5. Date of installation becoming operational (Art 15.6(e)); and
  6. Date and country of issue, and unique I.D. number (Art 15.6(f)).
- Member States shall recognize GO unless if it has well-founded doubts as to its reliability, in which case they must notify the Commission (Art 15.9).
- When marketing and referring to environmental or renewable energy, energy suppliers are obliged to make available information regarding the amount of share of energy from renewable sources for all installations or increased capacity that become operational after the introduction of this Directive (Art 15.12).
- Member States must submit a report to the Commission on their promotion and use of energy from renewable sources by 31 December 2011 and every 2 years thereafter until 2021 (Art 22.1). In particular, they must report on "the functioning of the system of guarantees of origin for electricity and heating and cooling from renewable energy sources and the measures taken to ensure the reliability and protection against fraud of the system" (Art 22.1.d).

The main focus of changes to the GO scheme are to prevent double funding of RES through support schemes and profits from GO sale and to clarify the roles of Member States regarding the GO scheme.

5.3 Transposition into Bulgarian Legislation

Existing Bulgarian legislation referring to REGO includes:

- Energy Act 2006 (SG No. 74 / 2006)
- Renewable and Alternative Energy Sources and Biofuels Act (SG. 49/19.06. 2007)
- Draft Ordinance on the Issue of Certificates of Origin for Electric Power Generated from Renewable Sources ("REGO Ordinance").

Table 18 compares the provisions of Bulgarian legislation to Directive 2009/28/EC.

Table 18: Provisions of Bulgarian legislation corresponding to REGO provisions from Directive 2009/28/EC
Please note that this is based on an official translation of the Energy Act and an unofficial translation of the draft Ordinance on the Issue of Certificates of Origin for Electric Power Generated from Renewable Sources ("REGO Ordinance"). It does not refer to the original Bulgarian documents, so there may be some minor discrepancies.

Provision of Directive 2009/28/EC	Transposition into Bulgarian legislation
Preamble	
(52) Guarantees of origin issued for the purpose of this Directive have the sole function of proving to a final customer that a given share or quantity of energy was produced from renewable sources.	✗ Not provided for.
A guarantee of origin can be transferred, independently of the energy to which it relates, from one holder to another.	✗ No provisions for transfer of REGO once issued.
However, with a view to ensuring that a unit of electricity from renewable energy sources is disclosed to a customer only once, double counting and double disclosure of guarantees of origin should be avoided.	✗ Not provided for.
Energy from renewable sources in relation to which the accompanying guarantee of origin has been sold separately by the producer should not be disclosed or sold to the final customer as energy from renewable sources. It is important to distinguish between green certificates used for support schemes and guarantees of origin.	✗ Not provided for.
(53) It is appropriate to allow the emerging consumer market for electricity from renewable energy sources to contribute to the construction of new installations for energy from renewable sources. Member States should therefore be able to require electricity suppliers who disclose their energy mix to final customers in accordance with Article 3(6) of Directive 2003/54/EC, to include a minimum percentage of guarantees of origin from recently constructed installations producing energy from renewable sources, provided that such a requirement is in conformity with Community law.	✓ Not specified, but not required.

Provision of Directive 2009/28/EC	Transposition into Bulgarian legislation
(55) Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market[19] provides for guarantees of origin for proving the origin of electricity produced from high-efficiency cogeneration plants. Such guarantees of origin cannot be used when disclosing the use of energy from renewable sources in accordance with Article 3(6) of Directive 2003/54/EC as this might result in double counting and double disclosure.	✘ Not provided for. There is no clarification of the difference between CHP GO and REGO.
(56) Guarantees of origin do not by themselves confer a right to benefit from national support schemes.	✓Article 159. (1) The public provider and, respectively, the suppliers of last resort, which hold a license for electricity supply, shall be obligated to purchase the entire quantity of electricity produced by a plant using renewable energy sources and registered by a certificate of origin, with the exception of the quantities for which the producer has concluded contracts according to the procedure established by Section VII of Chapter Nine herein or by which the said producer participates on the balancing market.
Article 2 Definitions	
(a) "energy from renewable sources" means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases;	✘ Under the Energy Act "Renewable energy sources" shall be solar, wind, hydroelectric and geothermal energy, which are renewed without apparent depletion from use of the said sources, as well as waste heat, energy from vegetable or animal biomass, including biogas, and energy from industrial and household waste. This is different from the EU definition and “waste heat” may not qualify under the EU directive, whereas “aerothermal, hydrothermal and ocean energy” are not included in the Bulgarian definition. Only the biomass portion of Energy from Waste qualifies under the EU definition.

[19] OJ L 52, 21.2.2004, p. 50.

Provision of Directive 2009/28/EC	Transposition into Bulgarian legislation
(j) "guarantee of origin" means an electronic document which has the sole function of providing proof to a final customer that a given share or quantity of energy was produced from renewable sources as required by Article 3(6) of Directive 2003/54/EC;	✘ No. Under the Energy Law "Certificate of origin" is an official non transferable document verifying the producer, the quantity of electricity and heating power generated from renewable energy sources, the power plant, its capacity and other data and indicators set forth in the ordinance stipulated by Article 19, para. 3. There is no provision for them to be used to provide proof to final customers that a given share or quantity of energy was produced from renewable sources. GO are also not electronic.
Article 15: Guarantees of origin of electricity, heating and cooling produced from renewable energy sources	
1. For the purposes of proving to final customers the share or quantity of renewable energy in an energy supplier's energy mix, according to Article 3(6) of Directive 2003/54/EC,	✘ Not specified.
Member States shall ensure that the origin of electricity produced from renewable energy sources can be guaranteed as such within the meaning of this Directive,	✓ SEWRC shall issue REGO in response to a request, when it is satisfied that the electricity to which the request relates was generated from renewable sources, Energy Act: Prom. SG. 49/19.06.2007: Article 19, paragraph 1.
according to objective, transparent and non-discriminatory criteria.	✓ The Minister of Economy and Energy is required to ensure the reliability of REGO: Energy Act: Prom. SG. 49/19.06.2007: Article 1, paragraph 2. ✓Procedures for issuance and reasons for non-issuance set out in for issuing REGO set out in the Ordinance on the Issue of Certificates of Origin for Electric Power Generated from Renewable Sources ("REGO Ordinance").
2. To that end, Member States shall ensure that a guarantee of origin is issued in response to a request from a producer of electricity from renewable energy sources.	✓ SEWRC shall issue REGO in response to a request, when it is satisfied that the electricity to which the request relates was generated from renewable sources: Energy Act: Prom. SG. 49/19.06.2007: Article 19, paragraph 1.
Member States may arrange for guarantees of origin to be issued in response to a request from producers of heating and cooling from renewable energy sources.	✓ Not specified, but not required.

Provision of Directive 2009/28/EC	Transposition into Bulgarian legislation
Such an arrangement may be made subject to a minimum capacity limit.	✓ Not specified, but not required.
A guarantee of origin shall be of the standard size of 1 MWh.	✗ No. Draft REGO Ordinance: Article 8 (1) One certificate is issued to cover 12 months production for up to 1 MW capacity plant. One certificate is issued to cover 6 months production for over 1 MW capacity plant.
No more than one guarantee of origin shall be issued in respect of each unit of energy produced.	✗ Not specifically defined.
Member States shall ensure that the same unit of energy from renewable sources is taken into account only once.	✗ Not specifically defined.
A Member State may provide that no support be granted to a producer when this producer receives a guarantee of origin for the same production of energy from renewable sources.	✓ Not specified, but not required.
The guarantee of origin shall have no function in terms of a Member State's compliance with Article 3 of this Directive. Transfers of guarantees of origin, separately or together with the physical transfer of energy, shall have no effect on the decision of Member States to use statistical transfers, joint projects or joint support schemes for target compliance or on the calculation of the gross final consumption of energy produced from renewable sources calculated in accordance with Article 5.	✗ Not specifically defined. However, this is a matter for the Ministry of Economy and Energy.
3. A guarantee of origin may only be used within twelve months of the production of the corresponding energy unit. It shall be cancelled upon its use.	✗ Not specifically defined. No provisions for “use” of REGO.

Provision of Directive 2009/28/EC	Transposition into Bulgarian legislation
4. Member States or designated competent bodies shall supervise the issuance, transfer and cancellation of such guarantees of origin. The designated competent bodies shall have non-overlapping geographical responsibilities, and be independent of generation, trade and supply activities.	✓ SEWRC is responsible for the issue of REGO: Energy Act: Prom. SG. 49/19.06.2007: Article 19, paragraph 1. ✓ SEWRC is the regulator for Bulgaria only and has no overlapping responsibility in any other geographical area. The Commission is independent of generation, trade and supply activities and is a specialized state body.
5. Member States or the competent bodies shall put in place appropriate mechanisms to ensure that guarantees of origin shall be issued, transferred and cancelled electronically.	✗ REGOS are non-transferable. Energy Act: Prom. SG. 49/19.06.2007: Complementary Provision 1 (52). ✗ SEWRC shall have a register on its website of Certificates of Origin: Draft REGO Ordinance: Article 13. However, the official form of Certificates appears to be hard copy Article 8(1). ✗ There is no mechanism for REGO to be "used" then "cancelled"[20].
and are accurate, reliable and fraud-resistant	✓ SEWRC will check the compliance of applicants and notify applicants of incompliant applications. If irregularities are not rectified then SEWRC will terminate the application and not issue a REGO. Draft REGO Ordinance: Article 5. ✓ SEWRC can check compliance of applicants and if an official order is made governmental authorities, power generation companies and officials are obliged to assist SEWRC. Draft REGO Ordinance: Article 6.
6. A guarantee of origin shall specify, at least:	
a) the energy source from which the energy was produced	✗ Technology is specified, but not energy source.
and the starting and ending dates of its production;	✓ Production dates. Draft REGO Ordinance: Article 11 (1.4).

[20] Note: this form of cancellation means marking the certificate that has been "used" to prove that a customer has received electricity generated from renewable sources. It is like the postal service cancelling a stamp on a delivered letter or like punching a train ticket to show it has been used on a train journey.

Provision of Directive 2009/28/EC	Transposition into Bulgarian legislation
b) whether the guarantee of origin relates to: i) electricity; or ii) heating and/or cooling;	✓ Draft REGO Ordinance: Attachment N2 to Article 8 (1.1) titled "Certificate of Origin for Electric Power generated from RPS".
c) the identity,	✓ Name of power generation plant: Draft REGO Ordinance: Article 11 (1.9).
location,	✓ Location of power generation plant: Draft REGO Ordinance: Article 11 (1.9).
Type	✓ Technology of power generation plant: Draft REGO Ordinance: Article 11 (1.6).
and capacity of the installation where the energy was produced;	✓ Installed capacity of power generation plant: Draft REGO Ordinance: Article 11 (1.8).
d) whether and to what extent the installation has benefited from investment support, whether and to what extent the unit of energy has benefited in any other way from a national support scheme, and the type of support scheme;	✗ Not specified.
e) the date of the installation's becoming operational;	✗ Not specified.
f) the date	✓ Date of issue: Draft REGO Ordinance: Article 11 (1.4).
and country of issue	✗ Not specified.
and a unique identification number.	✓ Unique number: Draft REGO Ordinance: Article 11 (1.2). However this is only one number per year or 6 months and there is not a unique number for each 1 MWh.
7. Where an electricity supplier is required to prove the share or quantity of renewable energy in its energy mix for the purposes of Article 3(6) of Directive 2003/54/EC, it may do so by using its guarantees of origin.	✗ Not specified.

Provision of Directive 2009/28/EC	Transposition into Bulgarian legislation
8. The amount of renewable energy corresponding to guarantees of origin transferred by an energy supplier to a third party shall be deducted from the share of energy from renewable sources in its energy mix for the purposes of Article 3(6) of Directive 2003/54/EC.	✗ REGOS are non-transferable. Energy Act: Prom. SG. 49/19.06.2007: Complementary Provision 1 (52).
9. Member States shall recognize guarantees of origin issued by other Member States in accordance with this Directive, exclusively as proof of the elements referred to in paragraphs 1 and 6(a)-(f).	✓ SEWRC shall recognize any guarantees of origin issued in other EU states based on the principles of reciprocity: Energy Act: Prom. SG. 49/19.06.2007: Article 19, paragraph 2 and also Draft REGO Ordinance: Article 16 (1)
A Member State may only refuse to recognize a guarantee of origin when it has well-founded doubts about its accuracy, reliability or veracity.	✓ Draft REGO Ordinance: Article 16 (2).
The Member State shall notify the Commission of such a refusal and its justification.	✗ Not specified.
10. If the Commission finds that a refusal to recognize a guarantee of origin is unfounded, the Commission may adopt a Decision requiring the Member State in question to recognize it.	✗ Not specified. Although it is specified that the matter may be bought before the European Commission. Draft REGO Ordinance: Article 16 (3).
11. A Member State may introduce, in conformity with Community law, objective, transparent and non-discriminatory criteria for the use of guarantees of origin in complying with obligations under Article 3(6) of Directive 2003/54/EC.	✓ Not specified, but not required.

Provision of Directive 2009/28/EC	Transposition into Bulgarian legislation
12. Where energy suppliers are marketing energy from renewable sources to consumers with a reference to environmental or other benefits of renewable energy, Member States may require the energy suppliers to make available, in summary form, information on the amount or share of energy from renewable sources that comes from installations or increased capacity that became operational after the date of entry into force of this Directive.	✓ Not specified, but not required.

5.4 Correspondence with Directive 2009/28/EC

Bulgaria is obliged by its membership of the European Community to transpose Directive 2009/28/EC into national law and to implement its provisions. Broadly, the new Directive covers a similar scope as the previous Directive 2001/77/EC, although it may be argued to be more rigorous. It seeks to harmonize the REGO scheme across Member States and detail the roles and responsibilities of Member States.

There are significant issues related to the compliance of the proposed REGO scheme outlined in the Bulgarian Draft REGO Ordinance with the new Directive 2009/28/EC.

- ***Proof to Final Customers***

  Guarantees of Origin are expected to be used to verify the renewable energy in an energy supplier's energy mix in order for them to provide this information accurately to final customers, as required under Article 3.6 of Directive 2003/54/EC. Under paragraph 52 of the preamble and in the definitions it is made clear that guarantees of origin have the sole function of proving to a final customer that a given share or quantity of energy was produced from renewable sources.

  The objective of disclosure is to provide consumers with relevant information about power generation and to allow for informed consumer choice, and for choice not to be based on electricity prices alone. In a liberalized market, disclosure requires some sort of tracking of the required attributes from generation to the supplier. Member states have implemented national legislation on disclosure in different ways, sometimes also allowing for disclosure of differentiated product information (e.g. a green power product and a standard product).

  In Bulgarian legislation and regulation there does not appear to be any provision for GO to be used to provide proof to final customers that a given share or quantity of energy was produced from renewable sources.

  In Bulgaria where there is relatively little competitive market for electricity at present, this requirement has less potential to allow consumers to make a choice about what supplier to choose, but does at least allow them to understand the environmental impact of the electricity that they use.

- ***No double issuing***

  Under Article 15.2 of Directive 2009/28/EC, no more than one guarantee of origin shall be issued in respect of each unit of energy produced and Member States shall ensure that the same unit of energy from renewable sources is taken into account only once. This is not specifically defined in Bulgarian regulation.

- ***Using GO***

  As mentioned above, GO are to be used to demonstrate to final customers the proportion of their energy that comes from renewable sources. Directive 2009/28/EC goes into much deeper detail about how exactly this “use” of REGOs should take place.

Some of this is advisory rather than requiring a specific mechanism to be used:

- Where an electricity supplier is required to prove the share or quantity of renewable energy in its energy mix for the purposes of Article 3(6) of Directive 2003/54/EC, it may do so by using its guarantees of origin (Article 15.7);
- Member States may choose to introduce objective, transparent and non-discriminatory criteria for the use of guarantees of origin in complying with these obligations under Article 3(6) of Directive 2003/54/EC (Article 15.11); and
- Where energy suppliers are marketing energy from renewable sources to consumers with a reference to environmental or other benefits, Member States may require the suppliers to make available information on the share of renewable energy that comes from new installations that became operational after the directive entered into force (Article 15.12).

- ***Allowing Transfer***

Under paragraph 52 of the preamble to Directive 2009/28/EC, a guarantee of origin can be transferred, independently of the energy to which it relates, from one holder to another. This is designed to better allow transfer of renewable energy between companies.

However, in Bulgaria, under the Energy Law "Certificate of origin" is defined as an official non-transferable document. This conflicts with the intention of the directive.

Whilst REGOs are not absolutely required to be transferable under the Directive, they are expected to be by the wording. Benefits of transferrable REGOs can include allowing producers the option to sell their production overseas if they can achieve higher values in other markets. This is less likely to apply to renewables that are supported by preferential tariffs, but may be useful for large hydro producers. Some states with competitive retail markets, such as the UK, the Netherlands and Austria, have "green" retail supplies, and companies may in some cases be willing to pay a premium for electricity sold with a REGO. This market may develop in the future and allowing the option of selling the electricity with a REGO keeps the market open for Bulgarian producers. Such REGO transfers have no impact on national targets.

There are costs and administrative complications associated with implementing transferable REGOs, such as the need to introduce measures to avoid double (or multiple) counting of the same energy, possible confusion with the system of tradable green certificates, etc.

- ***Standard 1 MWh size***

Under Article 15.2 of Directive 2009/28/ECa guarantee of origin is required to be the standard size of 1 MWh. This facilitates transfer of GO either within a Member State or between Member States by harmonizing the systems.

