

## REFUND + project

### Minutes from Regional Conference in Kaunas, Lithuania 5/02/09

#### List of participants:

No.	Name	Organisation
1	Seskeviciene Giedre	LR Ministry of Economy
2	Greblionaite Ausra	LR Ministry of Economy
3	Azukiene Jovita	Energy Agency
4	Uzsilaityte Lina	Energy Agency
5	Mockus Donatas	AB Panevezio energija
6	Liubarskis Vladimiras	Institute of Agriculture Engineering
7	Sodaitis Dainius	Authority of Municipality of Prienai district
8	Kandrotas Albertas	UAB Birstono siluma
9	Marcinauskas Kazys	Lithuanian Energy Institute
10	Skema Romualdas	Lithuanian Energy Institute
11	Kavolynas Antanas	Lithuanian University of Agriculture
12	Lisauskas Aurimas	Lithuanian Energy Institute
13	Dzenajaviciene Farida	Lithuanian Energy Institute
14	Masaitis Sigitas	Lithuanian Energy Institute
15	Saladis Jonas	Lithuanian University of Agriculture
16.	Tarvydas Dalius	Lithuanian Energy Institute
17.	Lauzikas Sarunas	Municipality of Silute district
18	Labutis Jonas	Authority of Municipality of Mazeikiai district
19	Grigas Robertas	Authority of Municipality of Lazdijai district

20	Janulis Mindaugas	UAB Cowi Baltic
21	Konstantinaviciute Inga	Lithuanian Energy Institute
22	Bobinaite Viktorija	Lithuanian Energy Institute
23	Gatautis Ramunas	Kaunas Municipality

Participants from project team:

<b>No.</b>	<b>Name</b>	<b>Organisation</b>
1.	Lescot Diane	Observ'ER
2.	Galiniš Arvydas	Lithuanian Energy Institute
3.	Lekavicius Vidas	Lithuanian Energy Institute

## Agenda

10:00-10:15	Registration
10:15-10:20	Welcome, Arvydas Galinis
10:20-11:00	Project presentation & Economic cross country results, Diane Lescot
11:00-11:40	Qualitative cross country analysis. Conclusions & recommendations, Diane Lescot
11:40-12:00	Coffee break
12:00-12:40	Modelling of heating systems and RES support schemes, Vidas Lekavicius
12:40-13:20	Results of modelling of direct tax measures for investments into RES heating systems in private households in Lithuania, Arvydas Galinis
13:20-14:20	Lunch
14:20-15:00	Discussions

## Welcome

Arvydas Galinis (AG) welcomed the participants and introduced the purpose of the session. The aim is to present the results of the first part of the project, that is to say the results from the monitoring of the 5 countries' experience with direct fiscal measure aimed at supporting investment in RES heating appliances in direct households. He invited participants to comment the presentations as much as they would like to. Comments will be integrated in the project contents as much as is possible.

### **1. Introduction to the project and presentation of results from economic cross country analysis**

*(see ppt Cross country economic analysis)*

Diane Lescot (DL) presented the project background, objectives and expected results, project team. She mentioned that 1/3 of the energy consumed in EU is heat and a lot of this heat is consumed for space heating and for hot water in households. She briefly described the different measures studied in the research. DL mentioned that every one could look in the website of the project the countries' analysis. She gave comparative analysis of tax measures implemented in analyzed countries. DL explained that because of the determined cost recovering ceilings, final consumers do not always get higher benefit in the case their investments are higher. Then she explained what analysis was made of the five national experiences of direct fiscal measures. DL presented Austrian's market evolution curve and explained that although tax allowance was implemented in 1979 but solar market had started to grow only in 1990 when regional subsidies were introduced. The growth of Belgian market was quite low until tax reduction implementation in 2003. After implementation of this tax with a combination of regional subsidies, market evolution got a stronger positive trend compared with market growth until 2003. The impact of the Belgium tax reduction was medium on solar thermal and low on biomass appliances and ground heat pumps. Whereas the Austrian tax allowance and the Portuguese tax reduction did not have any impact on the market, the French tax credit spurred the development of the solar thermal, the biomass and ground heat pumps appliances a lot. Italy put a successful tax reduction for solar thermal and wood appliances to a lesser extent. At the end of presentation DL mentioned the failure factors: tax measure is not the main policy (it is additional promotional tool), financial support is low, it works worse when measure is complex.

