Information Matters, Philippines:

Capacity Building for Enhanced Reporting and Facilitation of International Mutual Learning through Peer-to-Peer Exchange

Training-Workshop on Producing Sectoral and National Climate Change Mitigation Baselines

Marco Polo Hotel Ortigas, Pasig City, 03-05 February 2015

Climate Change Commission Philippines

On behalf of
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
of the Federal Republic of Germany

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EXECUTIVE SUMMARY

The GIZ on behalf of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) has initiated the "Information Matters: Capacity Building for Enhanced Reporting and Facilitation of International Mutual Learning through Peer-to-Peer Exchange" Project, which aims to provide technical support to the Philippines through the Climate Change Commission (CCC) in building and improving climate information basis in order to be more able to plan and implement national low carbon development policies. These information bases include data collection of emissions inventories, emissions trends, emissions reduction potentials, ongoing mitigation actions, climate policies, financial, technology and capacity building support needs and received support, international collaboration and international commitments, and established procedures and methodologies to monitor and collate these data. Ricardo-AEA, as a subcontractor of GIZ, provides the technical expertise for the capacity building missions to the CCC and sectoral lead agencies including backstopping support. The content of these CB workshops is decided in close consultation between GIZ and CCC.

Thus, training-workshop on Producing Sectoral and National Baselines, *the last of the series of capacity building activities under the project* was conducted on February 3-5, 2015, aiming to build the capacities of the participants on producing baselines, building on the previous capacity building on baselines. Specifically it aimed for the participants:

- To gain knowledge on the principles, types, and approaches to producing, baselines
- To have gained the skills to set and calculating sector-wide baselines and be capable of projecting BAU and other scenarios
- To identify the data needed to establish baselines
- To appreciate the importance of QA/QC and how sectoral baselines need to be harmonized to allow integration at a national level

The facilitator used a combination of plenary presentation for discussion and review of baselines concepts, key elements, and mechanisms and breakout sessions for application of acquired knowledge and skills. It lasted for three (3) days and at the end of the workshop, a post-training evaluation and post-training quiz were administered to assess if objectives were achieved and to gauge the level of knowledge the participants have gained, respectively.

Representatives from Waste, Industry, Energy, Transport, Agriculture, and Forestry sectors participated in the training-workshop, joined by officials and senior staff from the Climate Change Commission and GIZ. Technical expertise was provided by Ricardo -AEA, a British Company and subcontractor of GIZ for the Information Matters project, led by Dr. John Watterson and Ms. Judith Bates.

Below are key points raised during the plenary discussion.

<u>On assessing in case there is data overlap with other sectors</u>

First is to identify where the overlap lies, for instance in forecasting total gasoline utilization there is a need to agree within the sectors regarding boundaries between each sector. It is essential to ensure that there is coordination with relevant sectors regarding the data and agree on which sector handles such data.

On lead agencies to first identify all gaps and then work in a plenary to compare notes.

The Executive Order 174 institutes the delineation of the system, Department of Energy (DOE) is the lead agency and Department of Transport and Communication is under DOE as sub-sector to handle transport sector and in the recent consultation meeting it was agreed that the 2006 guidelines will be used. It is just a matter of delineation of data needs and tasks within the sectors. Similar to the case of Department of Agriculture and Philippine Statistical Authority, a Focus Group Discussion would facilitate an agreement on the data that will be used in the national inventory. Thus, all data gaps will be integrated for a meaningful inventory.

On QA/QC, what is the recommended duration if a country conducts baselines across sectors as well as a national inventory?

US for example conducts annual GHG inventory but that is not the case for all countries. However, for the national communication where submission takes 4 or 5 years, it would be better if the country can review it every 2 or 3 years, except if there are significant changes, like a sudden change in the economic or political conditions that is not applicable anymore from 3 or 4 years ago.

On financing of activities related to GHGI and baselines

At the moment, CCC only handles the capacity building activities but options are being explored for the current conduct of studies. Thus in the forward planning, needs or activities will be identified so CCC would know the requirements in terms of resource mobilization.

On decision tree for baseline calculations

Ricardo -AEA can assist the sectors but still it is the sector's decision tree. For the first and second presentations there is a decision guideline that can be used as reference.

On progress of NICCDIES

The framework for NICCDIES is already developed and CCC is now looking for IT specialists to do the present design. A meeting will be organized to comprehensively discuss the NICCDIES and even the development of the baselines which is common for all sectors.

In terms of data problem, the recent assessment of CCC revealed that almost all data are available from the sectors, for instance, agriculture sector has 90% available data, while waste sector has 80-90% available data and the remaining is proxy data. However, industry sector is yet to complete their data since majority of those will come from the industries.

On conducting FGD to address data gaps (suggestion to conduct it before August)

This is already put in the discussion within CCC, but the challenge is more on putting together the schedules of the sectors. For instance, DOE can handle the tier 1 approach but if DOE wants to move on a higher level, the involvement of DOTC is a key in the process.

While FGD will address the need, the sectors should still be reminded that it has to be consistent with 2006 IPCC guidelines, following the 2010 inventory year.

Prior to formally closing the activity, a forward planning was conducted to determine the needs and activities of the sectors.

Activities	
Focus Group Discussions	DA-CCO on addressing data gaps DTI, EMB and Industry Sector Between NSWMC and CCC to harmonize terminologies With DOTC (with attached agencies), DOE, Academe, LTO, LTRA, etc.
On NAMAs	NAMA for Forestry Studies on NAMA for waste sector
Surveys	Baseline emission projection based on recent data
Training on	Data Assessment (based on IPCC) Intensive IPCC Methodological Training NICCDIE software if available Basic Policy Analysis Technical Support to address data gaps MS Excel: Jr/Masterclass Producing baselines for waste sector of LGUs
Needs	
Tools	Software/Hardware For modelling
Data	Inventory Data for waste sector Development of country-specific emission factors
Funding Support	Waste Sector: funding for the conduct of EOP WACS for disposal sites e.g. open dump, CDF, SLF, (all 4 categories)
Human Resources	Be a permanent employee Manpower: Identify focal person/team per sector
Legal Document	MOU/MOA with data providers Special Oder for IPPU sector
Relationships	Strengthen collaboration with academe/private sector

BMUB International Climate Initiative (IKI)

Since 2008, the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) has been financing climate and biodiversity projects in developing and newly industrializing countries, as well as in countries in transition. Based on a decision taken by the German parliament (Bundestag), a sum of at least 120 million Euros is available for use by the initiative annually. For the first few years the IKI was financed through the auctioning of emission allowances, but it is now funded from BMUB budget. The Initiative places clear emphasis on climate change mitigation, adaptation to the impacts of climate change and the protection of biological diversity. These efforts provide various co-benefits, particularly the improvement of living conditions in partner countries.

The IKI focuses on four areas: mitigating greenhouse gas emissions, adapting to the impacts of climate change, conserving natural carbon sink with a focus on reducing emissions from deforestation and forest degradation (REDD+), as well as conserving biological diversity.

New projects are primarily selected through a two-stage procedure that takes place once a year. Priority is given to activities that support the creation of international climate protection architecture, transparency, and innovative and transferable solutions that have impacts beyond the individual project. The IKI cooperates closely with partner countries and supports consensus building for a comprehensive international climate agreement and the implementation of the Convention on Biological Diversity.

BMUB IKI Homepage
www.international-climate-initiative.com

Methodology and Approach

The facilitator used a combination of plenary presentation for discussion and review of baselines concepts, key elements, and mechanisms and breakout sessions including current computations for application of acquired knowledge and skills. The outputs from the break-out sessions were then presented back in the plenary so resource persons and other participants would be able to raise comments and/or clarifications.

The entire training-workshop lasted for three days and at the end of the training-workshop, post-training evaluation and post-training quiz were administered to test the training-workshops' efficiency, effectiveness, relevance to participating agencies as well as the level of the attainment of workshop objectives and to gauge how participants appreciated the shared knowledge and expertise, respectively.

Participants and Resource Persons

Representatives from the Waste, Industry, Energy, Transport, Agriculture, and Forestry sectors attended the training-workshops, joined by officials and senior staff from the Climate Change Commission and GIZ. Technical expertise was provided by Ricardo-AEA, a British Consultancy and subcontractor of GIZ for the Information Matters project, led by Dr. John Watterson and Ms. Judith Bates.

Preliminaries

Opening Prayer and National Anthem were rendered, followed by the opening remarks from Assistant Secretary Joyceline Goco of the Climate Change Commission and Dr. Bernd-Markus Liss, Principal Advisor of GIZ Climate Projects.

On behalf of the Climate Change Commission, ***Assistant Secretary Joyceline Goco*** welcomed the participants to the workshop. Asec. Goco emphasized that the capacity needs identified are country-driven as a result of the consultations with the stakeholders. These capacity needs are essential to enhance the country's international climate reporting especially the National Communication, BUR, and INDCs. Thus, tools are needed to determine the content of the report that is measurable, verifiable, and credible.

To that end, she encouraged the participants to work together not just in terms of international reporting but most importantly towards achieving sustainable development. She hoped that the inputs and learnings will be applied regularly which would then facilitate future institutionalization of tools.

Dr. Bernd-Markus Liss, Principal Advisor of GIZ Climate Projects thanked the participants for attending the workshop. He mentioned that with new developments, GIZ is glad to take the partnership towards having a solid outline for INDCs. Furthermore with the issuance of EO 174, the sectors are now geared towards computation and calculation of GHG inventory using the tools developed through the capacity building activities under the Information Matters project. To that end, Dr. Liss mentioned that the speech of President Aquino during the Climate Change Summit in New York gave emphasis on country's initiatives to contribute to addressing climate change, yet other countries are expected to do their part as well. He looked forward to observe a very interesting program and lively discussion.

After the opening remarks, quick introduction of participants and expectations check were conducted to set the tone of the capacity building workshop. In the context of workshop Dr. Watterson requested the participants to list down things that worried them and their expectation of the workshop, as it can be seen in the table below.

Table 1. Workshop Output: Participants' Expectations

Clusters	Worries/Concerns
Knowledge on concepts and tools	• To fully understand and learn the setting and computation of CC mitigation baselines • To understand the importance of producing/setting baselines in climate change reports • Harmonized concepts • Standard format in the submission to facilitate consolidation • Choosing the most appropriate baseline type • To learn the QA/QC procedure for the information data to other baselines
Skills on methods/tools for baseline computation	• How to compute for the Reference Emission Level • How to produce GHG baselines • Process of creating baselines for the Philippine environment scenarios • Learn to calculate accurate baselines

Clusters	Worries/Concerns
	• To know different techniques/methods in developing baselines • To know what is baselines all about, how it connects to country's mitigation efforts • Type of baseline procedures (methods to be used) • Excel Exercises • Acquire the methodology on baselines computation • Acquire tools to help execute the methodology • Know possible sources of data • Know how to process data • Learn how to collect and collate data on GHG emissions and mitigation measures needed • A simplified waste emission calculation • Not complicated method of computing baselines • Expect to learn more about baselines the easy way
Concerns on Data	• Concepts, data needs, data gaps and ways to address gaps • What are the data requirements in producing sectoral and national CCM baselines • To learn key information/tools needed for reliable reporting • Accuracy of data gathered • To know necessary data needed to establish baselines • To know data input for the baselines • To identify gaps and needs in making a baseline • To determine which data is relevant and how it is measured • Data requirements availability
Producing baselines using skills and knowledge acquired	• Baseline calculations for waste sector • Baseline standard for all sector • To establish baseline for waste sector • How to apply the concept and learnings to our agency (if applicable) • Establishing reliable, verifiable baselines for AFOLU sector • To learn how to create energy baseline • Best approaches for energy sector (pros and cons) • To understand more and learn the GHG baseline • How to identify baselines candidates
Others	• Be able to see clearly the presentation from where I am seated • To learn how to climate proof our 10 year SWM Plan

After the expectations check, it was followed by an overview of the project and updates on project implementation in the Philippines.

Information Matters: Transparency through Reporting – A Global Overview of the Project

Ms. Kirsten Orschulok, *GIZ IM Project*

Ms. Kirsten Orschulok, GIZ IM Project Coordinator presented an overview of the project and updates from the three participating countries. Under the support of German Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), the project aims to strengthen the participating countries' capacities for enhanced reporting of the climate relevant information to UNFCCC. It is a complementation project with UNDP-LECB, NCSP, UNEP in partner countries, WRI, and International Partnership on Mitigation and MRV, being implemented in the Philippines, Dominican Republic, Chile, and Ghana. The technical expertise required by the project is being provided by Ricardo-AEA, a British Consulting Firm. Figure on the right shows the project structure and partners involved in the project.

The gap analysis in September was validated during the kick-off workshop on October 2013, focusing on three key elements, institutional, technical and capacity on GHG MRV, Mitigation Actions and Climate Finance dimensions, overarched by five (5) key concerns specifically on coordination, policy framework, institutional mandate, common processes and procedures, and data access and archiving. From the gap analysis, specific needs and priorities on MRV systems and GHG monitoring were identified and through tailored capacity-building trainings and workshops, countries will be able to improve and refine procedures, methodologies and responsibilities to institutionalize their reporting system, with the special focus on the requirements for national-level mitigation-related reporting to the UNFCCC. The series of capacity building activities is the key building block towards the peer-to-peer exchange workshop in Bonn on September 2015.

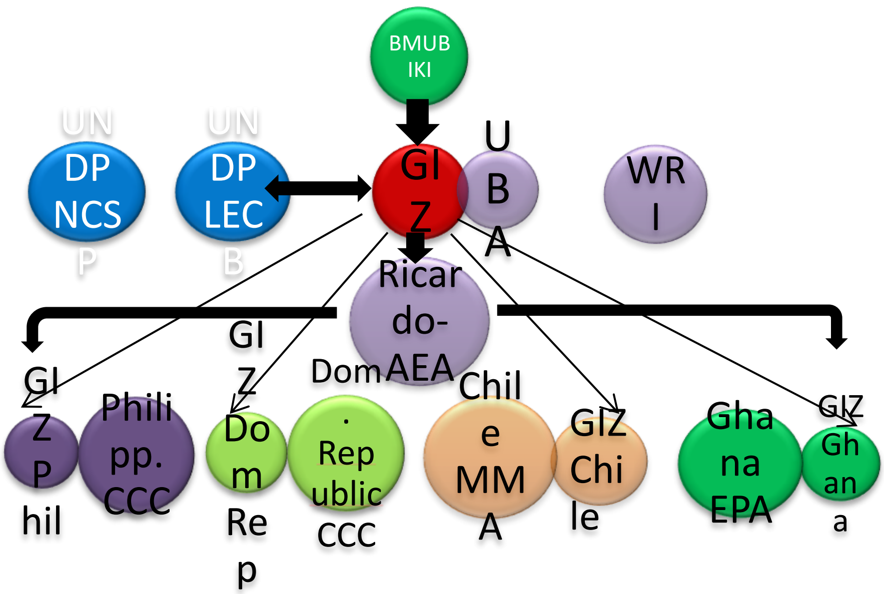


Figure 1. Information Matters Project steering structure

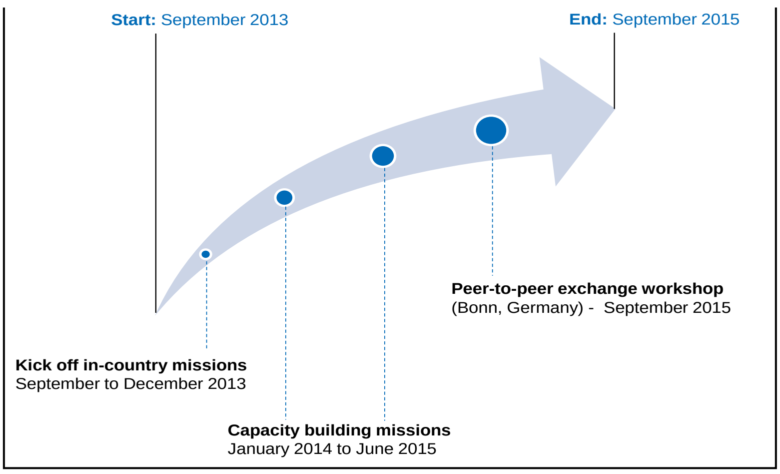
The graph shows the overall project timeline, while below are updates on the project in the three other participating countries.

