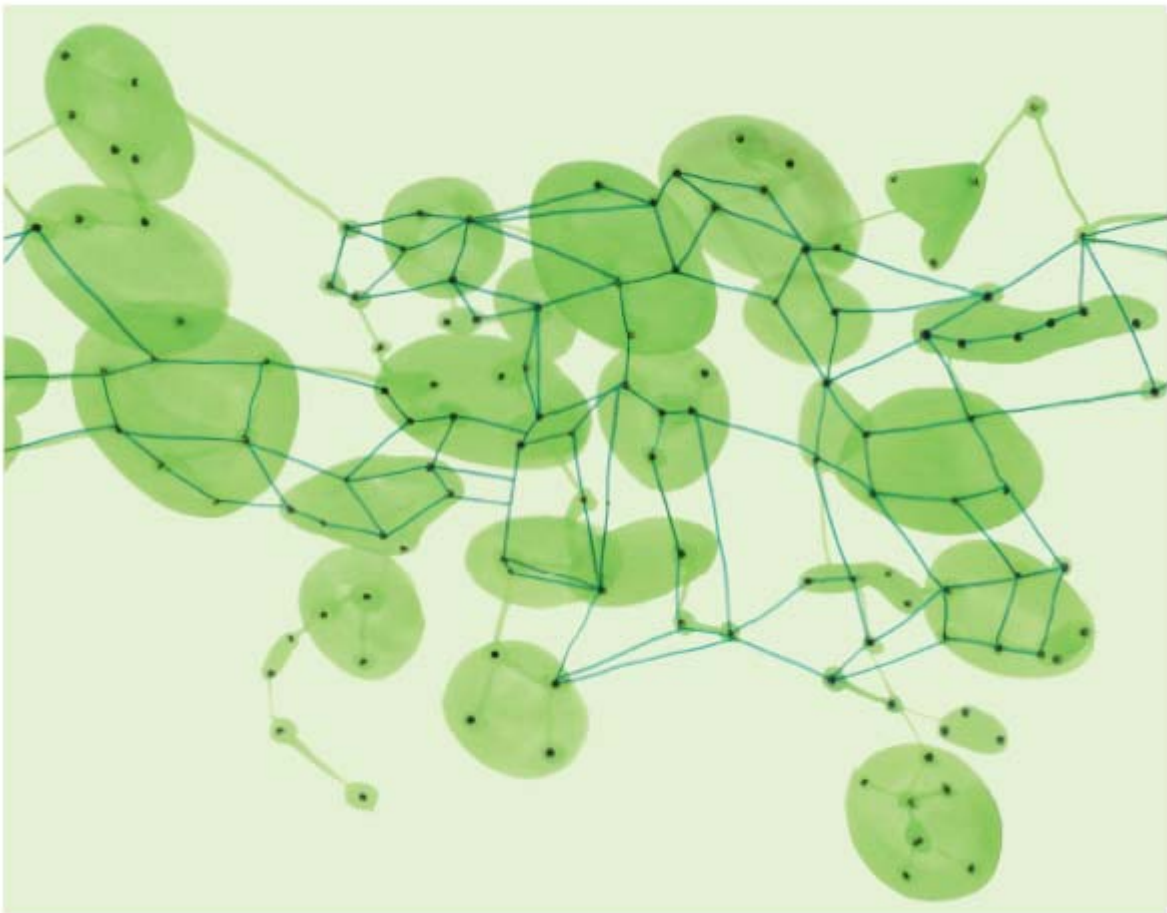


Sustainable Energy Pathways in the South Caucasus

Opportunities for Development and Political Choices



Regional Conference
Radisson Blu Iveria, Tbilisi, Georgia
June 12, 2015

South Caucasus Energy Pathways: Opportunities for Development and Political Choices

On June 12, 2015, the South Caucasus Regional Office of the Heinrich Boell Foundation (HBF SC) organized the regional energy conference bringing together the representatives of academia, politicians, civil society, governmental organizations and international organizations, from Armenia, Azerbaijan and Georgia to discuss the prospects of the sustainable energy systems in the South Caucasus Countries.

