Key Category Analysis

Training on the Building of Sustainable National Greenhouse Gas Inventory Management Systems

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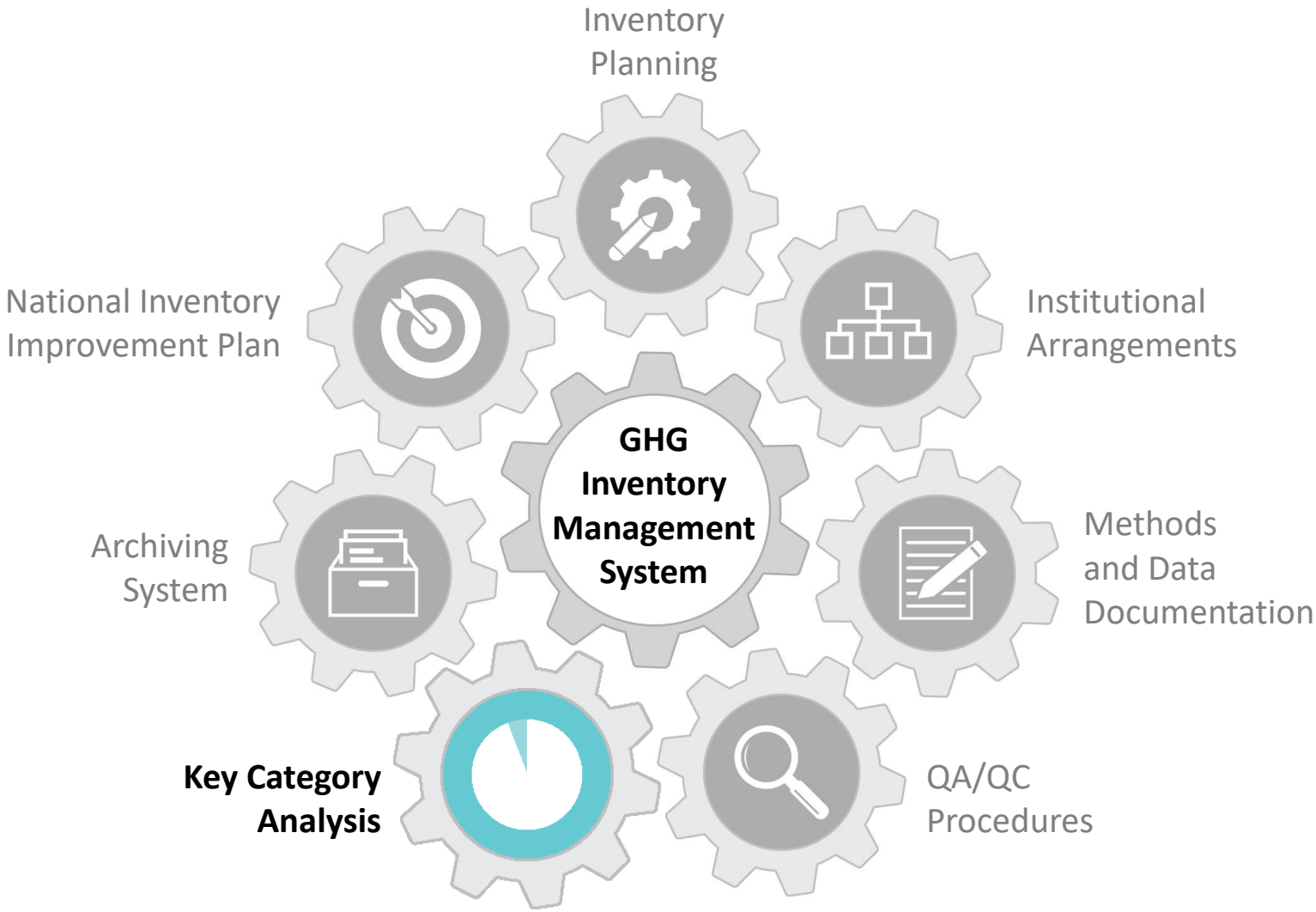
Key Category Analysis



Poll Question #3

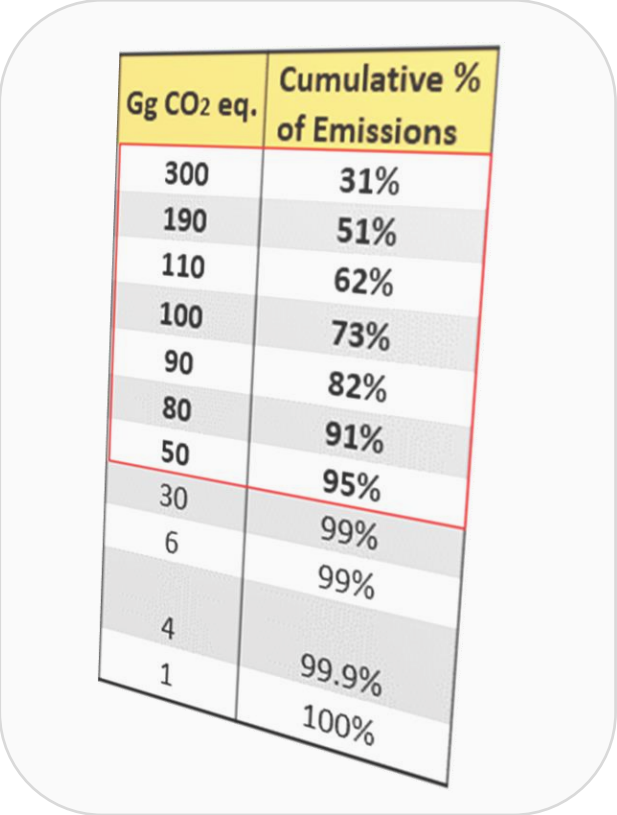
Which tools did you use to conduct the key category analysis?

a) Spreadsheet (developed by the GHG inventory compilation team)
b) IPCC Inventory Software
c) Other

Describe other tools here or using the chat!

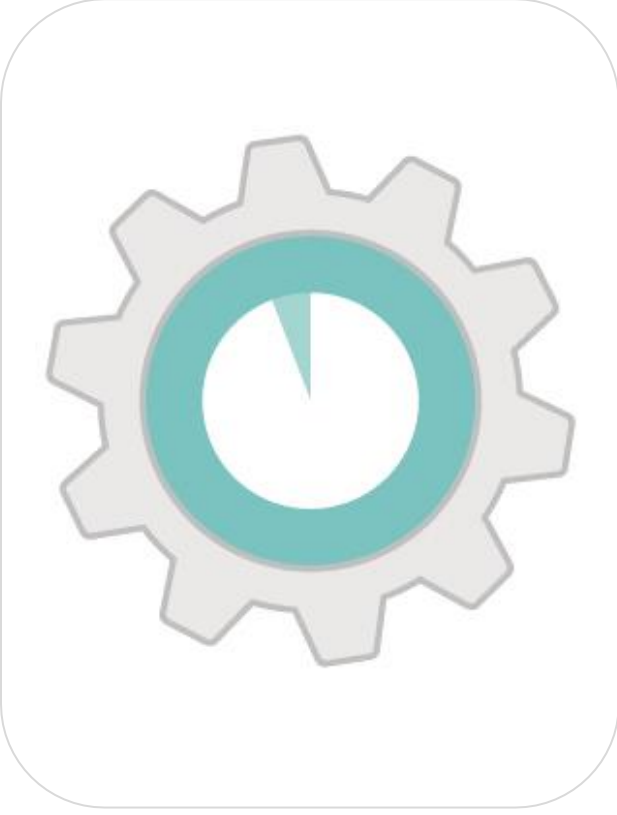
Respond using Mentimeter link in the chat!

