HEINRICH BÖLL STIFTUNG

Final Report on

Study Visit on Energy Transition for Stakeholders from the South Caucasus

October 12-16, 2015 Berlin

Each participant contributed to final report and shared their personal impressions on different sections of the program. Compiled and edited by Komila Nabiyeva.

Monday, 12 October

Introduction and excursion in the HBS building

Photo by Komila Nabiyeva

The first day of the study visit started with an introduction of participants and their expectations, and an overview of the 5-day programme. Eleven participants from Georgia and Armenia attended the meeting. Among their expectations: to get practical information about the German energy transition and its challenges, to learn new energy efficiency and renewable energy strategies, and to get new ideas on the ways of transferring the German experience to the South Caucasus.

Afterwards, the group proceeded to the excursion in the Heinrich Böll Foundation office, which due to its low energy consumption is a best practice on energy efficiency in buildings. The concept of the building follows 3 basic principles: 1) Intelligent systems with as little equipment as possible. This saves resources and keeps down the installation and operating costs; 2) Energy is not lost until it leaves the building. Waste heat is recycled in an innovative manner; 3) Ventilation and cooling are as natural as possible and give users maximum control. The PV system is installed on the roof.

Hans-Josef Fell, Energy Watch Group

Origins of the German Energiewende

Energy Watch Group is a global network of scientists and parliamentarians conducting research and publishing independent studies on global energy developments. The network was established in 2006 by several parliamentarians under the direction of Mr. Fell who was a member of the German parliament from 1998 to 2013 representing Alliance 90/the Greens.

Mr. Fell's experience in the field of renewable energy made him one of the major stakeholders and interesting lecturers of the study visit. He provided the background and history of the green

movement in Germany, identified major political and environmental challenges, gave statistical information on the growth of renewable energy in Germany, and told about climate protection and energy security policies as well as success stories from different countries.

It was interesting to find out that the environmental movement in Germany started long time ago i.e. after oil crisis in 1972 followed by the establishment of the Green Party five years later. Even though the nuclear disaster in Fukushima triggered new developments in Germany, the idea of shifting from nuclear and fossil fuels to renewables had been proposed and pushed by the green movement in Germany (including Mr. Fell himself and his colleague-parliamentarians) long before 2011.

It was important to learn that the German energy transition has been facilitated by various mechanisms incl. media, demonstrations and protests, creation of financial platforms, based on cooperatives, influencing high-level decision-makers and parliamentarians. Unfortunately, not all of these mechanisms can be applied in the South Caucasus, but this valuable experience shall be noted and used in the near future. Information on the impressive growth of the share of renewable energy in electricity and heat generation from 1992 to 2015, on the levelized cost of energy sources comparison and on the key pillars of the Renewables Energy Act (i.e. privileged grid access, promotional feed-in tariff and guaranteed period of remuneration) was particularly interesting from the professional point of view.

Dr. Gerd Rosenkranz, Agora Energiewende

Insights from the German energy transition


Photo by Komila Nabiyeva

Agora Energiewende is a think-tank that develops scientifically based and politically feasible approaches for ensuring the success of the energy transition in Germany. In cooperation with the public policy, civil society, business and academia Agora develops a common understanding of the concept and principals of energy transition and courses of action.

Dr. Rosenkranz provided detailed information on the current status, trends and challenges of the German energy transition. The statistical data, demonstrating major changes taking place in the German energy sector since 1990 as well as forecasts for up to 2050, was particularly valuable. It was interesting to learn contributions of wind, solar, biomass and hydro in formation of the 26% share. Also it was interesting to learn that biomass (8%) has greater contribution then solar PV (6%), whereas hydro plays the least rope (3%) unlike Armenia, where power generated by small HPPs constitutes about 10% of the total generation mix.

The group also learned that due to numerous reforms the total emissions of greenhouse gases in 2014 were reduced by about 26% as compared to 1990 level. Finally, the most encouraging statistics demonstrated how wind energy has become a mature (reliable and high-capacity) and affordable

(thanks to constantly decreasing prices) technology due to the strong legislative, institutional and financial support, provided by the public and private sectors.