At the Conference Heinrich Boell Foundation presented its regional energy study [South Caucasus Energy Pathways: Opportunities for Development and Political Choices](#). Specially for this occasion, HBF SC has invited [Mr. Hans-Joseph Fell](#) - German Green Politician (former MP 1998-2013) and the leading author of the key renewable energy-related legislation of Germany, as a keynote speaker.

The sessions of the Conference focused on: 1) current trends of the economic and energy development of South Caucasus countries, 2) costs and prospects of energy efficiency and renewable energy technologies in the region, 3) environmental and social impacts of the current energy systems in the South Caucasus and 4) climate politics and preparation for COP 21st.

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1 Conference Opening

Nino Lejava, Director of the South Caucasus Regional Office of the Heinrich Boell Foundation

Ms. Lejava welcomed all participants of the conference, explaining that the use of renewable energy sources and energy efficiency issues like smart energy facilities and even smart houses are not futuristic, but realistic. In Germany, as in many other western countries, this change was slow, and it was possible due to a change of values and the shift to supporting ecologically sustainable policies in the decades following the release of “The Limits of Growth” in 1972. What Germany is doing in this field is important, and it is important that it is exporting this to other countries as well. The South Caucasus Regional Office of the Heinrich Boell Foundation in 2014 started implementing a programme on climate change that advocates transparent change in energy policy and the shaping of sustainable energy systems in the region. The programme aims to analyse the situation in the South Caucasus countries through the lens of international experience and highlight the factors of mutual influence of the energy sector and climate change.

2 Welcoming Notes

Katharina Derkorn, Head of Development Cooperation, Embassy of German Federal Republic in Georgia

In her welcoming note, Ms. Derkorn stressed that Germany is supporting the energy sector of all the three countries in the South Caucasus. She also said that it is special that people from Armenia, Azerbaijan and Georgia are participating at the conference, as one usually sees the countries in differences. It is very important to see their energy sectors linked to each other. Although some projects may be controversial, Germany sticks to its decisions to support certain sectors and at the same time is working towards introducing standards in those sectors rather than withdrawing from them and leaving to others who don't care about the standards. The German Embassy considers Heinrich Boell Foundation as their partner in this sector, although the latter uses to stress on its independence.

Mariam Valishvili, Deputy Minister, Ministry of Energy of Georgia

Ms. Valishvili emphasized that the political priorities of Georgia right now are linked to the Association Agreement with the EU, which will introduce new and stricter standards to different sectors including the energy sector. Nevertheless, it is also important to cooperate with the neighboring countries despite their political choices. Ms. Valishvili highlighted the three main priorities: 1. Diversification of energy sources, which means working together with the neighbors as well as with other countries, 2. a better use of national resources, including renewable energy sources, and 3. Energy efficiency. Georgia shares its priority of establishing a healthy energy market with its neighbors, and though the country is directing to Europe, it doesn't forget that it has old partners in the region.

Teimuraz Murghulia, Deputy Minister, Ministry of Environment and Natural Resources Protection of Georgia

Mr. Murghulia pointed out that energy is one of the most important drivers of economy and politics in the region and emphasized that year 2015 is crucial because of national and international

decisions at UN Climate Change Conference negotiations. For a development in the right direction, wide participation is important, not only from international donors but society. Georgia is going through the process of bringing its legislation close to EU directives. The new Georgian law on Environmental Impact Assessment is the first step; also, the ministry has already started working on introducing the Strategic Environmental Assessment (SEA) and Energy sector is the very first one which will go through SEA. Although the widely used hydro energy is renewable, the focus must shift to less harming forms of renewable energies.

3 Keynote Speaker

Hans-Josef Fell, President of Energy Watch Group, Member of German Parliamentary Group Alliance 90/the Greens (1998-2013)

Mr. Fell responded to the speeches of the government representatives, saying that it is a very good sign that Georgia has undertaken a way towards renewable energies. According to Fell, the biggest political challenges of today's world are all connected to the use of fossil and nuclear energy. Climate issues and the problem of peak oil can be solved by two strategies: the first one is stopping greenhouse gas emissions, not just reducing them. Fell stressed that there is no lack of energy for doing so, just a lack of technology. The second one is taking out carbon from the atmosphere, via the creation of bio-coal and reforestation measures, as well as greening deserts and focusing on organic agriculture. Only countries being independent from fossil fuel import are free of pressure from outside – a switch to 100 percent renewables will therefore also contribute to a more peaceful world. The global trend now is a withdrawal from fossil investments, because of the fear that these are going to be stranded investments (“Carbon Bubble”). There is a double pitfall for fossil and nuclear energy investments: rising prices will make customers switch to renewables, declining prices will make investors withdraw from fossil and nuclear investments. As a result the trend is clearly going to renewable energies, and technology and political as well as private initiatives are developing faster than imagined. As prices for solar panels drop, since 2010 it is cheaper for a developing country to invest in renewable energy than in nuclear. Today wind and solar systems are the cheapest ways to produce power.

