

**Background:** (1) Wastewater treatment plants (WWTPs) are significant sources of greenhouse gases (GHG), (2) WWTP carbon footprints are increasing in ASEAN cities, and (3) Accurate GHG accounting in WWTPs is critical for emissions inventories and effective mitigation planning.

**Problems** of conventional monitoring: (1) Labour-intensive, (2) Limited and fixed sampling points, and (3) Costly analytical instruments.

**Consequences:** (1) Unable to capture the fluctuating nature of GHG emissions, (2) Low-resolution emissions data, and (3) Low accuracy of emission estimates hinders mitigation strategies.

**Solution:** ICT-enabled, mobile, and portable GHG monitoring platform deployed on a unmanned surface vehicle (USV).

**Benefits:** (1) Replace manual, static measurements with dynamic multi-point sampling, improving data representativeness, (2) Real-time sensing and data transmission, and (3) Reduce manpower and safety risks.

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