

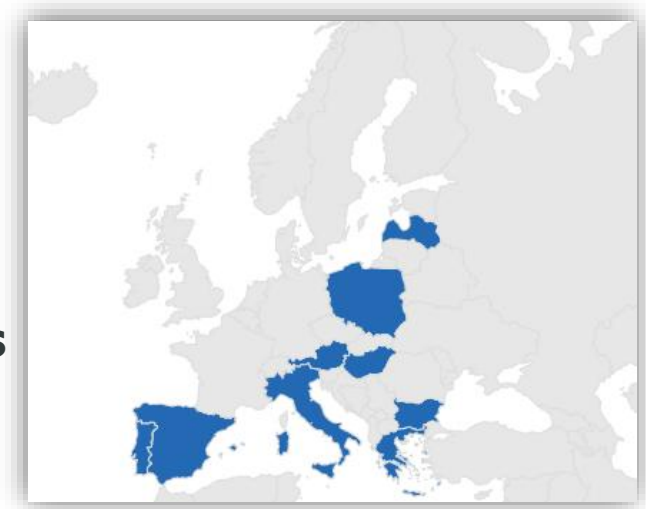
Beyond Energy Savings: A Comprehensive Decision-Making Tool for Energy Efficiency in Industry

KNOWNNEBs project

Integration of non-energy benefits into energy audit practices to accelerate the uptake of recommended measures

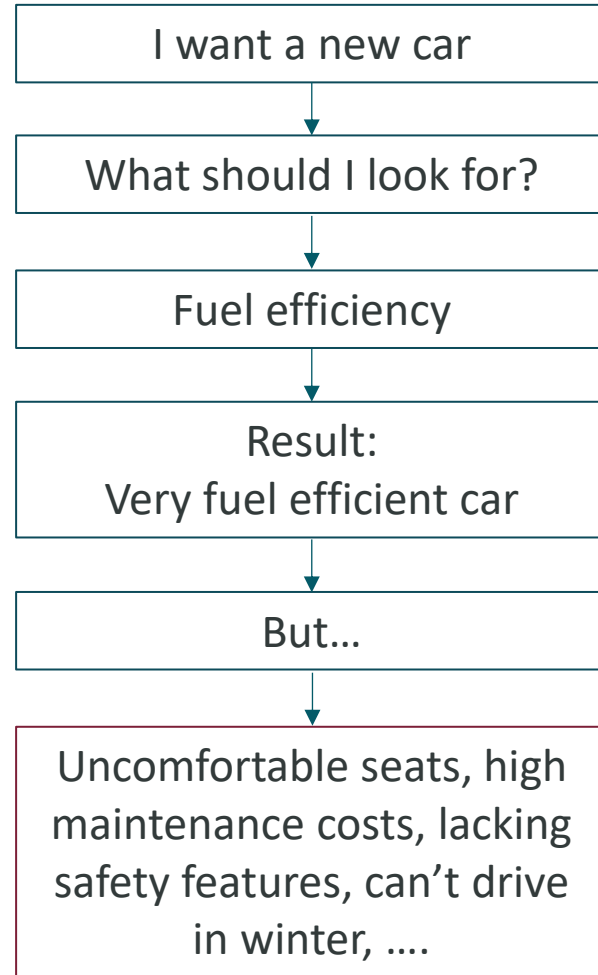
KNOWnNEBs project

- Latvia – **Ekodoma Ltd.** (project coordinator)
- Hungary – **The Budapest University of Technology and Economics**
- Portugal – **Institute of Systems and Robotics (ISR)**
- Spain – **ESCAN SL**
- Austria – **e7 Energie Markt Analyse GmbH**
- Bulgaria – **Chamber of Installation specialists in Bulgaria (KAPE)**
- Poland – **Krajowa Agencja Poszanowania Energii S.A.**
- Greece – **Centre for renewable energy resources and saving foundation (CRES)**
- Italy – **SOGESCA**



