

ACTIVITY COMPLETION REPORT

Preparation of Roadmap (strategic whitepaper) on the Development of District Heating in Azerbaijan until 2020

(AHEF.116.AZ)

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Abbreviations

AHEF	Ad Hoc Expert Facility
ITS	INOGATE Technical Secretariat
TA	Technical Assistance
CWP	Country Work Plan
EBRD	European Bank for Reconstruction and Development
ADB	Asian Development Bank
DH	District Heating
JSC	Joint Stock Company
CO ₂	Carbon dioxide
AZN	Azerbaijani Manat

1 PART 1 – EUROPEAN COMMISSION

1.1 Background

Assignment Title:	Preparation of Roadmap (strategic whitepaper) on the Development of District Heating in Azerbaijan until 2020, AHEF.116.AZ
Country and Dates:	Azerbaijan, May 2014 – March 2016
Beneficiary Organisation(s):	Azeristiliktechizat JSC (Azerbaijani Heat Supply Operator)
Beneficiary Organisation's key contact persons – name and e-mail address	Mr Ilham Mirzaliyev, Deputy Chairman of Azeristiliktechizat JSC, ilham.mirzaliyev@azeristiliktechizat.az
Deliverables Produced	Final report and presentations
Expert Team Members	Klaus Fafner, Patrick Moloney, Farhad Aliyev,

1.2 Essence of the Activity

The Technical Assistance (TA) assignment on the preparation of a Road Map on the Development of District Heating in Azerbaijan until 2020 was implemented during the period May 2014 – March 2016. The TA was requested by Azeristiliktechizat, the national district heating operator. The overall objective of the assistance was to provide the beneficiary with guidance and recommendations for choosing the optimal and most sustainable direction for development until 2020.

The Roadmap prepared as a part of this assignment (Annex 1) is aimed at designing a more efficient heating systems accompanied by increased comfort levels for the citizens as well as creating the basis for expansion of district heating while achieving economic and environmental benefits. The Roadmap identifies key issues and barriers to the improvement of the district heating sector, provides key recommendations and outlines a five year action plan. Other important deliverables of this TA included the improvement of the capacity of key decision makers as a result of on-the-job training supported by specific workshops on district heating strategy development.

As an additional activity to support the adoption and the implementation of the Roadmap in Azerbaijan, ITS conducted additional trainings and provided guidance to the beneficiary on the development of heat mapping (CWP.11.AZ).

1.3 Key Findings

1. The district heating in Azerbaijan typically comprises small decentralised heat supply systems serving from 8 to 12 apartment blocks from a single gas fired boiler house. Continued modernization of these systems has precedence for Azeristiliktechizat, but in the long term there are prospects to expand and interconnect them in larger systems.
2. While developing long-term plans, the management of Azeristiliktechizat followed the “Strategy of Heating Supply of the Republic of Azerbaijan” developed within a USAID project

in 2004. However, the document was not approved as an official strategy for the district heating sector in Azerbaijan.

3. A precondition for attracting interest from International Financial Institutions (in modernization, development and preparation for a 'green transition' in the long term) is that the national operator of heat supply system, Azeristiliktechizat, implements institutional improvements and adopts a financial strategy in order to ensure sufficient security for the investors and sustainable benefits from investments.
4. The key decision makers in Azerbaijan had limited capacity on the level of efficiency and functioning of district heating companies in the EU and considered Azeristiliktechizat as a company that provides their customers with services in an efficient and sustainable manner.
5. The management of the company found that it was too premature to develop a pilot DH project with a smarter operational concept, modern equipment, control and meters in order to save energy consumption, decrease maintenance costs and prolong the technical lifetime.
6. The heat tariffs of Azeristiliktechizat do not recover all costs related to the delivery of heat energy that results in a heavy burden of company's growing debts. As regards the proposals to strengthen and develop the business towards financial viability, the Minister of Finance, Mr. Samir Sharifov, stated that the government was unable to provide financial independence to some public utilities, inclusive Azeristiliktechizat, as their services are regulated by the state through the Tariff Council. At the same time, the Tariff Council has number of times declined company's applications for increasing the tariffs during the last five years.

1.4 Ownership and Benefits of the Activity

The main benefits of the activity for the Beneficiary are:

1. A long-term strategy for developing the district heating in Azerbaijan was created based on best practice and experience gained from Northern and Eastern Europe.
2. Barriers against strategic objectives were identified, and means of mitigating the barriers were formulated.
3. Specific action plans for initiatives up to 2020 were proposed.
4. Proposals were made to developing expertise, competencies, networking, technology, implementation of pilot projects, and building stronger national and international cooperation.
5. Proposals were made for cooperation opportunities across sectors and public institutions, creating the basis for possible support from international funding programs.

