Evaluation of the German National Climate Initiative (NCI)

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NATIONALE KLIMASCHUTZ INITIATIVE
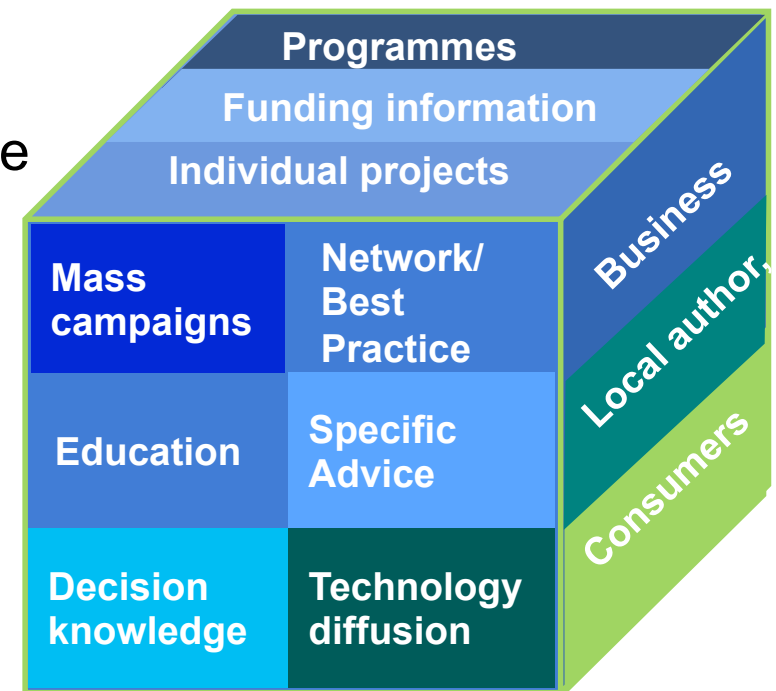
The National Climate Initiative (NCI)

The National Climate Initiative (NCI) ...

- … initiated in 2008 by the German Federal Ministry of Environment

- … contributes to German mitigation targets

- … involves actors, implements climate action locally

- … sets examples for imitation

- … aims at reducing barriers

- … is heterogenous, multifaceted, flexible

- … has a broad basis:

  - ✓ **Target groups**
  - ✓ **Funding structure**
  - ✓ **Size and duration**
  - ✓ **Action areas**
  - ✓ **Implementing actors**
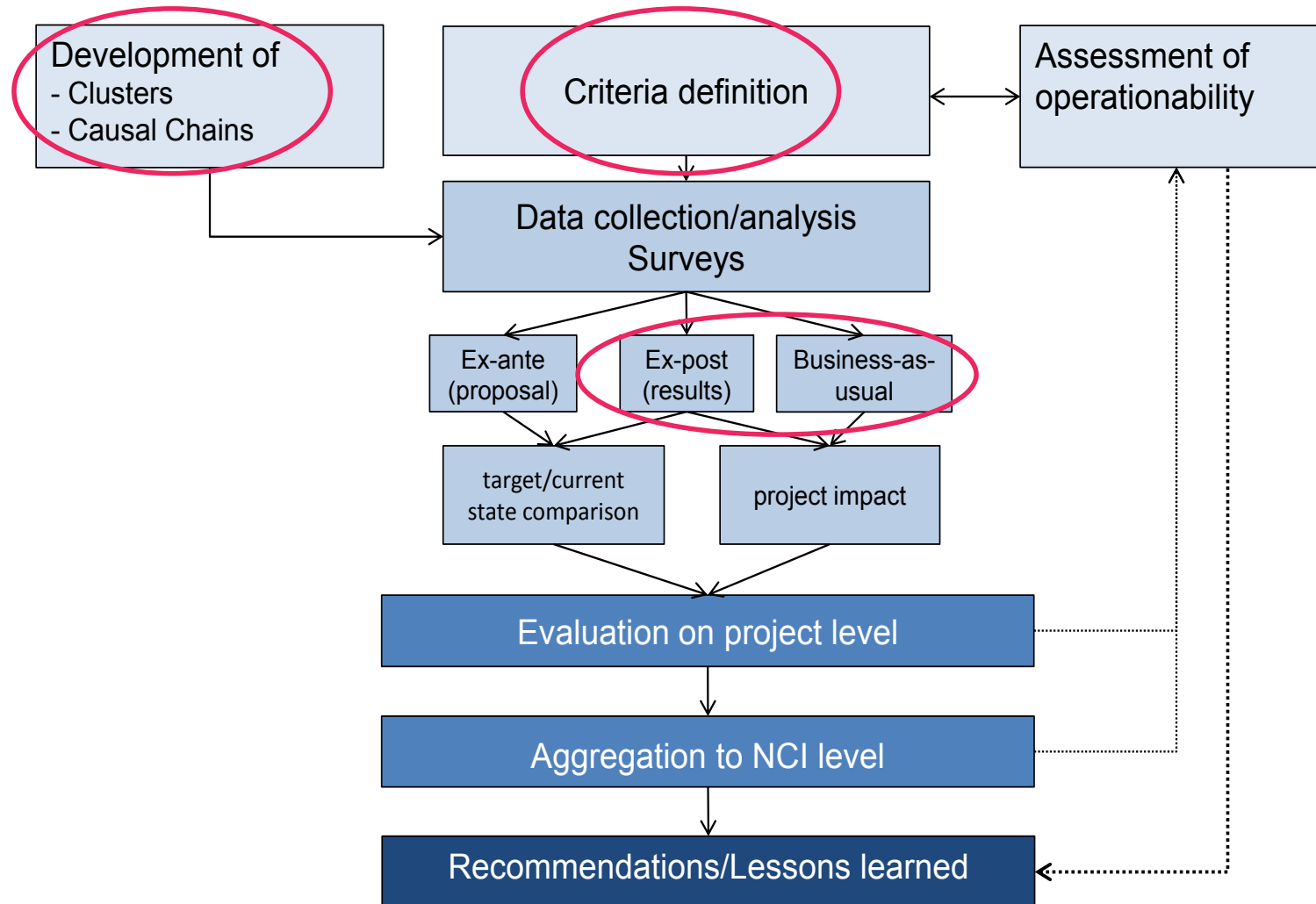 - ✓ **Impacts**

