The Climate Change Evaluators' Community of Practice: Guidelines for Climate Change Mitigation Evaluation

Webinar

Nov 27, 2012

Dr. Christine Wörlen

Outline

- Persistent challenges of climate mitigation evaluations
- Systems boundaries and baselines
- GHG measurement concepts
- Outcome indicators

arepo consult

Persistent Challenges of Climate Mitigation Evaluations

Examples for climate mitigation „interventions“

- Installation of a wind turbine
- Assessment of wind power generation potential
- REDD+ project
- Policy scheme for solar systems
- Training for technicians for home insulation / weatherization
- Energy audits
- New refrigerator
- Technical standards/laws requiring waste recycling in factories
- A campaign for using bicycles instead of cars
- Capturing and disposing of carbon dioxide emissions (CCS)
- ….

Typical climate change mitigation evaluation challenges (I)

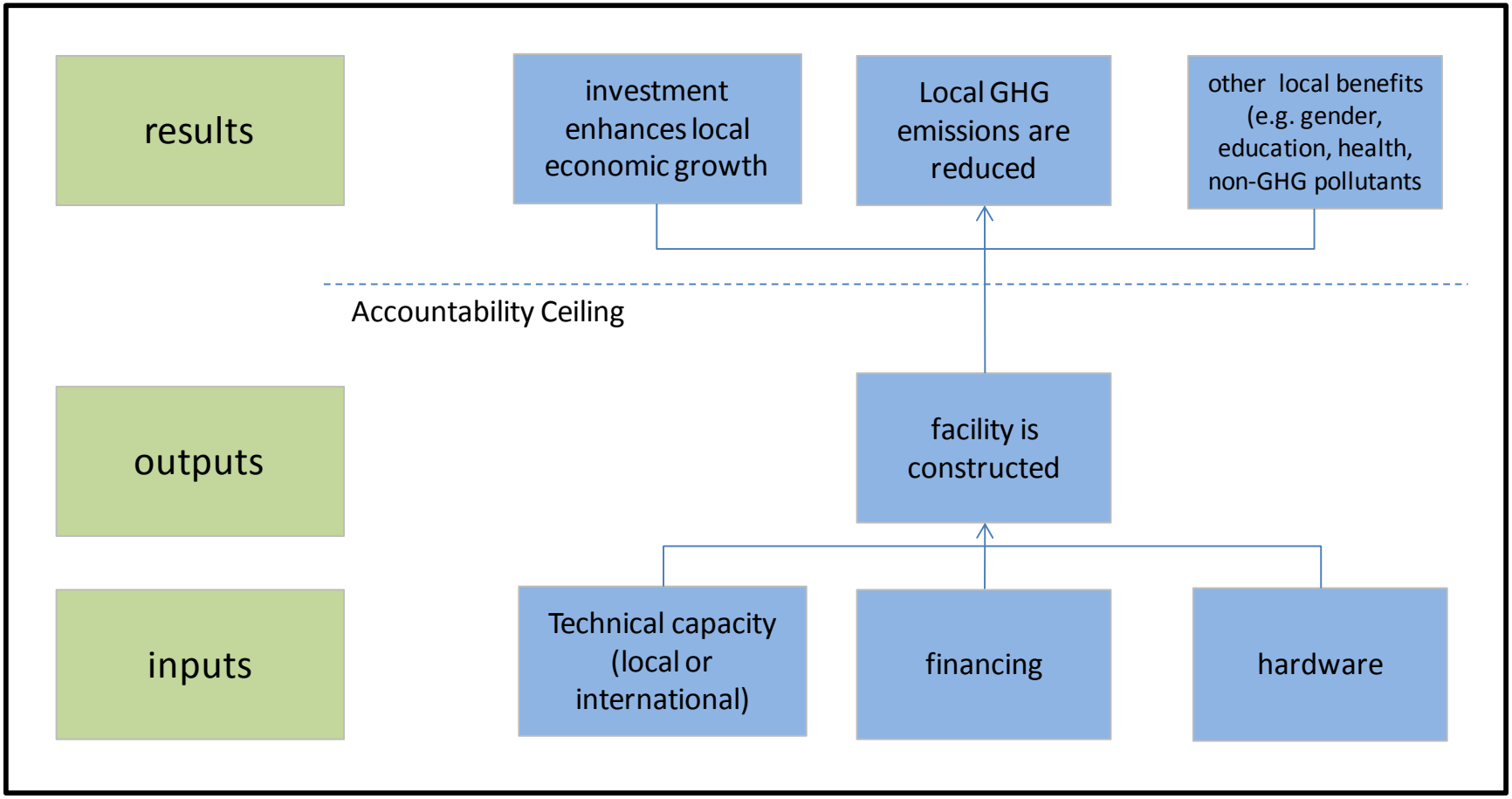
- Baseline issues: counterfactual can be difficult
- Ultimate impact: GHG-emission reduction together with economic development (→ indicator and measurement challenges)
- is mostly not reached directly but through changes in behaviour (investment, utilization) of GHG emitting actors and their supply chain

Typical climate change mitigation evaluation challenges (II)

