



United Nations

Department of
Economic and
Social Affairs

Office for
Sustainable
Development

Capacity development for Results in Environmental and Climate Statistics – Lessons learned from UNOSD

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UNOSD Strategy – Thematic focus

Capacity development and policy advisory on data-driven and evidence-based policy and planning for SDGs

Water
SDG 6 Policy
Support System
Wetlands
Inventories
(Ramsar)

Waste and
Circular Economy
Policy Support
System

Water-Energy-
Food-Ecosystems
Nexus

GHG Inventories
and Climate
Action



In 2024, we organized 12 training events reaching 542 participants

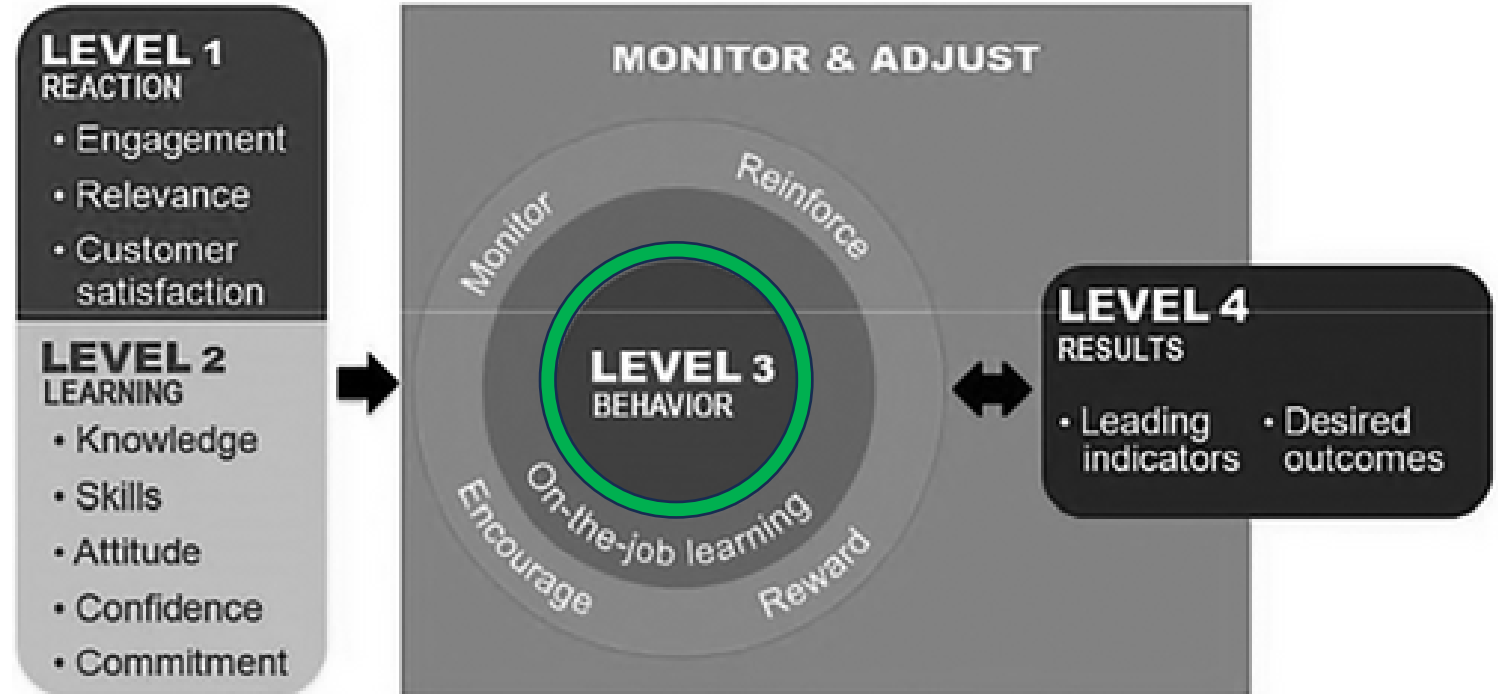


Current context and shared goals

- Decline in international development cooperation assistance amid geopolitical tension questioning UN value
- **UN80** - improve efficiency, effectiveness, and impact
- **Need to demonstrate impact and results on capacity development - How?**
- UN 2.0 – behavioral science opportunity to accelerate impact
- **Capacity development** – who, which, what, how of **behavior / institutional norms / social norms**

Kirkpatrick Model for evaluating training impact

- 4 Levels
- Guides effective capacity development
- UNOSD applies model for training evaluation



The Kirkpatrick model levels and influencing factors for institutional learning and capacity development results.