One of the project aims is the support to the countries to develop their first Biennieal Update Report (BUR). This project goal was achieved by one (1) of the four porject cpuntries: Chile. Other countries, who submitted their first BUR in December 2014, were e.g. Vietnam, Singapore, Andorra, Tunesia and Namibia. Based on the project experience, The team developed a toll to support countries on the global level to submit their first BUR: The BUR Template, which is online available. This template was discussed in several workshops and inlcudes also the feedback from international experts. The Template has a two-setps approach including guiding questions for basic information and bast practices.Chile: Chile submitted their first national BUR to the UNFCCC at the COP 20 in Lima. The project supported the process with an internal feedback round to improve the quality of the report and the GHG inventory. The comments were discussed in a workshop, the included into the report. The actual challenges are the inclusion of the different NAMA MRV system into one national system and to set-up a sustainable system for monitoring international and domestic support for climate activities.

Dominican Republic: The Dominican Republic started process to compile their GHG Inventory and their national report to the UNFCCC. The country still discusses internally what can be the best solution to set-up a sustainable reporting system with the existing technical knowledge in the institutions. The project is planning to organize an additional workshop on the IPCC Software for the technical experts to improve the handling and the quality of the GHG inventory.

Ghana. In the Ghana, the workshops focused on the Quality Control and Quality Assurance to improve the quality of national GHG Inventory and to set-up a system, which includes feedback regularly. This will support the national preparation of the first and the following Biennial Update Report. Ghana will submit their report to the UNFCCC in June.

Figure 2. GIZ Information Matters Project Timeline



Updates on the Information Matters Project in the Philippines

Ms. Sandee Recabar, *Climate Change Commission*

Ms. Recabar gave a brief overview on the scope and boundaries and criteria of the project. She also presented key highlights of the conducted activities under the IM project in the country.

Table 2. IM Scope and Boundaries and Criteria

Scope and Boundaries	Criteria
Strengthen in-country capacities through tailored capacity-building trainings and workshops, countries improve and refine procedures, methodologies and responsibilities to institutionalize their reporting system with the special focus on the requirements for national-level mitigation-related reporting to the UNFCCC. The work is designed to identify gaps related to the collection, processing, analysis and interpretation, tracking, and reporting of climate relevant information. IM looks at what capacity building is needed to fill the gaps, e.g. MRV, baselines setting, GHGI-QA/QC, etc. The concept of mitigation as a function of adaptation is important for the Philippines policy makers. The IM project does not consider adaptation, but for the work done in the country, does consider mitigation as a function of adaptation and in pursuit of national sustainable development goals. More than mere compliance to UNFCCC agreements, the Philippines may also utilize the updated baseline information from national climate reports as rational basis in developing, coordinating and prioritizing climate-responsive policies, plans and programs, i.e. informed decision-making.	The capacity building must be relevant to international reporting of climate change information (i.e. NC, BUR). It must complement or strengthen on-going projects where relevant and can cover any of the sectors or elements relevant to mitigation monitoring reporting, and verification. The capacity building needs to ensure an enduring outcome, with the aim of institutionalising processes and procedures. It can also be relevant to understanding how mitigation is a result of adaptation and/or development actions (co-benefits).

Various activities were already conducted to support the project from validation of gap analysis on September 2013, stakeholder's consultation on concept note and capacity building workshops on MRV architecture and baselines.

Table 3. Activities supported by Information Matters Project

Activities	Key Highlights
Validation of Gaps Analysis	• GHG inventory is yet to be institutionalized although capacity building of sectoral leads is ongoing. • The need for GHG inventory tools since activity data depends on this. No MRV systems in place, hence data collection needs by all sectors have to be identified. • No training on QA/QC. There is a need to identify QA/QC needs by all sectors. • Tools on MRV and tools for analysis of mitigation actions • Application of MRV and mitigation action analysis tools • Capacity to develop country-specific emission factors for the GHG inventory: how to calculate within 1-2 years • Baseline (GHG emissions): capacity to extract, gather: tools and criteria to establish the baseline within 1 year • National government tagging system for climate finance is in the pipeline; No institution yet for climate support. • The CCC and DBM has passed in December 2013 a Joint Memorandum Circular that provides guidelines in the tagging/tracking government expenditures for climate change in the budget process.
Stakeholders Consultation on Concept Note Development	• Discussed the Concept Note and agreed on priority topics to be covered under the BMUB-supported IM Project, including modes of delivery and time frame • Developed a roadmap of activities that will be supported by the project
Capacity Building on MRV Architecture	• Participants were introduced to the following skills and knowledge • Basic concepts on Measurement, Reporting, and Verification (MRV) System

	• MRV of GHG inventories • MRV of mitigation actions / NAMAs • MRV of support • Institutional structures for MRV
Capacity Building on Baselines	• Participants were introduced to the following skills and knowledge • Basic Concepts of Baselines • Application of Baselines • Connections of Baselines and Projections • Developing Indicators • Data Management: Steps, Principles, and Challenges • Dealing with Uncertainties • Methods in Addressing Data Gaps • Institutionalization of Baselines and MRV of Baselines
Capacity Building on Climate Relevant Data Management	• Participants were introduced to the following skills and knowledge • National Integrated Climate Change Database Information Exchange System • Uses of Climate-relevant Data in the Philippines • Collection and Management of Data • Access to data • Data Storage and Management • Quality Assurance/Quality Control

Plenary Presentation: Key Topics and Concepts on Producing Sectoral and National Climate Change Mitigation Baselines

Overview of Baselines: Part I

Dr. John Watterson, *Ricardo-AEA*

An overview on the concepts of baselines was presented to level off with the succeeding discussions on producing baselines.

Baselines can be used for domestic purposes and with climate change; the concern now is focused on taking actions to reduce emissions. There are two processes of quantifying emissions; annual and cumulative. Annual emissions are quantity of emissions that occur during one year, while cumulative emissions are quantity of emissions that occur over a longer period of time, typically the sum of annual emissions over a multi-year period. Calculating both annual emissions and cumulative emissions are useful for different purposes, especially on:

Stabilization of atmospheric concentrations of greenhouse gases are determined by the total amount of GHG emitted year after year.

Generating a snapshot of emissions levels in a given year, but this may not provide an accurate portrayal of emissions pathways because it could be an unusual year in terms of emissions growth or decline. Rather, it is helpful to understand cumulative emissions levels and cumulative emissions reductions over the goal period.

Baselines looks at concept of base year since mitigation efforts or goals are normally referenced to some kind of "base". A base year is a specific year against which some goal types are tracked over time and the first year of the goal period. Thus, base year emissions level is the GHG emissions level calculated in the base year.

A base period on the other hand is an average of multiple years against which a jurisdiction's emissions are tracked over time. However a base period can be chosen instead of a base year when there are significant fluctuations in emissions levels over time, which is referred to as base period emissions level or the average amount of emissions over the base period. These goals are most often framed in terms of a percent reduction below base year emissions to be achieved by the target year or target period. Thus, base year differs from baseline scenario and baseline emission, where the former is a set of assumptions and data describing the most likely events or conditions that would have occurred in the absence of the policy intervention, based on available information, while the latter is an estimate of GHG emissions and removals associated with the baseline scenario or sometimes used to describe the same concept as a baseline, such as counterfactual, reference case, reference scenario, or business-as-usual scenario.

In selecting a base year, it is important to always document the reasons for selection such as those identified in the table below

Table 4. Considerations for selecting a Base Year

Source: Watterson, J., Bates, J. (2015). *Baselines Overview Part 1*. [Powerpoint slides]

Problems is selecting a Base Year	Possible Solutions
Emissions data for some years of poor quality of missing	Choose a base year where you have accurate and complete data – both emissions data quality and availability This might mean years closer to the current date, rather than further back in time
High level of variability in emissions over some or all of the time series	Try to choose a base year that is representative of "average" emissions in order to avoid selecting a year with uncharacteristically high or low emissions (high might help with a reduction target) Perhaps use an average base period instead
Choosing a base year that aligns with existing mitigation goals, such as the Kyoto Protocol or Copenhagen Accord pledges	Although aligning the base year for mitigation pledges might promote consistency with international obligations, there may be problems with data accuracy for "early" years So choosing years closer to the current date might be better for policy implementation and tracking purposes

On one hand, in choosing the goal it would be helpful to reflect back on things that a country or an agency wants to achieve, whether it is GHG mitigation which can be called either a policy, mitigation action or a NAMA. There are different types of goals[1]:

- Single year and multi-year goals
- Some goals are designed to achieve emissions reductions by the final year of the goal period – i.e. the target year: single year goals.
- Other goals are designed to achieve emissions reductions (or reductions in intensity), or limit emissions (or emissions intensity), over several years: multi-year goals

[1] Watterson, J., Bates, J. (2015). *Baselines Overview Part 1*. [Powerpoint slides]

- Multi-year goals have a "target period" rather than a target year, during which emissions levels (or intensity) or emissions reductions (or reductions in intensity) are constrained

Goal period

The goal period is typically the period of time between the base year and target year/period.

Some goals are not based on a base year, and so the goal period differs by goal type

Emissions reductions

Emissions reductions are the difference in emissions measured between two different points in time (e.g., between base year emissions and target year emissions) or within the same point in time but between a baseline scenario and current emissions levels

For example, emissions reductions associated with a base year goal are measured as the difference between emissions levels in the target year and emissions levels in the base year

In the case of baseline scenario goals, emissions reductions associated with the goal are the difference between the baseline scenario emissions level in the target year and the target year emissions level

In choosing the type of goal and goal period table 5 shows key elements that can be taken into consideration, but at the same time it is reminded that baseline scenario goals pose a significant risk of low environmental integrity since baseline scenarios can be very uncertain and are often inaccurate projections of future emissions levels. If baseline scenario emissions are overestimated, the ambition associated with the baseline scenario goal will likely be compromised. Table 6 also shows some examples of systems that use the different goal types.

Table 5. Selecting base scenario goal types

Source: Watterson, J., Bates, J. (2015). *Baselines Overview Part 1*. [Powerpoint slides]

Aim	Type of goal to choose
Achieve absolute reduction in GHGs (e.g. Kyoto Protocol commitment)	Base year and fixed level goals. Environmentally "robust" – even if for example there is great economic growth, the goal still needs to be achieved
Accommodate growth in economy or populations	Choose intensity goal rather than a baseline scenario goal Less uncertainty associated with intensity goals, as they require assumptions about only one variable in addition to emissions (as opposed to projections that require assumptions about several variables as inputs to models)

Goal period	Advantages	Disadvantages

Short	Mobilize investment and planning for emission reductions more quickly Encourage quicker phase-out of inefficient practices and technologies	Once goal is met, if another goal is not set quickly, momentum to continue with GHG mitigation efforts may be lost
Long	Facilitate long-term planning Provide more certainty and flexibility for decision makers and stakeholders to make investment choices during the goal period Moderate the risk of unpredictable events that may temporarily increase emissions (e.g. natural disasters, large fluctuations in energy prices)	Lack of urgency to initialise emission mitigation reductions – "leave it until later" – procrastination! "Emission reduction fatigue" can set in. People and organizations become bored with the same message, or impatient when reductions are slow to materialise

Table 6. Examples of systems that use the different goal types

Source: Watterson, J., Bates, J. (2015). *Baselines Overview Part 1*. [Powerpoint slides]

Example	Approach (most like)	Notes
UNFCCC Kyoto Protocol	Cumulative multi-year goals inform average multi-year goals of nations	Complex modalities Trading mechanisms used (ETS, JI, CDM) Emphasis on global total, long-time-scales and cumulative atmospheric ppm
European Union Effort Sharing Decision	Single year goal to set target year emissions Annual multi-year goal to set trajectory	Complex modalities Trading mechanisms, and emission banking allowed
UK National Carbon budgets	Cumulative multi-year goal Corresponds to Kyoto targets and average multi-year goal in climate change act (80% 2050)	Average reduction to be achieved over 5-year periods Trading mechanisms, and emission banking allowed

UK Wales	Annual multi-year goal (3%/year) to Average multi-year goal (40% 2020) sets trajectory	Traded sector not included in target (except electricity) so no trading mechanisms

The succeeding discussions deal with baseline scenario and baseline emission scenario, which are both different concepts. Baseline is relevant to[2]:

Setting a mitigation goal. A baseline scenario can be used as a reference point against which the ambition of a mitigation goal (i.e. goal level) is set.

Assessing progress toward a mitigation goal. For baseline scenario goals, a baseline scenario is necessary to assess progress toward the goal's achievement by serving as a reference case against which progress is measured.

Reporting. Emissions projections are required by some reporting regimes. For example, under the UNFCCC, Annex I Parties are required to outline emissions projections for a number of different scenarios, including with and without policies and measures.

Mitigation assessment. Means of determining, selecting, and analyzing mitigation options and strategies and a critical element of carrying out a mitigation assessment is the development of a baseline scenario.

[2] Watterson, J., Bates, J. (2015). *Baselines Overview Part 1*. [Powerpoint slides]

Baseline Scenario

A baseline scenario is a reference case that represents the events or conditions most likely to occur in the absence of activities taken to meet the mitigation goal. It requires the user to make baseline scenario assumptions (e.g., related to emissions drivers such as economic activity, energy prices, population growth, and policies and measures) and involves a large number of inputs, including historical activity and emissions data, key drivers, and methodological choices about assumptions for key drivers and included policies and actions. However, how these inputs are defined depend on the objectives, resources, and circumstances and can have a significant effect on resulting baseline scenario emissions

Baseline Emission Scenario

A baseline emission scenario level is an estimate of the net GHG emissions level resulting from GHG emissions and removals within the goal boundary. The development of a baseline scenario is necessary for baseline scenario goals. Baseline scenario goals are most often framed as a percent (%) reduction below baseline scenario emissions in a target year or target period

Baseline scenarios may be static or dynamic and each has their advantages and disadvantages[3]:

[3] Ibid.

Static baseline scenario is developed and fixed at the start of the goal period and not updated over time. A fixed reference case against which a goal is set and progress is tracked, but which may deviate from a "business-as-usual" scenario.

Dynamic baseline scenario is developed at the start of the goal period and updated during the goal period based on changes in emissions drivers (e.g. GDP or energy prices). Intended to represent the latest or the current "business-as-usual" scenario, but does not represent a fixed reference case against which a goal is set and progress is tracked.

For example, a user develops a baseline scenario based on an assumption that GDP will grow at an average annual rate of 5% between 2015 and 2025, but in 2020 the GDP grew at an average annual rate of 2% between 2015 and 2020 and projected to grow at an average annual rate of 1% between 2020 to 2025. Therefore, a user with a dynamic baseline scenario should update the baseline scenario based on the revised GDP growth rates, both for the period 2015-2020 and for the period 2020-2025, while a user with a static baseline scenario should not make a similar update to their baseline.

This action may lead to recalculating base year of baseline scenario emissions due to changes in goal boundary including sectors, gases, and geographic area. These changes in calculation methodologies include updated inventory calculation method, improvements in the accuracy of emission factors or activity data, changes in GWP values, and discovery of significant error(s) in original calculations.

