Motiva

Energy Auditing in Finland 2020

„Technical assistance to promote energy audit and energy efficiency investments in small and medium-sized enterprises"

International Video-workshop, May 22th, 2020

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Energy Auditing in Finland
Background

Background

- Finland's Energy Audit Programme (the EAP) started as a subsidy policy in 1992
- EAP was developed into a programme level activity in 1993, launched in practice in 1994

Energy Efficiency Directive EED, Art 8. Energy audits

- According to the Art 8 of Energy Efficiency Directive, it is **mandatory for large companies to carry out energy audits**
- In addition to mandatory energy audits, the Directive mandates, that Member States must make **high quality energy audits available**
- In Finland the Art. 8 of EED was implemented by the Energy Efficiency Act, which came in to force on **1st of January 2015**
- Energy Auditing programme split into two: **voluntary and mandatory**

Energy Auditing
Voluntary energy audits

Implementing instruments of the energy audit programme in Finland

Development and improvement of the energy audit programme

Monitoring and impact assessment
Quality control
Energy audit models and other tools
Qualified energy auditors
Training of energy auditors
Promotion and marketing

Administration of the programme
Subsidy policy
Legislative framework

Key players

Ministry of Economic Affairs and Employment

Annual guidelines for voluntary energy audits

Energy Authority

Administration
of the programme

Business Finland

Subsidies for energy audits

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Clients (companies / municipalities)

Energy Auditors

Cooperation partners (specialists, manufacturers, etc.)

Voluntary energy audits are subsidised

Voluntary energy audit programme for

- municipalities,
- joint municipal authorities / municipal consortiums,
- foundations,
- small and medium-sized enterprises (SME's)

Subsidies available

Subsidy scheme

For municipalities, micro businesses and SME's, within the voluntary energy efficiency agreement scheme	50 %
For other energy audits and analysis	40 %

Energy audit models

- Energy audit models have been developed for service, industry and energy sector
- Models take into account the buildings, industrial processes as well as energy production facilities
- Models have also been tailored to different objects / facilities that vary in energy use and life cycle