November 2022 – October 2025

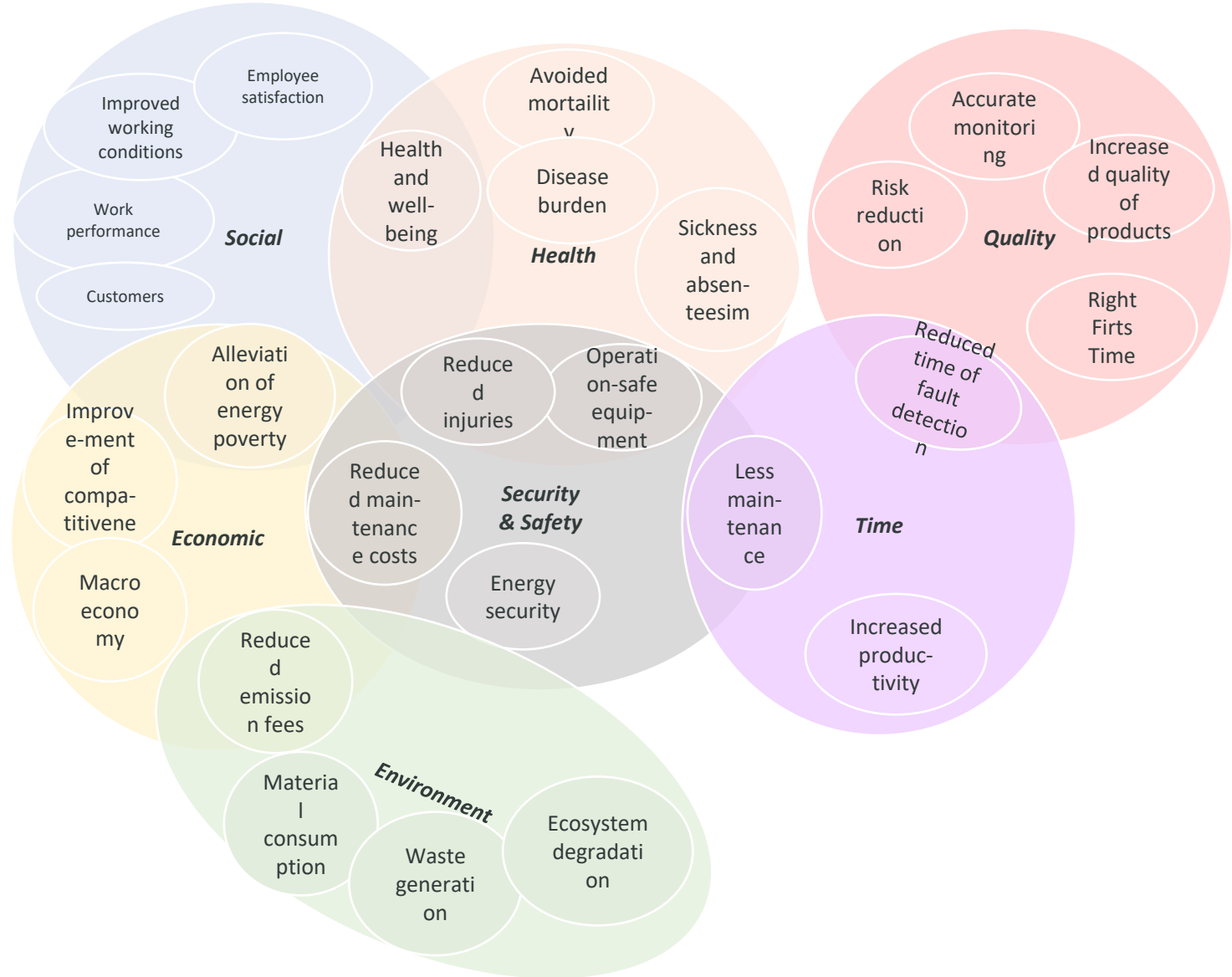
How to buy a car?



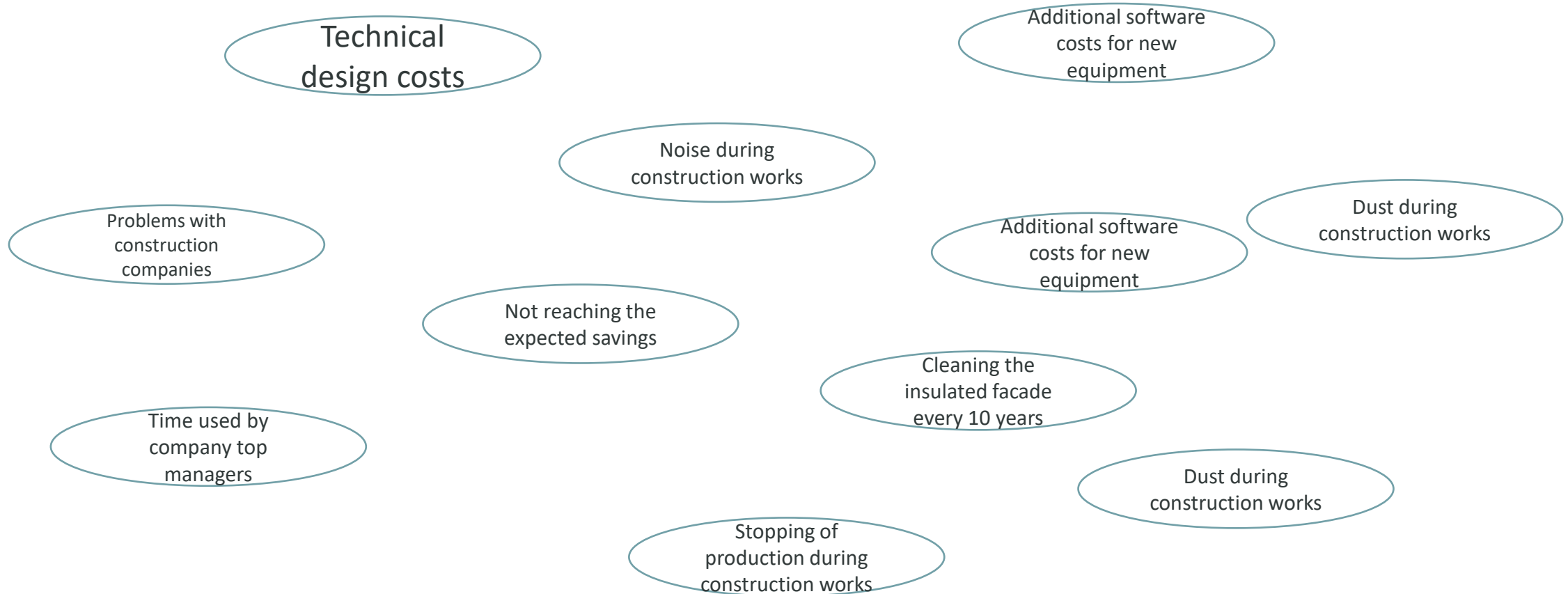
When we plan energy efficiency measures, we tend to focus on expected energy savings and forget they can also bring extra benefits and possible drawbacks