In Bulgaria the Draft REGO Ordinance foresees under Article 8 (1) that only one certificate is issued to cover 12 months production for plants with capacities up to 1 MW. One certificate is issued to cover 6 months production by plants over 1 MW.

- ***Using REGOs and avoiding double counting***

  The Directive stresses that a unit of electricity from renewable energy sources is disclosed to a customer only once. As REGOs can be transferred under Directive 2009/28/EC, there are some specific measures required to avoid any double counting:

  - A guarantee of origin may only be used within twelve months of the production of the corresponding energy unit (Article 15.3);
  - REGO shall be cancelled[21] upon use (Article 15.3);
  - Energy from renewable sources in relation to which the accompanying guarantee of origin has been sold separately by the producer should not be disclosed or sold to the final customer as energy from renewable sources to avoid "double counting" of renewable energy; and
  - The amount of renewable energy corresponding to guarantees of origin transferred by an energy supplier to a third party shall be deducted from the share of energy from renewable sources in its energy mix for the purposes of Article 3(6) of Directive 2003/54/EC (Article 15.8).

  The mechanisms in the Draft REGO ordinance do not explicitly define the measures to avoid double counting. This is particularly important if REGO can be transferred and used.

- ***GO is an electronic document***

  The definition of GO states: *"guarantee of origin" means an **electronic document** which has the sole function of providing proof to a final customer that a given share or quantity of energy was produced from renewable sources as required by Article 3(6) of Directive 2003/54/EC.*

  Under Article 15.5 Member States or the competent bodies shall put in place appropriate mechanisms to ensure that guarantees of origin shall be issued, transferred, and cancelled electronically.

  In Bulgarian law, REGOS are non-transferable (Energy Act, Complementary Provision 52). SEWRC will have an electronic register on its website of Certificates of Origin. However, the official form of Certificates appears to be hard copy. There is no mechanism for REGO to be "used" then "cancelled"[22].

[21] Note: this form of cancellation means marking the certificate that has been "used" to prove that a customer has received electricity generated from renewable sources. It is like the postal service cancelling a stamp on a delivered letter or like punching a train ticket to show it has been used on a train journey.
[22] As previously, this form of cancellation means marking the certificate that has been "used".

- ***Information specified on a REGO***

  Under the Bulgarian Draft REGO Ordinance, A REGO includes information on the type of certificate, the unique issue number (relating to either 6 or 12 months' production), the authority that issued the certificate (SEWRC), date of issue, period of production, quantity of electric power, technology of power plant, total installed capacity, name and location of the producer.

  In order to be fully compliant with Directive 2009/28/EC, the REGO must specify the following additional details:

  - The energy source from which the energy was produced; in the Draft REGO Ordinance the technology is specified but not the energy source;
  - Whether and to what extent the installation has benefited from investment support, whether and to what extent the unit of energy has benefited in any other way from a national support scheme, and the type of support scheme. In the case of Bulgaria this would mean whether the project is benefiting from Preferential Tariffs;
  - The date of the installation's becoming operational;
  - The country of issue (Bulgaria); and
  - Unique number: Draft REGO Ordinance, Article 11 (1.2) specifies a unique number but this is only one number per year or 6 months and there is not a unique number for each 1 MWh REGO.

- ***Interaction with CHP GO***

  Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration (CHP)[23] provides for guarantees of origin for proving the origin of electricity produced from high-efficiency CHP plants.

  The Directive 2009/28/EC defines the difference between REGOs and CHP GOs. In particular, that CHP GOs cannot be used when disclosing the use of energy from renewable sources in accordance with Article 3(6) of Directive 2003/54/EC as this might result in double counting and double disclosure.

  This is not fully defined in Bulgarian legislation as there is no provision for the "use" of CHP GO or REGO to provide information on the energy mix to final customers.

- ***Recognizing International GO***

  Under Article 15.9 of Directive 2009/28/EC, Member States are required to notify the Commission of any refusal to recognize GO and its justification. If the Commission finds that a refusal to recognize a guarantee of origin is unfounded, the Commission may adopt a Decision requiring the Member State in question to recognize it (Article 15.10).

[23] OJ L 52, 21.2.2004, p. 50.

The Draft REGO Ordinance does clearly specify the acceptable reasons for a refusal to recognize GO. However it does not stipulate that any refusal to notice will be proactively brought to the attention of the Commission – although it is specified that the matter *may* be bought before the European Commission (Draft REGO Ordinance: Article 16.3).

- ***Heating and Cooling***

  Under Directive 2009/28/EC, Member States may arrange for guarantees of origin to be issued in response to a request from producers of heating and cooling from renewable energy sources. Such an arrangement may be made subject to a minimum capacity limit.

  This is not a direct requirement under the Directive. In Bulgaria this would require the introduction of further legislation (possibly under the Energy Act).

- ***No impact on National Targets***

  The Directive 2009/28/EC makes a number of clarifications about calculating compliance with National Targets. Most of these are not relevant to GO. One requirement is that, under Article 15.2, GO shall have no function in terms of a Member State's compliance with National Targets. Transfers of GO, separately or together with the physical transfer of energy, shall have no effect on the decision of Member States to use statistical transfers, joint projects or joint support schemes for target compliance or on the calculation of the gross final consumption of energy produced from renewable sources.

  This is not yet specifically defined in Bulgarian legislation. However, this is a matter for the Ministry of Economy and Energy.

5.4.1 Consistency Between Bulgarian Requirements

There is some potential circularity in Bulgarian legislation, which should be clarified.

The Renewable and Alternative Energy Sources and Biofuels Act Article 16 (1) and the Energy Act Article 159 (1) both require that the public utility company and the end suppliers, respectively, shall purchase the entire quantity of generated electric power, for which there is a certificate of origin in place – with the exception of the quantities for which the producer has concluded contracts according to the procedure established by Section VII of Chapter Nine herein or by which the said producer participates in the balancing market.

However, the Draft REGO Ordinance Article 4 (3) requires that any application for guarantees of origin shall be accompanied by copies of invoices issued upon the sale of the relevant electrical power quantity and a document for the fee paid.

This seems to imply that a producer is required to have been paid for the power produced before claiming a REGO, but must claim a REGO in order to be paid for the power production.

This inconsistency should be resolved. As the legislation takes precedence over the ordinance, the suggestion is that these requirements are removed from the Ordinance until such time as the legislation is changed.

5.5 Recommendations

The recommendations for changes to ensure compliance are outlined below. The changes proposed to the Draft REGO Ordinance are highlighted in Appendix A.

5.5.1 Changes to Implement in the Draft REGO Ordinance

The following adaptations should be made to the Draft REGO Ordinance.

- ***No double issuing***

  Under Article 8(2) include a requirement that no more than one guarantee of origin shall be issued in respect of each unit of energy produced.

- ***GO is an electronic document***

  The definition of GO states: *"guarantee of origin" means an* ***electronic document*** *which has the sole function of providing proof to a final customer that a given share or quantity of energy was produced from renewable sources as required by Article 3(6) of Directive 2003/54/EC.*

  Under Article 15.5 of Directive 2009/28/EC Member States or the competent bodies shall put in place appropriate mechanisms to ensure that guarantees of origin shall be issued, transferred and cancelled electronically.

  SEWRC will have an electronic register on its website of Certificates of Origin. The unique certificate number that relates to each certificate and is stored electronically could be made the official form of GO, and the paper certificate only needs to be the physical copy.

  The interpretation of this may depend on Bulgarian legal requirements for what constitutes an official "document" as specified in the law. Provided there are no conflicts with state requirements, to implement this requires a straightforward change to Article 8 (1).

- ***Standard 1 MWh size***

  Under Article 15.2 of Directive 2009/28/EC, a guarantee of origin is required to be the standard size of 1 MWh.

  In Bulgaria the Draft REGO Ordinance foresees under Article 8 (2) that only one certificate is issued to cover 12 months production for up to 1 MW capacity plant. One certificate is issued to cover 6 months production for over 1 MW capacity plant.

  To change this requires a change to Article 8(2) and Article 11 (1) of the Draft REGO Ordinance.

This does not necessarily require any additional administration. This could be resolved by providing a unique number for each MWh in ascending sequential order. Only the start and end identifying numbers need to be provided on the paper form of the certificate.

For example for a producer of energy from renewable sources which has generated 231 MWh in a given six-month period, the certificate number could be specified as:

(Producers registration number)000001 to (Producers registration number)000231

Each of these certificates can be separated if a transfer is required or if SEWRC needs to cancel off some section of the production due to an erroneous application. But for ease of administration only the start and end certificate numbers need be specified in any other case.

- ***Information specified on a REGO***

  In order to be fully compliant with Directive 2009/28/EC, the REGO must specify the following additional details:

  - The energy source from which the energy was produced. In the Draft REGO Ordinance the technology is specified, but not energy source;
  - Whether and to what extent the installation has benefited from investment support, whether and to what extent the unit of energy has benefited in any other way from a national support scheme, and the type of support scheme. In the case of Bulgaria this would mean whether the project is benefiting from Preferential Tariffs;
  - The date of the installation's becoming operational;
  - The country of issue (Bulgaria); and
  - Unique number: Draft REGO Ordinance: Article 11 (1.2) specifies a unique number but this is only one number per year or 6 months and there is not a unique number for each 1 MWh REGO.

  This information should be added under Article 11(1) of the Draft REGO Ordinance and in the certificate in Attachment N2.

- ***Recognizing International GO***

  Under Article 15.9 of Directive 2009/28/EC, Member States are required to notify the Commission of any refusal to recognize GO and its justification. If the Commission finds that a refusal to recognize a guarantee of origin is unfounded, the Commission may adopt a Decision requiring the Member State in question to recognize it (Article 15.10). This requires an amendment to Article 16 (3).

5.5.2 Changes to Be Implemented Elsewhere

- ***Allowing Transfer***

  Under paragraph 52 of the preamble to Directive 2009/28/EC, a guarantee of origin can be transferred, independently of the energy to which it relates, from one holder to another. This is designed to better allow transfer of renewable energy between companies.

  However, in Bulgaria, under the Energy Law and under the Law on Renewable Energy Sources and Biofuels a "Certificate of origin" is defined as an official non-transferable document. This conflicts with the aims of Directive 2009/28/EC.

  To make certificates of origin transferable would require a change to the primary legislation. This should be raised for discussion with the Ministry of Economy and Energy. The basic (non-transferable) form is sufficient to meet the legislative requirements. However, it limits the trading options open to renewable producers.

- ***Disclosure to Final Customers***

  Electricity Disclosure is a requirement implemented in the electricity Market Directive 2003/54/EC. Under Article 3.6, all suppliers of electricity to final customers have to disclose to their customers the contribution of different energy sources to the portfolio of the supplier in the preceding year. They must also disclose related environmental impact indicators, at least in terms of CO_2 emissions and the production of nuclear waste.

  Ostensibly, this requirement has not yet been transposed in to Bulgarian regulation and legislation.

  The objective of disclosure is to provide consumers with relevant information about power generation and to allow for informed consumer choice, and for choice not to be based on electricity prices alone. In a liberalized market, disclosure requires some sort of tracking of the required attributes from generation to the supplier.

  In Bulgaria where there is relatively little competitive market for electricity at present, this requirement has less potential to allow consumers to make a choice about what supplier to choose, but does at least allow them to better understand the environmental impact of the electricity that they use.

  This requirement should be raised for discussion with the Ministry of Economy and Energy.

  Guarantees of Origin can be used to verify the renewable energy in an energy supplier's energy mix in order for them to provide this information accurately to final customer. To do this would require the responsibility to be placed on suppliers to make this disclosure. However, an enabling sentence could be added to Article 3.

- ***Interaction with CHP GO***

  This is not fully defined in Bulgarian legislation as there is no provision for the "use" of CHP GO or REGO to provide information on the energy mix to final customers. It should be defined along with the legislation to require disclosure to final customers.

6. SUPPORT MECHANISMS FOR RENEWABLE HEAT

6.1 Introduction

Under Directive 2009/28/EC, Bulgaria has a binding target to meet 16% of its final energy consumption from renewable energy by 2020. Of relevance to SEWRC is the fact that this includes energy used for both electricity and for heat.

The market on its own will not be able to achieve the dramatic increase in renewable electricity and heat required as the technologies are not yet cost competitive. Therefore support for renewable energy is required and Bulgaria may find it extremely difficult to meet the target of 16% of final energy consumption from renewable sources unless it encourages heat generation from renewables.

SEWRC set the prices for heat energy supplied through heat networks under the Ordinance on Regulating Heat Prices. However, there is currently no special support or incentivization for renewable heat energy. In Bulgaria, heat is generally supplied through heat networks or individual consumers may use gas, coal, oil or wood fuel. There is not one single network like electricity, but many different sources.

This section considers the ways SEWRC might extend support to renewable heat. This includes the outcomes of discussion of renewable electricity tariff setting at the second training workshop and renewable heat support mechanisms at the third workshop.

This chapter:

- Explains Bulgaria's obligations for renewable heat energy (Section 6.2);
- Considers the current situation for renewable heat in Bulgaria (Section 6.3);
- Outlines the issues with the current approach (Section 6.4);
- Suggests options for a possible future approach (Section 6.5)
- Presents recommendations for a future strategy for Renewable Heat in Bulgaria (Section 6.6).

6.2 EU Background

As previously discussed, Directive 2009/28/EC was published in the Official Journal of the European Union on 5 June 2009 and deals with the promotion of the use of energy from renewable sources, including heating and cooling and transport as well as electricity. The national overall target for the share of energy from renewable sources in gross final consumption of energy in 2020 for Bulgaria is 16% (a binding target).

Member States must bring into force the laws, regulations and administrative provisions to comply with this Directive by 5 December 2010. Article 4 on the adoption of national renewable energy action plans takes immediate effect. Member States will be obliged to present a National Renewable Energy Action Plan (NREAP) by 30 June 2010.

Bulgaria's target of 16% of final energy production from renewables is likely to be challenging, and support mechanisms will need to be carefully designed to ensure Bulgaria can meet these targets whilst minimizing where possible the costs to final consumers and maximizing the social and economic benefits.

6.2.1 Definition of Renewable Heat

SEWRC has requested a definition of renewable heat. To obtain a definition of renewable heat energy, one may refer to the definitions provided in Article 2 of Directive 2009/28/EC. The relevant extracts are reproduced below.

Definitions (Article 2)
(a) "energy from renewable sources" means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases;
(b) "aerothermal energy" means energy stored in the form of heat in the ambient air;
(c) "geothermal energy" means energy stored in the form of heat beneath the surface of solid earth;
(d) "hydrothermal energy" means energy stored in the form of heat in surface water;
(e) "biomass" means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste;
(g) "district heating" or "district cooling" means the distribution of thermal energy in the form of steam, hot water or chilled liquids, from a central source of production through a network to multiple buildings or sites, for the use of space or process heating or cooling;
(h) "bioliquids" means liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass;
(i) "biofuels" means liquid or gaseous fuel for transport produced from biomass;

Article 5, Paragraph 4:
For the purposes of paragraph 1(b), the gross final consumption of energy from renewable sources for heating and cooling shall be calculated as the quantity of district heating and cooling produced in a Member State from renewable sources, plus the consumption of other energy from renewable sources in industry, households, services, agriculture, forestry and fisheries, for heating, cooling and processing purposes.
In multi-fuel plants using renewable and conventional sources, only the part of heating and cooling produced from renewable energy sources shall be taken into account. For the purposes of this calculation, the contribution of each energy source shall be calculated on the basis of its energy content.
Aerothermal, geothermal and hydrothermal heat energy captured by heat pumps shall be taken into account for the purposes of paragraph 1(b) provided that the final energy output significantly exceeds the primary energy input required to drive the heat pumps. The quantity of heat to be considered as energy from renewable sources for the purposes of this

Directive shall be calculated in accordance with the methodology laid down in Annex VII.
Thermal energy generated by passive energy systems, under which lower energy consumption is achieved passively through building design or from heat generated by energy from non-renewable sources, shall not be taken into account for the purposes of paragraph 1(b).

This definition therefore comprises heat from renewable sources only, not from high efficiency sources such as cogeneration based on fossil fuels.

As with renewable electricity, renewable energy sources that can be used for heat include wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases. Aerothermal, geothermal and hydrothermal heat energy captured by heat pumps are considered as renewable energy sources for heating and cooling and will be taken into account in the calculation of the share of energy from RES[24].

6.3 Current Position in Bulgaria

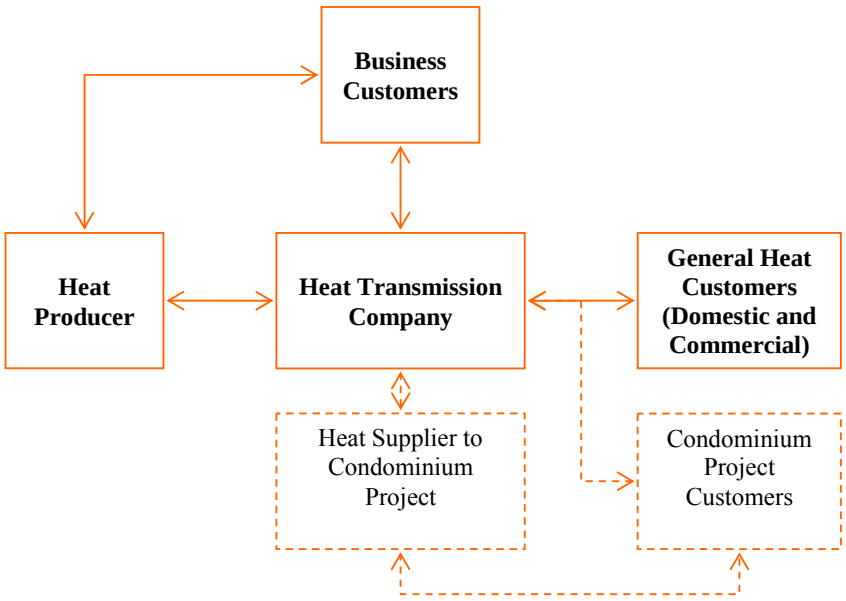
When this technical assistance project was started, tariffs for renewable heat were not under consideration in Bulgaria. Heat is generally supplied through heat networks or individual consumers may use gas, coal, oil or wood fuel.

