

STRENGTHENED  
INSTITUTIONS  
FOR A  
**SUSTAINABLE  
CLIMATE**



**Workshop Report**

**Calculation of greenhouse gases in the energy sector**

**Victoria Falls, Zimbabwe 27-30 of August 2019**



## Content

1. Aim of the workshop .....	2
2. Paris agreement with the transparency framework, article 13 and article 6 .....	3
3. National inventory arrangements .....	3
4. GHG estimates for the Energy sector .....	4
4.1. Stationary combustion .....	4
4.2. Mobile Combustion .....	5
4.3. Workshop: discussion points for the energy sector .....	5
4.4. General inventory activities .....	6
5. Energy Indicators .....	7
6. Evaluation of the workshop with reflections from the participants .....	7
7. Conclusions for further works and coming workshops under the Swedish program “Strengthening institutions for a sustainable climate” .....	9
8. Annexes .....	10
8.1. Participants list .....	10
8.2. Agenda .....	11

### 1. Aim of the workshop

The workshop was organised within the framework of the Swedish capacity building programme *Strengthened Institutions for a Sustainable Climate* and by the Swedish Environmental Protection Agency, Statistics Sweden and the Swedish Energy Agency with the kind assistance of the Ministry of Environment, Water and Climate in Zimbabwe and the University of Zimbabwe.

The workshop targeted countries and organisations within the programme involved in the calculation of GHG emissions in both stationary and mobile energy as well as national energy statistics and nationally inventory arrangements.

The aim of the workshop was training in calculation of greenhouse gas emissions from the energy sector in accordance with the reporting guidelines under UNFCCC, the Paris agreement and with IPCC 2006 methodology guidelines.

The workshop was divided into the following focus areas, which will be presented closer in the following sections of the report:

- Paris agreement with the transparency framework, article 13 and article 6
- National inventory arrangements
- Stationary combustion
- Mobile combustion
- General inventory activities
- Energy indicators

## **2. Paris agreement with the transparency framework, article 13 and article 6**

Sweden held a presentation about the Paris agreement with focus on the transparency system in article 13 and with the connections to article 6.

The transparency framework shall build on and enhance the transparency arrangements under the Convention, recognizing the special circumstances of the least developed countries and small island developing States, and be implemented in a facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty, and avoid placing undue burden on Parties.

Article 13 consists of guidelines for reporting information about the greenhouse inventory (GHGI), progress in achieving the Nationally Determined Contribution (NDC) (with both mitigation and adaptation) and support with information about finance provided and mobilized and received, technology transfers and capacity building. The article also sets guidance for the technical expert review and that each Party shall participate in a facilitative, multilateral consideration.

The GHGI is an important part of the transparency system to inform about the emissions and removals of the country, part of the indicators to show progress in achieving the NDC and information for the global stocktake and raising ambitions.

Sweden also held a presentation on international cooperative approaches under article 6 of the Paris Agreement and the link to the need for national inventory arrangements and accounting rules. The presentation also highlighted how the article 6 under the Paris Agreements puts different conditions compared to Kyoto mechanisms like the Clean Development Mechanism (CDM).

## **3. National inventory arrangements**

Sweden presented the set up for their national arrangements, with legal, institutional and procedural arrangements, for the National inventory report (NIR) and for tracking progress in achieving target. The aim with the presentation was to show what has been working well or not for Sweden and that a system like that needs constant improvements since the world is changing. The setup of a system needs to originate from national circumstances and thus all inventory systems have different setup structures depending on the national circumstances.

Sweden also showed how the greenhouse gas statistics are communicated and the connection between the national greenhouse gas inventory and policies and measures, target setting and fulfilment.

Kenya showed how the setup of their national inventory arrangements for the greenhouse gas inventory and to track progress in achieving target. One obvious reflection is that the participating countries would benefit a lot of having the possibility to have exchange discussions among them as south- south cooperation and with some reflection from north. The African countries can improve their capacity from each other since they are in a similar process right now. Sweden had the same cooperation with Finland when setting up their national arrangements for the first commitment period under the Kyoto Protocol.