NEBs (Non-energy benefits)

- 7 key domains
- 51 total non-energy benefits defined

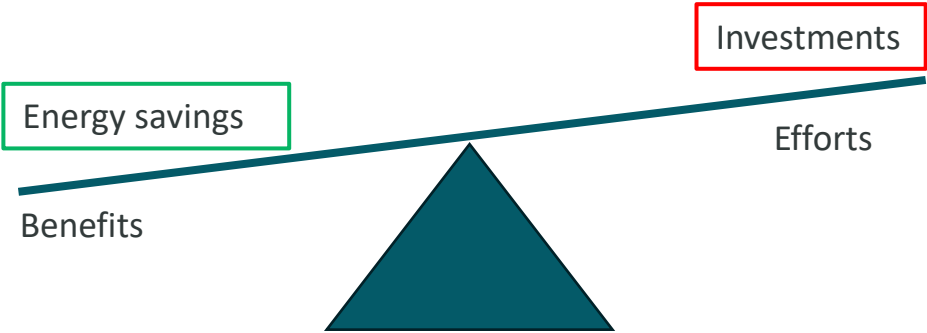


NEEs (Non-energy efforts)

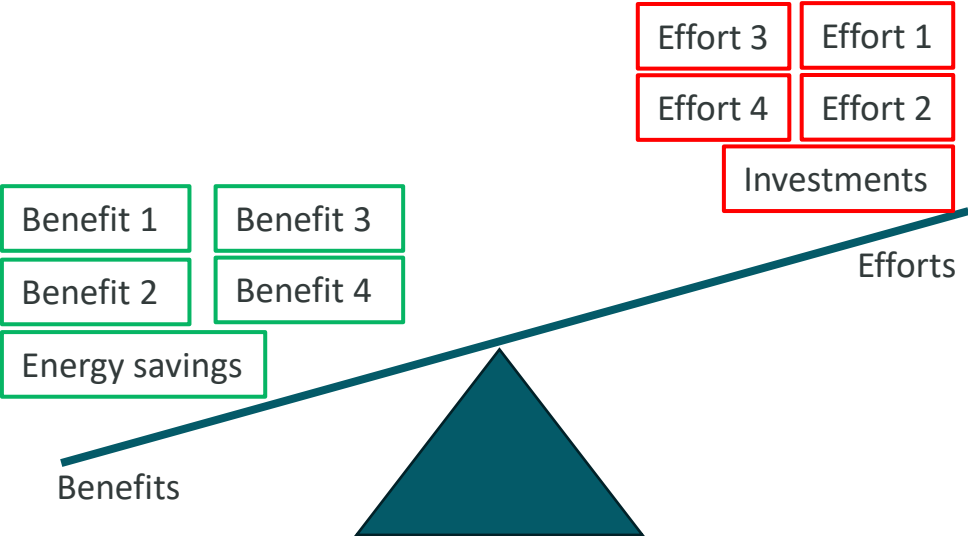


How energy efficiency measures should be evaluated

Existing approach



KNOWnNEBs tools and methodology



What have we developed

- **Methodology** – Describes the entire process of planning, analyzing, and presenting the outcomes of energy efficiency measures
- **TOOL1** – Guides the identification of Non-Energy Benefits (NEBs) for planned Energy Efficiency Measures (EEM)
- **TOOL2** – Evaluates the impact of NEBs and Non-Energy Effects (NEEs), enabling a comprehensive analysis of proposed EEM
- **Result Presenting approach** – Provides a clear, straightforward method to present results to company decision-makers, who may not be familiar with energy savings expressed in MWh

- Although originally developed for the food and beverage industry, the materials can be applied in any domain where energy efficiency measures are implemented
- Energy auditors were the initial target users, but we now see that company representatives could make even better use of these tools
- We have just finished testing and updating the materials
- All materials will be freely available for use and modification by anyone
- You can find these resources here: https://www.e-sieben.at/en/projects/22003_knownnebs.php

TOOL2

NORME EUROPEENNE
EUROPÄISCHE NORM

October 2021

ICS 03.100.01; 27.015

English version

Valuation of Energy Related Investments (VALERI)

Évaluation des investissements liés à l'énergie
(VALERI)

Bewertung von energiebezogenen Investitionen
(VALERI)

This European Standard was approved by CEN on 2 August 2021.

CEN and CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN and CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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CEN-CENELEC Management Centre:
Rue de la Science 23, B-1040 Brussels



A. Setting up the model

(1) Determination of benefits and efforts

Benefits and efforts quantifiable?

No

(2b) Specification of qualitative effects

Yes

(2a) Quantification of benefits and efforts

Benefits and efforts monetisable?

No

(3b) Specification of not monetisable effects

Yes

(3a) Monetisation (= > cash flows) considering price rise effects and degradation

(4) Determination of life time of investment and cash flow points in time

(6) Determination of the reference interest rate

(5) Consideration of risk

B. Calculation

(8) Sensitivity analysis

(7) Valuation of ERI

(9) Scenario analysis

C. Assessment

(10) Interpretation of the results

D. Reporting

(11) Transparent and retraceable presentation

TOOL2

- **Comprehensive Financial Metrics:**
 - **NPV (Net Present Value):** Quantifies long-term financial viability.
 - **IRR (Internal Rate of Return):** Measures efficiency of the investment.
 - **ROI (Return on Investment):** Simplifies comparison with other projects.
 - **Sensitivity & Scenario Analysis:** Tests how changes in key variables (energy prices, labor costs, etc.) impact overall results.
 - **CAPEX analysis:** Permissible energy efficiency measure cost determination
- Giving a monetized value to those NEBs and NEEs, which can not be quantified
- **Newly Developed ‘Benefit Indicator’:**
 - A single, easy-to-interpret number that synthesizes all benefits and drawbacks into one score, helping stakeholders quickly decide on project feasibility