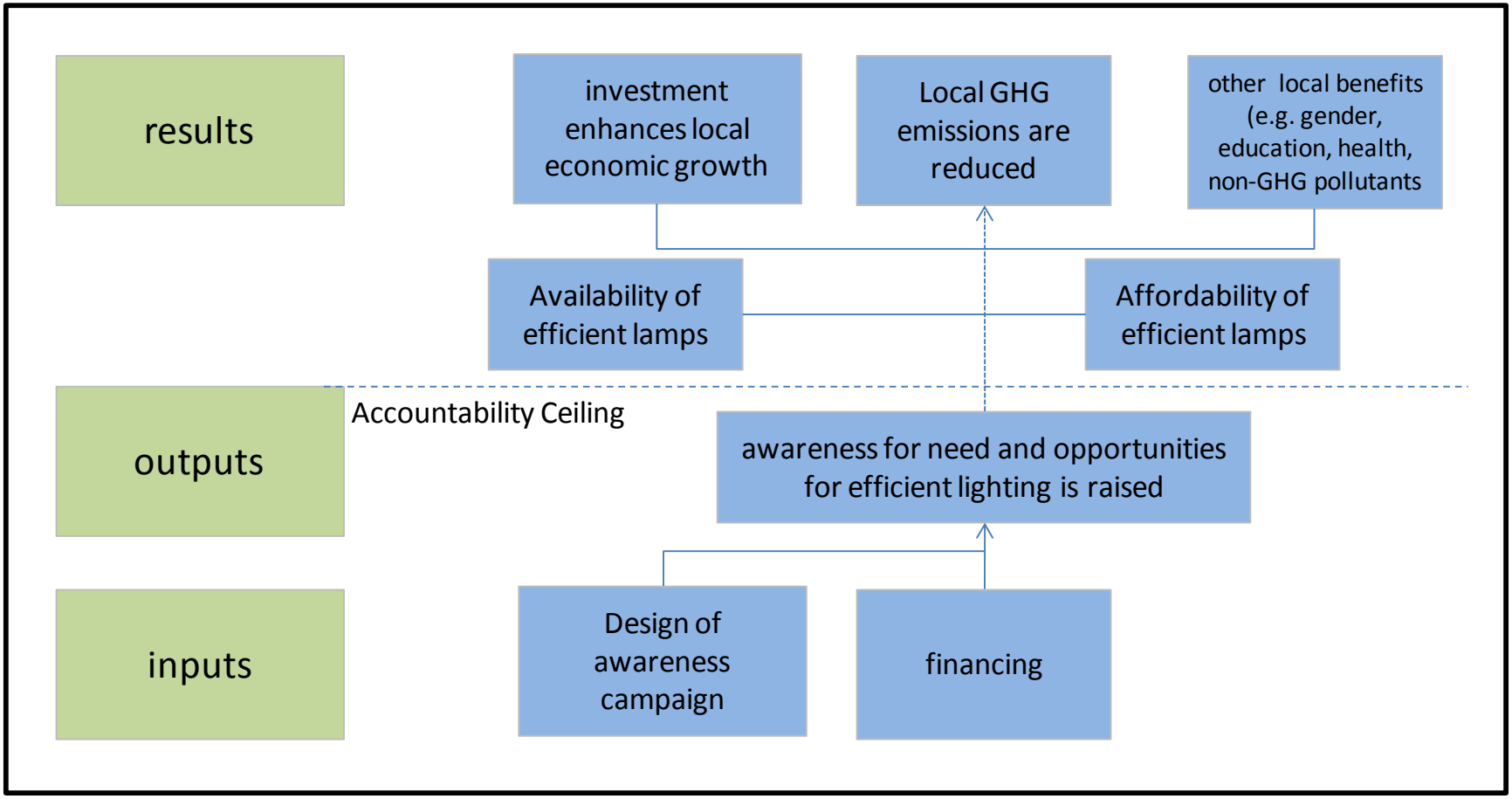
- Not only one group of stakeholders plays a role in achieving that result, but a whole sector; consisting of users, suppliers, financiers and policy .
- But: many climate mitigation interventions affect only one group of stakeholders (e.g. users OR supply chain OR policy makers OR financiers).
- Issues with attribution and context complicate „usual“ measurement challenges – even for the evaluation of a single awareness or capacity building measure, the context and other initiatives need to be taken into account.

What is the system that we are looking at?

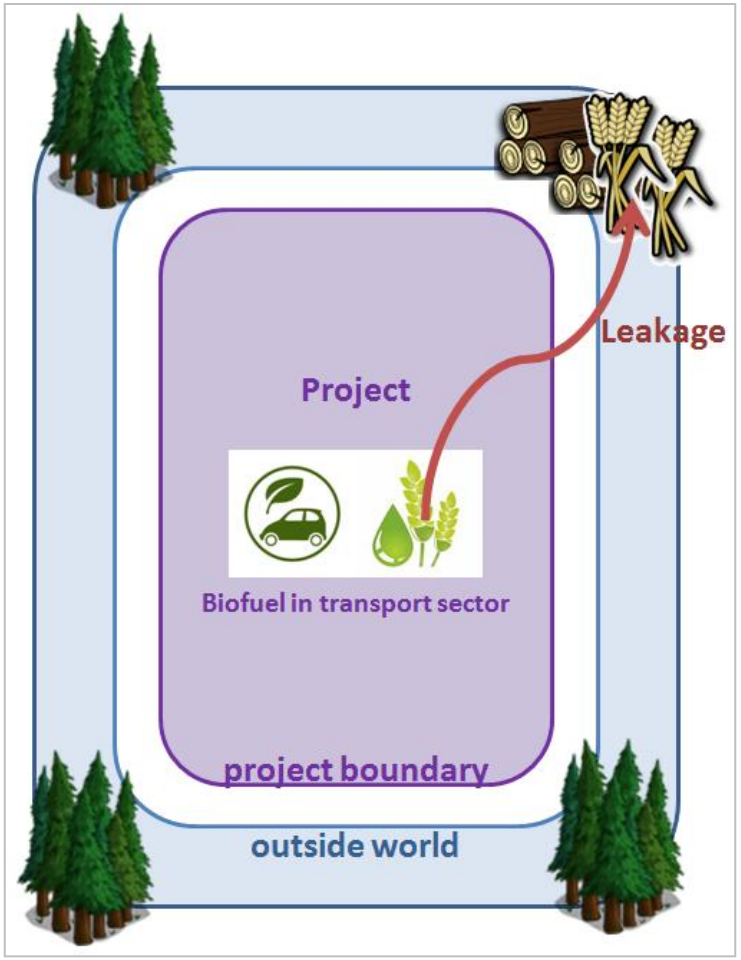
local projects – local consequences



…and what lies beyond… (example of a sectoral project)



