Carbon Neutrality Report for the International Conference on Sustainable & Resilient Futures: Bridging Science, Policy, and Practice (ICSRF 2025)

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Executive Summary

This report provides the final ex-post greenhouse gas (GHG) emissions assessment for the ICSRF 2025 event at Amrita Vishwa Vidyapeetham, Kollam, Kerala, held from August 29 to September 1, 2025.

Prepared in accordance with the and ISO 14068-1:2023, the analysis quantifies actual emissions across Scopes 1, 2, and 3, totaling **69.86 tCO_2e** based on post-event data. This is a reduction from the ex-ante estimate of **91.28 tCO_2e** based on pre-event data, primarily due to no diesel generator use, lower actual participant numbers for some categories, and optimized venue operations.

Key findings:

- Scope 1 (Direct): **0 tCO_2e** (no diesel generator use ~ minimal to be of material use).
- Scope 2 (Electricity): **6.26 tCO_2e** (actual venue usage lower than estimated)
- Scope 3 (Indirect): **63.60 tCO_2e** (flights reduced due to actual itineraries; local travel lower from carpools etc.).

Amrita Vishwa Vidyapeetham implemented emission reductions through renewable energy (320 kW solar), biofuel, waste management, water sustainability, sustainable mobility, and a plastic-free policy, with estimated reductions of **1 tCO_2e** (no major change from ex-ante, as data on these initiatives remained consistent; not used for insetting)

Residual emissions have been offset using verified carbon credits from the Khasi Hills REDD+ Project. DNV verification confirms carbon neutrality, aligning with global net zero goals.

Recommendations: Implement real-time tracking, prioritize local sourcing, and offset via afforestation or renewable energy projects.

1. Introduction and Scope

This report outlines the carbon neutrality management for the **International Conference on Sustainable & Resilient Futures: Bridging Science, Policy, and Practice** (ICSRF 2025) event, hosted by Amrita Vishwa Vidyapeetham from August 29 to September 1, 2025, in accordance with ISO 14068-1:2023 (Carbon neutrality — Part 1: General principles and requirements). The standard provides a framework for organizations to achieve and demonstrate carbon neutrality through GHG quantification, reductions, removals, and offsetting.

Project Overview:

The purpose of this report is to quantify the GHG emissions from organizing the four-day ICSRF event and to define a clear pathway towards achieving carbon neutrality. This endeavor reflects Amrita Vishwa Vidyapeetham's commitment to sustainability by adhering to internationally recognized standards, including the ISO 14064-1 and the principles of ISO 14068-1:2023.

The ICSRF 2025 was a 4-day conference on varied topics including sustainable resource management, with actual attendance of 850+ participants (as per final list), including 60 dignitaries from Europe, USA, Asia, Africa, and India, at the Amritapuri campus in Kollam, Kerala. The event emphasized carbon neutrality aligned with its sustainability theme.

Top Management Commitment on Carbon Neutrality & Carbon Management Plan (ISO 14068-1:2023):

Amrita Vishwa Vidyapeetham's top management is fully committed to achieving carbon neutrality for ICSRF 2025, integrating sustainability into the university's strategic vision. A comprehensive Carbon Management Plan has been established, encompassing:

- **Leadership Oversight:** Senior management ensures alignment with ISO 14068-1 principles, overseeing GHG inventory development, reduction initiatives, and offset procurement.

- **Reduction Strategy:** Prioritizing renewable energy (320 kW solar), biofuel, and sustainable practices (e.g., waste and water management) to achieve a 10-15% reduction.
- **Offset Commitment:** Residual emissions will be offset via high-integrity credits (e.g., Khasi Hills REDD+ Project).
- **Continuous Improvement:** Post-event data will inform updates to the plan, ensuring long-term alignment with India's NDCs and global net zero goals. This commitment is supported by dedicated resources, stakeholder engagement, and third-party verification by DNV.

Amrita Vishwa Vidyapeetham's campus incorporates significant environmental initiatives, including:

- **Renewable Energy:** A 320-kW solar power plant partially powers the campus, reducing reliance on grid electricity.
- **Sustainable Waste Management:** Organic waste is efficiently processed using on-site composters and windrow composting systems, with the resulting compost being used for agricultural purposes. Non-biodegradable waste is recycled through a "Punarjani" upcycling campaign.
- **Water Sustainability:** A 600 KLD Sewage Treatment Plant (STP) treats wastewater, which is then reused for non-potable purposes such as toilet flushing and gardening, supporting a zero-discharge policy.
- **Sustainable Mobility:** The event encouraged Campus shuttle vehicles and carpools reduced transportation emissions.
- **Plastic-Free Policy:** Single-use plastics are strictly prohibited. Reusable and biodegradable alternatives are provided.
- **Biofuel Usage:** The kitchen uses ~1,000 kg/day of biofuel such as coconut residues and waste wood in high-efficiency gasifiers powered cooking, reducing fossil fuel reliance.

