

## NS-298 - Low-carbon Bus NAMA Viet Nam

### Viet Nam

#### NAMA Seeking Support for Implementation

| A Overview                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A.1 Party                                  | Viet Nam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| A.2 Title of Mitigation Action             | Low-carbon Bus NAMA Viet Nam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| A.3 Description of mitigation action       | <p>Viet Nam's Low Carbon Bus (LCB) Nationally Appropriate Mitigation Action (NAMA) is an innovative and ambitious programme that puts the country at the forefront of Southeast-Asia's transition towards low carbon public transport. From 2025 onwards, Viet Nam pledges to source on in hybrid or electric buses. The NAMA focuses on the swift market penetration of near-to commercial bus technologies improving the operational efficiency of bus fleets and the ridership of the public transport system.</p> <p>At present, in Viet Nam public transport emissions from buses are higher than from motorcycles in terms of passenger. LCBs are therefore key to achieving emission reductions through a mode shift. The NAMA has a clear focus and follows a straightforward, sequenced approach.</p> <p>The 1<sup>st</sup> and main NAMA component comprises financial and technical assistance for the large-scale introduction of hybrid followed by plug-in hybrids and electric buses from 2025 onwards. In the 2019-2021 period, a fleet of 250 buses will be introduced which allows for economies of scale and low-cost professional maintenance. This approach, which is successfully implemented by leading public transport providers such as Transport for London (TfL) or TransMilenio in Bogota, is financially more attractive and less risky than pilot trials, which have high maintenance and operation costs. Hybrid buses are a proven technology: numerous bus operators run fleets of more than 100 units that achieve fuel savings of 25% and more, and report bus operating figures that are identical to conventional diesel units.</p> <p>The 2<sup>nd</sup> NAMA component focuses on improving the fuel efficiency of existing buses in Viet Nam by introducing technical operational measures such as efficient tyres, Eco Drive and modern telematics, as well as planning improvements to routes and bus dispatch. These measures are currently not applied in Viet Nam due to low levels of awareness, which will be overcome by providing financial and technical assistance. Buses will be equipped with state-of-the-art communication technology that allows for real-time monitoring of the core operational parameters.</p> <p>The 3<sup>rd</sup> NAMA component contributes to improved system efficiency in public transport by introducing mode integration, ticketing and greenhouse gas (GHG) measurements, as well as national policy advocacy, including the establishment of an urban mobility policy. The NAMA will strengthen the efforts undertaken by other national and international actors in Viet Nam. The NAMA will be implemented in two phases. Phase I, from 2019-2021, concentrates on three cities selected among Viet Nam's major cities such as Ha Noi, Can Tho, Da Nang, HCMC and Hue, while Phase II, foresees the scaling-up and expansion of the NAMA to all of Viet Nam's major cities. The NAMA is estimated to reduce GHG emissions by approximately 10 million tCO<sub>2</sub> by 2025, to make significant and quantified contributions towards reducing Black Carbon, particulate matter and NO<sub>x</sub> emissions and noise pollution in cities. Hybrid buses as well as plug-in hybrids are near-to-profitable and will presumably cross the financial threshold of viability by 2025, based on the expected fuel price increase. The financial structuring is based on initial financing to cover the investment and risk costs of the hybrid buses, gradually shifting to financing incremental costs only until they are phased out completely. Throughout the entire period, the NAMA requires approximately 5.5 billion USD, of which 60% through commercial loans, 32% through corporate capital and 8% through grants.</p> |
| A.4 Sector                                 | <input type="checkbox"/> Energy supply<br><input type="checkbox"/> Residential and Commercial buildings<br><input type="checkbox"/> Agriculture<br><input type="checkbox"/> Waste management<br><input type="checkbox"/> Other <input checked="" type="checkbox"/> Transport and its Infrastructure<br><input type="checkbox"/> Industry<br><input type="checkbox"/> Forestry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| A.5 Technology                             | <input type="checkbox"/> Bioenergy<br><input checked="" type="checkbox"/> Energy Efficiency<br><input type="checkbox"/> Hydropower<br><input type="checkbox"/> Wind energy<br><input type="checkbox"/> Carbon Capture and Storage<br><input type="checkbox"/> Land fill gas collection<br><input type="checkbox"/> Other <input checked="" type="checkbox"/> Cleaner Fuels<br><input type="checkbox"/> Geothermal energy<br><input type="checkbox"/> Solar energy<br><input type="checkbox"/> Ocean energy<br><input type="checkbox"/> Low till / No till                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| A.6 Type of action                         | <input type="checkbox"/> National/ Sectoral goal<br><input type="checkbox"/> Strategy<br><input checked="" type="checkbox"/> National/Sectoral policy or program<br><input type="checkbox"/> Other <input type="checkbox"/> Project: Investment in machinery<br><input checked="" type="checkbox"/> Project: Investment in infrastructure<br><input type="checkbox"/> Project: Other                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| A.7 Greenhouse gases covered by the action | <input checked="" type="checkbox"/> CO <sub>2</sub><br><input type="checkbox"/> N <sub>2</sub> O<br><input type="checkbox"/> CH <sub>4</sub><br><input type="checkbox"/> HFCs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