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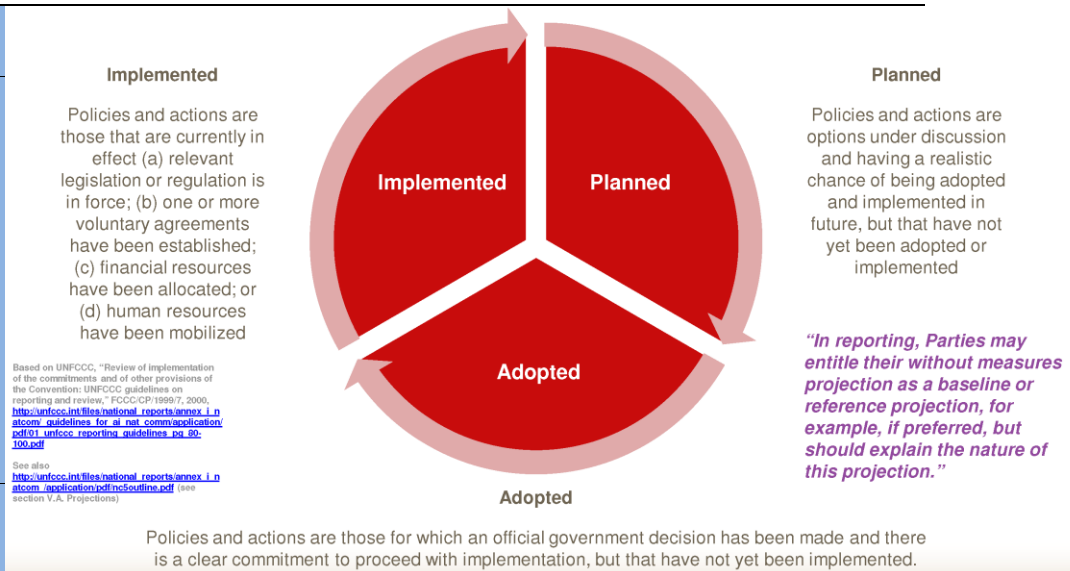
Figure 3. Implication of Policies

Source. Watterson, J., Bates, J. (2015). *Baselines Overview Part 1*. [Powerpoint slides]



Type of baseline		
Static baseline scenario		
Dynamic baseline scenario	updated to account for changes in emissions drivers, and users can therefore better identify changes in emissions resulting from mitigation policies and actions	ex-ante at the start of the goal period since the emissions level may change during the goal period due to updates to the baseline scenario It does not offer users and policymakers the certainty of an unchanging target, and it does not guarantee that a certain emissions level will be met in the target year

There is a quite range of variability in practice for baseline which includes policies and actions on baseline scenario as Figure 3 shows.

Consequently, users with baseline scenario goals can develop a range of plausible baseline scenarios, instead of a single scenario because baseline scenarios are generally very sensitive to key drivers, assessing the baseline scenario against a number of other plausible emissions pathways will help to ensure that the scenario is "robust". A range can reflect the upper and lower bounds of plausible emissions pathways associated with a range of values for key emissions drivers like GDP, energy prices, population, and technological change. Furthermore, each baseline scenario in the range can reflect a different storyline about future events (e.g., high GDP growth scenario, low GDP scenario, etc.), while a user should be reminded of spatial considerations

In summary, in dealing with baselines there is a need to:

- Understand the definitions such as counterfactual, BAU, baseline, base year, etc.
- Familiarize with methodologies and approaches. The first step is to map the "causal chain" - what changes will the policy lead to and define the GHG assessment.
- Think through the specific approaches to baseline setting. Broadly there is an estimation (or calculation) and modeling and there is no hard and fast rule on which one would be the best because it will depend on various factors such as availability of data etc.

  Think about the impacts from other policies so an assessment of what other intervention are leading to reinforcing or counteracting trends.
- Think of the best institutional framework needed to set good baselines.

Overview of Baselines: Part II

Ms. Judith Bates, *Ricardo-AEA*

In mapping the causal chain, there can be impacts of such mitigation policy. For instance in the transport sector, the light duty fuel efficiency standard would have until 3rd tier impacts.

In terms of GHG assessment, it is classified either ex-ante or ex-post. In which ex-ante is forward looking that estimate expected future of GHG effects of a policy action before it is implemented, while ex-post is backward-looking that estimate historical GHG effects of a policy or action after its implementation. In general, effective GHG management involves both ex-ante and ex-post assessment.

For example, in calculating ex-ante for a single year base year goal, the target year emission levels and expected emissions reductions associated with meeting a mitigation goal before implementation (**Fehler! Verweisquelle konnte nicht gefunden werden.**).

While in assessing progress during the goal period for a single year base year period would look like **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Figure 4. Mapping Causal Chain for Transport Sector

Source. Watterson, J., Bates, J. (2015). *Baselines Overview Part 2* [PowerPoint slides]

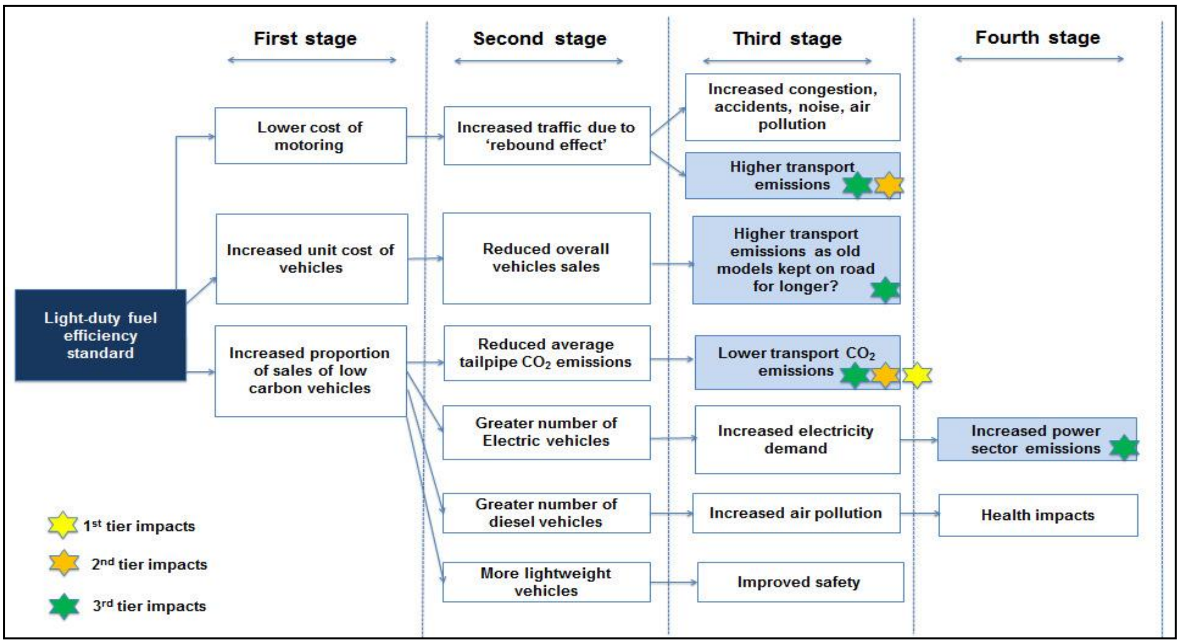


Figure 5. Ex Ante Computation for a Single Year Base Year

Source. Watterson, J., Bates, J. (2015). *Baselines Overview Part 2* [PowerPoint slides]

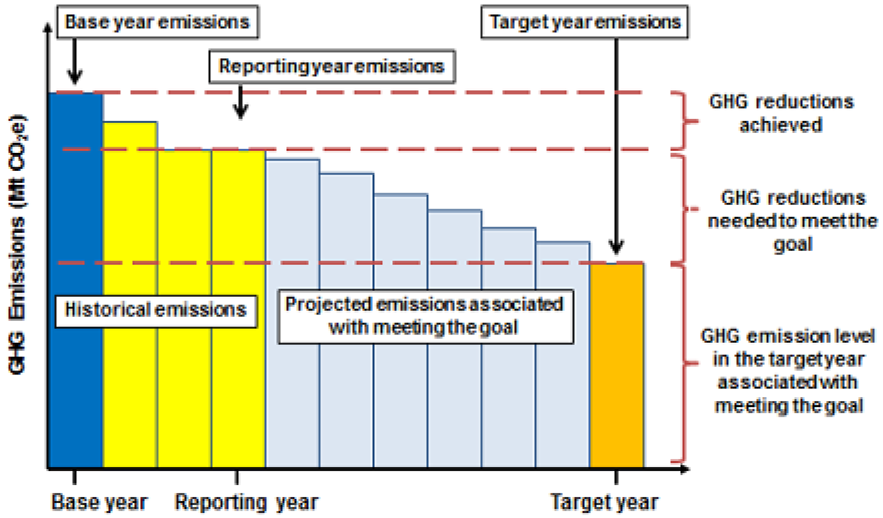


Figure 6. Assessing Progress during Goal Period for a Single Year Base Year

Source: Watterson, J., Bates, J. (2015). *Baselines Overview Part 2* [PowerPoint slides]

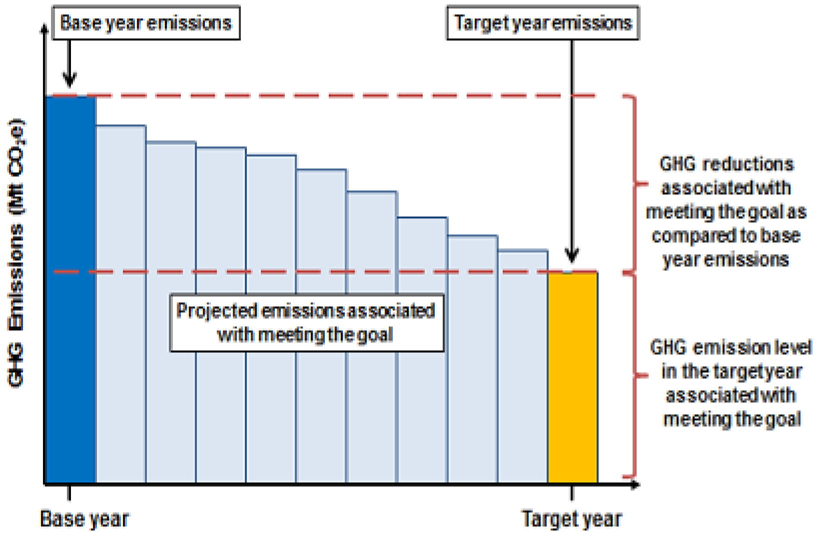


Figure 7. Ex-post Assessment for a Single Year Base Year

Source. Watter

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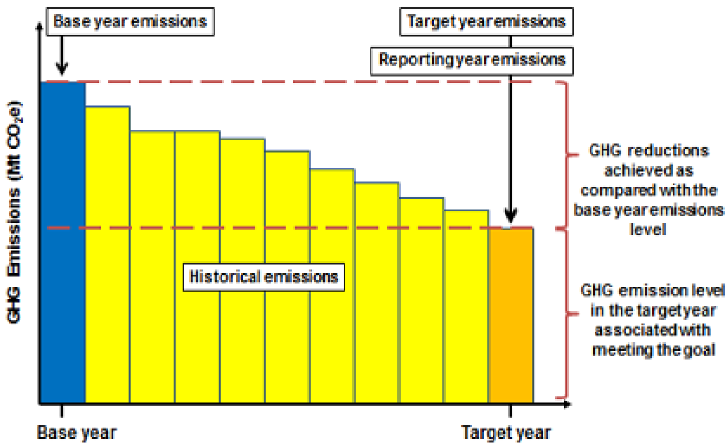
erview Part 2 [Powerpoint slides]



an	
ainst (2008)	Desired trend
d to	Upwards
d to	Upwards

Lastly, in assessing progress after the goal period, whether the goal was achieved and calculating the associated emission reductions and emission level reached after the implementation would look like Figure 7.

Below are some examples of baselines.

- The UK carbon budgets in the UK Climate Change Act outlines the following:
- 2050 emissions target;
- Requiring the government to set 5 year carbon budgets, with first 3 carbon budgets being set by June 2009, and later carbon budgets being set 11 ½ years before they start;
- Requiring the government to meet these carbon budgets;
- Setting-up of Committee on Climate Change (the CCC);
- Requiring government to report annually to Parliament on emissions levels; and
- Requiring CCC to report annually to Parliament on progress in meeting carbon budgets.
- Role of Climate Change Committee on advising on level of carbon budgets and monitoring progress Role of the Government to set and meet carbon budgets

Thus, the law provided an opportunity to government's interaction with the Climate Change Committee resulting to the milestones in Figure 8.

<u>Plenary Discussion</u>

<u>On determining a baseline period.</u>

In an international setting, annual baseline is more common but it can be three to five years. it should benoted that there is no hard and fast rule. Looking at the projections, the country could take 20-25 years, being 10 years the minimum to show ambitions and commitment..

Also, it would be better to have a harmonized approach, hence looking the appropriate approach for each sector.

On implication in case of various baseline periods.

It depends on how the country sets the mitigation baselines and decision on choosing the year.

Hence it is best to clarify as early as possible with the sectors regarding decisions that they want to take in order to have a total effect.

On ex-ante and ex-post measuring the overlaps or addressing the various baseline periods

Ex-ante and ex-post are the evaluation of impacts before and after they happened, then making adjustments based on what actually happened. One case is that, while some sectors do not have the recent data, the intervening year can be the 2005 actual data from the 2000 inventory, but taking note that there should be clarity on what the sectors intend to do in terms of projections.

On doing ex-ante and ex-post calculations

Calculate the baseline scenario taking into account the assumptions, then while working back recalculate for a new baseline scenario

On baselines in the context of REDD+ and Reference Emission Level

The principle is the same as establishing the projections at the same time taking into consideration policies on REDD+.

Producing Baselines

Dr. John Watterson, *RICARDO-AEA*

According to IPCC, emission scenarios are alternative images of how the future might unfold and are an appropriate tool to analyze how driving forces may influence future emission outcomes and to assess the associate uncertainties.

Emission scenarios are equivalent to projections and are not part of BUR, rather an element of Low Emission Development Strategies. LEDs are relevant to a) economy-wide, long-term mitigation goals ranging from 15 to 30 years, b) assessment of cost-efficient mitigation options and their prioritisation, and c) stipulation of concrete short- and mid-term mitigation actions.

The UNFCCC has specific guidelines on projections:

- Without measures" - excludes all policies and measures implemented, adopted or planned after the base year.
- "With (existing) measures" - encompasses currently implemented and adopted policies and measure
- "With additional measures" - also encompasses planned policies and measures but includes an estimate of the impact of additional mitigation measures

In a baseline scenario, it is against which mitigation options are measured and usually the "with existing measures" scenario. In a report by Danish Energy Agency, OECD and UNEP Riso Centre, baseline scenario is defined as "a scenario that describes future greenhouse-gas emissions levels in the absence of future, additional mitigation efforts and policies". Yet, there is no international guidance on how to develop baseline emission scenarios.

On one hand in creating the baselines, there should be an external model which provides future activity data for the sector, allowing the use the activity data x emissions factor approach for GHG inventory to do projections. Hence, the energy sector might have an energy model that forecasts future energy consumption by fuel and by sector. Typically this will only be the case of the more major sectors, otherwise (and for smaller sectors) there is a need to think about an appropriate driver to forecast the future activity data or application of an appropriate driver to forecast future GHGs at the very high level or at a more detailed sectoral or sub-sectoral level. **Fehler! Verweisquelle konnte nicht gefunden werden.** details baselines from activity data in its simplest form.

Figure 9. Baseline Scenario in Simple Form

Source. Watterson, J., Bates, J. (2015). *Producing Baselines* [PowerPoint slides]

In its simplest form, a baseline scenario is an emissions inventory for future years that uses projected instead of historical values for activity data and emissions factors. General algorithms for baseline scenarios include:

$$\textbf{Baseline Scenario Emissions} = \text{Projected activity data} \times \text{Projected emission factor}$$

$$\textbf{Baseline Scenario Emissions} =$$

$$\text{Projected energy consumption} \times \text{Projected energy efficiency} \times \text{Projected GHG intensity of energy generation} + \text{Projected non energy emissions} - \text{Projected GHG removals}$$

Baseline scenario emissions from the energy sector can also be expressed as a Kaya identity:

$$\textbf{Baseline scenario emissions from the energy sector} =$$

$$(\text{Projected population})\ X \left(\frac{\text{Projected GDP}}{\text{Projected population}}\right) \times \left(\frac{\text{Projected gross energy consumption}}{\text{Projected GDP}}\right) \times \left(\frac{\text{Projected emissions}}{\text{Projected gross energy consumption}}\right)$$

These algorithms are not sufficient on their own to develop baseline scenarios, but are shown to illustrate the underlying logic of how emissions projections may be created.

Various models for baselines emission scenario-projections are also presented and shown in the following figures.

Figure 10. Baseline Emission Scenario Projection using intensity based metrics.

