

Situation in the twelve New Member States with regard to tracking and related policies

D3 of WP 3 from the E-TRACK II project

**A report prepared as part of the EIE project
„A European Tracking System for Electricity – Phase II
(E-TRACK II)”**

February 2009

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Supported by

Intelligent Energy  **Europe**

The project "A European Tracking System for Electricity – Phase II (E-TRACK II)" is supported by the European Commission through the IEE programme (contract no. EIE/07/102//SI2.467611).

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Acknowledgement/Preface

It would not have been possible to gather the wide ranging information on tracking related policies to such a high level of detail for 12 New Member States without the help and support of the E-TRACK II project partners and their contacts throughout Europe. The following people are gratefully acknowledged for their help and contributions:

Christina Heilig and Helmut Sprongl (E-CONTROL) on Hungary
Thomas Bouquet (COGEN) on Bulgaria, Cyprus and Romania
Christof Timpe (OEKO)
Inga Konstantinaviciute (LEI), on Estonia, Latvia, Lithuania and Malta
Tamás Tóth (Hungarian Energy Office) on Hungary
Mark Draeck (IT Power) – survey of tracking policies in EU

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List of abbreviations

AGEN-RS	Energy Agency of the Republic of Slovenia
CHP	Combined Heat and Power (Cogeneration)
CHP Directive	Directive 2004/8/EC (11 February 2004) on the promotion of cogeneration based on a useful heat demand in the internal energy market
CHP-E	High Efficiency Cogeneration
CHP-GO	Guarantee of Origin for Combined Heat and Power
EC	European Commission
EU	European Union
EU-15	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom
EU-12	Malta, Cyprus, Slovenia, Estonia, Latvia, Lithuania, Poland, the Czech Republic, Slovakia, and Hungary (who joined the EU in 2004), and Romania and Bulgaria (who joined in 2007), also referred to as New Member States (NMS)
GO	Guarantee of Origin (certifying the renewable origin of electricity or heat)
IB	Issuing Body
MS	Member State
MW	Megawatt (electricity generation capacity)
MWh	Megawatt hour (electricity generation)
NA	Not available
NAP	Not applicable
RE	Renewable Energy
RE-GO	Guarantee of Origin for Renewable Energy
RES Directive	Directive 2001/77/EC (27 September 2001) on the promotion of electricity produced from renewable energy sources in the internal electricity market
RES-E	Electricity from renewable energy sources

1 Introduction

The legislation system in EU is based on directives, which have to be implemented in national legislation as primary legislation or secondary legislation. Internal electricity market is covered with three Directives, where the:

- The requirements for disclosure is found in Directive 2003/54/EC concerning common rules for the internal market in electricity and repealing Directive 96/92/EC of 26 June 2003,
- The requirements for electricity from renewable energy sources is found in Directive 2001/77/EC of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market,
- the requirements for electricity from high efficiency cogeneration in the Directive 2004/8/EC of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC.

These three European Directives currently dictated policies on disclosure, RE-GO and CHP-GO.

The Disclosure Directive includes provisions on what Member States (MS) should do to provide electricity consumers with relevant information on the electricity product they are buying, and had to be implemented by MS into national legislation by July 2004.

The RES Directive was adopted in 2001 and had to be implemented by October 2003 by the EU-15 MS.

The CHP Directive entered into force in February 2004. It was scheduled that MS had to adopt the directive by 21 February 2006, however due to delays resulting out of the Comitology process the deadline for MS to adopt the first obligations of the directive was moved to 6 August 2007. Only a few MS have met this deadline, and the Comitology process is currently still ongoing, i.e. the guidelines for the calculation of high-efficient CHP are still not published.

These three Directives form the legal framework by which tracking related policies are currently shaped. How the Directive's requirements are carrying out in New Member States (NMS) depend on existing economic, regulatory and legislative framework. The Treaty Concerning the Accession of the NMS (12) defined the target under Directive 2001/77/EC as increasing the share of electricity produced from renewable energy sources. Target for each country was defined in Official Journal of the European Union L 236, Volume 46, 23 September 2003 for Bulgaria and Romania in L 363, 20 December 2006.

1.1 EU-12 Countries and specialities of their energy markets

EU-12 countries are EU Member States that joined the Union in the third millennium, i.e. after the year 2000. These countries are given in Table 1.

Table 1: General data on EU-12 countries

Country	Population in 2008	Area (km ²)	Capital	Currency	EU Member since
Bulgaria	7,640,238	110,910	Sofia	Lev	1 January 2007
Cyprus	794,600	9,251	Nicosia	Euro	1 May 2004
Czech Republic	10,424,926	78,866	Prague	Czech koruna	1 May 2004
Estonia	1,340,602	45,227	Tallinn	Estonian kroon	1 May 2004
Hungary	10,041,000	93,030	Budapest	Forint	1 May 2004
Latvia	2,270,700	64,589	Riga	Lats	1 May 2004
Lithuania	3,369,600	65,200	Vilnius	Litas	1 May 2004
Malta	419,285	316	Valletta	Euro	1 May 2004
Poland	38,116,000	312,679	Warsaw	Złoty	1 May 2004
Romania	22,246,862	238,391	Bucharest	Leu	1 January 2007
Slovakia	5,379,455	49,035	Bratislava	Slovak koruna	1 May 2004
Slovenia	2,023,358	20,273	Ljubljana	Euro	1 May 2004

Source: Wikipedia

Most of the EU-12 countries lie in the Eastern part of Europe. 10 of them, i.e. all countries except Malta and Cyprus, emerged from the former socialist block. Many of them faced disintegration of former larger countries (Yugoslavia, Czechoslovakia and Soviet Union). The transition from socialist to capitalist system, as well as lost of Comecon-markets in former larger states, caused severe economic problems in most of these countries in 1990s.

Many of former socialist communist countries of EU-12 had before economic transition power systems that were not prepared for the changes. Due to the policy of social electricity tariffs in socialist countries many of these power systems were not properly maintained or consisted of generation facility that were not acceptable for EU standards. Such plants were many coal fired units not equipped with any desulphurisation facilities or old Soviet style nuclear units. Some systems also have problems because they were designed as a part of much larger system of former countries, so their generation units are too large for relatively small systems of new countries. Such examples are for instance Lithuania and Slovenia, which have very large nuclear units, designed to serve much larger systems of former Soviet Union and Yugoslavia.

Power systems have been developed to assist the socialist heavy industry. This resulted in the above mentioned big size of generation units, but also in electricity prices kept

deliberately low, and thus in no motivation for energy efficiency. (The potential in EE is very high in these countries; still there is no political cognition of it)

The energy intensity in these countries is at least twice of the EU-average.

The energy mix (excluding hydro) includes only a very minor share of renewables.

Modern renewable energy technologies are not well known, renewable energy potentials are not assessed, the transposition of EU regulation e.g. concerning subsidies for RES has thus often non-expected results. In Hungary a cap on wind energy production of 330 MW was imposed after the TSO noticed that the demand for wind turbines would by far exceed its possibilities for grid regulation.

Also the conservative thinking of engineers (energy systems have to be centralised) hinders the spreading of decentralised RES.

Market liberalisation is legally fulfilled but that doesn't mean that there is a functioning competition in these markets. Countries have found special ways of adjusting to the regulations with maintaining a high level of state influence.

Main characteristics (<http://www.agreenet.info/?project-detail&id=540>)

- Increasing oligopolies on the liberalised markets (incumbent operators, often state-owned, still predominate, and are often helped to become national champions, or when firms are privatised they tend to be bought by the 'European giants' (e.g. E.ON, RWE, EDF)
- Inadequate regulation (no unbundling, no support for RES and EE) A consistent lack of effective unbundling, weaknesses and lack of independence amongst regulators, and limited or non-existent support schemes and enabling rules for renewables and energy efficiency;
- False pricing (due to prices kept low the liberalisation will lead to an increase of electricity prices, contrary to the aim of achieving price decreases through competition) very long-term power purchase deals in the generation sector, and retail sector political price fixing that is not cost-reflective
- Forgotten environment: The challenges and opportunities for energy efficiency and renewables as responses to climate change and security of supply generally are not being realised.

1.2 Assessment of market opening in EU-12 countries

All Member States including new member states have met the deadline of 1 July 2007 for full opening of electricity markets. Restrictions to free and fair competition have, however, developed through the coexistence of open market segments and end-user supply price regulation.

Ten EU-12 countries became full members of EU in May 2004, and Bulgaria and Romania in January 2007. More than four years after the deadline of July 2004 for implementation the requirements from Directive in some of ten New Member States have still not implemented the legal requirements of the Electricity Directives, where the disclosure, the guarantee of origin for RES and CHP are required. This concerns in particular core areas of market liberalisation, such as regulatory oversight, unbundling and regulated supply tariffs as well as the communication of Public Service Obligations.

The European Regulator's Group for Electricity and Gas (EREG) is an Advisory Group of independent national regulatory authorities, where all the New Member States are involved. There they voluntarily cooperate to facilitate the creation of single, competitive, efficient and sustainable internal market for electricity and gas. Its Members are the heads of the national energy regulatory authorities in the 27 EU Member States.

