Initiative for Climate Action Transparency

Renewable Energy Guidance, Buildings Efficiency Guidance

17 August 2017

Outline

- Introduction to ICAT
- Renewable Energy Guidance
- Buildings Efficiency Guidance
- How to provide comments
- Questions

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Introduction to ICAT

ICAT objectives

Provide policymakers around the world with tools and support to assess the impacts of their climate policies and actions, to further transparent and ambitious climate action.

Two components:

- ICAT series of guidance
- Country support to build capacity

Multi-stakeholder partnership

DONORS

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

CIFF CHILDREN'S INVESTMENT FUND FOUNDATION

MINISTERO DELL'AMBIENTE E DELLA TUTELA DEL TERRITORIO E DEL MARE

ClimateWorks

GRANT MANAGEMENT

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IMPLEMENTATION PARTNERS

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WORLD RESOURCES INSTITUTE

SUPPORTING PARTNERS

Rainforest Alliance

CCBA The Climate, Community & Biodiversity Alliance

NEW CLIMATE INSTITUTE

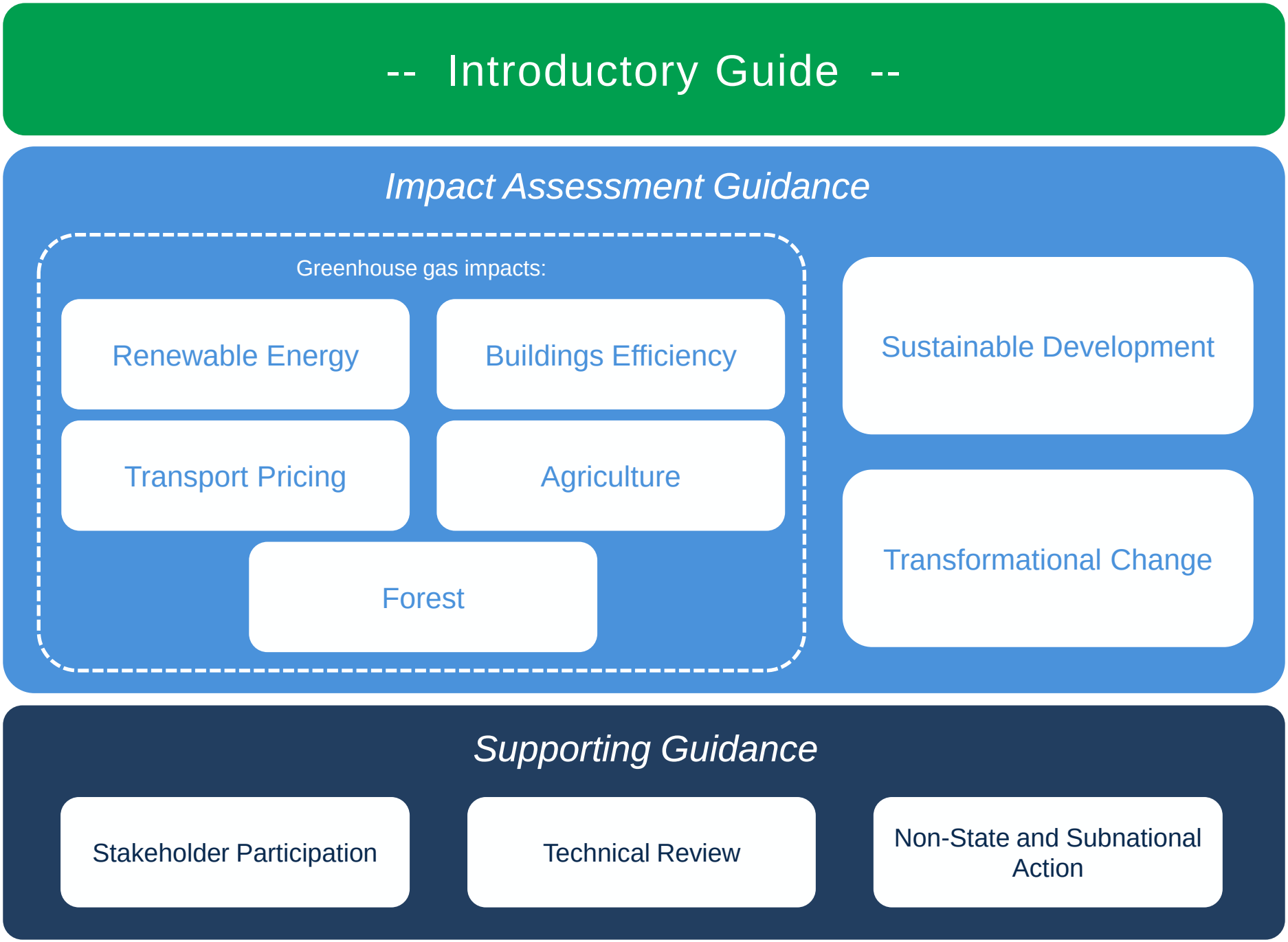
INFRAS

ghg management institute

CDP DRIVING SUSTAINABLE ECONOMIES

THE CLIMATE GROUP

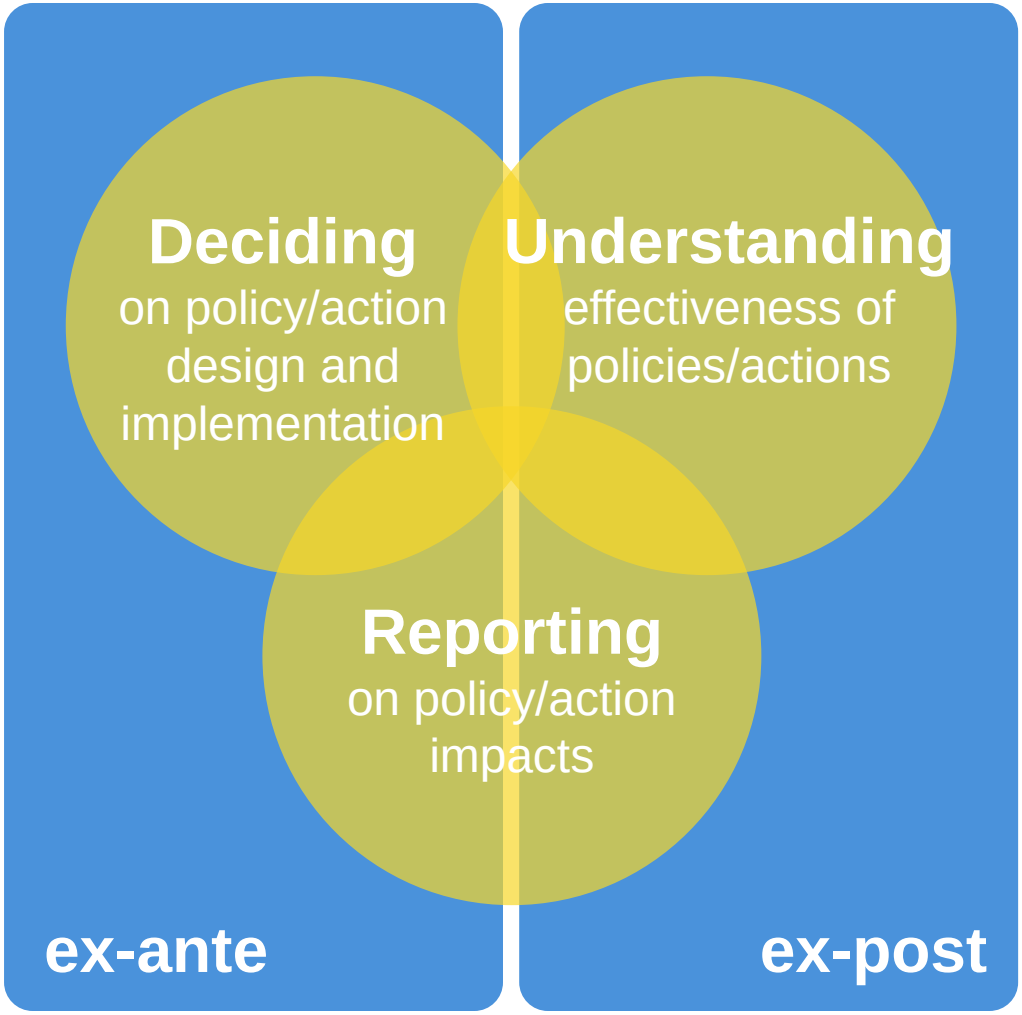
ICAT Guidance


-- Introductory Guide --
Impact Assessment Guidance
Greenhouse gas impacts:
Renewable Energy
Buildings Efficiency
Transport Pricing
Agriculture
Forest
Sustainable Development
Transformational Change
Supporting Guidance
Stakeholder Participation
Technical Review
Non-State and Subnational Action

Who can use the guidance?

