National GHG Inventory Statement of Work Template

## Description

This document provides a template for drafting a **Statement of Work** (SOW) that can be used by a lead inventory agency to develop a request for proposal/task order request (RFP/ToR). This SOW, when customized to your national circumstances, can be distributed by the lead inventory agency for a consultant that is contracted to develop emission/removal estimates for the National GHG Inventory. This document is part of **EPA’s National GHG Inventory Toolkit,** a supplementary resource to EPA’s [*Developing a National GHG Inventory System Template Workbook*](http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html). In particular, this SOW may apply to consultants listed in Tables 1.3 through 1.8 in the Institutional Arrangements template (depending on the sector).

## Purpose

The purpose of this template is to assist the lead inventory agency in drafting a SOW used to hire a consultant that develops emission/removal estimates for the National GHG Inventory. This template can be used as a guide to outline the goals, expectations, roles and responsibilities, work plan, and cost of consultants during the development of a Non-Annex I GHG Inventory. This template should be completed and used by the lead inventory agency to define the SOW for a consultant.

Throughout the SOW, example text is provided in each section, and text that should be modified by the lead inventory agency is provided in RED. This template is provided as an example; each lead inventory agency is strongly encouraged to modify as much text as they feel appropriate for their country’s national circumstances, and based on the work the consultants will accomplish for the GHG Inventory.

This template consists of the following main sections:

* Introduction
* Background and Purpose
* Statement of Work Tasks
	+ Task 1: Project Management
	+ Tasks 2-6: Development of Category Estimates
	+ Task 7: Development of GHG Inventory Report
	+ Task 8: GHG Inventory Analyses and Quick-Turn Around Response
* Products (Deliverables)
* Appendix I: Example work plan and schedule for inventory development
* Appendix II: Potential areas of coordination between sector leads

**STATEMENT OF WORK**

|  |  |
| --- | --- |
| **Title:**  | Greenhouse Gas Inventory Development and Technical Support |
| **Contractor and Contract #:** |  |
| **Request for proposal #:**  |  |
| **Estimated Budget:**  |  |
| **Key Management Personnel (from Lead Inventory Agency, e.g. Office Directors, etc.):** |  |
| **Lead Inventory Agency Project Officer (PO):**  |  |
| **Lead Inventory Agency Deputy Project Officer (DPO):**  |  |
| **Subject Matter & Technical Expert (SMTE):** |  |
|  |  |

**I. INTRODUCTION**

All countries that are signatories to the United Nations Framework Convention on Climate Change (UNFCCC) are mandated to develop a national inventory of anthropogenic greenhouse gas (GHG) emissions and removals. In accordance with the commitment to the UNFCCC and the reporting requirements for Non-Annex I Parties under the Convention, [insert coordinating/lead agency issuing request for proposal/task order request (RFP/ToR)] calculates and submits estimates of emissions and removals [specify, e.g. as part of National Communications and/or Biennial Update Reports[[1]](#footnote-1)] occurring in [insert country].

The emission and removal estimates produced in the greenhouse gas inventory by [coordinating/lead agency issuing RFP/ToR] represents a robust data analysis and conform to the UNFCCC standards of transparency, accuracy, consistency, comparability, and completeness.

**II. BACKGROUND AND PURPOSE**

In accordance with the commitment to the UNFCCC, and as part of the global effort to document national emissions of greenhouse gases and other precursor gases, [insert country] is obligated to prepare a national GHG inventory. Under this contract, the Contractor will assist [insert country and coordinating/lead agency] in developing its greenhouse gas inventory submission to the UNFCCC [specify, e.g. as part of the insert National Communication (NC) and/or Biennial Update Report (B.U.R.)] and the related work necessary to improve and build the GHG Inventory program.

**III. STATEMENT OF WORK TASKS**

The statement of work consists of the following components.

* Task 1: Project Management
* Task 2: Calculate Emission Estimates for Energy Sector Categories of Greenhouse Gases
* Task 3: Calculate Emission Estimates for Industrial Processes and Solvent and Other Product Use Sector Categories of Greenhouse Gases
* Task 4: Calculate Emission Estimates for Agriculture Sector Categories of Greenhouse Gases
* Task 5: Calculate Emission Estimates for Land-Use, Land-Use Change, and Forestry Sector Categories of Greenhouse Gases
* Task 6: Calculate Emission Estimates for Waste Sector Categories of Greenhouse Gases
* Task 7: Development of [insert country]’s GHG Inventory Report
* Task 8: GHG Inventory Analyses and Quick Turn-Around Response

**Task 1: Project Management**

This task includes project management for the contract including contract administration, attendance at inception and close out meetings, and development of a workplan and budget.

**Subtask 1.1: Perform Contract Administration:** The Contractor shall provide project management under this task, and shall submit a Monthly Progress Report to [coordinating/lead agency, such as Ministry of Environment] the Project Officer (PO). During the Period of Performance, the Contractor shall immediately inform the PO by telephone and/or email of any issue(s) that may impede performance along with any corrective actions needed by [coordinating/lead agency] and Contracting Agency [such as UNDP] to address the issue(s).

**Subtask 1.2: Attend Inception Meeting:** Under this task, the Contractor shall also attend a general or task specific inception meeting, either via conference call or in-person, whichever is most cost effective to the [Lead Inventory Agency administering the contract], to discuss the goals, strategy, and schedule for completing the products. The Contractor shall discuss the format of monthly contract reporting using a Monthly Progress Report, including more detailed budget tracking, and propose a progress report template to the [coordinating/lead agency] PO for approval. The Contractor, under this task, will also attend a wrap-up meeting at the end of the Period of Performance.

