



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



Report, Capacity Building: Industrial Energy Audit Analysis for Bankable Projects

Task GEO-26, Tbilisi, Georgia

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APPENDICES (Separate electronic documents)

- Appendix 1:** List of seminar participants
(Excel document in English)
- Appendix 2:** Agenda
(Word document in English)
- Appendix 3:** Finance Lecture: “10 Steps to Determine Feasibility of EE Projects”
(Power Point presentation in English and Russian)
- Appendix 4:** EE Lecture: “ECM Lighting Controls”
(Excel document in English and Russian)
- Appendix 5:** EE Exercise & Solution: ”ECM Supermarket Lighting”
(Excel document in English and Russian)
- Appendix 6:** Method Lecture “Efficient Energy Audit Analysis”
(PowerPoint presentation in English and Russian)
- Appendix 7:** RES Lecture: “HPP Siphon Turbine Gensets”
(Excel document in English and Russian)
- Appendix 8:** RES Exercise & Solution: “ECM Solar Hot Water System at a Slaughter House” (Excel document in English and Russian)
- Appendix 9:** Participant Questionnaire
(Word document in English and Russian)

1. SUMMARY

From April 19 to 21, 2011, the team of SEMISE experts conducted a seminar on industrial energy audit analysis for bankable projects in Tbilisi, Georgia. In short, the event was extremely successful. This seminar was prepared based on the application submitted by the EE & EP Centre for technical assistance under the INOGATE – SEMISE Ad Hoc Expert Facility.

The main objectives of this capacity building were

- To teach sound business practice using life cycle cost analysis in development of EE/RES projects;
- To teach how to optimize energy conservation measures (ECMs) for maximum benefit and avoid life cycle losses;
- To teach realistic analysis, free of hypothetical input, through rigorous reality checks.

SEMISE invited 30 participants in three categories:

60% (18) - Teachers from institutions capable of delivering training themselves (educational institutions, associations, chambers, consulting companies)

30% (9) - Industry representatives

10% (3) - Authorities

100% (30) - Total

Twenty participants actually attended all three days and received certificates.



Graduating participants with SEMISE team

All participants in the seminar received the training materials electronically, including the workshop exercises and all spreadsheet tools that had been developed by the SEMISE experts.



*INOGATE Country Coordinator
Nana Pirtskhelani (center)
addressing opening session*

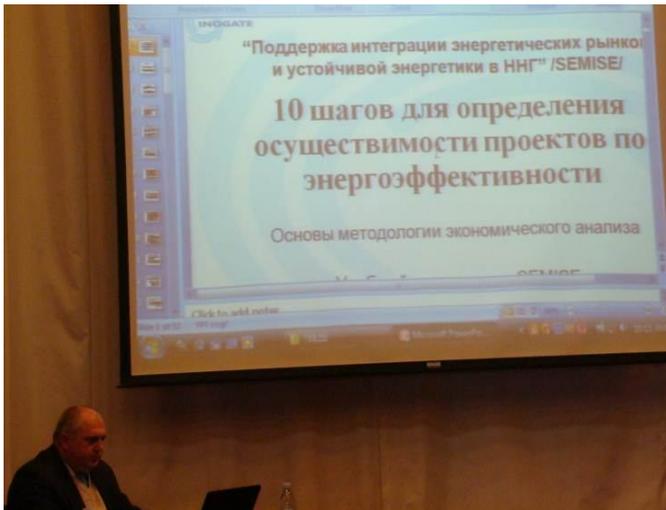


*Nelly Verulava (right), director of
EE&EP, beneficiary organization,
addressing group*

2. METHODOLOGY

The seminar was a workshop where participants learned by doing. After introductory lectures, participants performed actual exercises with the SEMISE analysis tool. Specifically, the work of the seminar had four different activities:

- General lectures
- Working group exercises
- Team presentations, discussion of exercise assignments
- Final quiz



*SEMISE banking expert
Vahan Babajanyan
delivering lecture*

*SEMISE Key expert
Larry Good
answering questions*



The seminar achieved all intended results:

- Training participants to apply life cycle cost analysis to development of EE/RES projects
- Designating qualified trainers to further perpetuate teaching of the seminar skills
- Developing the training material, including lecture slides and workshop exercises
- Training trainers to teach other Georgians in the future

3. ACTIVITIES

1st day

- a) Introduction to effective analysis of industrial energy audits
- b) EE lecture
- c) EE exercise



SEMISE local expert Baadur Chkhaidze answering questions

In the first half of the day the SEMISE experts introduced the audience to the 10 steps of life cycle cost analysis for bankable projects and delivered a lecture on analysing an EE project. In the afternoon the participants were divided into 4 groups to develop a lighting energy conservation measure (ECM) based on given data.