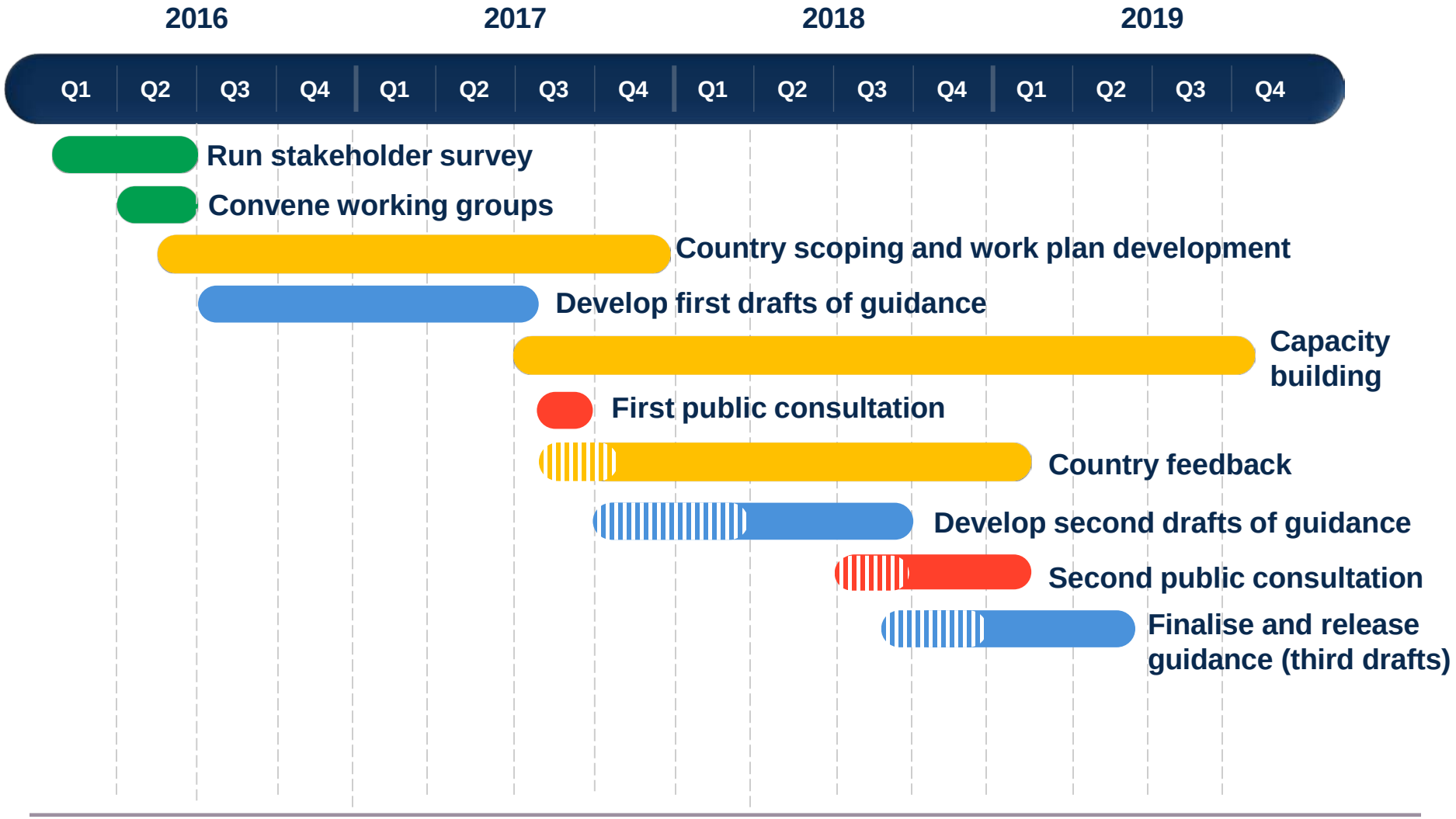
- Governments
- Donor agencies and financial institutions
- Businesses
- Research institutions and non-government organisations (NGOs)
- Stakeholders affected by policies and actions, such as local communities and civil society organisations

Goals for the guidance



Adapted from: GIZ 2016, *Reference Document on Measurement, Reporting and Verification in the Transport Sector*

An inclusive, multi-stakeholder process



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ICAT Renewable Energy Guidance

Overview of guidance‘s structure

Structure of ICAT Renewable Energy guidance based on *Policy and Action Standard – Energy Supply Sector Guidance (2015)*

Part I: Introduction, objectives, steps and overview of renewable energy policies

Understand the purpose and applicability of the guidance (Chapter 1)

Determine the objectives of the assessment (Chapter 2)

- Understand renewable energy policies (Chapter 3)
- Understand assessment steps and principles (Chapter 4)

Part II: Defining the assessment

Clearly describe the policy to be assessed (Chapter 5)

Identify GHG impacts, define the GHG assessment boundary and assessment period (Chapter 6)

Part III: Assessing impacts

- Estimate RE addition of the policy ex-ante (Chapter 7)
- Estimate GHG impacts of the policy ex-ante (Chapter 8)
- Estimate GHG impacts of the policy ex-post (Chapter 9)

Part IV: Monitoring and reporting

Identify key performance indicators and parameters to monitor and develop a monitoring plan (Chapter 10)

Report the results and methodology used (Chapter 11)

The problem statement …

- Estimating a policy's impact (in terms of electricity generated or GHG emissions reduced) is rarely straight forward

RE policy setup	Applicability of guidance
A cap is part of a policy	Assess whether there are any factors preventing the policy from reaching its cap
A separate target exists in the country which the policy aims to achieve	Assess whether the policy is sufficiently ambitious to achieve the target
No target exists	Assess the impact of the policy based on its design and other factors

- A policy cannot be regarded in isolation but needs to be viewed in the national context considering
  - Policy design characteristics
  - Effect on financial feasibility of RE technologies
  - Other barriers in national context

Chapter 3 – Overview of renewable energy policies

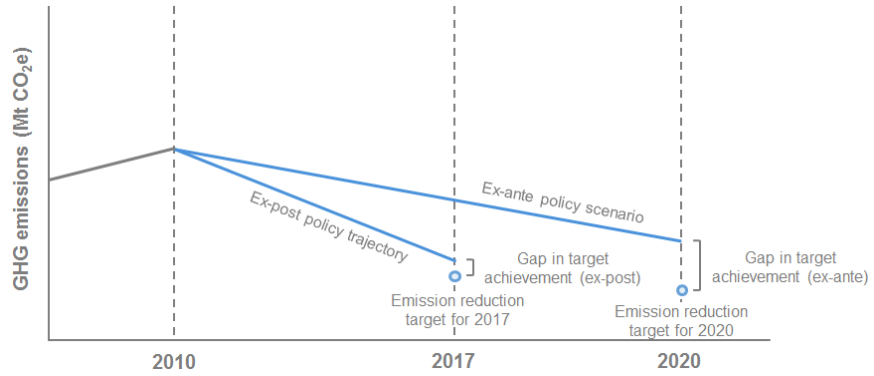
Guidance applicable to **three types of renewable energy policies**

1. **Feed-in tariff policies** (including feed-in premiums)
   - **Tariff:** Long-term purchase agreements with RE developers at a specified price per kilowatt-hour
   - **Premium:** for RE developers on top of the market price of their electricity production
2. **Auction policies**
   - Request for bids for the total investment cost of a project or for the cost per unit of electricity
3. **Tax incentive policies**
   - Wide variety of tax incentives types available
   - Usually apply to services and equipment, pre-investment expenses and income from the sale of electricity or other ancillary income

