



APCTT

Asian and Pacific Centre
for Transfer of Technology

Transboundary Air Pollution: Role of Technologies and Regional Cooperation

3 February 2026



- Transboundary air pollution – in the regional context;
- How technologies and regional cooperation can play a role
- Asian & Pacific Centre for Transfer of Technology (APCTT)
- Initiatives of APCTT and ESCAP



- Air pollution - Environmental, health & development challenge
 - Leading environmental cause of premature deaths (10/mrd in Asia Pacific)
 - 84% of global population breathes polluted air
- Transboundary air pollution - a shared concern impacting lives & livelihoods
 - ASEAN: Haze driven by biomass burning, land-use change, forest fires
 - South Asia: Emissions in the Indo-Gangetic Plain
 - Himalayan region: Black carbon deposition on snow and glaciers
- Demonstrate that air quality challenges are interconnected

Air pollution knows no borders. And neither can our solutions/actions.

Require coordinated policy frameworks, shared data, innovative partnerships.



- Technologies: Transforming how to detect, model, manage air pollution
 - Examples: Satellite-based monitoring, low-cost air quality sensors, AI-driven early-warning models, clean technologies
 - Strengthen ability to: identify hotspots in near real time, forecast and track movements of haze event, forecast air quality days ahead, support timely response and mitigation.
- New technologies: Enhance understanding of opportunities and challenges
- Technology alone is not enough
 - Depends on ability to integrate them into institutions, policies and field practices. .
 - UNEP Report: ASEAN can reduce PM_{2.5} levels by 40-70% by 2030, cutting black carbon by 70% & methane by 80%, if priority measures are implemented.
 - Nearly 40% of potential air quality improvement can come simply from stronger enforcement of existing policies
 - In addition to need for effective enforcement, the challenge is also of insufficient funding & infrastructure for monitoring and implementation

Need capacity development, institutional strengthening
technology transfer & regional cooperation





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Air pollution is local in impact, but may be regional in origin and movement

Technology makes a difference when it is effectively transferred and embedded
within national and local systems.

Asian and Pacific Centre of Transfer of Technology (APCTT)

Strengthen capabilities of member States to

Develop and manage national innovation systems

Develop, transfer, adapt and apply technologies

Improve the terms of transfer of technologies

Identify and promote the development and transfer of technologies relevant to the region

