

Bhutan Country Report

GLOBE Asia-Pacific Regional Meeting 2025

Prepared by the GLOBE Bhutan Country Coordination Office

1. Overview and Background

Bhutan, a small Himalayan kingdom nestled between India and China, has long been globally recognized for its environmental stewardship and commitment to sustainability, enshrined in its philosophy of Gross National Happiness. Aligning perfectly with this national ethos, Bhutan joined the GLOBE Program (Global Learning and Observations to Benefit the Environment) to engage youth, educators, and communities in citizen science and Earth system monitoring.

The GLOBE Program in Bhutan is managed under the auspices of the Ugyen Wangchuck Institute for Forest Research and Training (UWIFoRT) of the Department of Forests and Park Services.

2. GLOBE Participation Statistics (as of 2025)

Bhutan has demonstrated consistent growth in its GLOBE program implementation, both in terms of reach and data contributions:

Category	Statistics
Total Students Engaged	659
Total Educators Involved	33
GLOBE Observers	26
Data Entries Submitted	8,679
Registered GLOBE Schools	24
Honour Roll Recognitions	6 (various years)

Highlights:

- Schools span across Bhutan’s diverse ecological and altitudinal zones, enabling the collection of varied environmental data (atmosphere, hydrology, biosphere, soil).
- Many schools actively participate in GLOBE protocols, including air temperature, precipitation, soil moisture, and biodiversity surveys.
- Bhutanese schools also contribute to the Mosquito Habitat Mapper, Tree Height, and Land Cover campaigns on the GLOBE Observer app.

3. Training and Capacity Building

Human resource development has been central to Bhutan's success in implementing GLOBE. The program has focused on building a robust network of trainers, mentors, and teacher leaders.

Training Category	Numbers
GLOBE Certified Trainers	9
GLOBE Mentor Trainers	6
Total Individuals Trained	35
Workshops Conducted	3

Capacity-Building Initiatives:

- Workshops covered GLOBE protocols, data entry, environmental monitoring, and project-based learning (PBL) approaches.
- Training modules incorporated climate change awareness, local environmental challenges, and indigenous knowledge systems.
- Mentorship and peer-sharing mechanisms are being encouraged within schools to build continuity and local ownership.

4. Student Research and International Participation

International Virtual Science Symposium (IVSS) 2024

Bhutan made significant contributions to the IVSS 2024. A total of 6 participants represented the country:

- 2 students presented original research projects on climate and biodiversity monitoring.
- 2 teachers served as mentors for IVSS submissions.
- The Country Coordinator (CC) and Deputy Country Coordinator (DCC) participated in reviewing and mentoring support roles.

Projects focused on topics such as:

- Water quality monitoring in highland streams.
- Phenology and the flowering cycles of native species.
- Climate patterns across elevation zones using GLOBE protocols.

Vlogger Program

- Two students from Drukgyel Higher Secondary School successfully completed their term as GLOBE Student Vloggers, sharing Bhutanese field research and climate stories globally.
- Two new students have been nominated for the 2025 Vlogger cohort.

These students are not just GLOBE representatives, but environmental ambassadors for Bhutan, sharing their stories through social media and GLOBE's YouTube channel.

5. GLOBE Annual Meetings

2023 GLOBE Annual Meeting – Colorado, USA

- Bhutan was represented by 6 members: 2 students, 2 teachers, DCC, and a national administrator.
- Bhutan shared experiences on linking GLOBE protocols with curriculum-based project learning and community science outreach.

2024 GLOBE Annual Meeting – Fredonia, USA

- Bhutan again participated with 6 representatives.
- The delegation presented Bhutan's IVSS contributions, school-based Earth Day celebrations, and collaborative models involving forestry institutions.

These annual meetings have allowed Bhutan to network with other countries, exchange best practices, and elevate student research on a global platform.

6. GLOBE Activities in Schools and Communities

Earth Day Celebrations

- All 24 GLOBE-registered schools in Bhutan celebrated Earth Day 2024 with public programs.
- Activities included student-led exhibitions, GLOBE data collection events, environmental debates, community clean-ups, and cross-school virtual meetups.

Curriculum Integration

- Several GLOBE protocols are now being embedded into Bhutan’s school curriculum, particularly in science and geography subjects.
- Teachers use real data from the local environment to support lessons in climate change, biodiversity, and sustainability.

Beyond Classrooms

- Bhutan is exploring ways to expand GLOBE participation to:
 - Non-formal education centers
 - Youth groups and nature clubs
 - Field-based organizations, including park rangers and community forestry groups

This aligns with Bhutan’s national goal to create eco-literate citizens beyond the school system.

7. Challenges and Lessons Learned

Challenges

- Internet and infrastructure limitations in rural schools affect regular data uploads.
- Need for more mentor support to sustain school activities year-round.
- Limited funding for school-based research materials (thermometers, GPS units, water testing kits).

Responses and Lessons

- Focus on low-tech methods and manual data recording in remote areas.
 - Use of WhatsApp groups for real-time teacher support.
 - Partnering with local forestry offices and conservation NGOs for field guidance and mentorship.
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8. Strategic Way Forward

Short-Term Goals (2025–2026)

- Organize a National Strategic Planning Meeting for all GLOBE stakeholders in Bhutan.
- Expand the number of GLOBE schools to 35, with a focus on eastern and southern Dzongkhags.

- Train 20 new educators, especially female science teachers, to ensure gender-balanced leadership.
- Increase Bhutanese submissions to IVSS and GLOBE Observer Campaigns.

Medium-Term Vision (2026–2030)

- Institutionalize GLOBE training as part of pre-service teacher education at the Paro College of Education.
 - Establish a National GLOBE Student Conference (GLOBE Bhutan Expo).
 - Strengthen partnerships with:
 - Department of Environment and Climate Change
 - National Center for Hydrology and Meteorology
 - International universities and GLOBE Implementation Offices
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9. Acknowledgements

We express our deep appreciation to:

- The GLOBE Program Office (GPO)
 - Asia-Pacific Regional Coordination Office (AP-RCO)
 - All educators, mentors, and students who keep Bhutan’s GLOBE movement thriving.
 - Partners such as the Royal University of Bhutan, and NASA GLOBE team.
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10. Conclusion

GLOBE Bhutan stands as a beacon of how a small country can meaningfully contribute to global science, education, and climate awareness. Our strength lies in our community spirit, commitment to sustainability, and belief that students are the torchbearers of environmental responsibility.