Overview



Gg CO_2 eq.	Cumulative % of Emissions
300	31%
190	51%
110	62%
100	73%
90	82%
80	91%
50	95%
30	99%
6	99%
4	99.9%
1	100%

Introduction to Key Category Analysis



Review of the Template & Tools

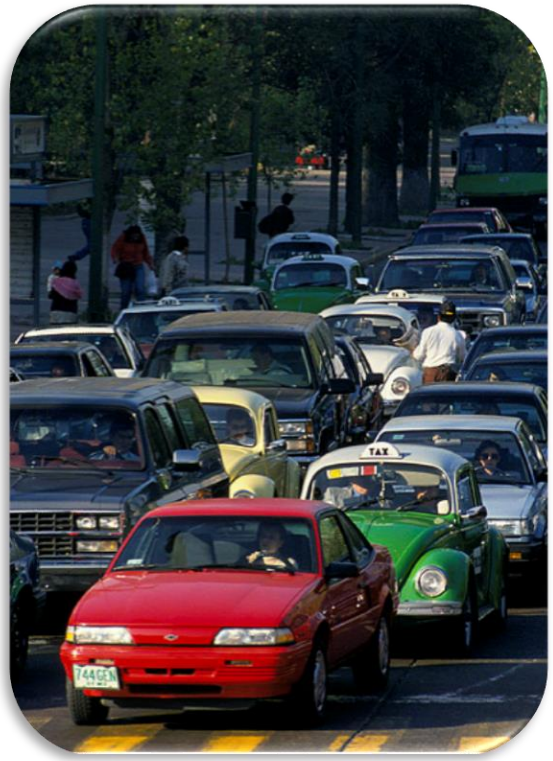
What is a Key Category?

2006 IPCC Volume 1, Chapter 4

A category that is prioritized within the national inventory system because its estimate has a **significant influence** on a country's total inventory of greenhouse gases in terms of the **absolute level, the trend, or the uncertainty in emissions and removals.**

Example Key Source and Sink Categories

Absolute level contribution to total emissions

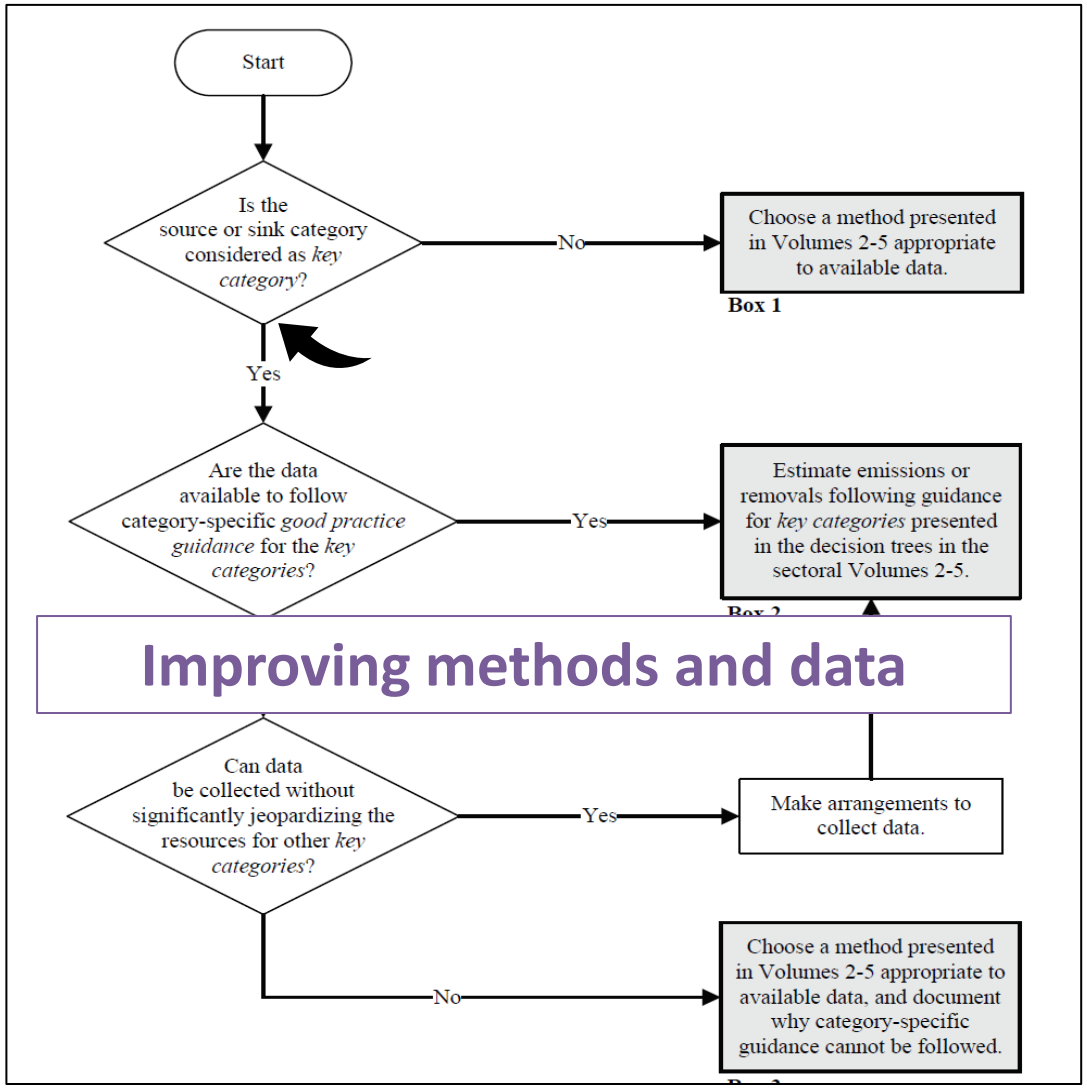


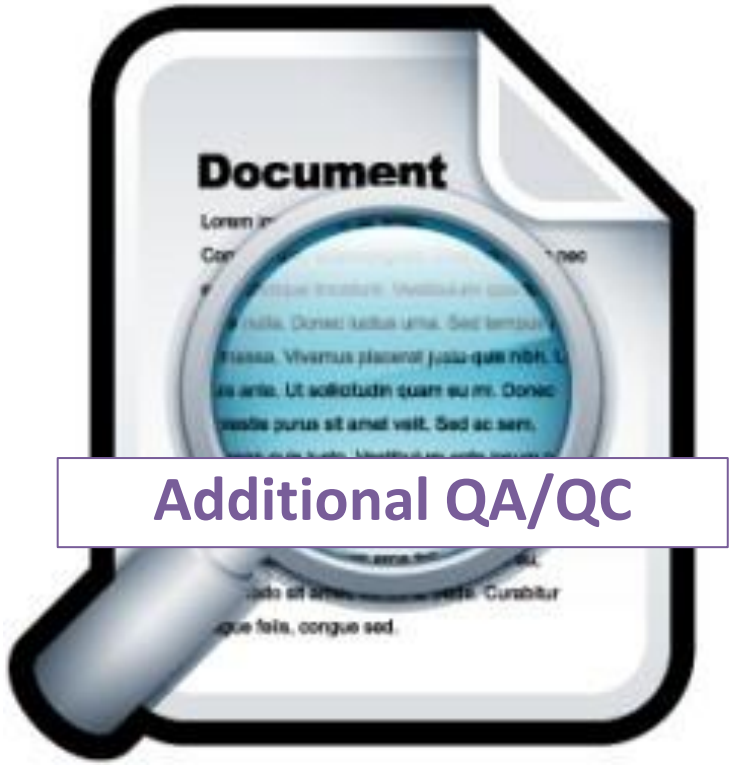
Trend: High growth rate in emissions

Uncertainty in emissions or removals

Prioritizing Key Categories in National GHG Inventories

Figure 4.1 Decision Tree to choose a Good Practice method





How to Identify Key Categories

Quantitative Approaches

Qualitative Approaches

How to Identify Key Categories

Quantitative Approaches

- Use emission and sink estimates and uncertainty analysis results to analyze actual category contribution to both overall emissions and sinks and uncertainty.

