CAPACITY BUILDING FOR LIVESTOCK GHG INVENTORIES AND MEASUREMENT, REPORTING AND VERIFICATION (MRV) IN VIETNAM

In the program: Measuring and Managing Livestock Emissions in the ASEAN region

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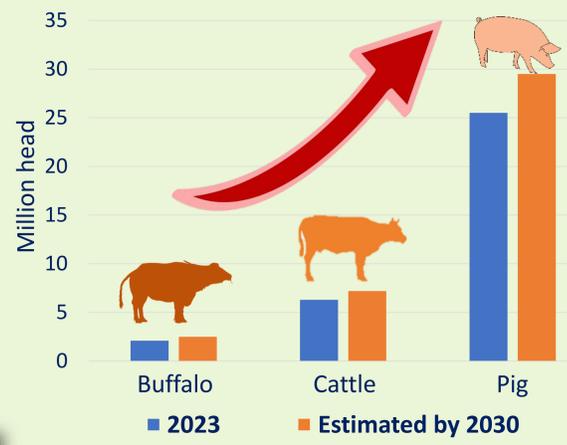NEW ZEALAND AGRICULTURAL GREENHOUSE GAS Research Centre

National strategy on climate change to 2050 (Decision 896-QD-TTg dated July 26, 2022)

Purposes

Reduce greenhouse gas emissions (to net zero by 2050)
- 2030: decreased by 43% in agriculture, not exceeding 64 million. tons CO_2 eq.
- 2050: decreased by 63.1% in agriculture, not exceeding 56 million. tons CO_2 eq.
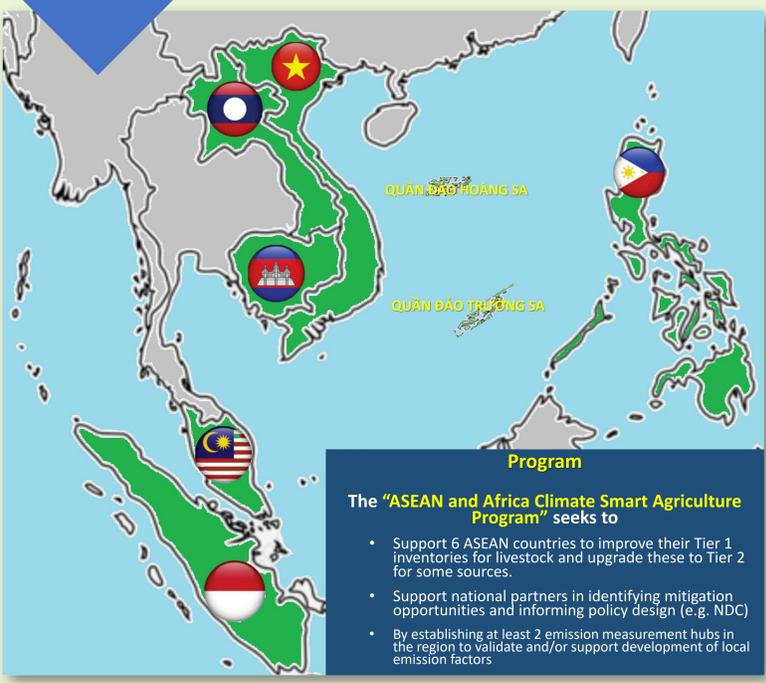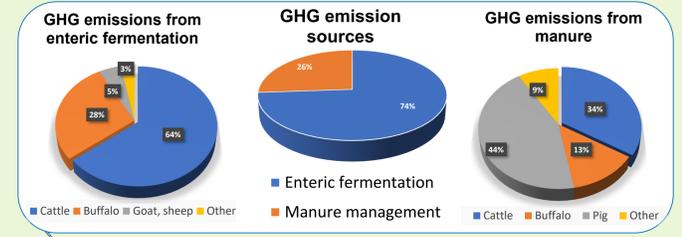
Responsibilities