Source: Kirkpatrick and Kirkpatrick, 2016, as referenced in Rucks et al., 2024.

Capacity development and behavior change key to all our work

- Our goal is behavior change and broader institutional change (*~ levels 3 and 4 of Kirkpatrick model*)
- Lesson – Hard-to-measure area – dedicated resources needed
- Lesson – High-level buy in needed, change the default in org.
- Lesson – Need to collect knowledge on the behavioral barriers for each training to ensure more effective behavior change from each training

UNOSD research to ground our CD work

SPRINGER NATURE Link

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Innovations in Behavioral Science to Accelerate Transformative Climate Change Management

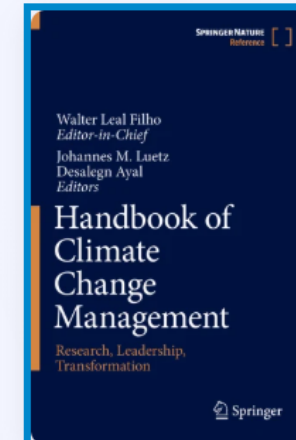
Reference work entry | First Online: 04 November 2021

pp 4471–4491 | [Cite this reference work entry](#)

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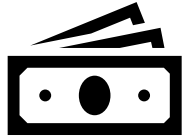
Handbook of Climate Change Management

[Sara Castro de Hallgren](#) ✉ & [Yujeong Kim](#)

[Sections](#)

[Fig](#)

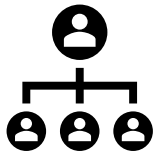
General Lessons learned in CD



- Essential to highlight links between data QC and QA and finance (e.g. Art. 6 and Art. 13)



- Interministerial delegations foster greater collaboration to strengthen action and follow up



- Higher-level commitment ensures political will-key ingredient for data and statistics funding and focus



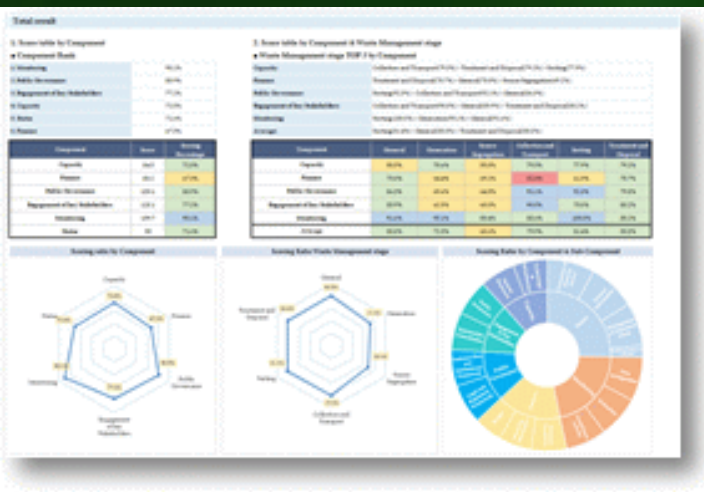
- Following same cohort of countries can yield results with follow up



- Assess needs vs results vs costs: Country to country benchmarking and networking essential – BUT in-person training is expensive (cost per participant). Must target champions and weigh potential results.

Waste Management and Circular Economy Policy Support System

Empowering UN Member States to Advance Sustainable Waste Management and Resource Circularity



[Click here to start](#)



The Growing Waste Crisis: Why Action Is Urgent

~2.1
Billion Tons

Municipal solid waste (MSW) generated annually.

~62
Per Cent

MSW that is managed in controlled facilities globally

~90
Per Cent

Waste in low-income countries that is discarded in unregulated dumps or burned openly

- Plastic waste increased by **126%** between 2000 and 2019
- E-waste reached **62 million tons in 2022** – up **82%** since 2010
- Waste sector contributes **~20%** of human-caused methane emissions
- **Absence and quality of national data**
Why?