From [5] it can be seen that all electricity markets in EU-12 countries are not yet fully open. Table 2 shows an overview of market opening in these countries, expressed as a volume percentage of liberalised market versus total national consumption.

Table 2: Market opening as a percentage of total consumption in new EU Member States

New Member State	Market opening in 2006	Market opening on 1 July 2007
Bulgaria	100,00%	100,00%
Czech Republic	100,00%	100,00%
Cyprus	30,20%	30,20%
Estonia	13,00%	13,00%
Hungary	67,00%	100,00%
Latvia	NAP	100,00%
Lithuania	74 % ¹	100,00%
Malta	0,00%	0,00%
Poland	80,00%	100,00%
Romania	83,50%	100,00%
Slovakia	80,00%	100,00%

¹ source <http://www.regula.lt/index.php?1756138912> Annual Reports 2006 of National Control Commission for Prices and Energy

Slovenia	75,00%	100,00%
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Source: European Commission

From Table 2 it is evident that even after 1 July 2007 not all EU-12 countries have fully liberalised markets. Table 3 shows how electricity markets in EU-12 countries were fully opening with time.

Table 3: Electricity market opening new in EU Member States

Electricity and gas markets opened before 1 July 2007	Electricity and gas markets open on 1 July 2007	Derogations on electricity market opening
Czech Republic	Bulgaria	Cyprus - until 2013
	Hungary	Estonia - until 2013
	Poland	Malta - permanently
	Romania	
	Slovenia	
	Slovakia	
	Latvia	
	Lithuania	

Source: European Commission

From Table 3 one can see that only Czech market fully opened before 1 July 2007 and that in two EU-12 countries electricity market will be opened only in 2013, while in Malta there will be no liberalized market at all. The countries with derogations, i.e. Cyprus, Estonia and Malta, are very specific regarding supply with electricity, either because of the structure of their generation sector that to a high degree relies upon a unique fuel (oil shale in Estonia) or because of the location on relatively remote islands (Cyprus and Malta). Bulgaria, Hungary, Poland, Romania, Slovenia, Slovakia, Latvia and Lithuania fully opened their electricity markets on 1 July 2007 as required by the Electricity Directive. A lack of experiences with the open market is common to all EU-12.

In EU-15 the electricity markets were opened before 1 July 2007 in the following countries: Austria, Belgium, Denmark, Finland, Germany, Ireland, The Netherlands, Portugal, Spain, Sweden and United Kingdom.

France, Greece, Italy and Luxembourg opened their electricity markets on 1 July 2007. The stakeholders in these countries have much more experiences with the liberalised market than in EU-12.

Still it has to be stated that the liberalised markets are not necessarily also well functioning markets. In the Central-Eastern-European (CEE) markets there are major obstacles that hinder the real market operation:

- high degree of State control of the energy sector
- high market concentration by European energy giants
- Lack of effective unbundling, including full ownership unbundling
- Weakness and the non-independent functioning of regulatory bodies
- The establishment of “national champions”
- Long term power purchase agreements (Àmon et. al. 2008, p. 5.)

1.3 Annual Switching Rate Electricity 2006

Regulation in the new member states shows inadequate compliance in areas of core relevance for the development of liquid markets such as transparency and primary capacity allocation. Special insufficiency is reporting on market indicators which are Member States responsibility. Only 30 % of national regulators can indicate the switching rates for the groups of industry, small and medium businesses and households.

Electricity switching is at a high level in the Czech Republic. In most other countries, the annual switching rate for households is about 1% or below. While the rates of switching for larger customers continue to rise, most small business customers and households still have limited scope to exercise their right to choose. Switching rates are not the only indicator of functioning competition in retail markets. Often competing offers are unavailable or are too similar to amount to a real choice. Member States and national regulators must ensure that transparent and simple switching procedures exist, to give customers the confidence they need. Moreover, retail competition is distorted by regulated supply tariffs.

The annual switching rates 2006 by volume in EU-12 countries are shown in Table 4.

Table 4: Annual switching rates in 2006 in EU-12 countries

New Member State	Annual Switching Rate Electricity 2006		
	large industrial	medium sized industrial and businesses	small industry and households
Bulgaria	NA	NA	NA
Cyprus*	0 %	0%	NA
Czech Republic	4 %	2 %	0,2 %
Estonia	NA	0 %	0 %

Hungary	NA	NA	NA
Latvia	NA	NA	NA
Lithuania	NA	0 %	0 %
Malta	NA	NA	NA
Poland	15,84 %	0,01 %	0 %
Romania	NA	NA	NA
Slovakia	NA	NA	NAP
Slovenia	0 %	1,18 %	46 %**

Source: European Commission

Comments to Table 4:

* Derogation. No switching procedures are as yet into force because there are no IPPs (the switching procedure/changing supplier is not an option at the moment).

** 1, 95% total eligible customers at distribution level (households excluded) including medium and small sized industry.

Where no data is currently unavailable, this appears in tables as follows: "NA" (not available) or in the case the data is not applicable for the abbreviation: "NAP" (not applicable).

1.4 Price controls in New Member States

One of the criteria of the status of market opening is an existence of price controls in NMS too. For the year 2006 and 2007 the data are shown in Table 5.

Table 5: Price controls in EU-12 countries

New Member State	Existence of electricity price controls 2006 and 2007		
	Regulated tariffs – industrial users	Regulated tariffs – small commercial users	Regulated tariffs – households
Cyprus	Y	Y	Y
Czech Republic	N	N	Y
Estonia	Y	Y	Y
Hungary	Y	Y	Y
Latvia	Y	Y	Y

Lithuania	Y	Y	Y
Malta	Y	Y	Y
Poland	Y	Y	Y
Slovakia	N	N	Y
Slovenia	N	N	Y

Source: European Commission

Regulated tariffs for industrial and commercial users are in place in Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta and Poland while in Czech Republic, Slovakia and Slovenia such regulated tariffs do not exist.

Regulated tariffs for household consumers are present in all EU-12 countries.

The data for Bulgaria and Romania were not available.

The negative effects of regulated energy prices remain a major concern. They lead immediately to a distortion of competition and reduce liquidity in wholesale markets. In the long run, regulated prices give wrong price signals to investors and thus have a negative impact on the development of new infrastructure. By setting a price level that does not allow new entrants to supply at cost-covering prices, price regulation creates a market entry barrier for alternative suppliers and thus directly threatens security of supply.

1.5 Degree of market concentration

The measure of the size of firms in relationship to the industry and an indicator of the amount of competition among them is the Herfindahl index also known as Herfindahl-Hirschman Index or HHI applied in competition law and antitrust legislation. It is defined as the sum of the squares of the market shares of each individual firm: i.e. the average market share, weighted by market share. As such, it can range from 0 to 10,000 moving from a very large amount of very small firms to a single monopolistic producer. Decreases in the Herfindahl index generally indicate a loss of market power and an increase in competition, whereas increases imply the opposite.

The market structures in New Member States on national scale are still very concentrated. Between 2005 and mid-2007, the number of independent suppliers on the electricity market increased in 40% of the Member States where data was available. The available data are shown in Table 6.

Table 6: Market concentration in EU-12 countries in 2006

Concentration	Electricity (generation)
Very highly concentrated [HHI above	Latvia, Slovakia, Slovenia

5000]	
Highly concentrated [HHI above 1800 - 5000]	Lithuania, Hungary, Romania
Moderately concentrated [HHI above 700 - 1800]	Cyprus, Poland,

Source: European Commission

Remarks:

Data for Estonia and Czech Republic were not available.

Bulgaria and Romania were not in EU in 2006.

Very highly concentrated wholesale markets, where HHI of the dominant generation company is above 5000, are in Latvia, Slovakia and Slovenia. Highly concentrated with HHI between 1800 and 5000 are generation markets in Lithuania, Hungary and Romania. Moderately concentrated electricity markets with HHI between 750 and 1800 are in Cyprus and Poland, although in Cyprus there are no independent suppliers.

There might be that some changes occurred since 2006. For example in Slovenia in 2007 a new generation company was formed that took over generation facilities previously owned and operated by the dominant generation company. This change resulted in reduction of HHI of the dominant market player to the range between 1800 and 5000.

Entry of new producers to the supply portfolio remains crucial for both competition and security of supply. Governments, national regulators and competition authorities should actively create a framework that forces competitive behaviors where it is not expected to develop from market structures, e.g. via capacity release and strict transparency requirements.

The high market concentration should be explained.