Qualitative Approaches

How to Identify Key Categories

Quantitative Approaches	Qualitative Approaches
• Use emission and sink estimates and uncertainty analysis results to analyze actual category contribution to both overall emissions and sinks and uncertainty.	• Completeness: If there are known categories that are excluded from the inventory, consider qualitive criteria to identify any additional key categories. • Other qualitative criteria include expected growth, lack of quantified uncertainty assessment, and mitigation effects

Quantitative Assessment for Identifying Key Categories

- ✓ **Approach 1** sorts and ranks source and sink categories according to their absolute contribution to total emissions and removals and identifies categories that collectively contribute **95%** of total national emissions and removals
  - ✓ A “level assessment” looks at a particular year
  - ✓ A “trend assessment” looks at the category trend relative to national trend in emissions and removals
- ✓ **Approach 2** is similar, but sorts and ranks category estimates according to their absolute contribution weighted by **uncertainty,** and identifies categories that collectively contribute **90%** of uncertainty weighted total national emissions and removals

Note: If using the IPCC Inventory Software, quantitative KCA is performed automatically by the software as data is entered – no need to process separately. Future reporting tools will also automate implementation of Approach 1 for identifying key categories.

Quantitative Assessment: Conducting an Approach 1 Level Assessment

Before you get started:

1. Identify roles - Decide who will conduct the KCA (e.g., National Inventory Coordinator).

2. Organize your inventory estimates in at disaggregation levels consistent with IPCC guidance: estimates are organized by the categories, subcategories where applicable, and gases as outlined in the 2006 IPCC Guidelines, Volume 1, Chapter 4, Table 4.1.

→ *Perform analysis including and excluding LULUCF sector*

Quantitative Assessment: Conducting an Approach 1 Level Assessment (w/LULUCF)

Step 1) List all inventory categories for year of level analysis (e.g., latest reported year)

Emission Category	Gas	Gg CO_2 eq.

Quantitative Assessment: Conducting an Approach 1 Level Assessment (w/LULUCF)

Step 1) List all inventory categories for year of level analysis (e.g., latest reported year)

Emission Category	Gas	Gg CO_2 eq.
Energy Industries (solid fuel)	CO_2	300
Road Transportation	CO_2	110
Iron and Steel Production	CO_2	90
Iron and Steel Production	CH_4	1
Forest Land Remaining Forest Land	CO_2	-190
Croplands Remaining Croplands	CO_2	6
Product Uses as ODS Substitutes (Aerosols)	HFC&PFC	4
Enteric Fermentation	CH_4	100
Manure Management	N_2O	80
Cement Production	CO_2	30
Rice Cultivation	CH_4	50

Quantitative Assessment: Conducting an Approach 1 Level Assessment (w/LULUCF)

Important good practice: The analysis should be performed at appropriate level of aggregation (i.e., at level at which you estimate IPCC categories or subcategories, per methods and decision trees).

Key Category Analysis

Approach 1: Level Assessment | Approach 1: Trend Assessment

A	B	C	D	E	F	G
IPCC Category code	IPCC Category	Greenhouse gas	1994 Ex,t (Gg CO2 Eq)	|Ex,t| (Gg CO2 Eq)	Lx,t	Cumulative Total of Column F
2.G	Other Product Manufacture and Use	SF6, PFCs	753201.6125	753201.6125	0.7526	0.7526
2.F.6	Other Applications (please specify)	HFCs, PFCs	70736	70736	0.07068	0.82328
1.A.1	Energy Industries - Solid Fuels	CARBON DIOXID...	29743.85	29743.85	0.02972	0.853
2.F.5	Solvents	HFCs, PFCs	27420	27420	0.0274	0.8804
1.B.2.a	Oil	NITROUS OXIDE...	26988.6	26988.6	0.02697	0.90737
3.D.1	Harvested Wood Products	CARBON DIOXID...	-22505.91952	22505.91952	0.02249	0.92986
2.E	Electronics Industry	SF6, PFCs, HFCs...	20600.3124	20600.3124	0.02058	0.95044
1.A.3.b	Road Transportation	CARBON DIOXID...	13448.0555	13448.0555	0.01344	0.96388
4.C	Incineration and Open Burning of Waste	CARBON DIOXID...	7704.54027	7704.54027	0.0077	0.97158
4.A	Solid Waste Disposal	METHANE (CH4)	3705.3582	3705.3582	0.0037	0.97528
1.A.2	Manufacturing Industries and Construction...	CARBON DIOXID...	3516.442	3516.442	0.00351	0.97879
1.A.1	Energy Industries - Liquid Fuels	CARBON DIOXID...	3387.944	3387.944	0.00339	0.98218
2.G	Other Product Manufacture and Use	NITROUS OXIDE (...	3349.9096	3349.9096	0.00335	0.98552
2.D	Non-Energy Products from Fuels and Solv...	CARBON DIOXID...	3342.603	3342.603	0.00334	0.98886

Refresh Data | Export to Excel

Quantitative Assessment: Conducting an Approach 1 Level Assessment (w/LULUCF)

Step 2) Sort in descending order by contribution to total emissions (absolute values)

Emission Category	Gas	Gg CO_2 eq.
Energy Industries (solid fuel)	CO_2	300
Forest Land Remaining Forest Land	CO_2	-190
Road Transport	CO_2	110
Enteric Fermentation	CH_4	100
Iron and Steel Production	CO_2	90
Manure Management	N_2O	80
Rice Cultivation	CH_4	50
Cement Production	CO_2	30
Croplands Remaining Croplands	CO_2	6
Product Uses as ODS Substitutes (Aerosols)	HFC&PFC	4
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Quantitative Assessment: Conducting an Approach 1 Level Assessment (w/LULUCF)

Step 3) Sum cumulative contribution of sources and sinks in absolute, descending order until you reach 95%

Emission Category	Gas	Gg CO_2 eq.	Cumulative %
Energy Industries (solid fuel)	CO_2	300	
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TOTAL : 961

Quantitative Assessment: Conducting an Approach 1 Level Assessment (w/LULUCF)

Step 3) Sum cumulative contribution of sources and sinks in absolute, descending order until you reach 95%

Emission Category	Gas	Gg CO_2 eq.	Cumulative %
Energy Industries (solid fuel)	CO_2	300	= 300/961 × 100%
Forest Land Remaining Forest Land	CO_2	190	
Road Transport	CO_2	110	
Enteric Fermentation	CH_4	100	
Iron and Steel Production	CO_2	90	
Manure Management	N_2O	80	
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Step 3) Sum cumulative contribution of sources and sinks in absolute, descending order until you reach 95%

Emission Category	Gas	Gg CO_2 eq.	Cumulative %
Energy Industries (solid fuel)	CO_2	300	31%
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Road Transport	CO_2	110	
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Forest Land Remaining Forest Land	CO_2	190	= [(190/961)*100] **+ 31%**
Road Transport	CO_2	110	
Enteric Fermentation	CH_4	100	
Iron and Steel Production	CO_2	90	
Manure Management	N_2O	80	
Rice Cultivation	CH_4	50	
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Iron and Steel Production	CH_4	1	100%

Sum to 95%

These are key categories identified by the approach 1 level assessment (including LULUCF) for the latest reported year

Quantitative Assessment: Conducting an Approach 1 Level Assessment

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Sum to 95%

Quantitative Assessment: Conducting an Approach 1 Level Assessment (w/LULUCF)