4 Presentation of Heinrich Boell Foundation`s Energy Study Sustainable Energy Pathways in the South Caucasus: Opportunities for Development and Political Choices

Petra Opitz, DIW Econ

Before presenting the key findings of the Regional Study *Energy Pathways in the South Caucasus: Opportunities for Development and Political Choices*, Ms. Opitz shared her impression that the vision of Mr. Fell and the will of the Georgian government seem to fit very well. Concerning the Regional Study, it was the first attempt to analyze the current situation in the three countries of the South Caucasus region. All of them went through the challenging way of transforming the inherited energy system designed for regional integration within the Soviet energy market into the national energy markets. They have great differences when it comes to issues like national fossil energy resources, a secure and stable energy supply and energy export potential, and have different intentions and strategies on economic integration. The three countries are now stabilizing and beginning to export energy, but on very different levels. All the three countries need to refurbish old power plants and to establish new ones, the three main pillars for further development should be energy efficiency, renewable energies and interregional energy trade, especially for renewables. Energy efficiency itself has huge potential in the South Caucasus, which is poorly developed so far. Especially on the demand side there is nearly nothing done by now. As energy efficiency measures can be much cheaper than investments in renewable energies, these are likely to pay off. Main obstacles in this sector are the low electricity and heat tariffs, which make these investments not profitable at the moment, and the lack of understanding for energy efficiency measures as sources of energy supply. The main proposals for all the three countries include the development of a regional electricity market, the development of an appropriate legal and economic framework for energy efficiency measures, the development of new approaches for heat supply and the development of attractive public transport.

Questions & Answers

Liana Jervalidze wanted to know more about the role of base load in future energy transition systems. **Mr. Fell** explained that he considers base load as an old system not needed anymore; what the countries need now is to create the system that balance a mix of all renewable energies, this means that we have to think about a new system with storages and smart connection with heating and cooling systems as well as of electrical grids and batteries. All those will make base load systems unnecessary. **Ms. Opitz** also stressed that storages will play a main role in the future.

Mamuka Gvilava stressed on the impacts of hydro power plants on the environment and asked if there could be a lock-in effect of hydro power technology as well. **Mr. Fell** said hydro is a renewable source, but it must be organized in a sustainable way. Therefore countries shall concentrate on small hydro power plants rather than big ones, and still on a sustainable way of construction and maintenance. The same goes for bioenergy. One must also consider that in contrast, nuclear or fossil energy can never be sustainable. **Ms. Opitz** pointed out that while it is true that hydro power was a peak load in Georgia in the past, gas has much more potential for a lock-in effect. The liberalization of the Georgian energy market somehow was misunderstood as “the market solves every problem”, but politics need to set the right frameworks. As energy demand will rise, energy efficiency must be seen as an energy supply source. With using this potential, there might not even be much need for new power plants, be them hydro or fossil ones.

5 Session 1: Energy Sector in South Caucasus Countries: Trends and Challenges

Speakers:

Temur Gochitashvili (Georgia) – Georgian Oil and Gas Corporation

Vahan Sargsyan (Armenia) – Scientific Research Institute of Energy of Armenia

Farid Guliyev (Azerbaijan) – Jacobs University of Bremen, School of Humanities and Social Sciences, Independent Consultant

Moderator: **Tamar Antidze**, Climate Change Program Coordinator, South Caucasus Regional Office of Heinrich Böell Foundation