Energy audit models

Buildings

Energy Inspection

Energy Audit

Post-acceptance Energy Audit

Follow-up Energy Audit

Industry

Industrial Energy Audit

Industrial Energy Analysis

Process Industry Energy Analysis

Two-phase Energy Audit for SMEs

Energy

Power Plant Energy Audit

District Heating Energy Audit

Others

Renewable Energy Municipal Audit

Compressed air systems

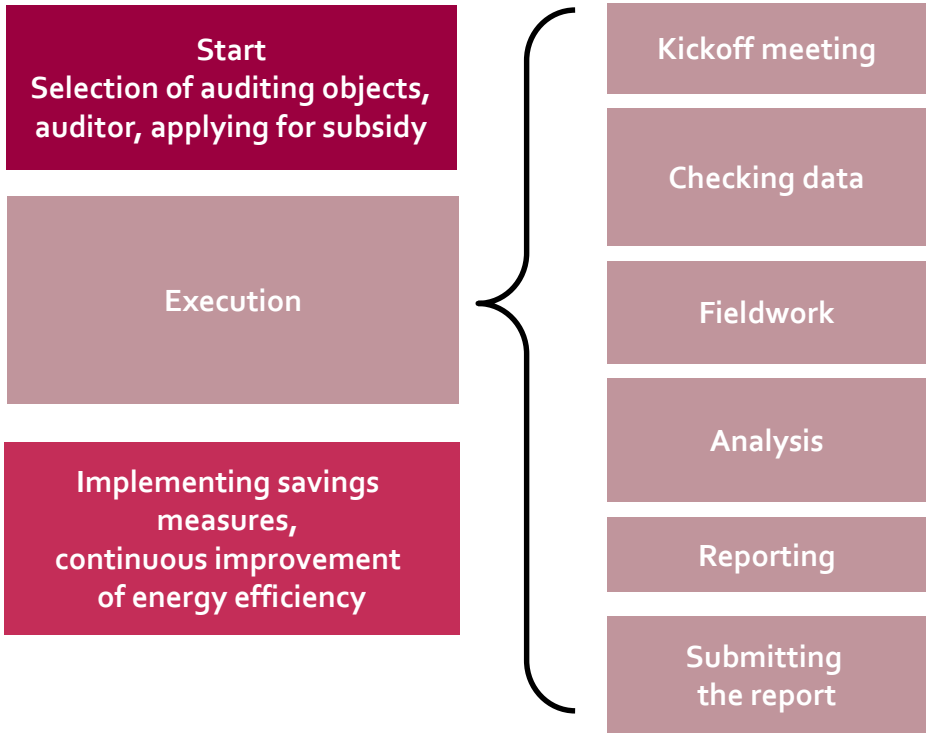
Steam and condensate systems

Cooling systems

Guides:
Surplus heat
Industrial furnaces
Data centres
Ski centres
Professional kitchens

Audit process

- **Basic procedure for energy audit**
  - Experienced auditor
  - Co-operation with maintenance department
- **Carried out every 3-10 years**
- **Yearly updating of efficiency measures**
- **Yearly information to energy management**

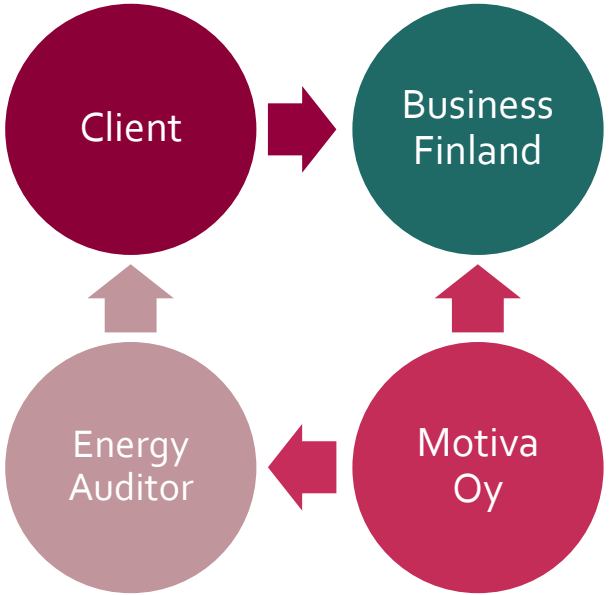


Quality control
– ensures compliance and effectivess

- **Motiva is responsible for quality control**
  - Information from clients / auditors
- **Quality control of all energy audits before subsidy payment**

Aim is to ensure

- compliance with instructions
- clarity and coverage of reporting
- effectiveness of results
- reliability of results



Monitoring – collecting audit data

Energy Audit database

Energy audit data is collected for statistical purposes

Reports, including compilation tables on energy consumption and savings measures sent to Motiva

Energy Audit statistics showcase energy saving potential, energy consumption, information on effective saving measures, etc.

Results reported both on national and EU level (in NEEAP)

Monitoring highlights energy saving potential in different building types and systems.

Creates a basis for measures and operations.

Energy audits in numbers

AUTHORIZED ENERGY AUDITORS (persons)