Choose your language:

English

For more information

Contacts ekodoma@ekodoma.org

WWW <https://www.ekodoma.org>

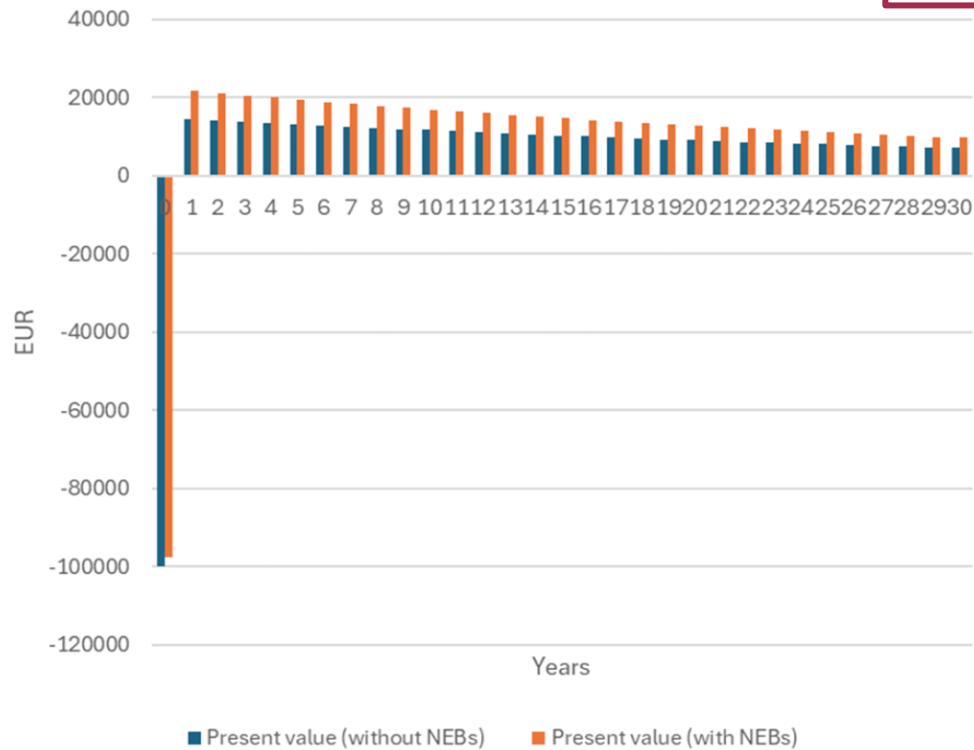
10 languages



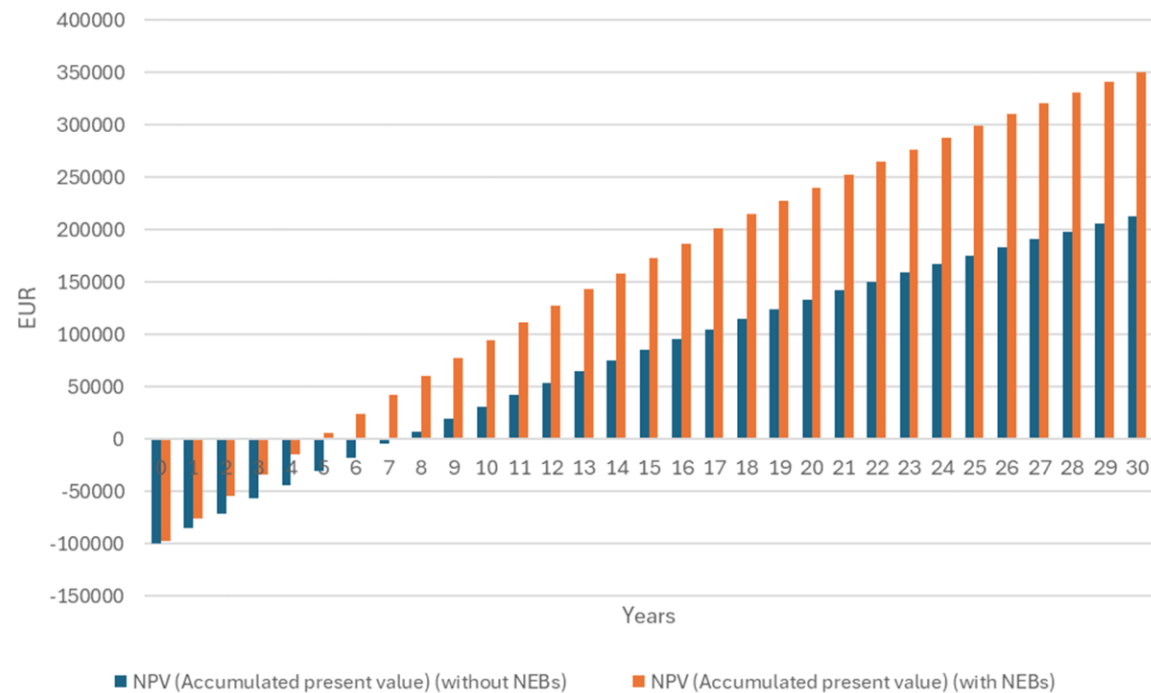
- English
- German
- Bulgarian
- Greek
- Hungarian
- Italian
- Latvian
- Polish
- Portuguese
- Spanish