- 1) high level of state control in the energy sector (e.g. MVM in Hungary, 67% state share in CEZ, 97% state control of the electricity sector in Slovenia) (see chapter “3.1 State control” of Àmon et al. 2008)
- 2) if privatisation took part, the “European giants” (EDF, E.ON, RWE, ...) control the market (see chapter “3.2 market concentration” of Àmon et al 2008)
- 3) national champions: many CEE governments try to build up a national and regional champion, e.g. CEZ in CZ, or HSE in SI, PEG in PL (or MOL is the gas sector in HU). While governments are doing efforts in backing these companies, less efforts are done for enabling real competition (see chapter “3.5 Made in CEE” of Àmon et al 2008)
- 4) increasing mergers and acquisitions in the energy sector

1.6 Average Hourly Labour Costs

Very interesting data are the Average Hourly Labour Costs (EUR/h) calculating for full-time employees in enterprises with 10 or more employees in industry and services. For EU 27 the costs are 20,35 EUR/h for year 2006. Table 7 shows average hourly labour costs in all EU-12 countries.

Table 7: Average hourly labour costs in EU-12 countries

New Member States	Average Hourly Labour Costs [EUR/h]
Bulgaria	1,65
Czech Republic	7,14
Estonia	5,50
Cyprus	11,98
Latvia	3,41
Lithuania	4,21
Hungary	6,34
Malta	8,69
Poland	6,03
Romania	2,68
Slovakia	5,33
Slovenia	11,29

Source: European Commission

Reliable energy services at acceptable prices for both industrial and household users continue to be a key factor in social and economic development. A well-functioning internal energy market is essential if all three of Europe's energy challenges of competitiveness, sustainability and security of supply are to be met. A big difference in the average hourly labour cost is another key factor which cause the lack of interesting about electricity attributes by customers.

The relevance of energy to Europe's growth and competitiveness is steadily increasing.

1.7 Gross Domestic Product

Gross Domestic Product (GDP) is the most frequently measure used for the overall size of an economy. It corresponds to the total monetary value of all production activity in a certain geographic area or county. The final result of the production activity of all producer units within certain country is GDP at market prices, no matter whether the units are owned by nationals or by foreigners.

GDP and particular GDP per capita is one of the main indicators used for economic analysis.

An analysis of the economy of different countries can be made by studying GDP per capita. With such approach there are removed the influence of the absolute size of the population.

In the [4] a range of data can be found for all European countries. Development of GDP per capita for the period 1997-2006 for EU-12 countries is shown in Table 8, where GDP/capita in each EU-12 country is shown as a relative value with reference to the average GDP/capita value for all 27 EU Member States.

Table 8: GDP development in EU-12 countries in the period 1997-2006

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	GDP per capita 2006 (EUR/capita)
U-27	100	100	100	100	100	100	100	100	100	100	23,500
Bulgaria	27	27	27	28	29	31	33	34	35	37	3,300
Czech Republic	73	71	70	69	71	71	74	76	77	79	11,100
Cyprus	86	87	88	89	91	90	89	92	94	93	18,900
Estonia	41	42	42	45	46	50	55	57	63	68	9,800
Hungary	52	53	54	56	59	62	64	64	65	65	8,900
Latvia	35	36	36	37	39	41	44	45	50	56	7,100
Lithuania	38	40	39	39	42	44	49	51	54	58	7,000
Malta	81	81	81	84	78	80	79	76	76	76	12,400
Poland	47	48	49	48	48	48	49	51	51	53	7,100
Romania	/	/	26	26	28	29	31	34	34	38	4,500
Slovakia	52	52	51	50	53	54	56	57	60	64	8,300
Slovenia	76	77	79	79	79	81	82	85	87	89	15,200

Source: Eurostat

Standard of living is one of the most frequently cited statistics expressed with GDP per capita. In the year 2006 it was EUR 23,500 for the EU-27. The lowest levels of GDP per capita among the Member States were recorded in Bulgaria and Romania, where living standards (again in PPS terms) were approximately 40 % of the EU-27 average in 2006.

A low living standard according to low GDP per capita in some new member states is one of the reasons that the residents do not ask for electricity produced from renewable energy. The energy service companies do not offer renewable energy which has a higher price and the government has no case of need to launch the legislation of support the production electricity from renewable energy and cogeneration installations. On the market there are less energy suppliers and less competitions.

1.8 Distortion on the electricity market in EU-12 countries

Market integration in EU-12 has still not developed to a sufficient extent. This is demonstrated by price differences, regional monopolies and persistent cross-border congestion between Member States. For example we can find some restriction about export electricity from the New Member States. In a well-integrated market, competition will keep prices similar among adjacent Member States or region, what is not the case. Energy prices for industrial electricity customers in the EU still differ by almost 100 % between Central where the most of EU-12 countries are located and North Western EU areas.

Cross-border trade is a key source of competitive pressure on prices. Sufficient network capacities are a prerequisite for such trade, therefore the persistent bottlenecks in electricity infrastructure need to be removed. In many EU-12 countries the electricity interconnection capacity in relation to installed capacity lies significantly below 10 %. The latter value was set as a target at a summit of EU heads of government in Barcelona in March 2002. There are only voluntary arrangements which cannot sufficiently guarantee the necessary level of security to cover market demand. This should be improved for all these countries, except Cyprus and Malta, which are islands.

Lack of independence of network operators in NMS are a barrier to adequate investment. Experience shows that in cases where national incumbents are shareholders in transport networks on their markets, their interest in limiting competition in their national market is often a barrier to sufficient capacity expansion upstream.

Some NMS intervention's in form of ban on the export of electricity during the winter. That ban, which entered into force in January 2008 and lasted until it was lifted at the end of March 2008, disrupted the operations of energy companies, prevented competition in the market and was contrary to the principles underlying the liberalization of the electricity market.

Another regulator from one EU-12 country made a priority reservation rights on certain cross-border sections of the transmission system.

The Government in one EU-12 country adopted new electricity market rules, according to which all exporters of electricity produced in this country are required to pay "system service fee".

The objectives of establishing a common European energy policy are to reduce import dependency, improve competitiveness and promote sustainable development. One of the areas of the common energy policy is the internal market in electricity and gas. Implementation of existing legislative requirements is also important for achieving the objectives. The NMS having problems with security of supply and for short term adopt some regulation which is not in line with the common European energy policy. Some cases will be explained as follows.

1.8.1 1st Slovenian case (Case No C 7/2005)

Slovenia has in 2001 introduced the scheme in order to support the generation of electricity from renewable sources and combined heat and power generation in Slovenia and to secure a reliable supply of energy from indigenous sources. In order to benefit from scheme, a generator must be designated as a "qualified producer". The Commission had doubts as to the compatibility of certain parts of scheme with the common market. The formal investigation was open in year 2005.

During the assessment Slovenia undertook to prepare amendments to the regulations on electricity from renewable energy sources and CHP in order to change the current financing system of the scheme. These amendments have been introduced in order to make the support scheme compatible with Articles 25 and 29 of the Treaty. The mode of collection of the support funds have been changed to lump-sum payments on connection, irrespective of the amount and source of the electricity consumed. With these amendments the Commission considers that Slovenia has undertaken to establish an appropriate instrument to remedy any discrimination which may have occurred in the past. In July 2008 "Act amending the Energy Act" was adopted where all these requirements of the Commission were included. The Commission investigation process was stopped.

1.8.2 2nd Slovenian case (E-3046/08)

According to the Slovenian Energy law the Energy Agency of the Republic of Slovenia (AGEN-RS) was appointed as Issuing Body for Guarantees of Origin for renewable energies and CHP. The Government has issued Regulation on issuing of the Guaranties of Origin at the end of the year of 2005. In this regulation were included requirements from the Directive 2001/77/EC and Directive 2004/8/EC. AGEN-RS issued the first GO at the beginning of 2006 for the year 2005. These GO were sold to Italy but were not recognised by relevant Italian authorities.

The Commission has conducted legal analysis about the reason for non-recognition of Slovenian guarantees of origin. The Italian Economic Ministry clarified and defined the rules to be applied for imported energy obtained from renewable source pursuant to the Italian Legislative Decree. The Slovenian producer has prepared a report with description of the procedure in Slovenia.

The case remains until now unsolved. For the energy companies involved in the procedure this is causing a financial burden, deteriorating business relations and causes uncertainty regarding strategic decision making.

1.8.3 Bulgarian case (E-3049/08)

At the end of year 2007 Bulgaria announced a ban on the export of electricity during the winter. That ban, which entered into force in January 2008 and has lasted until March 2008, disrupted the operations of energy companies, prevented competition in the mar-

ket and was contrary to the principles underlying the liberalization of the electricity market.

The Commission reviewed this restriction and has found out that such public obligations may be in some cases in line with the Directive. Member States may impose on undertakings obligations according to Article 3 paragraph 2 Directive 2003/54/EC, in the general economic interest, public service obligations which may relate security of supply, regularity, quality and price of supplies. But such obligations have to be clearly defined, transparent, non discriminatory and notified to the Commission. These conditions were not fulfilled in this case. The Commission will carefully watch this issue and will compare with Directive and if it will repeat then the Commission will open formal investigation.