After the presentation from Kenya on their setup of their national arrangements for the GHG inventory, discussions with nationally mixed groups enhanced further experience exchange. The participants were encouraged to share their view about the setup of their national arrangements today; which parts of their national arrangement works well, which challenges do they face and what improvements could be possible. Many improvements are proceeding, in some countries; there are Memory of Understandings (MoUs) in place between relevant stakeholders and the designated authority for the GHG inventory. In some countries they have also designated focal points for the work at the different authorities in place. One country informed that nationally publicity regarding climate change has been frequent, which can give an increased political will and creation of climate change departments/directorates.

### **Country challenges**

- Lacking acts to back up the inventory; and climate change in general;
- Weak activity data collection, quality, availability and level of disaggregation;
- Inadequate institutional capacity – human resource to compile the data (additional work above job description) is a disincentive and technical capacity to continually update the inventory;
- Software and hardware issues. MRV-online software is designed as single user based and not multi-user based, need for improved versions;
- Inadequate financial resources both from national governments and donors;
- Inadequate cooperation and coordination between sector ministries and academia regarding activity data and research;
- The inventory itself is less good than wanted.

### **Needs/Improvements**

- Improved data collection, activity data quality and disaggregation level;
- Fast tracking the development of legal frameworks that improve stakeholder coordination and data collection for the GHGI;
- Need to improve technical and institutional capacity
- Need for sustainable financing for the GHGI;
- Need to incorporate GHG estimations into university curricula;

## **4. GHG estimates for the Energy sector**

### **4.1. Stationary combustion**

Presentation at the workshop covered the following topics:

- Methods, Tiers for stationary combustion from IPCC 2006 Guidelines
- CRF-codes included in stationary combustion
- Activity data, where normally the activity data comes from
- Emission factors, default values from IPCC
- Risk of double counting with other sectors
- Treatment of biomass in the inventory

- Time series consistency
- Reference approach vs Sectoral approach

Exercises on how to use the Tier 1 methodology was held with a Swedish example from the pulp and paper sector. The second exercise was made with the participants own data by either using the IPCC Software or in Excel. The exercises are found in a separate Exercise presentation.



#### **4.2. Mobile Combustion**

**Power point presentation covered the following topics:**

- The connection between the Transparency System under the Paris agreement and greenhouse gas inventories.
- 2006 IPCC Guidelines
- General methodology issues for estimating GHG emissions including key categories, Tier1, Tier 2 and Tier 3 methodologies, CRF tables & categories and data sources for net calorific values and emission factors.
- Methodology for estimating the GHG emissions from mobile combustion

#### **4.3. Workshop: discussion points for the energy sector**

- During the development of National Energy balance data, what was the fuel definition used and reference of the definition used? In addition, do they have

knowledge about the IPCC fuel type definition described in the 2006 IPCC Guidelines?

- In the National Energy Balance how is the fuel allocated/methodology under Heavy petroleum products and light petroleum products?
- Is it possible to identify the source and the methodology used to collect the raw data used for the preparation of the energy balance?
- How the Ministry communicate with the IEA in case difference in reported data is observed between the report published by the Ministry and the Agency.
- Is the fuel consumption by International Aviation included in national aviation or is it missing?
- Agriculture/Forestry energy consumption data reporting in the Energy Balance?
- Some of the diesel oil is most probably used for working machinery (CRF 1A.2.gvii, 1A.3.eii, 1A.4.aii-cii)
- Aggregation level of activity data is often higher than CRF-codes. How to get AD at finer level?

#### **Plan of improvement**

- Establishing a system that supports the collection of energy data for the bottom up approach (Sectoral Approach) in a sustainable manner according to the IPCC guideline requirements.