Source. Watterson, J., Bates, J. (2015). *Producing Baselines* [Powerpoint slides]

$$\textbf{Base year emissions intensity} = \frac{\text{Base year emissions (Mt CO2e)}}{\text{Unit of output (e.g., GDP)}}$$

Modelling in sector as basis for baselines has its own advantages and disadvantages:

Advantages:

- Detailed modelling compiled by sector experts
- Incorporate price effects e.g. impacts of price on demand
- Allow scenario analysis with such models can provide a range of future outcomes

Disadvantages

- 'Black – box' – not transparent
- Underlying assumptions not always clear
- May not provide enough resolution by source sector
- Base year may not be the same as projection

May not cover all sources in sector.For instance, top-down and bottom-up models with corresponding characteristics, strengths, and weaknesses

Table 8. Top-down and Bottom-up Projection Model

Source. Watterson, J., Bates, J. (2015). *Producing Baselines* [Powerpoint slides]

	Top-Down	**Bottom-Up**
Characteristics	• System Integration • Focus on macroeconomics, based on historical trends • Focus on monetary units • Can be very simple, e.g. Excel model of projected GDP and project carbon intensity of GDP, or forecasts of activity data and emissions factors (i.e. 'projected' inventory data) or very complicated, e.g. Dynamic general equilibrium models	• Technological detail • Macroeconomic variables exogenous to model • Focus on material units • Varies from partial equilibrium to simulation to emission reduction option database approach (GENESIS)
Strengths	• Can take account of 'economic interlinkages' (top-down optimisation models, or CGE models) • Good for long-term analysis, as more stable due to econometric relationships • Behaviour outside of energy sector endogenous to model (determined by model) • Useful for financial instruments	• Rich in technology detail - easier to understand the reasons behind GHG trends • Decoupling economic growth from energy demand • Useful for technology oriented policy analysis, and other non-financial instruments
Weaknesses	• Limited technology detail • But less informative in terms of the specific reasons for GHG trends • Some top-down models can be somewhat 'black-box' (difficulty to validate)	• Data intensity – can be hard to obtain data • Lack of stability over longer timeframes

Lastly, Dr. Watterson provided key take off points from the presentation

- Choose the simplest approach you can to setting a baseline
- It is **imperative** to document which policies / measures / actions are included in the baseline
- If you create a WAM projection, again, document which policies / measures / actions are included in the projection
- Harmonise assumptions across sectoral projections – e.g. population, land areas, animal numbers, economic growth – otherwise people tend to use the "nearest set of data to hand" and data they are familiar with
- Document the technical approach used to creating projections – perhaps in a similar way the GHG manual that the Philippines already has – could you create a "projections manual"
- Make sure the sectoral teams are all using the same definitions.

<u>Buzz Session</u>

A 5-minute buzz session was conducted to discuss the advantages and disadvantages of the various approaches presented. Three (3) sectors were requested to briefly present their discussions.

Table 9. Feedback from the Sectors

Sectors	Advantages	Disadvantages
Transport	Use of Local data generated at local setting	But if there are gaps to come up with to compare estimation, international data and scenario can be considered on the condition that such context is the same as the Philippines.
Energy		There are models that are data intensive and requires hard work and after running there are still missing data, not knowing if the output is correct until the results are generated.
Waste	We would want to have inventory of all models, and determine baselines using available methods	Flexibility of data input, wherein the model fits the Philippine settings Black-box: data are inputted but what is happening in between is unknown. Source code in using available methods of programs, there are some instances that during data processing, the company holding the program will not provide the source code and when the contract ended, problems generating the data arise.

Using of Sector Modeling to Produce Baselines

Ms. Judith Bates, *Rcardo-AEA*

In producing baseline it is essential to evaluate if the sector model is appropriate and up-to-date based on the recent data, covers the resources and validated time period. Otherwise it could be developed further to meet the needs of the sector. There are key steps in implementing this:

Extract activity data from the model, at the level of detail a sector requires

Collect emissions factor data that is available from inventory and consider whether might change over time period considered

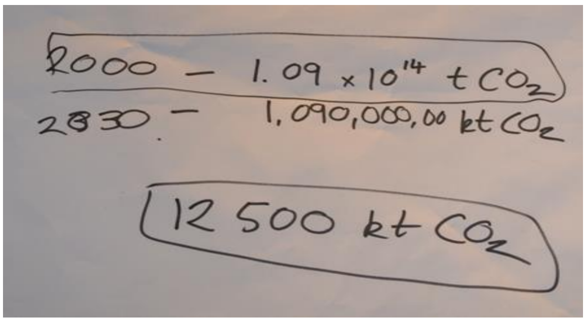
Combine activity data and emissions factor to produce estimate of emissions

In some models (e.g. LEAP) emissions factors can be included in the model to directly produce an estimate

<u>Breakout Session</u>

Prior to the exercise, Ms. Bates presented an example on using existing data (**Breakout_A\<1A_projections_example_150129.xlsx.).** The participants were then grouped together according to their respective sectors and asked to complete the calculation exercise to produce a baseline for the residential sector using a spreadsheet with data on energy use in the residential sector. The data is based on the PEP, with energy consumption that included electricity and need to convert back in relation to emission. Formula to convert carbon to CO2 was given to guide the groups*: CO2 = carbon x (44/12) or 3.6666*. The participants emphasized 2 key points as their feedback; a) difficulty in the conversion because it is not their sector and b) too many conversion units and conversion. Figure below shows the result of the calculation by most of the sectors.

Figure 11. Result of the Calculation



After the computation, the participants were individually asked on key topics/inputs that are useful for the next 2 days

- Guidance on baseline (what to include in terms of polices: adopted, planned, implemented)
- Review of basic math and conversion units (master conversion units)
- Listen for further instructions: step by step procedure of the exercise
- Repeat exercise to fully appreciate the process
- More baseline examples (simple one): more sample calculations
- Is there a need to quantify indirect emissions (i.e. scopes 2 and 3)

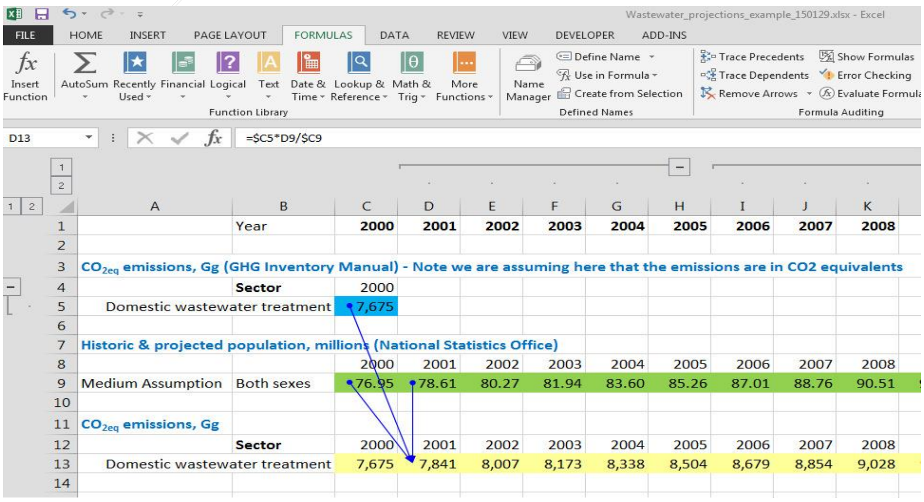
Creating a Baseline from Activity Data using a Simple Approach

Dr. John Watterson, *Ricardo-AEA*

The session reviewed the methods that can be used to create projections, but focused on simple approach and an example was presented detailing waste sector, specifically waste water treatment using data from CO2 emissions from the GHG Inventory. Note that the assumption is that the emissions are in CO2 equivalents and historic and projected population are in millions based on data from the National Statistics Office.

Figure 12. Waste Water Treatment Projection

Source. Watterson, J., Bates, J. (2015). *Creating a baseline from Activity Data Using Simple Approach* [PowerPoint slides] Excel File: <Wastewater_projections_example_150129.xlsx>



	A	B	C	D	E	F	G	H	I	J	K
1		Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
2											
3	CO_{2eq} emissions, Gg (GHG Inventory Manual) - Note we are assuming here that the emissions are in CO2 equivalents										
4		Sector	2000								
5	Domestic wastewater treatment		7,675								
6											
7	Historic & projected population, millions (National Statistics Office)										
8			2000	2001	2002	2003	2004	2005	2006	2007	2008
9	Medium Assumption	Both sexes	76.95	78.61	80.27	81.94	83.60	85.26	87.01	88.76	90.51
10											
11	CO_{2eq} emissions, Gg										
12		Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008
13	Domestic wastewater treatment		7,675	7,841	8,007	8,173	8,338	8,504	8,679	8,854	9,028
14											

The approach used covers the following steps:

- Locate GHG emissions data for the waste water treatment sector.
- Think about what AD is well correlated with emissions from waste water – for instance, Population is a good due to volume of waste water generated depends on how many people there are
- Locate projections population
- Use these population data as a “driver”
- Then use the ratio of the population increase, for a future year, relative to the year 2000, to estimate future from waste water treatment e.g. =$C5*D9/$C9

In summary, there is a need to do the following.

- Decide at what level it is planned to project emissions – sectoral or sub-sectoral
- May consider the following:
    - Sources of emissions in the sector – are they all influenced by the same factors or do they have different drivers?
    - Significance of sectors and subsectors
    - What is the most appropriate driver – what is most likely to correlate with the activity data in the sector e.g population, GDP GDP/capita
    - More detailed sub-sectoral drivers: What if you have no suitable drivers? Look at historic trends to get average growth rates
    - Be cautious in looking at historic data – are there particular circumstances that led to anomalies in the data? Are there data collection issues that mean that trends are not a true picture May be more appropriate to use moving averages?

Breakout Session

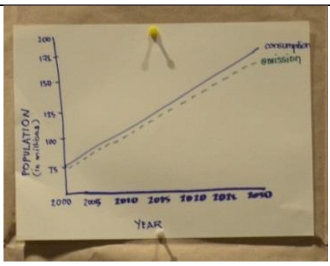
The participants were divided according to their sectors and tasked to discuss the need for creating baselines. Tables below detail the output of the sectors.

Transport Group

Sources	Data Needed	Methodology/Tools	Issues	Solutions
Metro Manila (MUCEP) Cebu City (BRT Project)	Fuel Efficiency (FE) per different types of vehicles for the entire country: cluster per area	Arithmetic/Excel Tools: Cube, Strada, Excel	Data gaps of fuel efficiency for rural Issues on typology that influence fuel consumption	Generate FE for rural setting Model/local data -VKT

Davao City (Sustainable Urban Transport Study) Land Transportation Office for Vehicle Population Rate of increase: details of population		Trans CO2 Teemp (KAI ASIA)		
	Vehicle KM, occupancy, ave speed		Data gaps on VKT: local and regional	
	Existing policies for modeling		Effects of Model Shifts Projection	
	Localized Emission Factor (other gases aside from CO2)		Difficulty of obtaining data (RED Tape)	

Residential Sector

	Drivers	Population	Income per household
	Other factors to consider	Household classification whether rural or urban	Income per household

Waste Sector

Driver	Options for projection	Assumptions
Recovery Wastes (data) Waste Generation (per capita)	Concentrate on the impact of bio	Too much inconsistent information
Disposal Site (waste Composition) Population	GHG inventory per year	
Waste Composition	Population generation (4 composition) regardless of quantity of waste recovery rate	

Agriculture Sector

Driver	Area Harvested	Crop Residue (no available data) Animal Waste (no data) Grazing Animals (no data)	Livestock population
Emission Sources	Rice Cultivation	Agricultural Soils	Enteric Fermentation
Is there more appropriate approach	Yes		
Problems with using a single driver	It will not be able to account for the total emission of the whole agricultural sector It will focus only on the specific sector, how about the contribution of the other sources which can also be significant		
Emission source to prioritize Why?	Rice cultivation area because it has the highest % of emission		

Land Use, Land Use Change and Forestry Sector (LULUCF)

Driver	Forest Conversion	Close to Open	Reforestation Efforts
Trends	Forest Cover Trend (2003-2010)		
Problems	Data Availability	Elements/Variable used	Species-specific Emission Factor
Resources Used	Excel	NGP (2011-2014)	IPCC Guidelines, Historical data, NAMRIA 2003 and 2010, GHG Inventory Manual (1999)
Additional Factors to be considered	Population growth	GDP	Forest protection measurer

Quality Control/Quality Assurance

Dr. John Watterson, *Ricardo-AEA*

The discussion is not a general presentation on QA/QC, rather it concentrates on specific elements of QC especially time series consistency and gap filling techniques. In generating data, problems on gaps, switching to a Tier 2 method but only with disaggregated data, and a sudden stoop in collecting data would likely be encountered. Along with these are barriers from obtaining available data such as:

- Lack of awareness of what data might be available
- Lack of structured data sharing processes
- Timeliness – key datasets are not available at the time required
- Sharing data may be viewed as losing power by individuals, Departments or organisations
- Restrictions on statistics data prior to official release
- Commercially sensitive data – e.g. from individual companies or installations
- Keeping up with the policy cycle – new measures and targets can be developed and implemented very quickly, sometimes without consulting data and technical experts.

Moreover, below are general data problems

- Common data problems: Data reported in wrong units, or out by a factor of 100 or 1,000 etc.
- Step-changes in a time series due to:
    - change in scope of data (e.g. European Union – Emissions Trading Scheme Phase I, Phase II, Phase III)
    - change in the data gathering systems (e.g. changes in reporting thresholds for industrial sites that used to report data)
    - change in the provision of reporting guidance (e.g. where sector-specific guidance has been updated so all operators start to use a new EF for a given pollutant which leads to a major step-change in the reported data)

Erroneous data that cannot be fixed and must therefore be deleted

Consequently, below are some solutions to the problem:

<u>Overcoming Data Barriers</u>

- Start by undertaking a systematic review of data available to establish who may hold what data that it is required
- Establish a working group of key data providers to develop data provision arrangements and resolve issues
- Implement data supply agreements (DSA's) with key data providers outlining what they will provide and when (Ghana already uses DSA's to help compile the GHG Inventory)
- Aggregate data to a level where it no longer is deemed as commercially sensitive – e.g. grouping data in order that individual sites and companies can no longer be identified

Visualize Data

- A vital first step
- It sounds simple – but through visualising data on a graph issues, comparisons and potential solutions can become clear
- Often used to identify outliers or step changes – to trigger further investigation
- Simple to do in MS Excel or similar

Dealing with Data gaps

Solution 1: Overlap. An assessment of comparability of two datasets over a time series that looks at consistent overlap or difference, preferably for multiple years to avoid bias and can either use comparable dataset or recalculate existing data on the basis of consistency

Solution 2: Surrogate Data. Using a dataset that is indicative of changes or trends to 'fill in' (or as a surrogate) data gaps, such as total vehicle km is indicative of road transport emissions or production output is indicative of industrial emissions. It is essential to understand relationship for multiple years data desirable to avoid bias prior to using surrogate data like regression analysis.

Solution 3: Interpolation. To fill gaps within datasets by estimating trends between two or more data points e.g. intermediate years where no data is available. This is useful for datasets with regular gaps, in its simplest form of linear interpolation. Hence, increasing confidence for a good QA/QC practice to compare interpolated data with surrogated data

Solution 4: Trend Extrapolation. To estimate trend and therefore actual value for a baseline by extending or 'extrapolating' trend backwards. This solution can also extrapolate forwards for projections, similar to interpolation although less is known about the trend. It is important that the trend must be constant to apply extrapolation and not erratic and should not be used for an extended period of time since the longer the period the greater the uncertainty. Also other splicing techniques should be used alongside extrapolation to improve confidence since "actual" data (when available) may differ from extrapolation.

Thus, in summary:

- There will be data gaps – all countries have this problem
- Preferred approaches are overlap and surrogate, because they are based on actual data
- Interpolation and extrapolation are effectively projections that assume certain trends in the absence of data

Similarly in research, it is not good practice to simply apply a gap-filling method blindly, as there is a need to understand why the approach is justified and to be able to explain it transparently

Breakout Session

The same groupings as to previous breakout sessions. Each group was asked to discuss the useful facts, expected effect on GHG emissions of the policy, implication of NAMA non-implementation, assumption if information is missing and data needs to assist in the estimation of NAMA, GHG emissions relevant to their sectors. Below outputs' details of the sectors are provided.