- Reduce methane (CH_4) emissions
  - 2030: reduce 30% CH_4 compared to 2020
  - 2050: reduce 40% CH_4 compared to 2030
- Develop and periodically update national-specific GHG emission coefficients for major emission sources (occupy 0.1% of total national GHG emissions)
- Conduct GHG inventory and reduce GHG emissions at the facility: 3000 tons CO2eq/year (by 2030) - 2000 tons CO2eq/year (by 2050)

Program

The "ASEAN and Africa Climate Smart Agriculture Program" seeks to
- Support 6 ASEAN countries to improve their Tier 1 inventories for livestock and upgrade these to Tier 2 for some sources.
- Support national partners in identifying mitigation opportunities and informing policy design (e.g. NDC).
- By establishing at least 2 emission measurement hubs in the region to validate and/or support development of local emission factors

Livestock development strategy for the period 2021-2030, with vision to 2045
(Decision 1520-QĐ-TTg dated June 10, 2020)

Million head — Buffalo, Cattle, Pig — ■ 2023 ■ Estimated by 2030

Measurement, reporting, and verification system for greenhouse gas (MRV) (Decree 06/2022/NĐ-CP dated 07/01/2022)

- **Measurement, reporting, and verification system for GHG emissions reduction** refers to a system that collects, processes, manages, stores, provides, checks, and verifies information on implementation results of GHG reduction *to ensure transparency, accuracy, and verifiability.*
- Information about GHG inventory results at national and sector level shall be published on the website of state management agencies on climate change and other relevant sectors.
- From 2022, the GHG inventory carried out by the sector management ministry.
- *Therefore, strengthening the capacity of MAE **(formerly MARD)** and other stakeholders to conduct GHG inventories and develop a system for MRV in the agricultural sector including livestock is necessary*

GHG emissions from enteric fermentation — Cattle 64%, Buffalo 28%, Goat, sheep 5%, Other 3%

GHG emission sources — Enteric fermentation 74%, Manure management 26%

GHG emissions from manure — Cattle 44%, Buffalo 34%, Pig 13%, Other 9%

The longer-term purpose: to enable MAE's technical members and other sector stakeholders to identify, plan and implement measures that meet national objectives for livestock development and GHG mitigation in line with Viet Nam's NDC.

The specific objective: to strengthen the capacity technical members of MARD and other sector stakeholders to implement their responsibilities for GHG inventory, measurement, reporting and verification (MRV) in the livestock sector.

Project in Vietnam
CAPACITY BUILDING FOR LIVESTOCK GHG INVENTORIES AND MEASUREMENT, REPORTING AND VERIFICATION (MRV) IN VIETNAM

- **Working to develop a regionalized Livestock GHG inventory with MAE & VIAVS (formerly NIAS) & statistical expertise**
- **VIAVS to be a pivotal measurement hub for the region**
- ✓ Support with equipment for enteric emission measurements and manure emission
- ✓ View as a future 'central laboratory'
- ✓ Engages New Zealand and Chinese (CAAS) experts to facilitate Hub establishment

Map — QUẦN ĐẢO HOÀNG SA, QUẦN ĐẢO TRƯỜNG SA

		2023	2024	2025
1	Livestock sub-sector GHG inventory			
M01	Strengthened capacities of MARD to compile, manage and report Tier 1 inventories for livestock			
M02	Tier 2 cattle and pig inventories compiled			
M03	Strengthened capacities to manage, report and continuously improve Tier 2 GHG inventory			
2	Measurement			
M04	Development of regionally relevant enteric methane conversion factors (Ym) and manure management CH4 and N2O EFs, and training to confirm independent in-country technical capability			
3	Systems for MRV in the livestock sector			
M05	At least one system for MRV of a livestock mitigation measure has been piloted and guidelines for MRV developed			
4	Policy & planning			
M06	Implications of Tier 2 livestock GHG quantification for national policies and plans have been communicated with policy makers			