1.8.4 1st Hungarian case (E-3048/08)

The Hungarian Energy Office (HEO) recently required all market participants to provide details of their long-term power purchase agreements. All traders holding such agreements had to give an undertaking to offer at auction all the energy purchased on that basis, meaning that the HEO terminated the long-term power purchase agreements in Hungary. Market participants have discovered that there are exceptions, as MAVIR, the transmission system operator, has allowed certain companies to have long-term import contracts, and also granted them cross-border capacities at the Slovakian-Hungarian border.

As far as domestic generation capacities in Hungary are concerned, the Commission has requested from Hungary, following an in-depth investigation, to end by December 2008, long-term power purchase agreements for electricity because they constitute unlawful and incompatible state aid to the power generators. Hungary must at the same time recover the aid granted to the generators concerned since Hungary's EU accession.

In addition, by letter of 18 October 2006, the Commission informed the Hungarian authorities about its concerns regarding the effective implementation of Directive 2003/54/EC in relation to non-discriminatory access to the transmission system. Since the Hungarian authorities could not satisfactorily demonstrate the proper application of the Directive mentioned, the Commission sent a reasoned opinion to the Republic of Hungary on 8 May 2008. The Hungarian authorities had to take all necessary measures in order to enable non-discriminatory access to cross-border transport capacities.

The latest news from the HEO is that it has revoked such long term import contracts or these agreements have been converted into ones that fulfill EU regulations.

1.8.5 2nd Hungary case (E-6207/07)

The Hungarian Government announced on the end of year 2007 that it will introduce a charge (fee) for power exports [7]. This was written Parliamentary question to the Commission.

The answer from Commission was that all protective measures concerning trans-border electricity exchange hinder the creation of integrated internal market for electricity. The Commission is exchanging some information about this subject with the Hungarian Government and at the moment it has not open a formal investigation with the provision of Regulation (EC) No 1228/2003.

1.8.6 Slovakian case (E-3047/08)

In July 2007 the Slovakian government adopted new electricity market rules. The particular rule giving rise to most concern relates to the 'System Service Fee', which was previously only paid by end-users in Slovakia. Under the new arrangements, all exporters of electricity produced in Slovakia are required to pay the fee. The only exceptions are those market participants who are merely transiting electricity across Slovakia. With such market rules the Slovakian energy market is hindered.

Introducing "system service fee" is the same as "export duty" for electricity generating in Slovakia. This duty is not compatible with Regulation No 1228/2003 on conditions for access to the network for cross-border exchanges in electricity.

2 Disclosure in EU 12

2.1 Existing disclosure systems in EU 12 countries

The EU Electricity Directive 2003/54/EC introduces an obligation for retail suppliers to disclose their fuel mix and some aspects of the environmental impact of the different types of generation involved in the production of electricity sold to customers. In order to obtain updated data a detailed questionnaire for each of the 29 countries was developed in WP2. The results from WP2 for 12 New Member States are shown in Table 9.

Table 9: Overview of performance of 12 New Member States with regard to the disclosure requirements, defined by the Directive 2003/54/EC

	DISCLOSURE										
	Legislation	Regulation	Mandatory	Disclosed information	Portfolio / Product	Basis for Disclosure	Based on GO	Explicit Tracking Mechanism	Implicit Tracking Mechanism	GO import & export	OVERALL SCORE
MAXIMUM SCORE:											
Bulgaria											
Cyprus											
Czech Republic											
Estonia											
Hungary											
Latvia											
Lithuania											
Malta											
Poland											
Romania											
Slovakia											
Slovenia											
☹											
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Source: IT Power (November 2008)

Most of EU-12 countries have not been implemented the disclosure requirements with such a measure that will be comparable with Directive. In many of these countries, the energy sector is currently in a general phase of major restructuring and the opening of electricity markets for competition is under way. Under these conditions tracking policies and their implementations is not in a priority. Different tracking systems for electricity disclosure have been adopted as have happened in the Old Member States. Cur-

rent national systems for tracking electricity are mainly focused on national markets and support schemes.

As can be seen from Table 9, many of EU-12 countries are behind the requirements of Electricity Directive. Regarding the level of legislation where they fail to comply with these requirements, they can be divided into the following two groups:

- EU-12 countries without any provisions on disclosure in national legislation:
 - o Bulgaria,
 - o Latvia,
 - o Lithuania,
 - o Romania.
- EU-12 countries having passed primary legislation but no further regulation has been passed or proposed, or the system in operation fails on at least one key criterion; no proper disclosure system is in place:
 - o Cyprus,
 - o Czech Republic,
 - o Estonia,
 - o Malta.

In addition to these countries, there are additional two EU-12 countries that have fully operational and even advanced disclosure systems. Unfortunately these two disclosure system fail though on one requirement, i.e. the disclosure of the environmental impact of the energy generation (CO₂ emissions and nuclear waste). These two countries are:

- o Slovakia,
- o Poland.

The above facts are quite worrying, since it is evident that 10 out of 12 EU-12 countries do not have adequate disclosure systems and 8 out of them even do not have any operational disclosure system. Only Hungary and Slovenia have adequate disclosure systems with regard to the requirements of the Directive.

As it is evident from the above overview, only the Slovenian disclosure system complies with all the requirements of the Directive, and is at the same time advanced, since it is (partly) based on RE-GO and imported/exported RE-GO are used for fuel mix calculation. It is still not perfect, especially due to the fact that interconnection mix instead of residual mix is used for electricity, the attributes of which are unknown.

The Slovenian disclosure system is also operational. Each supplier specifies on each issued bill for the supplied electricity the contribution of each energy source to the overall fuel mix of this supplier in the preceding year, including the production of CO₂ and radioactive wastes. References to web pages, where the information to the environment impact are publicly available, are given, too.

2.2 Importance of disclosure in EU 12 – consumers' point of view

2.2.1 Green electricity products available in EU-12

There was only one certificate based green electricity products available to customers in EU-12 in 2007.

In the Slovenian electricity market there is one big supplier which sells electricity from Slovenian hydro power plants as product name "Modra energija"².

The project "Modra energija" was set up in 2004. Selling of the product began in January 2005, when the product was available to all customers except households. In 2007 the number of customers and the volume of "Modra energija" sold increased significantly to 1,600 and 32 GWh, respectively. On 1 July 2007, i.e. the day of full market opening, "Modra energija" became available to household customers, too. The customers of "Modra energija" can also choose that only a certain percentage of their overall electricity consumption will be supplied by the product, i.e. one customer may choose for example 100 % of his/her consumption to be supplied by the product, while another one chooses a lower percentage of consumption to be met by the product and the remaining part by ordinary "gray" electricity.

In 2008 some new RE-GO based products appeared in Slovenian electricity markets. Since these products are new and introduced only in 2008, no data about quantities of these products sold in the market are available.

2.2.2 Interviews

Consumers' point of view was also assessed through the interviews that were performed with non-domestic customers.

In Slovenia interviews were performed with 8 companies. Although it was recommended to perform interviews with both green and non-green customers, an interview with only one partly green customer (a customer of "Modra energija" covering only a part of the consumption by the product) could be arranged. All the remaining 7 customers were non-green.

The structure of interviewees was as follows:

- 4 big industrial customers (car producer, brewery, pharmaceutical company and sport equipment producer);
- 3 small commercial and industrial customers;

² The word "Modra" in Slovenian means "blue" as a colour. But this word also means "wise". So the meaning of this name is double: this energy is blue since it comes from hydro plants and the one who is buying it is wise because he/she does something good for the environment.

- 1 hotel and ski resort.

The interviews were performed as bilateral conversations with the persons of the company, responsible for energy procurement. The focus of the conversations was on experiences with the liberalized electricity market, perception of disclosure, expectations regarding tracking systems and tracking related policies in the interviewed company.

The conclusions from the interviews with eight Slovenian non-domestic customers can be put in 3 categories:

- The interviewees are mainly not aware of disclosure, RE-GO and CHP-GO;
- The interviewees are aware of the electricity market and the most advantage is the choice of the supplier and the negotiations to electricity price – the electricity attributes are not important;
- The interviewees are fully acquainted with benefit of electricity market including the electricity attributes, but they are not able to sell the added value of attributes on the market of goods – the most (and often only) important item for them remains the price of electricity.

The main criteria for choice the new supplier are the low price and the long term predictability.

2.2.3 Workshops

AGEN-RS prepared and organized workshop in Czech Republic, Poland, Slovakia and Slovenia. After the presentations there were not many questions asked, especially not the questions from which we can conclude what are the customers' needs. All these workshops were characterized by relatively poor perception of importance of environmentally friendly electricity production. The tracking system are developed on the lower limit of the requirements defined in the Directives and it seems that both customers and producer of electricity are not very much interested about them. The exemption is mandatory system of quotas of RES-E and CHP that have to be fulfilled by submission (redemption) of adequate numbers of corresponding GO. Another exemption is where electricity producers can earn some additional money by exporting electricity from renewables to some foreign markets with adequate demand for such electricity. At many of these workshops the participants believed that tracking mechanisms were related only for supporting electricity generated in RES and CHP installations that are eligible for receiving support. The invited national speakers also dedicated most of their presentations to describing national support systems. In some countries national participants even expressed their concern that publishing reports on their tracking systems, failing to be compliant with the EU Directives, could be a signal to the Commission to start infringement procedures.