Transport Sector

Useful Facts	26, 483 Public Utility Buses, 6, 193 Mini-Buses (total units: 32, 676) 6,535 to be replaced with new units which is 20% of the total units
Expected Effects on GHG emission	New units will be hybrid buses (CNG) % Fuel Consumption reduction using hybrid buses
Counterfactual	Continued high fuel consumption: higher CO2 emission of old buses: i.e age>15 years
What Calculation	Calculate total reduction of fuel consumption from known fuel efficiencies
Data Needs	Fuel efficiency Vehicle-km of buses/mini-buses KM/Li for current old buses KM/LI and KWh for hybrid buses

Energy Sector

Given N of farmers= 100 size: 30 tons: % not given	Timeframe: 3cycle/year if 100% is implemented 100x30x3: 9000 tons/year
Expected Effects on GHG emission	Government support no of farmers available Selection Process
Counterfactual	For power generation own-use/grid-tied: Agricultural waste will not be utilized and will just produce methane
What Calculation	No of years and % actual project implemented
Data Needs	

Agriculture Sector

Useful Facts	Size, number, technical characteristics
Expected Effects on GHG emission	BAU to increase GHG emissions, WAM to decrease GHG emissions
What would happen if NAMA is not implemented	BAU
Assumptions on missing information	WAM: compute methane emission from manure management used as biogas and enteric fermentation BAU: Methane emission from enteric fermentation and manure management
Data Needs	Biomass Conversion Factor Amount of manure produced per animal by type EF Manure EF Enteric

LULUCF Sector (NGP Mitigation Potential)

Benefits	
Environmental Stability	12% increase in forest cover with 857 survival 8% increase in carbon sequestration from 36M tons/year to 38.9M tons/year Increase water holding capacity Reduced Downstream flooding and soil erosion Improved environmental services
Economic Security	Increased and sustained supply of forest-based raw materials Optimized utilization of upland resources Increase economic activity in the uplands Employment generation
Social	Poverty Alleviation

Waste Sector

Useful Facts	RA 9003 96% of 1,600 LGUs have residual disposal rate of 75tpd Worldwide research: 4% compost with soil mixture at 120cm thicker yield negligible methane concentration in semi-permeable membrane 4 liters of $CH_4/m^2/hr$ can be converted into CO_2 by applying eco-efficient cover under passive condition Validated study in 2 dumpsites in the Philippines
Policy on Application of eco-efficient dumpsite cover	Assumption 1536 cities/municipalities ,75tpd 23,200 tpd waste generation smaller dumpsites combined for the LGUs with smaller dumps

Enhancing the Impact of Measures

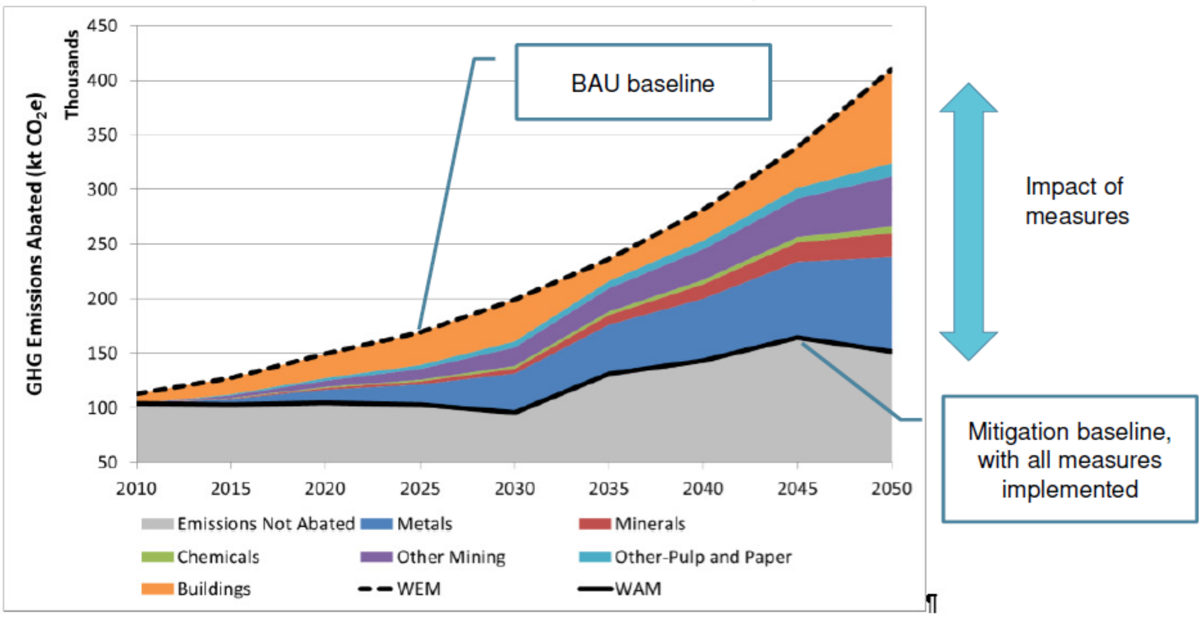
Ms. Judith Bates, *Ricardo-AEA*

The session covered discussion on four subtopics, business as usual and mitigation baselines, approaches to estimating the impact of NAMAs, differences between estimating impact of policies and measures, and annotated examples of NAMAs (mitigation actions).

In the "business as usual' baselines and mitigation baselines, it is important to set targets and the difference between BAU and mitigation impact that is needed to be achieved through NAMAs. In any case a question if NAMAs do not provide sufficient mitigation potential to deliver the mitigation baseline arises, a BAU projection and an assessment of mitigation options considering cost effectiveness and feasibility, then setting mitigation goal(s) and baseline are needed to achieve this. The figure below shows the BAU and mitigation baseline in practice.

Figure 13. BAU and Mitigation Baseline in Practice: South Africa Case

Source. Watterson, J., Bates, J. (2015). *Enhancing the Impacts of Measures* [Powerpoint slides]



Figure·40: → WAM· scenario· for· the· industry· sector,· showing· a· breakdown· per· sector.· Emissions·from·the·power·sector·have·been·reallocated·to·end-use·sectors·and· electricity-related· emissions· savings· have· been· adjusted· accordingly.· The· reference·case·WEM·emission·projection·is·also·shown¶

While approaches to estimating the impacts of NAMAs should consider the significance of GHG, timeframe of NAMAs, and interactions between NAMAs, it is also required to consider the follow:

- NAMAs will almost certainly be very sector specific

- Approaches in terms of Measurement (very rarely), simple calculation, sector specific modelling, wider cross sectoral modelling are all possible approaches

- Variations in NAMAs as some can be very sector specific, some may have very clearly defined actions and targets, or others can be much more policy related, and therefore the outcomes are specified less precisely

- The complexity of assessing the impact varies with the characteristics of NAMA (note there are specific definitions of the types of NAMAs e.g. unilateral NAMA).

- Key issues: Can vary from specific measures to packages of policies - Measures (well characterised) to policies (e.g. carbon tax – this will need modelling); and why a package of policies could cause some problems (e.g. renewable energy feed in tariff).

It should also be noted that there are differences between estimating impact of policies and of measures:

- Technical measures e.g. installation of low energy lighting, use of CHP – generally estimate abatement potential in bottom up way.

- Policy requirement to ensure implementation. Examples of policies are Regulatory, Fiscal, Education.

- Assessment of the impact of policies requires and assessment of how effective the policy will be in implementation of the measures.

A single policy can be designed to encourage the take up of a package of technical measures. For example in the UK, policies usually tend to be technology-neutral rather than technology-specific. So the CCAs set energy saving and emissions reduction targets for industry but don't state how they should be met.

In summary,

The WRI guidance on Policy and Action Standard is a good place to start to understand how to estimate the GHG impacts of policies and actions.

Consider developing central Philippines guidance on approaches to estimating GHG impacts of policies and actions.

Co-ordination between departments is essentially – what core common data could be used?

Interactions between NAMAs need to be identified – but could be hard to quantify. Yet, quantify where possible.

Key interactions are likely between:

- NAMAs which reduce electricity consumption

- NAMAs which reduce carbon intensity of electricity generation

If you do not consider this, you will overestimate the combined effect of the NAMAs.

Use casual chain and boundary mapping as approaches.

Think about the effects of the NAMA in time – implementation date, when effects would become.

<u>Breakout Session</u>

The same sector groupings and they were tasked to work on their respective NAMAs using the

<D2_Philippines_Baselineshandout_v4.0_docx> as guide in their discussion. After the exercise, some participants gave their feedback.

For transport sector: some of the assumptions are only based on the materials provided. With regards to the calculation specific to replacement of hybrid was used, however EF for hybrid buses is yet to be determined. There is also natural gas for public transport program of the government which can be incorporated in the measurement.

For waste sector: Assumed that emissions are the same as the current year based on the population. Hence, assumption is 58%. In terms of the IPCC guidelines, there is a need to harmonize terminologies as to the country's context so there would be not much difference when it comes to specifications and how it is being managed.

Creating Baselines from Activity Data: More Detailed Approach

Ms. Judith Bates, *Ricardo-AEA*

The discussion focused on the advantages of using a more detailed approach and how such detailed approach can be implemented.

Emissions are estimated at a sub-sectoral level, providing improved resolution and tailored modeling of sectors with small number of discrete sources. The more detailed approach has better inclusion of underlying trends and existing policies and measures such as autonomous improvement in energy efficiency can be taken into account and regulations requiring abatement of emissions. Also, a detailed approach brings more accurate modeling changes over time in emissions factors, technology changes, fuel switching and other external trends.

In terms of its advantages, a detailed approach improved the accuracy of baselines data allowing for more detailed assessment of mitigation actions. It can also allow sector specific agreements with industry and more informed engagement with stakeholders due to more insights gained from using the detailed approach.

The downside on one hand is that the approach needs more detailed, robust, and accurate data from greater sources. Thus, below are some key points to consider in deciding on the approach to be used.

Keep the complexity and detail of your approach in line with the quality of the data you have, use the results will be put too, and timeframe you need to deliver within.

Process of continuous improvement through:

- Starting simple and improve over time

- Clarity over what data you need to improve baseline
- Develop plan to collect data required in time for next iterations
- Mix and Match
- Choose what approach is appropriate for each sector and subsector
- 'Key' sources should be prioritised for a more detailed approach
- Power sector (i.e. electricity generation) almost always requires more detailed approach
- Usually good data to support this approach for power sector
- Other constraints important in power sector (e.g. matching peak power demand, reserve margin, dispatch order,)

Plenary Discussion

Who is responsible for creating the baselines in South Africa? The spreadsheets were put together taking into account inputs from different stakeholders and working groups/sector desks.

Which approach is applicable to industries in case that one company has sub-generated power plant? In South Africa, there is a specific sector that looks at power generation. There are two ways to deal with the situation, a) include the fuels in the generation and b) reduce the amount of electricity being fed back to the grid to capture water generation.

Breakout Session

The session focused on the discussion of concrete plan for baselines development. The sectors were also reminded to include the timeframe on two conditions: 1) data is available and 2) challenges that can be encountered due to insufficient data. Below outlines the results of the session.

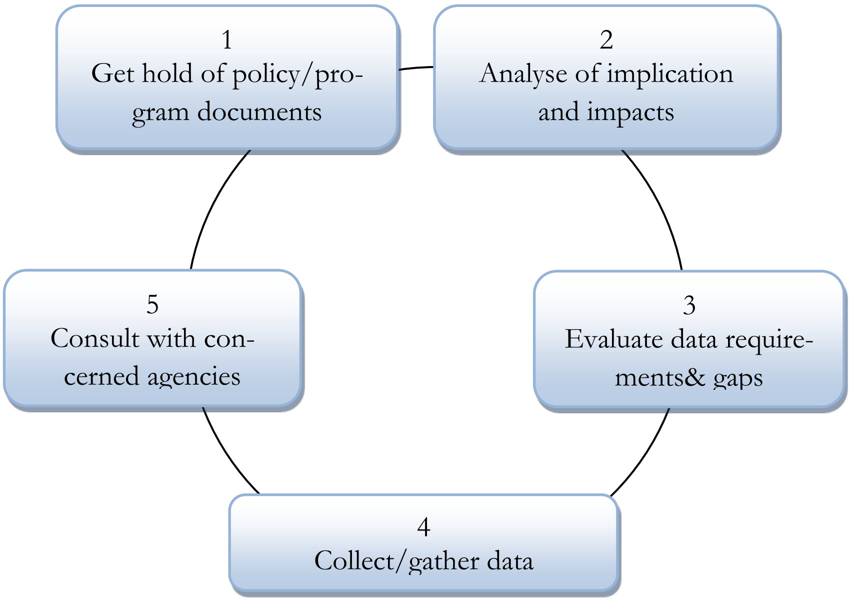
Agriculture Sector

DA Policy and Planning Services

Field Operations services

National Programming (implementing agencies

NIA, BSWM, PhilRice, IRRI, PCC, PCAF, BAI, PCCARD, BPI, BAR, PIDS, NEDA



Additional Data Needs (actual data gaps based on ALU software app)	Age of trees Crop Residue Manure Management Tillage practices, area on AWD, volume of waste of animals by type by age which will be converted to biogas Cropping system Fertilizer applied usage for other crops
Additional Guidance	From NEAD: Policy Analysis From CCC Analysis of results Implications of results QA of results
Timeframe	If data available: 3 months; with time to collect data: 6 months – 1 year
Challenge	Addressing data gaps

Industrial Processes and Product Use

Approach	Simple Sub-sector Mineral Chemical Metal Electronics Industry
New Approach	Mix and Match Updated IPCC guidelines Harmonize available data with IPCC guidelines
New Data Needed	Industry Gross value Added (GVA) Industry Growth Rate Level of Technology and Processes EF for Electronics Manufacturing
Stakeholders	EMB, DTI, MGB, NEDA, PSA, CCC, Industry Association
Estimated Timeframe	Ideally 3 months if data is available Realistically 1 year
Challenge	Activity Data

LULUCF Sector

Key Assumptions	Primary GHG Carbon Baseline is based on the amount of carbon Emit less, sequester more 80-85% carbon from above ground biomass
Carbon Pools	AGB (above ground biomass) BGB (below ground biomass) Soil Litter

	Dead Wood
Methods	Allometric Equation Remote Sensing Gain-loss Method (degradation) Design NFMS (National Forest monitoring System) NFI, GHGI, FRA, MRV
Baseline Emission based on Amount of Historical Deforestation	Monitoring of Forest Cover Models of Deforestation through Time Growth Forest
Stakeholders	NAMRIA, DA (BSWM), PSA
Additional Guid-ance	UNFCCC
Estimated Timeframe	1 week Tier 1 default data Annual Deforestation 2000-2012
Challenge	Getting the agencies

Waste Sector

Approach	BAU (urban/rural) Landfill Recovery rates Other end destination Emission Factor per disposal type
How	Harmonization of terms: RA 9003 vs IPCC Guidelines Commission to define accordingly WACS of Disposal sites QA/QC of available data Inventory of data Determine Gaps

	Fill Gaps
Additional Data	Detailed Waste Flow End of Pipe WACS (volume) Waste Management of Disposal Sites
Stakeholders	NSWMC, LGUs GIZ: Voltaire SWM Plans IPCCS Guidelines SLF, Transfer Station (operators) CCC Academe (technical assistance)
Estimated Timeframe	6 months to 1 year
Challenge	Validating the available data Ensuring the integrity of the data

Energy Sector

Data Collection (improvement, decrease lag time)	QA/QC of data/results
Additional Data	RE and New technologies Self-generating Industries SPDG/Missionary Electrification Area
Sources	DOE Service/Contractors RE Developers DENR/ERC NPC
Estimated Timeframe	With reliable and compete data: 6 months

	With additional data gathering: 2 to 3 years
Challenge	Accuracy of data

Transport Sector

Activity Data	Gather VKT from LTO from ODOMETER reading (if any) Network model of different areas/city/province Intensity (fuel efficiency) Fuel Type
Structure (mode and vehicle type)	Spreadsheet template (trans CO2)
How?	Bottom-up approach ASIF
Additional Data	Fuel Efficiency VKT (modes)
Sources	NCTS/ICE Studies MUCEP (Mega Manila)
New Departments	DOE, DOTC, UP NCTS
Estimated Timeframe	With available data: 2 weeks With data collection: 1 year
Challenge	Data and transport model to use

<u>Feedback from Ricardo-AEA</u>

Although challenges exist, the sectors should not be held back because looking at the results of the workshop, things are doable in terms of BAU projections. Simple instructions in terms of doing things rapidly to develop programs and projects and the setup of a strategy might help in addressing the information needed. Thus, there is a need in becoming bold in getting around baselines.