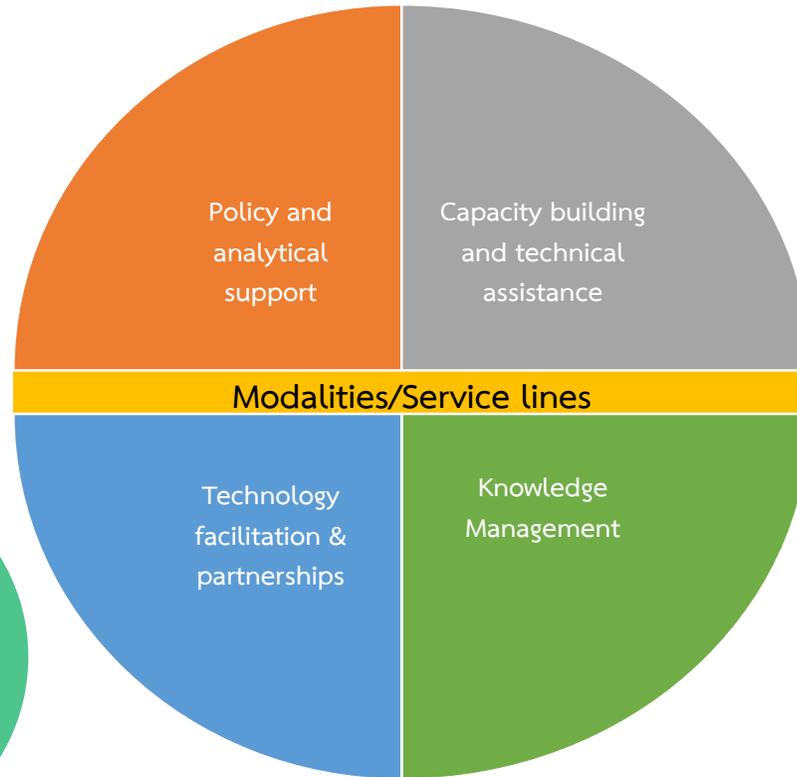
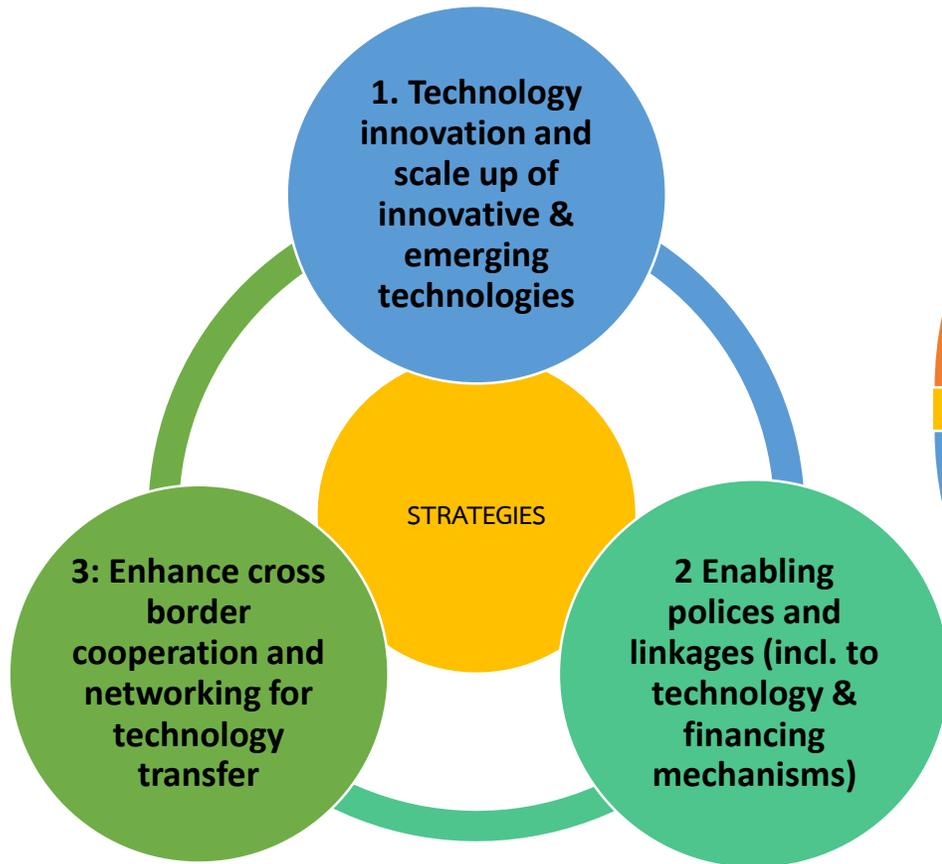
Strengthen regional technology cooperation and transfer

» Support achievement of SDGs



Vision (2026-27)

Enhanced cooperation for adoption, diffusion and transfer of innovative and emerging technologies in the Asia Pacific region for addressing climate change and achieving sustainable development goals



On air pollution:

- Policy studies and assessments on air pollution control technologies
- Knowledge products and compendium of Technologies for Air Pollution Control
- Capacity-building programmes (incl. study tours) on new technologies

Project: Enhanced capabilities to adopt innovative technologies for city air pollution control in select countries of the Asia-Pacific (2022-2023)

Focus on Bangkok, Thailand; Dhaka, Bangladesh; Gurugram, India

Highlights

- **Enhanced awareness on technology solutions** to air pollution control among nearly 600 city officials, policy makers and stakeholders
- **Compendium of Technologies provides a range of air pollution control technology options** for adoption across the Asia-Pacific region
- **Action points** for 3 cities for strengthening action plans for adoption of air pollution control technologies & integration with national priorities
- **Learnings and strategies relevant to Asia- Pacific region and recommendations** for regional cooperation to control air pollution



Main activities & achievements

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Capacity building programs For city officials & national policy makers in ၈ cities have **enhanced awareness** on air pollution & on **technology and policy options** available for air pollution control

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Compendium of Air Pollution Control Technology available for countries to identify and/or select appropriate technologies

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Contextualized analysis of city-level air pollution technology needs and gaps for ၈ cities provides a direction for technological way forward

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Study Tour: Exposure to advanced technology and policy strategies on air pollution in the **Republic of Korea** to ၁၀ city officials and national policy makers from ၈ cities

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Contextualized **assessment** of gaps and next steps to **strengthen City Action Plans** and policy frameworks in the ၈ cities

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Operational learnings from project shared through **Regional Workshop** - ၁၈ Dec ၂၀၂၈ and **knowledge products** shared to help scale up actions across Asia- Pacific region.