NPV analysis

Present value



Accumulated present value



Choose your language: **English**

English

or more in
contacts
VWW

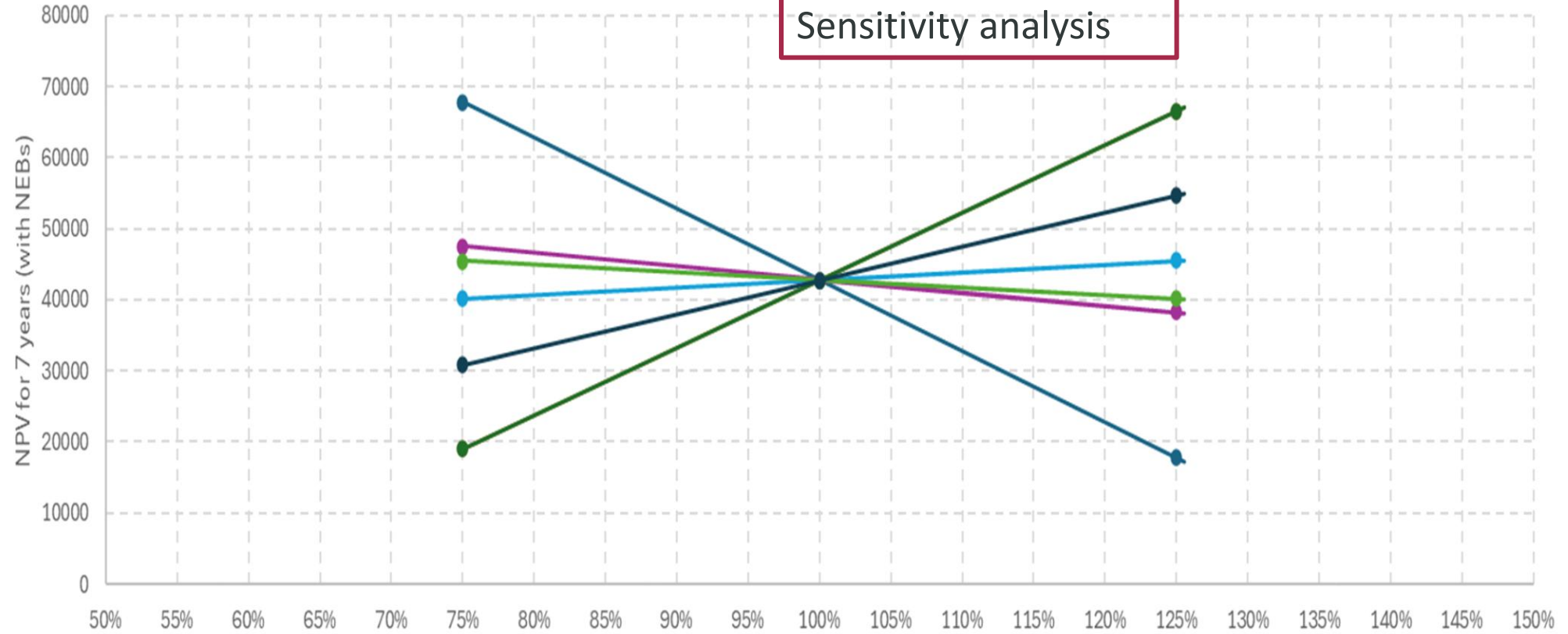
10 languages



Present value

NPV analysis

Accumulated present value



- Cost of energy efficiency measure (CAPEX), EUR
- Energy savings, MWh/year
- Energy price, EUR/MWh
- Energy price variation rate, %
- Interest rate of equity capital, %
- Interest rate of debt, %
- NEB quantification

Choose your language: **English**

For more info
contacts [ek](#)
VWW [htt](#)