Heat production, supply and regulation through heat networks is provided for in the Energy Law (Chapter 10) and regulated under the Heat Prices Ordinance. The price depends on the type of production and annual revenue requirements. There are no specific preferential prices for heat generated from renewable sources.

The heat transmission company is already obliged to connect and purchase output from heat producers in its area (except under certain defined circumstances). The way that heat producers contract with network operators to sell their energy is illustrated in Figure 19.

[24] Provided that the final energy output significantly exceeds the primary energy input required to drive the heat pumps.

Figure 19: Contracts for Purchase of Heat



6.4 The Case for Supporting Renewable Heat

Bulgaria may find it difficult to meet the new target of 16% of final energy consumption from renewable sources unless it encourages heat generation from renewables. Most other European countries, like Bulgaria, have only incentivized renewable electricity production up until now. Governments and regulators are now reacting to more challenging targets in the new Directive by considering what other renewable energy options may be available to them, like renewable heat energy.

Bulgaria has a relatively strong starting position compared to other European countries, as it already has a strong system of heat distribution networks that could easily transfer renewable heat. Heat transmission companies are already obliged to connect and purchase output from producers in their area (except under certain defined circumstances). This makes the enabling legislation to require them to purchase from a renewable heat producer at defined prices relatively straightforward.

However, unlike electricity, there is no central "TSO" that all heat networks are connected to. Heat networks cover discrete areas and there is therefore no simple method for equalizing the payments made by different heat companies.

As well as purchasing from the heat networks, there are other forms of heat available to consumers, including gas, coal, oil and wood fuel.[25] All users of fossil fuel sources for heat should meet a share of the costs of incentivizing renewable heat. Otherwise, it may place an undue burden on heat distribution networks and encourage customers to switch away. Consideration should also be given to supporting customers off the heat network that have individual sources of renewable heat, such as solar thermal panels for water heating and space heating.

[25] Also electricity, but electricity customers already meet a share of the costs of renewable electricity.

In designing a support mechanism there is therefore a balance to be struck between providing a simple mechanism that is easy to operate and by ensuring that the mechanism is completely economically effective and passes through costs evenly to consumers, so that competitiveness remains.

Bulgaria should therefore consider making a policy decision to support renewable heat generation. The earlier this is introduced, the easier it will be to meet the target.

There are a number of important features of any support mechanism:

- They should make investment in renewable energy plant profitable;
- Procedures need to be as simple as possible; and
- Costs should be redistributed to consumers.

6.5 The Options

There are a number of ways a renewable heat support mechanism could be introduced in Bulgaria. These are listed here roughly in order of increasing complexity:

1. **Fiscal Incentive ("Heat Levy")**

   A tax on all fossil fuels (gas, oil and coal) would be relatively simple to introduce. This would place a higher price on all non-renewable fuels and make renewables more cost competitive. Taxation is simple and well understood by companies and consumers. The tax can be transparently passed through the chain from producers, distributors and suppliers to consumers.

   However, such taxes are a relatively blunt instrument. They place a large cost on consumers, and not all consumers may have the option of switching away from conventional fuels.

   International experience shows that while fiscal measures are effective in combination with renewable support schemes, they are not generally effective on their own unless the price is onerously high, which could be damaging to the economy.

   Therefore, tax measures alone are not recommended.

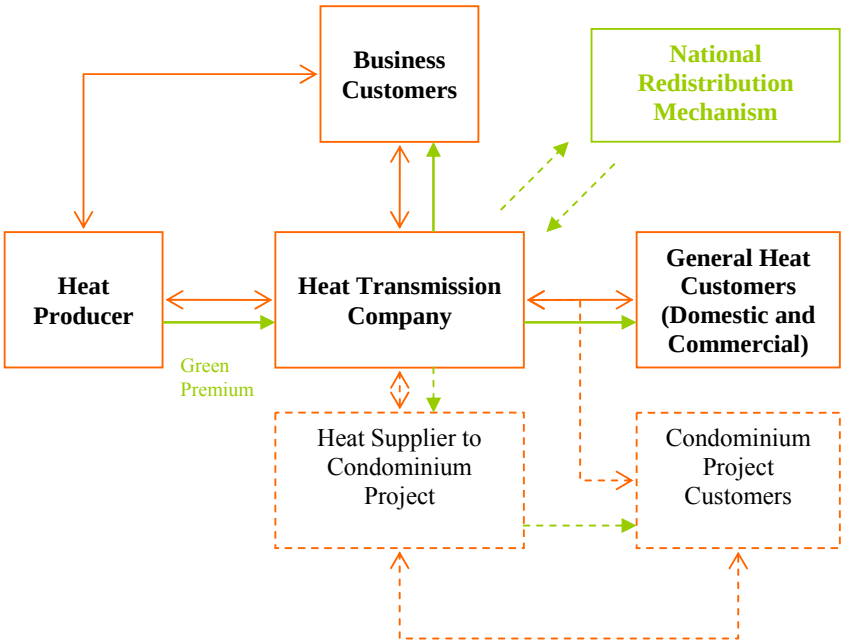
2. **Heat Network Preferential Prices**

   Bulgaria already has a strong understanding of preferential tariffs from the tariffs for renewable electricity producers.

   If similar tariffs were to be introduced for renewable heat producers as well, the simplest mechanism might be to place an obligation on Heat Transmission Companies to purchase renewable heat at preferential prices. A nationwide reallocation scheme could be introduced and managed (perhaps by SEWRC). This would mean that all customers of centralized heat networks would pay the same premium regardless of their location.

This is shown in Figure 20.

Figure 20: Possible Preferential Tariffs Scheme



This preferential prices scheme is relatively simple, but has a potential disadvantage that it would distort the market and disadvantage centralized heat supply as other suppliers of heat fuels (e.g. gas, oil, coal) would not be covered by the requirement to pay. Also, business customers could choose to buy direct from heat producers or to set up their own heat production to avoid paying renewable premiums.

Furthermore, this mechanism provides no support for customers off the heat network that have individual sources of renewable heat, such as solar thermal panels.

3. Heat Preferential Prices and Wider Fossil Fuel Levy

To avoid distorting the market to the extent of option 2, a third option could be to extend the scheme to support more types of renewable heat and distribute the costs more evenly among consumers.

This could involve a nationally paid preferential price for renewable heat administered by SEWRC. The preferential price would be paid to all verifiable renewable heat production, not just those connected to heat networks. For example, it could include support for solar thermal panels for residential properties.

The support would need to be funded. This could be through a levy on the supply of all fossil fuel for heat to equalize the cost among all consumers. The levy could operate in a similar way to that discussed in option 1.

It would require taxing fuel suppliers which – given that there are likely to be very large numbers of these is likely to be complex. It would be possible to restrict the requirement to certain fuels (for example pipeline

gas) but this runs the risk of distorting the market and is generally undesirable.

An apparently less complex option might be to impose the levy at the very top of the supply chain on producers or importers of fuels that can be used for heating. This could be based on the CO_2 content of the fuel to reflect the environmental impacts of the fuel chosen and incentivize more carbon efficient energy use. However, this would require the development of arrangements to track fuels used for other purposes (for example heating oil could be used as road fuel or for electricity generation). Therefore taxing at the point of supply on heat use may be more straightforward, despite the large number of suppliers concerned.

4. Heat Obligation and Green Certificates

An alternative option is that an obligation to source a given percentage of renewable heat could be placed on all providers of heat fuels (e.g. gas, oil, coal) and on heat transmission companies.

Companies with this obligation would have a choice of meeting the obligation by either purchasing tradable green certificates from renewable heat producers or paying a "buy-out" fee that is recycled back to participants.

This scheme is economically efficient as it puts the cost on the consumption of heat fuels and recycles the value back to producers of renewable heat. The market can then be left to choose the most efficient form of renewable heating.

However, there is some doubt whether the competitive market in Bulgaria would be sufficient to support such a scheme at present. For the scheme to be effective for renewable producers it would need a strong market for them to sell certificates. There would also be a requirement to set the buyout price for the obligation. This is particularly important when there is not an established market – set the buyout too low and no new capacity will be built, too high and lots of uneconomic capacity may get built, potentially causing a price collapse.

The obligation system is also significantly more complex to administer than a preferential tariff system.

First, it would require a licensing regime for fuel suppliers which – given that there are likely to be very large numbers of these – is likely to be complex. It would be possible to restrict the requirement to certain fuels (for example, pipeline gas) but this runs the risk of distorting the market and is generally undesirable. A less intrusive option might be to impose the license requirement only on producers or importers of heating fuels, which would have an obligation to source a certain proportion of their fuel from renewable sources (demonstrated by surrendering green certificates). However, this would require the development of arrangements to "net off" from the obligation fuels used for other purposes (for example, coal could be used for electricity generation). It would also be necessary to come to a view regarding a number of features of the scheme (for example should the obligation be based on the heat or carbon content of the fuel and how

should "green" heat be converted back to input fuel equivalent given the different efficiencies potentially available, etc.)

The scheme would also require arrangements for verification of production in order to issue green certificates and a register (computer system) of certificates that allowed them to be transferred. It would also require a properly funded independent central body to administer this; in the UK this role is played by Ofgem – the energy regulator who audits returns by producers to ensure that certificates are properly issued (in Bulgaria this role could be performed by SEWRC).

6.6 Recommendations

All the options outlined above have both advantages and disadvantages.

Table 19: Features of different support schemes

	Administrative Simplicity	Cost Targeting	Support for renewables
Option 1: Heat levy	Good	Good	Poor
Option 2: Preferential tariffs through heat networks	Good	Poor	Medium
Option 3: Preferential tariffs and fossil fuel levy	Medium	Good	Good
Option 4: Heat obligation and green certificates	Poor	Good	Good

Option 1 is the simplest, but taxes alone do not normally work to change behavior unless they are onerously high. This penalizes those consumers that cannot change their usage.

Option 4 puts the cost of consumption on heat users and encourages renewable production, but there is some doubt whether the market in Bulgaria is currently sufficiently established or competitive to set a buyout correctly and ensure a sufficient price. Furthermore, research in Europe suggests that obligations tend to cost the consumer more than feed-in tariffs and require greater administration.

Options 2 and 3 are similar in that they give a feed-in tariff to renewables. Option 2 is simpler, as it is administered just through heat network operators that are already closely regulated. Option 3 is more complex as it has a much wider application and more administration to collect the levy.

It is concluded that in the current state of market development, a preferential tariffs scheme is the best for Bulgaria. This can help to establish a market for renewable heat. It is advisable to start with a simple scheme through heat networks (option 2) and subsequently extend this as the market is developed (option 3).

Stage 1: Introduce preferential tariffs for renewable heat paid by Heat Transmission Companies, with costs equalized through an independent central body (possibly SEWRC). Tariff setting would also be carried out by an independent central body (SEWRC).

Stage 2: Extend the preferential prices to cover more applications (off the heat networks) and fund this through a wider fossil fuel levy. The levy would be placed

on suppliers or importers of fuel for heat, with a rebate for fuel used for other purposes or exported.

The scheme would again be administered by an independent central body (possibly SEWRC).

Three stages will be required to implement a renewable energy support mechanism:

1. Policy decision
2. Primary legislation
3. Secondary legislation and regulation, possibly a new Ordinance.

At present there has not been a policy decision from government that renewable heat should be supported. This might occur once a National Action Plan is adopted.

Once there is a policy decision, enabling legislation will be required (possibly through the Energy Act). The relevant legislation is likely to nominate a responsible body to administer the support mechanism process. A sensible choice may be SEWRC as independent regulator of the energy sector.

Once the relevant legislation has been adopted, the Ministry of Energy and Economy with SEWRC will need to adopt the appropriate regulation (or Ordinance) to implement the support mechanism.

7. SEWRC CAPACITY

7.1 Introduction

This section discusses the capacity within SEWRC to implement the proposals arising from other parts of the project, ensuring that Bulgaria meets its obligations under the EU Directive and is able to facilitate the development of a renewable energy sector in Bulgaria. It naturally falls towards the end of the assignment as it assesses capability to deliver and sustain the recommendations from improvement arising from all aspects of the project.

Originally it was intended that this task would include consideration of a regulatory database required to issue guarantees of origin for RES electricity in accordance with the EU Renewables Directive. Given that SEWRC had already developed the necessary database for logging REGOs, the client instead requested a review of the systems requirements arising from the new EU Directive as part of the REGO scheme (see Section 5).

As a result, the following data gathering and analysis activities were undertaken:

1. Data Gathering:
    - Documentation review of the organizational structure, including the division of activities, responsibilities and lines of reporting against established practice elsewhere;
    - Interviews with key members of staff[26];
    - Review of staffing arrangements including overall numbers, skills and training;
    - Information at a high level on the financing of the organization; and
    - Observations of working practices, corporate culture and workplace environment.
2. Analysis:
    - Based on comparisons from extensive international experience, successful features of the organizational design were compared with those of SEWRC;
    - Benchmarking of structure, staffing numbers and costs with other countries; and
    - Assessment of suitability of SEWRC to undertake other initiatives that could be introduced.

This chapter:

- Assesses the merits and limitations of the organizational structure of SEWRC and opportunities for continual development and refinement (Section 7.2);

[26] It draws in particular on a meeting with Mr. Plamen Denchev, and Ms Victoria Jermanova, when staffing and capacity issues were discussed, on 1st July 2009.

- Assesses human resource capacity within SEWRC to carry out its statutory obligations compared with regulatory agencies in other countries (Section 7.3);
- Considers options for safeguarding the existing progress and further development, drawing together overall conclusions and recommendations (Section 7.4).

7.2 Review of SEWRC Organization

7.2.1 Current Organizational Structure

SEWRC's organizational structure comprises 128 posts organized into two primary operational areas - General Administration (23 posts) and Specialized Administration (88 posts), with a further 17 executive and management posts. Within the Specialized Administration function there are six divisions:

- Legal;
- Economic Analysis and Consumer Affairs;
- Electricity;
- Heat Energy;
- Gas Supply; and
- Water Supply and Sewerage Services General.

The Electricity Division comprises three Departments:

- Prices Department;
- Market and Regulatory Control Department; and
- Licenses and RES Department.

The 'RES' function (renewable energy sources) currently sits within the Licenses and RES Department. Appendix B illustrates the current organization structure.

The Electricity Division contains twenty-three members of staff with three dedicated exclusively to the Licenses and RES Department. Of these, only one expert is dedicated exclusively to renewable energy issues. Other staff members working on RES issues have more general responsibilities and skill sets and are drawn from other areas/teams within the organization on an as-needed basis.

Working Groups/Task Forces are created to deal with particular renewable issues or tasks, drawing on the necessary legal, economic or technical skills of other departments as required for that particular issue and are not assigned permanently to the Licenses and RES Department.

This approach is not unusual among organizations and reflects good project management practice, offering flexibility and maximizing use of generic expertise in tariff setting, network access, etc. – regardless of whether for

conventional or renewable energy. Project teams formed for specific activities are dispersed back into business-as-usual activities at the completion of the project.

7.2.2 Alternative Structures for Consideration

The most common alternative approach to structure adopted in other EU regulatory agencies is to have a dedicated RES department which deals exclusively with the range of renewable energy issues – from administration of RES support schemes, renewable electricity and heat feed-in tariffs, to access to networks for renewable generators, REGO registration and monitoring, etc. However, in a small organization such as SEWRC, this runs the risk of duplication with other areas of the business and hence is more commonly found in larger markets, where the renewable energy sector is both larger and more mature than in Bulgaria.

There was evidence that the Commission reviews the organization of its RES dedicated staff resource on a regular basis; indeed it had been discussed by the Commission immediately prior to the meeting in July 2009. The Commission expressed a view that the current structure is working effectively at present and offers a flexible and responsive solution to emerging needs.

In view of the above, there is no recommendation for change at this time. Additionally, the practice of ongoing assessment by the Commission itself offers reassurance that should the situation change and the current structure become less effective there is a mechanism to detect and correct this.

7.2.3 Considerations for the Future

While there was little to suggest that an alternative organizational structure would be more effective for SEWRC at the time of the review, the following issues should be considered on a regular basis for the future to ensure the structure does not constrain capacity in RES:

- The overall staffing complement dedicated to the RES needs to remain reflective of the overall organizational business plans and initiative in the RES sphere of activities. If RES grow in importance or the projects activities become more complex and longer term, there may be merit in expanding the number of staff members dedicated to RES;
- As project staff gain experience in RES project activities there may be advantages in seeking to secure the same staff members on future project work. This may happen through informal routes at present, but SEWRC may seek to formalize the arrangement to ensure skills are retained and developed in the RES sector and that staff do not need to experience the learning curve on each occasion; and
- With only one of the three staff in the Licenses and RES Department being a dedicated RES specialist, SEWRC may be in a position of overreliance on one individual. The Commission may like to consider issues of succession planning and spreading the expertise with at least one other member of staff to ensure operations can continue with the minimum disruption should the individual leave.