The Beneficiary took ownership in the following way:

1. The beneficiary supported the cooperation of ITS experts and the employees of Azeristiliktechizat while implementation of this TA and expressed interest in adopting the developed Roadmap (strategic whitepaper) in the future. However, the adoption of the ITS recommendations depends on the financial stability of the company and therefore, the Roadmap can be submitted for approval only after resolving the severe economic problems of the company.

1.5 Recommendations

1. The adoption of the Roadmap should go along with the revision of the heat tariffs in order to achieve cost recovery and financial stability of the company in the long term.
2. International financial institutions, mainly the European Bank for Reconstruction and Development (EBRD) and Asian Development Bank (ADB), have recently showed a strong interest in investing in DH in Azerbaijan provided that good projects may be identified. To create the necessary basis for the attraction of international investments, it is highly recommended to officially adopt the Roadmap developed within this assignment to meet expectation of potential international investors.
3. It is also highly recommended to select a site for the development of the proposed pilot project based on potential international grants and as a platform for building international cooperation.
4. A stronger government support and involvement is needed in order to strengthen and anchoring the developed Roadmap into the national DH strategy. It may require that the Roadmap should be adapted to the government's needs in accordance with new policy and legislation.
5. A possibility for getting further inspiration and the improvement of the efficiency of the DH system in Azerbaijan can be implemented within an international twinning project together with modern European district heating companies.

1.6 Challenges Faced

1. The major challenge is that Azeristiliktechizat's tariffs are too low to cover the costs resulting in the accumulation of a growing company debt and thereby limited opportunities to engage in long-term strategic planning activities.
2. Azeristiliktechizat was not ready to support ITS proposal to select a pilot site for developing the proposed pilot project based on possible international grants and as a platform for building international cooperation.

2 PART 2 - BENEFICIARIES

2.1 Background

During the period from 01/2010 to 01/2012, the Ministry of Energy (Ministry of Industry and Energy at that period of time) received EC assistance devoted to the development of a strategy for energy efficiency and use of renewable energy resources. As a result of this EC support program, a number of strategic documents were drafted, but none of them targeted the improvement of a DH strategy. In order to rectify this omission the basic approach to a new DH strategy was to set the framework for energy efficiency and use of renewable energy resources, but also to develop a fruitful cooperation between authorities, investors, operating companies and citizens to achieve the vision of a reliable, competitive, environmentally friendly and energy-efficient district heating system.

The “Strategy of Heating Supply of the Republic of Azerbaijan” that was originally developed within the USAID project “Provision of technical assistance to the energy sector of Azerbaijan” in September 2004 is the key strategic document of the national district heating operator Azeristiliktechizat. However, it is not an official document and has never been approved as an official strategy for the district heating sector in Azerbaijan. This strategy includes to abandon large outdated centralized systems from the Soviet era and to establish smaller boilers in individual urban quarters. These smaller boilers are equipped with modern units with relatively high automation to increase their efficiency and to decrease the need for permanent presence of working staff. The capacity of the new boiler houses depends on the construction planned for the area and the amount of currently connected buildings; however these smaller boilers will not normally supply heat to more than 10-15 apartment blocks.

The ITS assessment of the unofficial DH strategy from 2004 shows a need for upgrading, because many changes have taken place the last decade in the operating environment of the district heating business, and changes are expected to continue in the future in the heating market. In addition, the DH strategy from 2004 does not take into account the huge potential of integrating renewable energy and surplus heat into the district heating systems, thus using district heating to achieve national political objectives for reducing CO₂ emissions, and at the same time supporting economic development and improved living conditions for the urban population.

Recently international financial institutions, mainly EBRD and ADB, have been reported to be keen to invest in DH in Azerbaijan provided that good projects may be identified. To create the necessary basis for possible international investments, an official national DH strategy is highly recommended. That is an additional reason why it has been important to elaborate the Roadmap (strategic whitepaper) on the development of District Heating in Azerbaijan until 2020.

2.2 Essence of the Activity

The overall objective of the TA was to provide the national heating operator Azeristiliktechizat with guidance in choosing the correct direction in which it should follow up until 2020 (and beyond) resulting in a more efficient and sustainable heating system accompanied by increased comfort levels for the citizens. Thus the assignment is aimed at assisting Azeristiliktechizat in the Preparation of Roadmap (strategic whitepaper) on the development of district heating in Azerbaijan until 2020.