Leakage

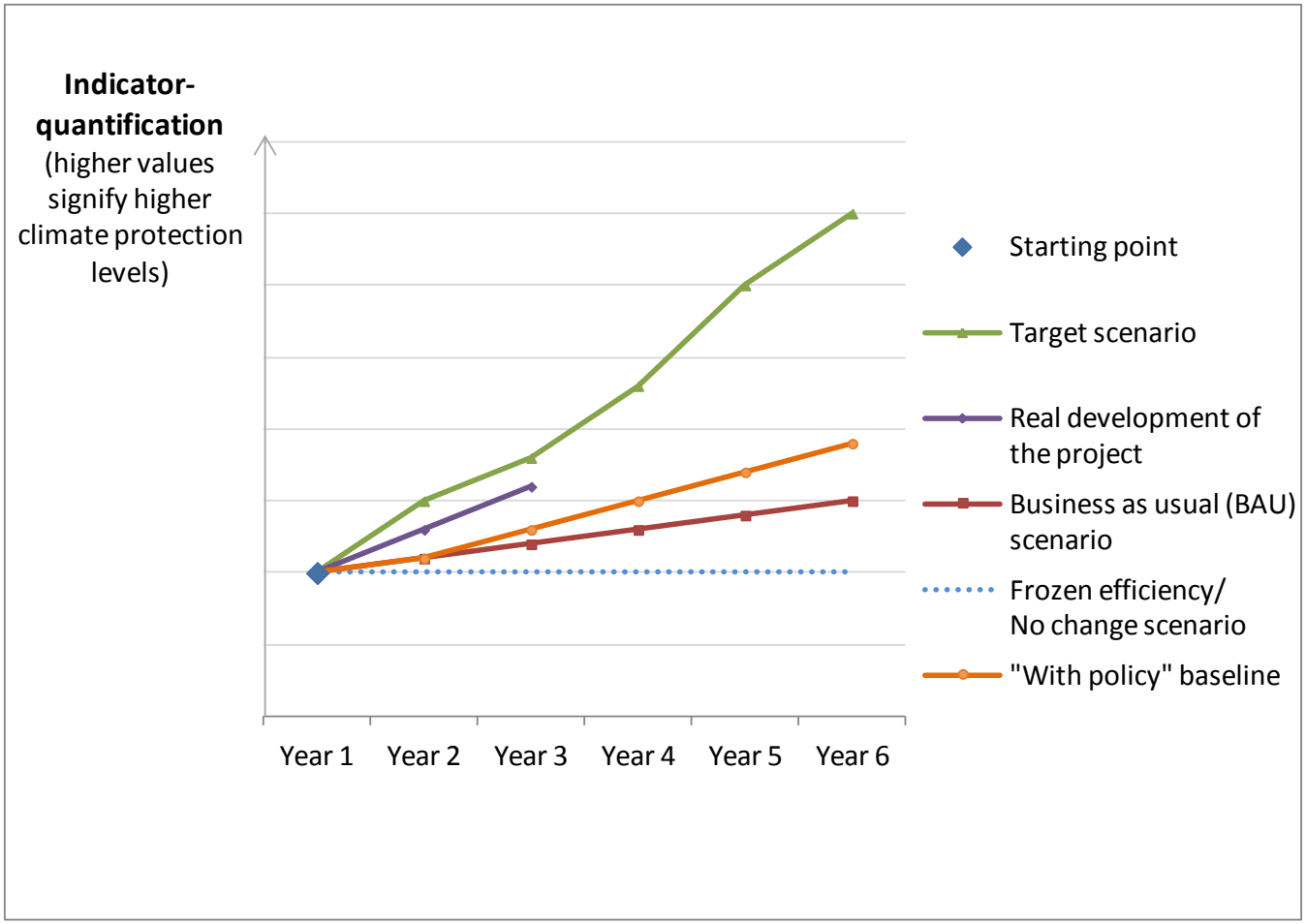

Leakage
Project
Biofuel in transport sector
project boundary
outside world

Note:

- GHG emission reduction as the ultimate objective. But:
- GHG impacts almost always lie on the other side of the accountability ceiling
  - **Limited project duration**
  - **Indirect project logic**
- This allows for / might require the application of different GHG concepts, which are not necessarily comparable.
- Results vary widely – no unified results indicators?
- Leakage: is also an intervention result; safeguard? Evaluate!
- Context needs to be accounted for
  - **Baseline shift**
  - **Other preconditions also required for evaluation (impact and other types)**

Baselines

The only constant is change.
The question is: how much?