Additionally, this approach to succession planning could be used to facilitate career development should any of the current generalist staff members in the Electricity Division have a wish to specialize in RES.

7.3 Staff Skills and Knowledge

7.3.1 Background and Governance

SEWRC was formed in February 2005 with an initial staff complement of 118 and a mandate of tariff setting and quality of services of enterprises in the gas, electric, district heating, and water supply and sewage sectors. SEWRC is also responsible for licensing of enterprises in the gas, electric and district heating sectors and issues permits for construction of transit gas or oil pipelines. It replaced the former State Energy Regulatory Commission (SERC) established in 1999 with 87 members of staff and smaller mandate.

The Commission's governance structure takes the form of a Board, comprising a chairman and twelve members of whom six are responsible for the energy sector and six for the water supply and sewage sector. The Chairman and two Vice Chairmen have been nominated by a Council of Ministers' resolution and appointed by the Prime Minister for a five-year period. The constitution permits reappointment for a further term.

At the time of the review, spring 2009, the Commission had been established in its current form for over four years, and as an energy regulator for almost ten years, in a stable internal environment, offering the chance to effectively plan for the longer term and develop skills and resources required for effective regulation of the energy and water sectors.

This position of SEWRC being established for a relatively long period compares favorably to other countries in the region. For example, the new regulator in Macedonia appears to be interested to learn from Bulgarian experience. It is very positive that SEWRC is able to share experience with the new generation of regulatory agencies emerging in South East Europe and is seen as a well-established regulatory body for others to learn from. This is a good foundation for SEWRC to undertake sustainable capacity development, and the review concluded that stability in governance is a clear strength.

7.3.2 Staff Profile

The review assessed a number of characteristics of the SEWRC workforce to identify any potential issues that could hinder capacity development. The key characteristics and considerations are listed below:

- ***Age Profile***

  The age profile of staff members in SEWRC is diverse with no excessive concentration in any particular age group. This is a fortunate position as it means there is little likelihood of significant numbers leaving the organization at the same time, for example on retirement. Additionally, it provides a balance of experience and

youth that will marry recent education skills with more traditional ones.

- ***Experience***

  New employees to the organization tend to be younger and more recently having left education. There is an established trend in Bulgaria for staff to work their way up in an organization from junior ranks to more senior ones, learning on the job and gaining in-house experience. The range of staff ages provides a range of industry experience.

- ***Recruitment Methods***

  All senior positions are advertised externally to the Commission, meeting both legal competition requirements and ensuring candidates are drawn from the widest possible pool to secure the most suited and talented to SEWRC. For more junior roles internal advertising may be sufficient to identify suitable candidates.

- ***Recruitment Volumes***

  There was evidence that SEWRC does not appear to have any problems in attracting recruits, with posts being well applied for. This may be due in part to the perceived security of public sector posts.

- ***Staff Retention***

  Staff retention was identified by SEWRC officers as an issue, due principally to levels of pay. As elsewhere in the EU, Government salaries (including SEWRC) are significantly lower than private sector salaries of similar levels of responsibility and experience. Indeed, even compared to some other state-owned entities, SEWRC salaries are reported to be less competitive and attractive. This makes it difficult for the Commission to retain the best people. For the longer term this is an area that SEWRC may consider planning to address through the development of human resource (HR) performance management and reward cultures whereby enhanced rewards can be linked to enhanced performance.

- ***Resource Flexibility***

  The review was informed that, in many cases, resource constraints are addressed by 'shuffling' people internally into priority areas of need rather than recruiting new staff at the time of need as a result of the wider economic position.[27] While this may overcome short term issues, there needs to be a more planned and sustainable solution in the longer term if the Commission is not to experience skills gaps and chronic underresourcing that impinge on the ability to deliver to its objectives.

[27] Information was provided to suggest that revenue from license fees is greater than SEWRC expenditure, but controlled by Ministry of Finance and currently all Government departments are facing a policy of cost control.

7.3.3 International Comparator Organizations

Part of the review undertaken compared staffing complements at similar regulatory organizations in Europe. Appendix C provides overall staff numbers in twenty countries, including at SEWRC.[28] Data is supplied for 2004 and 2006 where available. The data supports a number of observations regarding capacity development within SEWRC.

- ***Overall Staffing Complement***

  SEWRC has a staffing complement broadly consistent with the number of staff in other EU regulatory agencies of similar size, although these numbers do not reflect the use of consultants to enhance permanent resources (see Appendix C).

  Where available, data shows that all the benchmark organizations save Poland and UK have increased their staffing complement between 2004 and 2006, as illustrated in Table 20 below.

Table 20: Staffing Numbers in EU Regulators

Country	People million	IC (GW)	Regulator	Staff 2004	Staff 2006	% +/-
Austria	8.18	15.33	EControl	61	65	6.6
Belgium (fed)[29]	10.42	13.77[30]	CREG	35	64	82.9
Bulgaria	7.74	11.17		n/a	65	n/a
Czech Republic	10.21	16.26	ERU	90	99	10.0
Denmark	5.4	13.34	DEASB	30	35	16.7
Finland	5.23	15.83	EMA	16	36	125.0
France	62.18	112.02	CRE	80	126	57.5
Greece	11.06	12.60	RAE	50	55	10.0
Hungary	10.09	8.58	HEO	90	94	4.4
Ireland	4.06	7.14[31]	CER	39	56	43.6
Italy	58.13	93.6[32]	AEEG	86	133	54.7
Netherlands	16.27	21,8	DTE	55	70	27.3
Poland	38.16	30.85	URE	284	282	-0.7
Portugal	10.52	14.7[33]	ERSE	50	60	20.0
Romania	21.63	19.74	ANRE	n/a	219	n/a
Slovenia[34]	2.0	3.04	AGENRS	na	38	n/a
Spain	42.69	83.04[35]	CNE	153	210	37.3
Sweden	8.99	32.48	STEM	34	60	76.5
Turkey	70.8	38.84	EMRA	290	313	7.9
UK	59.84	78.71	Ofgem	320	310	-3.1

Sources - EURELECTRIC Position Paper on the European Commission's proposal for a new EU Directive on the promotion of the use of energy from renewable sources, Energy Information Administration -International Energy Annual 2006, www.iern.net

[28] Note SEWRC water related staff are not included in the figures.
[29] In line with Belgium's federal structure there are regulatory bodies for each of three Regions (the Flemish Region, the Brussels-Capital Region and the Walloon Region) as well as CREG which is the federal regulator
[30] CREG, Annual report 2008, p. 50.
[31] CER, Annual Report 2008, p. 14.
[32] AEEG, Annual Report 2008, p. 78.
[33] ERSE website, http://www.erse.pt/pt/electricidade/factosenumeros/Paginas/SEProdPotInstSEN.aspx
[34] AGE-RS, Annual Report 2008.
[35] Spanish Regulator Annual Report to the European Commission, 2007, p. 125

This general increase is largely to reflect the increasing regulation legislation over the period and increased complexity of requirements. Bulgaria is currently operating in the more complex regulatory environment, and the review was not of the opinion that a similar increase in staff numbers was likely to be required.

- ***RES Expertise of Staff***

  It is difficult to assess precisely the extent of the organization's skills and knowledge in renewable energy issues, but at the workshop (end of June 2009), sixteen SEWRC staff attended (See Appendix D), representing a good cross-section of the organization – i.e. legal, economic and technical experts as well as renewable experts. This indicates that the right skills are being brought together and a broad number of staff members are being involved in the issues. However, compared with other EU regulatory agencies, it seems inevitable that the number of staff with renewable experience in SEWRC, and the extent and depth of their experience will be less than their EU counterparts. This is simply because these issues are only now starting to be addressed in Bulgaria, whereas other EU countries have already been supporting and regulating renewable energy for some years under the EU framework.

  This point of view was reinforced at the workshop. The nature of discussion indicated that SEWRC experts have a clear understanding of the principles of renewable energy regulation. The questions received were largely about the detailed application and practical implementation of the EU Directives.

  To achieve the overall aims of sustainable capacity development SEWRC may consider performing a detailed skills audit of staff to formally record current levels of RES expertise against which to monitor and benchmark improvement in the coming months and years.

7.3.4 Staff Training and Development

- ***External Training***

  SEWRC holds regular internal training sessions for staff, in common with all state institutions which are mandated to hold two training sessions a year.

  In order to meet more specific training needs, SEWRC staff participate in workshops and training sessions organized by the Energy Regulator's Regional Association (ERRA), at both junior and senior levels.

  In the past, SEWRC has also benefitted from a number of international aid-funded programs of support and training, including:

  - 1-year twinning program with the Spanish regulator, funded by the EU Phare Program in 2006/7;

- USAID sponsored scheme twinning SEWRC with the New Jersey State regulator; and
- Sponsorship by the British Embassy for two experts to receive training.

It must be noted that the previous external training and capacity building received by SEWRC have not been specifically focused on the regulation of renewable energy frameworks.

- ***Renewable Training Options***

  There are a variety of training options available for improving the skills and knowledge of regulatory renewable teams dependent upon their specific needs. It is recommended that SEWRC considers some of the options below to develop a longer term training plan to meet any gaps in skills and to cultivate a longer term strategy of sustainable capacity development in the Commission.

  - **Tailor-made Training Courses:** Tailor made training courses and seminars, designed to meet a client's specific requirements and that are delivered to the client's staff in-house or externally can be excellent complements to on-the-job training and in-house training programs. Tailor made training courses and seminars can range from major know-how transfer programs designed to meet institutional development needs, such as leadership development programs for potentially hundreds of participants, to short and highly focused programs designed to meet a specific knowledge gap at a specific time.[36]
  - **Study Tours:** Study tours are a good practical way for senior executives to learn about and experience the key features and relationships that govern and influence relatively advanced energy markets. In addition, it provides the opportunity to develop networks of contacts in other institutions and focus groups that can be an extremely valuable tool to learn of industry-wide developments and how other organizations are adapting to cope with new developments.
  - **General Training Provision:** More general training is provided by training companies, industries association, universities and by regional regulatory forums. As developing and delivering training courses can represent a large sunk cost, many regional regulatory forums and industry associations are actively collaborating with training institutions and universities as a cost effective means of delivering high quality training and support material.

    A good example of such cooperation is the Energy Regulators Regional Association (ERRA) working with the Regional Center for Energy Policy Research (REKK) to deliver a five

[36] IPA Energy + Water Economics, among other firms, specializes in development of training materials and in using their international networks to arrange study tours. For the company profile, see http://www.ipaenergy.co.uk/index.php

day course on Renewable Energy Regulation in November 2009.[37]

The number of universities offering degrees (mainly at the post-graduate level) focused on the renewables sector has increased significantly in recent years. The Training Education Development (TED) register initiated by the REEEP (Renewable Energy and Energy Efficiency Partnership) contains a comprehensive list of available courses and training in the field of renewable energy and energy efficiency from around the world (http://ted.reegle.info/home.1.htm).

The Renewable Energy and Energy Efficiency Partnership has also developed an online training package on "Sustainable Energy Regulation and Policymaking for Africa". Although it was developed for Africa, it provides an introduction to the key issues relating to the energy market and energy regulation, as they affect sustainable energy that are relevant for all regions. (http://africa-toolkit.reeep.org/).

7.3.5 Capacity to Meet Objectives

The SEWRC had a full schedule in 2009, both with mainstream developments, including wholesale market opening, and renewable energy initiatives. Driven by the previous EU requirements on renewables, SEWRC's workload included:

- Publishing new methodology on green energy compensation – 1st July 2009;
- Commencement of the issue of Renewable Energy Guarantees of Origin (REGOs);
- Development of clearer rules for renewables gaining access to the networks – connections particularly;
- Development of the transmission networks – including interconnectors; and
- Clarification of the responsibilities of the TSO in relation to renewables.

In addition, the new EU Directive creates four major new tasks for SEWRC:

1. Forecasts for RES energy and energy balance;
2. Development of the Renewable Action Plan;
3. Amendments to the legal framework for RES (new energy law required by end 2010); and
4. Development of support mechanisms for heat.

[37] http://www.erranet.org/Training/Intermediate_Advanced_Training/Renewables_2009) provides a link to the course details.

Whilst the workload created by the new EU Renewables Directive is effectively the same for all EU regulators, SEWRC is also playing 'catch-up' compared to other regulators in relation to the previous renewable requirements. This has two capacity implications:

- In relation to renewable energy, staff in SEWRC are relatively inexperienced compared with their counterparts in other EU regulatory authorities, who have been doing it longer and who have perhaps already addressed some of the issues that SEWRC is now facing; and
- Resources within SEWRC are likely to be more stretched, as it has to tackle the requirements of the new Directive at the same time as the issues arising from the implementation of the original renewables requirements, such as grid access, certification of renewable energy sources, tariff levels, etc.

In the light of the above observations, the review concluded that SEWRC may benefit from further support and/or experience sharing in relation to the continued development of the regulatory framework for renewable energy. A number of options could achieve this, including:

- Recruitment to a fixed-term post;
- Appointment of short-term sustained consultancy support for knowledge transfer and development;
- International secondment arrangements to borrow staff from other regulators to enhance skills transfer and continue to develop networks of contacts; and
- Staff exchanges whereby organizations agree to "loan" specific members of staff to each other for a limited duration to achieve specific skills transfer objectives.

7.4 Recommendations

7.4.1 Overall Assessment

The overall assessment made during the review is that SEWRC has made excellent progress since its formation and is further advanced in its RES capacity development that might have been expected.

A number of initiatives that might be recommended for introduction at this stage of organizational development were found to have already been adopted by SEWRC, indicating an advancement and awareness beyond expectations.

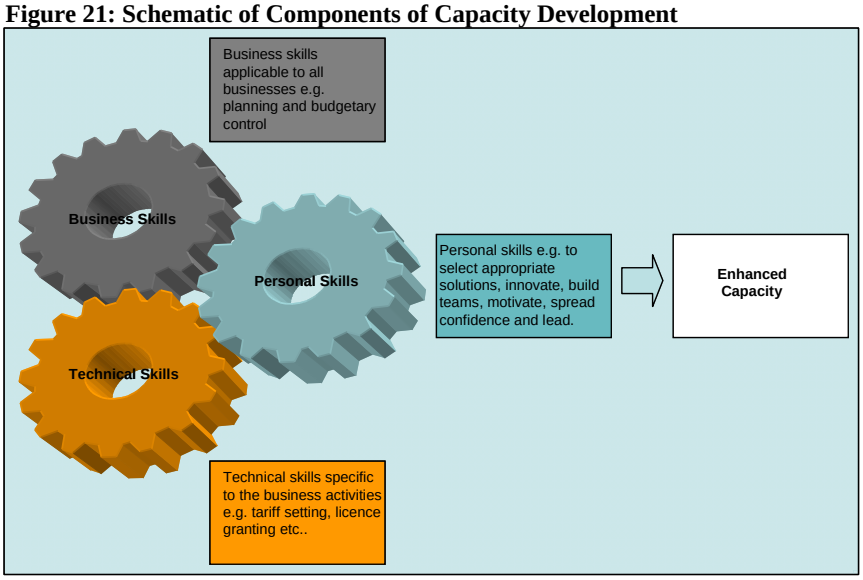
7.4.2 Overall Capacity

The proposed approach to organizational capacity development is founded in the theory that an organization's capacity is a function of the capacity of the individuals who work for it, and the way the individuals are organized structurally to undertake the work and the systems and process they apply in undertaking it.

Figure 21 illustrates three components to individual capacity, all of which are required to develop individuals' capacity to operate effectively and, hence, the organizations overall capacity:

- Business skills – common to all businesses including financial controls, planning activities, pricing and income strategies, etc.;
- Technical skills – specific to each business but in this case including RES knowledge, understanding of the policy and regulatory environment, understanding of RES technologies, etc.; and
- Personal skills – unique to each individual to allow informed decision making, management, leadership, innovation, the discretion to select appropriate solutions, etc.

Figure 21: Schematic of Components of Capacity Development



Overall, the review indicated that the current level of skills in all three areas is in keeping with that needed to deliver against current objectives.

The last workshop at the end of June 2009 reviewed SEWRC's capacity in the area of renewable energy regulation. It was found that SEWRC had made considerable progress with the development of a renewable electricity support mechanism, feed-in tariffs, a REGO system etc., and is learning as much from the experience of doing it in practice as from formal training or capacity building.

To a considerable extent, SEWRC is already taking advantage of opportunities to share experience with external organizations. The following recommendation aims to ensure this is both maintained and further developed.

Recommendation
Collaborative networks between SEWRC staff members and individuals in twinned organizations need to be formalized not only at a personal level but at an institutional level to ensure the framework for knowledge exchange is embedded in the organization. This will prevent loss of momentum and contacts, should key individuals leave SEWRC taking knowledge with them.

7.4.3 Organizational Changes

The review did not identify a need for organizational change to better deliver the RES objectives of SEWRC. The overall structure of the RES team appears broadly similar to other regulators of similar size and evolution. Additionally, the structure appears to be subject to internal review to ensure it remains appropriate.

Recommendation
If the mechanism for reviewing the appropriateness of the structure is not currently a formal one it should be adopted formally to ensure the organizational structure remains through a positive decision making process rather than a passive one whereby it could become outdated.