#### **4.4. General inventory activities**

Two general presentations on IPCC Software and CRF Reporter were held:

- IPCC Software: presentation included the aim of the software and introduction on how to use the software.
- CRF Reporter: presentation included an introduction of the CRF tables, with format, CRF-codes and various forms of importing data to the Reporter. In addition, a presentation on how to do this in the actual CRF-reporter was held.

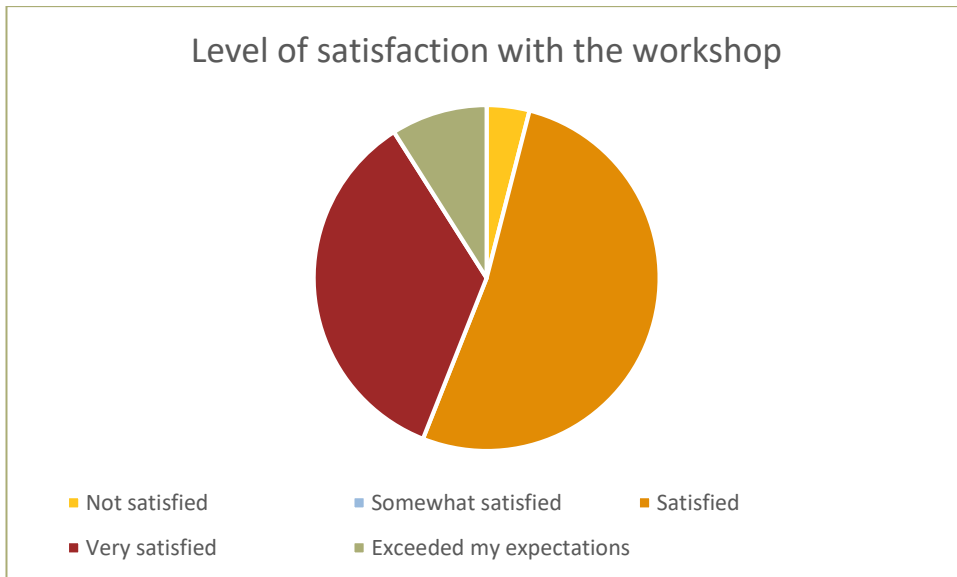
## 5. Energy Indicators



The Swedish Energy Agency held a presentation on experience from the Swedish perspective to use energy indicators as a policy measure to follow up progress towards the energy related goals, both domestic and EU legislated goals. The actual follow-up and use of these indicators are translated into an annual publication accessible to the public and to inform policy makers. As such it is an approach to measure progress over time in the energy sector and can show comparable data and statistics on progress over decades. Generally, there were questions on how this could be used as a tool to follow up on legislation, policy implementation, the figures demonstrated for the transport sector and how to calculate the overall energy balance. There was an appetite to go into further analysis and explanation of the graphs and numbers displaying how the indicators are being used and presented. This is a lesson learned. The ability to access data is generally a constraint as well as having a coordination mechanism hence a system where responsibility is rather straightforward assigned and with a clear mandate to act and follow up was something that was thought of as facilitating. Also, the connection between legislation, enforcement, tools and measures and data collection and follow up was emphasised.