**Subtask 1.3: Prepare Workplan:** Using information from the inception meeting, and in consultation with the inventory PO, the Contractor shall provide a draft workplan outlining the approach, resources, outputs or products, overall project timeline and key milestones, and estimated budget (costs and/or hours) for the tasks listed below. Estimates of costs and/or hours can be presented for each staff member by title and task/subtask, and/or product. The presentation of costs should be discussed with the Lead Inventory Agency Project Officer, and modified consistent with how the inventory budget is managed for your country. An example table is presented below that should be replicated for each Task and Subtask as it applies to your final estimates. This can be expanded to include staff names, titles, and products. This information shall be tracked and reported in the monthly progress reports. The timeline shall contain all products and shall be easily cross referenced against the projected hours and costs. An example timeline is included in Appendix I of this document and the inception memo template available online at: <http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html>. The [coordinating/lead agency issuing RFP/ToR] Project Officer (PO) and [insert name of any other required commenter] will review the draft workplan and will request revisions and/or changes as needed. The Contractor shall incorporate [coordinating/lead agency issuing RFP/ToR] comments into the final workplan.

**Subtask 1.4: Prepare or Update Template Workbook:** Additionally, the Contractor shall complete or update the existing QA/QC and Archiving National System Templates and complete an initial KCA upon consultation with the [coordinating/lead agency].

Using the QA/QC National System Template, with the [coordinating/lead agency] and the QA/QC Coordinator, the Contractor shall finalize the QA/QC procedures and schedule, including any sector specific checks for key emission and removal categories throughout the inventory development cycle. Contractors shall rely on existing drafts developed with the [coordinating/lead agency].

Using the Archiving National System Template, with the [coordinating/lead agency] and any Archives Coordinators, the Contractor shall finalize Archiving arrangements and procedures, define clear roles for core team members and update the archive schedule. Contractors shall rely on existing drafts developed with the [coordinating/lead agency].

1. Using the KCA National System Template and Excel KCA Tool, the Contractor shall prepare an initial IPCC Key Category Analysis or update the previous KCA to reflect the most recent Inventory results. The Contractors shall deliver the KCA spreadsheet and documentation to the [coordinating/lead agency].
2. Using the NIIP National System Template, the Contractor shall discuss priority improvements with the [coordinating/lead agency] and relevant technical partners. Contractors shall rely on existing drafts developed with the [coordinating/lead agency].

Sample budget template:

|  |  |
| --- | --- |
| **Task** | **Budget** |
| **Task 1 Total** | **$** |
|  Subtask 1.1 |  $ |
|  Subtask 1.2 |  $ |
|  Subtask 1.3 |  $ |
| **Task 2 Total** | **$** |
|  Subtask 2.1 |  $ |
|  [Add subtasks as necessary] |  $ |
| **Task 3 Total** | **$** |
|  Subtask 3.1 |  $ |
|  [Add subtasks as necessary] |  $ |
| **Task 4 Total** | **$** |
|  Subtask 4.1 |  $ |
|  [Add subtasks as necessary] |  $ |
| **Task 5 Total** | **$** |
|  Subtask 5.1 |  $ |
|  [Add subtasks as necessary] |  $ |
| **Task 6 Total** | **$** |
|  Subtask 6.1 |  $ |
|  [Add subtasks as necessary] |  $ |
| **Task 7 Total** | **$** |
|  Subtask 7.1 |  $ |
|  [Add subtasks as necessary] |  $ |
| **Task 8 Total** | **$** |
|  Subtask 8.1 |  $ |
|  [Add subtasks as necessary] |  $ |
| [**Add Tasks and subtasks as necessary**] | **$** |
| **Total Budget for All Tasks** | **$** |

Products and schedule under Task 1:

|  |  |
| --- | --- |
| **Subtask 1.1 Products** | **Due Date** |
| Prepare Monthly Progress Report/Budget Tracking Template | Draft due within 5 business days of inception meeting; Final due within 5 business days of PO comments |
| Monthly Progress Report | By 10th business day each month |
| **Subtask 1.2 Products** | **Due Date** |
| Attend inception meeting; Prepare revised staffing and budget plan | Within 2 weeks of award of contract |
| Attend wrap-up meeting | At least 2 weeks prior to the end of the contract, per PO direction |
| **Subtask 1.3 Products** | **Due Date** |
| Draft workplan | Within 7 days after receipt of this contract. |
| Final workplan | Within 5 days of receipt of comments from PO on draft workplan |

**Common Approach for Completing Tasks 2 through 6: Calculate Emission Estimates for Energy, Industrial Processes, Solvent and Other Product Use, Agriculture, Land-Use, Land-Use Change and Forestry, and Waste Sectors of Greenhouse Gases**

[*The approach in the two subtasks below is a general approach that can be replicated or adapted for other subtasks in particular for any sector estimates the coordinating agency includes in the ToR*. *The following general guidance is divided into two subtasks and describes the approach and elements required for each sector of GHG emissions estimates outlined in Tasks 2 through 6. Modify these subtasks and tasks according to country circumstances*].