7.4.4 New/Additional Capacity

The review indicated that the staff either directly devoted to the RES Department or those temporarily drawn in to work on RES projects are coping well with the demands to date. The right mix of skills seems to have been sourced at the right times to enable work to be successfully completed. The challenge for SEWRC will be to continue this going forward.

The possible areas of capacity shortfall that may arise are:

- A possible need for more resource to deal with both existing and new Directive requirements if there is an increase in the workload; and
- Lack of experience – given that SEWRC has only operated in the RES arena for a relatively short time, loss of key staff or significant changes in complexity could lead to capacity shortfalls.

To address the first point the following options could be considered:

- Recruit more permanent employees. This may be difficult given Government budget constraints in the current economic environment;
- Bring in temporary resource – consultants or temporary staff. There may be difficulty in finding employees willing to take temporary contracts who have the necessary expertise on renewables;
- Consultants bring ready-made expertise, but are expensive. Nevertheless, this tends to be how other regulators work to cope with (i) fluctuations in workload; and (ii) lack of experience or resource in particular areas. Again, this could be problematic budget-wise. Apparently, SEWRC cannot expect any increase in budget under current circumstances, despite the revenue from license fees being in excess of SEWRC's expenditure.

Recommendations
SEWRC should consider adopting a formal process for succession planning to ensure it is not compromised in its ability to deliver should key individuals leave the organization. Consideration should be given to the adoption of a flexible resource strategy to appoint temporary assistance if needed.

7.4.5 Training

A number of training possibilities have been outlined. However, the review did not indicate that general courses are required. From the nature of the responses in the workshops that were held and the type of questions received, it is matters of detail that SEWRC needs help with, not the general principles. More specifically, it is questions of interpretation and implementation of the requirements in the EU Directive.

Hence benefit is less likely to come from general training courses, but either tailored courses or by having an opportunity to share experience and discuss issues with others in a similar position could be very useful tools. Experience sharing within Europe with organizations that have the same mandate and similar legal obligations to SEWRC in relation to meeting the targets set by the EU may be most beneficial.

Recommendations
SEWRC should consider undertaking a formal skills analysis and training needs analysis (TNA) to identify gaps and shortfalls in skill sets across the individuals in the RES Department.
Following the skills audit and TNA a training strategy should be adopted and a training plan developed to implement the strategy. Key to the success of the training strategy will be ensuring capacity development is secured within the organization rather than the individuals so loss of key individuals does not unduly disadvantage the Commission.

7.4.6 Experience Sharing

This is an area that SEWRC has already made progress with through the Phare program and twinning undertaken with Spain. It is likely to be of significant added value given that it gives SEWRC access to a depth of experience that it does not yet have. Additionally, twinning or benchmarking with other organizations opens up communications routes that may be of value in several areas beyond the precise remit of the partnering agreement.

Recommendations
Consideration should be given to establishing twinning arrangements with another EU regulator(s). SEWRC has already benefited from these arrangements in the past, albeit at a more general level. SEWRC already has a relationship with Spain; a country that has made considerable progress with renewables and might be willing to re-establish the former relationship, perhaps on a more informal basis. There could be benefits to

secondments or resource 'swaps' between regulatory authorities in Europe. Consideration should be also given to participation in Regulatory forums such as CEER and ERRA. Formal training is offered by these organizations, but also informal links with other members and participants met on the training courses offer valuable networking opportunities to discuss approaches to common issues.

If informal contacts are sufficiently developed, there could be the opportunity for SEWRC to offer to host discussion groups or support forums, either electronically by web-based applications or through use of video-conferencing facilities, to promote discussion of relevant issues. Invitees may include other EU regulators who have already answered some of the questions facing SEWRC and who would/should be willing to share their experiences. Similarly there must be others going through the same things now who might also benefit from discussions and debates about how to resolve issues.

8. COMMUNICATIONS STRATEGY

8.1 Introduction

As already discussed, Bulgaria has a target to provide 16% of its energy needs from renewables, set in the recently published Directive 2009/28/EC. This is a challenging target that will have implications for all market players. The legal framework and tariffs established by SEWRC will create challenges for all participants. In an effort to win the best possible deal, the dialogue and demands of each group naturally grows adversarial at times.

Energy prices in Bulgaria are amongst the lowest that can be found in Europe. This is not a coincidence as prices have been held down below those that are required to pay the full cost of the system, including new capacity, and this has implications for RES which in absolute terms are currently more expensive than fossil fuels (if externalities are ignored). In Bulgaria, as in most of Eastern Europe, there is still a tendency to view energy as a social product, or even to view access to cheap energy as a right, so consumers are reluctant to accept tariff reforms. It is difficult politically to allow prices to increase to a level that would cover the costs of all stakeholders or make RES a viable option.

Consequently, it is very important to expand the public debate beyond the current narrow focus on tariff rates, to build understanding of the wider issues and commitment to RES as a means to reduce carbon emissions and increase security of supply. Furthermore, information about RES, the associated support schemes and certification must also be made available to a range of people, such as builders, architects and general citizens in order to enable them to invest in and use these solutions.

The effort to broaden the debate and make the tone more factual requires a definitive strategy and careful message management. Therefore, several specific recommendations for a Communications Strategy have been made.

This chapter:

- Sets out the background and key issues the Communications Strategy will need to address (Section 8.2);
- Outlines the objectives for the Communications Strategy (Section 8.3);
- Identifies target groups and key messages (Section 8.4);
- Examines tools and activities that can be used (Section 8.5)
- Provides a template for the workplan and budget (Section 8.6);
- Sets out an approach for monitoring and evaluation (Section 8.7); and
- Summarizes recommendations (Section 8.8).

8.2 Background and Key Issues

8.2.1 Background

To comply with Directive 2009/28/EC, Bulgaria will need to develop a viable regulatory framework that takes into consideration the needs of all stakeholders, including:

- SEWRC regulates prices charged for connection to the network and the cost-recovery process for regulated market participants. It also protects the interests of the consumer. This aspect of its work will be very important in a period in which tariffs are likely to rise considerably as a means to pay for necessary investment in the energy sector.
- NEK owns the transmission network assets and is responsible for its maintenance, reinforcement and extension as required.
- ESO is the electricity system operator and is responsible for the day-to-day management of the power system in Bulgaria. ESO is also responsible for planning the network and evaluating the impact of new connections.
- The regional distribution companies own and operate the lower voltage distribution network assets in the seven distribution regions in Bulgaria. They include CEZ, EON and EVN.
- Ministry of Economy and Energy is responsible for detailing the legislative provisions for RES support mechanisms and is required to "implement the state policies towards promotion of the production and use of energy generated from renewable and alternative energy sources" (Art 5 (1).1).

These stakeholders are currently facing a significant number of issues related to renewable energy, including:

- **Transmission and distribution companies** are experiencing difficulties connecting new renewable generation sites in a timely manner as required under existing legislation. These connections are not evenly distributed across Bulgaria which places disproportionate demands on certain distributors and limits the rate at which connections could be made given the need to reinforce the network in strategic locations.
- **ESO** is faced with a huge wave of connection applications, for which it is obliged to carry out studies and make connection offers against a very challenging timetable set out in the legislation. If even a small fraction of the projects which have applied for connections are eventually built, ESO will have very significant practical difficulties in operating the network

  For a developer, the costs of seeking a connection are low and very little commitment is made at this point. As a result there is little incentive not to make applications as quickly as possible as to do so may at least secure a place in the queue which may turn out to be an extremely valuable asset.

The pressure is already causing a lot of negative comment in the media.

- **Developers and investors** have a number of concerns, including the lack of transparency in the connection process and uncertainty about future tariff levels.
- **Government** is committed to promoting RES as part of EU Directives, and it needs to balance this requirement with the need to protect the general public interest and ensure sustainable development. While it is in the nature of Government to respond to the needs of the electorate, it is important it is sufficiently aware of both the Directives and the needs of market players so that legislation does not threaten the security of the energy system.
- **Incumbent producers** are finding it difficult to cover costs at present tariffs, according to press reports. A number of investments in traditional energy capacity have been made in recent years. Rehabilitation of Maritsa Iztok 3 (Enel Maritza East 3 thermal power plant) is already finished, while that of Maritsa Iztok 2 thermal power plant is well advanced, with work on the final two units (5 and 6) due for completion in 2011. Some other thermal power plants (Bobov Dol and Maritsa-3) are scheduled to come off line during the next six years, though there is some idea of building two replacement units at Bobov Dol. In Varna thermal power plant, all six units will need upgrading over the next decade, though some, if not all, of them will instead be replaced by a planned new 880 MW combined cycle gas turbine unit to be built by CEZ. The need to allocate greater resources to RES is likely to result in further negative comment, especially as the incumbent producers have had little experience of competition and will now have to compete with new market entrants whose additional costs will also have to be shared by them.

As the independent regulator, SEWRC has to balance all these needs. It must implement government policy in a coherent, workable system of legislation and regulation, while ensuring the effective functioning of the energy markets and protection of the consumer.

Without good dialogue it is easy for the relationship between the different key stakeholders to become adversarial. For example, strict tariff constraints might be in the best interests of consumers, but might be insufficient to enable adequate incentives to reinforce the grid as needed by new RES investors or even to continue with reliable supplies.

It is all too easy for the underlying issues to play out in the media, giving rise to confusion and criticism. Recently there have been a lot of references in the media to the huge bill needed to reinforce the network, frivolous applications to build renewable capacity, and the high cost of renewable energy. All this is likely to result in negative attitudes to renewables and any tariff increases necessitated by them. Unless addressed, this will create a very hostile environment for SEWRC to play its role.

In short, there is a lot of scope for criticism and confused messages in the media unless there is clear understanding of the various needs that SEWRC

needs to balance and full transparency of the processes in place to encourage greater competition and efficiency. Negative publicity risks undermining the image of SEWRC, and increasing resistance to any tariff increases that might be necessary.

8.2.2 Public Awareness Issues

Bulgaria's targets for RES can only be achieved if support mechanisms are put in place and so RES investments represent extra costs. Consumers are ultimately responsible for paying the preferential tariffs. Even if these are carefully designed to minimize the costs, this will not be a popular message.

It is difficult politically to allow prices to increase to a level that would cover the costs of all stakeholders. As a result, for example, in Bulgaria households still pay lower rates for power than industry despite the abundant evidence that the cost of serving small customers is significantly higher. SEWRC has recently bowed to strong pressure to reduce a proposed 3-4% rise in prices for commercial consumers, and refrain from raising tariffs for domestic consumers.

It will be almost impossible for Bulgaria to meet its commitments as an EU member, unless the public debate is expanded beyond the current narrow focus on tariff rates, in order to understand the wider issues and commitment to RES as a means to reduce carbon emissions and increase security of supply.

In part these extra costs could be mitigated through greater market efficiencies and completion. This too must be explained, along with the rights and obligations of the consumer in such a market. As the protector of the consumer's interest, it is SEWRC's responsibility to educate them about these rights, and about the role played by SEWRC in protecting them.

Finally, in accordance with Articles 13 and 14 of Directive 2009/28/EC on the promotion of the use of energy from renewable sources[38], Member States need to provide information on renewable energy and support schemes and certification schemes to a range of stakeholders. The Directive will need to be transposed into Bulgarian law by December 2010.

For these reasons it is recommended that a comprehensive Communication Strategy be put in place.

8.3 Communication Objectives

The objectives of the Communication Strategy must always support the overall mission and strategic direction of the Commission, namely to provide the appropriate regulatory framework to ensure the effective functioning of the energy markets while ensuring efficiency, competition, transparency, and the protection of the consumer. The recommendations have been carefully crafted to ensure that the objectives of this Strategy also comply with the needs of SEWRC and the

[38] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF

requirements of Directive 2009/28/EC. In line with this, the following objectives are proposed:

1. **Promote awareness of the role of SEWRC**: to ensure that SEWRC is known as a first point of contact in relation to renewable energy matters in Bulgaria, and subsequently to ensure a more competitive energy sector and a cleaner more sustainable environment and greater security of supplies fully in line with EU policies.
2. **Facilitate consultation and transparency**: To ensure full transparency by involving all partners/stakeholders in the consultation process and encouraging their participation in order to ensure a positive regulatory framework favorable for the promotion of RES, as well as informing them of their obligations under existing regulations. Article 24 of Directive 2009/38/EC states that the European Commission will establish an online transparency platform. This platform is first intended for cooperation between EU Member States regarding actions to meet the requirements of the Directive, but may also be appropriate to publish relevant information more widely.
3. **Ensure protection of consumer rights**: To enhance the profile of the Commission by promoting its role in protecting the interests of the consumer and the development of a competitive energy sector. Article 13 of Directive 2009/28/EC asks Member States to facilitate the use of RES in the industrial and residential sector and city infrastructure (including buildings) and defines high level requirements for equipment certification (in Article 13 and 14). Also certification and training schemes for installers will need to be developed (Article 14).
4. **Disseminate information about RES**: According to Article 14 of the Directive, from Dec 2010, information on RES, support schemes and certification schemes must be made available to a range of target audiences including professionals (planners, engineers, builders, architects, etc.) and the general citizens through information and guidance programs. In cooperation with the local authorities, the importance of awareness raising is stressed.

   Given that the strategy will need to target people from very different technical backgrounds, a critical principle in making information available is that it should be presented in such a way that it is appropriate for a range of stakeholders with very different levels of expertise.

8.4 Target Groups

For efficient and effective communication, it is important to determine which stakeholders need what levels of information. For this it is useful to identify three categories of targets:

- **Category 1** includes those which need to be *involved* in the SEWRC activities;
- **Category 2** includes those who will eventually *benefit* from the results of the project or who will influence how it is perceived; and
- **Category 3** is more *passive*, but will nonetheless benefit from and be impacted by its work.

With category one, a significant level of personal contact and two-way communications will have to be assured. A database of key individuals should also be developed which will form the basis for regular information provision and communication.

The second category of stakeholders will also be significantly impacted, or have the capacity to impact public opinion about the work of SEWRC and will have a clear interest in learning more about the project activities. Hence they will need to be informed through a variety of one-way and two-way communication tools and activities.

Category three stakeholders will be passively informed through mass media, such as the press and internet.

8.4.1 Category One Target Groups

Category one includes two main groups who will need to participate in or be consulted in the process of developing of an optimal regulatory framework, namely external market players and SEWRC employees.

- **External Market players/stakeholders:** Government and parliamentarians, ESO, transmission and distribution companies, producers from traditional electricity sources, RES producers, potential generators and the Ministry of Economy and Energy.

  A proper understanding of the consultation process is important for all players, including new ones, and draft reports on a wide range of policies, from TSO Systems Performance Incentives, RES support systems, or Process for Authorization and Licensing of Generating Stations need to be placed on the internet and comments invited as part of the policy development process.

  The main objective of communication with these groups is to:

  - Ensure they understand all regulatory aspects of the EU directives and how these are transposed into the Bulgarian system; and
  - Ensure the consultation process for this is completely transparent and involves them where possible.

- **Internal communication groups:** Commissioners, Heads of Departments, Managers, Policy makers, etc.

  The objective of communication is to ensure they are fully sensitive to the various constraints of the various stakeholders, as to EU directives and best practices elsewhere, and are to regulate a workable system and promote a single vision. Messages to convey to these target groups include:

  - The implications of the EU directives; and
  - How the consultation process works.

8.4.2 Category Two Target Groups

Category two includes three main subgroups, all of which are relatively influential or powerful. Their understanding of the role and support of the work of SEWRC can greatly help raise its profile and achieve its goals. These are:

- **Large Consumers:** Industrial and large commercial consumers and Municipalities.

  As competition increases, the marketing process to these customers will intensify, and prices will become more competitive. These customers are more likely to be aware of their rights. However, their level of influence requires that they are aware of and informed about the work of SEWRC to serve their interests.

- **Influencers/Multipliers:** Media, NGOs (e.g. environmental groups, energy efficiency groups, RES associations, chambers of commerce, trade associations), consumer protection groups.

- **Professionals:** Builders, Architects, Engineers, etc.

  For these the options they will be expected to incorporate into their work will be very much impacted by RES policy.

  All three subgroups will need to be made aware of:

  - The role of SEWRC as balancer of needs of all stakeholders in the interest of a viable system while complying with EU Directives and how these benefit them;
  - The longer term benefits for them and the wider system of a more competitive energy sector; and
  - RES options, preferential schemes, etc.

8.4.3 Category Three Target Groups

Category three are the passive audiences, referred to as passive, not because they are necessarily unwilling to voice their support of opposition, but because they are less powerful. Although more difficult to mobilize, if they strongly disapprove they can however make it very difficult for SEWRC to achieve its objectives.

- **Passive Audiences:** By and large three main groups exist: household consumers, small business consumers, and vulnerable consumers.

  Since this is a mass market and difficult to communicate with as intensely as the other two categories, SEWRC will have to rely on one-way channels – media, posters, leaflets, etc. This will require effective work with multipliers and those who do have a powerful voice. Another important characteristic of this group is that they are very diverse; from highly literate to poorly educated, from rich to poor, from rural to urban dwellers.

In general, these groups are likely to find the market liberalization process difficult to follow and are unlikely to be well informed. For that reason they may also be more vulnerable and need to be made aware of their rights, as suppliers begin to sell energy in different ways and offer new and different tariffs.

