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Institute for Applied Ecology

The dilemma of evaluating impacts of informational measures

Energy Evaluation Europe Conference

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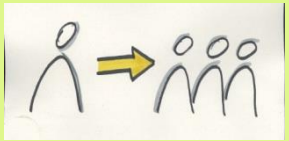
Informational measures

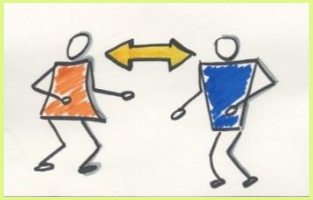
- Aim at raising awareness, sensitizing users
- Stimulate change in behaviour, user routines, purchase / investment decisions

Informative interventions – Clusters

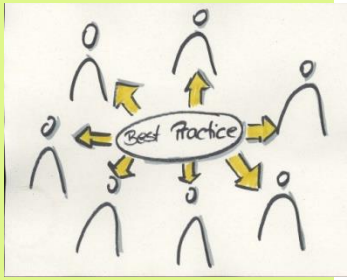
- Broad campaigns



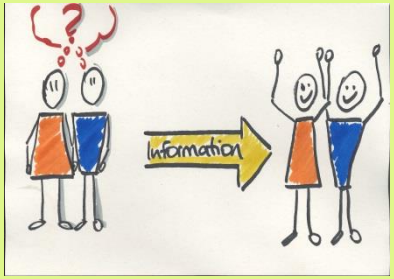
- Specific advice services



- Network/Best-practice-Transfer



- Knowledge transfer to change investment decision



Challenges to evaluating informational measures

- Diverse (sub)target groups
- Indirect effects, delayed impact, short/medium/long term impact
- Lack of data
- Cross-impacts from other measures

- Top-down approach
  - Before and after comparison, comparison to control group
- Bottom-up approach
  - Theory based bottom-up evaluation via impact chain analysis

More on energy savings/GHG impact of individual projects

- How to assess energy or GHG impact of individual activities?
- Consider impact chain (simplified bottom-up model)

Intervention	? (x)	GHG reducing activity	? (y)	Annual energy saving kWh/a or t CO_2/a	? (z)	Cumulative saving over lifetime kWh or t CO_2
	Effectivity		**Savings value**		**Lifetime**	

based on the recommended European Norm for “Energy efficiency and savings calculation –Top-down and Bottom-up methods”

x: How many people do we reach with our project and how many of those take action in terms of reducing GHG? = **Effectivity** of Intervention

y: How much do these GHG-reducing measures achieve per year? **Savings VALUE (**of e.g. an investment in building renovation, change in behaviour)

z: **Lifetime**: How long does the savings last? Lifetime of appliances, devices or change in behaviour.

A quick glance at the literature

Evaluation of the National Climate Initiative Germany – Schumacher et al. (2019)

Type of intervention	Intensity of intervention	Guideline Values for effectiveness
Broad campaigns	Simple contact Intensive contact	Max. 2% 2%-5%
Specific advice	Intensive contact (stationary) Very intensive contact (on-site)	5%-10% 10%-15%
Decision making help	Specific information for individual questions in decision making phase	8%-12%

Source: NCI evaluation methodology (Schumacher et al., 2019)

Achieving energy efficiency through behaviour change: what does it take? – EEA (2013)

Intervention	Range of energy savings
Feedback	5–15 %
Direct feedback (including smart meters)	5–15 %
Indirect feedback (e.g. enhanced billing)	2–10 %
Feedback and target setting	5–15 %
Energy audits	5–20 %
Community-based initiatives	5–20 %
Combination interventions (of more than one)	5–20 %

Changing energy behaviour – Dahlbom et al. (2009)

Intervention	Likely Saving*
Contracts and reward	6%
Financial incentives	3%
Fin. Incentives + information	5%
Information dissemination	1-2%
Specific information	3%
Financial support	9%
Tailor-made info	16%
Tailor-made + fin. Support	16+%
Ecoteams (high impact amongst small population)	15%

Main insights from the literature

- Mostly specific interventions and before and after approach.
- Few studies provide quantitative data on energy savings of different types of informational interventions.
- Different factors of the impact model not separated (implementation factor >< attribution factor).
- Savings are higher the more specific, intensive and tailored an intervention is.
- For some interventions (e.g. in the area of education, training programs, but also networking), it is not possible to find default values for savings in the literature.