Mr. Gochitashvili showed that the Georgian energy sector is mainly based on imported fossil energies. When it comes to the oil and gas sector, Georgia has prospects at the shelf of the Black Sea, which were not extracted at all yet, mainly because an important part of it lies on the territory of Abkhazia. In terms of oil and gas transit, Georgia is the regional leader and wants to further expand its role to becoming a major energy hub. As long as our economies depend on fossil energies, gas is the least harmful one. TAP, TANAP and AGRI are the three international projects Georgia together with Azerbaijan are involved in. Georgia has officially expressed the political will to access the Europe and the way towards EU is an opportunity but also challenge for Georgia. The country is now obliged to introduce standards and transparency and avoid monopolies. One significant challenge is an uninterrupted gas supply. In 2008, pipelines were under treat due to the conflict with Russia, and as many pipelines run through mountainous regions, natural disasters like landslides are a constant threat to them. Mr. Gochotashvili pledged for more usage of hydro power in Georgia, as it only uses 20 percent of its potential so far. Hydro power could be used to cover peak demand in the whole South Caucasus region. In conclusion, the Georgian energy sector should use more renewable sources, including hydro power, local and interregional infrastructure should be developed, strategic reserves should be created, and the legislation should be harmonized in the region, to establish a regional energy market comparable to that of the EU one day.

Mr. Sargsyan said that the Armenian energy sector at the moment is fully self-sufficient and connected to international gas pipelines from Russia (via Georgia) and Iran. Energy transmission lines to all neighboring countries do exist, but connections to Azerbaijan and Turkey do not operate due to the political situation. Future investments in Armenia include the extension of the Nuclear Power Plant’s lifetime until 2027 and the construction of a new one is beginning in 2027, the construction of the new high voltage energy transmission lines connecting the country to Georgia as well as to Iran, the development of around 700 MW of renewable energy sources and the construction of two new thermal power plants until 2027. There are agreements with Iran on seasonal electricity exchange to “store” electricity during summer and use it in the winter and to exchange gas for electricity. Agreements with Georgia include the parallel operation of power systems, the supply of electricity in emergency situations and instructions on the operational dispatch of the power systems of both countries. The benefits of a better regional transportation infrastructure will include the export of Armenian base power to Georgia in winter times (which will be possible through the use of the new nuclear power plant), electricity supplies from Georgia to Armenia in spring and summer time, the increase of seasonal electricity exchange with Iran and the supply of peak power in Georgia, which would allow Georgia to increase its peak power supplies to Turkey.

Mr. Guliyev in his presentation focused on the key challenges Azerbaijan is facing to: the “*resource curse*” meaning that oil-driven economies like Azerbaijan are vulnerable in terms of oil-prices and have to face challenges in revenue management, fiscal transparency in public investments and long-term sustainability issues. There is a rhetorical recognition of the need to end oil dependence of the country, and that economy needs to diversify. A “*Vision 2020*” has been adopted to promote diversification, opening businesses was made easier, infrastructure was renewed and events like the European Games 2015 are hosted. But the actual progress is not very high: private business environment is weak, basic social services are still poorly developed and the dependency on oil exports is still very high. The second challenge for Azerbaijan is an energy market without market institutions. State-owned monopolies, crony capitalism, excessive state intervention and stalled economic reform are hindering development in energy sectors outside of oil and gas. Mr. Guliyev’s impression was that Azerbaijan will not develop the renewable energies sector if there is no need to do so. He recommended more effort concerning transparency when it comes to oil revenues, the strengthening of democratic institutions, opening up the energy sector to regional and international competition and the separation of production from transmission and distribution of fuels.

Discussion

Irakli Samkharadze remarked that adaption of European standards will mean technical problems and high levels of legal frameworks for Georgia and wanted to know how this change will be undergone and if it may be a burden for Georgian companies. **Mr. Gochitashvili** responded that the integration process will indeed be a huge challenge for the country, but it is a political decision, not an economic one, Georgia wants to be a part of the European family. Another challenge regarding this will be the fact that between Georgia and the European Union lies Turkey, which might not be a problem for energy transition, but for gas transition it could be. By 2023 to 2025, Georgia will change problems concerning legislation and standardization issues which will probably be painful. Overall, Georgian laws are very close to the European standard, but it lacks implementation.

Liana Jervalidze wanted to know how Armenia wants to deal with the huge investment costs and the ecological threat of a new nuclear power plant. **Mr. Sargsyan** responded that the new nuclear power plant will, if the final decision for it is made, be built on the site of the actual one. This place was chosen and already prepared in Soviet times, which should reduce investment costs. Also, the site is considered to be safe.