Thailand Stakeholder Consultation



Study Tour on innovative technologies for air pollution control to the Republic of Korea

Bangkok

Identified significant Air shed effect and Cross-border effect impacting urban air quality.

Gurugram

Focus on Air shed management to tackle local and Cross-border pollution sources.

Dhaka

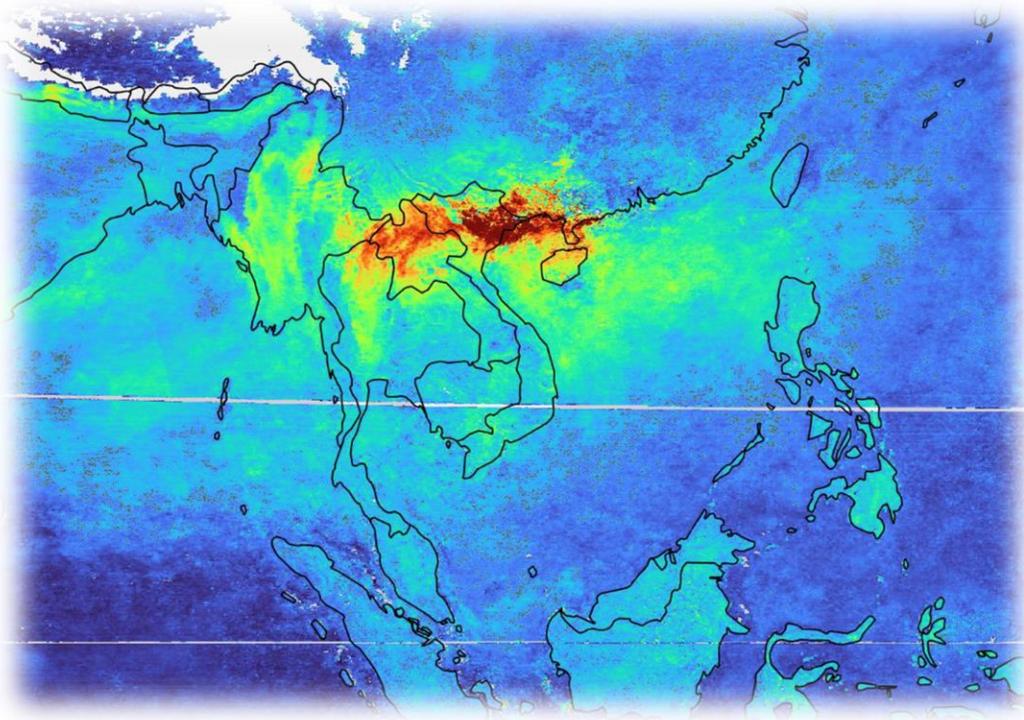
Critical need for regional cooperation due to massive Cross-border pollution inflow.

| City | Key Concerns | Critical Technologies |
|-----------------|---|--|
| Bangkok | Transport, Industry, Agri Waste, Construction | DPF, Electric Vehicles, CEMS, Remote Sensors |
| Gurugram | Power Plants, Road Dust, Brick Kilns | Airshed Approach, Intelligent Traffic, Water Fogging |
| Dhaka | Brick Kilns, Cooking Biomass, Road Dust | CAMS, DPF, Anti-smog guns, Cleaner Cooking |

Helped understand what can be controlled locally

— and what lies beyond their control.