Programmes

Funding information

Individual projects

Mass campaigns	Network/ Best Practice
Education	Specific Advice
Decision knowledge	Technology diffusion

Business

Local author,

Consumers

The National Climate Initiative (NCI) …

- …includes

  - energy and climate concepts and implementation

  - individual information and advise projects

  - networks/best practice exchange

  - investment subsidy programmes (micro-CHP, cooling, air-conditioning, hybrid busses, street and indoor lighting)

- Measures can be broadly split into

  – Information-based measures

  – Investment incentives

Masterplan 100 % Klimaschutz

klima verträglich mobil 60+

Mobil bleiben

Tipps für eine klimaschonende Mobilität in jedem Alter

Methodological Framework

Evaluation Criteria

| Criteria	Sub-criteria
GHG emission reduction	GHG-reduction, energy savings, funding efficiency
Model character	feasibility, transferability, visibility
Broad impact	target group coverage, regional coverage
Continuity	capacity building, continuation of personell and activities
Economic Effects	mitigation costs, employment effect, leverage effect

Cluster and causal chains
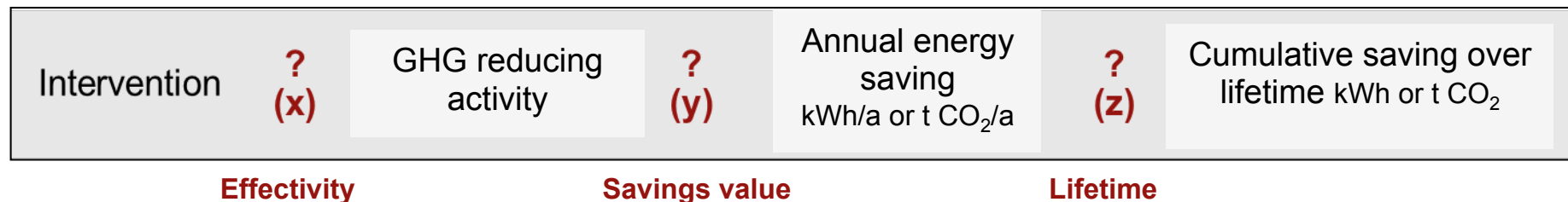
Economic incentives - Financial support programs