10 language

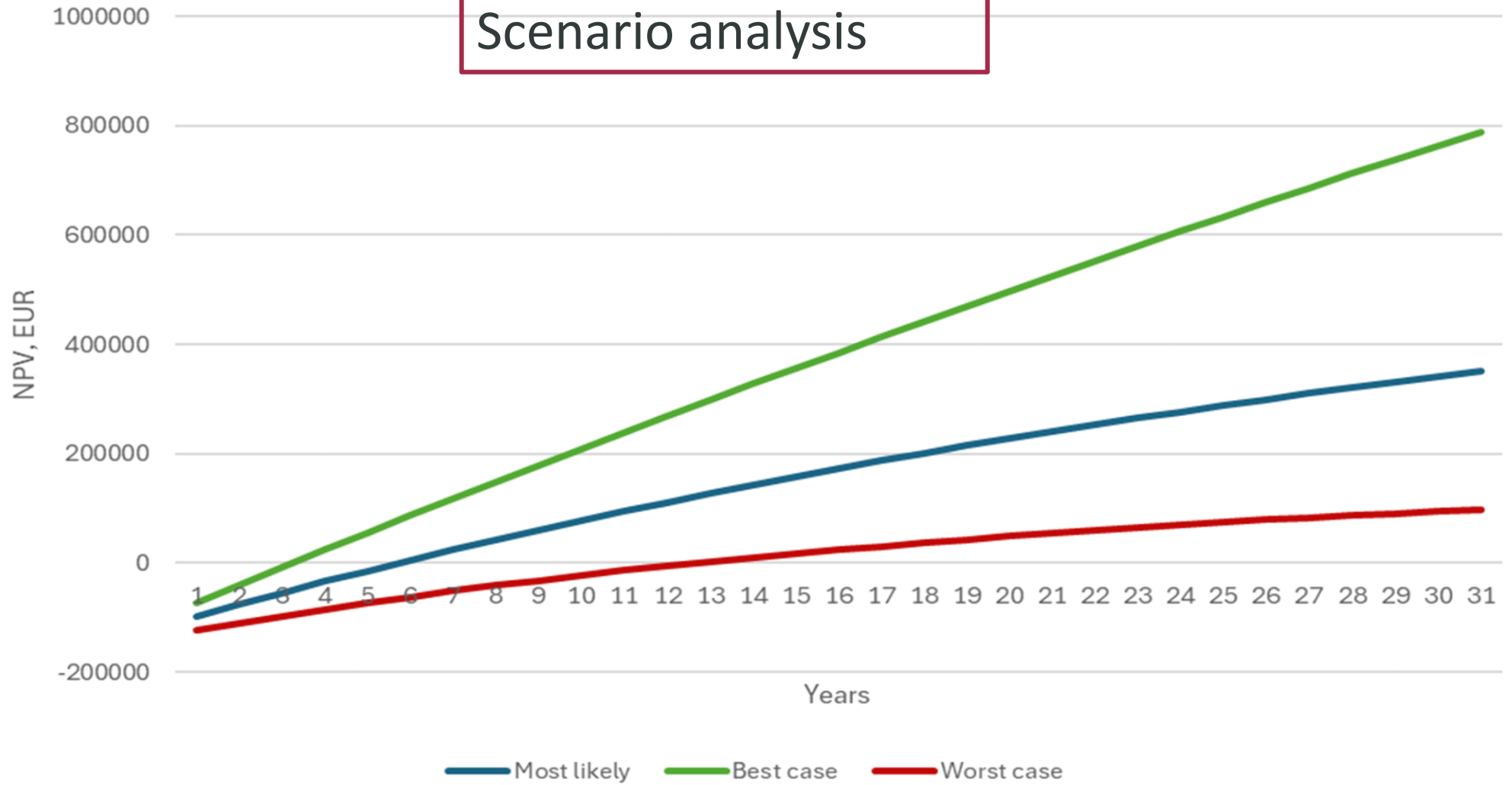


Present value

NPV analysis

Accumulated present value

Scenario analysis



Choose your language: **English**

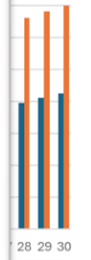
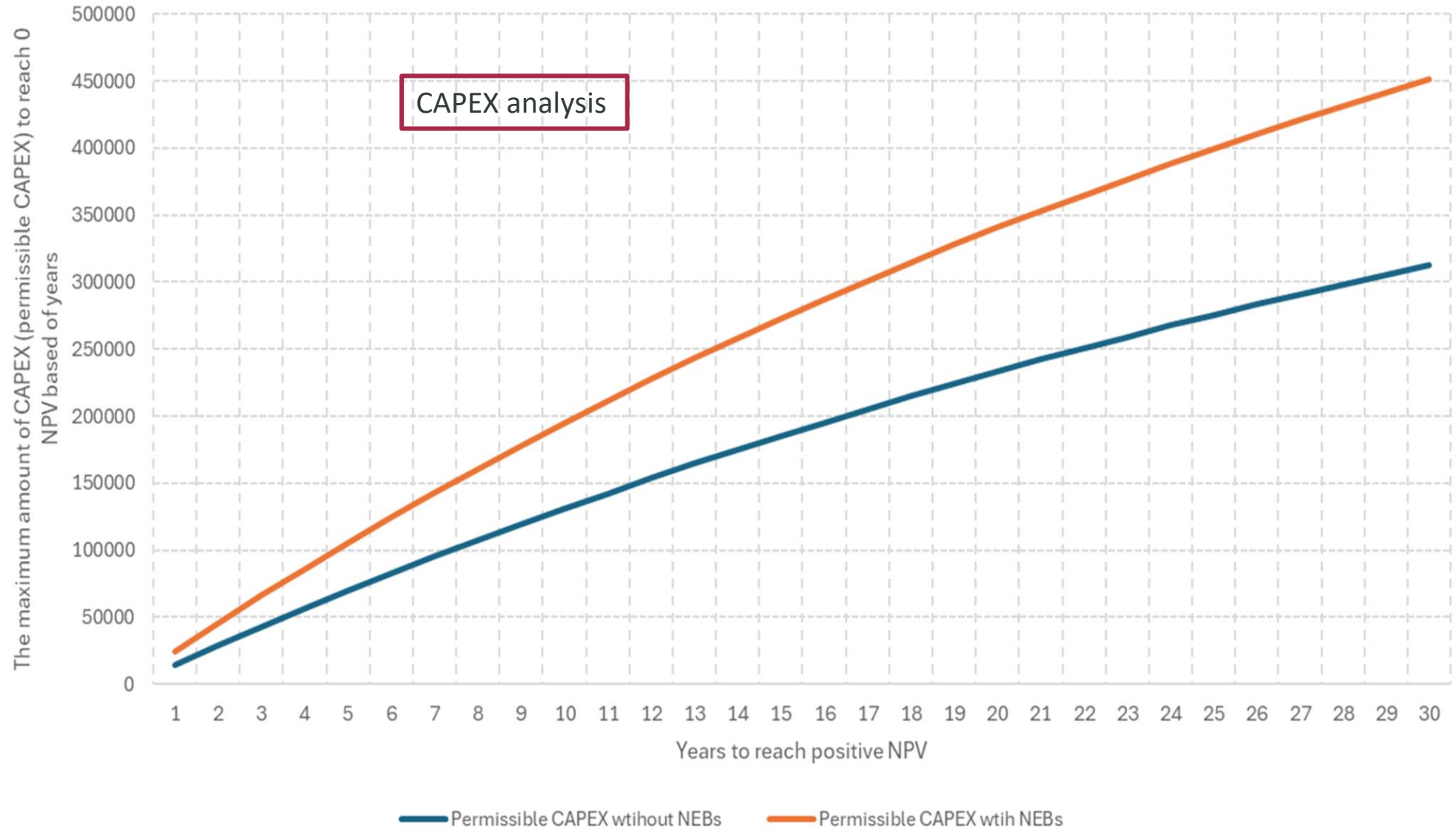
Present value