Tuesday, 13 October 2015

Bärbel Höhn, Member of the German Bundestag, Green Party and Chair of the Committee on the Environment, Nature Conservation, Building and Nuclear Safety

Photo by Komila Nabiyeva

The meeting with Ms. Bärbel Höhn was very useful and inspiring. Ms. Höhn was born in the Flensburg city, where coal industry played an important role in the economy. Therefore, climate change, the transition to renewable energy and the fight against nuclear and coal power have been the focus of her work. Ms. Höhn was a minister of the Environment, Agriculture and Consumer Protection in the North-Rhine Westphalia during 1995-2005.

Ms. Höhn talked about the anti-coal politics of the Greens party and her experience in fighting against biggest German utilities RWE and E.ON. She gave insights about the relations and cooperation among political parties of Germany on energy and environmental issues. She has also touched upon such interesting issues as:

- How shares of the cities in lignite-producing companies decreases year by year and the value of the companies declines;
- Pros and cons of the German Renewable Energy Act, which came into force in 2000 and was the initial impulse for a tremendous boost of renewable energies in Germany;
- The decrease of the PV costs from 50 eurocents/kWh to 11 eurocents /kWh in the last 20 years;
- Residential power tariff in Germany is about 28Ec/kWh, which includes 6.2 eurocents as a surcharge for renewables. Many businesses are exempt from the EEG surcharge;

Johann Strese, Housing Initiative for Eastern Europe (IWO)

Energy efficiency in the buildings in Germany and Eastern Europe

Johann Strese presented the main elements of the policies, measures, plans and challenges in the sphere of energy efficiency in the buildings in Germany. He also presented some examples of the IWO projects in Eastern Europe and the South Caucasus.

The 3rd National Energy Efficiency Action plan of Germany aims at increasing energy efficiency in all main sectors of economy. Its overall goal is to reduce energy use by 20% until 2020. The document specifies the role of the Government in this process as a creator of favourable conditions. On the

level of households and residential buildings the methods of implementing NEEAP can be expressed by 4 simple words: requiring, supporting (the most impressive!), informing and monitoring.

Excursion to a best-practice on energy efficiency in the buildings, «Bremer Höhe»

A practical example on the implementation of energy efficiency measures was the cooperative «Bremer Höhe». Founded by citizens, the cooperative was able to establish its own heating system thus becoming independent economically (the building residents pay by 1/3 less for heating than the residents in similar buildings in Berlin). This cooperative is a real success story and its experience could be helpful for developing the «culture» of residential cooperatives in Armenia and Georgia.

Dr. Petra Opitz, DIW econ

Sustainable Energy Pathways in the South Caucasus

Photo by Komila Nabiyeva

Dr. Opitz presented the study, commissioned by the Heinrich-Böll Foundation "Sustainable Energy Pathways in the South Caucasus". The discussion of the current situation of energy use in the South Caucasus revealed that despite similar historical conditions in 1990s, many changes have taken place and now the countries' needs differ significantly. Dr. Opitz stated that Armenian 1st NEEAP was not implemented, but in fact the overall target of reduction of energy use until 2014 was overachieved by 260%. So, the target-setting (as Georgia plans doing) can stimulate the implementation of EE measures and reduce the energy dependence of the country.

Wednesday, 14 October 2015

Dr. Andreas Wieg, Federal Office of energy cooperatives

The role of renewable energy cooperatives in the Energiewende

The meeting with Dr. Wieg was very interesting. It covered activities of energy cooperatives and showed some success stories in Germany. Altogether, there are 850 energy cooperatives with 150.000 members in Germany. The survey results indicate that the major motivation of cooperatives is not financial, but rather the community development.It was useful to learn about 3 business models (PV, wind energy and district heating) in detail. Banks play an important role by providing lower rates for these projects. Energy cooperatives are key for the rural development, as they provide new workplaces. This could be a useful experience both in Armenia and Georgia.