Bring it all Together

Dr. John Watterson, *Ricardo-AEA*

Dr. Watterson summed up the discussions for the past 3 days and gave emphasis on the following take away points and tips in producing baselines.

Take away points

- What institutional framework do you need for your "projections system"? Something simple would be useful – as creating projections will be repeated
- Be clear on definitions – maybe write down and get all stakeholders to agree to use them
- Map the casual chain and boundaries of policies
- Think through the policy interactions – even if you can only do this qualitatively
- Harmonising assumptions between sectors is good practice
- Set indicators and a create a simple MRV system to track progress
- It is imperative to document which policies / measures / actions are included in the baseline and all other projections
- The WRI guidance on Policy and Action Standard is a good place to start to understand how to estimate the GHG impacts of policies and actions
- When creating baseline projections, balance the needs of 1) time; 2) cost; 3) accuracy
- Even projections that are approximate can help set mitigation priorities

Tips on Producing Baselines

- Keep old files.
- In the IPCC guidelines, there is a list of definition for GHG inventories, what to include. And if there is business as usual, what policies should be included.
- Review of basic massive conversion
- There is a lot of information available in the Philippines, these are not perfect but it should not be a hindrance since there are solutions such as data splicing, surrogate data, interpolation, extrapolation
- Use population as a driver to make an estimate on waste projection
- Always start with what is available and create a plan to address the gap
- Consultation, ask somebody in order to learn key information for reliable reporting

Forward Planning

Ms. Sandee Recabar facilitated the session on next steps activities and needs of the sectors as follow through on the capacity enhancements under the Information Matters Project. Below are the activities and needs suggested by the participants.

Activities	
Focus Group Discussions	DA-CCO on addressing data gaps DTI, EMB and Industry Sector Between NSWMC and CCC to harmonize terminologies With DOTC (with attached agencies), DOE, Academe, LTO, LTRA, etc.
On NAMAs	NAMA for Forestry Studies on NAMA for waste sector
Surveys	Baseline emission projection based on recent data
Training on	Data Assessment (based on IPCC) Intensive IPCC Methodological Training NICCDIE software if available Basic Policy Analysis Technical Support to address data gaps MS Excel: Jr/Masterclass Producing baselines for waste sector of LGUs
Needs	
Tools	Software/Hardware For modelling
Data	Inventory Data for waste sector

	Development of country-specific emission factors
Funding Support	Waste Sector: funding for the conduct of EOP WACS for disposal sites e.g. open dump, CDF, SLF, (all 4 categories)
Human Resources	Be a permanent employee Manpower Identify focal person/team per sector
Legal Document	MOU/MOA with data providers Special Oder for IPPU sector
Relationships	Strengthen collaboration with academe/private sector

Closing Remarks

Dr. Bernd-Markus Liss, thanked the participants for the active participation and Ricardo-AEA for the expertise and the dedication to helping people in translating data to information, hence showing that the country can do it on its own. He mentioned that he was impressed with the outputs and was struck by three hashtag lines: #BeBold, #ThatThingcalledBaselines, and #TreeHugger. To that end, Dr. Liss highlighted that the coming activities that need to be done will be well coordinated with the CCC and the sectors.

Ms. Kristen Orschulok thanked the participants for the hard work in the workshops. She emphasized that the success is not just because of Ricardo -AEA and GIZ, but more importantly because of the active participation of the sectors. The continuity of the participants in all four workshops is outstanding, and the project members are very happy to had the chance to support this important process in the Philippines.

Dr. John Watterson expressed his gratitude and appreciation on the energy and cooperation of the participants. He noted that it is their privilege to share their expertise to the group and that the sectors can achieve their goals in the context of baselines.

In behalf of the Climate Change Commission, ***Ms. Sandee Recabar*** expressed her thanks to the sectors for their active participation. And mentioned that even though the schedules are tight, the participants never fail to show their dedication on what the country wants to achieve in the context of climate change adaptation and mitigation

Finally, ***representatives from the six sectors*** (forestry, industry, waste, agriculture, transport, and energy) expressed their gratitude for providing them the opportunity to participate and learn/gain new skills and knowledge on baselines.

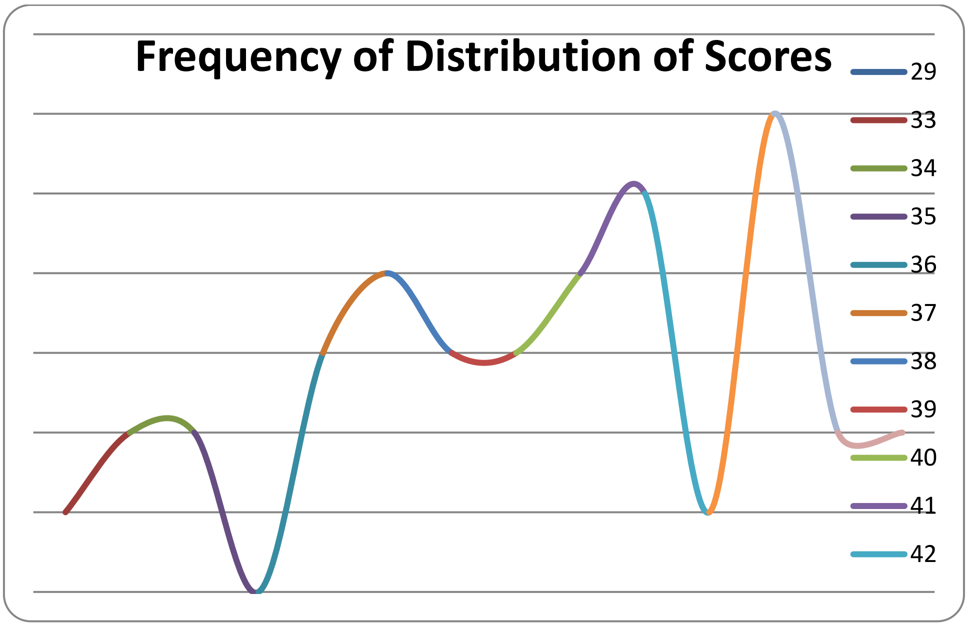
Post-Test Scores on Producing Baselines

A 25-item post-test was developed by the trainers to gauge the level of the participants' understanding about the basic elements on baselines. The highest possible score obtainable was 46.

The graph below shows the frequency distribution of scores garnered by the participants. A total of 38 participants took the test. The highest score registered was 45, while the lowest was 29.

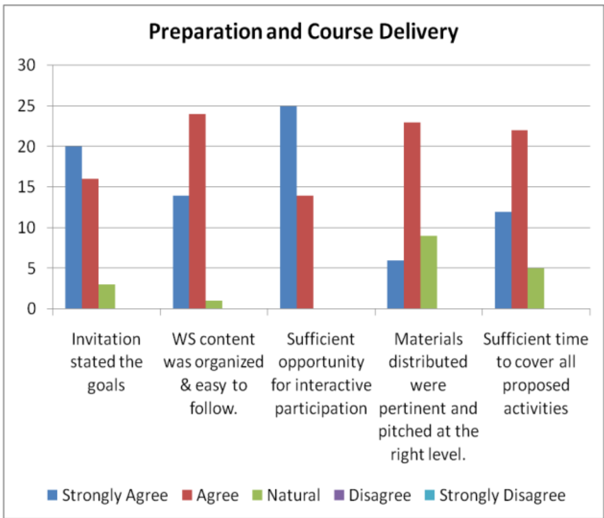
The lowest score obtained represents 63% of the total possible correct answers.

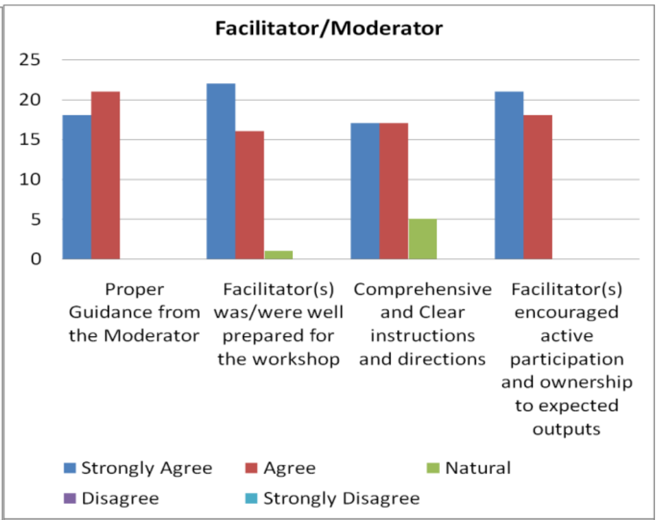
The group's average was 38.28, while the median and mode were 38.5 and 43, respectively. Standard deviation was 4.43 based on total population.

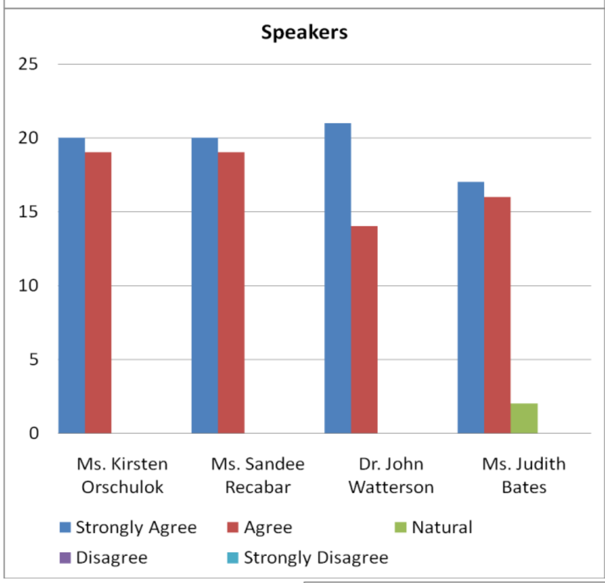


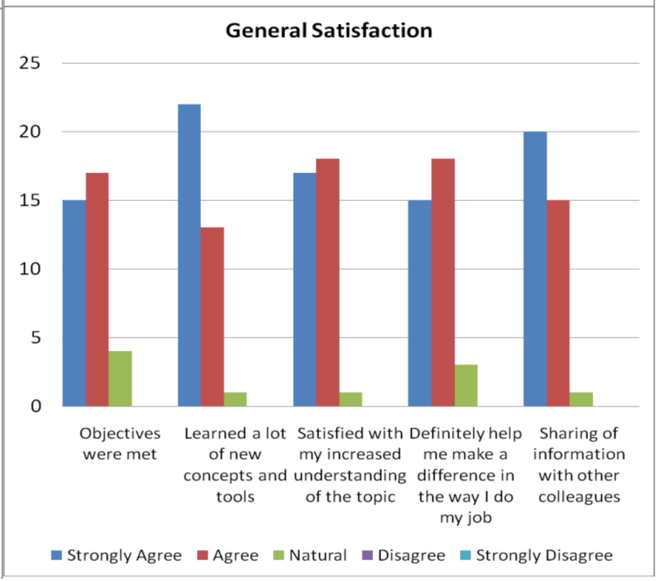
Post-Training Evaluation by Participants

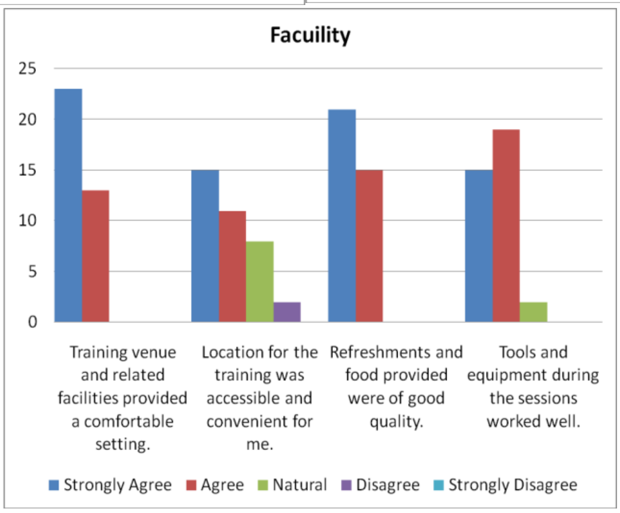
In general, participants showed much interest in the training-workshop given that majority of the participants' general satisfaction was rated "4". However, note that three (3) respondents were not able to evaluate questions 12-22 since the second page of the evaluation form was missing. In average 47% have agreed that workshop objectives were met and participants are highly satisfied with the inputs and expertise shared by the consultants from Ricardo-AEA. Below there are additional comments from the post-evaluation exercise.











Specific Comments were:

Questions	Comments
What will you do differently in your work/practice setting as a result of this workshop	Start collecting and sorting data relevant to GHG emission I can further improve the module I am developing for CO22 inventory for transport Definitely have more trainings here in Marco Polo: very spacious, comfy and conducive Define the baseline emission intensity using historical deforestation data and IPCC default data More concern on data sharing After workshop, new knowledge/learnings can/ will apply more accurate and improved work results To be included in our report Apply approaches/methods introduced during the workshop Prepare the materials/data/information available for the baselines projection preparation A good data detective Review conversion unit I can share the knowledge and use the knowledge when reviewing project proposals on waste sector As of now, all I can do is to share everything that I have learned from this workshop since I am still under study for MTSP Management Project
What aspects of the workshop could be improved	If the excel being discussed were given/distributed it will help the participant follow the presentation. Sample computations should have been distributed PPT presentations could have been more visible, e.g. extra screen Although it may be unavoidable, strict time management should be followed More exercises

	Presentations: more illustrations, less words Improve the presentation: larger font More Philippine scenarios of other sectors not just energy Comprehensive methodological training for baselines Break-out sessions (more detailed methods of doing the baselines and projections) More methodological trainings on IPCC guidelines and projection for forestry sector Time schedule can be improved Improve workshop setting and clearer/easily seen projected materials The distribution of hand-out or presentation may be improved the attentiveness of the participants Time allocation by topic/subject matter Presentation materials could be given during presentations esp. sample computation for better understanding Excel presentation and calculations
Other Remarks	Congratulations, let us help one another to take care of our home, our only home Thanks to the training team for a well-organized workshop Good job. More workshops that would broaden our knowledge in the area of climate change Thank you for additional knowledge Maybe one time, workshop/training will be conducted near of within Quezon City Nice job by the resource speakers and facilitator. Thanks to GIZ and CCC for the opportunity to be able to attend this workshop. I am sure the different sectors will have a great use of the knowledge imparted by this training Learned a lot

GLOSSARY

Compiled from WRI Mitigation Goal Standard and Policy and Action Standard

Courtesy of WRI. Please see http://www.wri.org/publication/mitigation-goal-standard

Accountable emissions	The quantity of emissions and removals that users apply toward achieving the goal. This value is compared to allowable emissions to assess goal achievement.
Activities	When used as a type of indicator, the administrative activities involved in implementing the policy or action (undertaken by the authority or entity that implements the policy or action), such as permitting, licensing, procurement, or compliance and enforcement. Examples include energy audits and provision of subsidies.
Activity- based accounting	Land- use accounting approach that assesses land- use emissions and removals based on select land- use activities.
Activity data	A quantitative measure of a level of activity that results in GHG emissions. Activity data is multiplied by an emission factor to estimate the GHG emissions associated with a process or an operation.
Activity data	A quantitative measure of a level of activity that results in GHG emissions. Activity data is multiplied by an emissions factor to derive the GHG emissions associated with a process or an operation. Examples of activity data include kilowatt- hours of electricity used, quantity of fuel used, output of a process, hours equipment is operated, distance travelled, and floor area of a building.
Additional emission reductions needed to achieve the goal	The difference between reporting year emissions and allowable emissions in the target year or first year of the target period.
Adopted policies and actions	Policies and actions for which an official government decision has been made and there is a clear commitment to proceed with implementation, but that have not yet begun to be implemented (for example, a law has been passed but regulations to implement the law have not yet been established or are not being enforced).
Allowable emissions	The maximum quantity of emissions that may be emitted in the target year, year of the target period, or over the entire target period that is consistent with achieving the mitigation goal.