As noted above, the Contractor shall prepare inventory estimates, documentation, uncertainty, and QA/QC as described below in Subtasks 1 and 2 for the emission categories listed. The Contractor shall follow instructions distributed by the inventory coordinator in the [reference any inventory procedures, such as an inception memo which will summarize documentation, data management/archiving, QA/QC, national inventory improvement plans] that outlines procedures and deadlines for the production of [insert country name]’s *Inventory of Greenhouse Gas Emissions and Removals* for [insert years included in inventory]. The Contractor shall use methods consistent with the conceptual framework developed by the Intergovernmental Panel on Climate Change (IPCC), and described in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, as well as being consistent with the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, and the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. The Contractor will also coordinate among sector leads to ensure there are no double counting issues among sectors and categories. An example of some of these unique cross-over issues are detailed in Appendix II.

**Subtask 1 Inventory Improvements:**

The Contractor shall review the key category analysis and existing improvement plans, and per those plans investigate new emission estimation methodologies and improvements to existing methodologies used in previous inventories[[2]](#footnote-2), as well as integrating new activity data sources, especially for key emission categories. *{In particular, the Contractor should consider and discuss with the PO on the methodological advancements presented in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, as well as other work that may be undertaken under a separate work assignment or contract.}* Methodological improvements may not be necessary for all of the categories listed.

Following agreement between the Contractor and the PO on areas for improvement, the Contractor shall collect the necessary activity data and emission factors. If any methodological improvements are made, the Contractor shall provide preliminary results to the PO in memo form, along with comparisons with estimates for previous years.

**Subtask 2Finalize Estimates and Documentation for Sectors and Categories Included in the Contract:**

* **Estimates:** The Contractor shall complete [carbon dioxide (CO2), methane (CH4) nitrous oxide (N2O), HFC, PFC, and SF6] emission estimates for [insert years, for example “2000 and 2010”, or “2005-2010”] for the emission categories listed below. The Contractor, in consultation with the [insert key sectoral coordinating agency(s) and data supplying agencies], shall collect the necessary activity data and emission factors. The Contractor shall develop estimates that adhere to IPCC principles and are transparent, accurate, complete, consistent, and comparable.

For improvements implemented, the Contractor shall prepare the necessary documentation consistent with IPCC Good Practice Guidance and/or 2006 IPCC Guidelines. For methodological improvements moving from Tier 1 to Tier 2 methods, the Contractor shall prepare a memo comparing the Tier 1 and Tier 2 results. For integration of new data sources, the Contractor shall describe the treatment of data across the time series to ensure time series consistency, completeness, etc.

* **Inventory Report Discussion text***:* The Contractor shall also prepare discussion text of the results for each emission category within the subtask for inclusion in the *inventory*, following the procedures in the inception memo distributed by the inventory coordinator*.* [Coordinating/lead agency] will provide any existing discussion text from previous inventories to update (if available), but the discussion shall include the following information:
	+ The nature of the source or emission category and pathway and relevance/detail on emission category for [insert country]
	+ An analysis of historical trends over [insert time series]
	+ Relevant avoided emissions from mitigation programs (e.g. voluntary programs)
	+ A description of methods used to prepare estimates
	+ Any methodological changes from previous reports or national communications
	+ A summary discussion of uncertainty in the estimates (optional)
	+ A summary discussion of recalculations if methodological changes were applied
	+ A summary discussion of planned improvements, if applicable
* **Documentation***:* The Contractor shall provide a Technical Annex with the following documentation for the inventory archives:
	+ A draft [Methods and Data Documentation (MDD) template](http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html) from the National System’s Template, completed for each sector included in this SOW. This template includes sections to document:
		- Calculation parameters, including activity data and emissions factors
		- The sources or references of all primary activity data and emissions factors, including assumptions and expert judgment
		- Methodologies selected for each calculation
	+ Copies of clean, transparent (i.e., understandable to a third party), and well documented electronic worksheets used to complete estimates
	+ Consult [Sector Lead/Coordinator] for documenting expert consultations, etc.
* **Inputs to UNFCCC Reporting tables**: For the emission categories listed within this task, the Contractor shall use the UNFCCC Reporting Software as directed by the [insert coordinating/lead agency]. [http://unfccc.int/national\_reports/non-annex\_i\_national\_communications/non-annex\_i\_inventory\_software/items/7627.php]
* **Uncertainty (optional):**For each emission category estimated under Tasks 2 through 6, the Contractor shall perform an uncertainty modeling effort (e.g., Tier 1) per the direction of the [Sector coordinating agency] and, at minimum, prepare a detailed discussion of uncertainty along with a quantification of the uncertainty in the estimates updating any existing analyses. As discussed under “improvements” above, a revision to the current uncertainty estimates may also be undertaken.
* **Quality Control:** The Contractor shall complete the Tier 1 QC checks for the each emission category based upon the QC forms [insert coordinating/lead agency] provides to the Contractor. Draft Tier 1 forms and a draft [QA/QC National Systems template](http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html) (including QA/QC checklists) shall be completed during the inventory preparation process prior to any external reviews that are conducted according to the overall schedule provided by [coordinating/lead agency].
* **Quality Assurance/Review**: The Contractor may be directed to respond to any comments from reviews (internal, interagency, and/or international) of the draft and final inventory. For example, the Contractor will assist the [coordinating/lead agency] to respond to comments from the UNFCCC International Consultation and Analysis process per the projected schedule provided by [coordinating/lead agency] during the initial inception meeting. Personal communications should be documented in the contact and supplemental information forms available online (in the Institutional Arrangements section) at: <http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html>.
* **Develop/Update GHG Inventory Improvement Plan:** The Contractor will consult with the [coordinating/lead agency] and apply available tools such as EPA’s National Inventory Improvement Plan Template and [insert country]’s final KCA to prepare a prioritized list of improvements to discuss with the [coordinating/lead agency] and relevant technical partners.