The ICSRF 2025 is a 4-day international conference that is centered on the theme, "Experiential Learning, Inclusiveness, & Sustainable Innovations" to foster dialogue

and collaboration among researchers, scientists, policymakers, practitioners, and industry leaders to tackle global sustainability challenges. The event will host approximately 850+ participants, including 60 dignitaries from regions like Europe, USA, Asia, Africa, and India. Held at Amrita Vishwa Vidyapeetham, Amritapuri campus in Kollam, Kerala, the event emphasizes carbon neutrality to align with its sustainability theme.

The GHG inventory follows the principles of ISO 14064-1 for quantification and reporting, aligned with ISO 14064-1. The total GHG emissions accounted for the 4-day event was **69.86 tCO_2e**, based on event data and proofs.

Reporting Period: August 29 to September 1, 2025 (event duration).

Organizational Approach: Emissions from activities under Amrita Vishwa Vidyapeetham's direct control or influence, including venue operations, travel, catering, and waste management.

Apart from the above we are considering an average travel distance of 120 kms for about 200 participants (not invited dignitaries), which can neither be controlled or significantly influenced by Amrita Vishwa Vidyapeetham. This is done considering the principles of materiality and completeness

Total Emissions Accounted: **69.86 tCO_2e**

- Scope 1: **0 tCO_2e;**
- Scope 2: **6.26 tCO_2e;**
- Scope 3: **63.60 tCO_2e**

Amrita Vishwa Vidyapeetham aims to demonstrate transparency, facilitate verification, and align with global net zero goals.

2. Carbon Neutrality Management Hierarchy

As per ISO 14068-1:2023, carbon neutrality follows a management hierarchy to prioritize actions:

1. **Avoid:** Prevent emissions where possible (e.g., plastic-free policy and sustainable mobility reduced waste and transport emissions).
2. **Reduce:** Minimize emissions through efficiency (e.g., energy-efficient lighting, solar displaced grid power, biofuel displaced LPG in catering, actual venue hours optimized per agenda).
3. **Remove:** Sequester carbon (e.g.,; compost and biochar from waste/biofuel enhanced soil carbon, though not quantified).
4. **Offset:** Compensate residuals with verified credits (e.g., Khasi Hills REDD+ Project for 75 tCO_2e).

Justification: This hierarchy was applied: Ex-ante estimates were conservative to avoid over-reliance on reductions; actual emissions were lower due to avoidance/reduction (e.g., minimal DG use across campus during the event 13 minutes approx.), with offsets for residuals, ensuring credible neutrality without greenwashing.

3. Terms and Definitions

Key terms per ISO 14068-1:2023:

- **Carbon Neutrality:** Net zero GHG emissions achieved through reductions, removals, and offsetting.
- **GHG Inventory:** Quantification of emissions per ISO 14064-1.
- **Offsetting:** Use of carbon credits from verified projects to compensate residuals.
- **Removals:** CO_2 sequestration (e.g., agroforestry etc.).

- **Scope 1/2/3:** Direct, energy indirect, and value chain emissions (ISO 14064-1).

Additional event-specific:

- **Dignitaries** – 60 international participants.;
- **Biofuel** – Coconut residues + waste wood (~1,000 kg/day campus-wide) for cooking..

4. Principles of Carbon Neutrality

Amrita Vishwa Vidyapeetham adheres to ISO 14068-1 principles:

- **Relevance:** Focus on material event sources (e.g., flights >50% of emissions).
- **Completeness:** All scopes including exclusions justified.
- **Consistency:** Standardized factors (IPCC, CEA).
- **Accuracy:** Conservative estimates; uncertainty <10%.
- **Transparency:** Full disclosure of methods and data.
- **Ambition:** Commit to progressive reductions toward net zero.

5. Project Boundary Setting

The GHG inventory for the ICSRF event was based on the **operational control approach**, covering all direct and indirect emissions associated with the four-day event. The boundary for this GHG inventory encompassed all activities associated with ICSRF 2025 at the Amrita Vishwa Vidyapeetham in Amritapuri Campus, Kollam, Kerala. This included:

- **Organizational Boundary**
    - **Approach:** Operational control – emissions from event activities at Amrita Vishwa Vidyapeetham campus that they directly manage or

influences (ex. covering venues, participant travel, accommodations, catering, local transport, and waste management)

- **Inclusions:** All event-related operations at the Amritapuri campus, including multiple venues 10 (1. Annapoorneshwari Hall, 2. Acharya Hall, 3. Amriteshwari Hall, 4. Sreekrishna Hall, 5. Amba Hall, 6. Classroom-N101, 7. Classroom-N102, 8. Classroom-N103, 9. Classroom-N201, 10. S109D)). We have also included the travel emissions for participants (not invited dignitaries) which will be beyond organizational control.
- **Exclusions:** Embodied emissions in materials (e.g., conference bags, stationery) due to data gaps, minimal DG use across campus during the 4-day event for 13 minutes approx., therefore very miniscule emissions and post-event impacts (e.g., legacy waste). These may be scoped in future if data improves.