>2000

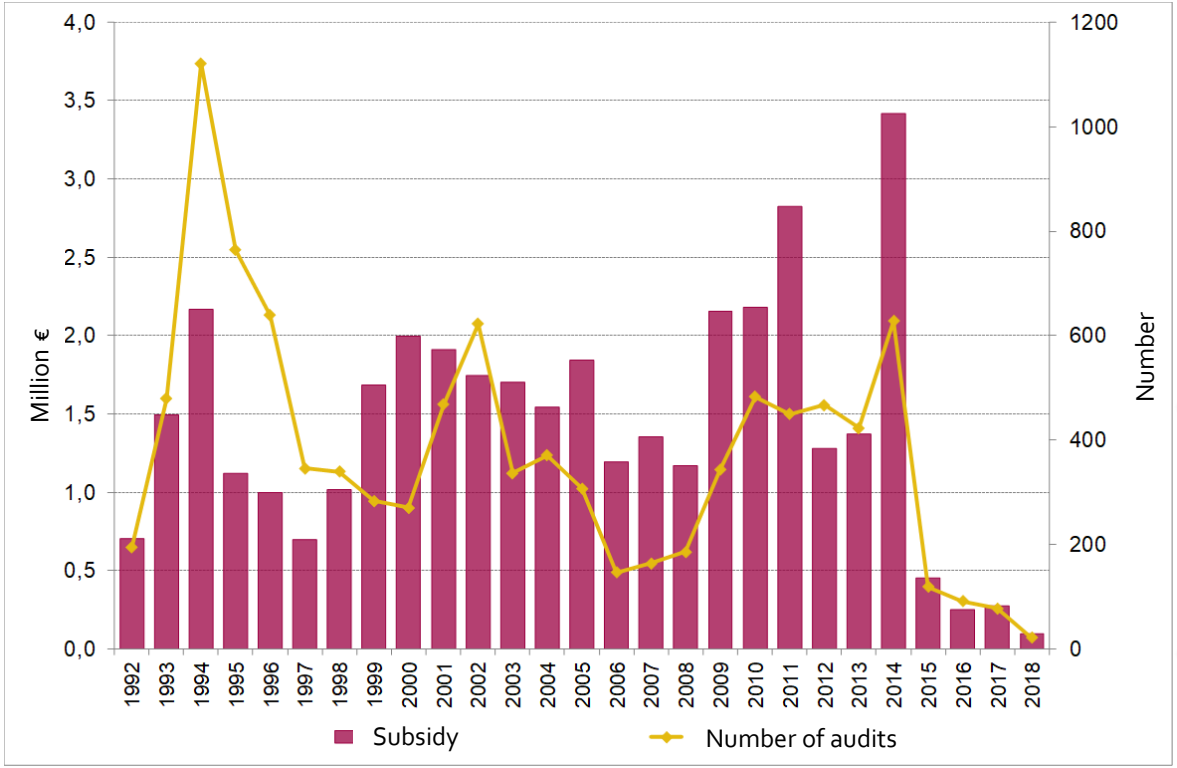
AUDITOR COMPANIES (REPORTED ACCEPTABLE AUDITS) (Nr)

60

CONDUCTED AND SUBSIDISED ENERGY AUDITS AND ANALYSIS (MOTIVA MODEL) (Nr)

>10 000

Subsidies granted and number of energy audits 1992–2018



Energy audits - Savings potential

		HEAT	ELECTRICITY	WATER	ENERGY COSTS
Municipal sector buildings		16 %	3 %	7 %	13 %
Private service sector buildings		17 %	9 %	6 %	11 %
Industry below 10 GWh		29 %	10 %	5 %	18 %
Industry 10-70 GWh		15 %	6 %	4 %	14 %
Industry 70-500 GWh		24 %	2 %	1 %	20 %

Implementation of energy saving measures

Link between energy efficiency agreements and audits

Proposed measures in the energy audit are moved to the energy efficiency agreements monitoring system

Implementation rate on good level

Based on the data gathered from energy efficiency agreements around 50-60 % of the energy saving measures proposed in the audits are implemented

Energy aid available to support the implementation

- Investments in renewable energy (conventional technology)
- Investments promoting energy savings and energy efficiency (conventional technology)
- Projects involving new technology

Challenges

EED made energy audits mandatory for large enterprises

Fewer audits, as large companies not part of the subsided auditing programme

Challenging to reach SMEs

Not interested in energy efficiency

Energy audits are not a familiar tool for SMEs

~~**Economic boom still ongoing?**~~

Shortage of resources: Energy auditors and auditor companies busy with other work