**Task 2: Calculate Emission Estimates for Energy Sector Categories of Greenhouse Gases**

**This task will include all elements of the common approach.** Under Task 2 of this contract, the Contractor shall calculate specified categories in the Energy sector of the inventory, including:

**Fuel Combustion Activities**

* Energy Industries – carbon dioxide, methane, and nitrous oxide emissions
* Manufacturing industries and construction – carbon dioxide, methane, and nitrous oxide emissions
* Transport – carbon dioxide, methane, and nitrous oxide emissions
* Other sectors – carbon dioxide, methane, and nitrous oxide emissions
* Non-Specified – carbon dioxide, methane, and nitrous oxide emissions

**Fugitive Emissions from Fuels**

* Solid Fuels – carbon dioxide and methane emissions
* Oil and Natural Gas – carbon dioxide, methane and nitrous oxide emissions
* Other emissions from energy production – carbon dioxide, methane, and nitrous oxide emissions

**Carbon Dioxide Transport and Storage**

* Transport of CO2 – carbon dioxide
* Injection and Storage – carbon dioxide
* Other – carbon dioxide

The Contractor shall use methods consistent with the conceptual framework developed by the Intergovernmental Panel on Climate Change (IPCC), and described in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, as well as being consistent with the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, and the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

The Contractor shall investigate new emission estimation methodologies and improvements to existing methodologies used in previous inventories, as well as integrating new activity data sources, if applicable. The Contractor shall adhere to the above mentioned subtask guidance on estimates, inventory report discussion text, documentation, UNFCCC reporting tables, uncertainty, QA/QC, and reviews. The products in the table below are consistent with this guidance.

Following agreement between the Contractor and the PO on areas for improvement, the Contractor shall collect the necessary activity data, including the data necessary for uncertainty modeling, and emission factors. If any methodological improvements are made, the Contractor shall provide preliminary results to the PO in memo form, along with comparisons with estimates for previous years.

Products and Schedule under Task 2:

|  |  |
| --- | --- |
| **Subtask 2.1 Products** | **Due Date** |
| Memorandum (2-4 pages) including draft list of recommended improvements for [insert reporting years of inventory] inventory |  Within **2 weeks** of contract initiation |
| Memorandum (2-4 pages) including final list of improvements for [insert reporting years of inventory] inventory | Within 1 week of receipt of comments from the PO |
| **Subtask 2.2 Products** | **Due Date** |
| Draft timeline and schedule for completion of Energy sector estimates, documentation (and completed MDD templates), uncertainty, QA/QC forms (and QA/QC template), and UNFCCC reporting table inputs for [insert years] inventory | Within **1 week** of submittal of memorandum of final list of improvements for the [insert time series] inventory (and to be determined on the basis of the inventory schedule provided in the inception memo) |
| Final timeline and schedule for completion of Energy sector estimates, documentation (and completed MDD templates), uncertainty, QA/QC forms (and QA/QC template), and UNFCCC reporting table inputs for [insert years] inventory | Within **1 week** of receipt of draft comments from the PO |
| Draft outline of inventory sectoral text conforming to the template established in Task 7 | Due date to be determined on the basis of the final schedule in written technical direction from the PO |
| Final outline of inventory sectoral text conforming to the template established in Task 7 | Due date to be determined on the basis of the final schedule in written technical direction from the PO |
| Draft estimates with discussion, documentation and draft UNFCCC reporting table inputs for [insert years] inventory | Due date to be determined on the basis of the final schedule in written technical direction from the PO |
| Final estimates with discussion, documentation and draft UNFCCC reporting table inputs for [insert years] inventory | Within **2 weeks** of receipt of draft comments from the PO |
| QA/QC forms and inventory archive materials for all Task 2 sources for the [insert years] inventory | Due date to be determined on the basis of the final schedule in written technical direction from the PO |
| Draft responses to comment from the review of the inventory, and any required revision to emission estimates, including discussion text and any supplemental documentation of revisions if required. | Due date to be determined on the basis of schedule for the inventory reviews in written technical direction from the PO |
| Final responses to comment from review of the inventory, and revision to emission estimates, including discussion text and any supplemental documentation of revisions if required. | Due date to be determined on the basis of schedule for the inventory reviews in written technical direction from the PO |

**Task 3: Calculate Emission Estimates for Industrial Processes and Solvent and Other Product Use Sector Categories of Greenhouse Gases**

**This task will include all elements of the common approach.** Under Task 3 of this contract, the Contractor shall calculate emissions for the specified categories in the Industrial Processes and Solvent and Other Product Use sectors of the inventory, which could include, but are not limited to:

[Customize the categories for national circumstances, including product use]

**Mineral Production**

* Cement Production – carbon dioxide emissions
* Lime Production – carbon dioxide emissions
* Limestone and Dolomite Use – carbon dioxide emissions

**Chemical Production**

* Ammonia Manufacture – carbon dioxide emissions
* Urea consumption for Non-Agricultural Purposes – carbon dioxide emissions
* Nitric Acid Production – nitrous oxide emissions
* Adipic Acid Production – nitrous oxide emissions
* Petrochemical Production – carbon dioxide and methane emissions
	+ Carbon Black
	+ Ethylene
	+ Ethylene Dichloride
	+ Methanol
	+ Styrene
* Soda Ash Manufacture and Consumption – carbon dioxide emissions
* Carbide Production and Consumption (Calcium and Silicon) – carbon dioxide and methane emissions
* Titanium Dioxide Production – carbon dioxide emissions