Reliable Data: The Foundation for Sound Waste Policy and Finance

15
Years

Average age of waste management data from low-income countries

Why is accurate waste data important?

- Data helps set baselines and track progress
- Supports financing (e.g. climate finance), budget resource allocation
- Crucial for business case and investment
- Enables **evidence-based** decisions, policy, planning



- **UN DESA Led** - UNOSD, in partnership with the Statistics Division – with Green Growth Knowledge Partnership (**GGKP**), the UN Environment Programme (**UNEP**)
- **Champion countries (Hub countries for regional training)**
- **Workshops in July 2024 (Central America), April 2025 (Western Africa) and August 2025 (Eastern Africa)**
- **Qualitative Data**
- Final component aligned with **UN Questionnaire on Environment Statistics** to familiarise and incentivise reporting

Environment Statistics

Work Programme > Data

Questionnaire on Environment Statistics

The Questionnaire on Environment Statistics is part of the biennial UNSD data collection from the Joint OECD/Eurostat Questionnaire. Definitions used are provided within each Questionnaire and may change slightly, for example, to meet new demand such as that related to the Sustainable Development Goals. Such changes are mentioned within the Introduction of the Questionnaire.

Countries' responses to the Questionnaire are invaluable for monitoring the progress of the Sustainable Development Goals.

- ▶ 6.3.1 (Proportion of domestic and industrial wastewater flow safely treated);
- ▶ 6.4.1 (Change in water-use efficiency over time);
- ▶ 6.4.2 (Level of water stress; freshwater withdrawal as a proportion of available freshwater);
- ▶ 11.6.1 (Proportion of municipal solid waste collected and managed in controlled facilities);
- ▶ 12.3.1 (b) (Food waste index);
- ▶ 12.4.2 (Hazardous waste generated per capita; and proportion of hazardous waste recycled);
- ▶ 12.5.1 (National recycling rate, tons of material recycled).

The latest round of this Questionnaire was sent to countries in 2024 following 11 previous rounds. Questionnaires are sent on a regular biennial basis to a country's National Statistical Office and Ministry of Environment. Each country has a single focal point for communications with UNSD. The next round is planned for 2026.

Tool's Strategic Alignment and Value – Strengthen SDG reporting on 11.6.1, 12.3.1, 12.4.1, 12.4.2, 12.5.1, + 14.1

Component	Sub-Component	Basic	Detailed
Capacity	Human Resources	13	16
	Technology & Infrastructure	12	16
Finance	Budget	10	10
	Financing Mechanism	11	17
	Financial Incentives	7	11
Public Governance	National Plan and Institutional Framework	9	18
	Legal and Regulatory Framework	25	39
Engagement of key Stakeholders	Stakeholder Consultation	20	26
	Public Awareness	18	2
Monitoring	Data management	21	5
	Compliance Activity	8	4
	Evaluation	8	5
Status <i>(quantitative based on UNSD questionnaire on environment statistics – waste)</i>	General Information	3	-
	Generation of Waste by Source	8	-
	Management of Hazardous Waste	11	-
	Management of Municipal Waste	17	-
	Composition of Municipal Waste	8	-
	Management of Municipal Waste – City Data	18	-
	E-waste Generation and Collection	16	-



Eastern Africa Sub-Regional Workshop on Waste Management and Circular Economy, Madagascar, Antananarivo, 1-3 April 2025, 50 participants from 12 countries in Eastern Africa


GHG Inventory Training (7 sessions) since 2018

Sixth Greenhouse Gas Inventory System Training Workshop

28-31 May 2024 – UN Conference Centre Bangkok, Thailand
 Co-organized by UNOSD of UNDESA, UNESCAP, UNFCCC, IPCC and DCCE of Thailand


UNFCCC resource persons discuss the Enhanced Transparency Framework (ETF) and conduct interactive hands-on training sessions on new electronic reporting tools for national GHG inventories.