☐ PFCs☐ SF6☐ Other

## B National Implementing Entity

|        |                  |                                                  |
|--------|------------------|--------------------------------------------------|
| B.1.0  | Name             | Ministry of Transport, Department of Environment |
| B.1.1  | Contact Person 1 | Mr. Tran Anh Duong                               |
| B.1.2  | Address          | 80 Tran Hung Dao, Hanoi, Viet Nam                |
| B.1.3  | Phone            |                                                  |
| B.1.4  | Email            |                                                  |
| B.1.5  | Contact Person 2 | Mr. Nguyen Huu Tien                              |
| B.1.6  | Address          | 80 Tran Hung Dao, Hanoi, Viet Nam                |
| B.1.7  | Phone            |                                                  |
| B.1.8  | Email            | nguyenhuutien@mt.gov.vn                          |
| B.1.9  | Contact Person 3 |                                                  |
| B.1.10 | Address          |                                                  |
| B.1.11 | Phone            |                                                  |
| B.1.12 | Email            |                                                  |
| B.1.13 | Comments         |                                                  |

[Add Additional Entity](#)

## C Expected timeframe for the implementation of the mitigation action

|     |                                       |      |
|-----|---------------------------------------|------|
| C.1 | Number of years for completion        | 12   |
| C.2 | Expected start year of implementation | 2019 |

## D Currency

|     |               |     |
|-----|---------------|-----|
| D.1 | Used Currency | USD |
|-----|---------------|-----|

Conversion to USD: 1

## E Cost

|       |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E.1.1 | Estimated full cost of implementation                    | 5,550,475,659<br>Conversion to USD: 5,550,475,659                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| E.1.2 | Comments on full cost of implementation                  | Full costs of implementation refers to the investment needs in low-carbon buses (with the number of buses required based on go modal share targets for public transport), and operational efficiency improvements.                                                                                                                                                                                                                                                                      |
| E.2.1 | Estimated incremental cost of implementation             | 338,000,000<br>Conversion to USD: 338,000,000                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| E.2.2 | Comments on estimated incremental cost of implementation | Incremental costs are mainly due to low-carbon buses being more expensive than conventional diesel Euro IV buses. Initially the grant finance is based on investment costs to overcome perceived risk barriers; the subsidy per bus will be reduced over time and based on full cost of ownership, i.e. taking into account savings, after 2022. Phase I incremental costs are USD 21.5 million, which includes financial assistance for operational measures and technical assistance. |

## F Support required for the implementation the mitigation action

|       |                                            |                                                                                                                                                                                                                                                                                                                                                    |
|-------|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F.1.1 | Amount of Financial support                | 496,900,000<br>Conversion to USD: 496,900,000                                                                                                                                                                                                                                                                                                      |
| F.1.2 | Type of required Financial support         | <input checked="" type="checkbox"/> Grant <input checked="" type="checkbox"/> Guarantee<br><input type="checkbox"/> Loan (sovereign) <input type="checkbox"/> Equity<br><input type="checkbox"/> Loan (Private) <input type="checkbox"/> Carbon finance<br><input checked="" type="checkbox"/> Concessional loan<br><input type="checkbox"/> Other |
| F.1.3 | Comments on Financial support              | To make LCBs comparable in financial and risk terms to conventional diesel buses, grants are required in Phase I, as only these will make the two investment financially compatible and demonstrate their viability. In Phase II, a financial mechanism including guarantees and concessional loans will facilitate wider scalar                   |
| F.2.1 | Amount of Technological support            | 0                                                                                                                                                                                                                                                                                                                                                  |
| F.2.2 | Comments on Technological support          |                                                                                                                                                                                                                                                                                                                                                    |
| F.3.1 | Amount of capacity building support        | 3,100,000<br>Conversion to USD: 3,100,000                                                                                                                                                                                                                                                                                                          |
| F.3.2 | Type of required capacity building support | <input type="checkbox"/> Individual level<br><input checked="" type="checkbox"/> Institutional level                                                                                                                                                                                                                                               |

☒ Systemic level☒ Other

Policy and planning support

## F.3.3 Comments on Capacity Building support

Includes support for monitoring operational efficiency measures, bus route planning, dissemination, eco-driving, national urban transport programme, integrate public transport integration and MRV system for cities.