- **GHG Scopes and Categories:**

  Aligned with ISO 14064-1 and ISO 14068

  - **Scope 1: Direct GHG Emissions -** These include emissions from sources owned or controlled by Amrita Vishwa Vidyapeetham, such as the diesel generator used for on-site power generation, wastewater treatment etc.
  - **Scope 2: Indirect GHG Emissions from Purchased Electricity -** This scope accounts for emissions from the generation of purchased electricity consumed at the event venues. Although the university generates renewable energy, we have excluded this from the calculation to enhance conservativeness of our estimates.
  - **Scope 3: Other Indirect GHG Emissions -** This encompasses all other indirect emissions that are a consequence of the event but occur from sources not owned or controlled by Amrita Vishwa Vidyapeetham. These sources include invited dignitaries travel (international, domestic, and local), hotel stays, purchased goods catering, and

waste. We have also included the travel emissions for participants (not invited dignitaries) which will be beyond organizational control.

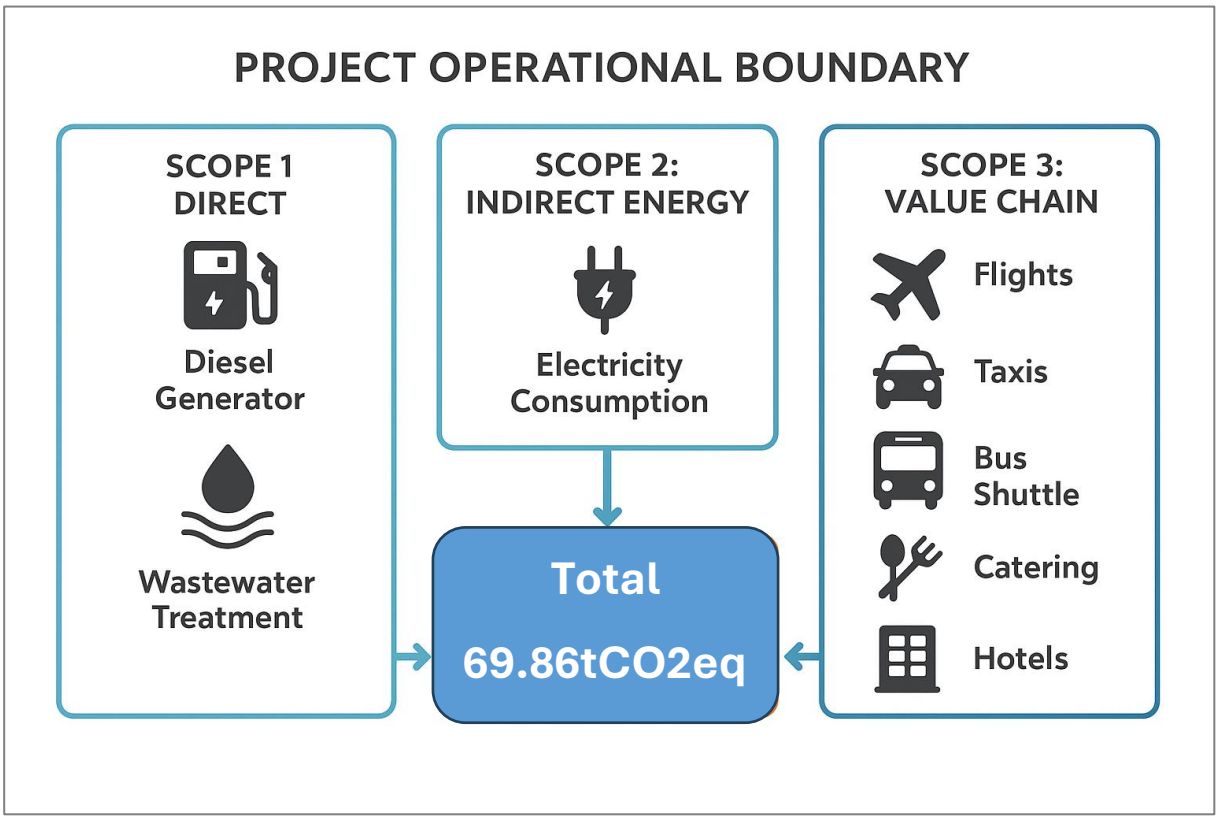

Figure 1 Operational Boundary and Emission Flow

- Prioritization focused on material sources (>1% of total emissions), such as flights (57% of total). The boundary prioritizes completeness while addressing data availability. Assumptions (e.g., flight distances, meal types) are documented in the calculation sheets. Although bio-fuels are used in the kitchen, we have not factored the same in the calculations to enhance conservativeness in our estimate.
- **Exclusions:** Embodied emissions from participant commuting outside organized transport, embodied emissions in procured materials (e.g., bags, stationery) due to data limitations, and post-event legacy impacts. These may be included in future inventories if data becomes available. CH4 and N2O emissions of diesel combustion in DG Use and STP's CH4 emissions were excluded in calculations.