**Metal Production**

* Aluminum - carbon dioxide and sulfur hexafluoride emissions
* Iron and Steel Production – carbon dioxide and methane emissions
	+ Metallurgical Coke Production
* Ferroalloy Production – carbon dioxide and methane emissions
* Magnesium Production - sulfur hexafluoride emissions
* Lead Production – carbon dioxide emissions
* Zinc Production – carbon dioxide emissions

**Electronics Industry**

* Semiconductor manufacture- Hydrofluorocarbon, Perfluorocarbon, Sulfur Hexafluoride, and Nitrogen Trifluoride emissions
* Flat Panel Display Production- Perfluorocarbon, Sulfur Hexafluoride and Nitrogen Trifluoride emissions
* Photovoltaics Production- Perfluorocarbon and Nitrogen Trifluoride emissions
* Heat Transfer Fluid Production- Hydrofluorocarbon and Perfluorocarbon emissions

**Substitution of Ozone Depleting Substances**

* ODS substitutes- Hydrofluorocarbon and Perfluorocarbon emissions

**Solvent and Other Product Use**

* Nitrous Oxide from Product Use – nitrous oxide emissions

The Contractor shall adhere to the above mentioned subtask guidance on estimates, inventory report discussion text, documentation, UNFCCC reporting tables, uncertainty, QA/QC, and reviews. The products in the table below are consistent with this guidance.

Products and Schedule under Task 3:

|  |  |
| --- | --- |
| **Subtask 3.1 Products** | **Due Date** |
| Memorandum (2-4 pages) including draft list of recommended improvements for [insert time period of inventory] inventory |  Within **2 weeks** of contract initiation |
| Memorandum (2-4 pages) including final list of improvements for the [insert reporting years of inventory] inventory | Within 1 week of receipt of comments from the PO |
| **Subtask 3.2 Products** | **Due Date** |
| Draft timeline and schedule for completion of Industrial Process and Product Use estimates, documentation (and MDD template), uncertainty, QA/QC forms (and QA/QC template), and UNFCCC reporting table inputs for [insert years] inventory | Within **1 week** of submittal of memorandum of final list of improvements for the 1990-2012 inventory (and to be determined on the basis of the inventory schedule provided in the inception memo) |
| Final timeline and schedule for completion of Industrial Process and Product Use estimates, documentation (and MDD template), uncertainty, QA/QC forms (and QA/QC template), and UNFCCC reporting table inputs for [insert years] inventory | Within **1 week** of receipt of draft comments from the PO |
| Draft outline of inventory sectoral text conforming to the template established in Task 7 | Due date to be determined on the basis of the final schedule in written technical direction from the PO |
| Final outline of inventory sectoral text conforming to the template established in Task 7 | Due date to be determined on the basis of the final schedule in written technical direction from the PO |
| Draft estimates with discussion, documentation and draft UNFCCC reporting table inputs for [insert years] inventory | Due date to be determined on the basis of the final schedule in written technical direction from the PO |
| Final estimates with discussion, documentation and draft UNFCCC reporting table inputs for [insert years] inventory | Within **2 weeks** of receipt of draft comments from the PO |
| QA/QC forms and inventory archive materials for all Task 3 sources for the [insert years] inventory | Due date to be determined on the basis of the final schedule in written technical direction from the PO |
| Draft responses to comment from the review of the inventory, and any required revision to emission estimates, including discussion text and any supplemental documentation of revisions if required. | Due date to be determined on the basis of schedule for the inventory reviews in written technical direction from the PO |
| Final responses to comment from review of the inventory, and revision to emission estimates, including discussion text and any supplemental documentation of revisions if required. | Due date to be determined on the basis of schedule for the inventory reviews in written technical direction from the PO |

**Task 4: Calculate Emission Estimates for Agriculture Sector Categories of Greenhouse Gases**

**This task will include all elements of the common approach.** Under Task 4 of this contract, the Contractor shall calculate emissions for the specified categories in the Agriculture sector of the inventory, which could include, but are not limited to:

* [insert applicable categories here]

The Contractor shall adhere to the above mentioned subtask guidance on estimates, inventory report discussion text, documentation, UNFCCC reporting tables, uncertainty, QA/QC, and reviews. The products in the table below are consistent with this guidance.

[Insert any other relevant category text here]

Products and Schedule under Task 4:

|  |  |
| --- | --- |
| **Subtask 4.1 Products** | **Due Date** |
| [insert products here]  |  [insert due dates here] |

**Task 5: Calculate Emission Estimates for Land-Use, Land-Use Change, and Forestry Sector Categories of Greenhouse Gases**

**This task will include all elements of the common approach.** Under Task 5 of this contract, the Contractor shall calculate emissions for the specified source categories in the Land-Use, Land-Use Change, and Forestry sector of the inventory, which could include, but are not limited to:

* [insert relevant source and sink category text here]

The Contractor shall adhere to the above mentioned subtask guidance on estimates, inventory report discussion text, documentation, UNFCCC reporting tables, uncertainty, QA/QC, and reviews. The products in the table below are consistent with this guidance.