Petra Opitz asked how the gas prices are accounted and argued that market prices for gas would generate gas revenues and also increase the willingness to implement energy efficiency measures. **Mr. Gochitashvili** responded that Georgia will open its market step by step, as one still has to take into account that there are many people in the country for whom higher gas prices would be problematic. Nevertheless the actual policy of delivery to everyone at a minimum price is also problematic as one can see that the richest three percent of Georgia’s population are consuming as much gas as the poorest 40 percent.

Murman Margvelashvili wanted to know if there are any goals specified concerning the potential energy flows between Armenia, Georgia, Iran and Russia. **Mr. Sargsyan** responded that the countries have only expressed their will to deepened cooperation so far, agreements will be made from 2018 on. Nevertheless, cooperation is making steps forward, for example this spring parts of the Armenian electricity system were shut down to use the Georgian one and vice versa.

6 Session 2: Costs and Prospects of Energy Efficiency and Renewable & Energy Saving Technologies in the South Caucasus

Speakers:

Giorgi Abulashvili (Georgia) – Energy Efficiency Center of Georgia

Murman Margvelashvili (Georgia) – World Experience for Georgia

Jahangir Efendiev (Azerbaijan) – Independent Energy Expert

Astghine Pasoyan (Armenia) – Foundation to Save Energy

Alen Amirkhanian (Armenia) – The American University of Armenia, Acopian Center for Environment

Moderator: **Vahram Jalalyan**, UNDP Armenia

Mr. Abulashvili's presentation was about energy saving potential in residential housing. He stated that the South Caucasus countries consume much less energy than the European OECD member states, but at the same time use this energy four times less efficiently than they. Residential buildings, industry and transport sector are the most energy intensive sectors in Georgia, the building sector is the most energy intensive in all the three South Caucasus states. When it comes to transport, Georgia has to be in contact with the exporters from Europe, because most of the cars in Georgia are exported from Europe and they don't fit emission standards there anymore. Energy efficiency has to improve in the long run, but one has to be aware that energy consumption is likely to rise in the future. The most positive forecast scenarios see Georgia's consumption standard staying where it is now. In Georgia's building sector nowadays energy efficiency is widely used as a marketing trick, because there are no standards implemented so far. Buildings are generally very energy intensive, there are no regulations and no targets set and no steps being taken towards reduction so far. The government released documents concerning this issue lately and is starting to work on Energy Efficiency Strategy, but Mr. Abulashvili mentioned that there are reasons to be skeptical about that. He stated that a developed and efficient emissions market like in the European Union would be the best method to face the problem of energy efficiency and CO2 mitigation.

Mr. Margvelashvili focused on the role of renewable energies in Georgia, saying that, as wind energy is now as cheap as hydro energy and the prices for solar energy decreasing fast, renewables will very soon become a mainstream. In Georgia there is a seasonal disbalance of supply and demand and investments depend on export. With a grid integration, hydro power plants could provide the balancing service for other renewable sources. He said that he sees a large misconception of what one should debate about: As it is already decided to implement European directives in Georgia, the question is not if, but when to introduce these directives, and if Georgia does this together with neighboring countries, which is supposedly easier and cheaper, or not. Mr. Margvelashvili believes that it should be done now since doing this later might be very difficult. Georgia needs a renewable energy action plan. The trend for solar power is increasing and Georgia has a lot of potential here. Hydro power plants have a seasonality problem and often have a bad impact on nature; therefore the focus should be on small plants, which are also easier to manage. Wind power has a potential for further expansion. When it comes to geothermals, models need to be introduced, but Mr. Margvelashvili sees potential here especially for agriculture in Western Georgia. Biomass could supply the same number of households that is now using wood, with sawdust having a potential that hasn't been discussed yet.

Mr. Efendiev pointed out that though Azerbaijan has a basic legislation, it is insufficient so far. There is no state programme concerning energy efficiency. He stated that he doesn't believe that increasing tariffs for promoting renewable is the right thing. Instead he proposed a fund for financing, whose regulations have already been drafted recently. But still a lacking fund should be no obstacle for investment in renewable energy technologies. In Azerbaijan, solar energy has the highest potential. While most of the investment comes from the state, there are numerous model projects in the country, like wind farms, a bioenergy-gas-solar-complex and an agro-energy-project. The production of renewable support devices, like solar panels, has also started recently. When it comes to energy efficiency, households have the biggest share in energy consumption, while public buildings have better energy efficiency figures than private ones.