Project: ENERGIE 2020

Project by Consumer Association of North Rhine-Westphalia (VZ NRW)

verbraucherzentrale Nordrhein-Westfalen

- Covers: Energy efficiency improvement, implementation of renewables and smart technologies
- Target group: Private consumers
- Activities: individual consultations (on-site and off-site), website information, social medial tools, public lectures, trade fairs

Energie ist unsere Sache

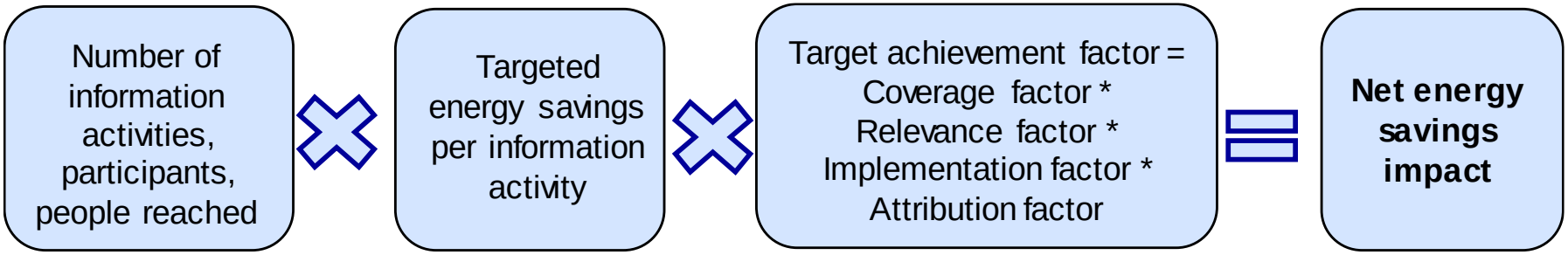
Das PROJEKT ENERGIE2020 wird gefördert durch:

EUROPÄISCHE UNION
Investition in unsere Zukunft
Europäischer Fonds
für regionale Entwicklung

Ministerium für Umwelt, Landwirtschaft, Natur- und Verbraucherschutz des Landes Nordrhein-Westfalen

Evaluation: ENERGIE 2020

Multi-stage impact chain evaluation model

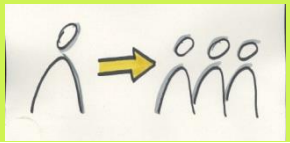


- Targeted energy savings: percentage savings, average value
- Target achievement factor =
  - Coverage factor: proportion of target group reached
  - Relevance factor: share for whom the intervention is relevant for
  - Implementation factor: proportion of implementation activity
  - Attribution factor: correction for other influencing factors