The basic approach to a district heating strategy is assumed to set the framework for a fruitful cooperation between authorities, investors, operating companies and citizens of Azerbaijan to achieve the vision of a reliable, competitive, environmentally friendly and energy-efficient district heating system. Thus, the output of the strategic planning work was proposed to include:

- Long-term strategy for developing the district heating market.
- Identification of barriers against strategic objectives and clarifying the means of mitigating barriers.
- Specific action plans for initiatives up to 2020.
- Proposals for projects and cooperation opportunities across sectors and public institutions, with possible support from international funding programs.
- Assessment of the impact on the environment, living conditions and employment due to the proposed modernization of the district heating systems.
- Initiatives to developing expertise, competencies, networking, technology, implementation of demonstration projects, and building stronger national and international cooperation.

As a part of the development of district heating in Azerbaijan, the strategy includes new energy sources: renewable energy, surplus heat from the industry, combined heat and power generation, and also the integration with district cooling as important elements of the future market, especially when modernizing urban areas.

The strategy takes into account the effects on the district heating sector of other trends affecting the business. The fundamental aim is to create the basis for carrying out a profitable DH business in a future competitive heating market:

- Influence on the operating environment in such a way that the district heating business can improve and expand their product and service ranges as well as quality and reputation.
- Targeted focus on factors that affect the development of the heating market, such as legislation, political decision-making, market control and technological development.
- In order to develop the district heating sector into a competitive forerunner in the heating market, the sector needs to attract/educate skilled professionals to develop the new energy business, handle new technologies and create an operational culture with focus on good service and satisfied customers.

The final deliverable of this assignment – the Whitepaper (the Roadmap) is presented in Annex 1 of this report and structured as follows:

- Chapter 1 is a prologue that sets out the context behind the whitepaper, addressing medium and long term targets (year 2020 targets and beyond).
- Chapter 2 and 3 describes the International energy agenda, trends with influence on the heating sector and the role of district heating. The chapters also describe the position and challenges of Azerbaijan in this respect.

- Chapter 4 contains an overview of current situation key issues, barriers and challenges for district heating in Azerbaijan: technical, institutional, legislative and financial.
- Chapter 5 presents recommendations to national strategic actions, inclusive proposals for technical, economic and institutional developments of the national DH operator Azeristiliktechizat.
- Chapter 6 includes a description of key stakeholders, authorities and responsibilities, and institutional framework within which the Roadmap can be realized.
- Chapter 7 is a description of a five year Action Plan: 2016 – 2020 by drafting a District Heating Roadmap in order to pave the way to the future district heating business.
- Chapter 6 is an epilogue that describes key elements of a desired future (world class) district heating system that is recommended as the long term target in Azerbaijan.

2.3 Key Findings

For attracting interest from International Financial Institutions in modernisation, development and preparation for 'green transition' in the long term, a precondition for investing is that the national operator of heat supply system, Azeristiliktechizat, adopts a perspective institutional strengthening plan including institutional improvements and a financial strategy to help ensure sufficient security for the international investments and maximum benefit from the investments in the long term.

In accordance with the opinion of Azeristiliktechizat, the company has been working for years on institutional strengthening and as of today, it is a well-operating company within the framework defined by the present regulations. Azeristiliktechizat has a business where staff is motivated and skilled in system operation and customer relations, and Azeristiliktechizat provides today their customers (heat consumers) with services in an efficient and sustainable manner. Thus, Azeristiliktechizat found limited readiness for the ITS proposals to develop further a new Institutional Strengthening Plan based on experience and best practise from modern European district heating companies. However, a possibility for getting further inspiration could be an international twinning project together with a modern European district heating company.

As regards proposals to strengthen and develop the business towards financial viability, the Finance Minister of Azerbaijan, Mr. Samir Sharifov, has stated that the government is unable to provide financial independence to some public utilities, inclusive Azeristiliktechizat, as their services are regulated by the state through the Tariff Council. A basic challenge is that Azeristiliktechizat's tariffs are too low to cover the costs resulting in the accumulation of a growing company debt. The head of the Customer Service Department, Rafiq Aliyev stated that Azeristiliktechizat has applied over more than 5 years to the national Tariff Council for an increase of tariffs, but without success. For example Azeristiliktechizat buys cold city water at 1,0 AZN per m³, but the heat tariff for hot tap water is only 0,4 AZN per m³. The government of Azerbaijan is aware of the main imbalance existing in the public utilities sector of the national economy.