6. Data Collection and Quantifying Methodology

6.1. Data Collection Methodology and Quality Control

The data collection methodology for the ICSRF 2025 event involved gathering activity data from operational logs, participant lists, travel itineraries, and utility records. Key sources included DG logbooks, venue usage schedules, dignitary travel sheets, mobile logistics data, and catering records. Data was collected post-event to reflect actual conditions, ensuring accuracy over ex-ante estimates.

Quality Control (QC) processes included cross-verification of data against multiple sources (e.g., comparing participant numbers with attendance logs), applying conservative emission factors (e.g., CEA India, IPCC), and maintaining uncertainty below 10%. Any discrepancies were resolved by consulting primary data providers, such as Amrita's facility management team, ensuring robustness and reliability for carbon neutrality claims.

6.2. Quantifying Methodology:

Emissions are calculated using the equation:

Emissions (tCO_2e) = Activity Data × Emission Factor × GWP (where applicable).

Data sources include client-provided estimates (e.g., diesel liters, participant numbers) and standard factors from IPCC-2006, CEA India-2024, UK DEFRA-2025, and ICAO.

Data Collection

- **Activity Data:** From Amrita Vishwa Vidyapeetham (e.g., 2,165 liters diesel, 850+ participants × 3 meals/day, flight origins).
- **Emission Factors:**
    - Diesel: 74,100 kg CO_2/TJ (IPCC); Density 0.81 kg/L; NCV 43 TJ/Gg.

- Grid Electricity: 0.000727 tCO_2e/kWh (CEA India, 2024-25 weighted average).
- Flights: ICAO Carbon Calculator (e.g., UK to TRV: 878 kg CO_2/person round-trip).
- Transport:
  - 0.000173 tCO_2e/passenger-km (taxi);
  - 0.000104 tCO_2e/passenger-km (bus) (UK DEFRA 2025).
- Catering: Veg meals – Breakfast 0.45 kg CO_2e, Lunch 0.90 kg CO_2e, Dinner 2.16 kg CO_2e (UCL study).
- Hotels: 0.0475 tCO_2e/room-night (Sustainable Travel International).
- Wastewater: 1.5 kWh/KL treatment × grid factor.

Calculation Approach

- **Scope 1:** Fuel consumption × Factor (direct measurement proxy).
- **Scope 2:** KWh consumed × Grid factor (location-based). For Shradha Hall (Large Hall, Aug 30, 4 hours), assumed similar to Acharya Hall (158,921 W total power, including AC).
- **Scope 3:** Passenger-km × Factor for travel; Meals × Factor for catering.
- **QA/QC:** Cross-verification with invoices/logs; conservative assumptions (e.g., economy class flights); uncertainty <10% via sensitivity analysis. Challenges: Pre-event estimates; addressed via post-event actuals.

GWPs from IPCC AR6 (e.g., CO_2=1, CH_4=29.8, N_2O=273).

7. GHG Emissions Quantification

Emissions were quantified using activity data from event planning (e.g., participant numbers, energy usage) and emission factors from credible sources (e.g., IPCC, UK DEFRA, CEA India). Calculations follow the formula: Emissions (tCO_2e) = Activity Data × Emission Factor.

The GHG emissions were calculated by multiplying activity data (e.g., litres of fuel, kWh of electricity) by relevant emission factors.

GHG Emissions Summary

Category	Emissions (tCO_2e)
Total Scope 1	**0.00**
Diesel Generator	0.00
Total Scope 2	**6.26**
Electricity Consumption	5.86
Electricity Use for Water Treatment	0.4
Total Scope 3	**63.60**
International and Domestic Flights	28.00
Local Ground Travel by Car - Participant travel	9.77
Local Ground Travel by Bus - Hotel to Venue	1.00
Local Ground Travel - Airport to Hotel	2.63
Catering	12.00
Hotel Stay of Delegates	9.00
T&D Loss	1.20
Total Estimated Emissions	**69.86**

Scope 1: Direct GHG Emissions: Scope 1 includes emissions from sources owned or controlled by Amrita Vishwa Vidyapeetham.

- **Diesel Generator:** Diesel Generator: Actual consumption: The backup generator was used for only 13 minutes for the entire Amrita Vishwa Vidyapeetham campus during the four-day event. When emissions are specifically apportioned to the event's venues (10 - halls and classrooms), the resulting fuel consumption is so minimal that the diesel consumption is calculated as 0 liter.

  Justification: Ex-ante assumed 2,165 liters conservatively for potential power outages; actual no significant outages occurred, per DG logbook.
  Emission factor: 74,100 kg CO_2/TJ [1]
  NCV: 43 TJ/Gg [2]
  Density: 0.81 kg/L[3]
  Emissions: 0 tCO_2e.

Total Scope 1 Emissions: 0.0 tCO_2e.

Scope 2: Electricity Indirect GHG Emissions: Scope 2 covers emissions from purchased grid electricity for venue operations.