Evaluation: ENERGIE 2020

Focus on two specific examples for informational measures

Cluster: Broad campaigns



- Do-it-yourself-YouTube clip: Insulating heating pipes

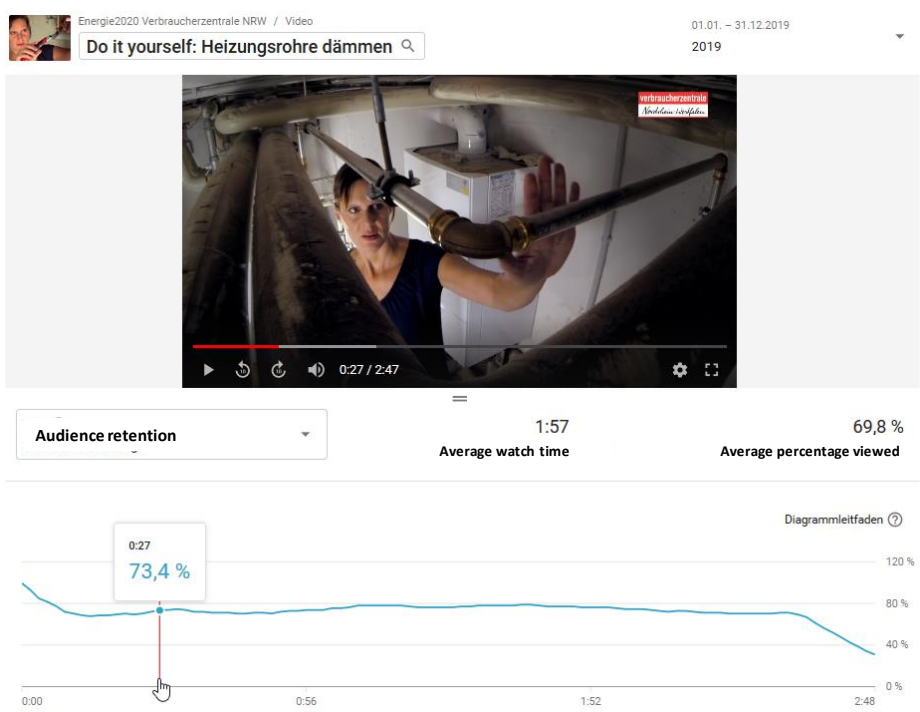
https://www.youtube.com/watch?v=mJhMb3SUh0s

- Public lectures on insulation, efficient heating, PV, reducing mildew, efficient airing, funding options

https://www.verbraucherzentrale.nrw/sites/default/files/2020-12/Verbraucher-und-Energie-4-2020-web.pdf

Example 1: Do-it-yourself-Video on heating pipe insulation

- Coverage factor: ratio of views of relevant length to total number of views 70%
- Other factors - no measurement possible
  - ❖ Relevance factor: 50-60%
  - ❖ Implementation factor: 70-80%
  - ❖ Attribution factor: 20-30%



⇒ Target Achievement Factor 5 – 10%

⇒ every 20th to 10th viewer of the DIY video ist motivated by the DIY video to carry out heating pipe insulation

Example 2: Public lecture on energy renovation of buildings

- Intervention type: group consultation
- Coverage and relevance factor: 100%
- Other factors via three stage survey
  - ✓ Before the lecture
  - ✓ Right after the lecture
  - ✓ 3 to 5 months after lecture

- Implementation factor: 10 - 18%
- Attribution factor: 25% - 36%

⇒ Target Achievement Factor 3 – 6.5 %

⇒ every 20th participant is motivated to carry out (additional) modernisation in response to the lecture.

Insights

- Multi-stage evaluation model is useful, transparent, comprehensible and based on cause-impact chain, accounts for attribution. Is flexible and can be tailored.
- Separating different factors is strength of approach but challenge for parametrisation
- Literature values often consider energy savings without making explicit the intermediate stages along the impact chain. Attribution factor is often disregarded.
- Informational interventions play important role but impact is challenging to evaluate.

Recommendations for funders/evaluators/policy makers

- Stimulate exchange of expertise with evaluators and the scientific community
- Ensure regular review of the parameterisation.
- Encourage/conduct surveys and follow-up surveys to enhance empirical evidence. Include marketing and communication approaches.
- Give more emphasis to indicators at the outcome level rather than impact level, e.g. knowledge enhancement, awareness raising, empowerment but also visibility of project, networking, develop trust in project developer, etc.

Questions to the audience

- Do you have experience with evaluating informational measures?
- What kind of approach do you follow?
- How do you collect data? How do you value the quality of your data?
- Which criteria/indicators do you apply?
- How do you find the line between „scientifically sound and feasible“ and „result of assumptions“ or „speculation“?

This is us

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Vielen Dank für Ihre Aufmerksamkeit!
Thank you for your attention!

Haben Sie noch Fragen?
Do you have any questions?