Chapter 4 – Assessment objectives

Choice between two approaches depending on objectives of assessment

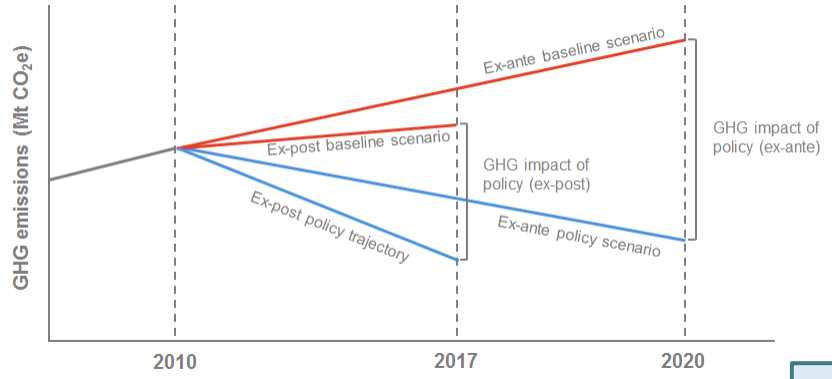
1



Absolute GHG emission level

- Determine whether policies are on track to meet goals (such as NDCs or sectoral targets)
- Inform goal setting and understand expected future emissions with the policy in place

2

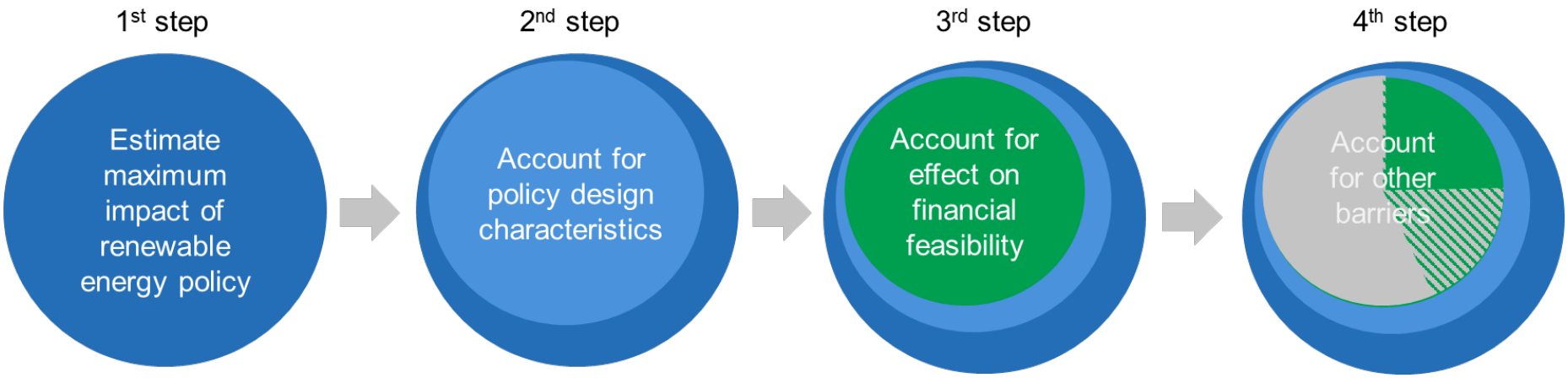


GHG emission reductions

- Estimate emission reductions under a policy scenario compared with what would have occurred under a baseline scenario
- Assessing the effectiveness of policies and improving their design and implementation

Approach 2 adds another level of complexity as informed assumptions on baseline development are required

Chapter 7 – Estimating RE addition of the policy ex-ante



Hypothetical examples provided in guidance for each step

- Stepwise approach to estimate RE addition (in GWh)
- Account for **policy design characteristics (2nd step)**, **account for effect on financial feasibility of RE technologies (3nd step)**, and **account for other barriers (4nd step)**

Chapter 7 – Estimating RE addition of the policy ex-ante

Hypothetical example in guidance for feed-in tariff without a cap

Policy to RE addtion

Step 1 – Estimate maximum implementation potential

1,300 MW

Estimate based on resource potential analysis conducted by national experts

Step 2 – Account for policy design characteristics

800 MW

Accounting for *scope of eligibility*, *premium price policy* and *contract & payment duration*

Step 3 – Account for effect on financial feasibility of RE technologies

600 MW

LCOE calculation and accounting for other considerations such as *access to finance*

Step 4 – Account for other barriers

237 – 314 MW

Accounting for barriers such as *no domestic technology providers for rooftop solar PV panels* and *policy uncertainty due to history of ad-hoc policy changes and adjustments*

RE addtion to GHG emissions

Step 5 – Estimation of sectoral emissions

5,452 $MtCO_2e$ in 2030

Emissions trajectory method (simple methodology) conducted for each year of the assessment

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Chapter 8 – Estimating GHG impacts of the RE policy ex-ante

Guidance distinguishes between two principle approaches

1. Estimate GHG emission level for the policy scenario
   - Large scale impact such as policies with a transformative impact on the energy system
2. Estimate emission reductions using an emission factor
   - Small scale impact such as projects

Considerations for determining emission estimation approach

Decision based on

- **Scale of impact**
  - Small vs. transformative impact on the energy system
  - Depending on size of energy system and size of intervention
- **Timeframe of intervention**
  - Shorter (e.g., single projects, small policies) vs. longer timeframes
- **Aim of analysis**
  a. Estimating emission reductions compared to hypothetical baseline
  b. Estimating sectoral emissions pathway

Chapter 8 – Estimating GHG impacts of the RE policy ex-ante

Guidance provided for two emission estimation approaches

I. Emission trajectory method

Requires estimation of baseline emission scenario to calculate emission reductions ex-ante (if applicable)

1. Limited in-country capacity - Simple methodology
   - Estimate future electricity demand
   - Determine the electricity mix
   - Calculate sectoral emissions using technology specific emission factors
2. Enhanced in-country capacity - Energy models

II. Grid emission factor method

Emission factors can be modelled or estimated using existing guidance (e.g., CDM)

Apart from interventions with very small scale of impact, sectoral emission pathways approach are better suited for impact assessment.

Chapter 7 – Estimating RE addition of the RE policy ex-ante

Hypothetical example in guidance for feed-in tariff without a cap

Policy to RE addtion

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Chapter 9 – Estimating GHG emissions ex-post

9.1 Determine assessment steps based on objectives of assessment

1. Compare achieved RE addition with a policy cap, RE addition with a RE target, or GHG emission level to a sectoral emissions target
2. Compare achieved RE addition or GHG emissions with a baseline scenario
3. Compare achieved RE addition or GHG emissions with an ex-ante assessment

9.2 Estimate achieved RE addition using monitored values

Chapter 10 provides guidance on monitoring performance over time to obtain ex-post monitored data

9.3 Update baseline emissions (if applicable)

9.4 Estimate ex-post GHG emissions

Use either the **emission trajectory method** or the **grid emission factor method** to estimate the ex-post GHG impacts