K. Marcinauskas (KM) wanted to know why only these five countries were selected as it would be of more interest for him to know what happens in more Nordic countries that are similar according to climate conditions, demand and etc. DL made clear that no other countries were implementing a tax measure when the research was designed. This is an exhaustive overview of existing direct tax measures. In Nordic countries there are subsidies, which are of a different nature, as the end consumer is being granted money to buy his appliance.

The question asked by Jonas Saladis (JS) was on what were the criteria that were used in the analysis to establish that the tax measure was a success or failure. DL answered that the team mainly focused on the positive impact of tax measures on the market curves. Also when existing, side effects were identified so as to underline what would have to be monitored and avoided in cases of implementation of a new tax measure.

KM mentioned that European Council is dealing with a question that all heat pumps should be considered as RES. He was interested in how the presented results would change after implementation of such a rule. AG mentioned that despite heat pumps use green electricity or not they were involved as RES.

## **2. Presentation of qualitative cross country analysis**

*(see ppt Cross country qualitative analysis)*

During her second presentation, DL identified 3 similar profiles of investors and consumers (ecologist, cautious and technoDYI) that have bought the appliances and briefly gave their characteristics. She mentioned that not all profiles are found in all 5 analyzed countries. For example, technoDYI are found only in Belgium, France and Portugal. This analyzes provide information why people invest in RES equipment, and as DL mentioned ecological issues are not the only problems concerning different people. After introduction of people profiles, DL's presentation included an overview of the role played by the fiscal measure in each of the countries:

- Triggering role – it means that consumer is triggered to make this investment because there is such a tax measure.
- Facilitators or maximizator role – means that consumers were thinking about such an investment and thanks to this measure they can get financial benefit or they think it is very favour time.
- Good surprise – consumer knows about such a tax measure only during purchasing time, but as it was explained, such a role doesn't stimulate investments.

All three roles were identified only in France and Belgium. In contrast, in Austria and Portugal, where because of subsidies used, tax measures never play a trigger role.

After presentation of the role played by the fiscal measure, failure (economic factors, communication with consumers and RES target) and success factors were identified and commented. At the end of presentation DL gave recommendations for the system improvement.

## **3. Conclusion and recommendations**

*see ppt Conclusions and recommendations*

DL presented operational recommendations directed at policy makers that would intend to set up a direct fiscal measure in their country. DL presented steps of tax measure policy. Later DL explained characteristics for good RES support policy. She mentioned that the measure should be as simple as possible; it should allow people easy calculation of how they benefit from this measure. If country decides to support different aims (for example energy efficiency and RES) the support ceiling should be quite high to enable people to do both investments. The scheme shouldn't discriminate different technologies. The measure should be based on significant financial support and this support could be

based on levelized costs. It would be more useful if financial support could cover both equipment and installation (for example in France only material cost is covered) cost.

R. Skema (RS) was raised a question on the reason why France chose such a high level of tax measure, especially when nuclear is providing a lot of its energy?

DL answered that tax credit was seen as a replacement of support through subsidies. And this presentation was based on tax measures not on subsidies that are common in EU. France knew transition period from 2001 to 2005 with a tax credit of 15%. Then subsidies were abandoned and tax credit was increased to 40% and then 50% of equipment costs. Also a motivation behind this policy was to spur the replacement of the stock of old wood boiler appliances in France, which is why only equipment with a minimum efficiency of 75% could be eligible to tax credit.

#### **4. Introduction to Message model**

*see ppt Modelling of heating systems and RES support schemes*

Vidas Lekavicius (VL) presented the functioning and assumptions behind the Message model. In accordance to different analysis done on Lithuanian people opinion, model makers keep in mind that cost are the main factor that influences the choice of heating system in Lithuania. VL mentioned that modelling was based on individual houses. He explained features of the Message model, situation of building stock and existing technologies for space heating and hot water preparation, assumptions made regarding future fuel prices, discount rate. Then he was talking about possible new technologies that can exchange existing ones, representation of demand and supply (solar energy) variation, modelling principles used in Lithuanian model. One of the most difficult tasks of preparation of the model was assumption on heat demand, because various literatures provide different information. VL pointed out the structure of investment cost for new technologies. He concluded that total investment cost depends on previous installed heating system because part of existing system can be used when heat generator is changed. At the end of his presentation he mentioned that additional tool that helps automatic creation of scenarios, and tool for analysis of the optimization results from different points of view were created and used in the study.