Source: NKI Evaluation

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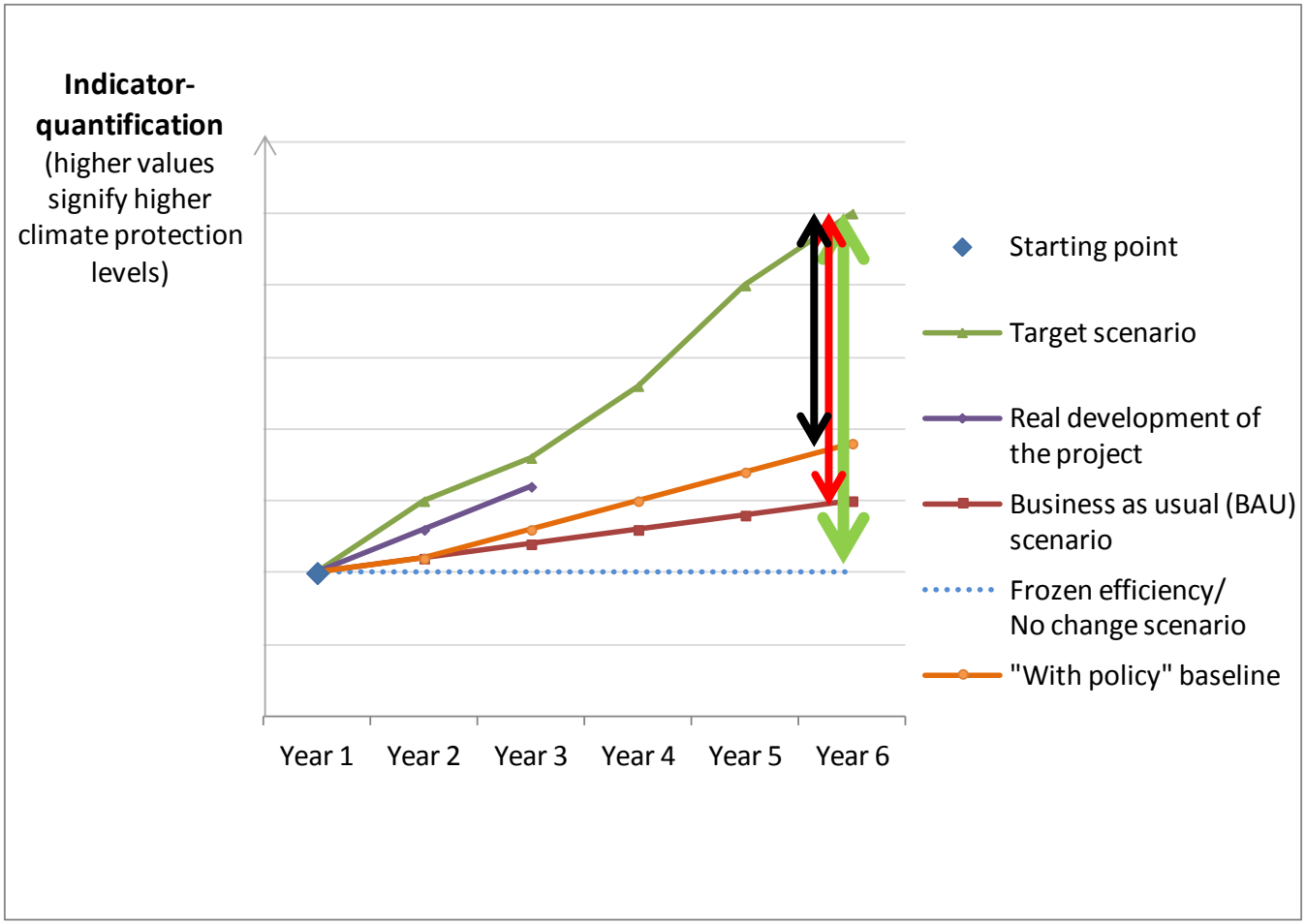


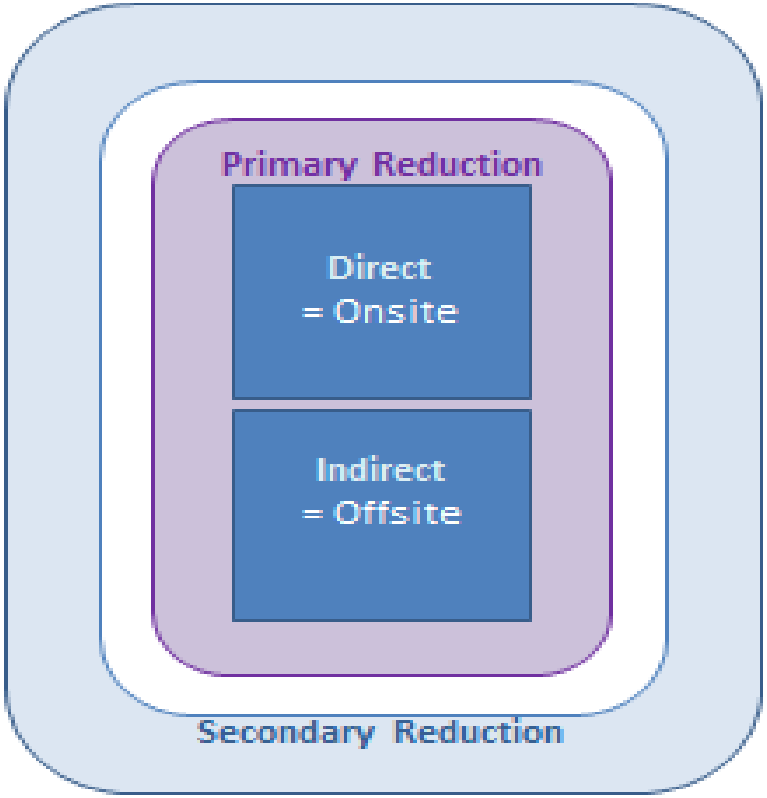
Source: NKI Evaluation

Note:

- Counterfactual is always unobserved – baseline is always somewhat speculative
- Baselines can look different ex-ante (design stage) and ex-post (impact evaluation stage)
- Good practice: measures at least one year of baseline before intervention starts or rigorous methodology (for locally confined interventions)
- Free riders are part of the baseline. Subtract them from the intervention's impact.

GHG concepts with relation to CC mitigation projects

Different types of GHG reductions are determined with varying degrees of certainty.



- E.g. “direct / indirect” (WRI/WBCSD):
  - **location where GHG emissions are reduced**
  - **e.g.: higher efficiency in fuel wood use vs. reduction of conventional power consumption, reduction of carbon footprint**
  - **depends on type of GHG reduction potential that is attacked**
- Primary / secondary:
  - **Is the GHG reduction controllable by the project?**
  - **depends on project approach**
  - **E.g. project investments vs. capacity building**