Please select one of the ETF reporting tools




ETF | GHG INVENTORY
Reporting tool

Enter >



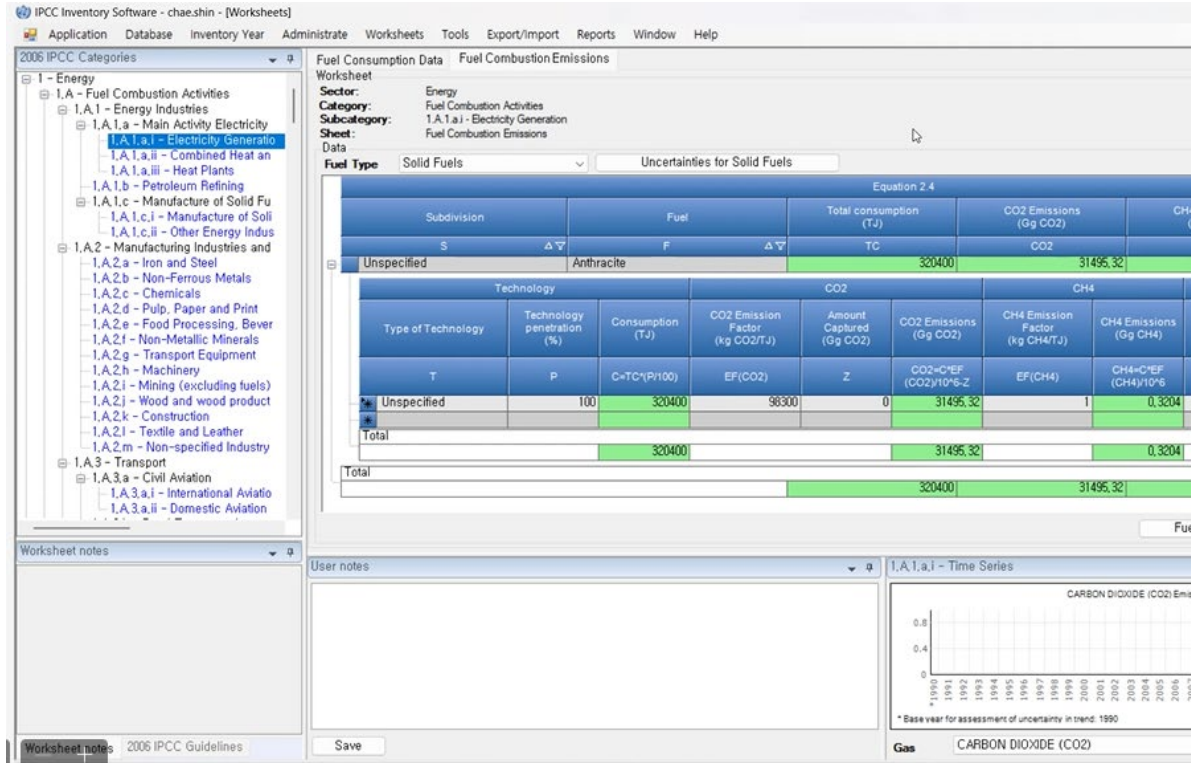
ETF | PROGRESS
Reporting tool

Enter >



ETF | SUPPORT
Reporting tool

Enter >



The screenshot shows the IPCC Inventory Software interface. On the left is a tree view of 2006 IPCC Categories, with '1.A.1.a.i - Electricity Generation' selected. On the right is a data table for 'Fuel Consumption Data' under the 'Fuel Combustion Emissions' worksheet. The table is titled 'Equation 2.4' and has columns for Subdivision, Fuel, Total consumption (TJ), and CO2 Emissions (Gg CO2). A row for 'Unspecified' under 'Anthracite' shows a total consumption of 320400 TJ and CO2 emissions of 31495.32 Gg CO2. Below this is a 'Technology' table with columns for Type of Technology, Technology penetration (%), Consumption (TJ), CO2 Emission Factor (kg CO2/TJ), Amount Captured (Gg CO2), CO2 Emissions (Gg CO2), CH4 Emission Factor (kg CH4/TJ), and CH4 Emissions (Gg CH4). A row for 'Unspecified' shows 100% penetration, 320400 TJ consumption, 98300 kg CO2/TJ emission factor, 0 Gg CO2 captured, 31495.32 Gg CO2 emissions, 1 kg CH4/TJ emission factor, and 0.3204 Gg CH4 emissions. A 'Total' row at the bottom of the technology table shows 320400 TJ consumption, 31495.32 Gg CO2 emissions, and 0.3204 Gg CH4 emissions. At the bottom right, there is a 'Time Series' chart for '1.A.1.a.i - Time Series' showing 'CARBON DIOXIDE (CO2) Emissions' from 1990 to 2019. The chart shows a steady increase from 0 in 1990 to approximately 0.32 in 2019. A note below the chart states '* Base year for assessment of uncertainty in trend: 1990'.