The listener from audience asked whether there is a subsidy scheme for renovation of heating systems in Lithuania. VL answered that they tried to know what would happen if these measures were implemented and how they will affect consumers' choice. Another participant stressed the fact that it is important to account for benefits induced for the whole country through the support of individual households' investments in RES.

There was a question of the origin of the prices for equipment that have been introduced in the model: prices are low and variable and it is difficult to get a clear idea. VL answered that presented prices are for 1 kW and information on prices is based on the information they get from sellers. These prices are averaged prices. Listener from audience recommended for modelling to use not the efficiency number that is showed in the equipment document, but actual which is perhaps smaller. He explained that boiler during the year works in different regime; therefore perhaps it would be correct to take into account the average efficiency.

#### **5. Presentation of the results of simulation for Lithuania**

*(See .ppt: Results of modelling of direct tax measures for investments into RES heating systems in private households in Lithuania)*

AG presented the results of the Message simulation that was done about the consequences of introducing a tax measure for Lithuania. At the beginning of his talk AG distinguished factors having impact on the use of various heating appliances: economic attractiveness, comfort level, impact on environment, reliability of fuel supply. He said that this research was mainly based on economic attractiveness because Lithuanian people do not agree and ready to pay more for energy in depended they are from RES or not. He pointed out the specific situation of the country in which wood energy already

represents ~70% for heating purposes in individual households. Then AG added that Lithuania has limited wood resources that are used not only in household sector. Wood consumption is growing in district heating sector. He explained that there are some boilers that can use either coal or biomass. In the model these don't get support, they are called "solid fuel boilers". Other boilers which are only to be used with biomass are called "RES boilers". AG noticed that although investment costs in Lithuania compared to Western European countries varies depending on technology employed, but more or less these costs are similar between countries.

Because the heat demand changes during a year, month, depending on outside air temperature, in Lithuanian analyzes they used for space heating  $T_{max}$  equal to 2175 h (this is Kaunas region data) and  $T_{max}$  equal to 524 h for solar collectors.  $T_{max}$  shows how much the selected technology during the year should work at the highest capacity in order to produce all energy required. AG in his presentation gave comparison of heat production cost at existing boilers and heating systems that could replace existing ones. This comparison was made for different size of houses and type of existing technology. Speaker mentioned that in general people will not choose to heat the houses with pellet boiler or heat pumps without the support, because the production costs are high. During the presentation about the costs of heat production from different technologies, the listener from audience asked about the lifetime of existing technologies. AG answered that depending on time it varies from 15 till 30 years. Later, similarly to heating cost, AG presented comparison of water heating costs using different technologies without support schemes. It was clear that the cheapest way to heat water is by using existing boilers whereas water heating with solar collectors can reach 43.9 euro cents per kWh. This difference occurs because the utilisation time of solar collector is low. Nevertheless not always it is convenient to use existing boilers for water heating during summer period. Therefore people use electric water heaters that are cheaper in comparison with solar collectors. In the study 72 cases were analyzed. The difference between them lies on the difference of fuel price, demand, discount rate, tax deduction and deduction rate. AG showed several slides on differences in fuel balances, installed capacities when support scheme is used and when it is not used. When there wouldn't be any support to RES technologies, heat production would mainly come from "solid fuel boilers". When support scheme came to place, the penetration level of "RES boilers" both in rural and urban areas would be much higher. AG showed that coal consumption would have reduction and it would be substituted by wood in the case the support scheme would be implemented. However total increase of wood consumption in calculated cases reached only 6% because of current high level of wood use (70%) and possibility to use wood by "solid fuel boilers" that are not under support schemes. AG stressed that the effect will be also on CO2 emissions. Without support scheme CO2 emissions from household heating sector would grow, but after implementation of support they would have the opposite trend. Later AG was focusing on estimation of rational support levels. The rational support level which comes from modelling results is 20-30% from total installation cost or 40-50% from equipment cost. In order to implement support schemes the spending from state budget should be 10-12 mln. euro every year. The results of the model show that heat pumps are not a solution in Lithuania: they become competitive only when 100% of investment costs are covered by tax measure. Solar becomes competitive with electricity when there is a support of 40%. When support reaches 85% solar becomes competitive with gas water heaters. It was also noted that solar water heaters should be analysed as complementary systems only because when sun is not shining or its radiation is low additional source for water heating should be in place.