Christoph Bals and Oldag Caspar, Germanwatch

NGOs as drivers for the Energy Transition

Photo by Komila Nabiyeva

During the meeting, Germanwatch presented its work, campaigns and strategies in relation to the energy transition and climate change, incl. Climate Change

Performance Index and Climate Risk Index.

I will try to analyze these indexes more scrupulously and present arguments/facts during the discussions with stakeholders in Armenia. It was very interesting to hear about the Peruvian farmer, who with Germanwatch' support plans to sue RWE in the German court in the run-up to the climate conference in Paris. This could be an area for possible cooperation with Germanwatch in future (e.g. Court of Human Rights). Another important thing was Mr. Bals' analysis of the perspectives of Paris conference, and his arguments on its progress. Summarizing I will say that in Germany the public is using the findings of NGOs. If any NGO finds a corruption case, it will be immediately acted upon by the government (also because there is a public demand for action), which unfortunately still does not work in Armenia.

Dr. Franziska Smolnik, German Institute for International and Security Affairs

Dr. Franziska Smolnik is a researcher, focusing on the contemporary political developments in the Caucasus. She has been working on a research on energy security in the region, which will provide expertise for decision-makers and is due to be presented next year in Brussels and in Germany. She was discussing the Azerbaijan-Georgia-Turkey energy triangle, the role of the EU in shaping the South Caucasus energy strategy, the role of the recently signed EU-Georgia Association Agreement, nuclear power in Armenia and integration of Armenia in Eurasian Union and the neutral position of Azerbaijan. The group also discussed conflicts in South Caucasus countries, focusing on the population level and post conflict situations after the 90s and after 2008.

Rainer Hinrichs-Rahlwes, German Renewable Energy Federation (BEE) and

Sophie Heitz, Foundation 2°

The role of businesses in the Energiewende

The BEE umbrella association unites 26 industry associations (HPP, wind, solar), 30,000 single members, and 5000 companies and the Foundation 2° is an initiative of CEOs and private companies. The speakers told the group about the history of energy transition in Germany, its challenges and benefits. They also shared information on how the German energy system looks like, the goals and the incentives, used to burst further energy transition. The meeting was highly important for the participants of the program as on one hand it gave a clear picture about differences between the South Caucasus countries and Germany and on another hand it gave new ideas on the potential arguments that can be used to persuade the decision makers in the South Caucasus.

Dr. Camilla Bausch- Ecologic institute

Climate change and the UN climate conferences as drivers for the energy transition

The third day of the study tour finished with a dinner together with Dr. Camilla Bausch. Dr. Bausch presented in detail insights of the coming climate change conference in Paris. She gave a comprehensive overview of the process, internal streams, different parties, challenges, problems and expectations of the conference. The meeting itself was very informative as Dr. Bausch described all previous meeting and explained the reasons why the Copenhagen meeting failed to meet

expectations, what went wrong, what have been changed or fixed since then and why she thinks that Paris meeting will not fail the expectations.

Thursday, 15 October 2015

Field visit to the first energy self-sufficient community Feldheim

The participants of the study tour were transferred to the Feldheim, Treuenbrietzen, where presentation by Ms. Kathleen Thompson and excursion to the wind and solar parks took place.

The Feldheim village, some 60 km southwest of Berlin, is home to 128 residents. On the surface, it's unremarkable. But beneath Feldheim's lone street runs a network of electrical cables and heating pipes powered entirely by renewable energy. The Feldheim's energy experiment dates back to 1995, when the entrepreneur Michael Raschemann proposed erecting four wind turbines on the land owned by the local farming cooperative. The relatively flat and windy landscape was ideal for that.

Photo by Vahram Jalalyan

In partnership with the renewable energy firm “Energiequelle” (Raschemann was its co-founder) Feldheim gradually expanded the wind park to its current size with 47 turbines. The newest and largest of the turbines alone are on track to produce 9 million KW/hours of electricity per year: more than enough to power the entire Feldheim village several times over. The village wind farm produces so much renewable energy, that 99% of what it produces is sold on the energy market.