M01: Strengthened capacities of MARD to compile, manage and report Tier 1 inventories for livestock

(Apr. – Aug. 2023)

- **Training in GHG inventory management for administrative officers & scientists from MARD's institutes (14 participants)**
- **Develop institutional guidelines for livestock GHG inventory management**
- **Training in inventory management procedures (planning, QA,QC, archiving etc)**
- **Develop Tier 1 inventory Excel tool and SOPs for Tier 1 livestock inventory management**

M02: Tier 2 cattle and pig inventories compiled

Nov.-Dec. 2023 — Training Tier 2
- Structure (animal sub-categories)
- Animal performance and manure management data requirements

Jan.-Feb. 2024 — Collate and analyse available data
- Cattle and pig sub-categories,
- Animal performance
- Manure management
- Consulted with academic experts

Jul. – Oct. 2024 — Compile inventory
- Implement QA,QC activities
- Uncertainty analysis
- Write inventory report
- Country expert supports and review

Oct.2024 — Draft inventory improvement plan
- VIAVS team
- Experts

Nov. 2024 — National validation workshop
- MAE
- Local authorities from different ecological zones

M04: Develop regionally relevant enteric methane conversion factors (Ym) and manure management EFs

To establish preliminary Ym values and manure management CH4 and N2O Efs; identify data gaps

- **Feb – Mar 2023** — Collate results from existing Vietnamese experiments and relevant literature
- **Sep 2023** — Examine operation and performance of existing Vietnamese enteric fermentation facilities
- **Aug-Sep 2023** — Installing integrated Greenfeed automated CH4 and feed intake measurement equipment
- **Jun-Jul 2023** — Training in the use of the Greenfeed system and in the handling and analysis of data
- **Sep 2023** — GC installation and train in use; Develop the Standard Operating Procedures for GC and manure emission measurement
- **Oct 2023 – Oct 2024** — Cross-validation of the Greenfeed facility with existing measurement systems
  - Undertake experiments to obtain updated Ym and EF values
    - For priority feeding regimes in the key agro-ecological zones and production systems (dairy and beef cattle production systems)
    - Priority manure management methods and climate regimes (pig production systems)

M03: Strengthened capacities to manage, report and continuously improve Tier 2 GHG inventory

Jun. 2024 — Revision of institutional guidelines, inventory tools and SOPs to meet needs of Tier 2 inventory

Jun – Jul 2024 — Additional data and data collection methods, questionnaires
- Protocol, data collection methods
- Experts reviews on methods and protocol
- Training for field survey

Aug-Dec 2024 – Mar 2025 — Collect additional data to fill key data availability and data quality gaps in the initial Tier 2 inventory
- Data collection at field
- Data analysis, report
- Consulting with experts and local authorities

Data collection in 6 provinces

CARBON NET ZERO

M05: Pilot of an MRV system

Jul. 2024 — MRV training and Identify priority for MRV system design
- Training
- Workshop with national experts

Aug. 2024 — Assess relevant existing data management systems

Sep.-Oct. 2024 — Design and develop MRV system for piloting

Sep.-Dec. 2024 — Pilot MRV improvements on a case study basis

Dec. 2024 — Evaluate pilot and draft guidelines for implementation of MRV system

M06: Implications of Tier 2 livestock GHG quantification for national policies and plans have been communicated with policy makers and sector stakeholders

Dec. 2024 — Consult with policy makers and sector stakeholders to identify priority information needs

Dec. 2024 – Feb. 2025 — Collect baseline data

Feb – Mar. 2025 — Analyse baseline (BAU) and mitigation scenarios related to policy makers' and stakeholders' priorities

Mar. 2025 — Communicate results to policy makers and stakeholders (policy report, workshop)

Regional Conference
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Hanoi, Vietnam, 24-25 March 2026

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