A participant asked if the labour costs were taken into account in calculation: in terms of functioning people have to go fetch the wood or the coal. AG answered that this was included as a cost of 1 hour per day of average salary.

Another participant asked why we could witness an increase of only 6 percent of wood consumption whereas the increase in capacity installed is about 40%. AG explained that people with classical boilers ("solid fuel boilers") are already using wood in parallel to coal or peat. Change in structure of boilers occurs because of support schemes (people

choose more "RES boilers" and less "Solid fuel boilers") but this leads only to additional substitution of coal by wood (substitution of that part of coal that was used by "solid fuel boilers").

It was noted that Cautious people could think the other way round: because "RES boilers" are designed to use only wood people could be afraid to install them because there will be only one fuel possible for use and consumers will have no other choice if wood price would rise in the country as it did two years ago. AG was reassuring on this point: currently there are no big problems of supply of wood in the country. Why they should occur in the future? Wood is local fuel. Also in emergency case some wood boilers can use peat or coal.

DL added that it is also the responsibility of the State to help the creation of secure distribution channels for wood energy to avoid this problem.

Listener from the audience asked whether modellers took into account people's income, it's growth, the inflation, what a forecast is. If people's income would be low, people would have to decide and review their preferences by choosing either expenditures for food or new technologies. AG mentioned that the entire economic environment wasn't taken into account. Only the shutting down of the Lithuanian nuclear plant was taken into account regarding its impact on electricity prices He added that lifetime of some equipment will be to the end therefore they should have to be replaced by new in any case.

Listener from the audience said that gas but not coal is the main competitor of wood. The new trends show that the use of wood decreases and the use of gas increases. AG noted that gas boilers are very comfortable: they necessitate no manipulation. For such systems, the only replacement in the model could be heat pumps or automatic pellet boilers. They could be competitive with gas with support.

A participant noted that there is a great increase of heat pumps in other countries and, for example, Sweden is promoting use of heat pumps in Lithuania. AG answered that Sweden is supporting heat pumps in Lithuania (they are looking for a market). Also electricity prices are different. Price in Nordic countries is approximately 55 euros per MWh (system price). The price would be much higher in Lithuania after Ignalina NPP closure (90 euro per MWh). A lot of hydro power plants are in Nordic countries, which means that by using heat pumps, CO<sub>2</sub> is not emitted. Plus, there is a CO<sub>2</sub> tax for fossil fuels and it makes the fuel expensive.

DL asked whether CO<sub>2</sub> emission reduction would have impact on national level. The results of the model show that there are CO<sub>2</sub> emissions reductions, but these have a low impact on national scale, as a consequence of the small importance of individual household in the overall emissions of the country. DL underlined however, that the cost of the CO<sub>2</sub> reductions have to be taken into account into this evaluation and that supporting RES is also a question of energy safety of supply which is a strategic factor to be taken into account.

The person from the ministry outlined that the new Lithuanian government is ambitious regarding RES. This project will be a good background for the setting of new policies.

Municipalities are not usually providing support schemes for RES.

A question was raised on the interest of decision makers for the results of this project. How will they know about the results and what kind of decisions will be taken upon the end of the project.

DL answered that there were several dissemination actions and channels for spreading the results of the projects: national workshops were organised in Austria, Belgium, France and Portugal to inform about the monitoring of the national experience as well as about what happened in other countries. The conference in Lithuania is intended to disseminate results of simulation cases as well as the one that is foreseen in Warsaw in March. A brochure with operational recommendations on how to implement fiscal

measures will be drafted and 500 copies will be distributed in countries participating in the project. All project documents are downloadable from the project website.

DL also pointed out that this project was a research project and that the team could not take decisions that are the responsibility of policy makers.

The audience showed interest in elaboration of specific recommendations dedicated to Lithuania after finalisation of the project.

AG warmly thanked all participants for coming to this conference; he rejoiced that there were some representatives from the Ministry of Economy and Energy Agency that came from Vilnius.

AG offered that LEI could make an additional presentation at the ministry offices if this would be of some interest for them and could even make other runs of the model on different assumptions if needed.