Informative interventions – Clusters

- ❖ Broad campaigns

- ❖ Specific advice services

- ❖ Network/Best-practice-Transfer

- ❖ Knowledge transfer to change investment decision

- ❖ Education
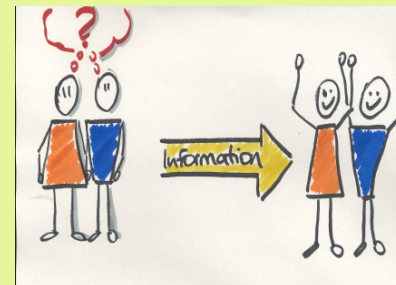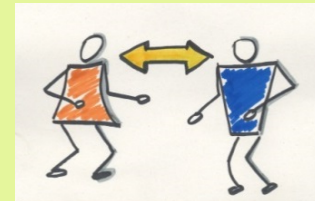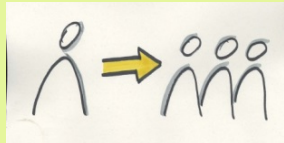
More on GHG impact of individual projects

- How to assess GHG reduction 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.

Assessment of GHG mitigation

- Characterization based on availability, quality and validity of data.

  ➢ Metered, technical data

  ➢ (Quasi) full data collection

  ➢ Partial data collection and und extrapolation

  ➢ Rough estimate based on literature information and qualified assumptions

Quality:
very good
good
medium
critical
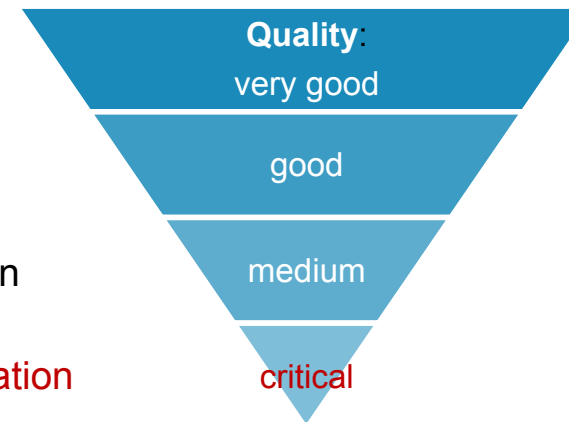
- Impact differs with respect to data integrity and meaning
  - Investment based intervention ⇔ realized GHG mitigation
  - Information based intervention ⇔ induced GHG mitigation

NCI Funding – 2008-2017

Pilot projects
1%

Municipal climate concepts
10%

Other concepts
3%

information-based interventions
27%

Financial support programs (investment-based interventions)
59%

Total funding € 800 million
(thereof evaluated 715 Mio. €)

Specific advice programs
15%

Mass campaigns
5%

Education
2%

Knowledge for investment decisions
2%

Networks and best practice transfer
3%

GHG reduction over lifetime

million t CO2 over the lifetime

| | 0 | 2 | 4 | 6 | 8 | 10 |

investment-based interventions

information-based intervention

Legend:
- micro-CHP plants
- energy efficiency in municipalities
- commercial cooling systems
- other stimulus programs
- pilot projects
- knowledge for investment decisions
- specific advice programs
- mass campaigns
- other information-based interventions

Further positive effects

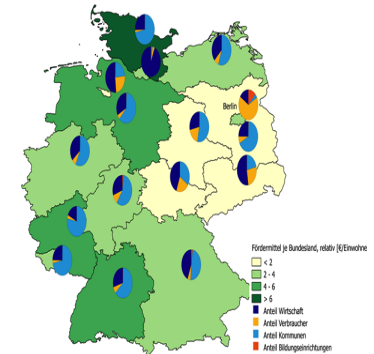- Coverage - activities reached a large number of actors, were spread to varying extents all over Germany

- Feasibility well, high visibility and good transferability

Programs	Feasibility		Visibility		Transferability	
innovative individual projects	●●○○○ to ●●●●●		●●●○○ to ●●●●●		●○○○○ to ●●●●●	
Municipality projects strategic	●●●●●		●●●○○ to ●●●●○		●●●●●	
Municipality projects investment	●●●●○ to ●●●●●		●●○○○ to ●●●○○		●●●●○ to ●●●●●	
Micro-CHP	●●●●○		●●●○○		●●●●●	
Cooling/air-conditioning	●●●●○		●○○○○		●●●●●	
Diesel-electric hybrid busses	●●●●○		●●●●●		●●●○○	

- Positive employment effects: More than 14 000 persons were directly involved with the NCI (full time equivalents), another 35 000 indirectly involved further up the value chain.