The reasons for this situation are complex. Social changes that occurred in the early 90's brought market economy and big problems of their industry. The results were unemployment, low income of majority of population, etc. In such situation it is not very realistic to expect that people or companies would be ready to pay more for environmen-

tally friendly produced electricity, especially since one of the reasons of introduction of market liberalization were significantly increased electricity prices.

However, some interesting questions were raised. Due to the historical reasons business people in New Member States expect that all relevant regulations are published in the Official Journal or published as European standards, in the case they must cope with much more developed western competitors. It is also not known, how a manufacturer of a product could calculate how much green energy is consumed for making a single product. Let's assume that the manufacturer buys partly green electricity. Then the producer should know how many products could be marketed as "made using renewable energy". The proposal was that this should be regulated by a legal document, such as regulation, or a standard. Nevertheless, it remains questionable, what, if any, market opportunity has a product made of green electricity in the EU-12 markets.

2.2.4 Bilateral meeting

As an E-TRACK II project partner AGEN-RS had to conduct workshops with interested consumer parties. The representative of the standardization was not able to be present at the Slovenian consultation workshop which took place in December 2008. An agreement was made to send a copy of E-TRACK standard to the representative of standardization to check the standard with the CEN/CENELEC Internal Rules for drafting the European standards. After the representative of standardization had reviewed the E-TRACK standard, the bilateral meeting was carried out 20 January 2009 with the representative of the Slovenian Institute for Standardization.

E-TRACK standard was compared with the requirements written down in the Internal Regulations, Part 3: Rules for the structure and drafting of CEN/CENELEC Publications (ISO/IEC Directives – Part 2, modified) 2006-12 (web page: http://www.cenelec.eu/NR/rdonlyres/45E5EB28-D1E4-4B28-AD57-7B6AA2EB2915/0/2006CEN_CENELEC_IR_P_3_DEF.pdf). The main remark was that the E-TRACK standard is not written according to internal rules CEN/CENELEC for drafting European standards. About the shortage of slow procedure when the requirements in the standard have to be changed the proposal was to use other standardization documents as: Technical Specification; Technical Report or CEN/CENELEC Workshop Agreement (CWA).

The costs for preparing and drafting all European standardization publications are borne by the interested parties. Nevertheless, the Commission contributes towards bearing the costs of developing some specific standards which improve quality. E-TRACK standard should be declared to improve quality and protect environment and that is one another reason for cooperation with European standardization organizations. If the Commission bears some cost of developing standards then grant mandate to European Standards Organizations (CEN, CENELEC, ETSI).

Due to the history the Slovenian business people would like that all regulation must be announced in Official Journal. That means, European standards are obligatory to guarantee the lower level of safety or quality. The characteristic of product or services

should be higher quality as required by the standard. The similar situation that all regulation must be announced in Official Journal is in all New Member States.

Recently a new Memorandum of Understanding (MoU) between CENELEC and CEER (the Council of European Energy Regulators) was signed on cooperation and exchange of information in the field of standardization in the energy sector. Another agreement was signed between ESMIG (EU Smart Metering Group) about cooperative relationship between the parties in standardization activities in areas of common interest. These include quality of service, energy efficiency, energy management, metering, network connections and customer service.

2.3 Analysis possibilities of potential improvements of disclosure systems

Improvements of disclosure systems in EU-12 countries will be possible when they will be more widely applied and consequently recognized by customers. As we can conclude from interviews, the most important criterion to choose the supplier is the price. Attention to attributes was not devoted from the stakeholders.

One of the best instruments for giving additional value and importance to disclosure is creation of tariff calculator. Tariff calculators are usually created by independent organisations, such as regulators, and made available to all electricity customers on their web pages. Each customer can choose among the potential electricity supplier according to the price of electricity supplied and fuel mix that is provided by each potential supplier or each product the supplier offers. This makes the customer's choice easier according to various aspects of supplied electricity. Such tariff calculator is for instance offered by the Slovenian regulator, Energy Agency of the Republic of Slovenia on its web pages (www.agen-rs.si).

The disclosure systems could also be improved in the way that suppliers should be ranked into classes in a similar way that is used for labeling of household appliances. In such a system suppliers are ranked in classes, such as A+, A, B, C, etc., according to the share of environmentally friendly electricity they supply. The suppliers with the highest portion of such electricity should be classified as A+, and those with lower portions would be then ranked in the subsequent classes. This would create much more transparent classification of suppliers since it is much easier to the customer just to recognize the supplier's class, especially due to similarity with already well established and recognized classification scheme for household appliances.

Another new use of disclosure will be labeling the products with regard to the quantity and quality of electricity used for manufacturing them. The quantity would be disclosed in the term of kWh of electricity used for producing it, while the quality would be disclosed by showing the fuel mix that was used to produce it. This could create a market opportunity for some manufacturers due to the fact that they use green electricity for making their products or services. It may be a subject of further in-depth market analysis, but it may seem that for example a bottle of beer with an inscription "brewed with renewable electricity" could be more interesting to a certain group of customers than

other brands in the market. This could also be extended to some service sectors. Hotels or restaurant could advertise them as fully (or partly) supplied with green electricity.

There is also a need to establish adequate level of co-operation with standardization organizations. Many of the manufacturers are awarded with the international environment certificate ISO 14001. According to the information obtained by one of the Slovenian issuer of these certificates, it is not necessary to be green electricity consumer to obtain this certificate. The recommendation of E-track II project is that ISO 14001 certificates will be given only to companies that use green electricity, proved by redemption of adequate number of RE-GO.

In the disclosure the obligatory data is the quantity of CO₂ emission per kWh. In EU-12 countries as in the whole EU certain products are subject to paying excise duty. These products include electricity. If quantity of CO₂ emission should be linked with excise duty or returning the percentage of excise duty payments to the consumer, they will find with this issue some benefits to buy electricity with a few or zero CO₂ emission. Such a measure would increase the importance of disclosure and consequently of RE-GO and CHP-GO, too, in the EU-12 countries.

3 RES-E Guarantees of Origin in EU 12

3.1 General facts about RES-E in EU-12 countries

EU-12 countries have different potentials for generating electricity from renewables. Some of them, such as Latvia, Romania, Slovenia and Slovakia, have relatively high potentials, mostly in hydro power plants. On the other hand, there are also some EU-12 countries that have relatively low shares of RES-E generation. Current and future potential for RES-E in EU-12 can be seen from the table of reference values of RES-E for 1999 (and 2001 for Romania and Bulgaria). These values are given in Table 10.

Table 10: Reference and target shares of RES-E in EU-12 countries

New Member State	RES-E (1999) in TWh	RES-E % (1999)	RES-E % (2010)
Czech Republic	2,36	3,8	8
Estonia	0,02	0,2	5,1
Cyprus	0,002	0,05	6
Latvia	2,76	42,4	49,3
Lithuania	0,33	3,3	7
Hungary	0,22	0,7	3,6
Malta	0	0	5
Poland	2,35	1,6	7,5
Slovenia	3,66	29,9	33,6
Slovakia	5,09	17,9	31
New Member State	RES-E (2001) in TWh	RES-E % (2001)	RES-E % (2010)
Bulgaria	1,7	6	11
Romania	14,9	28	33
Community	372	13,2	21

Source: European Commission

EU-12 countries have quite versatile range of policies regarding support and promotion of electricity generation from renewables. They are summarized in Table 11.

Table 11: Overview of the main policies for renewable electricity in EU-12

Country	Main electricity support scheme	Comments
Bulgaria	Combination of feed-in tariffs, tax incentives and purchase obligation.	Relatively low levels of incentive make penetration of renewable especially difficult as the current commodity prices for electricity are still relatively low. A green certificate system to support renewable electricity developments has been proposed. Bulgaria recently agreed upon an indicative target for renewable electricity, which is expected to provide a good incentive for further promotion of renewable support schemes.
Cyprus	Grant scheme for the promotion of RES (since February 2000 financed through an electricity consumption tax of 0.22 E/kWh (since Aug. 2003).	Promotion scheme is fixed only for a 3-year period.
Czech Republic	Feed-in tariffs (since 2002), supported by investment grants Revision and improvement of the tariffs in February 2005.	Relatively high feed-in tariffs with 15-year guaranteed support. Producer can choose between a fixed feed-in tariff or a premium Tariff (green bonus). For biomass cogeneration, only the green bonus applies.
Estonia	Feed-in tariff system with purchase obligation.	Estonia currently is used feed-in tariff parallel with feed-in premium for RES-E promotion. Although the feed-in tariff increased in 2007 till 74.2 EUR/MWh, but it remained not differentiated among technologies. Feed-in tariff and premium are set for all RES-E technologies for 12 years of start of the production.
Hungary	Feed-in tariff (since January 2003) combined with purchase obligation and tenders for grants.	Medium tariffs (6 to 6.8 ct/kWh) but no differentiation among technologies. Actions to support RES are not coordinated, and political support varies. All this results in high investment risks and low penetration.