Ms. Pasoyan stated that energy demand is rising in Armenia, and renewable energies would help reducing an impending supply capacity gap and increase energy security. In this scenario, solar energy would help to save water at hydro power plants, which could then be used for peak loads, while geothermal energy could be used as a base load and would be available for peaks. The base of the pyramid however is energy efficiency, while economically, an implementation of renewables is “only likely” when energy efficiency potentials are used. Within the “Covenant of Mayors” and the “Sustainable Energy Action Planning” programs, CO² reduction targets are set and actions are taking place at a local level in many municipalities in Armenia. Concerning the financing of energy efficiency and renewables, five banks in Armenia have sustainable energy on-lending schemes, while 20 banks offer various energy efficiency and renewable energies loans for the households.

Mr. Amirkhanian concentrated on the costs of energy efficiency and renewable energy, highlighting the role of knowledge and capacity. He stressed that passive house standard is a tenth of the average thermal consumption of Armenian households. There are two challenges for implementing such standards in countries like Armenia: Firstly, such high standards are very knowledge intensive. Secondly, there has to be a demand for energy efficiency. The latter will develop as soon as prices for energy rise. When it comes to knowledge, it must be accumulated, transferred and spread all over the country. Therefore the pilot projects that are already being implemented in the different places of the country are very important. There also needs to be a search for synergies, as well as a very early start to implement such knowledge, for example in schools. Having the energy efficient school building means that you have a certain number of people who get used to this standard and culture.

Discussion

Liana Jervalidze mentioned that the interests for bank loans are very high and therefore useless for poor households wanting to improve their energy efficiency. **Ms. Pasoyan** responded that the interest rates for loans on energy efficiency measures are improving, at least in Armenia. She stated that energy efficiency is the best thing to help the poor and told that in Armenia huge amounts of money were used to keep gas tariffs low and to hide higher tariffs from the population, but this money would have better been invested in energy efficiency. **Mr. Abulashvili** told that international funds are financing energy efficiency measures in Georgia and said that one has to take into account that investments in energy efficient devices are decreasing energy costs, while investments in new and mostly bigger devices, like they are mostly common among the population, are increasing energy costs.

7 Session 3: Environmental and Social Impacts of the Current Energy Systems in the South Caucasus

Speakers:

Irakli Macharashvili (Georgia) – Green Alternative

Karine Danielyan (Armenia) – Association for Sustainable Human Development

Inga Zarafyan (Armenia) – Ecolur

Anna Samvel & Ida Bakhturidze (Georgia) – Women in Europe for a Common Future

Moderator: **Tamara Gurchiani**, Lawyer

Mr. Macharashvili gave examples of negative impacts of hydro power plants in Georgia. Problems of the current “business as usual”- approach are for example deficient environmental impact assessments, outdated hydrological data, deficient monitoring systems, the absence of spatial planning, an outdated system to assess availability of water resources, poor forest management or a lack of investment in maintenance and renovation of the facilities. In conclusion, hydro power plants, including small ones, are a threat to biodiversity in Georgia right now. Instead of “business as usual”, Mr. Macharashvili proposed a “sustainable ecosystem management”, including watershed management plans and funding, implementation of guidelines such as environmental impact assessments, a spatial planning policy, inventory and monitoring of hydro resources, an updated system for water availability criteria and sustainable forest management.

Ms. Danielyan talked about the realization of the post Rio+20-process in Armenia. She stated that one has to meet between grassroots initiatives and high level decision-making, this is why there were discussions implemented between government representatives and civil society in Armenia. Sustainable development of energy is a top priority: At Rio Summit, there was an index of sustainable development created, by now there exists also an index of sustainable cities. Ms. Danielyan said she doesn't agree with the Armenian government about the role of hydro power plants, their impact on the biosystem is immense. Instead of concentrating on building small hydro power plants, there should be investments in solar energy and geothermals.