Evaluation Challenges

- Data, data, data….

- Informative interventions:

  - Impact chain unclear (e.g. educational programmes)

  - No immediate impact (time lag, requires activity beyond the project)

  ➢ Effectivity of intervention (gap „x") highly uncertain

- Business-as-usual or reference development unkown/debated

- Free-rider effects for investment subsidies

Lessons learned

- Peer-to-peer approaches work well (B2B, C2C, S2S, M2M)

- Communication and exchange are key for mutual learning

- Using existing communication/network channels is most efficient

- Municipalities have high potential and set examples.

- Different target groups are receptive to different interventions

- Information and motivation in one-off behavior can deliver more climate benefits than measures in changing daily-routines

- Quantitative indicators insufficiently reflect success of projects

=> NCI is a quick-learning, flexible, innovative and effective instrument for climate action in Germany.

Looking Forward and Further Information

- Comparable programs in your countries?

- Learning from each other, esp. concerning informative interventions!

- Evaluation reports (in German):
  https://www.klimaschutz.de/zahlen-und-fakten

Extra slides

X – Effectivity

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**

- Differentiate type of intervention:

  - Investment subsidies

  - Information based measures

    - Intensity and kind of information provision ranges from broad campaign to one-to-one interactive advice

    - effectivity might range from 2% to 15%

- How to arrive at effectivity rates?

  - Via Surveys, literature, information from existing evaluations

  - Expert guess

Intensity of contact	Effectivity
Broad campaign: • Simple contact • Intensive contact	 2% 8%
Specific advice: • Intensive contact (stationary) • Very intensive contact (at-home)	 10% 15%
Decision making help	15%

Y – Energy Savings Value

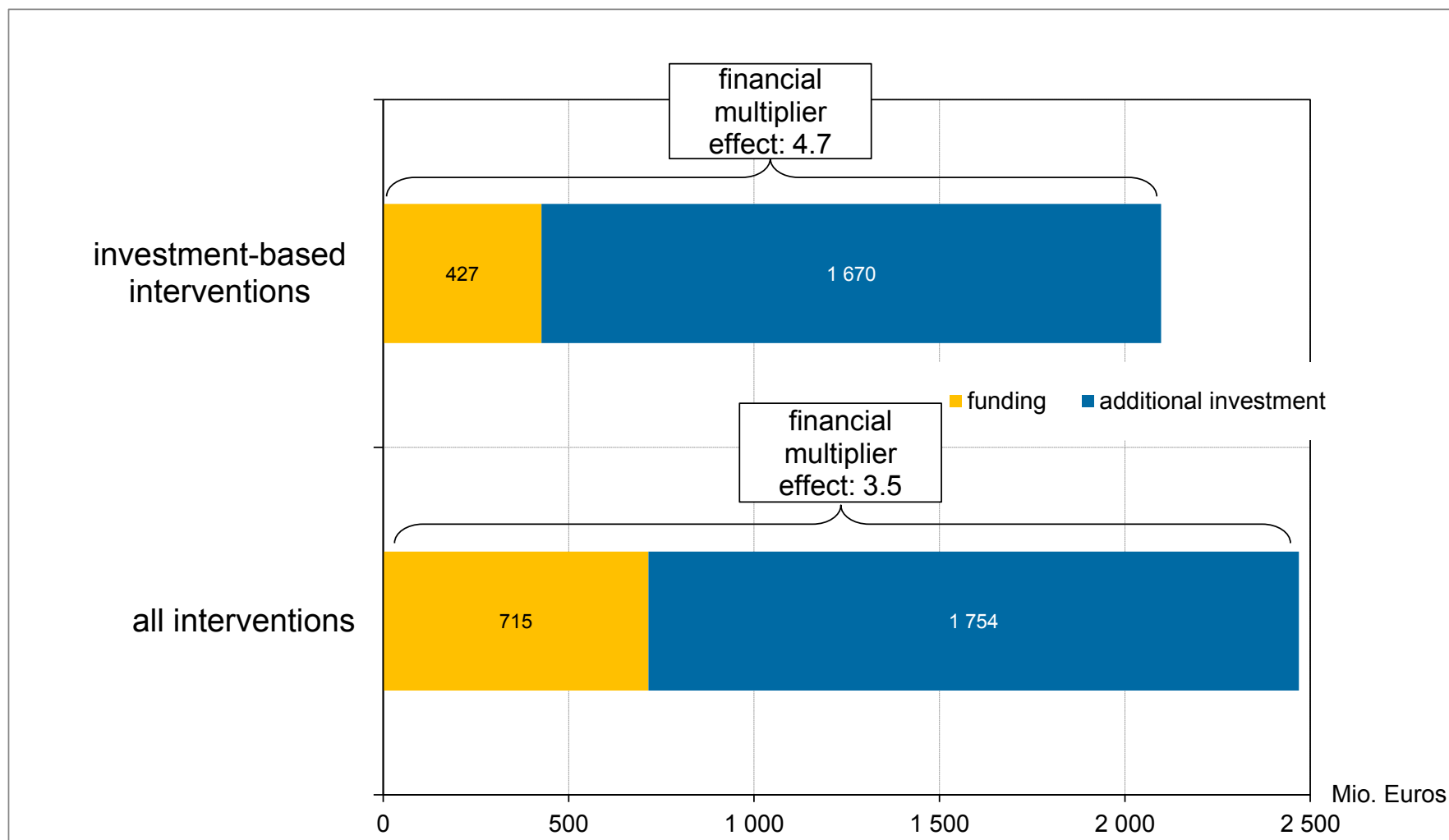| Intervention	? (x)	GHG reducing activity	? (y)	Annual energy saving kWh/a or t CO_2/a	? (z)	Cumulative saving over lifetime kWh or t CO_2
	Effectivity		**Savings value**		**Lifetime**	