NPV analysis

Accumulated present value

or more in
contacts
VWW

10 languages



145% 150

Choose your language:

English

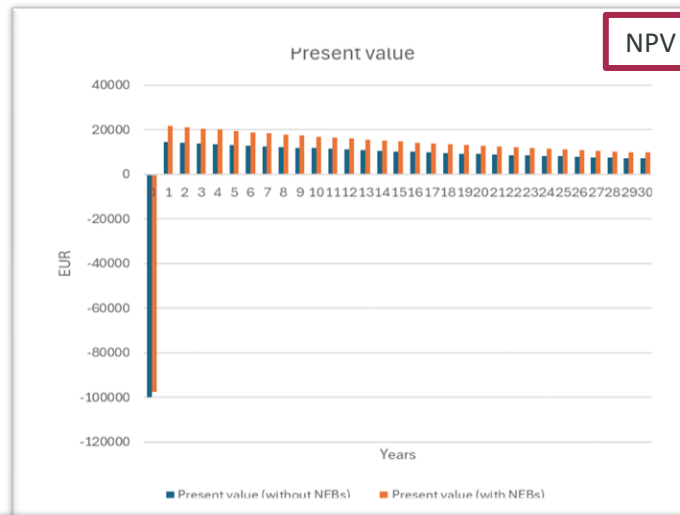
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For more information

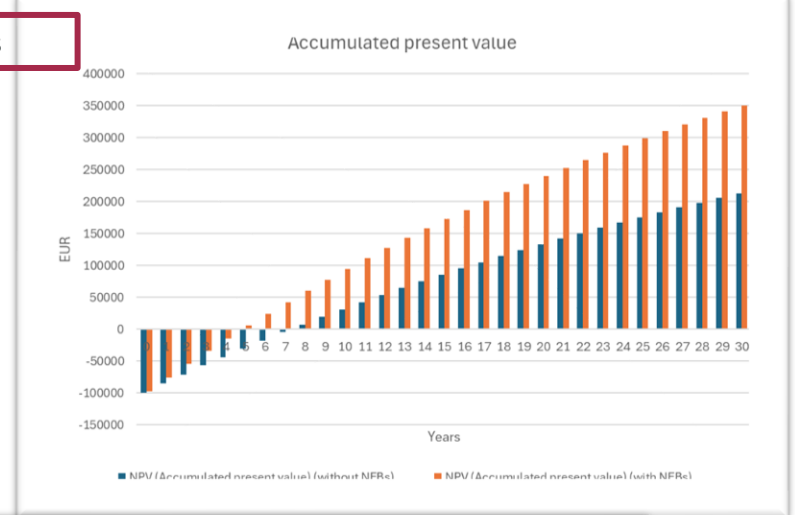
Contact: ekodoma@ekodoma.com

Website: <https://www.ekodoma.com>

10 languages



NPV analysis



Benefit indicator

1.013

Benefit indicator

NPV, EUR

-3

-2

-1

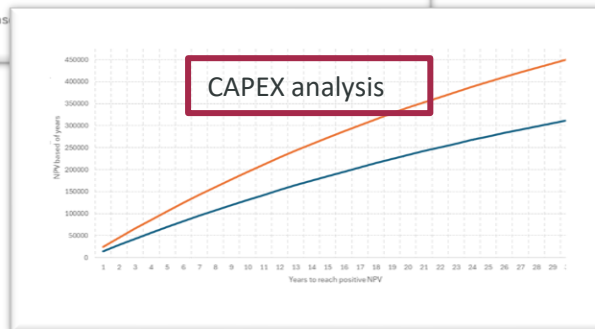
0

1

2

3

— Most likely — Best case



140% 145% 150

Choose your language:

English

- English
- German
- Bulgarian
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- Polish
- Portuguese
- Spanish