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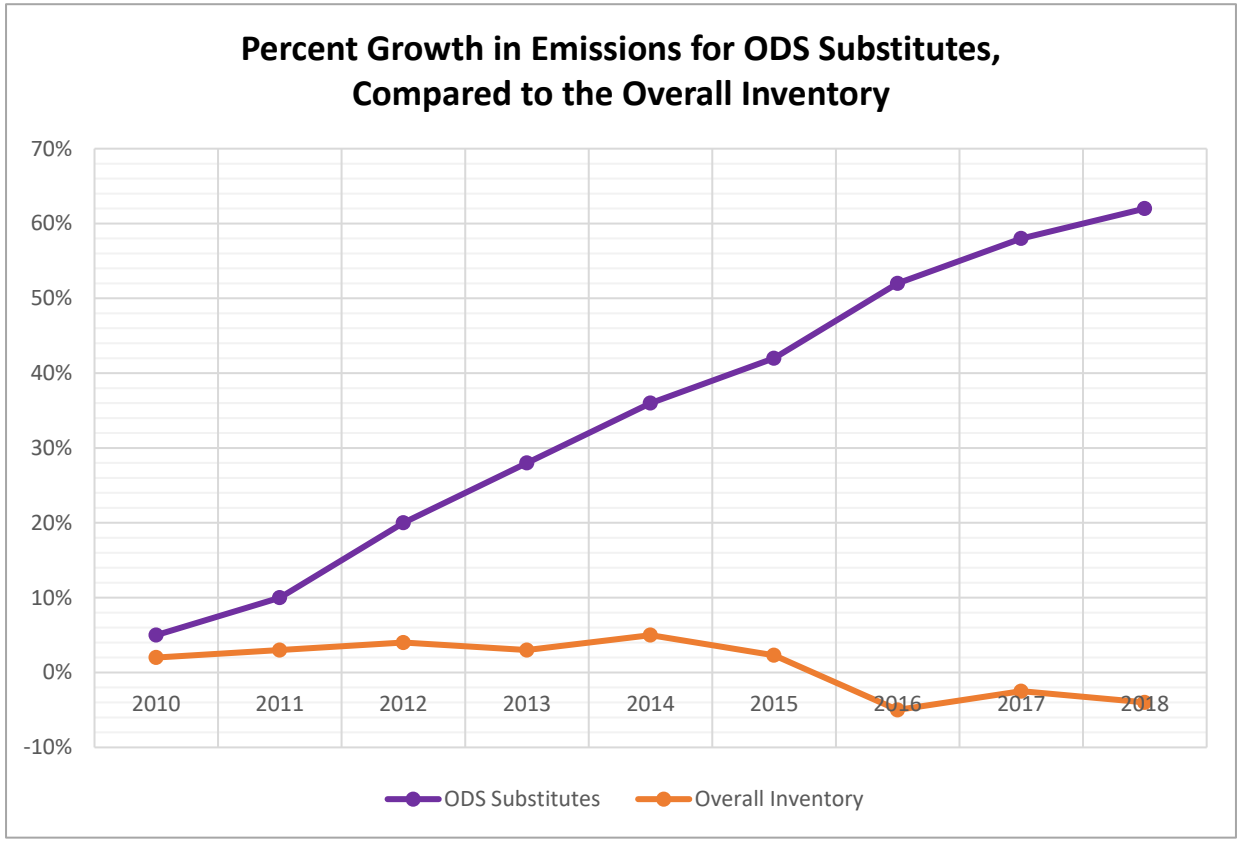
Iron and Steel Production	CH_4	1	100%

ETF reporting guidelines provide flexibility for developing countries, in light of their capacities, to instead use a threshold of no lower than 85% to allow focus on improving fewer categories

Quantitative Assessment: Trend Assessment



A trend assessment looks at a category's relative changes in emissions over time, instead of the contribution of a category to the total emission estimates for a country in a particular year (2006 IPCC GL).

Quantitative Assessment: Conducting an Approach 1 Trend Assessment (w/LULUCF)

Emission Category	Gas	1990 Gg CO_2 eq.	2018 Gg CO_2 eq.	Trend Assessment	% Contribution to Trend	Cumulative Total
Energy Industries (solid fuel)	CO_2	200	300	=		
Forest Land Remaining Forest Land	CO_2	-210	-190			
Road Transport	CO_2	60	110			
Enteric Fermentation	CH_4	80	100			
Iron and Steel Production	CO_2	120	90			
Manure Management	CO_2	70	80			
Rice Cultivation	CH_4	45	50			
Cement Production	CO_2	35	30			
Croplands Remaining Croplands	N_2O	8	6			
Product Uses as ODS Substitutes (Aerosols)	HFC&PFC	1	4			
Iron and Steel Production	CH_4	1.5	1			
		TOTAL: 410.5	**TOTAL: 581**			

Per 2006 IPCC GL This is calculated as the difference between the trend of each category (the change in category between the base and current year) and trend of the total inventory (the change in total inventory emissions over time), weighted by the relative contribution of this category to absolute total emissions in the base year (level assessment in base year).

2006 IPCC Equation for a Trend Assessment (Approach 1)

Equation 4.2 Trend Assessment (Approach 1)

$$T_{x,t} = \frac{E_{x,0}}{\sum_y |E_{y,0}|} \cdot \left| \left[\frac{(E_{x,t} - E_{x,0})}{|E_{x,0}|} \right] - \frac{(\sum_y E_{y,t} - \sum_y E_{y,0})}{|\sum_y E_{y,0}|} \right|$$

Where,

$T_{x,t}$ = trend assessment of source or sink category *x* in year *t* as compared to the base year (year 0)

$|E_{x,0}|$ = absolute value of emission or removal estimate of source or sink category *x* in year 0

$E_{x,t}$ *and* $E_{x,0}$ = real values of estimates of source or sink category *x* in years *t* and 0, respectively

$\sum_y E_{y,t}$ *and* $\sum_y E_{y,0}$ = total inventory estimates in years *t* and 0, respectively

Note if base year = zero, activity was not occurring than use equation 4.3 to calculate trend assessment

EQUATION 4.3
TREND ASSESSMENT WITH ZERO BASE YEAR EMISSIONS

$$T_{x,t} = \left| E_{x,t} / \sum_y |E_{y,0}| \right|$$

2019 Refinement Equation for Trend Assessment (Approach 1) Updated/Simplified

Improved approach to identifying categories whose trend contributes to the trend of the overall inventory, which may not be captured by level assessment.

EQUATION 4.2 (UPDATED)
TREND ASSESSMENT (APPROACH 1)

$$T_{x,t} = \left| \frac{E_{x,t} - E_{x,0}}{\sum_i E_{i,t} - \sum_i E_{i,0}} \right|$$

Where:

$T_{x,t}$ = trend assessment of source or sink category x in year t as compared to the base year (year 0)

$E_{x,0}$ and $E_{x,t}$ = value of emission or removal estimate of source or sink category x in year 0 and year t

$\sum_i E_{i,t}$ and $\sum_i E_{i,0}$ = total inventory estimates in years t and 0, respectively

for i = 1, ..., n

Quantitative Assessment: Conducting an Approach 1 Trend Assessment (w/LULUCF)

Emission Category	Gas	1990 Gg CO_2 eq.	2018 Gg CO_2 eq.	Trend Assessment	% Contribution to Trend	Cumulative Total
Energy Industries (solid fuel)	CO_2	200	300	0.02		
Forest Land Remaining Forest Land	CO_2	-210	-190	0.08		
Road Transport	CO_2	60	110	0.03		
Enteric Fermentation	CH_4	80	100	0.02		
Iron and Steel Production	CO_2	120	90	0.1		
Manure Management	CO_2	70	80	0.02		
Rice Cultivation	CH_4	45	50	0.02		
Cement Production	CO_2	35	30	0.02		
Croplands Remaining Croplands	N_2O	8	6	0.01		
Product Uses as ODS Substitutes (Aerosols)	HFC&PFC	1	4	0.00		
Iron and Steel Production	CH_4	1.5	1	0.00		

Follow equations in 2006 IPCC GLs, Volume 1, Chapter 4 to calculate Trend Assessment