Allowance	Generated by emissions trading programs and issued to emitting entities to be traded or used to comply with emissions obligation.
Annual multi- year goal	Mitigation goal that aims to reduce, or control the increase of, annual emissions by a specified amount each year over a target period relative to a base year or baseline scenario.
Average multi- year goal	Mitigation goal that aims to reduce, or control the increase of, annual emissions by an average amount each year over a target period relative to a base year or baseline scenario.
Base period	An average of multiple years of historical data against which emissions are compared over time.
Base period emissions	GHG emissions and removals within the goal boundary in the base period.
Base year	A specific year of historical data against which emissions are compared over time.
Base year emissions	Emissions and removals in the base year for all gases and sectors included in the goal boundary, including out- of- jurisdiction emissions, if relevant.
Base year emissions goal	Mitigation goal that aims to reduce, or control the increase of, emissions relative to an emissions level in a historical base year.
Base year intensity goal	Mitigation goal that aims to reduce emissions intensity (emissions per unit of another variable, typically GDP) by a specified quantity relative to a historical base year.
Baseline emissions	An estimate of GHG emissions, removals, or storage associated with a baseline scenario.
Baseline scenario	A reference case that represents future events or conditions most likely to occur in the absence of activities taken to meet the mitigation goal.
Baseline scenario	A reference case that represents the events or conditions most likely to occur in the absence of the policy or action (or package of policies or actions) being assessed.
Baseline scenario assumption	Numerical value that defines how an emissions driver in a baseline scenario is most likely to change over a defined future time period.
Baseline scenario emissions	An estimate of GHG emissions or removals associated with a baseline scenario.

Baseline scenario goal	Mitigation goal that aims to reduce emissions by a specified quantity relative to a projected emissions baseline scenario.
Baseline value	The value of a parameter in the baseline scenario.
Black carbon	A climate forcing agent formed through the incomplete combustion of fossil fuels, biofuel, and biomass.
Bottom- up data	Data that are measured, monitored, or collected (for example, using a measuring device
Bottom- up methods	Methods (such as engineering models) that calculate or model the change in GHG emissions for each source, project, or entity and then aggregate across all sources, projects, or entities to determine the total change in GHG emissions.
Business- as- usual (BAU) scenario	A reference case that represents future events or conditions most likely to occur as a result of implemented and adopted policies and actions.
Calculated data	Data calculated by multiplying activity data by an emission factor. For example, calculating emissions by multiplying natural gas consumption data by a natural gas emission factor.
Cap	A cap limits the quantity of land sector emissions or removals that can be accounted for toward the achievement of the mitigation goal.
Causal chain	A conceptual diagram tracing the process by which the policy or action leads to GHG effects through a series of interlinked logical and sequential stages of cause- and- effect relationships.
Counterfactual	The counterfactual, or counterfactual scenario, is an estimate of what would have occurred in the absence of the evaluated intervention.
Change in net land sector emissions	Depending on the accounting method chosen, the change in net land sector emissions refers to either (1) the difference between net land sector emissions in the reporting year and net land sector emissions in the base year (for the net- net accounting method), (2) net land sector emissions in the reporting year relative to a reference case of zero (for gross- net accounting method), or (3) the difference between net land sector emissions in the reporting year and net land sector emissions in the baseline scenario in the reporting year (for a forward- looking baseline accounting method).
CO2 equivalent (CO2e)	The universal unit of measurement to indicate the Global Warming Potential (GWP) of each greenhouse gas, expressed in terms of the GWP

	of 1 unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis.
CO2 equivalent (co2e)	The universal unit of measurement to indicate the Global Warming Potential (GWP) of each greenhouse gas, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate different greenhouse gases against a common basis.
Cumulative emissions	Sum of annual emissions over a defined time period.
Cumulative multi- year goal	Multi- year mitigation goal that aims to limit cumulative emissions to a fixed absolute amount over a target period.
Decomposition analysis	Method for determining the effect of changes in various emissions drivers on year- to- year changes in overall emissions levels.
Double counting	Occurs when the same transferable emissions unit is counted toward the mitigation goal of more than one jurisdiction. Double counting includes double claiming, double selling, and double issuance of units.
Drivers	Socioeconomic or other conditions or other policies/actions that influence the level of emissions or removals. For example, economic growth is a driver of increased energy consumption. Drivers that affect emissions activities are divided into two types other policies or actions and non- policy drivers.
Dynamic	A descriptor for a parameter (such as an emission factor) that changes over time.
Dynamic baseline scenario goal	Mitigation goal that aims to reduce, or control the increase of, emissions relative to a dynamic baseline scenario.
Dynamic baseline scenario	Baseline scenario that is recalculated during the goal period based on changes in emissions drivers.
Effects	Changes that result from a policy or action. See intermediate effects, GHG effects, and non- GHG effects.
Emission factor	A factor that converts activity data into GHG emissions data.
Emission factor	A factor that converts activity data into GHG emissions data. For example, kg CO2e emitted per liter of fuel consumed.
Emission reduction	Reduction in greenhouse emissions relative to a base year or baseline scenario.

Emission reductions associated with achieving the goal	The difference between emissions in the first year of the goal period and allowable emissions in the target year or period.
Emissions	The release of greenhouse gases into the atmosphere. For simplicity, this standard often uses the term "emissions" as shorthand for "emissions and removals."
Emissions	The release of greenhouse gases into the atmosphere.
Emissions drivers	Socioeconomic parameters that cause emissions to grow or decline, such as economic activity, population, and energy prices.
Emissions estimation method	An equation, algorithm, or model that quantitatively estimates GHG emissions. For example, a simple emissions estimation method is the following equation: GHG emissions = emission factor × activity data. An emissions estimation method is comprised of parameters.
Emissions estimation method	An equation, algorithm, or model that quantitatively estimates GHG emissions. For example, a simple emissions estimation method is the following equation: GHG emissions = emission factor × activity data. An emissions estimation method is comprised of parameters.
Emissions intensity	Greenhouse gas emissions per unit of another variable, such as economic output (GDP), energy (MWh), or population.
Emissions level	The quantity of greenhouse gas emissions in a given year.
Emissions source	Any process, activity or mechanism that releases a greenhouse gas into the atmosphere.
Estimated data	In the context of monitoring, proxy data or other data sources used to fill data gaps in the absence of more accurate or representative data sources.
Ex- ante assessment	Prospective analysis of expected future events.
Ex- ante assessment	The process of estimating expected future GHG effects of policies and actions.
Ex- ante baseline scenario	A forward- looking baseline scenario, typically established prior to implementation of the policy or action, based on forecasts of external drivers (such as projected changes in population, economic activity, or other drivers that affect emissions), in addition to historical data.
Ex- post assessment	Retrospective analysis of past events.

Ex- post assessment	The process of estimating historical GHG effects of policies and actions.
Ex- post baseline scenario	A backward- looking baseline scenario that is established during or after implementation of the policy or action.
Expert judgment	A carefully considered, well- documented qualitative or quantitative judgment made in the absence of unequivocal observational evidence by a person or persons who have a demonstrable expertise in the given field (IPCC 2006).
Fixed-level goal	A mitigation goal that aims to reduce, or limit the increase of, emissions to an absolute emissions level in a target year.
Flux	Includes both transfers of carbon from one carbon pool to another and non-C O2 emissions arising from activities such as prescribed burning and manure management.
Free Rider Effect	Participants in a policy or program who would have implemented the technologies, practices, or processes associated with the policy or program in the absence of the policy or program.
Geographic boundary	The physical territory included in the goal boundary.
GHG	See greenhouse gas.
GHG assessment	The estimation of changes in GHG emissions and removals resulting from a policy or action, either ex- ante or ex- post.
GHG assessment boundary	The scope of the assessment in terms of the range of GHG effects (and non- GHG effects, if relevant), sources and sinks, and greenhouse gases that are included in the assessment.
GHG assessment period	The time period over which GHG effects resulting from the policy or action are assessed.
GHG effects	Changes in GHG emissions by sources and removals by sinks that result from a policy or action.
Global warming potential (GWP)	A factor describing the radiative forcing impact (degree of harm to the atmosphere) of 1 unit of a given GHG relative to 1 unit of CO2.
Global warming potential (GWP)	A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of CO2.
Goal assessment	The evaluation of progress toward a mitigation goal, which can include the evaluation of goal achievement at the end of the goal period.

Goal baseline scenario	A baseline scenario used to set a baseline scenario goal and assess goal achievement.
Goal boundary	The greenhouse gases, sectors, geographic area, and in- jurisdiction and out- of- jurisdiction emissions covered by a mitigation goal.
Goal level	The quantity of emission reductions or emissions and removals within the goal boundary in the target year or period that the jurisdiction commits to achieving.
Goal period	The definition of the goal period depends on the goal type. For base year emissions goals and base year intensity goals, it is the time between the base year and the target year or period. For baseline scenario goals, it is the time between the start year of the baseline scenario and target year or period. For fixed-level goals, it is the time between the year in which the goal is adopted and the target year or period.
Goal type	The way the goal is framed. This standard covers four goal types: base year emissions goals, fixed-level goals, base year intensity goals, and baseline scenario goals.
Greenhouse gas (GHG)	For the purposes of this standard, GHGs are the seven gases covered by the UNFCCC: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF3).
Greenhouse gas inventory	A quantified list of a jurisdiction's GHG emissions and removals by source, sector, and gas.
Greenhouse gases (GHGs)	For the purposes of this standard, GHGs are the seven gases covered by the Kyoto Protocol: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF3).
Implemented policies and actions	Policies and actions currently in effect, as evidenced by one or more of the following: (a) relevant legislation or regulation is in force; (b) one or more voluntary agreements have been established and are in force; (c) financial resources have been allocated; and (d) human resources have been mobilized.
Implemented policies and actions	Policies and actions that are currently in effect, as evidenced by one or more of the following: (a) relevant legislation or regulation is in force, (b) one or more voluntary agreements have been established and are in force, (c) financial resources have been allocated, or (d) human resources have been mobilized.

In- jurisdiction effects	Effects that occur inside the geopolitical boundary over which the implementing entity has authority, such as a city boundary or national boundary.
In- jurisdiction emissions	Emissions from sources located within a jurisdiction's geopolitical boundary.
Independent policies	Policies that do not interact with each other, such that the combined effect of implementing the policies together is equal to the sum of the individual effects of implementing them separately.
Indicator	See key performance indicator.
Informational baseline scenario	A baseline scenario used to inform goal design and mitigation assessments, assess progress, and meet reporting requirements. Informational baseline scenarios are not used to set a baseline scenario goal or assess goal achievement (see goal baseline scenario).
Inputs	Resources that go into implementing a policy or action, such as financing.
Intended effects	Effects that are intentional based on the original objectives of the policy or action.
Interacting policies	Policies that produce total effects, when implemented together, that differ from the sum of the individual effects had they been implemented separately.
Intermediate effects	Changes in behaviour, technology, processes, or practices that result from a policy or action.
Jurisdiction	The geographic territory over which a government exercises political authority.
Jurisdiction	The geographic area within which an entity's (such as a government's) authority is exercised.
Key performance indicator	A metric that indicates the performance of a policy or action, such as tracking changes in targeted outcomes. For example, the quantity of wind power generated in a country may be used as an indicator for a production tax credit for wind power.
Land- based accounting	Land- use accounting approach that assesses land sector emissions and removals based on select land- use categories.
Land sector	Refers to the following land- use categories: forestland, cropland, grassland, wetland, and settlement, consistent with Volume 4 of the IPCC

	Guidelines for National Greenhouse Gas Inventories (2006). It includes emissions and removals from land in agricultural production and grazing lands/grasslands. However, it does not cover accounting for GHG fluxes from on- farm agricultural activities, such as manure management or fossil fuel– based emissions from on- farm use of electricity, heat, or vehicles.
Land sector accounting approach	The way land sector emissions and removals are accounted for toward the goal— from either select land- use categories or select land- use activities. There are two accounting approaches for the land sector: land- based accounting and activity- based accounting.
Land sector accounting method	Used to assess emissions and removals within each selected land- use category or activity. Land- use accounting methods include the net- net (accounting relative to base year/period emissions), forward- looking baseline, and gross- net methods (accounting without reference to base year/period or baseline scenario emissions).
Leakage	Increase in emissions outside of the mitigation goal boundary that result as a consequence of activities, such as policies, actions, and projects, implemented to meet the goal.
Leakage	An increase in emissions outside the jurisdictional boundary that results from a policy or action implemented within that jurisdiction.
Legacy effect	When past management has an effect on carbon stocks that cause stocks to vary even in the presence of sustainable management.
Life- cycle effects	Changes in upstream and downstream activities, such as extraction and production of energy and materials, or effects in sectors not targeted by the policy, resulting from the policy or action.
Long- term effects	Effects that are more distant in time, based on the amount of time between implementation of the policy and the effect.
Macroeconomic effects	Changes in macroeconomic conditions— such as GDP, income, employment, or structural changes in economic sectors— resulting from the policy or action.
Managed land proxy	Estimates of emissions and removals on managed lands that are used as a proxy to remove non- anthropogenic fluxes as part of the land-based accounting approach.
Market effects	Changes in supply and demand or changes in prices resulting from the policy or action.

Materiality	Concept that individual or aggregation of errors, omissions, or misrep-resentations could affect the goal assessment and mistakenly influence decision making.
Measured data	Direct measurement, such as directly measuring emissions from a smokestack.
Mitigation goal	Commitment to reduce, or limit the increase of, GHG emissions or emissions intensity by a specified quantity, to be achieved by a future date.
model uncertainty	Uncertainty resulting from limitations in the ability of modeling ap-proaches, equations, or algorithms to reflect the real world.
modeled data	Data derived from quantitative models, such as models representing emissions processes from landfills or livestock.
Multi- year goal	A goal designed to achieve emission reductions or reductions in inten-sity over several years of a target period.
Net GHG emissions	The aggregation of GHG emissions and removals.
Net GHG emissions	The aggregation of GHG emissions (positive emissions) and removals (negative emissions).
Non- GHG effects	Changes in environmental, social, or economic conditions other than GHG emissions or climate change mitigation that result from a policy or action, such as changes in economic activity, employment, public health, air quality, and energy security.
Non- policy drivers	Conditions other than policies and actions, such as socioeconomic fac-tors and market forces, that are expected to affect the emissions sources and sinks included in the GHG assessment boundary. For example, energy prices and weather are non- policy drivers that affect demand for air conditioning or heating.
Normalization	A process to make conditions from different time periods comparable, which may be used to compare policy effectiveness by removing fluc-tuations not influenced by the policy or action, such as weather varia-tions.
Offset credit	Represents the reduction, removal, or avoidance of GHG emissions from a specific project that is used to compensate for GHG emissions occurring elsewhere. One offset credit represents 1 tonne of CO2 equivalent.