For more information

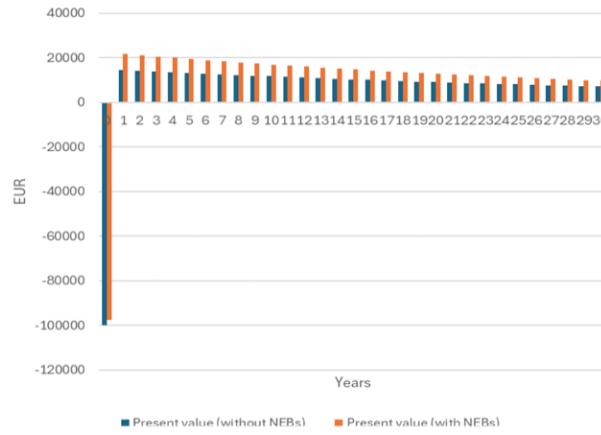
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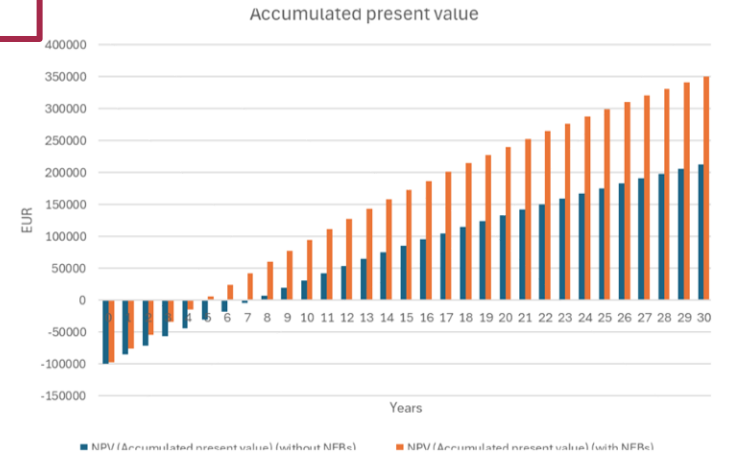
10 languages



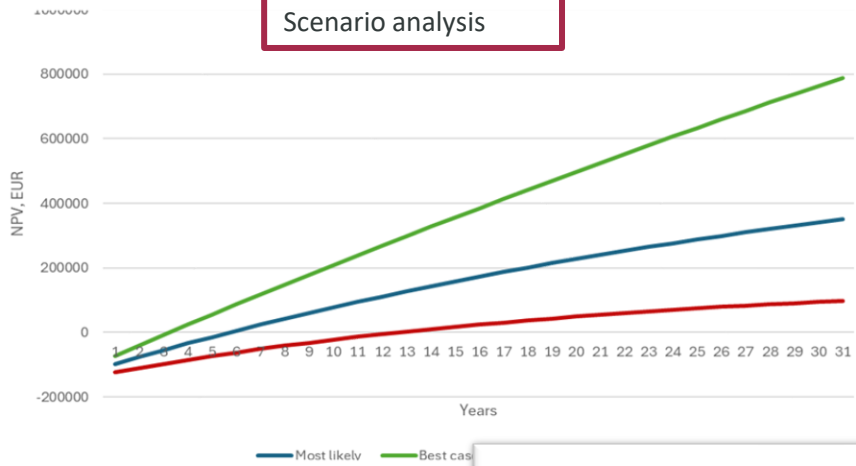
Present value



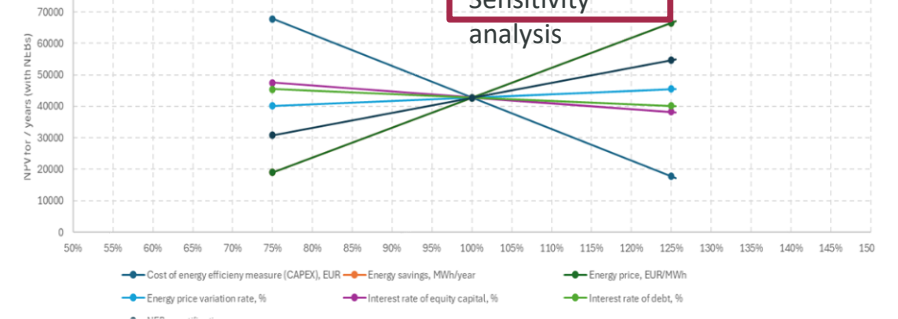
NPV analysis



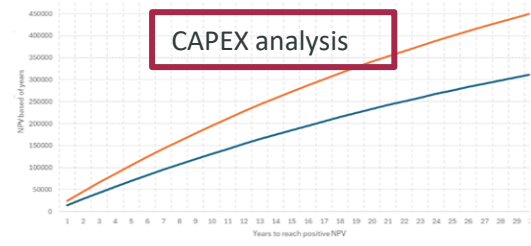
Scenario analysis



Sensitivity analysis



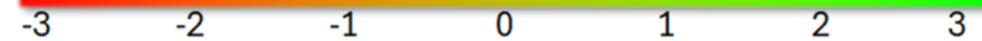
CAPEX analysis



Benefit indicator

1.013

Benefit indicator



Regular energy audit vs new methodology

- **Example from Latvia: Deep Renovation of a building**
- **Regular Energy Audit**
 - Estimated annual energy savings: **180.4 MWh**
 - Corresponding cost savings: **14,980 EUR per year**
 - Simple payback period: **27.3 years**
 - The building **should not be renovated** since the payback time exceeds 20 years (the lifetime of renovation)
- **Energy Audit Using Our New Methodology**
- Over a 20-year period, the renovation is projected to achieve a **Net Present Value (NPV) of 91,069 EUR**.
 - This consists of **-135,399 EUR** from energy savings and **226,468 EUR** from additional non-energy benefits (NEBs).
 - These NEBs include a **40% renovation grant, an increase in property value, and a 10-year real estate tax reduction** after renovation.
 - The **Benefit Indicator** for this measure is **0.713**, which strongly supports implementing the renovation.
- By accounting for both direct energy savings and non-energy benefits, our new methodology provides a more comprehensive and favorable financial picture than a standard energy audit.

Upcoming activities

- Energy auditor training course (8 hour courses) with online videos available on Youtube
- Meetings with companies, banks, legislators and other stakeholder groups



THANK YOU!

Gatis Zogla
gatis@ekodoma.lv



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