- Examples:

  - Investment activity: energy use of new versus alternative technology

  - Organizational change: use of energy management system

  - Change in user routines: different heating patterns, efficient driving, modal shift

- How to arrive at savings values?

  - Technology data base

  - Literature, standard assumptions

  - Meters, surveys

Z – Lifetime

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**	

- Investment activity: Technical lifetime or depreciation period

- Behavioural change: literature, surveys – max 2 years

Economic leverage effect

investment-based interventions: funding 427, additional investment 1 670 — financial multiplier effect: 4.7

all interventions: funding 715, additional investment 1 754 — financial multiplier effect: 3.5
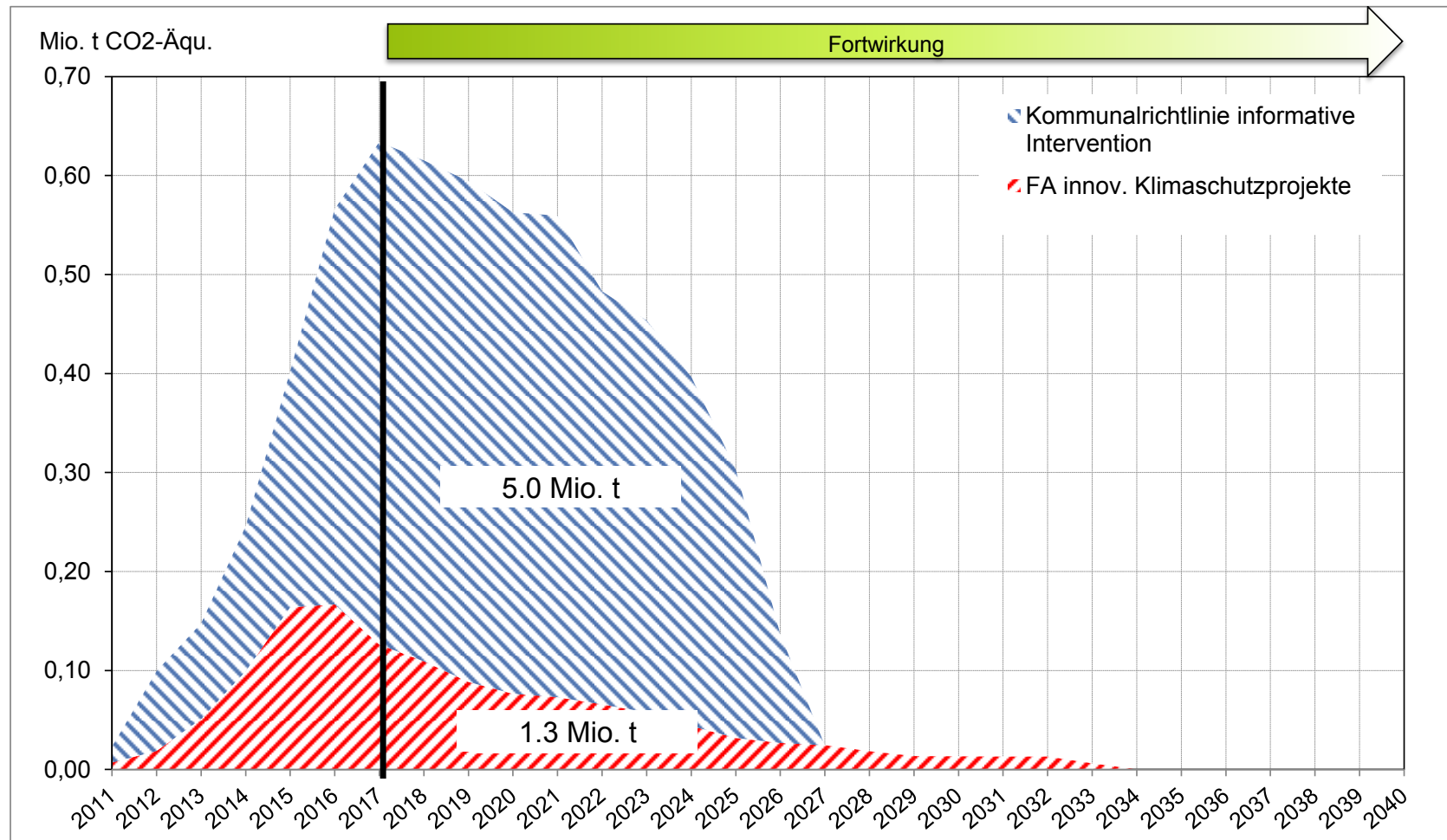
Legend: ■ funding ■ additional investment

Mio. Euros

Net GHG mitigation investment-based interventions over lifetime
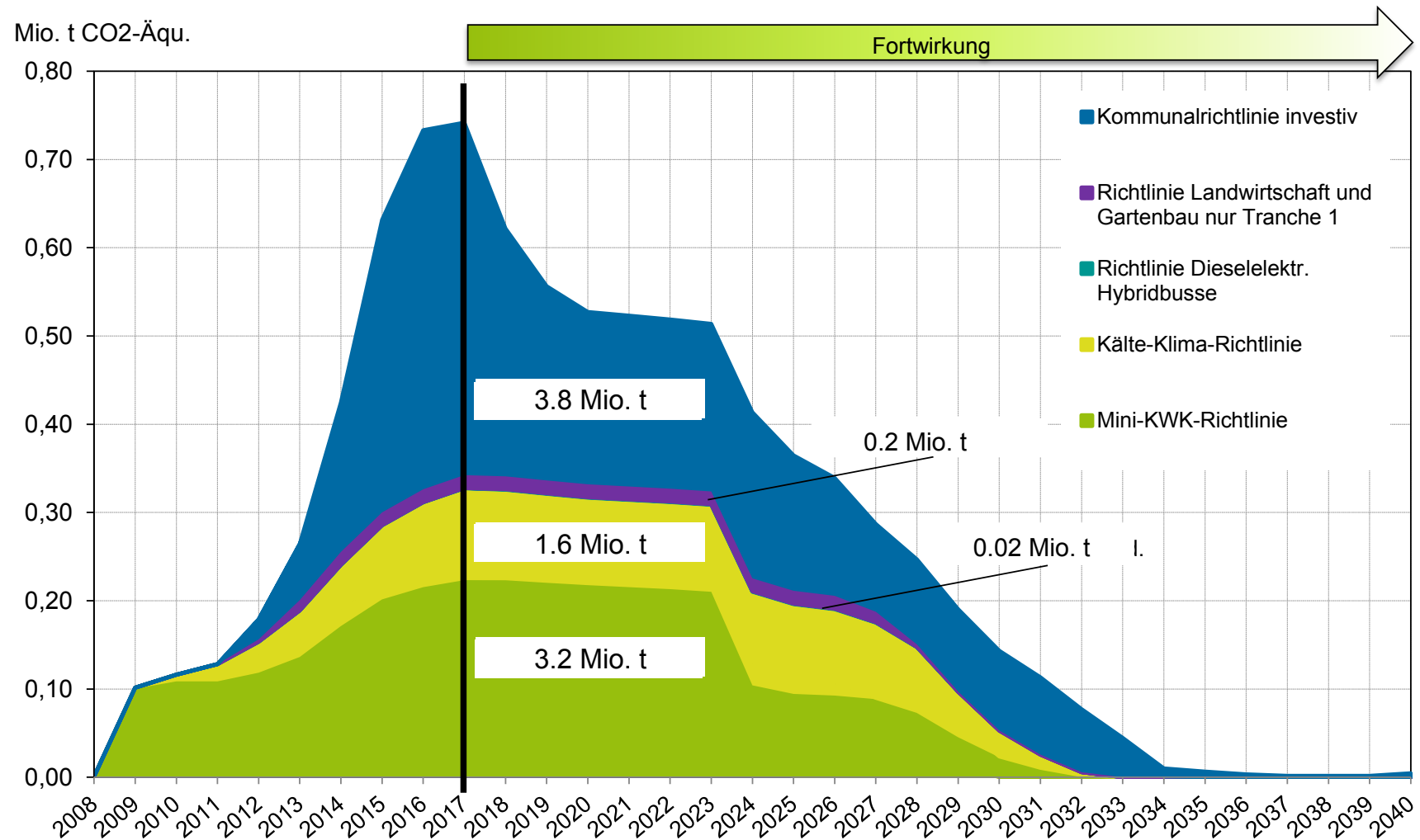
GHG savings of informative interventions overs lifetime of saving