Latvia	Quota obligation system since 2002 (combined with feed-in tariffs).	New support scheme entered into force in 2007 in Latvia . Currently RES-E promotion policy is based on feed-in tariffs differentiated among technologies. The feed-in tariffs will be awarded for the first 10 years of operation of wind (<0.25 MW), biomass (<4MW), biogas (without capacity limitations) and small hydro (<5 MW) PP and afterward it will be reduced. The level of the feed-in tariff is related to two factors: the end user price of natural gas and the installed capacity of the power plant. Electricity produced from bigger than 0.25 MW wind PP is eligible for a tendering system.
Lithuania	Relatively high feed-in tariffs combined with a purchase obligation. In addition good conditions for grid connections and investment programs.	Lithuania has long term support scheme for promoting RES-E. The support scheme is based on feed in tariffs that are differentiated among technologies: The RES-E promotion procedure sets forth that fixed feed-in tariffs will be applied until 31 December 2020. As from the year 2021, generation of electricity from renewable energy sources will be promoted by introduction of the green certificate system.
Malta	Low VAT rate for solar.	Very little attention to RES-E so far.
Poland	Green power purchase obligation with targets specified until 2010. In addition renewable are exempted from the (small) excise tax.	No penalties defined and lack of target enforcement.
Romania	Subsidy fund (since 2000), feed-in tariffs.	Normal feed-in tariff modest, but high tariff for autonomous small wind systems (up to 110-130 €/MWh). Romania recently agreed upon an indicative target for renewable electricity, which is expected to provide a good incentive for further promotion of renewable supports schemes.
Slovak	Program supporting RES and energy efficiency, including	Very little support for renewables. The main support program runs from 2000, but

Republic	feed-in tariffs and tax incentives.	there is no certainty as to the time frame or tariffs. The low support, lack of funding and lack of longer-term certainty make investors very reluctant.
Slovenia	Feed-in system combined with long-term guaranteed contracts. CO ₂ taxation and public funds for environmental investments.	New GO based support system is under preparation.

Source: European Commission, AGEN-RS

3.2 Existing RES-E GO systems in EU 12

European Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market (Directive 2001/77/EC – RES-E Directive) requires from all EU Member States to issue Guarantees of Origin for electricity, produced from renewable energy sources (RE-GO). The RES-E Directive was adopted in 2001 and had to be implemented by October 2003 by the EU-15 MS. Since the EU-12 countries were at that date not yet EU members, they had to implement the provisions of the Directive by the date of their official entrance to the Union. For all EU-12 countries except Romania and Bulgaria that was 1 May 2004, while for the latter two countries it was 1 January 2007.

Current situation regarding RE-GO, as obtained through questionnaires in WP2, is shown in Table 12.

Table 12: RE-GO systems in EU-12 countries

	RE-GO										OVERALL SCORE
	Legislation	Regulation	Issuing Body	Issuing	Redemption	Information on GO	Import & export	GO for Disclosure	GO for Support	GO for Target	
MAXIMUM SCORE:											
Bulgaria											
Cyprus											
Czech Republic											
Estonia											
Hungary											
Latvia											
Lithuania											
Malta											
Poland											
Romania											

Slovakia											
Slovenia											
☹											
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Source: IT Power (November 2008), AGEN-RS, LEI

The analysis of national RE-GO systems was done in the same way as for disclosure. Various aspects of RE-GO systems were analyzed and at the end the systems were categorized into three groups.

In the first group there are countries that have RE-GO systems that are behind the requirements of the RES-E Directive or even do not yet have such a system. The countries that do not have adequate RE-GO systems in place are the following:

- Bulgaria,
- Cyprus,
- Czech Republic,
- Hungary,
- Latvia,
- Malta,
- Romania.

Some of the above countries have already passed adequate legislation, such as Bulgaria, but the systems have not yet been implemented. Some other countries, such as Romania, have even not yet passed adequate primary legislation.

The next group consists of countries that have in place RE-GO systems that just comply with the requirements of RES-E Directive. Since the provisions of the Directive regarding RE-GO are very loose and do not require things as redemption, central registry, unique Issuing Body in the country or part of the country, these requirements can practically be met by any operating RE-GO system. The countries that have GO systems that are just in line with the Directive are:

- Estonia,
- Hungary,
- Lithuania,
- Slovakia.

It has to be stressed that the Hungarian RE-GO system is not yet operational. It is planned that the first GOs will be issued in 2009 (for the production in 2008).

The only EU-12 country with RE-GO system developed beyond the requirements of the Directive is Slovenia. Slovenian GO system is based on central registry, managed by the

Energy Agency of the Republic of Slovenia, which was by the Energy Act nominated as Issuing Body for both RE-GO and CHP-GO. Slovenian GOs are issued in electronic way and can be transferred to other users. When they are used, e.g. for disclosure, they have to be redeemed. Slovenian GOs can be exported and GOs from other Member States may be imported into the Slovenian system.

3.3 Analysis of possibilities for potential improvements of RES-E GO systems

As can be concluded from the above analysis, there are many possibilities of improving the RE-GO systems in EU-12 countries. Since only 3 countries have operational RE-GO systems and the additional one will make it operational rather soon, the main area of improvement should be establishing of RE-GO systems in all EU-12 countries. This will of course be necessary since all the countries should already have such systems.

Additional possibility of improvements should be introduction of advanced RE-GO systems that will be also in line with the E-track standard in all countries. Since most of the countries do not have any operational RE-GO system, the new systems in all these countries should be from the very beginning designed in advanced way. The three countries that already have RE-GO systems that are not classified as advanced should also upgrade these systems and make them advanced.

In parallel to establishing advanced RE-GO systems in all EU-12 countries adequate conditions should be established to create demand for RE-GO. More on them is described in the section 3.5.

3.4 Current use of RES-E GO in EU 12 countries

As mentioned in the section 3.2, only four of EU-12 countries have operational RE-GO systems (or will be operational very soon), i.e. Hungary, Lithuania, Slovakia and Slovenia.

In Hungary RE-GO will be used for support. Producers of green electricity that get feed-in tariff will be obliged to get GO to verify their production, i.e. the GO will be used to check the producer's entitlement to support (i.e. feed-in tariff). GO will be issued on a yearly basis.

In Lithuania RE-GO can be used either for obtaining support or to prove the customer the origin of electricity supplied, i.e. for disclosure.

In Slovakia RE-GO are used for disclosure and support and cannot be transferred.

In Slovenia RE-GO are currently used for disclosure only. Due to the absence of any GO based renewable electricity product in the Slovenian market, RE-GO were until 2007 almost entirely used for proving the green origin of exported electricity. This situation is changing in 2008 with emergence of new RE-GO based products. The most interesting market of RE-GO for Slovenian RES-E generator is neighboring market of

Italy, where all the suppliers have to fulfill prescribed quotas of renewable electricity. The poor perception of disclosure among the Slovenian electricity customers creates no demand for RE-GO in the Slovenian market. So the producers can basically choose between doing nothing and selling RE-GO to foreign markets where adequate demand for them exists.

There are plans in the near future that RE-GO will be used for support in Slovenia. The primary legislation about this was adopted by the Parliament in July 2008. Secondary legislation laying down detailed rules about the new system was prepared in the first half of 2009 and the system is expected to become fully operational in September 2009.

The new system will actually remain similar as it was in the past. This means that the producers eligible to obtain support will still be able to choose between feed-in system, where all electricity produced will be purchased by the Market Operator and the producer will receive guaranteed price, or bonus system, where the producer will sell electricity in the market to the selected buyer and receive only the bonus to the market price from the Market Operator. One of the essential changes in the new system is that the role of entity which buys feed-in electricity and pays bonus is changed from the system operators to the newly established Support Centre which forms a part of the Slovenian Market Operator – Borzen. Another big change is that the producers receiving any of the above mentioned types of support will have to issue RE-GO or CHP-GO for their entire production and transfer these Guarantees of Origin to the Market Operator (Support Centre).

3.5 Possibilities of finding new areas of use RES-GO in EU 12

In the EU 12 countries there is generally a large potential for improvement for implementation of advanced tracking systems, such as Guarantees of Origin. All these countries have either a large amount of RES-E production or a high potential for new RES-E production facilities. Potential and already exploited sources range from wind to hydro and solar.

The main obstacle for improvement of current situation is lack of demand for such instruments, which is to a large extent a consequence of historical development in these countries. Maybe one of the most promising options for EU-12 is to start exporting RE-GO to the Member States with adequate demand for renewable electricity. In many EU-12 countries there is substantial potential for this due to relatively high share of RES-E production. This may in the first step help countries to establish advanced RE-GO systems, since only such can be traded in the EU countries with high demand for them. Presence of such systems in the country may gradually help in development of demand for RE-GO in the national market. The main motivator of such a development could be electricity traders, who should see trading opportunity by exporting RE-GO.

