

## 4<sup>th</sup> Regional Exchange of Modelling Experts involved in the Development of Integrated National Energy and Climate Plans (NECPs) in Southeast Europe

### Building up Modelling Capacity for Integrated Energy and Climate Planning

#### Meeting minutes

Virtual exchange via MS Teams, 07-Jul-2020, 10:00-11:00 am CET

#### Participants invited

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Representatives from Albania, Bosnia and Herzegovina, Kosovo\*, Montenegro, North Macedonia - government stakeholders, local and regional experts; consultants: REKK, SERA and Klimapolitika; the Energy Community Secretariat (ECS) and GIZ.

#### Opening remarks and introduction

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The regular regional exchange is jointly organized by CDCPIII, the ORF-EE, the Energy Community Secretariat and KEEP. Mr. Wittrock warmly welcomed the participants and especially the experts working in the modelling sector. He invited the participants to use the opportunity of the regional exchange to openly exchange on challenges and opportunities, lessons learned and/ or experiences.

Mr Wittrock handed over to Esad Smajlovic, who provided an expert input, on the one hand, a short introduction to LEAP for the case of Bosnia and Herzegovina and, on the other hand, touching up on challenges in modelling the energy supply and demand focusing on examples from the industry sector.

#### Expert presentation

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Mr Smajlovic explained that in Bosnia and Herzegovina LEAP was chosen as modelling tool for energy efficiency, renewable energies and CO<sub>2</sub> emissions due to the fact that LEAP supports optimization modelling, allowing for the construction of least cost models of electric system capacity expansion and dispatch, also under specific constraints such as limits of CO<sub>2</sub> emissions or maximal local air pollution. By this, policy measures such as carbon prices can be taken into account in the model. LEAP is primarily created to provide energy balances. However, energy balances often do not reveal much information in terms of energy efficiency directly. This information can often only be found indirectly and only for specific sectors, e.g. for transmission sectors (think of the example of auto producers). For industries or households, one cannot read the energy efficiency balance directly from the model. In those cases, one has to develop one's own tool or indicator to examine the efficiency.

Furthermore, Mr Smajlovic discussed the current status of the modelling based on examples from different sectors. For every sector and baseline the corresponding 2030 future energy balance is already known. To derive the future energy balances data from 2015 was used. One of the main challenges was to reconsult and take into account all the different documents, plans and strategies published for the sectors and to integrate them in the model in a consistent

way. The environmental parameters, which are included in the model, indicate how well the country performed overall in CO<sub>2</sub> reductions. Those parameters are comparable with the NDC emission reduction aims.

Equally, from energy balances can be read how different energy sources, such as renewable energies, participated in each subsector, e.g. the electricity consumption.

For Mr Smajlovic, the key in good modelling is how far one can go in what he calls “bottom bottom indicators”. The aim is to calibrate your input data as good as possible and to produce valid energy balance for initial year in LEAP (based on the lowest level of technology). If there is a good match between the indicators and the modelled results for the initial year, the model is well calibrated (can be seen in comparing the values corresponding to the initial year). *[further clarification from Esad: For example, for residential heating we knew that average (actual not theoretical) energy need was 180 kwh/m<sup>2</sup> for all 60 million m<sup>2</sup> of heated area (both of these are bottom indicators), We knew from the survey what were the shares of different fuels like coal, wood, oils based fuels (another bottom indicator). Once we entered this into LEAP calculator, we got results in the energy balance for the part related to heating. Also, once we have compiled and entered the data on energy consumption for appliances per different fuel types or for cooking based on standard needs per households or per person (also bottom indicators) this was automatically added to the LEAP balance for 2015 (start year). Final results in LEAP energy balance 2015 (the sum of all above in residential sector) did not differ too much from official energy balance so we could only conclude that we are dealing with good calibration (this is standard procedure in LEAP). We were using official energy balance for 2015 and all possible official data from that year to produce similar energy balance in LEAP based on technologies and official figures.]*

A difficult part regarding the analysis was that different energy efficiency indicators exist for different energy relevant sectors. For the modelling process it is necessary to be aware of those differences to include the right parameters/indicators in the model. Mr Smajlovic pleaded for the introduction of energy audits. Unfortunately, no system of regular energy audits in industry was established until today, so often it is not straight forward to receive and include relevant data to the model. Obligated parties to conduct energy audits should be large enterprises and large consumers. The former are entities that employ on average less than 250 persons per year, whose total annual income is less than 97,500,000.00 convertible marks and whose total annual balance sheet is less than 84,000,000.00 convertible marks, The latter are entities annual consumption of more than 0.35 GWh of electricity, and / or 30 tons of coal, and / or 150 tons of petroleum products and / and-or total energy and energy consumption in excess of 30 toe.