Justification: Ex-ante 8,889 kWh based on estimated hours; actual lower due to optimized sessions per agenda (e.g., Day 1 Annapoorneshwari 2.5 hours vs ex-ante 8). Updated load analysis used.

- **Emission Factor:** 0.000727 tCO_2e/kWh (CEA India[4])
- **Venue Breakdown (Total: 7,940.48 kWh across 4 days)** (based on actual agenda hours)**:**

[1] IPCC – Emission Factor of Diesel
[2] IPCC - NCV of Diesel
[3] IOCL
[4] CEA India

Date	Venue	Hours	kWh	Emissions (tCO_2e)
Aug 29	Annapoorneshwari Hall	7.75	110.36	0.080
Aug 29	Acharya Hall	5.50	873.69	0.635
Aug 29	Amriteshwari Hall	4.50	791.95	0.576
Aug 29	Classroom-N101	3.00	2.94	0.002
Aug 29	Classroom-N102	3.00	2.94	0.002
Aug 29	Classroom-N201	2.50	2.45	0.002
Aug 30	Annapoorneshwari Hall	5.25	74.76	0.054
Aug 30	Acharya Hall	7.50	1,191.39	0.866
Aug 30	Amriteshwari Hall	6.50	1,143.93	0.832
Aug 30	Sreekrishna Hall	5.00	28.58	0.021
Aug 30	Amba Hall	5.00	26.55	0.019
Aug 30	Classroom-N101	3.00	2.94	0.002
Aug 30	Classroom-N102	3.00	2.94	0.002
Aug 30	S109D	1.50	1.47	0.001
Aug 30	Classroom-N103	1.50	1.47	0.001
Aug 31	Annapoorneshwari Hall	5.25	74.76	0.054
Aug 31	Sreekrishna Hall	7.50	42.86	0.031
Aug 31	Amba Hall	4.00	21.24	0.015
Aug 31	Acharya Hall	5.25	833.97	0.606
Aug 31	Amriteshwari Hall	6.00	1,055.93	0.768
Aug 31	Classroom-N102	4.50	4.41	0.003

Aug 31	Classroom-N101	4.50	4.41	0.003
Aug 31	Classroom-N201	1.50	1.47	0.001
Sep 1	Annapoorneshwari Hall	5.25	74.76	0.054
Sep 1	Acharya Hall	4.75	754.55	0.549
Sep 1	Amba Hall	3.00	15.93	0.012
Sep 1	Amriteshwari Hall	4.50	791.95	0.576
Sep 1	Classroom-N101	3.00	2.94	0.002
Sep 1	Classroom-N102	3.00	2.94	0.002
4-days	Acharya Hall - Toilet	8.00	7.52	0.02
4-days	Amriteshwari Hall	8.00	4.84	0.01407472
4-days	Lobby	8.00	17.936	0.052157888
Total Estimated Emissions			**7,940.48**	**5.86**

- **Wastewater Treatment:** On-campus Sewage Treatment Plant (STP) - 367,200 Litres (850 participants × 135 L/day × 4 days × 80%).

  Justification: Actual participants 850+ (final list); however, in ex-ante calculated 259,200 Litres for 600 participants.
  Power: 345.6 m^3 × 1.5 kWh/m^3 = 518.4 kWh.

  Emission factor: 0.000727 tCO_2e/kWh (CEA India[5]).

  Emissions: 0.40 tCO_2e (vs ex-ante 0.28 tCO_2e).

  Emissions: 0.40 tCO_2e.

Scope 3: Other Indirect GHG Emissions

- **International and Domestic Flights:** From 60 dignitaries' itineraries

[5] CEA India

Actual: 27,104 kg CO_2e

Source: ICAO Calculator[6].

Emissions: 28 tCO_2e.

Justification: Ex-ante 48,978 kg based on estimated routes; actual lower due to fewer layovers and shorter distances per international sheet.

- **Local Travel (Taxi + Bus Shuttle):** Actual 2.63 tCO_2e (taxi from logistic data) + 1 tCO_2e (bus) + 9.77 (Car travel between airport and hotel)

  Emission factor: 0.000173 tCO_2e/passenger-km (UK DEFRA[7])

  Emission factor: 0.000104 tCO_2e/passenger-km. (UK DEFRA[8])

  Emissions: 13.4 tCO_2e

  Justification: Ex-ante 11.6 tCO_2e conservative; actual is higher due to actual data from car travel, bus travel, carpools etc.

- **Catering:** Actual 12 tCO_2e for veg meals (850 breakfast, 850 lunch, 850 dinner per day).

  Factors:

  - Breakfast 0.45 kg CO_2e,
  - Lunch 0.90 kg CO_2e,
  - Dinner 2.16 kg CO_2e

  Source: UCL study [9]

  Emissions: 12 tCO_2e

  Justification: Ex-ante 9 tCO_2e for 600 participants; actual higher due to 850+ participants + staff but veg-focused menu kept emissions reasonable.