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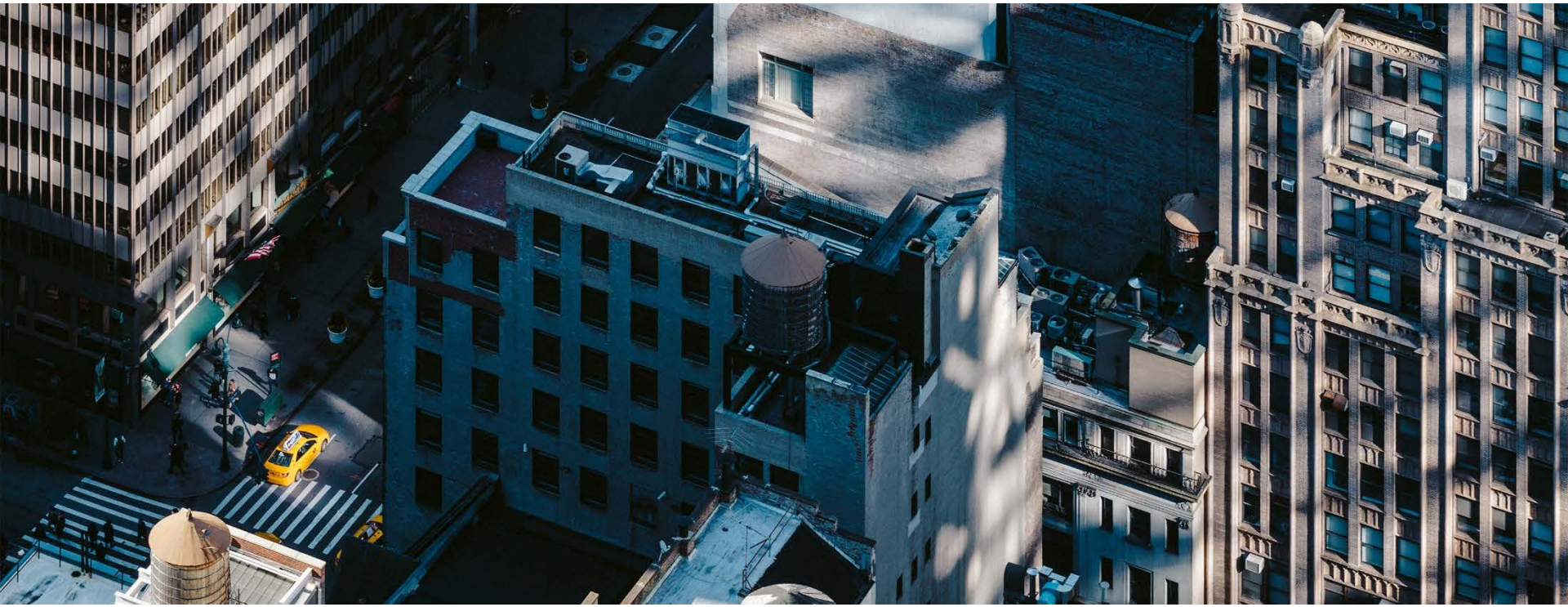
ICAT Buildings Efficiency Guidance



Overview of guidance‘s structure

Structure of ICAT Buildings guidance inspired by *Policy and Action Standard – Commercial and Residential Buildings Sector Guidance (2015)*

Part I: Introduction, objectives, steps and overview of building sector policies

Understand the purpose and applicability of the guidance (Chapter 1)

Determine the objectives of the assessment (Chapter 2)

- Understand buildings policies (Chapter 3)
- Understand assessment steps and principles (Chapter 4)

Part II: Defining the assessment

Clearly describe the policy to be assessed (Chapter 5)

Identify the GHG impacts, define the GHG assessment boundary and assessment period (Chapter 6)

Part III: Assessing impacts

- Define the most likely baseline scenario, estimate baseline values for each parameter, estimate baseline emissions (Chapter 7)
- Estimate GHG impacts ex-ante (Chapter 8)
- Estimate GHG impacts ex-post (Chapter 9)

Part IV: Monitoring and reporting

Identify key performance indicators and parameters to monitor and develop a monitoring plan (Chapter 10)

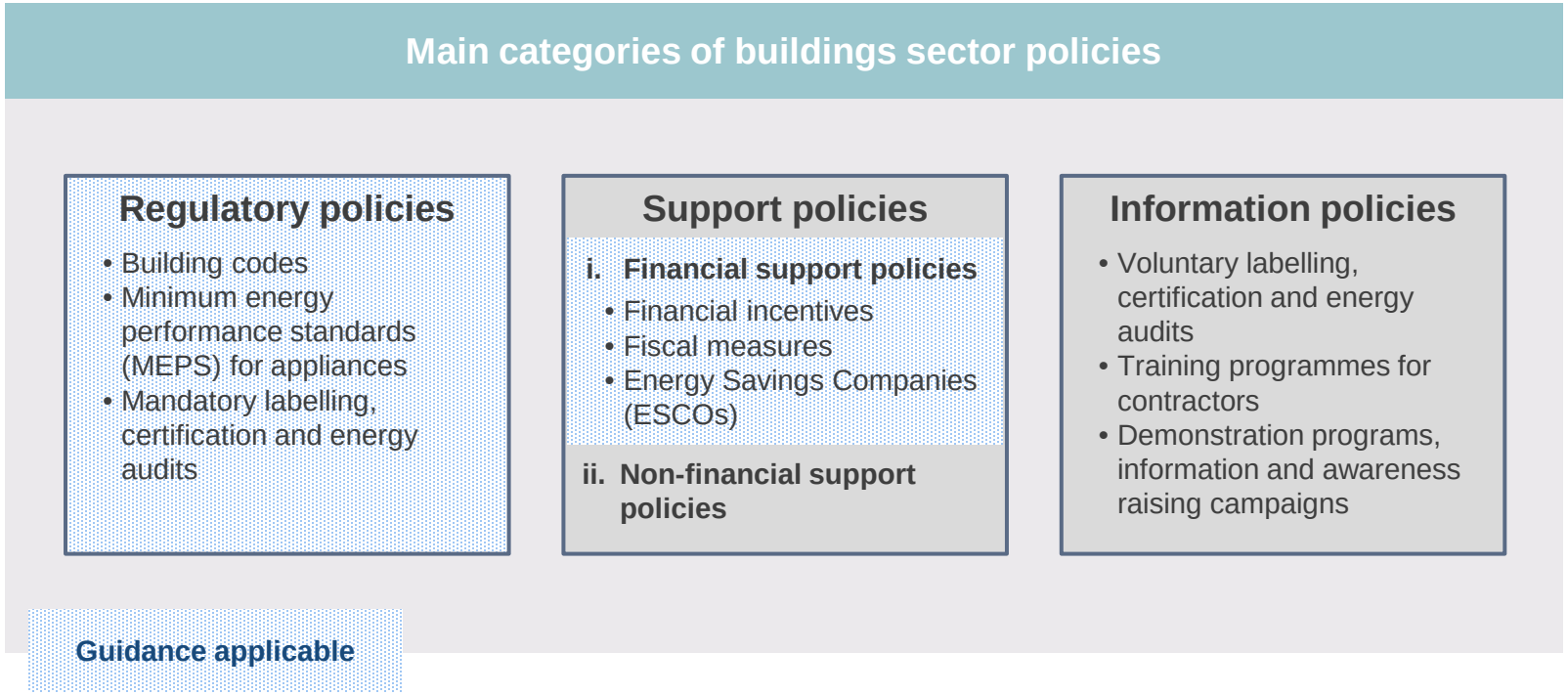
Report the results and methodology used (Chapter 11)

Chapter 1 – Scope of guidance

- Guidance applicable to residential, commercial and public buildings
- Focus on space heating and cooling (and all related appliances)
- Does not address all other hardwired appliances and plug appliances (e.g., network connected appliances and brown goods)

Building use	Space heating and cooling	Appliances *(related to heating, cooling and hot water)*	Appliances+ *(not related to heating, cooling and hot water)*	Lighting++	Cooking
Residential	Yes	Yes	No	Yes	No
Commercial	Yes	Yes	No	Yes	No
Public	Yes	Yes	No	Yes	No

Chapter 3 – Buildings sector policies

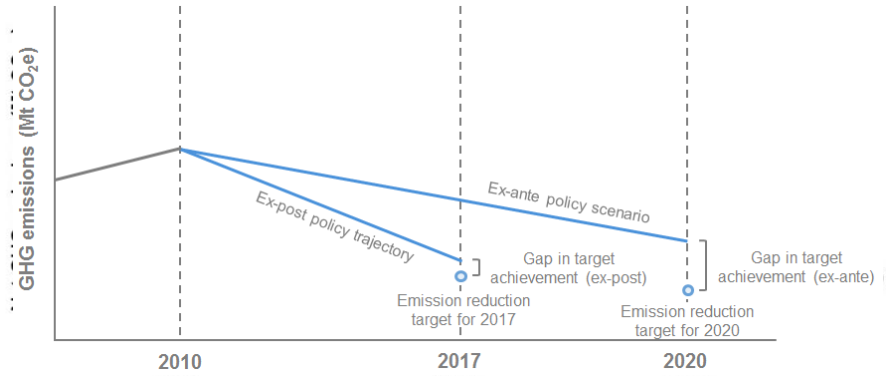


- Guidance applicable to **regulatory policies** and **financial support policies**
- Information policies are part of the barrier analysis (but guidance not applicable to information policies