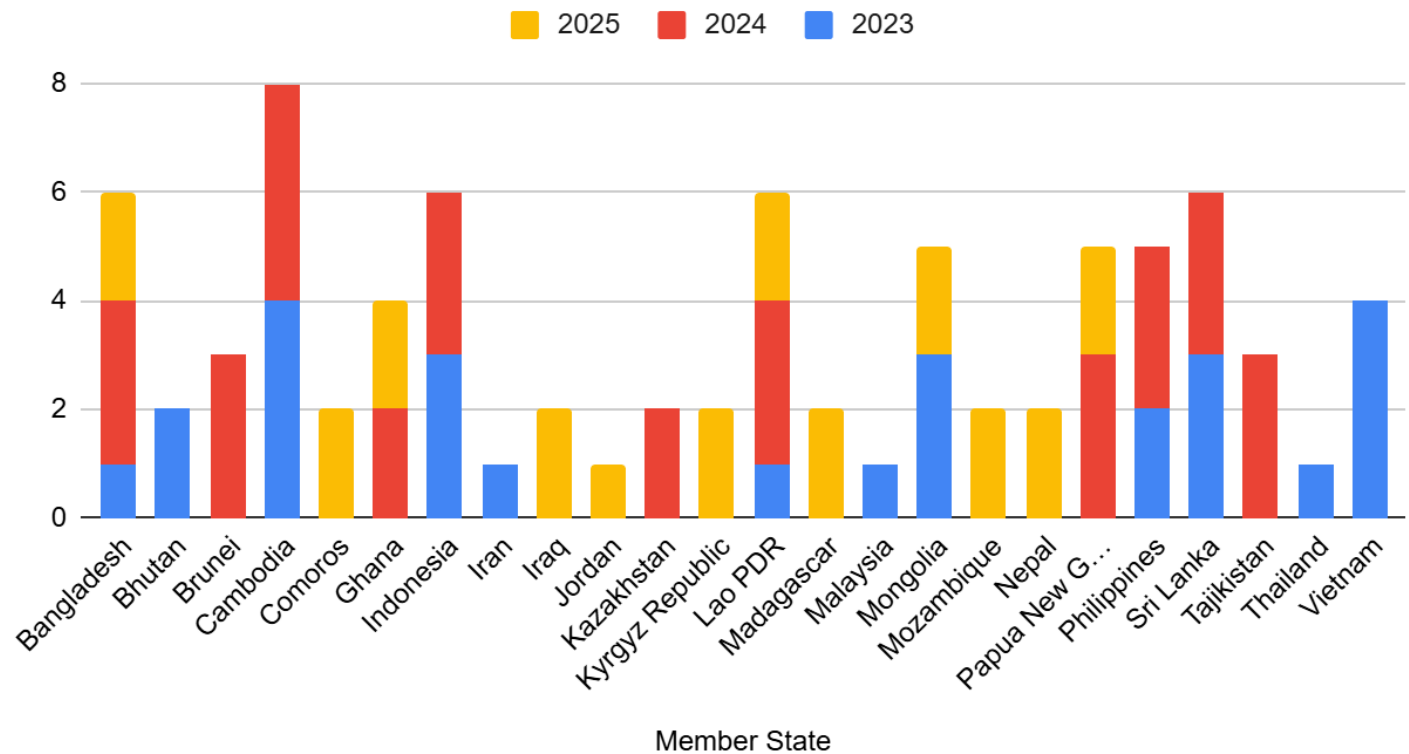


#Together4Transparency

GHG Inventory Training – Insights and lessons

- 2023 – 26 participants
*6 statistical offices**
- 2024 – 32 participants
- 2025 – 23 participants
- Pre-workshop activities and Follow up
- Over 24 countries supported
- GAP: High-level backing needs strengthening
- GAP: Mapping of institutional arrangements

GHG Inventory Workshop Attendees by Member State (by Year)



*Sri Lanka, Mongolia, Vietnam, Bhutan, and The Philippines.