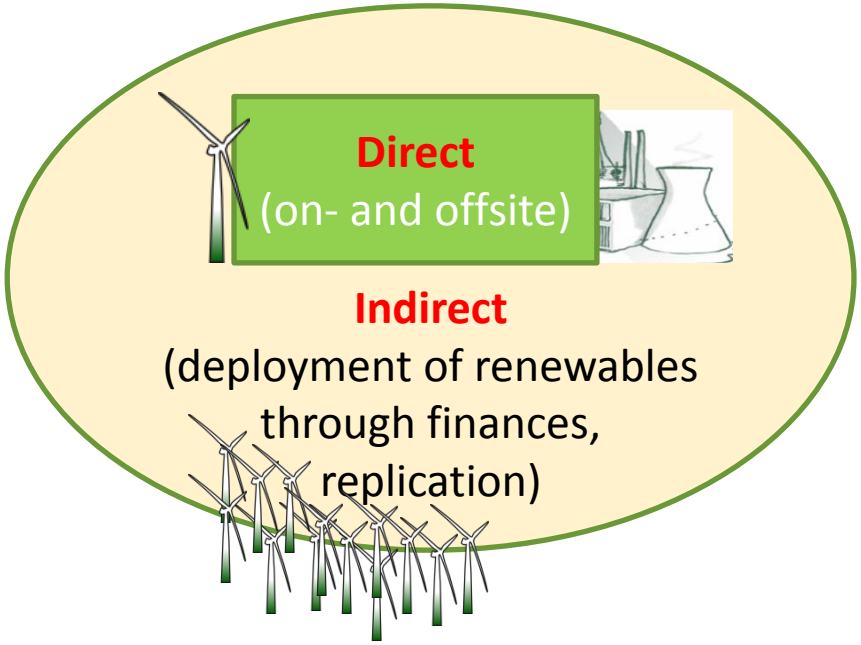
Use of terminology is not necessarily harmonized!

WRI/WBCSD	GEF, GTZ/GIZ*

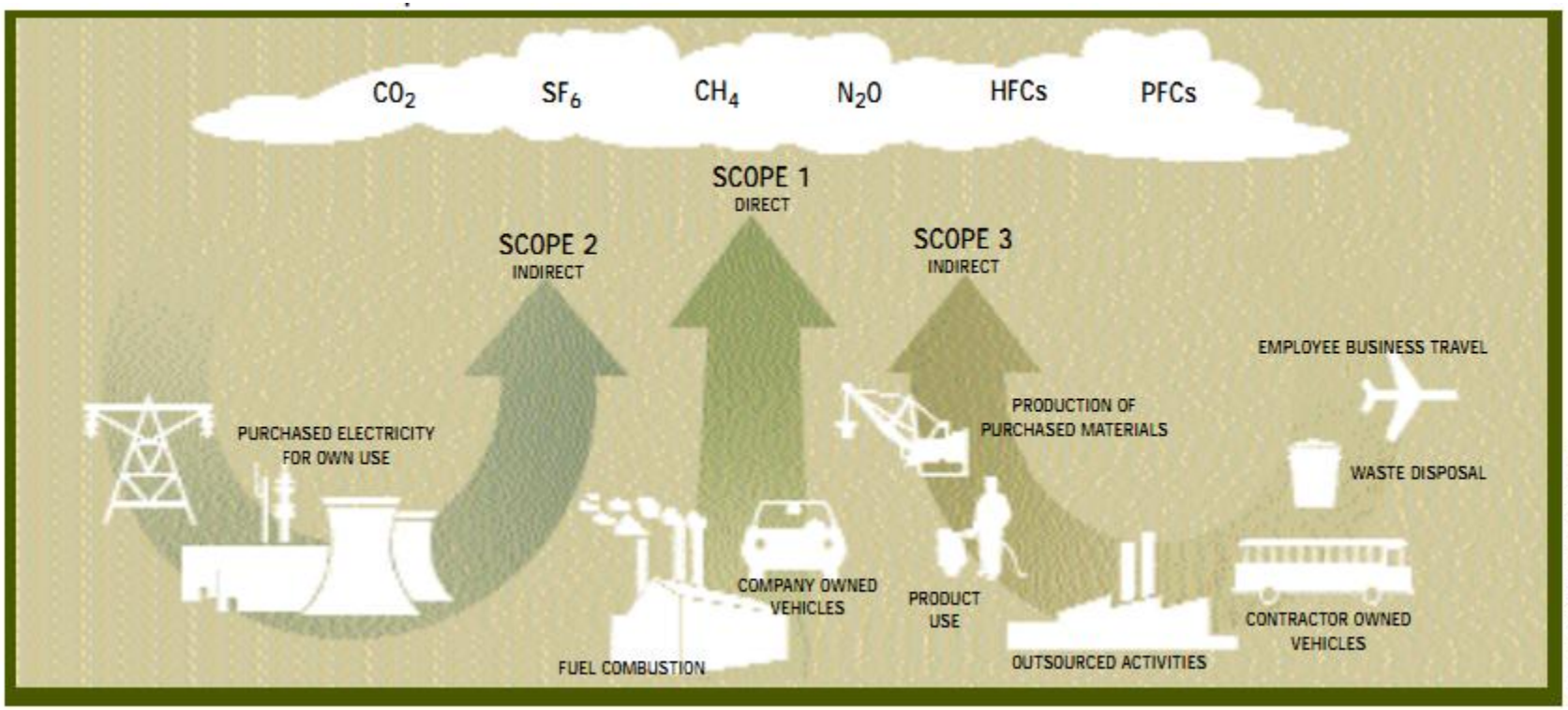
Direct
= Onsite
(i.e. process emissions)

Indirect
= Offsite
(i.e. electricity)

≠



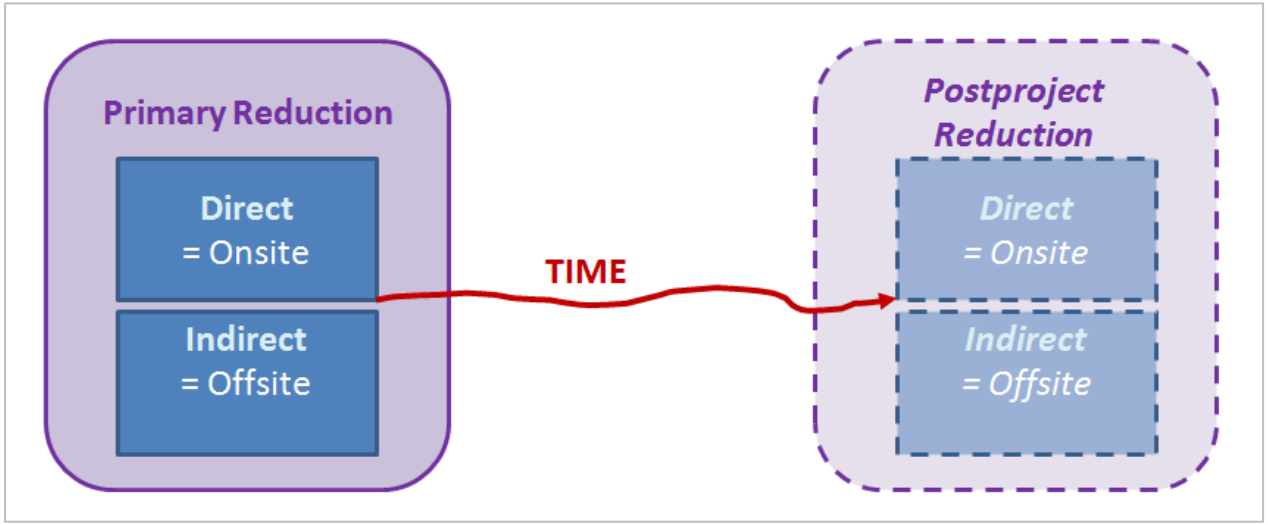
Accounting concept No.2: Carbon Footprint concept