Chapter 4 – Assessment objectives

Choice between two approaches depending on assessment's objective

1



Absolute GHG emission level

- Determine whether policies are on track to meet goals (such as NDCs or sectoral targets)
- Inform goal setting and understand expected future emissions with the policy in place

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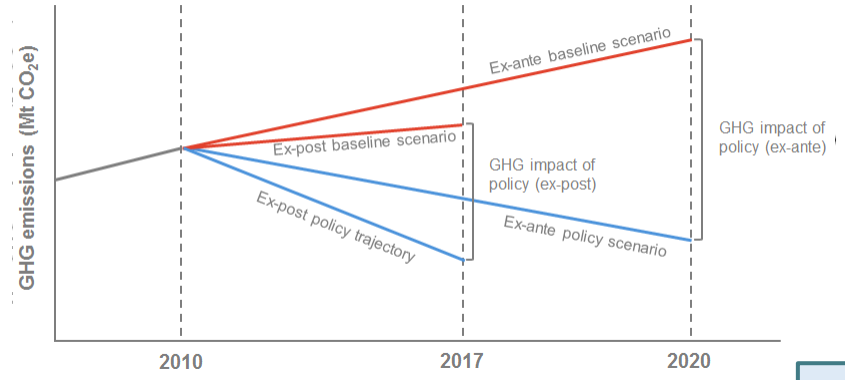


GHG emission reductions

- Estimate emission reductions under a policy scenario compared with what would have occurred under a baseline scenario
- Assessing the effectiveness of policies and improving their design and implementation

Approach 2 adds another level of complexity as informed assumptions on baseline development are required

Chapter 7 – Estimate baseline emissions

7.1 Considerations for determining the baseline scenario

7.2 Equation for calculating baseline emissions

Same estimation approach for **all building uses** (residential, commercial, public) and **all building stock types** (new buildings, existing buildings with retrofit, existing buildings without retrofit)

Same approach used for ex-ante and ex-post GHG emissions estimations as well

Estimation approach to calculate baseline emissions for building sector

Baseline emissions in year$_{(a)}$

$= \sum$ (Number of buildings per building type$_{(b)}$ in climate zone$_{(z)}$ in year$_{(a)}$

× Average annual specific energy use per m^2 per building type$_{(b)}$ in climate zone$_{(z)}$ in year$_{(a)}$

× Share of energy carrier$_{(f)}$ in fuel mix per building type$_{(b)}$ in climate zone$_{(z)}$ in year$_{(a)}$

× Average floor area per building per building type$_{(b)}$ in climate zone$_{(z)}$ in year$_{(a)}$

× Energy carrier$_{(f)}$ emission factors)

Alternative

Average annual energy use per building by building type$_{(b)}$ in climate zone$_{(z)}$

(instead of *Average annual specific energy use per m^2 per building type$_{(b)}$ in climate zone$_{(z)}$* and *Average floor area per building type$_{(b)}$ in climate zone$_{(z)}$*)

Chapter 7 – Estimate baseline emissions

7.1	Considerations for determining the baseline scenario
7.2	Equation for calculating baseline emissions
7.3	Estimate baseline emissions

Step 1	Determine building types included in the assessment
Step 2	Determine climate zone differentiation for building types
Step 3-7	Estimate baseline values for all parameters for each year of the assessment
Step 8	Calculate baseline emissions for each year of the assessment period

Examples provided in guidance for each step

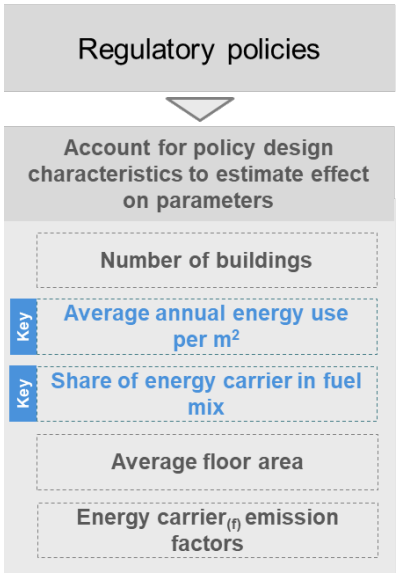
Chapter 8 – Estimating GHG emissions ex-ante

8.1 Introduction to estimating GHG impacts ex-ante

Applicable for three types of building policies

1. Regulatory policy without complementary financial support policy
2. Regulatory policy with complementary financial support policy
3. Standalone financial support policy

8.2 Account for policy design characteristics - **Regulatory policies**



Estimate impact of regulatory policies on ex-ante parameter values for each year of the assessment period

Guidance contains an example for a regulatory policy with a complementary financial support policy

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Chapter 8 – Estimating GHG emissions ex-ante

8.1 Introduction to estimating GHG impacts ex-ante

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8.3 Account for policy design characteristics - **Financial support policies**

Regulatory policies | Financial support policies | Barriers

Two potential approaches

1. Estimation of the diffusion rate based on ex-post monitored results of previously implemented policies (**preferred and most accurate**)
2. Estimation based on transparent analysis of all relevant aspects, based on experience and good guesses by experts in the field

Account for policy design characteristics to estimate effect on parameters

- Key: Number of buildings
- Key: Average annual energy use per m^2
- Key: Share of energy carrier in fuel mix
- Average floor area
- Energy carrier$_{(f)}$ emission factors

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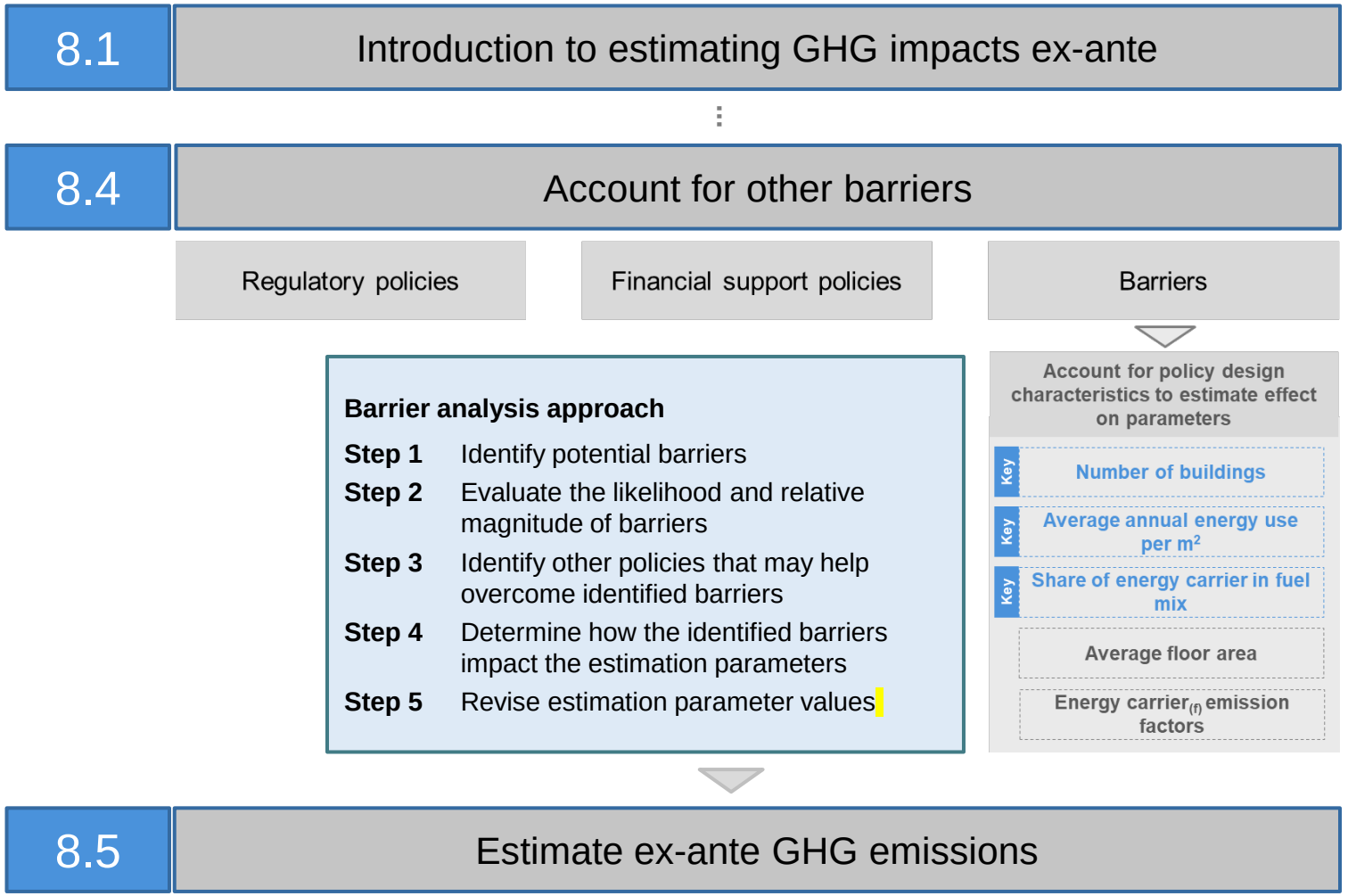
Chapter 8 – Estimating GHG emissions ex-ante