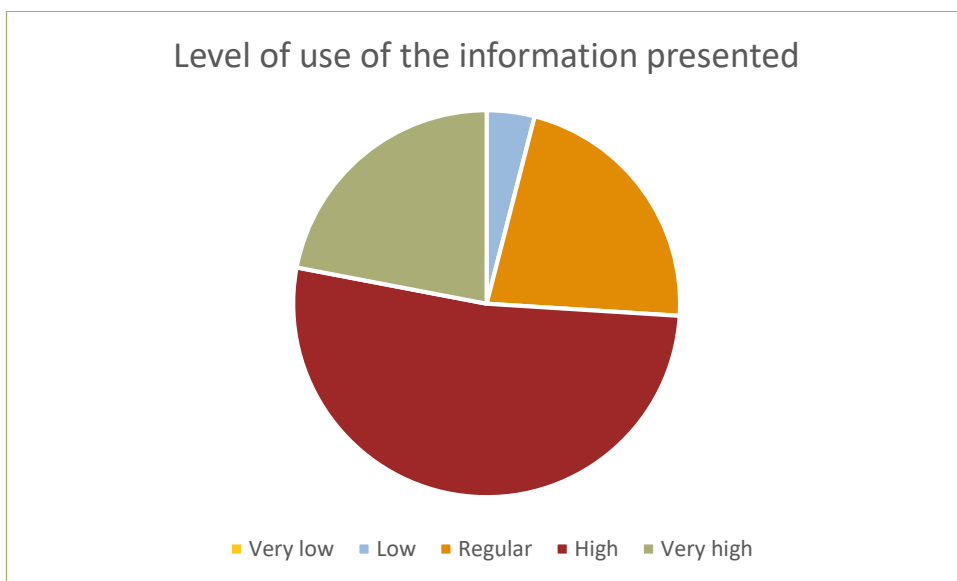
## 6. Evaluation of the workshop with reflections from the participants

**Level of satisfaction with the workshop. Result presented in % of participants.**  
The level of satisfaction with the workshop was good. Most of the participants were satisfied or very satisfied.



**Level of use of the information presented. Result presented in % of participants**

The level of use of the information presented at the workshop was in general seen as high. Around 75 % of the participants found the information of very high or high value.

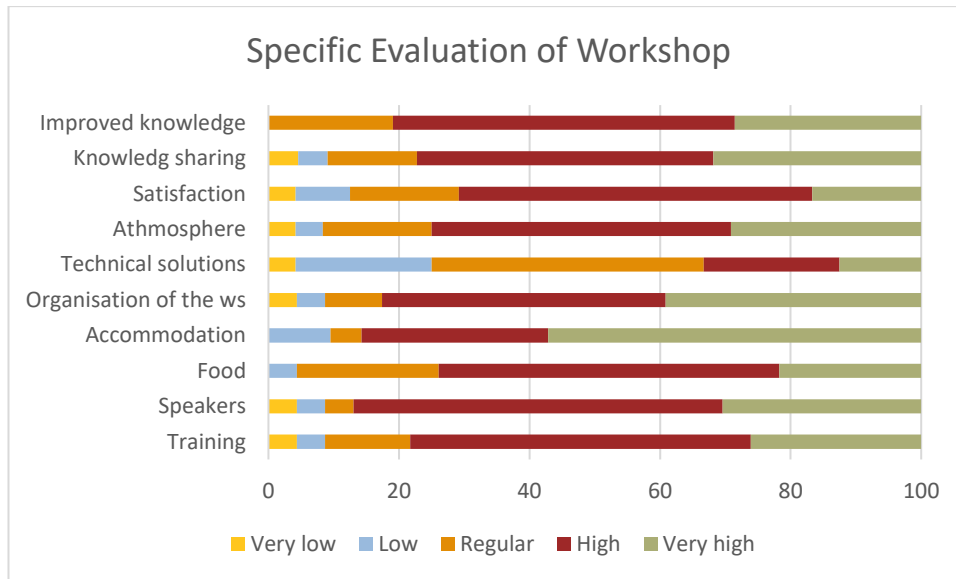


**The result of the evaluation is presented in % of participants views.**

**How do you evaluate:**

In general, the participants found that the workshop had improved their knowledge in the workshop topic and that the sharing of knowledge was good.