Since the adopted new RES directive (2009/28/EC) was significantly changed with regard to the European Commission proposal from January 2008, RE-GO will not be used for verification of fulfillment of EU countries' mandatory RES-E target shares, as fore-

seen in the proposal. Therefore there will not be any additional demand for these instruments due to the interest of the EU Member States.

4 CHP Guarantees of Origin in EU 12

4.1 Existing CHP GO systems in EU 12 countries

According to the EU legislation all EU 12 countries should already implement CHP GO. The European Directive on the promotion of cogeneration based on a useful heat demand in the internal energy market (2004/8/EC – CHP Directive) requires for all Member States to establish their own GO systems for high efficiency CHP. Since the matrix of reference values that are used to establish, whether a CHP plant is high-efficient or not, was published by the EC only on 6 February 2007, all Member States should establish their CHP GO system by 6 August 2007, i.e. 6 months after publishing of these reference values. Due to the fact that all EU-12 have already been Member States by that date, they should also establish their CHP system by then.

Current situation regarding CHP-GO, as obtained through questionnaires in WP2, is shown in Table 13.

Table 13: CHP-GO systems in EU-12 countries

	CHP-GO											Overall score
	Legislation	Regulation	High Efficiency rules in place	Issuing Body	Issuing	Redemption	Information on GO - Support	GO import & export	GO for disclosure	GO for support	GO for target	
Maximum score												
Bulgaria												
Cyprus												
Czech Republic												
Estonia												
Hungary												
Latvia												
Lithuania												
Malta												
Poland												
Romania												
Slovakia												
Slovenia												
☹												
☺												
☺												

Source: IT Power (November 2008), AGEN-RS, LEI

According to the available data only few countries had fulfill the requirements of the CHP Directive. Most of the countries had adopted primary legislation, but there are still barriers for developing CHP GO market in practice. Issuing bodies are appointed. Systems are not sophisticated and are mainly without electronic registry. According to available data some countries are having or planning electronic issuing, but issuing procedures will not be harmonized and linked between EU 12. It means that we have countries with paper form of CHP GO, countries with electronic CHP GO and countries without CHP GO at all, but almost all countries that respond to our inquiry are planning to use registry.

According to the analysis, the following EU-12 countries have not yet established CHP-GO systems in line with the CHP Directive:

- Bulgaria,
- Cyprus,
- Hungary
- Malta,
- Romania,
- Slovakia.

The remaining 3 countries have operational CHP-GO systems, but none of them has advanced system, beyond the requirements of the CHP Directive. These countries are:

- Czech Republic,
- Poland,
- Slovenia.

In all the above three countries CHP GO systems are operational and CHP GO are issued. In Poland and Czech Republic they are used for fulfilling national CHP targets, while in Slovenia they do not have any special use, yet. In Slovenia they are in general used for disclosure purpose, although the national disclosure system in accordance with the 2003/54/EC Directive covers only primary energy sources and not the method of production. So electricity from both conventional natural gas power plant and from high efficiency natural gas fired CHP plants contribute to the same category, i.e. "Natural Gas". Nevertheless, a CHP generator may sell electricity directly to customers and can prove the origin of this electricity by CHP GO, which is disclosure, too.

Standard unit for issuing is different from country to country, but the most common for issuing CHP GO is 1 MWh for net and gross production. Validity date of CHP GO is either not specified or quite long (five years and more). CHP GO can be issued on monthly or yearly bases.

Level of the transferability is very low. Only few members allow transferring. Verification and accreditation process is possible only in two EU 12 members, and only one of them uses redemption process as part of their GO system.

Quick look on the contents of the CHP GO shows us more similarities. Most of the CHP GO will contain: registration number, sources of energy used, production period, production location, name of producer, type of use of the CHP heat, lower calorific value of the fuel sources, primary Energy savings and name of certificate owner.

CHP GO from EU-12 do not contain information on CO₂. There are also some countries that didn't include capacity and information on public support on their CHP GO.

4.2 Analysis possibilities of potential improvements of CHP GO systems

CHP GOs are not recognized as elements with value. More must be done in the area of implementation and promotion of the CHP GO. After implementation (business) opportunities must be recognized. Suppliers and traders didn't recognize CHP GO as their tool to achieve higher electricity price and to do more on their corporate social responsibility. But even if they would start to use CHP GO the consumers remains an open question. From the consumers' point of view beside promotions and ecological awareness need to have appropriate financial status which enables them to buy energy from CHP.

4.3 Current use of CHP GO in EU 12 countries

According to available data over 12 TWh of CHP GO had been issued in all EU 12 since implementation of the directive. There is no information on practical use and trading with CHP GO in these markets. There are no practical market opportunities for CHP GO. EU 12 countries already implemented or are going to implement directive, but they are not obliged to put incentives or instruments to start CHP GO market.

4.4 Possibilities of finding new areas of use CHP-GO in EU 12

Precondition is implementation of Directive and promotion of the GO. Mechanisms that will start trading and open new market opportunities should be placed. Next step should be also done by policy maker which should try to connect other (supporting, disclosure) mechanisms with CHP GO. This would be actually some kind of campaign that will push market players that they will start thinking about added value of the CHP GO.

5 Conclusion and Recommendation

5.1 Common conclusions for all EU-12 countries

All EU 12 countries are characterized by relatively poor perception of importance of environmentally friendly electricity production. GO systems in many of these countries are developed but it seems that both customers and producer of electricity are not very much interested in them. There are more or less only two exemptions of this situation that makes GO more interesting:

- In some countries there are obligatory quotas of RES-E and CHP that have to be fulfilled by submission (redemption) of adequate numbers of corresponding GO. Such countries are for example Poland and Czech Republic;
- Electricity producers in some countries realized that they can earn some additional money by exporting electricity from renewables to some markets with adequate demand. Due to the lack of environmental awareness of local customers and absence of any obligatory quotas in their countries this makes RE-GO very interesting in some countries. Such country is for example Slovenia.

The reasons for this situation are complex. An important fact seems to lie in the history of these countries. Ten of them belonged until the early 90's to the socialist block with no market economy. In such system electricity was considered to be everyone's good, available at artificially kept low prices. Social changes that occurred in the early 90's brought market economy and big problems of their industry that could not cope with much more developed western competitors. The results were unemployment, low income of majority of population, etc. The main objective of many people became how to survive. And in such situation it is not very realistic to expect that people would be ready to pay more for environmentally friendly produced electricity, especially since one of the reasons of introduction of market liberalization were significantly increased electricity prices. And the surviving industry in these countries also did not think about anything but to continue its existence, also by saving any penny or cent and not very much thinking about making environmental image as one of the reasons of its market success.

The remaining two countries, i.e. Malta and Cyprus, are relatively small islands with limited potential of CHP and RES-E (except solar and wind), where environmental awareness of population could not develop adequately. One of the reasons for this is also in the fact that until the early 2000s there were no RES-E and CHP-E generation in these two countries.

5.2 Disclosure

After completion of national workshops in all EU-12 countries, interviews with non-domestic customers and workshops with representatives of domestic customers, some specific recommendations regarding disclosure could be given.

In those countries that were found to be not compliant with the requirements of the Directive, either the legislation on disclosure has not yet been passed or disclosure system is not fully operational or properly implemented.

The most important recommendation is valid for the countries without any provisions for the disclosure, either in primary or secondary legislation. Such countries have to pass adequate primary and secondary legislation and make their disclosure system operational. Such systems have to be mandatory regarding disclosure of fuel mix, CO₂ emissions and production of nuclear waste.

The second recommendation is meant for the countries having disclosure system in place but not fully in line with the Directive. In most such cases (CZ, PL, SK) only the supplier's fuel mix is disclosed without CO₂ emissions and production of nuclear waste. Regarding the responses obtained at the workshops, the main problem lies in the fact that CO₂ emissions and production of nuclear waste are in responsibility of different ministry than electricity supply. It is obvious difficult to produce rules about a matter covering responsibilities of two ministries. Nevertheless, the requirements of the Directive are clear and adequate solutions will have to be found in these countries to establish disclosure systems as required.

The third recommendation is intended for all countries and this is to establish disclosure systems in accordance with E-TRACK standard. This means that GO should always be linked to disclosure, mandatory use of redeemed/cancelled GO for disclosure, adequate treatment of imported/exported GO and use of properly calculated residual mix for electricity from unknown sources. This recommendation in some EU-12 needs another precondition, i.e. establishment of RE-GO and CHP-GO systems.

5.3 RE-GO

After completion of national workshops in all EU-12 countries, interviews with non-domestic customers and workshops with representatives of domestic customers, some specific recommendations regarding RE-GO could be given.

Some countries were found not to be in line with the requirements of the Directive 2001/77/EC. Since the provisions of the Directive are quite loose, most of these countries do not have RE-GO system in place at all. The reasons for non-compliance are either missing primary and/or secondary legislation or non recognition of RE-GO from other MS.