Quantitative Assessment: Conducting an Approach 1 Trend Assessment (w/LULUCF)

Emission Category	Gas	1990 Gg CO_2 eq.	2018 Gg CO_2 eq.	Trend Assessment	% Contribution to Trend	Cumulative Total
Energy Industries (solid fuel)	CO_2	200	300	0.02		
Forest Land Remaining Forest Land	CO_2	-210	-190	0.08		
Road Transport	CO_2	60	110	0.03		
Enteric Fermentation	CH_4	80	100	0.02		
Iron and Steel Production	CO_2	120	90	0.1		
Manure Management	CO_2	70	80	0.02		
Rice Cultivation	CH_4	45	50	0.02		
Cement Production	CO_2	35	30	0.02		
Croplands Remaining Croplands	N_2O	8	6	0.01		
Product Uses as ODS Substitutes (Aerosols)	HFC&PFC	1	4	0.00		
Iron and Steel Production	CH_4	1.5	1	0.00		

TOTAL: 0.32

Follow equations in 2006 IPCC GLs, Volume 1, Chapter 4 to calculate Trend Assessment

Quantitative Assessment: Conducting an Approach 1 Trend Assessment (w/LULUCF)

Emission Category	Gas	1990 Gg CO_2 eq.	2018 Gg CO_2 eq.	Trend Assessment	% Contribution to Trend	Cumulative Total
Energy Industries (solid fuel)	CO_2	200	300	0.02	6%	
Forest Land Remaining Forest Land	CO_2	-210	-190	0.08	25%	
Road Transport	CO_2	60	110	0.03	10%	
Enteric Fermentation	CH_4	80	100	0.02	5%	
Iron and Steel Production	CO_2	120	90	0.1	30%	
Manure Management	CO_2	70	80	0.02	7%	
Rice Cultivation	CH_4	45	50	0.02	5%	
Cement Production	CO_2	35	30	0.02	7%	
Croplands Remaining Croplands	N_2O	8	6	0.01	2%	
Product Uses as ODS Substitutes (Aerosols)	HFC&PFC	1	4	0.00	1%	
Iron and Steel Production	CH_4	1.5	1	0.00	0%	
				TOTAL: 0.32		

Follow equations in 2006 IPCC GLs, Volume 1, Chapter 4 to calculate Trend Assessment

Quantitative Assessment: Conducting an Approach 1 Trend Assessment

Emission Category	Gas	1990 Gg CO_2 eq.	2018 Gg CO_2 eq.	Trend Assessment	% Contribution to Trend	Cumulative Total
Iron and Steel Production	CO_2	120	90	0.02	30%	30%
Forest Land Remaining Forest Land	CO_2	-210	-190	0.08	25%	56%
Road Transport	CO_2	60	110	0.03	10%	65%
Cement Production	CO_2	35	30	0.02	7%	73%
Manure Management	CO_2	70	80	0.1	7%	80%
Energy Industries (solid fuel)	CO_2	200	300	0.02	6%	86%
Rice Cultivation	CH_4	45	50	0.02	5%	92%
Enteric Fermentation	CH_4	80	100	0.02	5%	97%
Croplands Remaining Croplands	N_2O	8	6	0.01	2%	99%
Product Uses as ODS Substitutes (Aerosols)	HFC&PFC	1	4	0.00	1%	
Iron and Steel Production	CH_4	1.5	1	0.00	0%	

Sum to 95%

TOTAL: 0.32

Follow equations in 2006 IPCC GLs, Volume 1, Chapter 4 to calculate Trend Assessment

Quantitative Assessment: Considering Uncertainty when Conducting an Approach 2 Trend Assessment

Emission Category	Gas	1990 Gg CO_2 eq.	2018 Gg CO_2 eq.	Trend Assessment	Trend Assessment Including Uncertainty	% Contribution to Trend	Cumulative Total
Energy Industries (solid fuel)	CO_2	200	300	0.02	=0.02*$U_{x,2018}$		
Forest Land Remaining Forest Land	CO_2	-210	-190	0.08			
Road Transport	CO_2	60	110	0.03			
Enteric Fermentation	CH_4	80	100	0.02			
Iron and Steel Production	CO_2	120	90	0.1			
Manure Management	CO_2	70	80	0.02			
Rice Cultivation	CH_4	45	50	0.02			
Cement Production	CO_2	35	30	0.02			
Croplands Remaining Croplands	N_2O	8	6	0.01			
Product Uses as ODS Substitutes (Aerosols)	HFC&PFC	1	4	0.00			
Iron and Steel Production	CH_4	1.5	1	0.00	**TOTAL: TBD**		

Qualitative Assessments to Conducting Key Category Analysis

- Mitigation techniques and technologies applied
- Expected emission growth
- Uncertainties not yet quantified, but presumed high (e.g., LULUCF)
- Not yet included in inventory (i.e., completeness)

Recap: Why Do a Key Category Analysis?

Perform Key Category Analysis

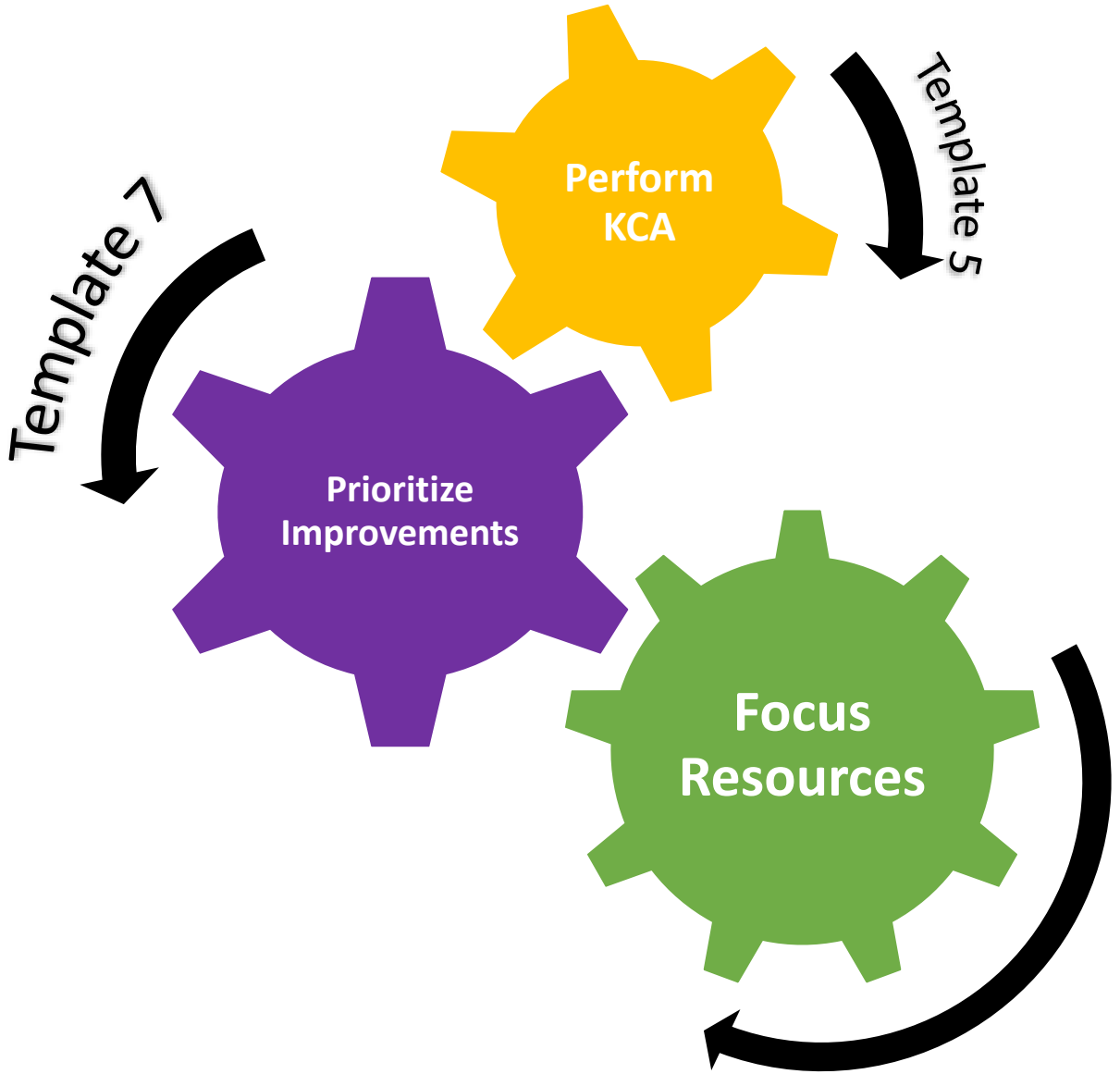
↓

Identify categories to prioritize in inventory planning and National GHG inventory improvement plan