Other policies or actions	Policies, actions, and projects— other than the policy or action being assessed— that are expected to affect the emissions sources and sinks included in the GHG assessment boundary.
Out- of- jurisdiction effects	Effects that occur outside the geopolitical boundary over which the implementing entity has authority, such as a city boundary or national boundary.
Out- of- jurisdiction emissions	Emissions from sources located outside of a jurisdiction's geopolitical boundary that occur as a consequence of activities within that boundary.
Overlapping policies	Policies that interact with each other and that, when implemented together, have a combined effect less than the sum of their individual effects when implemented separately. This includes both policies that have the same or complementary goals (such as national and subnational energy efficiency standards for appliances), as well as policies that have different or opposing goals (such as a fuel tax and a fuel subsidy). The latter are sometimes referred to as counteracting policies.
Parameter	A variable that is part of an emissions estimation equation. For example, "emissions per kWh of electricity" and "quantity of electricity supplied" are both parameters in the equation "0.5 kg CO_2e/kWh of electricity × 100 kWh of electricity supplied = 50 kg CO_2e."
Parameter	A variable such as activity data or an emission factor that is part of an emissions estimation method. For example, "emissions per kWh of electricity" and "quantity of electricity supplied" are both parameters in the equation "0.5 kg CO_2e/kWh of electricity × 100 kWh of electricity supplied = 50 kg CO_2e."
Parameter uncertainty	Uncertainty regarding whether a parameter value used in the assessment accurately represents the true value of a parameter.
Parameter uncertainty	Uncertainty regarding whether a parameter value used in the assessment accurately represents the true value of a parameter.
Parameter value	The value of a parameter. For example, 0.5 is a parameter value for the parameter "emissions per kWh of electricity."
Peer- reviewed	Literature that has been subject to independent evaluation by experts in the same field prior to publication.
Peer- reviewed	Literature (such as articles, studies, or evaluations) that has been subject to independent evaluation by experts in the same field prior to publication.

Planned policies and actions	Policy/action options that are under discussion and have a realistic chance of being adopted and implemented in the future but that have not yet been adopted.
Planned policies and actions	Policy or action options that are under discussion and have a realistic chance of being adopted and implemented in the future but that have not yet been adopted or implemented.
Policy and action	An interventions taken or mandated by a government, institution, or other entity, which may include laws, regulations, and standards; taxes, charges, subsidies and incentives; information instruments; voluntary agreements; implementation of new technologies, processes, or practices; and public or private sector financing and investment, among others.
Policy implementation period	The time period during which the policy or action is in effect.
Policy monitoring period	The time over which the policy is monitored. This may include pre-policy monitoring and post- policy monitoring in addition to monitoring during the policy implementation period.
Policy or action	An intervention taken or mandated by a government, institution, or other entity, which may include laws, regulations, and standards; taxes, charges, subsidies, and incentives; information instruments; voluntary agreements; implementation of new technologies, processes, or practices; and public or private sector financing and investment, among others.
Policy scenario	A scenario that represents the events or conditions most likely to occur in the presence of the policy or action (or package of policies or actions) being assessed. The policy scenario is the same as the baseline scenario except that it includes the policy or action (or package of policies/actions) being assessed.
Policy scenario emissions	An estimate of GHG emissions and removals associated with the policy scenario.
Pool	A reservoir in the land sector containing carbon.
Propagated parameter uncertainty	The combined effect of each parameter's uncertainty on the total result.
Proxy data	Data from a similar process or activity that are used as a stand- in for the given process or activity.

Rebound effect	Marginal increases in energy- using activities or behaviour resulting from energy efficiency improvements.
Regression analysis	A statistical method for estimating the relationships among variables (in particular, the relationship between a dependent variable and one or more independent variables).
Reinforcing policies	Policies that interact with each other and that, when implemented together, have a combined effect greater than the sum of their individual effects when implemented separately.
Removal	Removal of GHG emissions from the atmosphere through sequestration or absorption; for example, when carbon dioxide is absorbed by forests and other vegetation during photosynthesis.
Removal	Removal of GHG emissions from the atmosphere through sequestration or absorption, such as when CO2 is absorbed by biogenic materials during photosynthesis.
Reporting year	The year of emissions data that is used to assess goal progress or achievement.
Reporting year emissions	Emissions and removals in the reporting year for all gases and sectors included in the goal boundary, including out- of- jurisdiction emissions, if relevant.
Retired	Refers to a unit used by the purchaser and no longer valid for future sale.
Scenario uncertainty	Variation in calculated emissions resulting from methodological choices, such as selection of baseline scenarios.
Sensitivity analysis	Assesses the extent to which the outputs of an emissions modeling approach— projected activity data, projected emission factors, and projected emissions— vary according to model inputs— assumptions, projected values for key emissions drivers, and methodological choices.
Sensitivity analysis	A method to understand differences resulting from methodological choices and assumptions and to explore model sensitivities to inputs. The method involves varying the parameters to understand the sensitivity of the overall results to changes in those parameters.
Short- term effects	Effects that are nearer in time, based on the amount of time between implementation of the policy and the effect.
Single- year goal	A goal designed to achieve reduction in emissions or emissions intensity by a single target year

Sink	Any process, activity, or mechanism that increases storage or removals of greenhouse gases from the atmosphere.
Source	Any process, activity, or mechanism that releases a greenhouse gas into the atmosphere.
Spillover effect	Out- of- jurisdiction effects that reduce emissions outside the jurisdictional boundary, or effects that amplify the result but are not directly driven by the policy or action being assessed (also called multiplier effects).
Start period	The first years of a baseline scenario.
Start period emissions	Average emissions level within the goal boundary in the start period.
Start year	The first year of a baseline scenario.
Start year emissions	Emissions within the goal boundary in the start year.
Static	A descriptor for a parameter (such as an emission factor) that does not change over time.
Static baseline scenario	A baseline scenario fixed throughout the goal period and not recalculated based on changes in emissions drivers.
Static baseline scenario goal	Mitigation goal that aims to reduce, or control the increase of, emissions relative to a static baseline scenario.
Target period	For multi- year goals, a period of several consecutive years over which the mitigation goal is to be achieved, which are the last years of the goal period.
Target year	For single- year goals, the year by which the goal is to be met, which is the last year of the goal period.
Target year emissions	Emissions and removals in the target year(s) for all gases and sectors included in the goal boundary, including out- of- jurisdiction emissions, if relevant.
Top- down data	Macro- level statistics collected at the jurisdiction or sector level, such as energy use, population, GDP, or fuel prices.
Top- down methods	Methods (such as econometric models or regression analysis) that use statistical methods to calculate or model changes in GHG emissions.
Trade effects	Changes in imports and exports resulting from the policy or action.

Transferable emissions units	Emissions allowances and offset credits from market mechanisms outside the goal boundary that are used toward meeting a mitigation goal or are sold to other jurisdictions.
Treatment of the land sector	The way emissions and removals from the land sector are included or not included in the goal boundary. This standard has four land sector treatment options: (1) include in the goal boundary; (2) treat as separate sectoral goal; (3) treat as offset; or (4) do not account for the land sector.
Uncertainty	(1) Quantitative definition: Measurement that characterizes the dispersion of values that could reasonably be attributed to a parameter. (2) Qualitative definition: A general and imprecise term that refers to the lack of certainty in data and methodology choices, such as the application of non-representative factors or methods, incomplete data on sources and sinks, or lack of transparency.
Uncertainty	1. Quantitative definition: Measurement that characterizes the dispersion of values that could reasonably be attributed to a parameter. 2. Qualitative definition: A general term that refers to the lack of certainty in data and methodology choices, such as the application of non-representative factors or methods, incomplete data on sources and sinks, or lack of transparency.
Unintended effects	Effects that are unintentional based on the original objectives of the policy or action. Unintended effects may include a variety of effects, such as rebound effects, lack of compliance or enforcement, effects on behavior once a policy is announced but before it is implemented, and effects on members of society not targeted by the policy or action.

Annex 01: Training Agenda

On behalf of:

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

of the Federal Republic of Germany

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Information Matters

Transparency through Reporting

Capacity Building for Enhanced Reporting and Facilitation of International Mutual Learning through Peer-to-Peer Exchange

Information Matters Training-Workshop on Producing Sectoral and National Climate Change Mitigation Baselines

3-5 February 2015

Marco Polo Hotel Ortigas, Pasig City, Philippines

Objectives

At the end of the workshop, participants are expected:

- To gain knowledge on the principles, types, and approaches to producing baselines
- To have gained the skills to set and calculating sector-wide baselines and be capable of project-ing BAU and other scenarios
- To identify the data needed to establish baselines
- To appreciate the importance of QA/QC and how sectoral baselines need to be harmonized to allow integration at a national level

AGENDA

Time	Activity/Topic
Tuesday 3rd February 2015	
08.45a	**Registration**
09:00a	**Opening ceremonies** • Prayer and National Anthem • Welcome Remarks • Introduction of Participants
09:15a	**Setting the scene** • About the Information Matters Project • Overview and objectives of the workshop:
09:30a	**Board of expectations/questions**

Time	Activity/Topic
	• Participants to write down their concerns/questions about producing baselines, and expectations of the workshop
09.45a	**Baselines Overview** Brief overview and recap of previous course on baselines • What is a baseline? • What are relevant concepts for setting baselines? • WRI accounting standards
10.30a	*AM Break*
10.45a	**Baselines Overview continued** • Different types of baseline • Key decision steps • Relationship between baselines and mitigations goals
12.00p	*LUNCH*
01:00p	**Producing baselines** • Overview of different approaches that can be taken to producing baselines - Using other modelling in sector as a basis for baseline - Creating a baseline from activity data – simple approach - Creating a baseline from activity data – detailed approach • How to choose the most appropriate approach for a sector • Prioritising effort • How do the inventory, baselines, NAMAs and mitigation goals fit together • Integrating baselines created for individual sectors
02:00	**Using sector modelling to produce baselines** • How to implement • Advantages and disadvantages of this approach • Worked example (e.g. using Philippines Energy Plan to create energy baseline)
02:30p	*PM Break*
02:45p	***Break out session A – Producing an energy baseline*** • Hand's on exercise to produce baseline Delegates provided with data for sector modelling and tasked with producing projection(s) of emissions for sector
04:00p	***Report back to plenary and discuss***
04:30p	**Closing of Day 1; Expectations for Day 2**
Wednesday 4th February 2015	
09:00a	**Preliminaries** • Recapitulation • Overview of Day 2 Agenda
09:15a	**The board of expectations, concerns/questions** • Quick review to see if the workshop is helping to answer questions raised
9.30a	**Creating a baseline from activity data – simple approach** • Principles and how to implement • Worked example for one sector
10:15a	***Break out session B – Producing a sectoral baseline*** • Hand's on exercise to create baselines for each of 6 sectors (delegates supplied with source material and a simple template)

Time	Activity/Topic
	***Break out session B –Report back to plenary and discuss*.** • Did this work? • What were the problems? • What were your criteria for decisions on data choices? • What are the uncertainties in the baseline you produced
12.30p	*LUNCH*
01:30p	**QA/QC** • The importance of QA/QC • How do you implement it in practice?
02:00p	***Break out session C – QA/QC Exercise*** Hands on exercise to demonstrate importance of QA/QC
02:30p	**Estimating the impact of measures** • 'Business as usual' baselines and mitigation baselines • Approaches to estimating the impact of NAMAs • Differences between estimating impact of policies and measures • Worked example for one NAMA
03:15p	*PM Break*
03:30p	***Break out session D – Estimating mitigation impacts*** • Hands on exercise to estimate impact of other NAMAs
04:30p	***Break out session D –Report back to plenary and discuss*.** • Did this work? • What are the uncertainties in the estimate you produced • How could the estimate be improved and made more robust
05:00p	**Closing of Day 2; Expectations for Day 3**
Thursday 5th February 2015	
09:00a	**Preliminaries** • Recapitulation • Overview of Day 3 Agenda
09:15a	**The board of expectations, concerns/questions – Quick review** • Quick review to see if the workshop is helping to answer questions raised
09:30a	**Creating a baseline from activity data – more detailed approach** • Advantages to using a more detailed approach • What does a more detailed approach look like and how could you implement it • Worked example for one sector
10:30a	***Break out session E – Planning for creation of baseline*** • Hands on exercise – for other sectors develop a plan for a more detailed approach; identify what data needs might be
11.15a	*AM Break*
11:30a	***Break out session E –Report back to plenary and discuss*.** • How feasible is this approach for the Philippines

Time	Activity/Topic
12:00a	**Bringing it all together** • Recap on approaches to baselines • Pros, cons and data needs of each • Importance of harmonising assumptions between sectors • Interactions between sectors • Combining impacts of NAMAs • Scenarios and sensitivity analysis
1:00p	*LUNCH*
2:00p	**Quiz! And prizes!**
3:00p	*PM Break*
3:15p	**Way Forward**
4:15p	**Closing ceremonies** • Post-workshop participant survey • Closing remarks and summary

Annex 02: Post-Training Evaluation by Participants

Questions	Strongly Agree	Agree	Natural	Disagree	Strongly Dis-agree	Total Pax	Weighted Average
Preparation and Course Delivery	5	4	3	2	1		
Invitation stated the goals	20	16	3			39	4.44
WS content was organized & easy to follow.	14	24	1			39	4.33
Sufficient opportunity for interactive participation	25	14				39	4.64
Materials distributed were pertinent and pitched at the right level.	6	23	9			38	3.92
Sufficient time to cover all proposed activities	12	22	5			39	4.18
Facilitator/Moderator							
Proper Guidance from the Moderator	18	21				39	4.46
Facilitator(s) was/were well prepared for the workshop	22	16	1			39	4.54
Comprehensive and Clear instructions and directions	17	17	5			39	4.31
Facilitator(s) encouraged active participation and ownership to expected outputs	21	18				39	4.54
Speakers: Clear, Concise, and Effective Presentation							
Ms. Kirsten Orschulok	20	19				39	4.51
Ms. Sandee Recabar	20	19				39	4.51
Dr. John Watterson	21	14				35	4.60

Ms. Judith Bates	17	16	2			35	4.43
General Satisfaction							
Objectives were met	15	17	4			36	4.31
Learned a lot of new concepts and tools	22	13	1			36	4.58
Satisfied with my increased understanding of the topic	17	18	1			36	4.44
Definitely help me make a difference in the way I do my job	15	18	3			36	4.33
Sharing of information with other colleagues	20	15	1			36	4.53
Facility							
Training venue and related facilities provided a comfortable setting.	23	13				36	4.64
Location for the training was accessible and convenient for me.	15	11	8	2		36	4.08
Refreshments and food provided were of good quality.	21	15				36	4.58
Tools and equipment during the sessions worked well.	15	19	2			36	4.36

Annex 03: Feature Article

Published in CCC Website: http://climate.gov.ph/index.php/media-resource/22-media-resources/press-release/129-capacity-building-on-producing-sectoral-and-national-baselines

Capacity building on producing sectoral and national baselines

#ThatThingCalledBaselines #BAUWow #ComputePaMore #StartSimple #TYLSaExcel #BeaDataDetective #NasaAminAngData #WagasSaBaselines #BeBold – These are some of the light-hearted hashtags echoed by the participants at the end of a three-day training-workshop organized by the Climate Change Commission (CCC) in cooperation with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Information Matters Project last February 3-5, 2015 at the Marco Polo Hotel Ortigas.

The institutional capacity building initiative entitled "Training-Workshop on Producing Sectoral and National Climate Change Mitigation Baselines" was a deep-dive, calculation-laden workshop that served as a follow through to a series of capacity building missions on baseline scenario setting; measurement, reporting and verification (MRV); and climate-relevant data management. Technical expertise was again provided by Ricardo-AEA, a British consulting firm specializing in MRV methodologies and climate data management.

More than 60 representatives from sectoral lead, planning, and statistics agencies learned the processes and techniques involved in calculating and projecting business-as-usual (BAU) baselines, mitigation baselines and other scenarios based on available sectoral activity data. Specifically, the participants were able to gain knowledge on the principles, types, and approach to producing baselines; identify the data needed to establish baselines; and appreciate the importance of QA/QC and how sectoral baselines need to be harmonized to allow integration at the national level. As a follow through activity, the CCC will conduct internal discussions with government agencies to identify how the knowledge gained from the workshop will now be integrated in the development of baselines for the country.

This activity is in line with the goal of strengthening the capacities of the Philippine government in the enhancement of national climate reporting processes to provide a clear basis for lead government agencies to mainstream climate-relevant programs and to achieve sustainable development objectives. It also supports the United Nations Framework Convention on Climate Change’s (UNFCCC) climate reporting initiatives at the international level.

The Information Matters Project is part of the International Climate Initiative. The German Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supports this initiative on the basis of a decision adopted by the German Bundestag.

Annex 05: Zopp Booth Groupies

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