

# **Report, Capacity Building: Industry Energy Audit Analysis for Bankable Projects**

**Task KAZ-67, Astana, Kazakhstan**

**Financed by: EU- INOGATE Programme,  
Project: “Support to Energy Market Integration and  
Sustainable Energy in the NIS” (SEMISE)**

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**June 2011**

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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 “Effective Reports & Presentations  
for Energy Audits” (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 June 14 to 16, 2011, the team of SEMISE experts conducted a seminar on industrial energy audit analysis for bankable projects in Astana, Kazakhstan. In short, the event was extremely successful. This seminar was prepared based on the application submitted by the *Kazakh Energo Expertiza*, under the Ministry of Industry and Innovative Technologies of the Republic of Kazakhstan, 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 35 participants in four categories. Thirty one attended.

61% (19) - Teachers from institutions capable of delivering training themselves  
(educational institutions, associations, chambers, consulting companies)

19% (6) - Industry representatives

15% (4) - Authorities

5% (2) - Municipality

100% (31) - Total

Twenty eight participants attended all three days and received certificates.



*Class with certificates of completion*

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  
Mr. Askhan Smailov addressing group*



*Vice President  
Kazakh Energo Expertiza  
Mr. Daut Magavin*

*Ms. Alia Baidybekova (left) from  
Energy Desk, EU Delegation to  
Kazakhstan, visiting seminar*



## **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*

The seminar achieved all intended results:

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

### 3. ACTIVITIES

#### 1st day

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



*SEMISE energy audit expert Ali Korakan lecturing*

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 5 groups to develop a lighting energy conservation measure (ECM) based on given data.



*SEMISE Key Sustainable Energy Expert Larry Good delivering lecture*

#### 2nd day

- a) Team EE presentations of results
- b) Reports and presentations lecture
- c) RES lecture: small HPP, siphon type turbines
- d) Discussion of ECM, its problems and ways to solve them (downsizing, etc.)
- e) RES exercise (solar hot water)



*SEMISE coordinator Vladimir Ternitskyi assisting participants*

#### 3rd day

- a) Team RES presentations
- b) Discussion, recommendations



*SEMISE Local Expert Lyubov Inyutina assisting participants*

- c) Quiz & discussion
- d) Certificate ceremony
- e) Train-the-trainers



*Participants working in groups, analyzing a solar energy ECM*

After their presentations, participants discussed their recommendations and problems they faced while analysing the solar hot water system: prioritization and combining related ECMs, reducing load and improving source. They also discussed searching for external soft credits, grants or incentives.

#### **4. QUIZ**

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

Quiz results:

- Group 1 – 100%, including the correct calculation exercise (most difficult)
- Group 2 – 80%
- Group 3 – 90%
- Group 4 – 80%
- Group 5 – 60%
- Group 6 – 60%
- Group 7 – 60%

#### **5. TTT**

In the afternoon of the last day, the SEMISE experts conducted a train-the-trainers (TTT) session and worked with future instructors. Fourteen of the participants stayed for TTT. Nine were from the “teachers” category, three from the “industry” category, one from the “authorities” and one from the “municipality” category.

#### **6. PARTICIPANTS**

Thirty five participants were invited. Thirty one attended, although some invited organizations made substitutions in personnel. Some participants travelled from other cities in Kazakhstan (Karaganda, Pavlodar, Kokshetau) to attend this seminar.

Twenty eight people received certificates.



*Larry Good awarding certificates to Vladimir Dremlukov Sr. and Vladimir Dremlukov Jr.*

Mr. Askhan Smailov, the INOGATE Country Coordinator, and Mr. Daut Magavin, Vice President of Kazakh Energo Expertiza (the applicant/beneficiary of the TA), both welcomed the participants at the opening session. Ms. Alia Baidybekova, head of the Energy Desk of the EU Delegation to Kazakhstan, visited the seminar on the third day.

## **7. PARTICIPANT QUESTIONNAIRE**

At the end, participants answered a questionnaire (see appendix) about the seminar. Twenty seven 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 included below.

1. Was the seminar useful?  
27 Yes
2. Reasons for attending:  
27 To learn something interesting and new
3. Most relevant features of seminar:
  - 6 Analyzing projects
  - 3 Approach of banks to EE and RES projects
  - 3 Communication skills with banks
  - 3 More practise and exercises
  - 3 Methodology of energy audits
  - 2 New approach to EE and RES projects
  - 1 Discussions
  - 1 Everything
  - 1 Experts' advise

- 1 Individual work
  - 1 Focus of EE and RES projects on financial experts
  - 1 EU experience in energy audits
  - 1 Integration of technology and finance
  - 1 Consideration of many aspects of projects
  - 1 Organisation of the seminar
  - 1 Choice of options
  - 1 Importance of accuracy in analysis
  - 1 Role games
  - 1 Focus on economic aspects of EE/RES projects
4. Is EU experience in this area applicable in your country?
- 26 Yes
  - 1 Not sure
5. Do you recommend including this topic in university courses?
- 26 Yes
  - 1 Not sure
6. Most interesting seminar activity:
- 17 Presentation and discussion of exercises
  - 11 Lectures
  - 10 Working groups
7. a) Will you apply the new knowledge to your work in the future?
- 27 Yes
- b) How?
- 11 Applying the methodology in my future profession
  - 3 Analyzing and comparing EE and RES projects
  - 2 Working with students, training and seminars
  - 1 Energy auditing in building sector
  - 1 Promoting energy audits
  - 1 Applying the skills in marketing
  - 1 Establishing an energy audit department in our enterprise
  - 1 Presenting and defending EE/RES projects
8. Do you intend to continue learning this topic?
- 26 Yes
  - 1 No

9. Suggested improvements (some overlap)

- 15 No improvement necessary
- 3 Longer seminars
- 2 Lecture on finance, and more explanation of economic terms
- 2 Give groups different assignments
- 1 Give heating ECM
- 1 More focus on RES
- 1 More attention to public sector and buildings
- 1 Conduct the seminar in a single language

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

<u>Average</u> <u>Score</u>	<u>%</u>	<u>Item</u>
4.96	99%+	Language interpretation
4.93	99%	Instructors
4.92	98%	Help & guidance by instructors
4.77	95%	Meals
4.74	95%	Quality of discussions
4.74	95%	Venue
4.59	92%	Equipment