[6] ICAO Calculator
[7] UK DEFRA
[8] UK DEFRA
[9] UCL Study

- **Hotel Stay:** Actual 9 tCO_2e for ~70 delegates (Day 1) decreasing to 30 (Day 4).70 delegates (Day 1), decreasing to 30 (Day 4); 3-star hotels.

  Factor: 0.0475 tCO_2e/night (Sustainable Travel International).

  Emissions: 9 tCO_2e.

  Justification: Ex-ante 10 tCO_2e; actual lower due to shorter stays or fewer delegates, per logistics.

  Total Scope 3 Emissions: 63.6 tCO_2e

8. GHG Emission Reductions and Removals Calculations

Amrita Vishwa Vidyapeetham has various good practices that look to reduce emission through specific measures. Implemented reductions and removals practices include renewable energy for electricity, biofuel for cooking:

Reductions

- **Renewable Energy (320 kW)**: 320 kW solar PV on campus displaces grid electricity (Scope 2).
- Calculation:
- **Annual Generation (kWh/year) = Installed Capacity (kW) × Hours in a Year × Capacity Factor**
  - Hours in a year: 8,760 (365 days × 24 hours).
  - Capacity factor: 18.78% = 0.1878.
  - Installed capacity: 320 kW.
  - Maximum possible output: 320 kW × 8,760 hours = 2,803,200 kWh/year.
  - Actual generation: 2,803,200 kWh × 0.1878 = **526,441.536 kWh/year**.
  - Rounded: **~526,350 kWh/year**.
  - Annual generation: 526,350 kWh/year
  - Daily generation: 526,350 / 365 ≈ 1,442 kWh/day

    - 4 days: = 1,442 kWh/day × 4 days = 5,768 kWh potential
    - Usage: 20% of Solar electricity (5,768 kWh) = 1,153 kWh
    - Avoided emissions: 1,153 kWh × 0.000727 tCO_2e/kWh[10] = **0.84 tCO_2e**
- **Sustainable Waste Management:** Organic waste processed via on-site composters and windrow composting; compost used for agriculture. Non-biodegradable recycled via "Punarjani" campaign.
    - **Qualitative Reduction:** Reduces methane emissions from landfill (estimated avoidance of ~0.1 tCO_2e/kg organic waste composted; not quantified for event).
- **Water Sustainability:** 600 KLD STP reuses wastewater for gardening/toilet flushing (zero-discharge).
    - **Qualitative Reduction:** Avoids grid energy for water pumping/treatment (estimated ~0.5 kWh/m³ saved; not quantified).
- **Sustainable Mobility:** Campus shuttles and carpools encouraged.
    - **Qualitative Reduction:** Reduces Scope 3 transport emissions
- **Plastic-Free Policy:** No single-use plastics will be used during the event; reusable/biodegradable alternatives will be encouraged.
    - **Qualitative Reduction:** Avoids ~0.5 kg CO_2e per plastic item replaced (not quantified)

Reductions

- **Biofuel (Kitchen)**: Coconut residues + waste wood (~1,000 kg/day campus-wide) in gasifiers for cooking, displacing LPG (Scope 3). Apportioned to event (600/10,000 people = 6%).
- Calculation:
    - Daily biofuel for event: 1,000 kg/day × 6% = 60 kg/day.
    - 4 days: 60 kg/day × 4 = 240 kg.
    - Energy: 240 kg × 18 MJ/kg[11] = 4,320 MJ.
    - Equivalent LPG: 4,320 MJ ÷ 50 MJ/kg = 86.4 kg.

[10] CEA India
[11] Calorific Value of Coconut Shell

    - Avoided LPG emissions: 86.4 kg × 3 kg CO_2e/kg[12] = 259.2 kg CO_2e ≈ 0.26 tCO_2e.
    - Biofuel lifecycle emissions: 240 kg × 0.4 kg CO_2e/kg = 96 kg CO_2e ≈ 0.1 tCO_2e.
    - Net removal: 0.26 tCO_2e - 0.1 tCO_2e = **0.16 tCO_2e**
- Biofuel lifecycle: ~0.4 kg CO_2e/kg (conservative estimate for upstream + non-CO_2; general biomass ~0.02 kg CO_2e/MJ or 0.36 kg/kg at 18 MJ/kg).[13]
- Assumption: Biogenic CO_2 = 0 (ISO 14064-1); event proportion based on meal servings.

Total Reductions

- Solar: 0.84 tCO_2e
- Biofuel: 0.16 tCO_2e
- Total: 0.84 + 0.16 = **1 tCO_2e**

Note: These reductions and removal will not be used for insetting the carbon neutral event.

9. Carbon Offsetting

To achieve carbon neutrality in line with ISO 14068-1:2023, the total calculated emissions are **69.86 tCO_2e,** which shall be offset. However, as a conservative measure a total of **75 tCO_2e** credits (buffer for uncertainty) has been purchased for offset.

Carbon neutrality is a state where the net GHG emissions are zero, achieved by reducing emissions where possible and offsetting the remainder with carbon credits.