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Chapter 9 – Estimating GHG emissions ex-post

9.1 Determine assessment steps based on objectives of assessment

Objectives for ex-post estimation with ex-post monitored data

1. Compare historical GHG emissions in the buildings sector to a sectoral target
2. Estimate achieved GHG emission reductions of implemented buildings policies
3. Compare an ex-post assessment with an ex-ante assessment

9.2 Estimate or update baseline emissions (if applicable)

9.3 Estimate GHG impacts

Ex-post monitored values for all parameters for each year of the assessment period to estimate GHG emissions ex-post

Chapter 10 provides guidance on monitoring performance over time to obtain ex-post monitored data

Public consultation via Collaborase

Collaborase is an online software that supports an unlimited number of reviewers and allows reviewers to more easily provide comments and navigate documents.

www.collaborase.com/icat

Accessing the documents

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Initiative for Climate Action Transparency Guidance

Public Consultation

Accessing the guidance documents

To comment on the guidance, submit your email address on the document page(s) linked below. A confirmation email will be sent to your email account with a link to access the document.

ICAT Introductory Guide	ICAT Sustainable Development Guidance
ICAT Renewable Energy Guidance	ICAT Transformational Change Guidance
ICAT Buildings Efficiency Guidance	ICAT Stakeholder Participation Guidance
ICAT Transport Pricing Guidance	ICAT Technical Review Guidance
ICAT Agriculture Guidance	ICAT Non-State and Subnational Action Guidance
ICAT Forest Guidance	

Accessing the documents

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ICAT Forest Guidance

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To post a comment, click the 'Comment' button below any section title. Where relevant, we recommend comments include (1) a comment title/issue and (2) a proposal for a change or new text. The comment form allows you to add images, files and/or links. You can also view comments that have already been submitted.

To view comments in a single section, click the 'Comment' button below the section title to display the list of comments for that section. Click the comment title to read the comment and any replies. To view all comments for the full document, click the 'Comment' tab at the top of the webpage – this will open the comments page with a searchable/sortable table of all the comments. If you view comments by other reviewers, we encourage you to use the 'Vote' button to easily express your agreement or disagreement.

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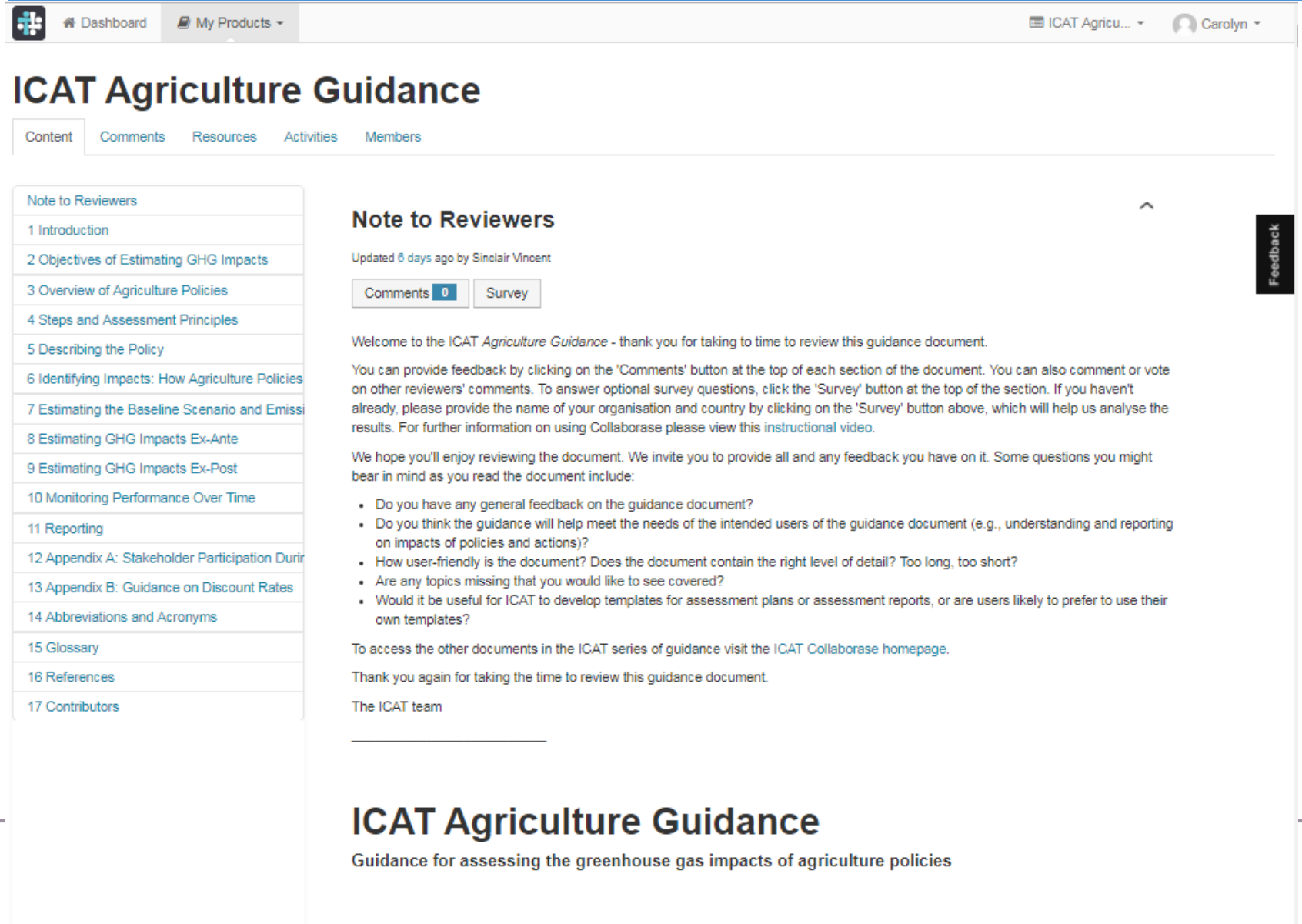
Your view in Collaborase



How to comment in Collaborase

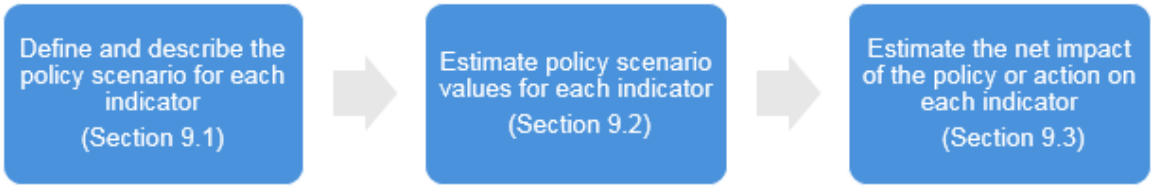
9 Estimating Impacts Ex-Ante

Updated 15 days ago by Sinclair Vincent

Comments 0

This chapter describes how to estimate the expected future impacts of the policy or action (ex-ante assessment). In this chapter, users estimate policy scenario values for the indicators included in the assessment boundary. The impacts of the policy or action are estimated by subtracting baseline values (as determined in Chapter 8) from policy scenario values (as determined in this chapter). Users not quantitatively assessing impacts ex-ante can skip this chapter.