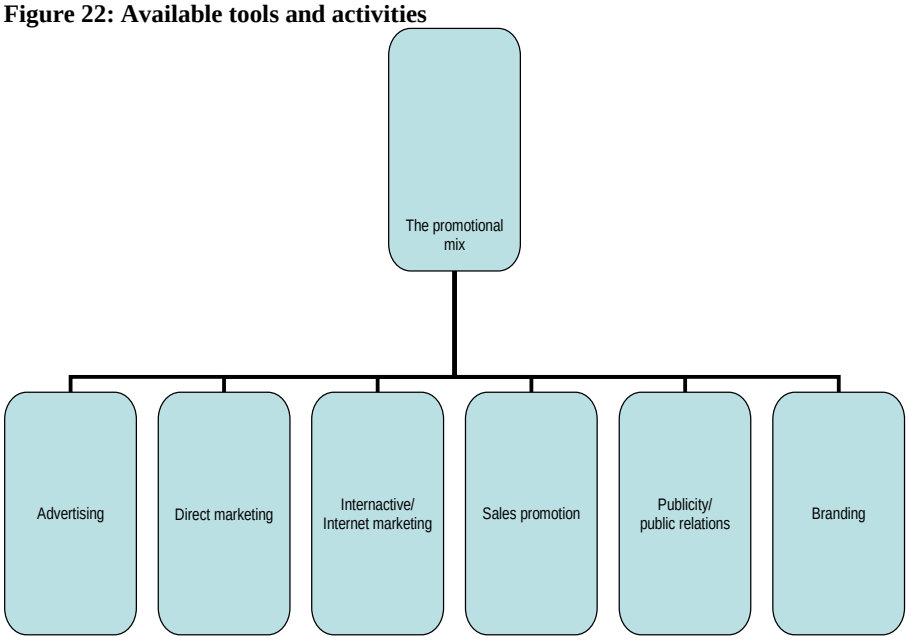
Passive audiences will require the following information:

- The EU directives and their implications, including likely impact on tariffs;
- The need to ensure secure supply through competitive markets, that tariffs need to cover the true costs of the entire energy system;
- RES options, preferential schemes, etc.;
- Their rights and obligations as electricity consumers and how SEWRC works to protect their interests.

8.5 Communication Tools

There are six main types of tools and activities available to the communicator, i.e. to SEWRC, as shown in Figure 22.

Figure 22: Available tools and activities



8.5.1 Advertising Tools

The key difference between advertising and public relations is that with advertising you have complete control of the message as you will pay for the space or time to communicate the message to your target audience. As such, advertising is a powerful way to transmit information but should be

used along with public relations as advertising alone will not build a positive and trustworthy image.

Advertising is expensive, and it is important that it be used judiciously, with a clear idea of what you want to achieve, for example:

- Awareness;
- Image; and
- To introduce a new service, e.g. a hotline, or freedom to choose energy supplier.

The cost of reaching people with your advertising message can be defined in terms of CPM (cost-per-thousand). The cost to reach 1,000 customers can be determined by dividing the cost of an advertisement by a medium's circulation. If, for example, a full-page, black-and-white magazine advertisement costs BGN 2,000, and the publication reaches 50,000 people, the CPM is BGN 25. In other words, it costs BGN25 to reach 1,000 people in that magazine.

There are a wide range of advertising mediums to select from:

- **TV** – has excellent reach but is too costly to justify except in the case of very important messages. PR is more effective unless miscommunication between SEWRC and the media is creating a dangerous issue.
- **Radio** – is often underestimated. Because of its nature there is significantly less focus on the expensive look, more on the message. It is more personal and it works well with broad audience demographics. Radio is most effective when adverts are repeated: radio stations will typically sell a package containing different levels of listener. Advertisements are flexible and relatively easy/low cost to produce. Memorability and creativity of message is essential. However, radio spots can be costly if different stations need to be covered to reach the target groups, and lack of visuals restricts the information that can be passed on. It is also important to negotiate a good time for the message as the difference between audiences can be significant – at 7.30 when people are on their way to work audiences are a lot higher than at 9.15.
- **Print media** – most are too wordy and targets need to be understood very well.
    - **Newspapers** are one of the more immediate advertising venues with lead time for an advert being just a few days. A newspaper will have different sections, such as a business section once a week and you can use this to target advertisements if a clear target profile exists. It is a good way of disseminating precise information, but newspapers have a short shelf life and limited reach. Even the most popular newspapers in Bulgaria have limited circulation and are quite costly to advertise in. Newspapers are generally most effective for more educated audiences and for delivering more detailed messages than radio.

- **Magazines** are a good way to reach a very specific audience, especially trade magazines. However, they are an effective way of making a relatively detailed point to even more educated/influential audiences than newspapers.

- **Posters** – message needs to be very, very short. However strong images are an excellent way to attract attention to key messages – perhaps encouraging visits to websites or to call a helpline. Effectiveness depends on dissemination strategy. A wide range of outdoor and indoor media are available for this purpose, including:
  - Outdoor billboards;
  - School newspapers and yearbooks;
  - Bus benches and shelters;
  - Mobile advertising on trucks, taxis, buses, etc.;
  - Hotel advertising;
  - In-store displays;
  - Supermarket entrance advertising;
  - Sports/fitness/leisure facilities;
  - Sports events programs;
  - Town and community festivals and fairs;
  - Seminars/workshops/special events; and
  - Display panels.

8.5.2 Direct Marketing Tools

With direct mail, any selected part of a market can be reached. While creative and interesting direct mail can be well received this medium suffers from a huge amount of what is called "Junk Mail" and may not receive sufficient attention by the recipient. A good approach if sending direct mail is to send it with the bill. In this way the relevance of the message is more immediate.

In general there are a few important principles. The headline should immediately grab the readers' attention, clearly identify the issue (problems the reader is likely to be having) and tell them how SEWRC can help or their problem can be solved. Where possible, as in electronic mailings to more targeted groups, the mailing should include the name of the recipient.

Direct mail must always be a route into more information and it is thus vital to ensure that the mailings provide a clear name and number or website address where the target audience can learn more.

8.5.3 Interactive/internet promotion

The internet is becoming increasingly widespread in Bulgaria and a website is the single most comprehensive, flexible, and cost-effective communication tool over which SEWRC can maintain control.

It is an excellent means of keeping stakeholders up-to-date on developments, consultations, etc; and the public informed about tariffs, their rights, and policies and how these are impacting the work and decisions of SEWRC.

Some general principles of a good website are:

- Keep it simple and practical;
- Ensure that content is easy to read and well presented;
- Make it user oriented, users are more interested to learn more about what is relevant to them than about you;
- Make it easy to navigate and ensure that users can find what they are looking for quickly and easily (no animated intros);
- Keep it up-to-date;
- Allow interaction and make sure you get your visitors' emails;
- Use hyperlinks to keep main info clear but allow for more details;
- Make clear the content of key documents without having to open or download files; and
- Draw out key decisions and developments as part of news section.

The website will be targeted at different categories of users, involved audiences as well as the general public. It is vital in the case of the latter that information is explained in simple, easy to understand terms. Some regulators use different "microsites" for different groups. For example, customers seeking information about competitive supply or customer protection are directed to an area of the site with suitable presentation, while more informed industry users can use a more technical area where full details and texts of documents are available. Investors and market players should easily find details on open tenders, procedures, etc. The website can also be used to disseminate publications, FAQs, presentations, etc.

- ***Internet advertising***

  A website is a very useful tool only if it is well known. In part this will be done by advertising it on all Commission publications and materials. However, to reach wider audiences, internet advertising is very useful. Think about which other websites should include the link. Think too about using a Web banner advert, especially to bring it to the attention of the wider public. The key with a banner advert is that it can entice a viewer to immediately visit the SEWRC site through a simple click on the computer mouse.

- ***E-newsletter***

  E-newsletters are a very effective way of keeping more involved and interested targets informed of updates. They can be used to update interested groups of developments quickly and effectively, and are versatile and cheap, since they can be sent out whenever one or two stories or news items are available, and hence the user is immediately alerted without having to check the website. Subscribers receive an

email with story headings and leads and can click link to website if they are interested to read the full story.

It is also a good means to remind people of the extent and nature of SEWRC role and activities.

8.5.4 Public Relations

Public Relations (PR) is the planned exchange of information with a view to establishing a positive image and understanding of the organization. It draws on a variety of tools, e.g. media, meetings/presentations, events, publications.

- ***Media***

  The major advantage of PR aimed at media is credibility and relatively low costs. The media are an important provider of information to the Commission's target groups. The disadvantage is that the coverage will not always be positive or even accurate. Recent coverage of an energy conference in Sv. Konstantin in Bulgaria suggested a limited understanding of issues with coverage being more focused on prices, rather than understanding and explaining the different issues.

  It is important to have effective media relations, since journalist articles are a lot more convincing in getting the message across than paid advertisements. It is also important because if journalists get confused, it can quickly lead to a disaster in terms of image and public opinion. Examples of the public outrage due to misunderstandings about energy policies and tariffs are not difficult to find. In part these are fuelled by the media, caught up in controversy and not always understanding the bigger picture. This can be addressed directly - hence for example, in Romania, journalists were brought in for half-day briefings with the Energy Regulator ANRE to ensure a more thorough understanding of what the Agency is doing and issues involved.

  The mass media is particularly suited to raising general messages, but it is important, too, to keep the messages clear and simple, so as to avoid risk of confusion. This is best done by briefing them in calm environments rather than letting them piece together for themselves the issues over moments of heated debate. Also they will not necessarily be able to understand the relatively complicated Reports, Protocols and Decisions currently available through the website. It is also important to keep such briefings and media materials relatively accessible and relevant to the media audiences. Press releases can serve as reference materials to convey the important messages, while eliminating room for misunderstanding.

  The following actions are recommended:

  - Preparing a press pack including role, vision, and strategic objectives of SEWRC, RES targets, the reasoning, the expected benefits, useful interviews, photographs, etc.;

- Organizing briefings for journalists after meetings likely to involve heated debate, rather than giving them direct access, and organizing bigger workshops on regular occasion in order to build better relations and mutual understanding;
- Emailing notice of upcoming events and milestones to journalists; and
- Identifying speaking opportunities and set up interview or talk shows opportunities and identifying high profile persons and experts to speak about the reforms.

- ***Consultations***

As mentioned above, a transparent and effective consultation process is vital to ensure that the policies are based on a thorough understanding of issues facing all players, the needs of the sector, and Bulgaria's international commitments and benefits accruing from these. SEWRC consults with industry via a Consultative Council. However, to ensure transparency, the consultation process should be expanded to include further stakeholders. Possible measures to achieve this include:

- **Meetings and visits:** As part of the transparency process it is very important to get managers and policy makers out talking to stakeholders, in order to listen to their problems and better understand the issues.
- **Events and seminars:** Participation in smaller, targeted events, such as roundtables and seminars are a good means not only of disseminating information and helping stakeholders understand the role and work of SEWRC, but also to provide possibilities to obtain feedback.
- **Trade Shows:** Can sometimes be ineffective as a means of promotion, but they can be quite valuable because there is a wealth of knowledge focused around a particular cause or industry assembled in one place. It is possible to learn a lot from participation in a short period of time, but you should have a clear objective for attending each one - rather than taking the opportunity because it is there.
- **Presentations, Digital media** (e.g. CDs, Power Point presentations): Are a good means of getting across clear precise information, with a visual element while also obtaining feedback. They can be relatively simple to produce, easy to adjust, and are also useful for placing on the internet for wider access.

- ***Internal communications***

Internal communications are a vital part of an effective organization. Staff need to be kept informed of developments within SEWRC that are relevant to their work, as well as all information that is given to the public (to ensure that there are no conflicting messages delivered as a result of different people speaking to interested parties).

Two way communication is very important to obtain feedback on issues encountered by staff. It is recommended that an internal communication audit (e.g. survey) be carried out to establish information needs and that a system of regular meetings, emails (database), and presentations is established to address any shortfalls. Staff need to be kept informed of developments within SEWRC that are relevant to their work, as well as all information that is given to the public (to ensure no conflicting messages).

- ***Publications***

  Information must be made available at different levels of detail and jargon. While internet is very useful for downloads, it is by no means clear that all targets will investigate the website and so hard copies are essential for dissemination and visibility.

  The following types of information leaflets might be prepared:

  - An **RES leaflet** telling consumers about Bulgaria's commitments as an EU member to reach RES targets and the benefits and implications of this.
  - How **tariffs** are determined and the importance of ensuring a reliable system, while keeping prices low for the consumer through competition.
  - The **rights and obligations of the consumer**, and the role and work of SEWRC to protect their interest.
  - The **rights and obligations of investors**, and support mechanisms available (financial, technical, and administrative by SEWRC).

  As issues arise, factsheets can be prepared that explain these in simple question and answer format. In the UK for example the regulator's website explains why tariffs are rising, even though oil prices are falling.

  All materials need to of course be included on the website. More detailed information should be made available via direct links, for the benefit of individuals looking for more detail.

  The leaflets should be as short as possible to ensure maximum readership while explaining issues sufficiently to consumers. All materials should have common visual identity elements and contain concrete, well researched information with web addresses and telephone numbers for contact.

8.5.5 Branding

Branding is important. Every organization has a personality, from the casual and bold, to the solid or conservative, the approachable or the formal. The personality must be reflected in the look and applied to everything: business cards, stationery, design of premises, etc.

A strong, recognizable brand will help raise the profile and image of SEWRC. To this end it will be important to use the logo and visual identity consistently in all publications, and at all presentations and other events. This should be applied to the website, publications, stationary, power point presentations, etc.

8.5.6 Recommended Tools

To provide a synthesis of above sections, recommended tools to achieve different objectives and reach different target groups are summarized below:

- Objective 1: Awareness of energy market reforms
- Objective 2: Consultation and transparency of processes for market players and opportunities for investors
- Objective 3: Informing about consumer rights

Table 21 presents the various marketing and communication tools that have been presented in Section 8.5, linking these to the various target groups as identified in Section 8.4 and suggesting which objectives will be met by these measures.

Table 21: Synthesis of recommended tools and objectives to reach different target groups

Advertising	Market players	Staff	Influencers	Large consumers	Small consumers	Objective
Radio spot				×		Consumer rights
Newspapers: national / regional	×			×		Consumer rights, Market opportunities
Magazines: articles and ads	×					Consumer rights, Market opportunities
Posters				×	×	Consumer rights
Direct marketing	**Market players**	**Staff**	**Influencers**	**Large consumers**	**Small consumers**	**Objective**
Letters	×		×	×		Transparency, Market opportunities
Mailings with bills					×	Reforms, Consumer rights
Website/e-newsletter, internet ads	**Market players**	**Staff**	**Influencers**	**Large consumers**	**Small consumers**	**Objective**
Website	×	×	×	×	×	All three objectives
e-letter	×		×	×		All three objectives
Electronic calendar of meetings and events	×	×	×			Transparency, Market opportunities
PR	**Market players**	**Staff**	**Influencers**	**Large consumers**	**Small consumers**	**Objective**
Media relations (press releases/conferences, interviews, briefings, talk shows)				×	×	Market reforms, Consumer rights and role of SEWRC
Consultations	×		×			Transparency, Market opportunities
Visits to stakeholders		×				Transparency, Market opportunities
Internal communications (emails, meetings)		×				All three objectives
Seminars, workshops, fairs	×		×	×		All three objectives
Publications (also electronically)	×	×	×	×		All three objectives
Presentations	×		×			All three objectives
CDs	×		×			All three objectives
Branding	**Market players**	**Staff**	**Influencers**	**Large consumers**	**Small consumers**	**Objective**
To be reviewed						

8.6 Workplan and Budget

A work plan and budget ensure that a communications strategy is implemented with the available financial and technical resources in mind. A forward view should be taken. Table 22 provides a template to put in place a Communications Strategy as outlined in this document. This will need to be further developed by the PR department in accordance with own resources.

Table 22: Communications Plan and Budget

Communications Plan and Budget	Quantity	2009 €	*2010* €	*2011* €
Objective 1: Awareness of energy market reforms				
Advertising • Posters				
Organize media relations • Press pack, Press releases, conferences, briefing, Interviews, Talk show ops				
Develop leaflet simple (public)				
Develop brochure (more detailed)				
Design and organize presentations (PPTs for target groups one and two)				
Publish leaflets				
Prepare simple overview of RES targets and market reform process for web				
Events. Indentify events and speaking ops to explain process to involved and influential target groups				
Internal communications: meetings, presentations				
Promotion of project on partner websites				
Objective 2: Consultation and transparency of processes for market players and opportunities for investors				
Mailings , e-mailings (set up and maintain database and system or circulation of decisions, invitations)				
Website (calendar of events, consultation papers, directives, processes, etc)				
E-newsletter				
Media relations				
Publications: reports				
Consultations. Agree and publicize process and implement				
Visits to stakeholders				
Development of more detailed materials for electronic dissemination				
Objective 3: Informing about consumer rights and obligations				
Advertising • Radio, Newspapers, Magazines, Posters				
Direct mailing with bills				
E-newsletter, interested groups to be allowed subscribe				
Website. Prepare section (separate website) to explain energy market reforms and consumer rights and obligations				
Media relations • Press pack, Press releases, conferences, briefings/workshops, Interviews, Talk show ops				
Publications: leaflets and FAQs (also to be made available electronically				
Events: presentations to influencers, trade fairs				
Internal communications (meetings, presentations)				
TOTAL				

8.7 Monitoring and Evaluation

Monitoring and evaluation procedures will ensure thorough implementation of the Communications Strategy and can upon conclusion be used to draw lessons learnt for a follow-up strategy. In order to assess the effectiveness of performance,

evaluation should be carried out either internally or by an independent assessor. The following aspects need to be considered:

- Inputs (e.g. number of events organized in accordance with plan, number of press releases, etc.)
- Outputs (how well an activity is done, e.g. how well an event is organized in terms of number of attendants and the level of satisfaction, or the numbers of media who use the press releases
- Outcome (to what degree the activities have contributed to achieving communication objectives, such as increasing awareness, or transparency. This is less easy to measure, but effectively should all result in an effective regulatory system, good understanding of EU directives, the benefits of cost recovery through the tariffs, and consumer rights.