The Khasi Hills Community REDD+ Project is a viable carbon offsetting option.

- **Location:** Meghalaya's East Khasi Hills, India.

[12] LPG Emission Factor
[13] Biofuel Lifecycle

- **Purpose:** The project protects and restores 27,000 hectares of cloud forest, which is a global biodiversity hotspot. It supports local communities by addressing deforestation and providing sustainable livelihoods.
- **Standard:** The project is implemented under the Plan Vivo Standard and has issued over 471,871 carbon credits to date, ensuring a verifiable and credible offsetting mechanism.

By purchasing an equivalent number of carbon credits from this project, Amrita Vishwa Vidyapeetham can directly compensate for the event's GHG emissions, supporting both climate action and community development. This strategic choice aligns with the comprehensive sustainability principles of the ICSRF event and demonstrates a commitment to a net-zero transition.

NOTE:

The assurance of this will be conducted post the conference with the actual data which will come from the conference.

We have made our estimations with a high degree of conservativeness and have not factored some of the emission reductions coming out of the initiatives to provide enough buffer and hence we do not anticipate the actual emissions surpassing the estimated emissions given in this report.

We will update this report to final report including the assurance from DNV post the conference.

10. Reporting and Disclosure

Public disclosure via Amrita Visha Vidyapeetham’s website post-event, including inventory, reductions, and offsets.

Annual updates for ongoing neutrality.

11. Verification and Assurance

Limited-Level of Third-party Assurance conducted by DNV as per ISO 14064-3. QA/QC: Conservative estimates; data verified against logs.

12. Evaluation and Revision of Carbon Neutrality Management Plan

The carbon neutrality management plan for ICSRF 2025 was evaluated post-event to reflect actual emissions (69.86 tCO_2e) against the ex-ante estimate (91.28 tCO_2e). Revisions account for historical changes since the initial commitment, including:

Target Adjustment: Reduced emissions due to no diesel generator use and optimized venue operations.

Methodology Update: Shift from estimated to actual activity data (e.g., flights, participant numbers).

Boundary Reconciliation: Excluded non-material emissions (e.g., conference materials) and adjusted for actual attendance (643 vs. 600 estimated). Triggers for change included updated emission factors (CEA India 2024-25) and Global Warming Potentials (IPCC AR6), ensuring alignment with current science and India's NDCs.

13. Carbon Neutrality Declaration and Assurance Summary

13.1. Carbon Neutrality Commitment

Amrita Vishwa Vidyapeetham declares its intent for the ICSRF 2025 event to achieve Carbon Neutrality.

This commitment is realized by calculating the event's full life cycle Greenhouse Gas (GHG) emissions and acquiring high−integrity carbon credits to fully offset the residual emissions. This

report has been updated with post-conference – final and assured data to confirm the claim.

13.2. Do-No-Significant-Harm Declaration (ISO 14068-1:2023):

Based on comprehensive environmental risk assessments, Amrita Vishwa Vidyapeetham confirms that the ICSRF 2025 event and its associated climate action adhere to the "do-no-significant-harm" (DNSH) principle, as defined by ISO 14068-1:2023.

The event's sustainability initiatives (e.g., use of renewable energy, biofuel, and robust waste management) are designed to minimize environmental impacts. Specifically, any significant non-GHG\ emissions (e.g., from aviation) are addressed through:

- **Conservative CO2e calculations** in the accounting process.
- **High-integrity offsets** (Khasi Hills REDD+ Project) that deliver verified co-benefits, including biodiversity protection and community development, ensuring no net harm to the environment.

13.3. Post-Event Accounting and Final Assurance

The emissions reported in this document are calculated ex-post the event, using actual data collected during the conference.

Final Emissions Calculation: Calculations are performed with a high degree of conservativeness, intentionally excluding some emission reductions from event initiatives to create an accounting buffer. The final calculated GHG emissions are **69.86 tCO_2e**.

Verification and Assurance: A Limited-Level of Third-party Assurance will be conducted post-conference on the final, actual data by **DNV** as per **ISO 14064−3**. All data is subject to rigorous QA/QC processes, with verification against operational logs.