Therefore the first recommendation is that all countries should adopt all necessary legislation and make RE-GO systems operational. These systems should be open for RE-GO from other MS, which means that they have to be recognized. It should also be possible to enable export of RE-GO to other MS.

Other recommendations are intended to make RE-GO systems in all EU-12 countries compliant with the E-TRACK standard. This means that RE-GO systems should always

be based on a central registry. The registry should record any event in the RE-GO life-cycle, i.e. issuing, transfer and redemption/cancellation.

The main purpose of RE-GO should be disclosure. This should be also in the countries that use RE-GOs for the support purposes.

The last recommendation is to cooperate with international organizations which use standardized systems for issuing energy certificates.

5.4 CHP-GO

After completion of national workshops in all EU-12 countries, interviews with non-domestic customers and workshops with representatives of domestic customers, some specific recommendations regarding CHP-GO could be given, based on the findings of analysis of the answers in the questionnaires.

In the Directive 2004/8/EC there are clear directions on minimal requirements which have to be met by all Member States. If the New Member States follows minimal requirements, there is a wide variety in the level to which the CHP-GO systems have developed. Most of New Member States do not meet these requirements. This causes a potential threat for the reliability and the accuracy and then to non recognition EU-wide CHP-GO system.

The first recommendation is to make all New Member States their CHP-GO system to meet all the requirements stated in the CHP Directive.

Double counting problems could rise when the CHP power plant is fuelled with biofuel and the produced electricity may be registered in both RE-GO and CHP-GO system. The second recommendation to prevent this problem is to nominate one issuing body for both system and the regulation would be such, that the producer could choose only one GO for produced electricity. At least in one country there are different issuing bodies for RE-GO and CHP-GO.

The third recommendation is to define the redemption process mandatory. With this requirement the multiple use of CHP-GO is prevented. In addition all transfers of CHP-GO have to be tracked and only licensed electricity supplier is allowed to redeem them. After redemption was done the CHP-GO are moved to a special redemption account.

The last recommendation is addressed to European Commission that properly defines the CHP-GO and the High Efficiency CHP.

5.5 Recommendation for the individual New Member States

Results from the inventory of national policies relating to tracking show, that many Member States still have not transposed the current requirements on Guarantees of Origin for RES-E and CHP-E correctly into national regulations. After national workshops, interviews with domestic and non-domestic customers could be given for each New Member States. Into account, that some states show very slow development of actual

competition, the recommendations or proposals for the improvement of the tracking systems in the respective countries are as follow.

5.5.1 Recommendations for Bulgaria

Proposals on Guarantees of Origin:

- Secondary legislation on GoOs is in place since May 2007, amended in February 2008.
- There is a need for a market for GoOs.

Proposals on Electricity Disclosure:

- Public authorities must show an increased willingness to correctly implement rules related to disclosure, despite incomplete market liberalisation.

5.5.2 Recommendations for Czech Republic

Proposals on Guarantees of Origin:

- Establish the national RE-GO system in line with the requirements of E-TRACK standards.
- Introduction of full life cycle of GO: Issuing, transfer, cancellation.
- Establish a clear link between GO and Disclosure.
- Redemption/cancellation always linked to Disclosure.
- Imports of GO should be accepted, but only if the country issuing the GO is using a Residual Mix for purposes of Disclosure (prevention of multiple counting).

Proposals on Electricity Disclosure:

- Only redeemed/cancelled GO can be used for disclosure.
- Inclusion of CO2 emissions and production of radioactive waste, as required by the Directive 2003/54/EC.
- Define binding requirements regarding green electricity products (obligatory use of GO or certificates), including minimum requirements for additionality.
- Improve awareness of Czech customers regarding disclosure of electricity.

5.5.3 Recommendations for Estonia

Proposals on Guarantees of Origin:

- Define and clearly regulate the use of RE-GO for disclosure and support.
- Improve the accuracy of the tracking system, especially with regard to transfers, imports and exports of GO.

- Introduce RE-GO as electronically transferable certificates.
- Make sure double-counting risks are excluded.
- Allow for RE-GO transfers and exports, and simplify RE-GO imports.

Proposals on Electricity Disclosure:

- Develop and adopt secondary legislation to effectively put in place a disclosure system (including tracking of GO transfers, imports and exports).
- Make the disclosure requirements mandatory.

5.5.4 Recommendations for Latvia

Proposals on Guarantees of Origin:

- Develop and adopt secondary legislation to effectively put in place an accurate and reliable RE-GO and CHP-GO system (including tracking of GO transfers, imports and exports).
- Allow for RE-GO transfers and recognize RE-GO imports.
- Define and clearly regulate the use of RE-GO for disclosure and support.
- Introduce RE-GO as electronically transferable certificates.

Proposals on Electricity Disclosure:

- Develop or pass primary legislation on disclosure.
- Develop and adopt secondary legislation to effectively put in place a disclosure system (including tracking of GO transfers, imports and exports).
- Make the disclosure requirements mandatory.

5.5.5 Recommendations for Lithuania

Proposals on Guarantees of Origin:

- Define and clearly regulate the use of RE-GO for disclosure and support.
- Improve the accuracy of the tracking system, especially with regard to transfers, imports and exports of GO.
- Introduce RE-GO as electronically transferable certificates.
- Make sure double-counting risks are excluded.
- Allow for RE-GO transfers and exports, and simplify RE-GO imports.

Proposals on Electricity Disclosure:

- Develop or pass primary legislation on disclosure.

- Develop and adopt secondary legislation to effectively put in place a disclosure system (including tracking of GO transfers, imports and exports).
- Make the disclosure requirements mandatory.

5.5.6 Recommendations for Malta

Proposals on Guarantees of Origin:

- Develop and adopt secondary legislation to effectively put in place an accurate and reliable GO system (including tracking of GO transfers, imports and exports).
- Allow for RE-GO transfers and recognize RE-GO imports.
- Define and clearly regulate the use of RE-GO for disclosure and support.
- Introduce RE-GO as electronically transferable certificates.

Proposals on Electricity Disclosure:

- Develop and adopt secondary legislation to effectively put in place a disclosure system (including tracking of GO transfers, imports and exports).
- Make the disclosure requirements mandatory.

5.5.7 Recommendations for Poland

Proposals on Guarantees of Origin:

- Introduction of new "real" GO instead of current GO that are in fact "support certificates". They should be mainly used for disclosure purposes.
- Making Polish RE-GO and CHP-GO fully compatible with European standards (EECS).
- Imports of GO should be accepted, but only if the country issuing the GO is using a Residual Mix for purposes of Disclosure (prevention of multiple counting).

Proposals on Electricity Disclosure:

- Only redeemed/cancelled GO can be used for disclosure.
- Inclusion of CO2 emissions and production of radioactive waste, as required by the Directive 2003/54/EC.
- Define binding requirements regarding green electricity products (obligatory use of GO or certificates), including minimum requirements for additionality.
- Improve awareness of Polish customers regarding disclosure of electricity.

5.5.8 Recommendations for Romania

Proposals on Guarantees of Origin:

- There is a need to clarify whether RES GoOs can be traded or not.
- The role of RES GoOs in Romania is not well defined as GoOs are not used for disclosure under Law 220/2008.

Proposals on Electricity Disclosure:

- Electricity disclosure in Romania still has to be developed, in particular for electricity end-users.
- The system of disclosure has to be strengthened, in particular with regards to Monitoring, Reporting and Verification.
- Billing information should reflect the information provided by generators to traders and retailers.
- At the very least a centralise Website ought to provide the information on electricity attributes.

5.5.9 Recommendations for Slovakia

Proposals on Guarantees of Origin:

- Allow for RE-GO transfers and exports, and simplify RE-GO imports.
- A standardised use of RE-GO and agreed rules on its use for disclosure, support (and target) purposes above national state level.
- Introduction of CHP-GO system in line with the E-TRACK standard. Adoption of necessary secondary legislation (Decree on high efficiency of CHP production of CHP plant).

Proposals on Electricity Disclosure:

- Inclusion of CO2 emissions and production of radioactive waste, as required by the Directive 2003/54/EC.
- Define binding requirements regarding green electricity products (obligatory use of GO or certificates), including minimum requirements for additionality.
- Improve awareness of Slovak customers regarding disclosure of electricity.

5.5.10 Recommendations for Slovenia

Proposals on Guarantees of Origin:

- Making Slovenian GO fully compatible with modern European standards.

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- Support green energy offerings with additionality “strong”, based on “opt-out” of plants from the national targets.
 - Imports of GO should be accepted only if the country issuing the GO is using a Residual Mix for purposes of Disclosure.

Proposals on Electricity Disclosure:

- GO should ideally be the only label for disclosure.
- Introduce a standardised way to deal with imports and exports of GO in Fuel and Residual Mix calculations (at EU level).
- Define binding requirements regarding green electricity products (obligatory use of GO or certificates), together with minimum requirements for the additionality.
- Make the Slovenian electricity customers more aware about the disclosure. This should also be reflected in the markets of other products (the customers should be able to distinguish between products made by green electricity and other products).

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