Ms. Zarafyan was mainly talking about the role of hydro power in Armenia, stating that environment is not resources only, but it is also for physical and psychological recreation of humans. When talking about the potential of hydro power in Armenia, investors often forget about the rising risks of draught. The technical equipment of Armenian hydro power plants is often very outdated, and they are often built in protected areas or in seismic zones with the risks of landslides. Some hydro power plants have contaminated water, which is not only a threat for nature, but for humans as well. Ecolur, together with the Ministry of Environmental Protection, tries to implement a new certification system for hydro power plants in Armenia.

Ms. Samvel and Ms. Bakhturidze presented their “gender sensitive nationally appropriate mitigation action” for the energy sector in Georgia. They implemented solar water heating in rural areas in Georgia (and to a smaller extent in Armenia and Azerbaijan too), where wood was mainly used for this purpose. As about 74 percent of Georgian woods are unsustainably managed, this simple solar technology has a positive impact on climate. Further on, people in rural areas save money, it doesn't have such a bad impact on health as woodfire, and women save time on the unpaid labor of preparing fire for cooking. The project also aimed for gender equality in the trainings on construction, maintenance and monitoring, which was achieved by 40 percent.

Discussion

Maia Tskhvaradze stated that apart from solar water heating systems, burning firewood would be better than using gas, given the precondition of sustainably managed wood. **Ms. Samwel** responded that the problem is that most of the Georgian forest is not sustainably managed, but that any approach to change that would be supported by her.

Liana Jervalidze stated that also small hydro power plants can't be a solution and wanted to know if there are any figures for the share of small and big hydro power plants in Armenia. She also was interested in calculations regarding the potential for solar power in square meters in Georgia and Armenia. **Ms. Zarafyan** answered that she doesn't differentiate between small and big hydro power plants, as the figures for these come from the state, which also doesn't differentiate. **Ms. Danielyan** said that there are perfect conditions created for hydro energy in Armenia and that the focus needs to be shifted to solar energy. **Ms. Samwel** said there are no such calculations existing for solar power, but according to her information the installation of one solar water heating systems costs about 1000 Lari.

Mamuka Gvilava was interested in the funding source for Armenian hydro power plants and gave the example of a Georgian hydro power plant which was considered to be designed according to a “best international practice” and funded by KfW. It was impacted by two landslides and two floods so far. **Mr. Macharashvili** added that the project was considered to be designed according to “best practice” by the developers, not by the government. **Ms. Zarafyan** answered that the funding source for Armenian hydro power plants is mainly private investments, but also KfW and other development banks. The European Development Bank is also interested in funding such projects.

8 Session 4: Climate Politics and Preparation for COP 21

Speakers:

Marina Shvangiradze (Georgia) – Manager of Georgia's Third National Communication to the UNFCCC, Government of Georgia/UNDP

Maia Tskhvaradze (Georgia) – Climate Change office of the Ministry of Environment and Natural Resources of Georgia

Muslum Gurbanov (Azerbaijan) – Head of Environmental Laboratory of the Institute for Radiation Problems of the Academy of Sciences in Azerbaijan

Moderator: **Tamar Antidze**, Climate Change Program Coordinator, South Caucasus Regional Office of Heinrich Boell Foundation

Ms. Shvangiradze said that ahead of the Paris summit this year, Georgia as a small emitter is mostly stressing on its vulnerability. If we have a look at the figures, CO² emissions have rapidly decreased since 1990 and are increasing again since 1995. In 2011, emissions were just little more than a third of that of 1990. Whereas in the 1990s, there was an increase of thermal energy electricity generation, the share of hydro electricity generation grew after 2000. Forecasts say that the import of energy will rise by 70 percent until 2030, so the reduction strategy is fully directed into the reduction of imports. While energy production is very clean already today in Georgia, the transport sector might switch to natural gas to get cleaner. The government is mainly focused on hydro energy, whereas energy efficiency measures and renewable are mainly implemented by the NGO sector and municipalities. In Georgia, only the emission reduction policy is bringing all the players connected to emissions together.

Ms. Tskhvaradze explained the system of “Intended Nationally Determined Contributions” (INDC) ahead of the Paris summit. As Georgia is affected by climate change, it is important for the country to reduce emissions, even though its share of emissions is very low. In a moderate forecast, the country's emissions will double until 2030. Georgia's proposed INDC structure contains a 15 percent reduction from the baseline as unconditional reduction and a 25 percent reduction from the baseline as conditional reduction in a timeframe from 2021 to 2030.