World is changing - digitalization is the trend

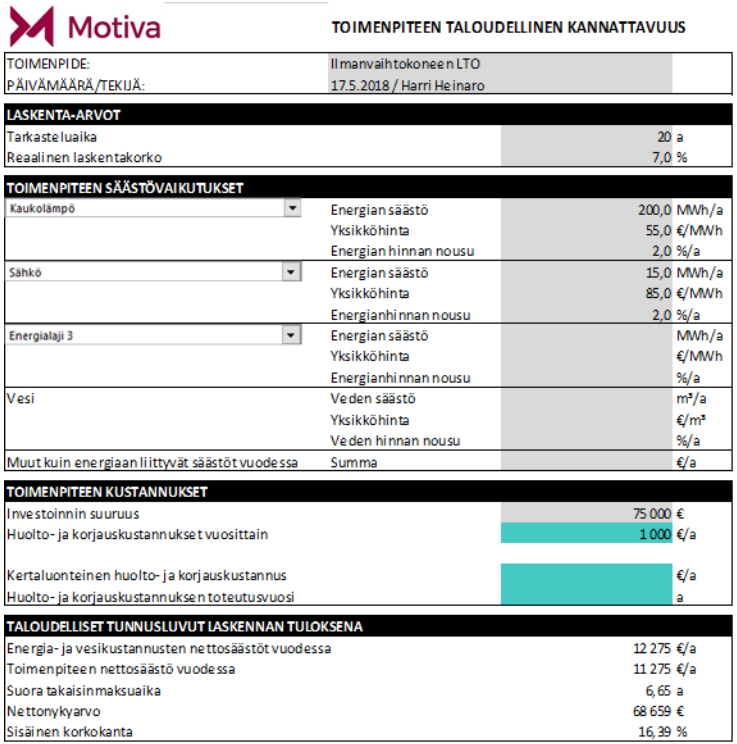
Need to update and modernize energy audits BUT Resources are limited

Regional energy counseling

- **Regional energy counseling increases awareness of energy efficiency and renewable energy**
  - The target groups of regional energy counseling are consumers, municipalities and SMEs.
  - An energy advisor provides unbiased information about the means available to improve energy efficiency and the use of renewable energy.
  - Regional energy counseling brings the energy advisor closer to the target groups in all provinces. The energy advice service is one way of promoting emission reductions: the energy advisor assist the consumer, municipality or SME in taking one step towards increased energy efficiency and use of renewable energy.
- **Energy surveys and energy efficiency agreements boost emission reductions**
  - **Another goal with the regional energy counseling service is for the energy advisors to promote energy surveys in municipalities and SMEs, and thus to assist in the execution of energy efficiency agreements.** Energy surveys and energy efficiency agreements are voluntary means selected by the state of Finland for the execution of the Energy Efficiency Directive (EED).
  - Energy counseling does not include any information on any specific devices to be selected or any detailed design or consulting services.
  - The Energy Authority has funded and coordinated regional energy counseling since 2018.

4/2019

Economical calculation tool for energy efficiency measures



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TOIMENPITEEN TALOUDELLINEN KANNATTAVUUS

TOIMENPIDE:	Ilmanvaihtokoneen LTO		
PÄIVÄMÄÄRÄ/TEKIJÄ:	17.5.2018 / Harri Heinaro		
LASKENTA-ARVOT			
Tarkasteluaika		20	a
Reaalinen laskentakorko		7,0	%
TOIMENPITEEN SÄÄSTÖVAIKUTUKSET			
Kaukolämpö	Energian säästö	200,0	MWh/a
	Yksikköhinta	55,0	€/MWh
	Energian hinnan nousu	2,0	%/a
Sähkö	Energian säästö	15,0	MWh/a
	Yksikköhinta	85,0	€/MWh
	Energianhinnan nousu	2,0	%/a
Energialaji 3	Energian säästö		MWh/a
	Yksikköhinta		€/MWh
	Energianhinnan nousu		%/a
Vesi	Veden säästö		m³/a
	Yksikköhinta		€/m³
	Veden hinnan nousu		%/a
Muut kuin energiaan liittyvät säästöt vuodessa	Summa		€/a
TOIMENPITEEN KUSTANNUKSET			
Investoinnin suuruus		75 000	€
Huolto- ja korjauskustannukset vuosittain		1 000	€/a
Kertaluonteinen huolto- ja korjauskustannus			€/a
Huolto- ja korjauskustannuksen toteutusvuosi			a
TALOUDELLISET TUNNUSLUVUT LASKENNAN TULOKSENA			
Energia- ja vesikustannusten nettosäästöt vuodessa		12 275	€/a
Toimenpiteen nettosäästö vuodessa		11 275	€/a
Suora takaisinmaksuaika		6,65	a
Nettonykyarvo		68 659	€
Sisäinen korkokanta		16,39	%

- **Aim of the simple tool is to promote implementation of energy efficiency measures**
- **Easy calculation of two other investment parameters besides the normal payback time**
  - Net present value
  - Internal rate of return
- **Freely available but developed especially for energy auditors**

More information:

- www.motiva.fi/kannattavuuslaskuri


Kiitos.
Thank you.
www.motiva.fi