As regard the ITS recommendation for technical improvements, Azeristiliktechizat is ready for cooperation, but is also already working on implementing their own modernisation and development

plans. The ITS experts recommended the beneficiary to focus on the existed weaknesses, problems, and outdated life cycle of the pipes and equipment that was supported by Mr. Gulmammad Javadov, Deputy Minister of the Ministry of Energy during the first mission to Baku. More specific the ITS recommended Azeristiliktechizat to focus on the following:

- Even most of the boilers are rather new, they are the non-condensing boiler type and that is not recommended for modern systems.
- Heat distribution networks are without high-insulated modern distribution pipes.
- Insufficient pump regulation results in high electricity consumption.
- Lack of modern system regulation and control results in often overheating at the heat consumers.
- The present water treatment is poor resulting in limited technical lifetime of the pipes.
- There is limited metering and thereby limited knowledge about the system performance in general.

Under the present condition it was too premature for Azeristiliktechizat to provide support to the ITS proposal to develop a pilot project with a smarter operational concept, modern equipment and modern control and meters in order to save the fuel and electricity, decrease maintenance costs and prolong the technical lifetime. Thus Azeristiliktechizat did not have the opportunity to support a further maturing of this proposal, and was not able to support the ITS proposal to select a pilot site for developing the proposed pilot project based on possible international grants and as a platform for building international cooperation.

Overall the strategic whitepaper (the Roadmap) became a product created by the ITS experts. In some aspects, Azeristiliktechizat's contribution was limited to return random comments on the report text mostly focusing on to doubt or to reject the ITS proposals to be too ambitious under the present circumstances and in the near future, however an option in the long term.

2.4 Ownership and Benefits of the Activity

Because of the seriousness of the current barriers it was difficult for Azeristiliktechizat to take the full ownership of the outputs of the TA exactly after the completion of the assignment. At the same time the beneficiary expressed interest in adopting the developed Roadmap (strategic whitepaper) in the future after overcoming the severe economic problems of the company related to low heat tariffs.

In general, the Deputy Chairman of Azeristiliktechizat Mr. Mirzaliyev left a good impression and interest for the technical assistance. Mr. Mirzaliyev exact words were: "in order to fix heating system in Azerbaijan, the main priorities are equipment improvement, improve measuring system, tariff system, reduce the cost, and finally we want a system with great results, cost recovery and cost benefits. Also, we cannot forget about energy efficiency improvement."

But Azeristiliktechizat was at the moment only able to take limited ownership to the ITS strategic proposals, mostly due to severe economic problems (huge accumulated debt) and actual technical

challenges. The operator focused on to cope with actual short-term challenges, and not a long term vision. However, the beneficiary expressed strong interest in developing renewable energy projects in district heating as proposed by the ITS in the future.

On governmental level Mr. Gulmammad Javadov, Deputy Minister of the Ministry of Energy, and Ms. Halida Masimova, Head of the Energy Efficiency Department at the Ministry of the Energy also supported ITS recommendations. The whitepaper was important and required to address the existing challenges - the existing system weaknesses, problems, and outdated life cycle of the pipes and equipment.

2.5 Recommendations

The drafted Roadmap developed under this technical assistance assignment is recommended to be adapted to meet the demands and requests from potential international investors, mainly EBRD and ADB that have been reported to be keen to invest in DH in Azerbaijan provided that good projects may be identified. The adoption of the Roadmap should go along with the revision of the heat tariffs in order to achieve cost recovery and financial stability of the company in the long term.

During the implementation of the TA assignment, Azeristiliktechizat found that it was too premature to support the Consultant's proposal to develop a pilot project with a smarter operational concept, modern equipment, modern control and meters in order to save the fuel and electricity, decrease maintenance costs and prolong the technical lifetime. However, after the completion of this assistance, it is still highly recommended to mature this proposal to select a pilot site for developing the proposed pilot project based on possible international grants and as a platform for building international cooperation.

A stronger government support and involvement is recommended in order to strengthen the anchoring of the developed Whitepaper (Roadmap) as the national DH strategy. It may require that the Roadmap should be adapted to the government's needs in accordance with new policy and legislation.

2.6 Challenges Faced

A basic challenge for dealing with the roadmap's proposal for actions and development is that Azeristiliktechizat's tariffs are too low to cover the costs resulting in the accumulation of a growing company debt and thereby limited opportunities to engage in long-term strategic planning, as was the purpose of the TA.

Mr Ilham Mirzaliyev, Deputy Chairman of Azeristiliktechizat JSC, was on medical leave for longer periods of time which made planning and implementation a great challenge because nobody in the company had the authority to take any decisions in his absence.

2.7 Impact

As the activity was to elaborate a strategic whitepaper there are no direct and measurable impacts as regards policy, regulation, environment, economics and social conditions. The strategic whitepaper may found the basis for such impacts in the future.



ENERGY COOPERATION BETWEEN THE EU, THE LITTORAL STATES OF THE BLACK & CASPIAN SEAS AND THEIR NEIGHBOURING COUNTRIES

Annexes 1. Roadmap (Strategic Whitepaper)