Adapted from NZBCSD, 2002

Replication

- Some GHG monitoring / evaluation methodologies also assess replication effects.
  - **Either through demonstration / barrier removal**
  - **Or through institutions and organizations that are still in place after the project ended (e.g. revolving funds)**



- Needs estimates for replication factors etc. which are often not empirically available.

Noteworthy on GHG:

- Different concepts
- Determination with varying degrees of certainty (primary/secondary, direct/indirect)
  - **Different degrees of controlability**
  - **Different degrees of attributability**
  - **Most of the time not finished at the time of the evaluation**
- Difficult to express in one sum

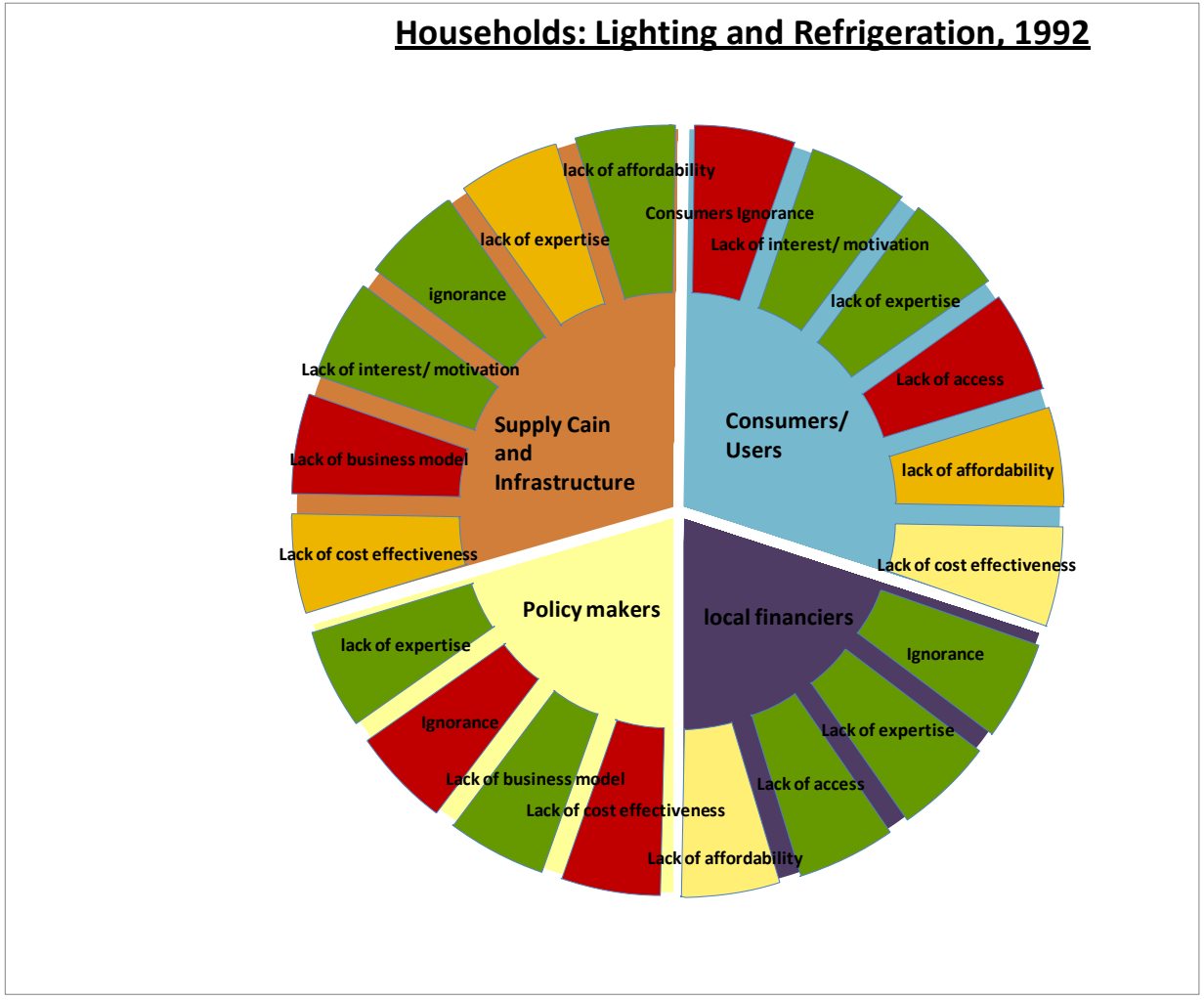
Results indicators other than GHG

Full set of barriers.