The following indicators will be used to monitor and evaluate the activities set out in the work plan.

Table 23: Key performance indicators

Activity	Key performance indicators
Advertising	Number of spots broadcast; Audience numbers; Number of advertisements/(paid) articles published; Audience number; Circulation; Readership.
Direct mailings	Availability of a well structured database, number of emails sent to groups, responses to these.
Internet/website	Number of web hits, number of downloads, frequency with which updated, Number of documents available on web, regularity of updates, evidence of usefulness of documents as demonstrated by online viewings and downloads Visual identity applied consistently in all communications Number of subscriptions to e-newsletter, number of e-newsletters sent out. Numbers of partner websites displaying project banners or links
Media relations	Number of press releases disseminated, Number of briefings, Number of interviews, quality of press pack. Amount and accuracy of media coverage, and of support for RES tariffs
Publications	Number of materials prepared and disseminated, interest in leaflets, availability online, compliance with visibility requirements.
Consultations	Number of events organized, numbers of participants, feedback, amount of agreement on strategy, amount of understanding of EU Directives relating to RES and the understanding of the benefits
Presentations	Number of events organized. Number of (appropriate) attendees, quality of presentations, use of branding in all materials. Interest and attendee satisfaction (evaluation forms). Number of influential partners and organizations met with and publicly supporting works of SEWRC, RES regimes
Internal communications	Number of meetings and presentations, number of employees invited, number of materials and info circulated, level of understanding of EU directives and stakeholders and public concerns.

8.8 Recommendations

There are six main categories of communications available to communication professionals to achieve these objectives and these are elaborated in more detail in this document. The two most important categories, particularly for a public agency, are:

- PR (in particular media relations and publications); and
- Electronic channels (website and newsletters).

In consideration of the limited resources that are likely to be available to the Commission in the short term, it is recommended that SEWRC act as a mediator and point of liaison for the public and those directly involved in the market development process by employing the following approach:

1. **Traditional Media**: The media has the widest reach and considerable credibility. For this reason, the following actions are proposed:
    - The organization of focused **Media Briefings** to explain developments and identify issues**;** rather than providing journalists with direct access to the meetings which are likely to grow adversarial between stakeholders debating issues the journalists will not necessarily understand.
    - The preparation of **Background Notes** and **Press Releases** to ensure that the role of SEWRC, the EU Directives and their implications, and the development of RES is explained in clear, accessible language highlighting in particular how this relates to the consumer.
    - The organization of regular **Information Workshops** (e.g. twice annually) in order to better inform the journalists of the issues the Commission is working on and progress made, in a quiet environment that enhances mutual understanding.
2. **Web Media**: Likewise, best practice in other countries indicates that the internet can be used to convey information in simple, easily accessible language at varying levels of detail to a wide range of users. **Factsheets**, **Leaflets**, and **Report Summaries** can all help explain developments using simple, accessible language and examples relevant to the reader.
3. **Consumer Focus Messaging:** Energy supply from RES is believed to give rise to a number of challenges. The target consumer is concerned that RES is less reliable; the technologies are new, relatively expensive and requiring incentives. It is important to develop a well understood consultation process, and tried and tested procedures – for example in developing clear transparent rules for connections and prioritization of investors.

In this five priorities are incorporated:

- *Simple information* in material available to journalists, to help them better understand the role of the Commission, the introduction of RES and how it works, and how tariffs are determined in the interest both of greater efficiency and also the reliability of the system.

- *Regular briefing* workshops for journalists to enable them to better understand the work of the Commission and the challenges it meets as it goes through its tasks.
- *Leaflets,* and FAQs in simple language, including on topics on why energy tariffs are going up. Distribution of such material can sometimes be problematic and material should be available electronically, and the Commission should consider development of a specific consumer-focused website or microsite (a dedicated area of the existing site) to provide a "one-stop shop" for such users.
- Greater *transparency of procedures* for investors, including summaries of larger and more significant documents on website (in the form of briefing papers and factsheets), to help orientate users and let them know in which directive or report they will find what kind of information.
- Preparation of *consumer-focused campaigns* to help them understand all aspects of RES, including support schemes, GO Certificates, etc.

APPENDIX A: DRAFT REGO ORDINANCE WITH RECOMMENDED CHANGES

Unofficial Translation from Bulgarian. Highlighted text is suggested additions.

DRAFT ORDINANCE ON THE ISSUE OF CERTIFICATES OF ORIGIN FOR EL. POWER GENERATED FROM RENEWABLE POWER SOURCES

Chapter One
GENERAL PROVISIONS

Art. 1. The present Ordinance regulates:
1. the conditions and order for issue of certificates of origin for el. power generated from renewable power sources (RES);
2. the form and content of certificates;
3. the conditions and order for enlisting in the Public Register, maintained in accordance with the Ordinance, of the circumstances subject to enlisting therein, and the way of obtaining information from the Register.

Art. 2. Certificates of origin are issued by the State Energy and Water Regulatory Commission (SEWRC), referred hereinafter as "the Commission", as official non-transferable documents verifying the producer, el. power quantity generated from renewable power sources, period of generation, power generation plant and its capacity.

Art. 3. Considered as generated from renewable power sources is only el. power for which a relevant certificate of origin has been issued. Where an electricity supplier is required to prove the share or quantity of renewable energy in its energy mix Certificates of Origin may be used. A guarantee of origin may only be used within twelve months of the production of the corresponding energy unit. REGO shall be cancelled upon its use so it cannot be used again.

Chapter Two
ISSUE AND INVALIDATION OF CERTIFICATES OF ORIGIN

Art. 4. (1) The producers of el. power from renewable power sources, whether subject to licensing under the Energy Law or not, shall be obliged to file a written application for the issue of a certificate of origin by the Commission within 10 working days after the expiry of the period for which the issue of certificate of origin is requested, following the model form given in Attachment N 1.

(2) The written application under para. (1) shall contain:
1. full name and data as per the personal identity document of physical persons, firm and BULSTAT/UIC code for legal persons and sole merchants, respectively;
2. location and name of the power generation plant;
3. el. power quantity for which a certificate of origin is requested;
4. the power source;
5. description of the power generation plant and the power generation technology;
6. total installed capacity of the power generation plant;
7. power of el. generation facilities generating power from RPS;
8. the period when el. power is generated and for which the issue of a certificate of origin is requested;
9. date of commissioning of the power generation plant;

10. number of the power generation license, if available;
11. other additional information related to the power generation process.

(3) The application under Para. 1 shall be accompanied by:
1. data on the generated power quantity by the separate facilities at the power plant;
2. in case of el. power generation in a plant utilizing diverse power sources – data verifying el. power quantity generated upon utilization of RPS;
3. copies of invoices issued upon the sale of the relevant el. power quantity;
4. a document for fee paid;
5. data on the location of trade metering appliances and recording control appliances;

(4) Data per para. 3, item 1-2 shall be submitted in a check up drawn after a model form approved by the Commission.

(5) Data per para. 2, items 2&9, as well as data per para. 3, item 5 shall be submitted only upon first filing of application on issue of certificate of origin.

(6) Upon occurrence of a change in data and circumstances per para. 5 the producer shall be obliged to notify the Commission in writing within 7 days from the occurrence of the change by applying thereabout the relevant evidence in writing.

(7) The producer of el. power from RPS shall file an application per para. 1 for each separate power plant operated by the producer.

Art. 5. (1) Filed applications and attachments thereto shall be checked in respect of compliance with the requirements of the Ordinance within 10 days after their receipt.

(2) In case the application or the attachments thereto prove incompliant with the requirements of the Ordinance, the applicant shall be notified in writing to rectify within 7-days period any irregularities thereof.

(3) In case no rectification of irregularities is committed within the period per para. 2, the correspondence shall be terminated by a resolution of the Chairman of the Commission.

Art. 6. (1) The Commission may check the circumstances related to the correspondence after an official order.

(2) Upon performance of the activity per para. 1 the governmental authorities, the power generation companies and officials shall be obliged to render to the Commission any assistance requested.

Art. 7. (1) In case of consideration of a power producer's application on the issue of a certificate of origin for the first time, the Commission shall take a decision within 30 days from the receipt of the application or from the rectification of any irregularities thereof in case the applicant is a licensed producer, and within two months' period in case the application is filed by a non-licensed producer.

(2) In the cases of considering each following application, the Commission shall take a decision within 30 days from the receipt of the application or from the rectification of any irregularities thereof.

(3) In case no meeting of the Commission is held within the times specified per para. 1&2 on any objective reasons, the decision shall be taken on the first coming meeting of the Commission.

Art. 8. (1) The Commission shall issue certificates of origin electronically on a register as provided for in Article 13. A paper copy of the certificate will also be issued after a model form in accordance with Attachment N2. The electronic form is the official form.

(2) One certificate is issued for el. power quantity generated from RPS within 12 months to producers of up to 1 MW power capacity included and 6 months to producers of power capacity over 1 MW. No more than one guarantee of origin shall be issued in respect of each unit of energy produced.

If, in any month, output falls short of one whole megawatt hour, this volume may be carried forward and added to the output data for the following month, for the purpose of determining the output in that month.

Art. 9. (1) The public provider and, respectively, the end consumers, till the issue of a certificate of origin, shall buy from the producers the entire el. power quantity declared as generated from RPS at preferential prices approved by the Commission.

(2) The conditions and order for execution of payments, including upon systematic or substantial deviations between quantities registered by a certificate of origin and quantities for which payments are made per Art. 1, shall be settled by the power purchase contracts.

Art. 10. The Commission shall reject issue of a certificate of origin in case:
1. data filed by the producer is incomplete, inaccurate or false;
2. in case of inconsistency with standard requirements on determining of the el. power quantity as generated from RPS.

Art. 11. (1) Certificates of origin shall contain the following compulsory requisites:
1. type of certificate;
2. unique number per MWh production containing the producer's registration number and the number in line of the issued certificate(s),;
3. authority having issued the certificate of origin;
4. date of issue, period of el. power generation;
5. el. power quantity generated from RPS;
6. technology of power generation from RPS;
7. power generation plant and its total installed capacity;
8. installed capacity of the power generation facilities;
9. name of the producer and BULSTAT/UIC code.
10. The energy source from which the energy was produced.
11. Whether and to what extent the installation has benefited from investment support and/or from Preferential Tariffs.
12. The date of the installation's becoming operational.
13. The country of issue (Bulgaria)

Art. 12. (1) The decision on the issue of a certificate of origin shall be annulled and the issued certificate invalidated on an initiative of the Commission in case a document or documents substituting base for issue are declared invalid by a competent authority, or in case the Commission proves that the holder of the certificate has filed false data having served as a base for issue of the certificate.

(2) The Commission may annul the decision on the issue and invalidate the certificate of origin within one year from the date of issue.

Chapter Three
CERTIFICATES OF ORIGIN REGISTER

Art. 13. The Commission shall establish, maintain and publish on its web site Certificates of Origin Register.

Art. 14. (1) The Certificates of Origin Register shall contain information about the producers, including name and location of the power plant, issued and invalidated certificates of origin.

(2) Enlisting in the Register shall be performed on the basis of the Commission's decisions.

(3) Enlisting of circumstances about the relevant producer shall be made on the basis of data contained in the documents submitted in front of the Commission or officially collected by the Commission.

(4) Enlisting shall be performed by officials appointed by the Chairman of the Commission.

Art. 15. (1) The State Energy and Water Regulatory Commission (SEWRC) shall enlist in the Certificates of Origin Register the producers generating el. power from RPS, their issued or invalidated certificates within five working days from the date of taking of the relevant decision.

(2) Any certificates issued in EU member states, recognized by SEWRC after the order of Chapter Four shall be also enlisted in the Certificates of Origin Register.

Chapter Four
MUTUAL RECOGNITION OF CERTIFICATES OF ORIGIN ISSUED IN EU MEMBER STATES

Art. 16. (1) The Commission shall recognize the certificates of origin issued in EU member states under the conditions of mutual recognition. The certificates of origin issued in an EU member state shall serve as an evidence on the fidelity of facts and circumstances proven thereby.

(2) Any rejection of the Commission to recognize certificates of origin per para. 1, including rejection on reasons related to avoiding of fraud, shall be based on objective, transparent and undiscriminating criteria upon proper substantiation.

(3) Upon enactment of a Commission's deed on rejection of recognition to certificates of origin the Commission will notify the European Commission of the refusal to recognize GO and its justification. The dispute may be brought in front of the European Commission. If the European Commission finds that a refusal to recognize a guarantee of origin is unfounded, the Commission will accept this decision and recognize the certificates of origin in question.

Art. 17. (1) Any person requesting recognition in R. Bulgaria to a certificate of origin issued in another EU member state shall file a written application which shall be considered by the Commission through correspondence.

(2) The application per Para. 1 shall be accompanied by a copy of the certificate of origin, its officially verified translation and data allowing identification of the applicant and the authority having issued the certificate, including data about their representatives and addresses for correspondence.

(3) Within one month the Commission shall perform an official check of the circumstances of correspondence by requesting information from the relevant authority having issued the certificate.

(4) The Commission shall take a decision within 10-days term after obtaining of information per para. 3.

ADDITIONAL PROVISION

Para. 1. The present Ordinance introduces the provisions of Directive 2001/77/EO of the European Parliament and the European Council dt. September 27th 2001 regarding promotion of the generation and consumption of el. power from RPS at the domestic el. power market.

TRANSITIONAL AND CONCLUSIVE PROVISIONS

Para. 2. The Commission shall issue and recognize certificates of origin for el. power quantities generated after January 01st 2008 from RPS.

Para. 3. The present Ordinance is issued on the grounds of Art. 19, para. 3 of the Law on renewable and alternative power sources and biofuels.

Attachment N 1 to Art. 4, para. 1

Incoming N ……./ the year of …….

TO

THE STATE ENERGY AND WATER REGULATORY COMMISSION

**APPLICATION
ON ISSUE OF CERTIFICATE OF ORIGIN
FOR ELECTRIC POWER GENERATED FROM RPS**

From ……..
(full name of physical person, or firm of legal person or sole merchant according to trade registration)

……
(permanent address of physical person, seat and address of management of legal person or sole merchant)

…….
(complete and punctual address for correspondence)

Identity document of physical person:
N …….
issued on …….. by …….
BULSTAT/UIC ……..……
IBAN …….. BIC-code ……..
at ……..…….. tel.: …….. fax: ……..…….
…….
e-mail ……..
represented by ……..…… (full name)
identity document: N …….
issued on ……. by ……..……
title: …….

Dear Mr. Chairman,

1. I am kindly requesting hereby on the grounds of Art. 4, para. 1 of the Ordinance on the issue of certificates of origin for el. power generated from RPS for the issue of Certificate of Origin to me as a producer of el. power from:

……
(please note whether the power is generated from RPS)

2. Location and name of the power generation plant:

……

3. El. power quantity generated from RPS:

……
……..……..

4. Period in which the el. power is generated:

……

…….
……
(the period shall be: for producers of el. power from RPS of capacity up to 1 MW – 12 months, for producers of el. power from RPS of capacity over 1 MW – 6 months)

5. Power source: ……..……..……..
……..……..……

6. Description of the power generation plant and process flow:
……..…….
……..…….

7. Total installed capacity of the power generation plant:
……..……..

8. Power of the facilities generating el. power from RPS:
……..……..

9. Date of power generation plant commissioning:
……..…….

10. Number of the power generation license, if any:
……..……

11. Detailed inventory of documents attached to the filed application:
……..……
……..

The undersigned ……..……..
declare hereby that the submitted information is true and accurate and that for the same el. power quantity no other certificate of origin has been issued. I am well aware of the fact that I am bearing responsibility for false data after Art. 33 of the Penalty Code.

I am binding myself hereby to submit all documents which the State Energy and Water Regulatory Commission may request additionally from me for the issue of the certificate of origin and its enlisting in the Certificates of Origin Register in accordance with the provisions of the law. I am binding myself to notify SEWRC within 7 days from the date of occurrence of any change in data and circumstances declared.

Date: ……. Signature: …… (seal)

The application is filled in on PC, typewriting machine or by hand in an eligible way. The documents submitted to SEWRC shall be provided in duplicate and verified by the person having representative authorities who has signed the application.

In case the power producer owns more than one power generation plant, the producer shall file separate applications for each one of them.

Data per items 2, 3 and 10 of the application shall be submitted only upon first filing of an application on the issue of certificate of origin, or within 7 days after occurrence of a change in circumstances.

Each application shall be accompanied by:

1. data on the generated power quantity from the separate facilities at the production power plant;
2. data verifying el. power quantity generated upon utilization of RPS (in case of el. power generation at a plant utilizing diverse power sources);
3. copies of invoices issued upon the sale of the relevant el. power quantity;
4. a document for fee paid;

The data per items 1&2 shall be submitted in the scope and form according to a model form approved by the Commission.

Attachment N 2 to Art. 8, para. 1

On the grounds of Art. 19, para. 3 of the Law on renewable and alternative power sources and bio fuels (promulgated in the State Gazette, issue 49 dt. 19.06.2007), Art. 8 of the Ordinance on the issue of certificates of origin for el. power generated from RPS and Commission's Decision N …….. dt. ……..