## 7. Conclusions for further works and coming workshops under the Swedish program “Strengthening institutions for a sustainable climate”

Following conclusions for further work are drawn from discussions at the workshop and from participant’s comments in the evaluations:

- more regional workshops with discussions on how to solve regional issues and to share lessons learnt from each country in the program, (peer to peer learning)
- more workshops focused on institutional arrangements with both south-south and north-south exchange of experiences
- how to go from GHGI to mitigation actions (policies and measures)
- workshops focused in other sectors than the energy sector
- more in-depth workshops on activity data and how to improve data
- regional work to enhance or create regional/national emission factors
- continuing the work/discussions in between regional workshops through a common platform

## 8.2. Agenda

Day	Time	Activity	Responsible
Day 1	8:15 – 8:30	Registration	
	8:30 – 8:45	Welcome notes Presentations of participants	Malin Kanth
	8:45 – 9:30 9:30 – 10:00	Presentation of reporting under the UNFCCC and the Transparency framework under the Paris agreement. Presentation of article 6 in the Paris Agreement. National GHG inventory arrangements	Malin Kanth Marie Karlberg
	10:00 – 10:30	Coffee break	
	10:30 – 11:00	General introduction to reporting and the guidelines.	Veronica Eklund/ Jonas Allerup
Day 1	11:00 – 12:00	Introduction Energy Sector including discussions on data availability <ul style="list-style-type: none"> <li>• Mobile combustion</li> </ul>	Veronica Eklund
	12:00 – 13:00	Lunch	
	13:00 – 14:00	Introduction Energy Sector including discussions on data availability <ul style="list-style-type: none"> <li>• Stationary combustion</li> </ul>	Carina Ortiz
	14:00 – 15:30 (Incl. quick coffee)	CRF-tables <ul style="list-style-type: none"> <li>• Stationary combustion</li> <li>• Mobile combustion</li> </ul> Introduction to IPCC software	Carina Ortiz/ Jonas Allerup
	15:45 – 18:15	Victoria Falls excursion	
	19:00 – 21:30	Dinner	

Day 2	09:00 – 10:00	Estimates of GHG emissions -Stationary combustion <ul style="list-style-type: none"> <li>• Case study: Estimating for one/several countries</li> <li>• Compiling inventory in IPCC-Software</li> </ul>	Carina Ortiz
	10:00 – 10:30	Coffee break	
	10:30 – 12:00	<i>Cont.</i> Estimates of GHG emissions -Stationary combustion Case study: Estimating for one/several countries Compiling inventory in IPCC-Software	Carina Ortiz
	12:00 – 13:00	Lunch	
Day 2	13:00 – 14:30	Estimates of GHG emissions – Mobile combustion <ul style="list-style-type: none"> <li>• Case study: Estimating for one/several countries</li> <li>• Compiling inventory in IPCC-Software</li> </ul>	Veronica Eklund
	14:30 – 15:00	Coffee Break	
	15:00 – 16:00	<i>Cont.</i> Estimates of GHG emissions – Mobile combustion <ul style="list-style-type: none"> <li>• Case study: Estimating for one/several countries</li> </ul> Compiling inventory in IPCC-Software	Veronica Eklund
	16:00 – 17:00	General discussions/conclusions	Carina Ortiz/ Veronica Eklund/Jonas Allerup
	19:00 – 21:30	Dinner and an outdoor table for us from 8 pm	
Day 3	9:00 – 10.30	International Energy statistics Tracking progress in the energy sector through the use of energy indicators; a lesson learned perspective from Sweden Swedish targets and how it connects to the GHG inventory	Marie Karlberg  Malin och Jonas
	10:30 – 11:00	Coffee and tea	
	11:00 – 12:30	Institutional arrangements – Kenya present their system. Group discussions and presentations to the big group	Steve, Malin and Jonas

	12:30 – 13:30	Lunch	
	13:30 – 14:30	Stationary combustion-estimates/questions/improvements	Carina Ortiz
	14:30 – 15:30	Mobile combustion-estimates/questions/improvements	Veronica Eklund
	15:30 – 16:00	Coffee and tea	
	16:00 – 17:00	Lessons learned and evaluation. Conclusion.	Steven, Jonas and Malin
	19:00 – 21:30	Dinner	
Day 4	9:00 – 10:00	Wrap-up	Malin Kanth