After each group presented its results, the whole class discussed the ECM, its problems and ways to solve them (downsizing the ECM, etc.).

2nd day

- a) Team EE presentations
- b) RES lecture
- c) RES exercise



SEMISE energy auditing expert Ali Korakan assisting in workshop exercise

Participants worked in groups and analysed a solar energy ECM. After their presentations the participants discussed their recommendations and problems they faced while analysing the solar hot water system ECM, e.g., search for external soft credits, grants or incentives.

3rd day

- a) Team RES presentations
- b) Review, quiz & discussion
- c) Certificate ceremony
- d) Train-the-trainers

4. QUIZ

During the third and final day of the seminar the SEMISE experts summarized the results of the Seminar. Then the students, remaining in their working groups, took a 10-question quiz.

Quiz results:

- Group 1 – 60%, including the correct calculation exercise (most difficult)
- Group 2 – 60%
- Group 3 – 70%
- Group 4 – 80%

After the quiz, the instructors discussed the answers at length with the class.

5. TTT

In the afternoon of the last day, the SEMISE experts conducted a train-the-trainers (TTT) session and worked with future trainers. All graduating participants in the “teachers” category stayed for TTT. In addition, two from the “authorities” category and two from the “industry” category stayed for TTT. Interest in teaching others was high.

6. PARTICIPANTS

Thirty participants were invited. Thirty participants appeared, although some invited organizations made substitutions in personnel. In addition, Ms. Nana Pirtskhelani, the INOGATE Country Coordinator appeared at the opening session.

Of the 30, 20 participated every day and received certificates.

Of the 20, 19 stayed for our train-the-trainer session. This indicated strong interest in perpetuating the seminar's knowledge in Georgia.

7. PARTICIPANT QUESTIONNAIRE

At the end, participants answered a questionnaire (see appendix) about the seminar. Twenty participants responded. The general consensus was a desire for more.

Not all responders answered all questions, so some answers are missing. However, some participants gave multiple answers to the same question, causing overlap. All answers are summarized below.

1. Was the seminar useful?

20 Yes

2. Reasons for attending:

18 To learn something interesting and new

2 To network

3. Most relevant features of seminar:

4 Bankable approach

3 Financial calculations

3 Everything

2 Evolution of 10 Steps method (created in Georgia in 2000)

1 Banker's lecture

1 Presentation skills

1 Working in groups

1 Multi-faceted and replicable methodology

1 How to convince bankers

1 Impact of factors on EE and financial indicators

1 New approach to energy auditing

1 Working with spreadsheet tool

4. Is EU experience in this area applicable in your country?

20 Yes

5. Do you recommend including this material in university courses?

19 Yes

1 Already started including it

6. Most interesting seminar activity:

12 Lectures

11 Presentation and discussion of exercises

4 Working groups

7. a) Will you apply the new knowledge to your work in the future?

- 19 Yes
- 1 No (academic interest only)

b) How?

- 8 Create template for developing future projects
- 4 Share knowledge with others
- 2 Work with students
- 1 Pay more attention to EE

8. Do you intend to continue learning this topic?

- 17 Yes

9. Suggested improvements (some overlap)

- 10 No improvements necessary
- 4 More time for exercises
- 2 More information about energy sector
- 1 More exercises
- 1 More time for seminar
- 1 More one-on-one consulting
- 1 Media coverage
- 1 Adjustment to local conditions
- 1 More such seminars in Georgia
- 1 Presentations in national language (Georgian)
- 1 No fire drill (by hotel) during seminar

10. Seminar quality (scale: 0 = worst, 5 = best)

<u>Average</u> <u>Score</u>	<u>%</u>	<u>Item</u>
5.0	100%	Quality of instructors
4.9	98%	Help & guidance by instructors
4.9	98%	Language interpretation
4.9	98%	Venue
4.9	98%	Meals
4.8	96%	Quality of discussions
4.8	96%	Technical equipment