Mr Smajlovic pointed out an example from the German Federal Ministry of Economic Affairs, who started a programme on energy efficiency in industry focusing on compressed air, electrical drives, and refrigeration. Mr Smajlovic thinks that those solutions might also be interesting for other counties and could serve as low hanging fruits in terms of energy efficiency. He concluded with an example from Bosnia and Herzegovina showing that the potential and increase in energy efficiency in industry is enormous.

## Discussion

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Mr Wittrock opened the room for the discussion and questions.

### **Question 1: Mr Wittrock started asking about key bottlenecks for the implementation of energy audits in industry so far.**

Mr Smajlovic answered that the key bottlenecks in industry are similar to the key bottlenecks in any other sector. Especially, the infant stages are challenging. For example, in the building sector it took time to develop and set a proper programme for energy auditors. Mr. Smajlovic thinks that for the industry sector this will be even more complicated, because energy audits need to be dedicated to specific technologies. Therefore, technology-profiled experts are necessary, who are able to conduct the audits (they need to be educated first).

Ms Cherepnalkoska shared her experience while doing industry auditing within the UN Industrial Programme: Big corporations and industries measure their improvements in energy efficiency often by very simple indicators (e.g. energy consumption per product or per m<sup>3</sup>), which are easy to understand. However, in those kinds of industries it is often more appropriate and comprehensive to measure improvements in energy efficiency through regression analysis instead of using the simple indicators mentioned above. Ms. Cherepnalkoska suggested to use both models/indicators in parallel always with regard to the purpose of the analysis.

### **Question 2: Ms Rosenberg asked, whether any economic indicator influenced the development of the policy scenarios? Were price signals such as carbon prices etc. accounted for while developing the policy scenarios?**

Mr Smajlovic pointed out that if as soon as an optimization for the different subsectors should be conducted, different economic parameters such as operational and maintenance costs, or investment costs, etc. need to be added to the model. However, LEAP itself is primarily created to produce total net present values of all the measures that are implemented.

Mr Smajlovic described that they were so far only able to enter residential sector related demand costs (Euro/m<sup>3</sup>). Once all costs for the demand and supply side are added, optimization becomes possible. This whole process will take some more time. However, Mr Smajlovic pointed out that they did manage to find pure potential connections between economic parameters and energy intensities of each sub-sector. *[further clarification from Esad: we did find pure connection but to make it visible we have to get all the aimed scenario costs data for all the sectors and subsector we modelled in LEAP beside heating in residential sector: appliances, cooking, DHW, public buildings heating, public buildings nonheating, transport (freight and passengers), industry per different branches + costs o needed investments into supply side like costs of TPP commissioning (Fixed OM costs, stranded costs, variable OM costs...) and decommissioning of TPP, new district heating system expansion costs... For this we do need more time.]*

### **Question 3: Ms Rosenberg asked about the future development of the model and what the main things in need are.**

Mr Smajlovic mentioned that the group finished already the optimization process. Many international stakeholders such as the World Bank are active in the process and interested in

setting carbon pricing standards while at the same time respecting competitiveness concerns of the different countries. They are interested in conducting impact assessments, e.g. regarding coal miners or thermopower plants. Mr Smajlovic hopes that representatives of the ministries are in favor of and supportive for regular energy audits. He emphasized that the NECP processes need to be jointly with all stakeholders and simultaneously across all sectors developed.

Zdravko added a comment to discuss about the industry sector further. He thinks this sector is in the Balkan area very specific, since many firms have been privatized. Hence, it is very difficult to find data on how much energy the consume. Firstly, because of the technology in use and secondly, because private firms often do not share the data voluntarily. So, it is even more important to introduce obligatory energy audits and a programme for energy management systems in the industry sector. He pleaded for the implementation of incentives to foster the transition to more sustainable technology. Also, he thinks it would be helpful to create and/ or connect with the position of an energy manager, who is responsible to collect all the energy related data in corporations.

Mr Smajlovic added an example of the German energy certification system for the wood industry. Within this framework it is up to the country to decide how the indicator should look like, but in the end the energy certificate enables users to see where the company is placed in terms of energy consumption and energy efficiency.

## **Next steps**

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Since the vacation period is right ahead the wish was expressed by some of the participants to postpone the next exchange to August.

Mr Wittrock will ask for input presentations or teasers for the next exchange. Participants are kindly asked to (bilaterally) reach out to Mr Wittrock, Avni Sfishta, Tibor Schaffhauser, Anja Rosenberg or to Dubravka Bosnjak to express ideas or also to discuss challenges, next steps or lessons learned that could be interesting also for others.

Ms Bosnjak announced that a regional meeting on Research, Innovation and Competitiveness - 5th NECP Dimension - is planned. This meeting will be used to exchange experiences in preparing this thematic area in NECP documents. For more information please get in touch with Ms Bosnjak.

Mr Wittrock thanked everyone for participating and especially Mr Smajlovic for the valuable input.