The State Energy and Water Regulatory Commission
issues

CERTIFICATE OF ORIGIN
for el. power generated from RPS
N……. to N……. ./dt.

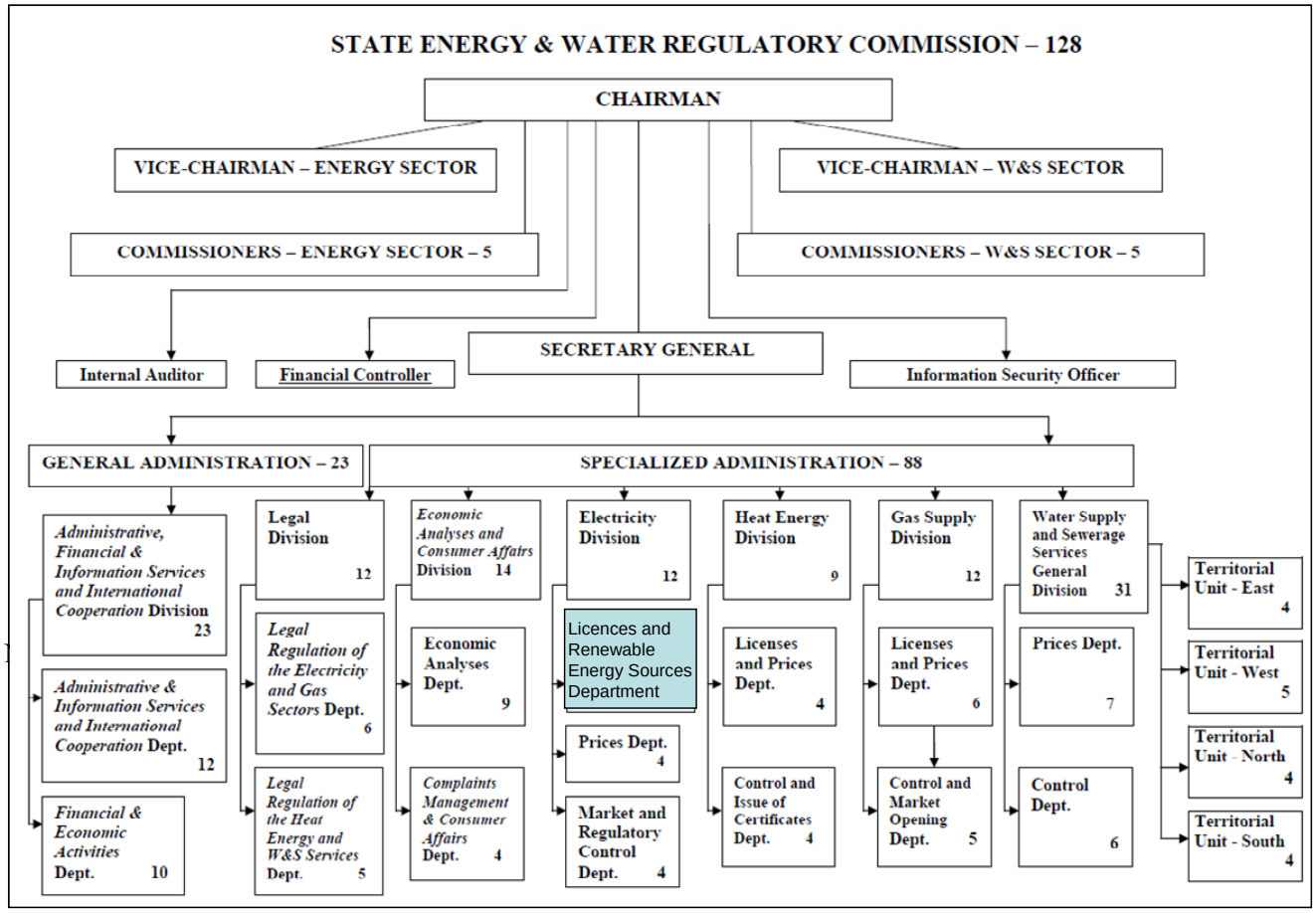
to ……
……..
……
(full name and address of physical person, or firm, seat, address of management and BULSTAT/UIC for merchants)

for el. power ……. MWh, generated from RPS from…….
till…….. (period of production) through (technology and energy source of el. power generation by ……..…. (el. power plant),
location ……. of total installed capacity …….. MW and
installed capacity of facilities generating el. power from RPS …..……. Mw. The date of the installation's becoming operational. Whether and to what extent the installation has benefited from investment support and/or from Preferential Tariffs.

Chairman
of the State Energy and Water Regulatory Commission
Secretary General of State Energy and Water Regulatory Commission

The country of issue (Bulgaria)

APPENDIX B: SEWRC ORGANIZATION CHART



APPENDIX C: EU REGULATORY AGENCIES STAFF NUMBERS AND BUDGETS

Country	Population (M)	IC(GW)	Regulator	Electricity/gas	Staff '04 ('06)	Budget 2004	Funding
Austria	8.18	15.33	E-Control	E,G	61(65)	€ 8M	Tariffs
Belgium (federal)	10.42	13.77[39]	CREG	E,G	35 (64)	€ 13.2M[40]	State levy
Bulgaria	7.74	11.17	SEWRC	E,G	65*	n/a	State budget; licensing fee
Czech Republic	10.21	16.26	ERU	E,G, other	90 (99[41])	€ 4M	State budget
Denmark	5.4	13.34	DEASB	E,G, other	30 (35)	DKK 29.4 M	Licensing fees
Finland	5.23	15.83	EMA	E,G	16 (36)[42]	€ 1.5M	State budget; licensing fee
France	62.18	112.02	CRE	E,G	80 (126)	€ 9M	State budget
Greece	11.06	12.60	RAE	E,G	50 (55)	n/a	Licensing fees
Hungary	10.09	8.58	HEO	E,G, other	90 (94)	€ 6M	State budget; licensing fee
Ireland	4.06	7.14[43]	CER	E,G	39 (56)	€ 8M	Licensing fees
Italy	58.13	93.6[44]	AEEG	E,G	86 (133)	€ 18M	State budget; licensing fees
The Netherlands	16.27	21,8	DTE	E,G	55 (70[45])	€ 9M	Ministry; license fees
Poland	38.16	30.85	URE	E,G	284 (282)	€ 15M	State budget; licensing fees
Portugal	10.52	14.7[46]	ERSE	E,G	50 (60)	€ 4M	Tariffs
Romania	21.63	19.74	ANRE	E,G	n/a (219)	n/a	Licensing fees; other
Slovenia[47]	2.0	3.04	AGEN-RS	E,G, other	(38)	€2.36M	Tariffs on use of networks
Spain	42.69	83.04[48]	CNE	E,G	153 (210[49])	€27.8 M[50]	Tariffs

[39] CREG, Annual report 2008, p. 50.
[40] CREG, Annual report 2008, p. 15.
[41] ERU, Annual Report 2008, p. 79.
[42] EMV, Annual Report, 2008, p. 4.
[43] CER, Annual Report 2008, p. 14.
[44] AEEG, Annual Report 2008, p. 78.
[45] DTE, http://www.dte.nl/engels/about_ek/index.asp
[46] ERSE website, http://www.erse.pt/pt/electricidade/factosenumeros/Paginas/SEProdPotInstSEN.aspx
[47] AGE-RS, Annual Report 2008.
[48] Spanish Regulator Annual Report to the European Commission, 2007, p. 125
[49] CNE, Annual Report 2007, p. 234
[50] CNE, Annual Report 2007.

Country	Population (M)	IC(GW)	Regulator	Electricity/gas	Staff '04 ('06)	Budget 2004	Funding
Sweden	8.99	32.48	STEM	E,G	34 (60)	€ 2.5M	Ministry
Turkey	70.8	38.84	EMRA	E,G	290 (313)	€ 25M	Licensing fees
UK	59.84	78.71	Ofgem	E,G	320 (310)[51]	€ 54M[52]	Licensing fees

Sources - EURELECTRIC Position Paper on the European Commission's proposal for a new EU Directive on the promotion of the use of energy from renewable sources, Energy Information Administration -International Energy Annual 2006, www.iern.net

* Estimate of energy related staff, calculated as all specialist staff dedicated to energy (33) + ½ of generic and support staff.

[51] OFGEM Annual Report 2008-2009, p. 36.
[52] OFGEM, Annual Report 2008-2009, p 37.

APPENDIX D: WORKSHOP OVERVIEW

Staff training through knowledge and skills transfer is crucial in the sustainable development of SEWRC and the promotion of RES.

Three training workshops were prepared and delivered to SEWRC staff (and other stakeholders where appropriate), providing necessary background knowledge for staff to be able to work with the new schemes developed under this project. In parallel, discussions were held on task- and project-specific issues.

Workshop 1 (10 November 2008)

The first training workshop on renewable energy support mechanisms was held on 10 November 2008 in Sofia and followed up with a series of conversations with stakeholders on 11 November.

The first training workshop presented international best practice in RES support schemes to give SEWRC staff an overview of available tools and facilitated discussion on most adequate solutions in the Bulgarian context. Staff and stakeholders were consulted on their opinions, views and expectations of the forthcoming project. The ultimate aim was to select one overall feasible scheme.

Despite a feed-in tariff that offers significant support being in place, investor confidence in the Bulgarian renewable energy sector is still relatively low, although investors are potentially interested in developing a large number of projects (as evidenced by the very large number of connection applications for new wind projects in particular). The workshop discussed the factors that were currently preventing investors from proceeding to the investment stage.

The workshop confirmed that the feed-in tariff mechanism remains the most appropriate choice for Bulgaria where the competitive market is not highly developed and investors are likely to require the level of security offered by a feed-in tariff in order to proceed.

Positive feedback from participants in the market strongly suggested that the tariff level was considered to be adequate. However, a number of key issues were raised that required more detailed attention:

- **Annual tariff adjustment rate**

  The support element of the tariff level can be adjusted downwards at a rate of 5% every year. Over 20 years, the payment levels can therefore potentially decrease significantly and hence this imposes a major risk factor for investors who are potentially financing their investment using long term loans.

- **Exchange rate risk**

  The Bulgarian feed-in tariff is paid in Bulgarian leva (BGN). Long-term loans and project costs are primarily in Euros. This situation is a high risk potential to investors due to exchange rate volatility. Although Bulgaria operates a Currency Board charged with closely shadowing the Euro rate and the structure of this Board means that there is little short term risk of devaluation there remains a long term risk that the "peg" will prove unsustainable due to macroeconomic factors and this obviously represents a risk for lenders and investors alike.

- **Connection issues**

  Network Operators (TSO and DNOs) are seen as having little incentive to connect new sites in a timely manner. Furthermore, the process for managing the queue of generators waiting to connect was seen as opaque, and not well understood. Delays in grid connection are seen as a major risk for developers and investors and the explosion in applications for grid connections by potential developers has made this much worse to the point that the management of the connection queue dominates the development of projects.

  The feed-in tariff has a significant impact on costs in those areas of Bulgaria which are most favorable to wind power. There is an obligation on the regional companies to buy renewables in their region and recover the cost from consumers in their region and this has the potential for a disproportionate impact on some areas. Due to differences in the renewable resource, a cost equalization mechanism between the different regions is necessary.

Table 24: Attendees for Workshop 1

Name	Organization	Position
Plamen Dentchev	SEWRC	Member of the Commission
Stefcho Nachev	SEWRC	Director, Electricity Power Division
Ekaterina Istatkova	SEWRC	HoD Economic analysis Economic analysis and customer relation
Stefan Simeonov	SEWRC	State expert Economic analysis
Daniela Mitrova	SEWRC	Chief expert, tariffs Dept, electric power division
Mladena Miteva	SEWRC	Chief expert, tariffs Dept, electric power division
Venelin Barosov	SEWRC	Electric Power Division
Victoria Dzhermanova	SEWRC	State expert EU
Velizar Kiriakov	Ass. Of producers of Ecological Energy	President
Boris Bakalov	Eolica	Project manager
Ken Lefkowitz	New Europe Corporate Advisory	MD
Teodor Bobochikov	AES	General Manager
Georgi Georgiev	ECO New Energy	Project Development manager

Workshop 2 (24 February 2009)

The second training workshop was held on 24 February 2009 in Sofia.

The workshop covered procedures and methodology of pricing electricity from RES. Tariff methodologies are complex and the goal of this workshop was to provide background knowledge to relevant staff to enable effective implementation and administration of the tariff system. As with the first workshop, this was followed by discussions with key staff and relevant stakeholders to obtain feedback.

Attendees included representatives from the system operator ESO, distribution companies (CEZ Bulgaria, EVN Bulgaria), the transmission system owner NEK, and the Ministry of Economy and Energy.

During the second workshop SEWRC indicated that it was close to agreeing a nationwide equalization system through the pricing ordinance. The proposals were subsequently examined; comments were made and discussed with SEWRC.

SEWRC also asked for some feedback on the extent that exported electricity prices should include green electricity costs, and additional information on this was incorporated in Section 3.

There was also extensive discussion of the Euro to Lev exchange rate issue raised at the first workshop. It was generally viewed as undesirable to change to a Euro-linked system for a number of reasons. In particular, it would be difficult to accommodate such a change under the current legislation, and there was a perceived risk that any large shift in the relative values could lead to budgeting issues. The general view from SEWRC was that the risk was better covered by investors and appropriately compensated in the preferential price.

There were mixed views on the appropriateness of long-term contracts for purchase of renewable energy which would in effect fix the revenue stream for the life of the project. This would be a significant departure from the current Bulgarian system of annual reviews for all renewable plant which places both market and regulatory risk on the project. Still, introducing long-term contracts was suggested as a worthwhile undertaking, given that this would result in a more bankable system and would also reduce the risk of overcompensation that exists in the current model. This would require a significant legislative change, and so is out of the direct influence of SEWRC.

Table 25: Attendees for Workshop 2

Name	Organization
Iliana Angelova	EVN Bulgaria
Velko Kurshumov	EVN Bulgaria
Stefan Ivanov	CEZ Bulgaria
Ognyan Nechev	CEZ Bulgaria
Damian Hristov	NEK
Elisabeta Mihailova	Ministry of Economy and Energy

Name	Organization
Maria Minova	Ministry of Economy and Energy
Elena Marinova	SEWRC
Lilia Ivanova	NEK
Mihail Stoykov	NEK
Vensislav Markov	NEK
Lubomir Lubenov	ESO
Aneta Ivanova	ESO
Ekaterina Shivacheva	SEWRC
Lili Mladenova	SEWRC
Stefen Simeonov	SEWRC
Maria Evtimova	SEWRC
Stefan Sulakov	ESO
Nikolay Chavdarov	ESO
Venelin Barosov	SEWRC
Irena Blizhaska	SEWRC
Emilia Jeliazkova	ESO
Dimiter Deynov	ESO
Nikolai Iliev	ESO
Mladena Miteva	SEWRC
Daniela Mitrova	SEWRC
Zdravka Zheleva	SEWRC
Stefcho Georgiev Nachev	SEWRC
Ivan Dimitrov Dimitrov	NEC
Marin Alexandrov Mermershi	NEC
Mariana Zhekova	SEWRC
Plamen Denchev	SEWRC
Dimiter Slaveikov	CEZ Bulgaria

Name	Organization
Victoria Jermanova	SEWRC

Workshop 3 (30 June 2009)

The third and final training workshop was held on 30 June 2009 in Sofia, followed by a series of conversations with SEWRC on July 1. In contrast to the previous two workshops which had included stakeholders the final workshop was much more forward looking and was restricted to internal SEWRC staff.

This workshop on proposed guidelines and rules of support for RES in Bulgaria served as a round-up workshop, introducing SEWRC staff to the REGO scheme, capacity report, communications plan and more information on the tariff methodology, particularly taking into account new developments with the Renewables Directive 2009/28/EC.

The discussions at the workshop were primarily driven by the remaining tasks of the project – the communications strategy and the organizational review. In addition, Directive 2009/28/EC, which was published 5 June 2009, also formed an important part of the background discussions. It was recognized that the new Directive will place significant demands on SEWRC and that these needed to be taken into account in the development of the programs. The developments of the REGO were discussed in light of the new directive, analyzing the extent to which the existing drafting conflicted with, or was incompatible with, the Directive. The recommended changes to the Ordinance are set out in the section of the report on REGO. There are a number of areas where SEWRC will need to work with the Ministry of Economy and Energy to make changes to the law.

The discussion focused on the potential of expanding the coverage to include renewable heat as this is likely to be required for Bulgaria to meet its international obligations. This covered both the potential design of a support mechanism for renewable heat and the analysis of the existing legislation as well as its compatibility with the requirements – making recommendations regarding the changes that would be required.

Table 26: Attendees for Workshop 3

Name	Position
Stefan Nachev	Director, electric energy
Martin Bonchev	Senior expert, electric energy
Venelin Barosov	Senior expert, electric energy
Maria Evtimova	Head of division, electric energy
Toma Giortchev	Member of the commission
Stefan Simeonov	Expert IARP
Lezia Mladenova	Expert IARP
Plamen Denchev	Member of the commission

Name	Position
Mladena Miteva	Senior expert, electric energy
Daniela Mitrova	Senior expert, electric energy
Victoria Jermanova	Expert, international relations
Mariano Sotirova	Senior expert, heat energy
Georgi Petrov	Expert, heat energy
Yuliana Angelova	Expert , heat energy
Maria Tsocheva	Legal expert
Yani Ouzounov	Senior expert, public relations