## G Estimated emission reductions

|                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| G.1 Amount                                                                                          | 10.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| G.2 Unit                                                                                            | MtCO <sub>2</sub> e <span>▼</span>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| G.3 Additional information (e.g. if available, information on the methodological approach followed) | Cumulative emission reductions up to 2030, based on full-scale implementation. Reductions are based on well-to-wheel calculation estimated as follows: 1) introduction of nearly 30,000 hybrid, plug-in hybrid and battery electric buses compared to conventional diesel grid electricity factor based on current power mix in Viet Nam; 2) low-rolling resistance tyres, idle-stop devices and eco-driving; and shift from private to public transport to achieve government targets, under the assumption the shift is from motorcycles to buses, w conservative as there will be shifting from cars as well. |

## H Other indicators

|                                        |                                                                                                                                                                                                                       |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| H.1 Other indicators of implementation | tCO <sub>2</sub> /capita for transport by city; gCO <sub>2</sub> /km for buses; gCO <sub>2</sub> /p-km; public transport mode share; tNO <sub>x</sub> ; tPM, number of implemented operational measures; USD measures |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## I Other relevant information

|                                                                                        |                                                                                                                                       |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| I.1 Other relevant information including co-benefits for local sustainable development | Co-benefits include: air quality improvement, energy security, accessibility, city liveability, congestion reduction, noise reduction |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|

## J Relevant National Policies strategies, plans and programmes and/or other mitigation action

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| J.1 Relevant National Policies | Viet Nam's Nationally Determined Contribution from 2015; Plan for the Implementation of Paris Agreement (Decision No. 2053/QĐ-TTg dated 28 October 2015 of Prime Minister); Viet Nam Sustainable Development Strategy from 2011 to 2020 (Decision No. 432/QĐ-TTg dated 12 Apr 2012 of Prime Minister); Viet Nam Green Growth Strategy from 2011 to 2020 and vision to 2050 (Decision No. 1393/QĐ-TTg dated 25 Sep 2012 of Prime Minister); National Strategy on Climate Change from 2011 to 2020 and vision to 2050 (Decision No. 2139/QĐ-TTg dated 05 December 2011 of Prime Minister); Scheme on GHG emission management from 2012 to 2020 (Decision No. 1775/QĐ-TTg dated 21 November 2012 of Prime Minister); Roadmap for application of exhaust emission standards to manufactured, assembled and imported brand new cars and motorbikes (Decision 49/2011/QĐ-TTg); Action plan on climate change and green growth of period 2016-2020 (Decision 1456/QĐ-BGTVT); Plan for road traffic development in Viet Nam by 2020 and the orientation towards 2030 (Decision 356/QĐ-TTg); Development of bus public transport for the period 2012-2020 (280/QĐ-TTg and Decision No 13/ QĐ-TTg); National Targeted Programme on Energy Efficiency Conservation Phase 2012-2015. |
| J.2 Link to other NAMAs        | (none)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## K Attachments

| K Attachments              | <table> <tr> <th>Title</th> <th>Description</th> </tr> <tr> <td colspan="2">No records to display.</td> </tr> </table> | Title | Description | No records to display. |  |
|----------------------------|------------------------------------------------------------------------------------------------------------------------|-------|-------------|------------------------|--|
| Title                      | Description                                                                                                            |       |             |                        |  |
| No records to display.     |                                                                                                                        |       |             |                        |  |
| K.1 Attachment description |                                                                                                                        |       |             |                        |  |
| K.2 File                   | <div>Choose File</div> <div>No file chosen</div>                                                                       |       |             |                        |  |

## L Support received

| L.1 Outside the Registry | Support for NAMA development from GIZ project "Creation of a comprehensive framework for NAMAs and MRV in Vietnam", funded by the German Federal Government, the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). |                  |             |        |         |      |                        |  |  |  |  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|--------|---------|------|------------------------|--|--|--|--|
| L.2 Within the Registry  | <table> <tr> <th>Support provided</th> <th>SupportType</th> <th>Amount</th> <th>Comment</th> <th>Date</th> </tr> <tr> <td colspan="5">No records to display.</td> </tr> </table>                                                       | Support provided | SupportType | Amount | Comment | Date | No records to display. |  |  |  |  |
| Support provided         | SupportType                                                                                                                                                                                                                            | Amount           | Comment     | Date   |         |      |                        |  |  |  |  |
| No records to display.   |                                                                                                                                                                                                                                        |                  |             |        |         |      |                        |  |  |  |  |