↓

Focus Improvement Efforts on Key Categories

- Choose higher-tiered methods (Tier 2, 3)
- Obtain improved activity data
- Improve/establish institutional arrangements
- Focus QA/QC, etc.



Key Categories in the National Inventory Compilation Cycle

- Save all compilation files and references to create an inventory archive
- Backup the archive

- Inventory inception meeting
- Start with previous inventory, if available
- Review and implement improvement plan
- Identify Activity Data and choose methodologies

- Finalize inventory report, including reporting tables
- Develop improvement plan
- Publish/submit inventory for UNFCCC reporting on time

- Collect Activity Data, Emission Factors
- QC all data

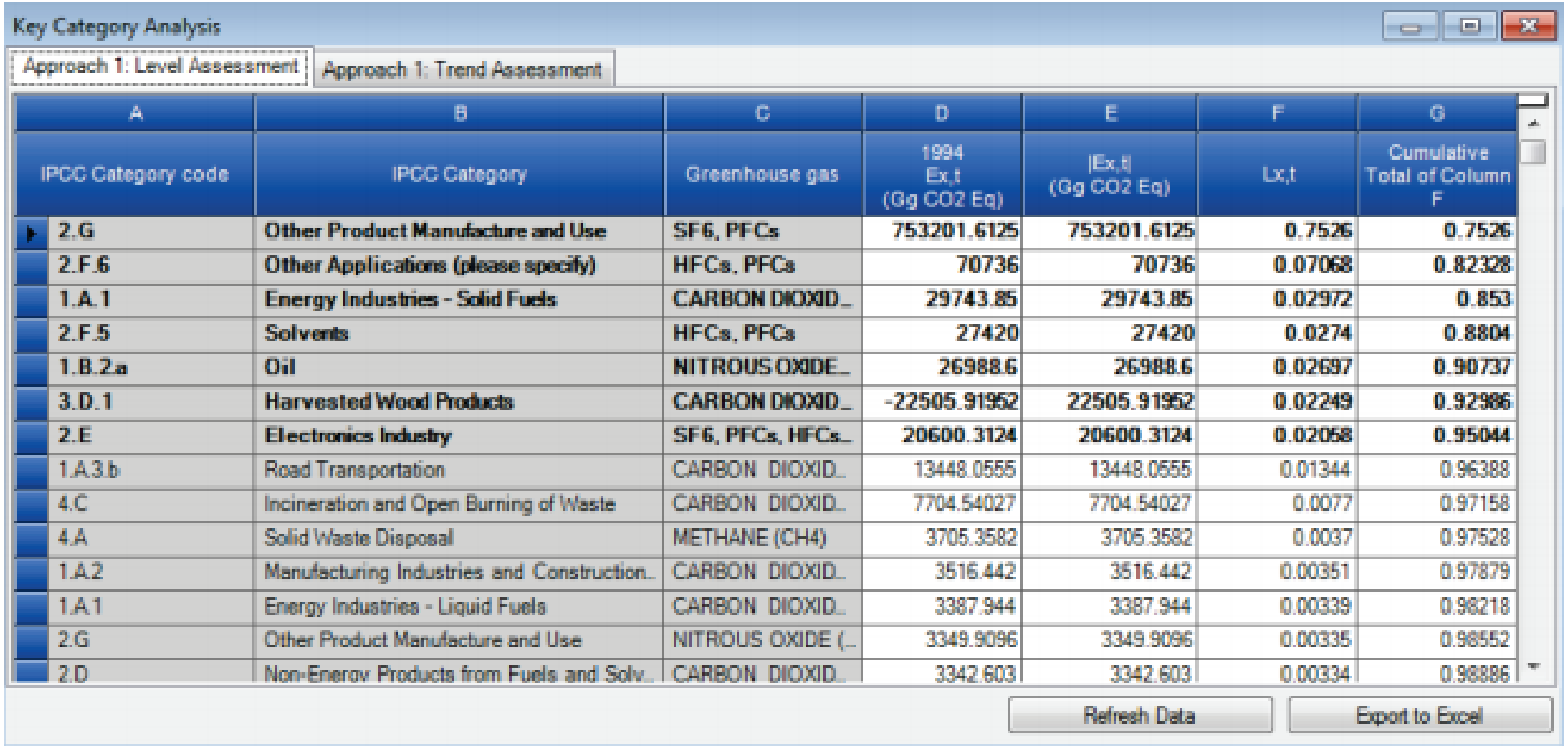
- Conduct & document QA/QC procedures, such as basic peer review
- Address QA/QC findings

- Estimate emissions & removals
- Implement QC procedures
- Revise estimates, based on new data and QA/QC findings
- Ensure time series consistency
- Conduct uncertainty & key category analyses

- Document methodological approaches, recalculations, and references
- Write inventory report, prepare draft reporting tables

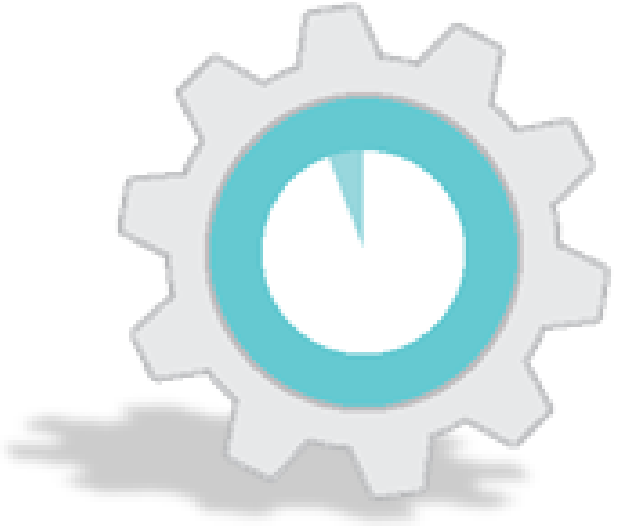
IPCC Inventory Software

Automates preparing a quantitative KCA analysis



A	B	C	D	E	F	G
IPCC Category code	IPCC Category	Greenhouse gas	1994 Ex,t (Gg CO2 Eq)	|Ex,t| (Gg CO2 Eq)	Lx,t	Cumulative Total of Column F
2.G	Other Product Manufacture and Use	SF6, PFCs	753201.6125	753201.6125	0.7526	0.7526
2.F.6	Other Applications (please specify)	HFCs, PFCs	70736	70736	0.07068	0.82328
1.A.1	Energy Industries - Solid Fuels	CARBON DIOXID...	29743.85	29743.85	0.02972	0.853
2.F.5	Solvents	HFCs, PFCs	27420	27420	0.0274	0.8804
1.B.2.a	Oil	NITROUS OXIDE...	26988.6	26988.6	0.02697	0.90737
3.D.1	Harvested Wood Products	CARBON DIOXID...	-22505.91952	22505.91952	0.02249	0.92986
2.E	Electronics Industry	SF6, PFCs, HFCs...	20600.3124	20600.3124	0.02058	0.95044
1.A.3.b	Road Transportation	CARBON DIOXID...	13448.0555	13448.0555	0.01344	0.96388
4.C	Incineration and Open Burning of Waste	CARBON DIOXID...	7704.54027	7704.54027	0.0077	0.97158
4.A	Solid Waste Disposal	METHANE (CH4)	3705.3582	3705.3582	0.0037	0.97528
1.A.2	Manufacturing Industries and Construction...	CARBON DIOXID...	3516.442	3516.442	0.00351	0.97879
1.A.1	Energy Industries - Liquid Fuels	CARBON DIOXID...	3387.944	3387.944	0.00339	0.98218
2.G	Other Product Manufacture and Use	NITROUS OXIDE (...	3349.9096	3349.9096	0.00335	0.98552
2.D	Non-Energy Products from Fuels and Solv...	CARBON DIOXID...	3342.603	3342.603	0.00334	0.98886