Success Factors

NCI projects

- are heterogenous and multifaceted

- raise awareness and sensitize on climate action

- set examples for imitation

- help to reduce barriers

- are flexible and well-tailored to address individual target groups

Programs	Feasibility		Visibility		Transferability	
innovative individual projects	● ● ○ ○ ○ to ● ● ● ● ●		● ● ● ○ ○ to ● ● ● ● ●		● ○ ○ ○ ○ to ● ● ● ● ●	
Municipality projects strategic	● ● ● ● ●		● ● ● ○ ○ to ● ● ● ● ●		● ● ● ● ●	
Municipality projects investment	● ● ● ● ○ to ● ● ● ● ●		● ● ○ ○ ○ to ● ● ● ○ ○		● ● ● ● ○ to ● ● ● ● ●	
Micro-CHP	● ● ● ● ○		● ● ● ○ ○		● ● ● ● ●	
Cooling/air-conditioning	● ● ● ● ○		● ○ ○ ○ ○		● ● ● ● ●	
Diesel-electric hybrid busses	● ● ● ● ○		● ● ● ● ●		● ● ● ○ ○	

Conclusions

- Distinct difference in impact between information-based and investment-based instruments and within these groups

- Some reach large number of people but have limited impact on changing behaviour, some affect behaviour but have limited impact on total GHG emissions