- **Cities experience cross-border effects that they cannot control locally**
- **Air pollution travels across shared airsheds, making city level or even national-only responses insufficient**
- **Without regional cooperation, data, technologies, and actions remain fragmented**

The problem is not lack of action, but fragmented action

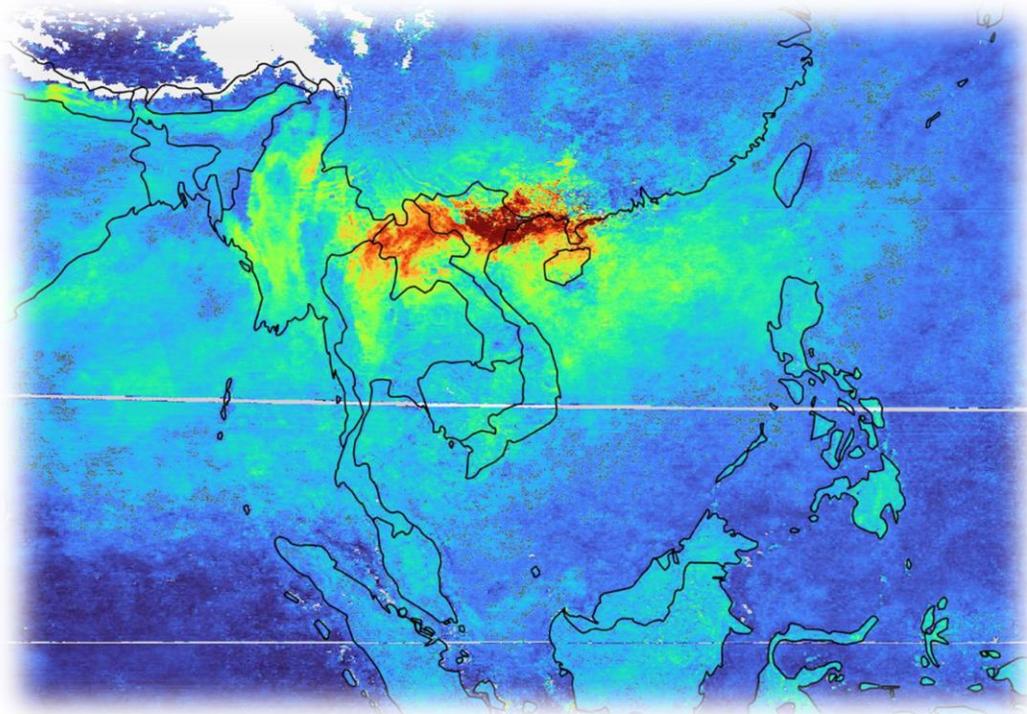




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Transboundary air pollution can be addressed when technology, data,
and capacity also move across borders



Regional Cooperation

- Strengthen **regional coordination frameworks** for managing shared airsheds.
- Expand **open data platforms** to enhance forecasting, accountability, and public engagement.
- Scale up **multi-sector interventions** targeting relevant sectors - transport, agriculture, energy, industry, and waste burning.
- Increase **investment in monitoring infrastructure and facilitate access to technologies**



Asia-Pacific Regional Action Programme on Air Pollution (RAPAP) aims to promote clean air for all in Asia and the Pacific through:



Promoting science-based
and policy-oriented
cooperation



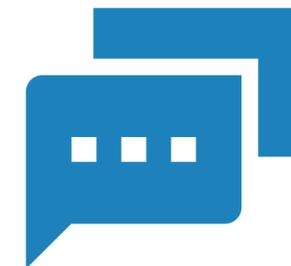
Establishing an open
regional platform for best
practices exchange



Promoting domestic
actions and regional
cooperation



Identifying technical
and financial
resources for
multilateral and
cooperative action



Fostering dialogue
and technical
cooperation

RAPAP enables the transfer of knowledge, tools, and practices across countries to support coordinated action on air pollution





- **From city evidence to regional coordination:**
Use local and city-level findings to inform coordinated regional responses to transboundary air pollution
- **From platforms to practical technology transfer:**
Leverage platforms such as RAPAP to support practical technology transfer, capacity building, and shared analytical approaches.
- **From workshops to sustained collaboration:**
Move from one-off workshops to sustained regional collaboration among cities, countries, and technical institutions

APCTT stands ready to support this transition by translating technologies into context-specific solutions and strengthening regional capacity





A Call to Collective Action

- **Think beyond national boundaries;**
- **Share data, innovations, and methods;**
- **Engage actively in co-development of tools and solutions;**
- **Forge lasting cross-sectoral and cross-border collaborations;**
- **Prioritize solutions that are scalable, adaptable, and field-ready.**





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Thank you!

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