Figure 9.1: Overview of steps in the chapter



Checklist of key recommendations

- Define a policy scenario that represents the conditions most likely to occur in the presence of the policy or action over time for each indicator being estimated, taking into account all specific impacts included in the quantitative assessment boundary
- Estimate the net impact of the policy or action on each indicator by subtracting baseline values from policy scenario values, taking into account all specific impacts included in the quantitative assessment boundary
- Separately assess the impacts of the policy or action on different groups in society where relevant

How to comment in Collaborase

9 Estimating Impacts Ex-Ante

Updated 15 days ago by Sinclair Vincent

Comments 0

Reviewer Comments

New comment

0 Open | 0 Closed | Newest

No Comments Yet

This chapter describes how to estimate the expected future impacts of the policy or action (ex-ante assessment). In this chapter, users estimate policy scenario values for the indicators included in the assessment boundary. The impacts of the policy or action are estimated by subtracting baseline values (as determined in Chapter 8) from policy scenario values (as determined in this chapter). Users not quantitatively assessing impacts ex-ante can skip this chapter.

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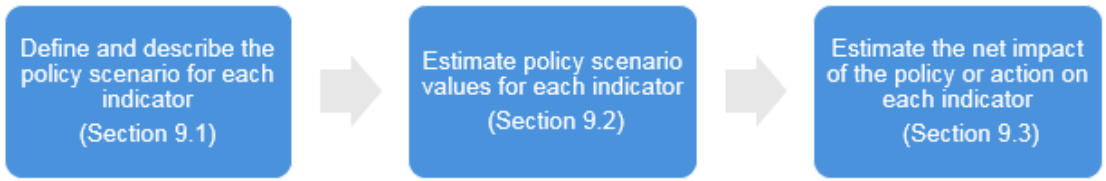

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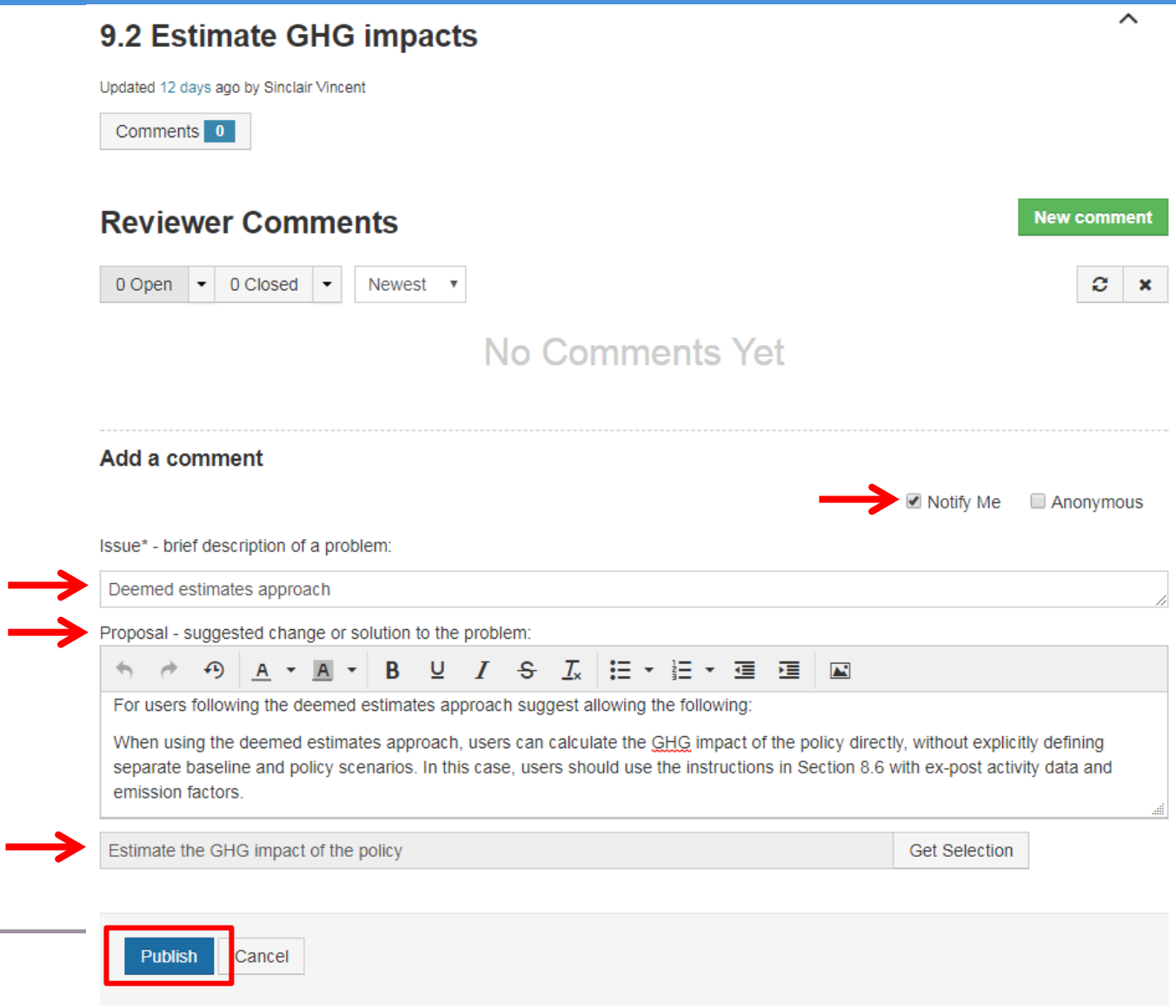

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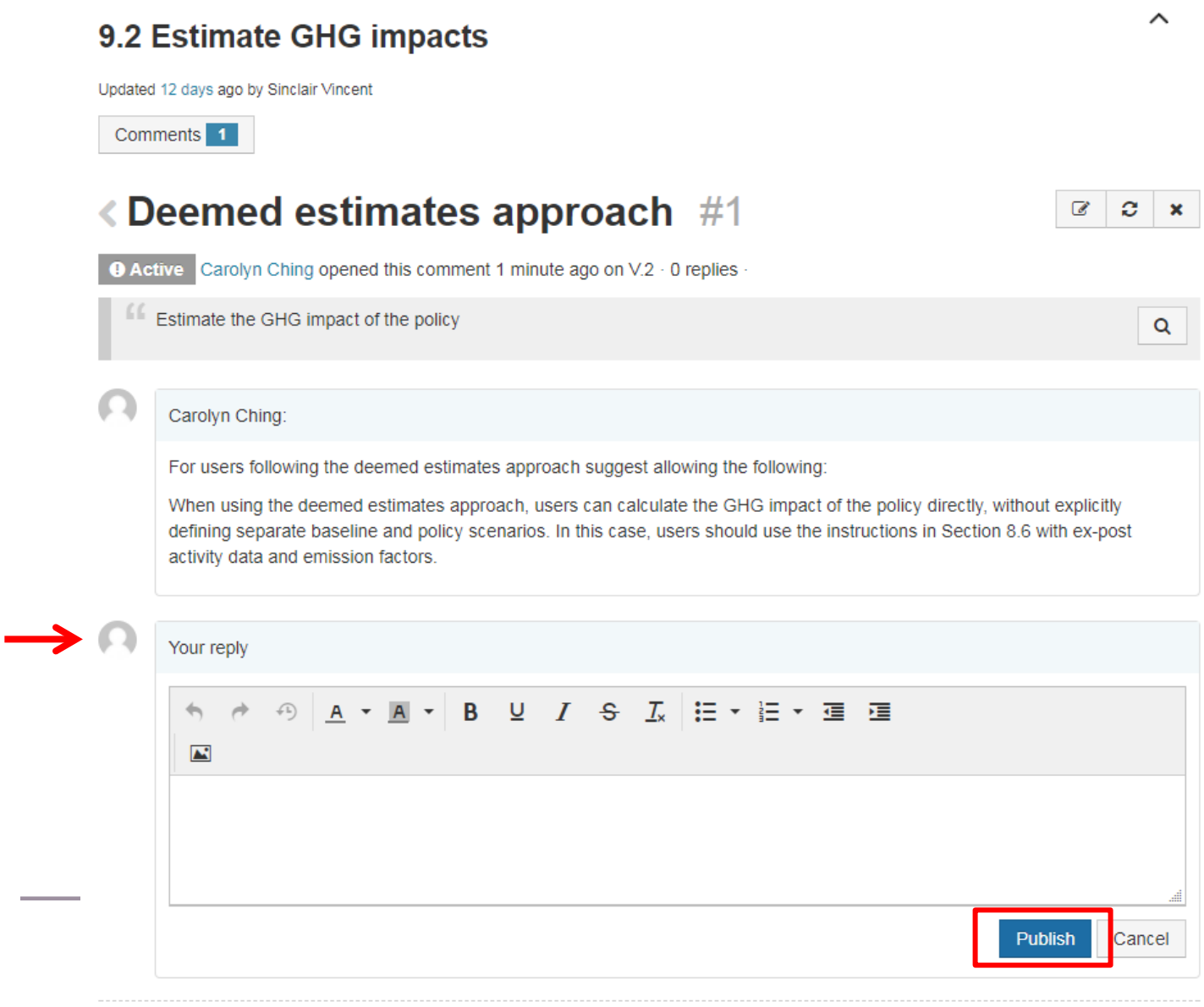