[Insert any other relevant category specific text here]

Products and Schedule under Task 5:

|  |  |
| --- | --- |
| **Subtask 5.1 Products** | **Due Date** |
| [insert products here]  |  [insert due dates here] |

**Task 6: Calculate Emission Estimates for Waste Sector Categories of Greenhouse Gases**

**This task will include all elements of the common approach.** Under Task 6 of this contract, the Contractor shall calculate emissions for the specified source categories in the Waste sector of the inventory, which could include, but are not limited to:

* [insert applicable category(s) here]

The Contractor shall adhere to the above mentioned subtask guidance on estimates, inventory report discussion text, documentation, UNFCCC reporting tables, uncertainty, QA/QC, and reviews. The products in the table below are consistent with this guidance.

[Insert any other relevant category text here]

Products and Schedule under Task 6:

|  |  |
| --- | --- |
| **Subtask 6.1 Products** | **Due Date** |
| [insert products here]  |  [insert due dates here] |

**Task 7: Development of [insert country]’s GHG Inventory Report**

**This task will include all elements of the common approach.** Under this task, the Contractor shall work to support the development of [insert country]’s GHG inventory report. The Contractor shall use methods consistent with the conceptual framework developed by the Intergovernmental Panel on Climate Change (IPCC), and described in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, as well as being consistent with the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, and the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.[[3]](#footnote-3) The Contractor shall format the report according to the reporting guidelines agreed to at the UNFCCC [insert reference UNFCCC National Communication or Biennial Reporting Guidelines, both paragraphs 39-42 and [annex III of decision 2/CP.17](https://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&priref=600006772#beg) and the Annex, paragraph 3 of 17/CP.8] and in consultation with the [insert country and lead/coordinating agency] on required and encouraged items.

The Contractor shall work with the PO on setting deadlines for the compilation of the inventory report. *The structure and schedule for the compilation of the inventory will be detailed in an “inception” memo. A template will be distributed by [coordinating/lead agency], and a sample is available online at:* [*http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html*](http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html).

The Contractor shall collect and compile the necessary data and calculated emissions from category experts, and then provide complete emission estimates for all emission and removal categories to the coordinator at [coordinating/lead agency] for review. The Contractor will also perform a KCA once all emissions estimates for all emission and removal categories are complete and provide the complete analysis to the coordinator at [coordinating/lead agency] for review. The Contractor shall then prepare a first draft report, including any required annexes, for internal review. The Contractor shall also be responsible for summarizing the comments received during the internal review, identifying any major issues or conflicts, and incorporating changes in consultation with the coordinator. A summary of these comments and responses to these comments shall be provided to the coordinator. Following the internal review, the Contractor shall finalize all sections of the report, making changes to address comments received in consultation with the coordinator and relevant category experts. The revised, final inventory document will be supplied to the [coordinating/lead agency].

The Contractor shall also work with the coordinator at [coordinating/lead agency] to report estimates to the UNFCCC[[4]](#footnote-4) (http://unfccc.int/national\_reports/non-annex\_i\_national\_communications/non-annex\_i\_inventory\_software/items/7627.php). The reporting tables should be prepared for the required time series, paying particular attention to changes in data or methodologies. The Contractor shall work with the inventory coordinator at [coordinating/lead agency] to ensure that adequate review by relevant category experts is obtained. The Contractor shall deliver to the coordinator a set of reporting tables and the entire final document in an electronic format so that the coordinator can prepare the files for the UNFCCC submission.

The Contractor will conduct any other activities necessary to finalizing the document and related materials, including but not limited to: 1) developing an outline for the GHG Inventory Report and a template for sectors to follow, 2) completing the archive, a comprehensive collection of MDD, spreadsheets, documented QC, and all materials used and cited in the inventory, 3) developing the response document to the internal comments, and 4) putting together inventory binders for the coordinator, which include the inventory document and the annexes.

Products and schedule under Task 7:

|  |  |
| --- | --- |
| **Subtask 7.1 Products** | **Due Date** |
| Discussion meetings and notes | As requested by the PO |
| **Subtask 7.2 Products** | **Due Date** |
| Draft outline of the GHG Inventory report, and templates for each sector | As requested by the PO |
| Final outline of the GHG Inventory report, and templates for each sector | As requested by the PO |
| **Subtask 7.3 Products** | **Due Date** |
| Internal review draft of inventory | As requested by the PO |
| **Subtask 7.4 Products** | **Due Date** |
| Summary of expert review comments and responses for each | As requested by the PO |
| **Subtask 7.5 Products** | **Due Date** |
| Final version of GHG inventory | As requested by the PO |
| **Subtask 7.6 Products** | **Due Date** |
| All data files for UNFCCC submission, including Excel reporting tables | As requested by the PO |

**Task 8: GHG Inventory Analyses and Quick Turn-Around Response**

This task provides resources to enable the Contractor to provide expert support to the PO and to respond to requests for presentation materials, technical briefings, profiles or summaries of GHG emission characteristics, and inventory-related analyses, often needed on a quick turn-around basis. Additional work on disaggregating emissions to end use categories may also be conducted under this task. This task has been provided in recognition of the fact that inventory development work is a broader and more complex effort than data compilation and document production.

Products and Schedule under Task 8:

|  |  |
| --- | --- |
| **Subtask 8.1 Products** | **Due Date** |
| Tables, spreadsheets, presentation graphics, and/or documentation |  To be determined by PO |

**IV. PRODUCTS**

Product due dates are specified by task above. Distribution of products should be handled by sending one electronic copy each to the [coordinating/lead agency, Contracting Officer] and the [coordinating/lead agency] Project Officer. Hard copy products will be made available upon request of the PO.