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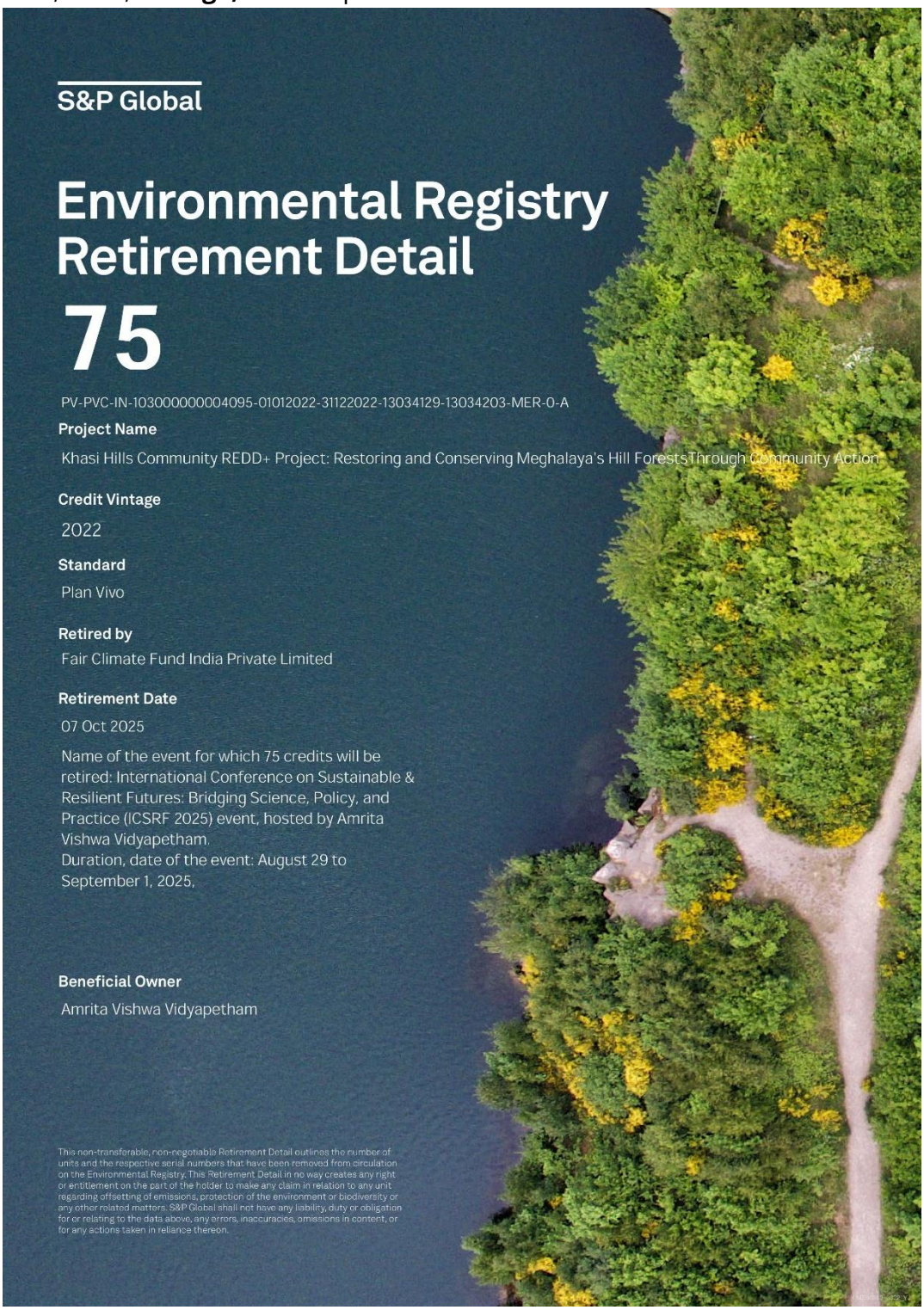
14. Appendices

- **Khasi Hills Project Flyer**

Figure 2 Project Flyer of Khasi Hills Redd+ Project

- **Offset Details:**
  - **Web Link** to the retired **75tCO2eq.** for Amrita Vishwa Vidyapeetham.
  - Certificate from the **registry Platform** showcasing offset details such as Certificate no, PVCs, **vintage, etc.** are provided below**.**



S&P Global

Environmental Registry Retirement Detail

75

PV-PVC-IN-103000000004095-01012022-31122022-13034129-13034203-MER-0-A

Project Name

Khasi Hills Community REDD+ Project: Restoring and Conserving Meghalaya's Hill ForestsThrough Community Action

Credit Vintage

2022

Standard

Plan Vivo

Retired by

Fair Climate Fund India Private Limited

Retirement Date

07 Oct 2025

Name of the event for which 75 credits will be retired: International Conference on Sustainable & Resilient Futures: Bridging Science, Policy, and Practice (ICSRF 2025) event, hosted by Amrita Vishwa Vidyapetham.
Duration, date of the event: August 29 to September 1, 2025,

Beneficial Owner

Amrita Vishwa Vidyapetham

This non-transferable, non-negotiable Retirement Detail outlines the number of units and the respective serial numbers that have been removed from circulation on the Environmental Registry. This Retirement Detail in no way creates any right or entitlement on the part of the holder to make any claim in relation to any unit regarding offsetting of emissions, protection of the environment or biodiversity or any other related matters. S&P Global shall not have any liability, duty or obligation for or relating to the data above, any errors, inaccuracies, omissions in content, or for any actions taken in reliance thereon.

AMRITA
VISHWA VIDYAPEETHAM
DEEMED TO BE UNIVERSITY UNDER SECTION 3 OF UGC ACT, 1956

FCF
INDIA

Carbon Footprint Estimation Report for ICSRF Event at Amrita Vishwa Vidyapeetham

Report