Key Category Analysis



National System Templates

Template 5: Key Category Analysis

Key Category Tool

Helps implement IPCC methods, and calculate Key Categories using Microsoft Excel or OpenOffice Calc

Note: EPA is updating this tool, so stay tuned for a new version in the near future.

Where to Obtain the Key Category Analysis Tool

Available Online at

https://www.epa.gov/ghgemissions/toolkit-building-national-ghg-inventory-systems

5. Key Category Analysis (KCA)

This template identifies the sources and sinks that make the greatest contribution to national GHG emissions and removals. With this analysis of key categories, a GHG inventory team can prioritize over time the resources needed to implement the more impactful improvements to a national GHG inventory.

- Key Category Analysis (12 pp, 124 K)
- Key Category Analysis (PDF) (12 pp, 486 K)

Supporting Tool: The **Key Category Analysis Tool** enables a GHG inventory team to determine key categories of GHG emissions and removals from GHG inventory estimates.

- Key Category Analysis Tool (MB)

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Documenting KCA Results

- *Save copies of the file as different versions for draft and final analyses by inserting the date or version number at the end of the file name (e.g., "KCA Tool v2.xls").*
- *You may also use the 2006 IPCC Guidelines inventory software, which has a KCA module in it, or build your own spreadsheet(s) that follow the methodologies in the 2006 IPCC Guidelines.*

STEP 3: Complete the Approach 1 key category current year level assessment

- *Complete Table 5-1, below, using the results from the KCA you performed in Step 2. This table will be a record of the results of the IPCC Approach 1 key category level assessment for the most recent or current year (e.g., 2019). Add as many rows to the table as necessary to provide detailed information for each category.*
- *If or when the inventory is updated, update the KCA.*

Approach 1 Assessment (Current Year)

Table 5-1: Key Categories Based on Contribution to Total National Emissions

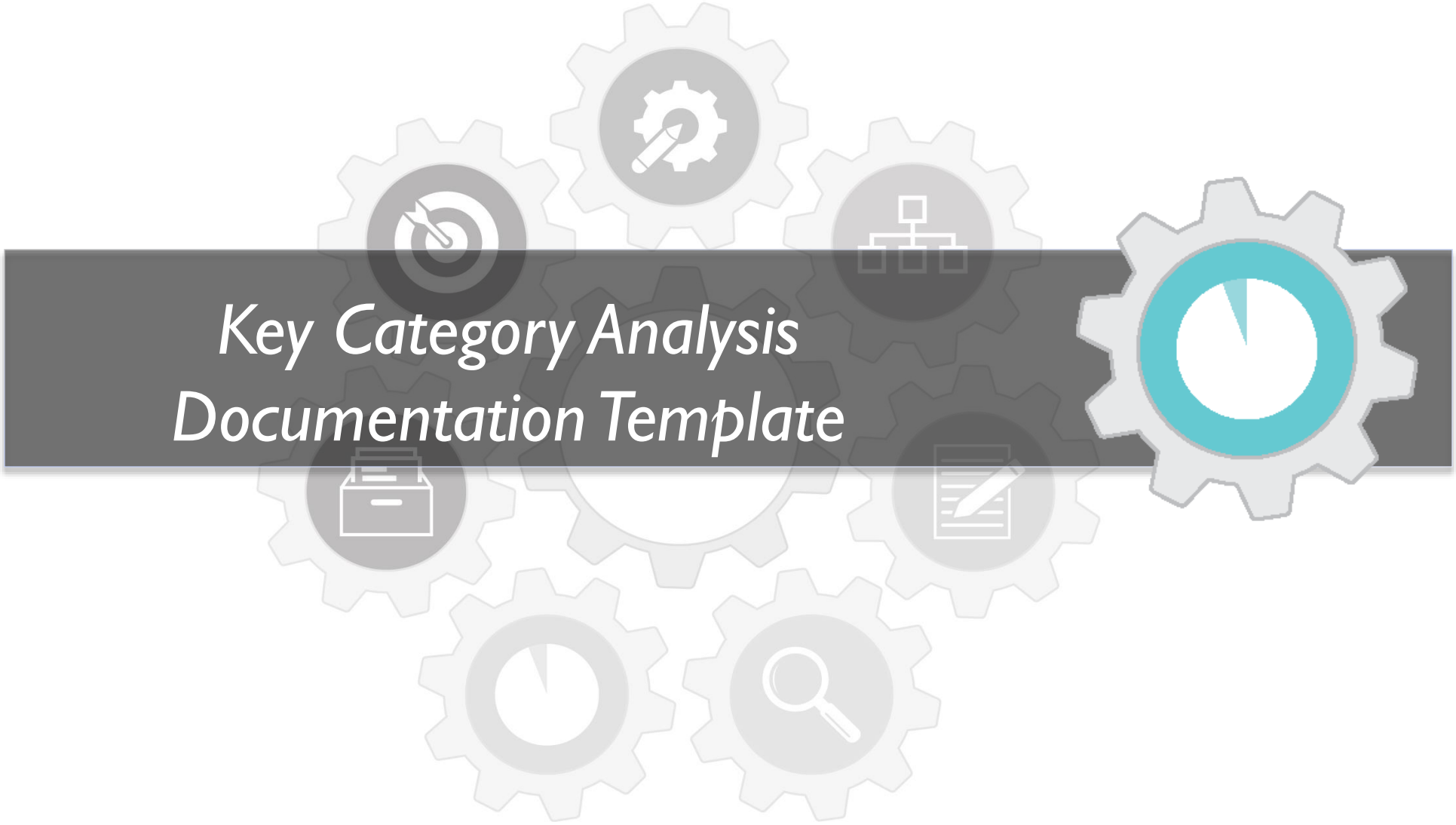
IPCC Category Code	IPCC Category	Gas	Current Year Emissions (Gg CO_2 Eq.)	Contribution to National Emissions	Cumulative Per Cent of National Emissions

*Represents results from the "Key Category Approach 1 Assessment for the Current Year" sheet in the EPA KCA tool.

STEP 4: Complete the Approach 1 key category base year level assessment and trend assessment

- *Complete this step if your country has GHG inventories with a time series of more than one year.*
- *If your country has a GHG inventory for only one year, proceed to Step 5.*

Key Category Analysis Documentation Template



How this Template Will Help!