- Measures targeted very different savings potentials

- GHG savings may be realized instantly, some in medium or long term or only on paper
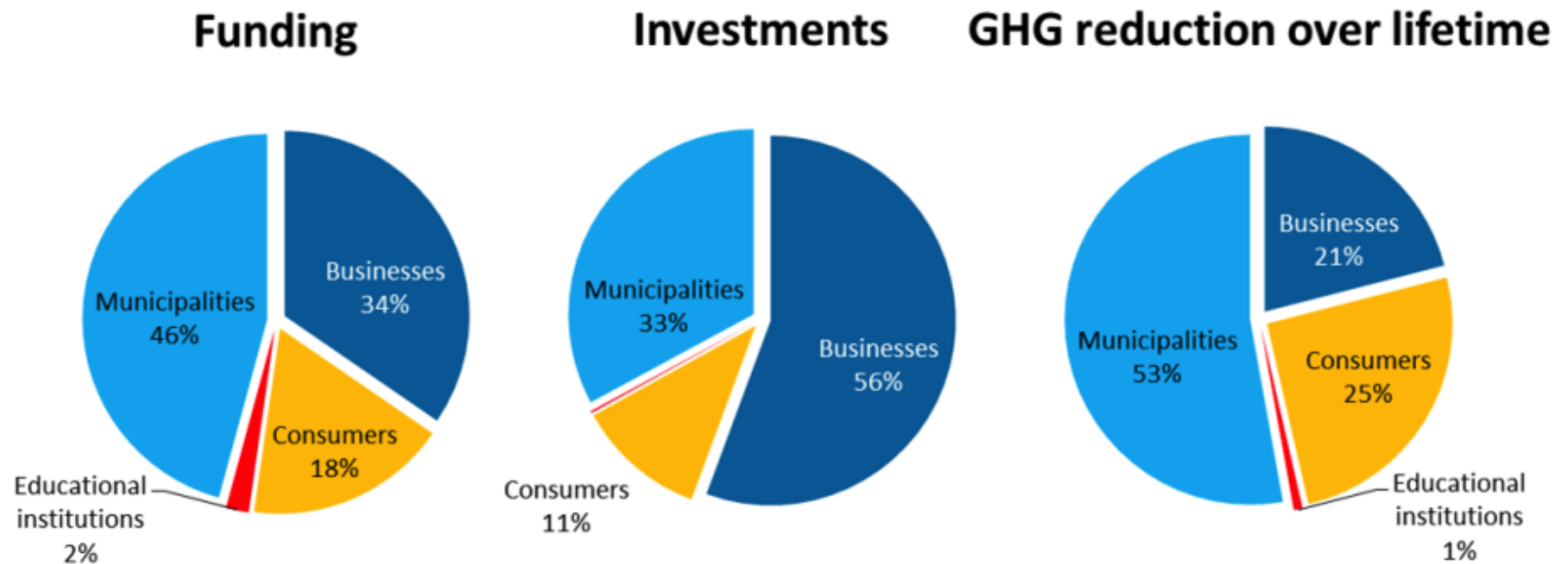
- Consistent monitoring is essential

Effects: Gross or Net?

Gross effect

- consideration of standard investment (reference development)

- consideration of dynamic emissions factors

- consideration of windfall effects

-/+ consideration of (direct) anticipatory effect

Net effect

Effects by target group

Funding

- Businesses 34%
- Municipalities 46%
- Consumers 18%
- Educational institutions 2%

Investments

- Municipalities 33%
- Businesses 56%
- Consumers 11%

GHG reduction over lifetime

- Businesses 21%
- Municipalities 53%
- Consumers 25%
- Educational institutions 1%

Conclusions

- ● NCI is successful
  - – very flexible, innovative and effective
  - – can be adjusted to meet demands and provide room for exploration
  - – can tackle target groups and their respective barriers
  - – NCI structured to reach many stakeholders/attractive partner for cooperation - local authorities, federal states, industry companies, NGOs, consumers/consumer groups
  - – NCI supplements existing policies and measures
    - ● specific to target groups
    - ● specific to mitigation potentials
- ● It needs to provide exit-strategies to discontinue funding but continue projects or mitigation
- ● Consistent monitoring is essential

Feasibility, Visibility, Transferability

Programs	Feasibility	Visibility	Transferability
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Micro-CHP	●●●●○	●●●●○	●●●●●
Cooling/air-conditioning	●●●●○	●○○○○	●●●●●
Diesel-electric hybrid busses	●●●●○	●●●●●	●●●○○

Cluster and causal chains

Type of intervention/ Cluster	characteristics/addressed GHG-mitigating behaviour at end-user
Economic Incentives **Cluster: Financial support programmes**	address investment decisions only
Informative Interventions	expand or change perception of options for action
Cluster: **Broad campaigns**	**one-way information flow** fundamental orientation, simple recommendations and raise problem awareness
Cluster: **Specific advice services**	**mutual flow of information** provide individualized and situation-specific advice
Cluster: **Network/Best-Practice-Transfer**	**"Peer-to peer " Information + Feedback** Networks of „peers" promotes Best Practice Transfer. Stimulates learning and competition.
Cluster: **Knowledge transfer to change investment decisions**	**one-way information flow** Offers practical, situation or product-specific but not individualized information
Cluster: **Education**	**Activation and mobilisation of multiplicators** (teachers etc.) for climate action; Trainees and students are sensitized to climate action, their knowledge is expanded, climate-friendly behaviour is identified and, if possible, practiced or initiated..