Mr. Gurbanov shared the details with respect to INDC preparations in Azerbaijan. He stated that Azerbaijan considers it important to adopt an internationally legally binding agreement under the convention applicable to all parties leading to climate resilient sustainable development. The INDC preparations include a reduction of greenhouse gas emissions by 35 percent in 2030 compared to the base year of 1990. The country has already met this goal, but will face challenges in holding it, for example by population growth. Mr. Gurbanov said that the country has to make efforts when it comes to energy efficiency in the energy sector – by constructing new and refurbishing old power plants for example, by switching to gas as a fuel, by reducing loss of transmission lines. The transport sector especially needs to reduce emissions, here first steps have been made by introducing electrical trains connecting cities and towns in the country and by the reduction of speed limits. The household sector has a huge potential when it comes to energy efficiency.

Discussion

Stella Namgaladze, who pointed out that she was speaking as an activist, said that there is optimism in Georgia regarding the Paris summit, but we have to talk about the culture of consumption and think about our future. She stated that we also have to take into consideration the attempts of the USA to reduce the high standards in the EU via free trade and that it is hard to trust the Georgian government because it mostly follows business interests. **Ms. Tskhvaradze** responded that the INDC is a general document without detailed aims yet. We will see more when it gets more detailed. By 2016 there will be a new draft law adopted concerning the energy efficiency of the buildings.

Mamuka Gvilava said that the structure of the Georgian economy is not comparable to what it was in the 1990s anymore and highlighted the importance of the realistic benchmarks. **Ms. Shvangiradze** responded that the 1990 benchmark is used for developing countries, for developed countries it is the year 2000. **Ms. Tskhvaradze** stated that the Ministry of Environment uses 2013 as a baseline for BAU scenario and not 1990. Mr. Gvilava again stressed that Georgia should focus on its time of independence and not take Soviet Union figures as a benchmark. **Ms. Pasoyan** responded that 1990 was the last year the South Caucasus countries had decent energy balance until 2010 (in case of Armenia), so it is an important and realistic benchmark.

Irakli Macharashvili expressed his mistrust to MARKAL model. The main reason of his skepticism was the fact that when the planning of the hydropower sector was undertaken and capacity of the planned HPPs was defined according to 10 percent sanitary flow calculations. Such approach has drastic ecological and social affects and misleads the investor as well. **Ms. Anna Sikharulidze**, the specialist working on MARKAL model with Ministry of Energy remarked that the model is quite flexible and the 10% can be easily changed to any other number if that specific sector introduces different regulation or parameter.

Liana Jervalidze remarked that the problems Georgia is facing now with adopting European regulations are based on the fact that former reforms were made under US advisory, which could be simplified as “the market solves every problem”.

Mamuka Gvilava also highlighted the problems related to Black Sea coast erosion and wondered at what extent it is covered by third national communication. **Ms Shvangiradze** responded that in the document the issues of coast erosion is emphasized and number of recommendations and strategy are included for minimization of that problem.

9 Wrapping up the Conference

Petra Opitz, DIW Econ

Ms. Opitz stated that the conference was very interesting, and summarized the following points: most discussions focused on fossil energy, as Georgia wants to become an energy hub. There is a discussion about whether energy efficiency measures can and should be established immediately or not. An important factor in all the three countries is new buildings; the non-implementation of energy efficiency measures here could lead to a lock-in effect. It is important to establish a market for energy efficiency, but that market doesn't appear by itself, we need policies that lead to this market. Subsidies, especially concerning gas tariffs, are an issue. It would be better to turn them into energy efficiency investments, which would also help poor people in the three countries. Also the finances and donor's funds should be focused onto a right direction. Here, the countries need to explain more what they want or need. There is a need for implementation of sustainability measures, especially when it comes to hydro power and firewood. European experience of proper public participation instruments and environmental impact assessment can be solution of those problems.

*The text is a report of the conference held in Tbilisi, on June 12th, 2015, titled “Sustainable Energy Pathways in the South Caucasus: Opportunities for Development and Political Choices “. The report was compiled by **Steffen Kolberg**, intern at HBF SC and edited by **Tamar Antidze**, Climate Change Programme Coordinator at South Caucasus Office of the Heinrich Boell Foundation.*

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