The *Key Category Analysis Tool and Template* will help the inventory team:

- Identify, document, and summarize all key categories identified using latest Inventory based on approaches available
  - Approach 1
  - Approach 2 (reflects uncertainty)
  - Qualitative criteria
- Document inventory improvements for the future

Step 1: Level Assessment (Current Year)

Approach 1 Level Assessment (Current Year)

Table 5.1: Key Categories Based on Contribution to Total National Emissions in Current Year [year, e.g., 2019, excluding LULUCF]

IPCC Category Code	IPCC Category	Gas	Current Year Emissions (Gg CO_2 Eq.)	Contribution to National Emissions	Cumulative Per Cent of National Emissions
1A1	Fuel Combustion Activities - Energy Industries (Gaseous Fuel)	CO_2	7,500	30%	30%
1A3e	Fuel Combustion Activities - Transport - Other Transportation	CH_4	5,000	20%	50%
2C3	Metal Industry -Aluminum Production	PFC	4,800	19%	69%
1A3a	Fuel Combustion Activities - Transport - Domestic Civil Aviation	CO_2	1,000	3%	72%
3C1	Biomass Burning	N_2O	700	3%	75%
…	…	…	…	…	…

Who completes this table: Key Category Analysis Lead

Steps 2-7: Key Categories from Conducting Level Assessment for Base Year, Trend Assessment using Approach 1 (Approach 2 if feasible) and Qualitative Criteria

- Repeat process in remaining tables within template to list key category identified from each assessment
  - Approach 1
    - Level Analysis (current year)
    - Level Analysis (base year)
    - Trend Analysis
  - Approach 2
    - Level Analysis (current year)
    - Level Analysis (base year)
    - Trend Analysis
  - Qualitative

Table 5-2: Key Categories Based on Contribution to Total National Emissions in Base Year [year, e.g., 2000]

IPCC Category Code	IPCC Category	Gas	Base Year Emissions (Gg CO_2 Eq.)	Contribution to National Emissions	Cumulative Per Cent of National Emissions
1A1	Fuel Combustion Activities - Energy Industries (Gaseous)	CO2	7,200	32%	32%

Approach 1 Level Assessment (Base Year)

Table 5-3: Key Categories Based on Contribution to Overall Trend in Net National Emissions

IPCC Category Code	IPCC Category	Gas	Base Year Emissions (Gg CO_2 Eq.)	Current Year Emissions (Gg CO_2 Eq.)	Contribution to Trend	Cumulative Contribution to Trend
1A1	Fuel Combustion Activities - Energy Industries (Gaseous)	CO2	7,200	7,500	31%	31%

Approach 1 Trend Assessment

Who completes this table: Key Category Analysis Lead

Step 8: Key Category Analysis Summary

Table 5-8: Summary of Key Categories Identified and Methodology

IPCC Category Code	IPCC Category	Greenhouse Gas (CO_2, CH_4, etc)	Identification Criteria (L1, T2, Q, etc)	Comments
1A1	Fuel Combustion Activities - Energy Industries (Gaseous)	CO2	L1, T1	None

Who completes this table: Key Category Analysis Lead

Step 9: Improvements to GHG Inventory

Table 5-9: Improvements to the GHG inventory

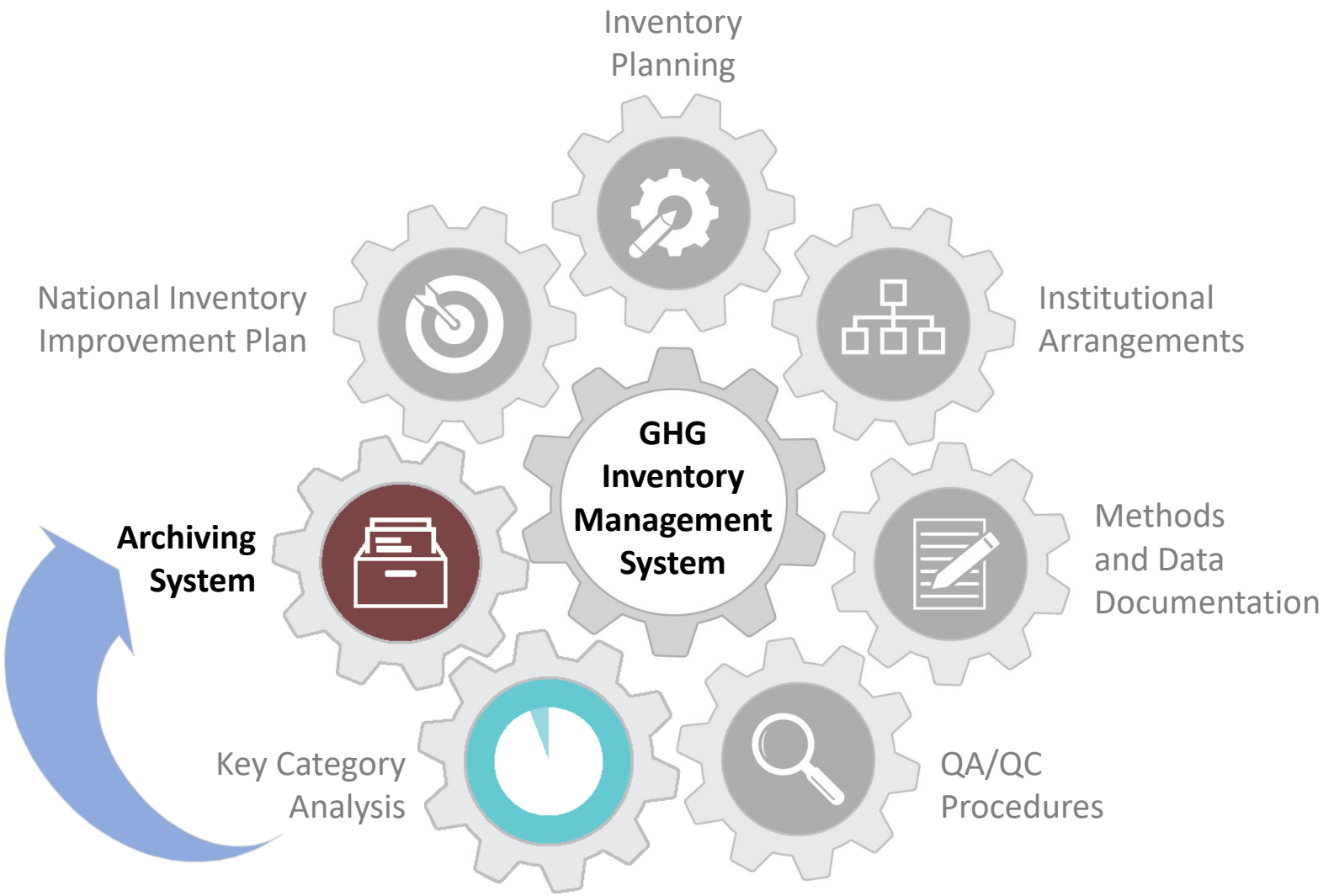
Improvement #	Sector	Source Category and IPCC Tier Used	Potential Improvement	Steps Needed to Implement This Improvement
1	Energy	Transport-Railways (CO2, CH4, N2O)	Currently no estimates, need to include	Find source for activity data and if available, data on uncertainty
2	IPPU	Cement Production (CO2)– Tier 1	Move to Tier 2 because this category is a key category	Establish IA with data provider for clinker production data
3	IPPU	Aluminum Production (PFCs)	Apply and document category-specific QC and send to expert for additional QA	Select applicable category specific QC procedures (e.g., comparing AD to other available data, comparing EFs to defaults and those for production in region, if available). Collect relevant data Conduct comparisons Prepare documentation outline

Who completes this table: Key Category Analysis Lead

Action Items for Key Category Analysis

1. Assign specific responsibilities for who will do the KCA
2. Collect all emissions and removal estimates and if available, also the corresponding uncertainty assessments
3. Ensure analysis is at appropriate level of disaggregation
4. Conduct the Key Category Analysis
5. Document KCA results in the template
6. Identify inventory improvements based on KCA results
7. Archive analysis and KCA data for future inventories, review, and staff training

Next template…



Thank You For Your Attention!

For questions & more information, email:

ghgi.transparency@epa.gov

Toolkit for Building National GHG Inventory Systems

https://www.epa.gov/ghgemissions/toolkit-building-national-ghg-inventory-systems