Building on the wind farm's success, the farming cooperative has diversified its business. In the face of the falling crop prices and rising energy costs, they decided to build a biogas plant. That facility now turns maize and cereal silage - plus a mixture of pig and cow manure - into methane, which in turn heats and powers Feldheim households. In 2008, the same year the biogas plant came into operation, Feldheim and “Energiequelle” added a solar farm to their portfolio of renewable energy assets. The farm was built on the site of an abandoned Soviet military base, and now produces enough electricity to power 600 households.

Despite the robust development of renewable energy resources in and around Feldheim, there was still a major roadblock to becoming entirely energy self-sufficient: the utility company E.ON refused to sell or lease its grid to the village. Feldheim built its own parallel electrical grid and heating network, funded by “Energiequelle”, EU subsidies, capital loans and contributions of 3.000 euros

from each resident. The grid started operating in late 2010 - the point in time Feldheim considers itself fully carbon-neutral - and since then, local energy prices have dropped by about a third.

Photo by Vahram Jalalyan

The carbon-neutral moniker must be taken with a grain of salt: the German law allowed only homeowners to buy into the electrical and heating grid. The few renters in Feldheim are still connected to the original grid and receive their energy from the same mix of resources as nearly all German households. Feldheim is also currently installing a massive battery that can store enough electricity to power the village for two days. It's due to be switched on this fall.

The immense publicity around Feldheim has turned it into a tourist destination. Residents say they have an average of 3.000 visitors per year - many from Japan, where people increasingly look for alternative sources of energy after the Fukushima disaster. Residents of Feldheim and those involved in its energy project recognize it may be difficult to replicate their success in other parts of the world.

Photo by Vahram Jalalyan

<u>Friday, 16 October 2015</u>

Jörg Kirsch, Deputy Head of Bilateral energy cooperation with non - OECD counties, Russia, Turkey

Prospects for EU/German cooperation on renewable energy and energy efficiency with the South Caucasus

Mr. Kirsch discussed with the group German plans and strategies, regarding the South Caucasus region. As the German Government is trying to reduce its dependence on the Russian gas, the South Caucasus is considered as an alternative corridor for gas supply and Georgia - as a potential cooperation partner due to its geopolitical location and existing pipeline infrastructures.

Cooperation with Georgia in the field of renewable energy is not attractive so far due to a) an unexplored market for wind and solar technology; b) Turkish market and its existing cooperation with Germany; c) price of the technology - although the price of wind and solar (not hydro) technology is decreasing, the technology price in the developing countries is still a challenge.

Therefore, Mr. Kirsch thinks it is better to cooperate with the South Caucasus as well as with Tunisia, Algeria and Kazakhstan on energy efficiency. These countries have a big potential and energy efficiency can be achieved at certain level without big costs. The GIZ, on behalf of the Ministry, cooperates with Georgia and other countries in climate change issues including energy efficiency.

Mr.Kirsch noted that the German Government prefers to build large scale wind power plants rather than small capacities. He presumes that constructing large-scale wind power plants with the state funding in the developing countries could be unreasonable. But small-scale individual projects might have benefits. In response to this, I would like to mention that the Georgian Government is currently constructing the first 20 MW wind power plant with a potential to increase its capacity to 100 MW. Several private proposals for wind power plant construction are also under consideration; among them are German–Georgian investors.

One of the barriers mentioned is that the government of Georgia and of other South Caucasus countries do not express their readiness to deepen the existing cooperation. There was a suggestion from the group to push the talks with the ministry next time.

With the lifted sanctions against Iran, it was important to understand if the German Government has plans to transport Iranian gas and oil to Europe through Armenia. His answer was negative, because: 1) As the main gas and oil exporter to Europe Russia is not interested in letting Armenia to be a corridor between Europe and Asia for the Iranian gas. 2) Germany does not need so much oil and gas. 3) It is questionable if Iran will want to sell oil and gas to Germany. The Asian market is bigger and might be more attractive for Iran.