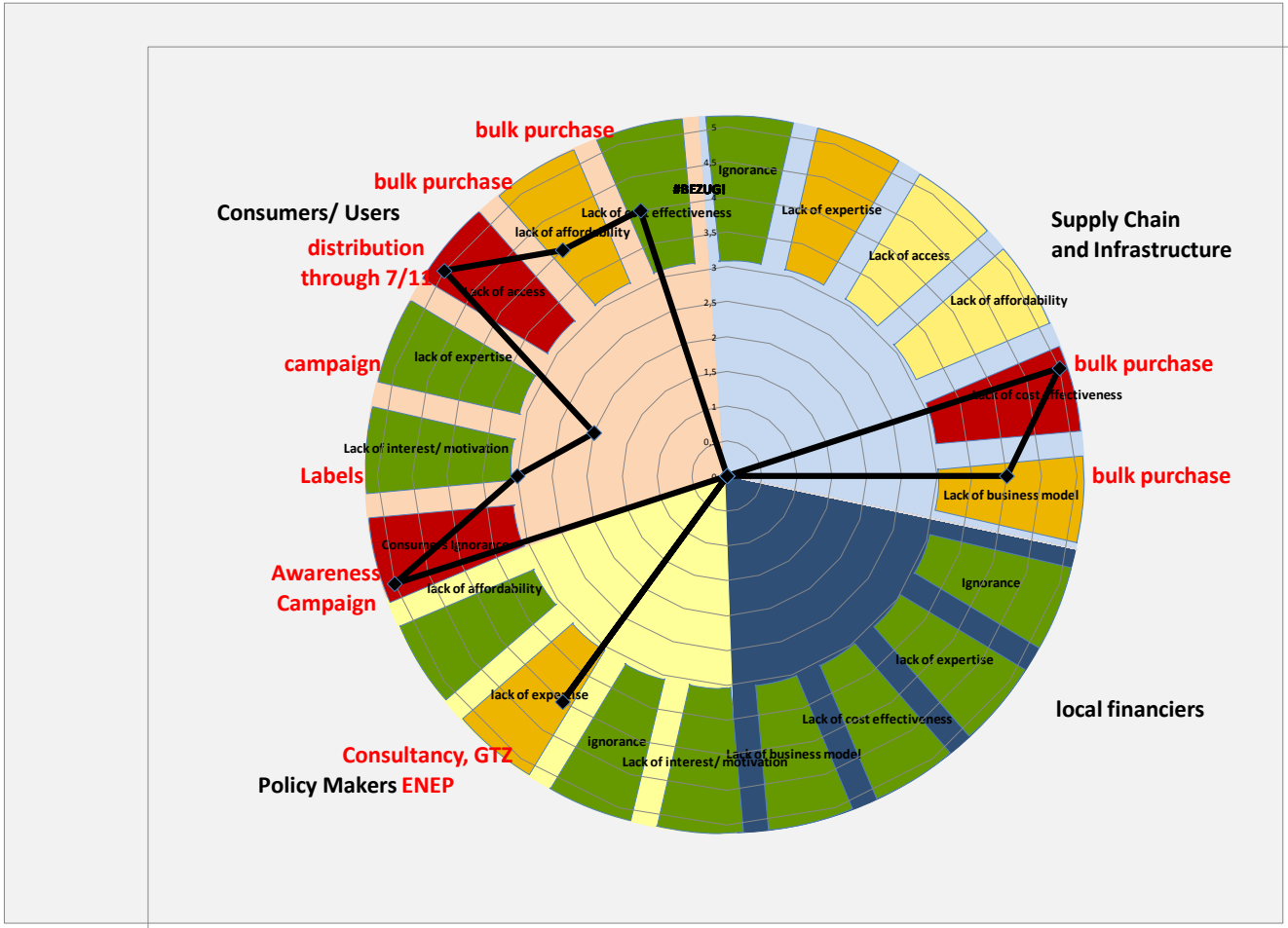
Potential Barrier	Explanation of the barrier
ignorance	not knowing what causes and does not cause GHG emissions, not aware of how to reduce them
lack of motivation / interest	not minding, not interested in reducing emissions or providing the supporting service even if other benefits would accrue (e.g. saving money, leveraging growth opportunities)
lack of expertise	not being knowledgeable enough for implementing the reduction
lack of access to the mitigation option	the technology is not physically available, e.g. because the next sales point is too far away, no maintenance service is provided …
lack of affordability	the funds for the investment are not available even if the implementation would save money and be overall cost effective
lack of cost effectiveness	the mitigation option is not cost effective, i.e. would be more expensive than the status quo

Potential Barrier	Users / Consumers	Supply chain	policy makers	local financiers
ignorance	users might not know what causes and does not cause GHG emissions, might not be aware of how to reduce them	suppliers might not knowing if their products cause GHG emissions, and might not be aware of how to reduce them	policy makers might not know which options cause more GHG emissions, and how they can be reduced	financiers might not know which options cause more GHG emissions, and if they can trust the technical solutions
lack of motivation / interest	users might not be aware or not interested in reducing emissions even if they could save money	Not applicable (if all the other aspects are given, the supply chain will be interested in additional business)	not interested in reducing emissions even if other benefits would accrue (e.g. saving money, leveraging growth opportunities)	Not applicable (if all the other aspects are given, banks will be interested in additional business)
lack of expertise	users might not know how to implement the GHG-reducing measures	users might not know how to install or maintain the GHG-reducing measures	not being knowledgable enough for making smart policy / lack of policy capacity	not applicable (banks should have sufficient banking knowledge)
lack of access to the mitigation option	the technology is not physically available, e.g. because the next sales point is too far away, no maintenance service is provide or the like	the technology is not physically available, e.g. because no local production or importation exists	Not applicable	Not applicable (banks do not neet to access the technology)
lack of affordability	the funds for the investment are not available even if the implementation would save money and be overall cost effective	the funds for the expansion of the business are not available even if the change would provide growth opportunities	the funds for political support are not available	even if liquidity is available, banks might not be able to lend more as they might be overexposed
lack of cost effectiveness	the mitigation option is not cost effective, i.e. would be more expensive than the status quo, even if the savings are fully factored in	no business can be established, e.g. because of a lack of demand	the mitigation option is not cost effective on an economy-wide level as measured in an economy-wide costs benefit analysis	no business model can be established, e.g. because of small market size

The barrier circle of the Theory of No Change



The barrier circle of the Theory of No Change can be matched with the project to see appropriateness of project approach.