7th GHG Inventory Training Feedback

Key Strengths:

- Hands-on training with the IPCC Inventory Software
- Practical insights and experience sharing
- Engaging facilitation and high-quality presentations
- Focused technical content (e.g. BTR, ETF Tools)

Key Opportunities:

- More in-depth sessions on the IPCC Software & ETF Tools
- Desire for longer training (suggested: 6–14 days)
- Inclusion of sector-specific training (e.g., Agriculture, LULUCF)
- More opportunities for practical application

Follow-Up Topics Requested:

- Advanced IPCC software training for non-energy sectors.
- ETF reporting and interoperability with national inventory systems.
- Institutional arrangements for data collection and governance.
- Regional or quarterly sector-focused follow-up sessions.

National Wetland Inventory Training Programme Module 1: Introduction to National Wetland Inventories

9-13 September 2024 | National Institute of Ecology, Seocheon, Republic of Korea



10 countries over 3 years selected through high-level process

Ramsar Convention Secretariat and National Institute of Ecology in Korea three-year training for the development of national wetland inventories

Interim period with 4 virtual check-ins and assignments for countries

e.g. Indonesia – National Wetland Inventory blends global datasets but requires more geospatial temporal and local validation of data

Cooperation with national geospatial agencies and field verification

Training Programme on National Wetlands Inventories – 10 countries over 3 years

Sept. 2025: Latest training hands-on training in spatial wetland databases — the use of QGIS data tools and global wetland datasets such as GLWD v2.0 and SWOT.

Challenges to inventory development (from surveys):

“Cooperation between different institutions and administrations, need for capacity building, budgetary matters, time management

Coordination and synchronization data among stakeholders

“Coordination with different stakeholders. Fund establishing data management system. Establish National Wetland committee of Jordan”

The institutional framework at my country is a big obstacle. In addition financial problems.”



Climate and SDGs integrated planning trainings

Dual delegations from 20 countries: 1 SDG focal point + 1 climate focal point (May 2024, March 2025)

Objectives:

- Climate-SDG synergies: Operationalising the synergistic approach nationally
- Strengthen practical knowledge and skills for integrated SDGs and climate action in national planning - coherent **policy, knowledge and data governance, and integrated financing.**
- Facilitate networking and collaboration across government agencies for integrated and evidence-based policymaking and reporting on sustainable development and climate action.
- Countries 2024 (20) 2025 (22)



“Our number one priority should be capacity development.”

- Mr. Emmanuel Williams, MoFDP, Liberia

Lesson: Structured Surveys key to measure learning and results for each activity

- Pre- and post-event surveys tailored to learning goals and behavioral barriers (e.g. thinking in silos, present bias, etc.)
- Need to measure change in knowledge, skills and attitudes/perception
- Example: 70% increase in knowledge on how the Paris Agreement and SDGs are linked
- Six-month follow-up for 'Stories of Impact'



Lesson: Survey pre-event to inform design

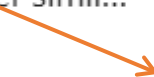
7. What do you think are some of the **top 3 challenges** to implementing integrated approaches for **managing** Water-Energy-Food-Ecosystem (WEFE)-related sectors in your country and region?

[More details](#)

16
Responses

Latest Responses

"Lack of technical capacity, No clear interest from Govt in such approaches,"
"1)Sectoral fragmentation: Water, Energy and food security aren't under simil... "
"Policy, Finance, knowledge"
...



Behavioral Bias?
Silo mentality -
Loss aversion,
group think
confirmation bias

8. What are your country's **top 3 needs across** the Water-Energy-Food-Ecosystem (WEFE) sectors?

7 respondents (44%) answered water for this question.



Next Steps & Recommendations



Costs and Impact: Need standardized KPIs and tracking of Cost per Participant for CD



How can we communicate impact better to donors, partners, public?



Stories of Impact – How did we change behavior in the target group?



Structured Follow up required - checkins with countries (e.g. Ramsar NWI model)



Need to strengthen country OWNERSHIP (E.g. GHG Inventory, NWI)



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Thank you.