**Appendix I**

**Example Work Plan and Schedule for Inventory Development (from the Inception Memo Template)**

| Activity | Activities and Responsibilities | Lead[[5]](#footnote-5) | Due Date[[6]](#footnote-6) | Relevant Resources |
| --- | --- | --- | --- | --- |
| 1 | Finalize and document Institutional Arrangements, and identify experts for sectoral working groups and inventory peer review. * Complete the Institutional Arrangements Template.
 | **NIC, Sector leads**  | *For example, 1-2 months from start* | *EPA Institutional Arrangements (IA) Template* |
| 2 | Prior to kick-off/inception meeting, revise and complete this memo and additional portions of the EPA [National GHG Inventory System Template Workbook](http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html) that will apply to all sectors. For example, the NIC should develop the QA/QC and archiving plans for the inventory. Some sections like the MDD template will need to be completed by category leads during inventory development. | **NIC, Sector leads** | *1-2 months* | [*EPA National GHG Inventory System Template Workbook*](http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html) *(all templates)* |
| 3 | Hold inception meeting with key inventory team members and all Sector Leads to:* Ensure readiness of the team to conduct the inventory
* Discuss sectors and categories to be included in the inventory
* Communicate which years inventory estimates will be reported (e.g. 2005 and 2010)
* Communicate which guidelines will be used (for example, the 2006 IPCC Guidelines)
* Communicate the software that should be used for the inventory
* Discuss what needs to be submitted to the NIC, and schedule
* Distribute and review the inception memo and any additional general inventory guidance
* Distribute and review category preparation instructions and any additional supporting materials (e.g. template for narrative text)
* Discuss any issues or concerns
 | **NIC, Sector leads** | *1-2 months* | *National Inventory Inception Memo Template (in EPA Toolkit)* |
| 4 | Review IPCC methods and good practice guidance. Consider whether additional training of staff is needed.  | **NIC, Sector Leads** | *1-2 months* | [*IPCC Guidelines*](http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html)[*UNFCCC Consultative Group of Experts Training Materials for Each Sector*](http://unfccc.int/national_reports/non-annex_i_natcom/training_material/methodological_documents/items/7914.php) |
| 5 | NIC should work with Sector Leads to find and distribute any available materials from the previous National Communication or National Inventory.  | **NIC** | *1-2 weeks* | [*Sector Lead Roles and Responsibilities*](http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html) *(in EPA Toolkit)* |
| 6 | Each Sector Lead should:* Review the relevant section(s) of the previous national communication
* Review previous inventory to determine priorities for this inventory. Pay attention to discussions of problems or potential future improvements. Review inventory sections, spreadsheets, and other relevant files.
* Assign staff responsibilities (i.e., collecting data, developing estimates, coordinating consultant(s), working with ministries providing data, etc.)
* Determine data availability, quality, and barriers to collection
* Choose methods, identify activity data, approaches for filling data gaps, emission factors, and conversion factors.
* Send any necessary official communication to request data
 | **Sector Leads and sector working groups** | *1-2 months* | *EPA Methods & Data Documentation (MDD) Template**Sector Lead Roles and Responsibilities (in EPA Toolkit)*[*IPCC Guidelines*](http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html) |
| 7 | Determine methods and compile activity data and emission factors (e.g. data should include activity data, emission factors and relevant uncertainty parameters).Use MDD template to document methods and data. | **Sector Leads** | *1-2 months* | [*IPCC Guidelines*](http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html)*EPA Methods & Data Documentation (MDD) Template**Review reporting and documentation sections of* [*IPCC Good Practice GL/2006 GL*](http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html) *for each emission/removal category* |
| 8 | Complete emission calculations and prepare narrative text to be included in the inventory | **Sector Leads** | *2 months* | *Sector Lead Roles and Responsibilities (in EPA Toolkit)* |
| 9 | Recalculate emission estimates for previous inventory years (if applicable) and explain changes in narrative text | **Sector Leads** | *1 month* | *Sector Lead Roles and Responsibilities (in EPA Toolkit)* |
| 10 | Complete internal quality control (QC) procedures, including additional internal reviews as described in the QA/QC plan | **Sector Leads, QA/QC Coordinator** | *1 month* | *EPA Description of QA/QC Procedures Template*[*Review QA/QC sections of IPCC Good Practice GL/2006 GL for each emission/removal category*](http://www.ipcc-nggip.iges.or.jp/public/gp/bgp/6_2_QA_QC.pdf) |
| 11 | Complete external quality assurance (QA) procedures (e.g., stakeholders, advisory committee) including any additional external reviews as described in the QA/QC plan | **Sector Leads, QA/QC Coordinator** | *1-2 months* | *EPA Description of QA/QC Procedures Template* |
| 12 | Revise GHG estimates and narrative text based upon QA/QC reviews | **Sector Leads** | *1-2 weeks* | *Sector Lead Roles and Responsibilities (in EPA Toolkit)* |
| 13 | Complete Uncertainty Analysis (if applicable). Document Uncertainty methods using MDD Template.  | **Sector Leads, Uncertainty Coordinator** | *2-4 weeks* | *EPA Methods & Data Documentation (MDD) Template,* [*IPCC Uncertainty Chapter*](http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1_Volume1/V1_3_Ch3_Uncertainties.pdf) |
| 14 | Compile sector narratives into one document | **NIC** | *1-2 weeks* | *NIC Roles and Qualifications (in EPA Toolkit)* |
| 15 | Perform Key Category Analysis (KCA) on GHG estimates. Conduct a Level Analysis, and conduct a Trend Analysis if multiple years of data are available.Use the EPA materials to learn more about conducting a KCA (the webinar), to do the analysis (the tool), and to document the results (the template). | **NIC** | *1 week* | [*EPA KCA Webinar Part 1*](http://youtu.be/Ftx1U6q4mNE)[*EPA KCA Webinar Part 2*](http://youtu.be/s-5gGkWdcXQ)*EPA* [*Key Category Analysis (KCA) Tool*](http://www.epa.gov/climatechange/Downloads/EPAactivities/EPA-KCA-Tool-v2.4.4.xls)*EPA Key Category Analysis (KCA) Template*[*Review IPCC Chapter on Key Category Analysis*](http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/1_Volume1/V1_4_Ch4_MethodChoice.pdf) |
| 16 | Prepare the draft inventory chapter or report. Perform internal QC checks.  | **NIC, QA/QC Coordinator** | *2-3 weeks* | *EPA Description of QA/QC Procedures Template*[*Review IPCC QA/QC of Inventory Systems*](http://www.ipcc-nggip.iges.or.jp/public/gp/bgp/6_2_QA_QC.pdf) |
| 17 | Address comments from QC review and finalize inventory chapter or report. | **NIC** | *2-3 weeks* |  |
| 18 | Submit inventory to the UNFCCC as part of the NC or BUR.  | **NIC** | *1-2 weeks* |  |
| 19 | Archive all inventory files both electronically and physically (with hard copy printouts). Follow the archiving plan developed using EPA Description of the Archiving System (AS) Template.Compile all the completed templates for a complete documentation inventory processes, methods, data, etc.At a minimum, archives should include:* description of institutional arrangements
* descriptions of the data assessment and manipulation processes, including the sources of data that were evaluated;
* why a particular data source was chosen for use in the inventory and possibly why others were not chosen;
* what assumptions were made in manipulating or choosing data for final use;
* references for the data;
* why recalculations were made and what those recalculations were; and responses to internal and external review comments;
* major draft and final versions of spreadsheets and the National Inventory Chapter of National Communication or Biennial Update Report (BUR)
 | **NIC** | *1 month* | [*EPA National GHG Inventory System Template Workbook*](http://www.epa.gov/climatechange/EPAactivities/internationalpartnerships/capacity-building.html) *(all templates)**The MDD and AS templates can be particularly helpful here.* |
| 20 | Determine potential improvements for the next inventory, and document into a plan | **NIC to lead with input from all inventory team members** | *2-4 weeks* | *EPA National Inventory Improvement Plan NIIP (NIIP) Template* |