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How to comment in Collaborase

Answering survey questions in Collaborase

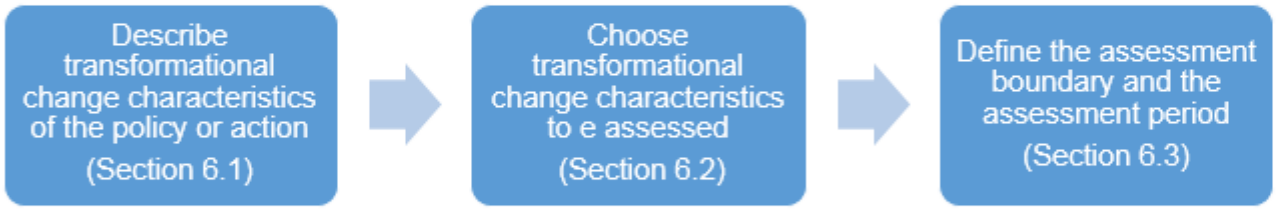
6 Choosing Which Transformational Change Characteristics to Assess

Updated 15 days ago by Sinclair Vincent

Comments 0 | Survey

This chapter provides guidance on identifying and choosing transformational change characteristics that are relevant for a policy or actio
It also defines the transformational change assessment boundary and the assessment period.

Figure 6.1: Overview of steps in the chapter



Checklist of key recommendations

- Identify and describe transformational characteristics of the policy or action
- Choose characteristics to be assessed based on their relevance to a policy or action and the society in which it is implemented
- Define the assessment boundary in terms of geographical and sectoral coverage of transformational characteristics selected for assessment
- Define the assessment period

Answering survey questions in Collaborase

6 Choosing Which Transformational Change Characteristics to Assess

Updated 15 days ago by Sinclair Vincent

Comments 0 | Close Survey

This chapter describes characteristics of transformational impact. Are the descriptions of characteristics sufficient and clear enough to enable assessment of impacts for transformation specific to a policy or action? If not, how can we improve them?

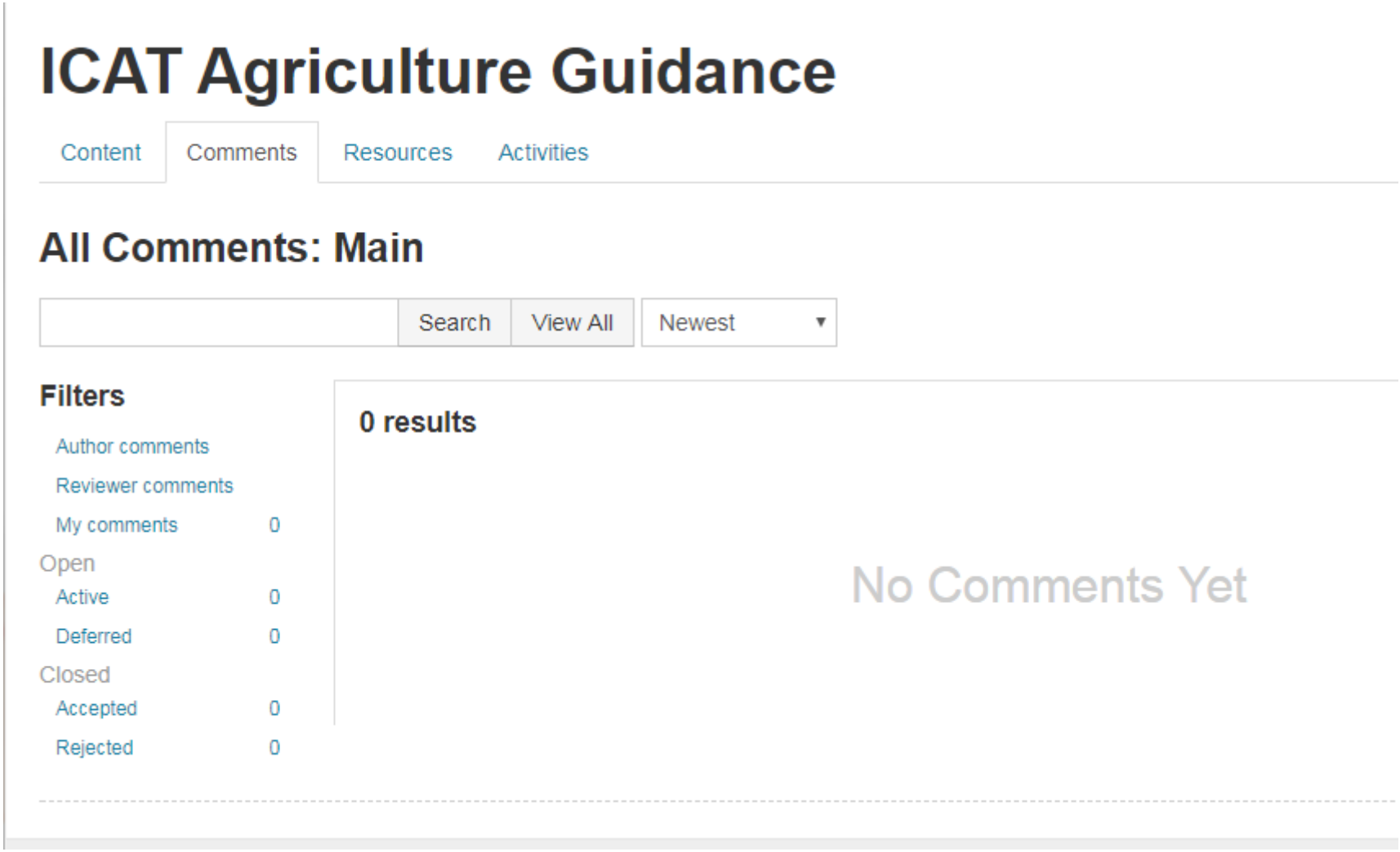
It would be helpful if these descriptions could be more detailed.

In Table 6.4 users are asked to describe characteristics of transformational outcomes for GHG and SD at scale and over time. Is further guidance needed on how to use other ICAT guidance for GHG and SD impact assessment and how to assess impacts of multiple outcomes for GHG and SD?

- [x] Yes
- [ ] No

The guidance provided is sufficient.

Collating and reviewing comments



Questions?

Consultation ends 24 September

Thank You

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