Barriers can limit markets for climate mitigation technologies

- Stakeholders
- Color code allows to compare several projects in tables
- Here: case study Poland district heating

	Barrier	District heating		Geothermal		Coal to Gas		Biomass	
		prior to project	2004	prior to project	2004	prior to project	2004	prior to project	2002
Users	Ignorance	↑	↑	↗	↘	↗	↑	↘	↑
	Lack of expertise	↗	↗	↗	↗	↗		↘	↗
	Lack of access to technology	↘	↗	↓	↑	↘	↑	↘	↑
	Lack of cost effectiveness	↘		↑	↘	↗	↗	↘	↘
	Lack of motivation / interest	↘	↑	↘	↘	↘	↑	↘	↑
	Lack of affordability	↓		↗	↗	↓	↘	↘	↗
Supply Chain	Ignorance	↑	↑	↘	↑	↗	↑		↑
	Lack of expertise	↑	↑	↑	↑	↘	↗	↘	↑
	Lack of access to technology	↑	↑	↗	↑	↗	↑		↑
	Lack of cost effectiveness	↑	↑	↑	↓	↗	↑		↑
	Lack of business model	↑	↑	↓	↘	↘		↘	↑
	Lack of affordability	↑	↑	↘	↗	↘		↑	↑
Local Financiers	Ignorance	↗		↗	↗	↘	↑	↘	
	Lack of expertise	↓		↓	↗	↓	↑	↘	
	Lack of cost effectiveness	↓		↘	↓	↘	↓	↓	
	Lack of business model	↓	↓	↘	↓	↘	↘	↓	↓
Policy Makers	Ignorance	↑		↗	↑	↗	↗		
	Lack of expertise	↗		↓	↑	↗	↗	↗	
	Lack of motivation / interest	↗		↑	↑	↑	↑	↘	↑
	Lack of affordability	↘		↑	↓	↓	↗	↑	↑

Potential lead questions, criteria and indicators for outcomes – here: users / consumers (households and companies)

Ignorance	• Do consumers and users (households and companies) have an awareness of climate change and their impact on climate change?
	• Does the population have a general understanding of climate change?
	• Do users (individuals, companies) having access to data on their behavior (e.g. consumption of energy, water, wood)?
	• Do companies publish reports, e.g. on CSR?
	• Are companies certified / Have they implemented environmental management systems?
Lack of Motivation/ Interest	• What are the prevalent attitudes, values and expressed priorities? Does climate change feature in them? Do people perceive energy/forests/fuel as a precious good worth economizing?
	• Do people / managers put more effort, time or other types of investments in causes other than climate change mitigation that have equal or lesser returns on investment?
Lack of expertise	• Do users know how to implement the GHG-reducing measure?
	• Are users sufficiently knowledgeable to apply and maintain techniques and technologies?
	• Is sufficient trained staff present, e.gin the industry, to carry out the necessary activities? Indicators: Share of companies with energy managers, personal with higher educational degrees in companies
Lack of Access to Mitigation Option	• Are users in a position to make climate relevant decisions?
	• Do users have access to the respective climate friendly services, technology, spare parts, equipment etc. that are competitive and deliverable within reasonable time?
Lack of Cost-effectiveness	• Is the mitigation option more expensive than the conventional option? • Is there an alternative business model that makes the mitigation option more cost effective than the conventional option?
Lack of Affordability	• Do users have sufficient funds to afford the initial investment in the mitigation option?

Potential lead questions, criteria and indicators for outcomes – here: supply chain

Ignorance	• Are suppliers aware of the impact their products and services? Do they know alternatives? (Likertscale)
Lack of expertise	• Number of staff in key departments
	• Number of trained staff working in certain key professions, e.g. trained electricians.
	• Number of training opportunities available to suppliers, e.g professional associations offering training to construction workers on new building materials
	• Number of complaints about badly installed or bad quality products and projects / call for repairs and maintenance / call on warranties
Lack of Access to Mitigation	• Price and lead time for availability
	• Do legal obstacles exist for producing or importing a product?
Lack of Cost effectiveness	• Is the existing BM financially more profitable than the desired BM?
Lack of Affordability	• What are the costs of buisiness modell change? • Do suppliers have sufficient funds to expand their business or train their staff?

Potential lead questions, criteria and indicators for outcomes – here: financiers

Ignorance	• To what degree do local financiers know, that customers might be interested in funding of (investment) projects and in the associated financing products, e.gin solar panel loans?
Lack of Cost Effectiveness / Business Model	• Has a realistic business model at the prevailing capital market rates been demonstrated?
Lack of Affordability	• Is the local financial market sufficiently liquid?
	• Is the local market overexposed to project-specific risks

Potential lead questions, criteria and indicators for outcomes – here: policy makers

Barrier	Examplary Lead Questions or Indicators
Ignorance	• Are policy makers aware of the issues?
	• Are sufficient data available?
Lack of Motivation/interest	• Are policy makers interested in protecting the climate? • Are policymakers motivated/ interested in implementing supportive policy frameworks?
	• Does a government participate in international negotiations (e.g.UNFCCC)? • Do policy makers support national and regional initiatives and programmes? • Does a government implement relevant international treaties? • Does the legislator show legislative climate activity, e.gregulations on building codes, feed in tariffs, renewable obligation, minimum standards, emission trading schemes, feed in tariffs, tax abatements for public transport etc.? • Does an inter-institutional coordination on climate policy, e.gmainstreaming of climate policy between different resorts and levels exist and function?
Lack of expertise	•Does the administration have enough qualified and trained staff?
	• Does the administration and policy makers have enough expert knowledge, data and information to design efficient policies,e.g. on different types of technologies?
	• Does the administration have sufficient staff in key areas?
	• Lack of administrative skills: Are procedures clear, understandable, widely accessible, affordable (administrative fees including corruption) work within reasonable times?
Lack of Affordability	• Are sufficient government funds available for climate policy?
	• Is sufficient international funding available?

Thank you for your attention.

- Further Questions?

- www.climate-eval.org
- Climate-eval(at)climate-eval.org

- Christine Wörlen, woerlen(at)arepo-consult.com

Questions and discussions