**Appendix II**

Table with potential areas of coordination between sector leads.

|  |  |
| --- | --- |
| **Sector** | **Potential Areas of Overlap** |
| Energy | * + Coordinate with the Industrial Processes Sector Lead to determine if there will need to be any adjustments made for Energy fossil fuel combustion activity data. This might include production of non-fuel products from energy feedstocks such as coke, ethane, gas/diesel oil, LPG, naphtha, and natural gas.
	+ Coordinate with the Waste Sector Lead to determine the amount of waste incinerated used for electricity generation, the methane from coal mine waste, and landfill gas and sewage gas.
	+ Coordinate with the mobile combustion leads to ensure double counting of agricultural and off-road vehicles are avoided.
 |
| Industrial Processes | * + Coordinate with the Energy Sector Lead to determine if there will need to be any adjustments made to either sector in cases where GHG estimates might overlap (e.g. iron and steel production, ammonia, etc.).
	+ Coordinate with the Agriculture Sector Lead to determining if there will need to be any adjustments from limestone used for agricultural purposes.
 |
| Agriculture | * + Coordinate with the LULUCF Sector Lead to determine emission calculations and activity data adjustments for complex categories such Agricultural Soil Management and Manure Management, and ensure consistency between nitrogen quantities in Manure Management and Agricultural Soil Management.
	+ Ensure consistency of data between enteric and manure management (e.g., livestock populations and characterization).
	+ Coordinate with the Waste sector to ensure assumptions on application of sewage sludge and nitrogen content are consistent.
 |
| Land-Use, Land-Use Change and Forestry (LULUCF) | * + Coordinate with the Agriculture Sector Lead to determine emission calculations and activity data adjustments for overlapping categories such as Agricultural Soil Management and Manure Management.
 |
| Waste | * + Coordinate with the Energy Sector Lead to determine whether there is energy generated from waste incineration, and if so, whether that will be included in the Energy sector.
 |

1. For Non-Annex 1 countries, the United Nations Framework Convention on Climate Change (UNFCCC) requires the biennial development and submission of a National Inventory of GHG sources and removals (http://unfccc.int/national\_reports/non-annex\_i\_natcom/items/2716.php). [↑](#footnote-ref-1)
2. Previous Non-Annex I National Communications are available online at: <http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php>. [↑](#footnote-ref-2)
3. All versions of the IPCC Guidelines are available online at: <http://www.ipcc-nggip.iges.or.jp/>. [↑](#footnote-ref-3)
4. See Tables 1 and 2 on p. 11-12 of 17/CP.8 at http://unfccc.int/resource/docs/cop8/07a02.pdf#page=2 [↑](#footnote-ref-4)
5. “Lead” is the person(s) responsible. This may have been defined in Section 1.2 of the Institutional Arrangements Template. [↑](#footnote-ref-5)
6. The NIC should determine due dates (with day/month/year). Example timeframes for each activity have been suggested. [↑](#footnote-ref-6)