BỘ TÀI NGUYÊN VÀ MÔI TRƯỜNG VIỆT NAM
MINISTRY of NATURAL RESOURCES and ENVIRONMENT

VIET NAM
CLEAN TECHNOLOGY FUND
INVESTMENT PLAN

PRESENTATION TO CTF TRUST FUND COMMITTEE

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Outline of Presentation

- **Overview of Climate Change in Vietnam: Challenges and Opportunities**
- **Vietnam Response to Climate Change: Determination of the Government**
- **Proposed Country Investment Plan:**
  - Priority Sectors
  - Proposed Projects
  - Developmental Impact and Implementation Potential
  - Result Indicators
  - Financing Plan

Overview of Climate Change in Vietnam:

Challenges and Opportunities

Map of Viet Nam showing likely impacts of climate change this century

Northeast and Northwest; storms flashfloods, drought

Red River Delta: storms, floods, inundation, SLR and storm surges

Central coasts: storms, floods, flashfloods, SLR

Central highlands: floods, drought, storms

Mekong River Delta: Floods, saline intrusion, storms, landslides, droughts

Climate Change, Sea Level Rise Scenarios

South Asia

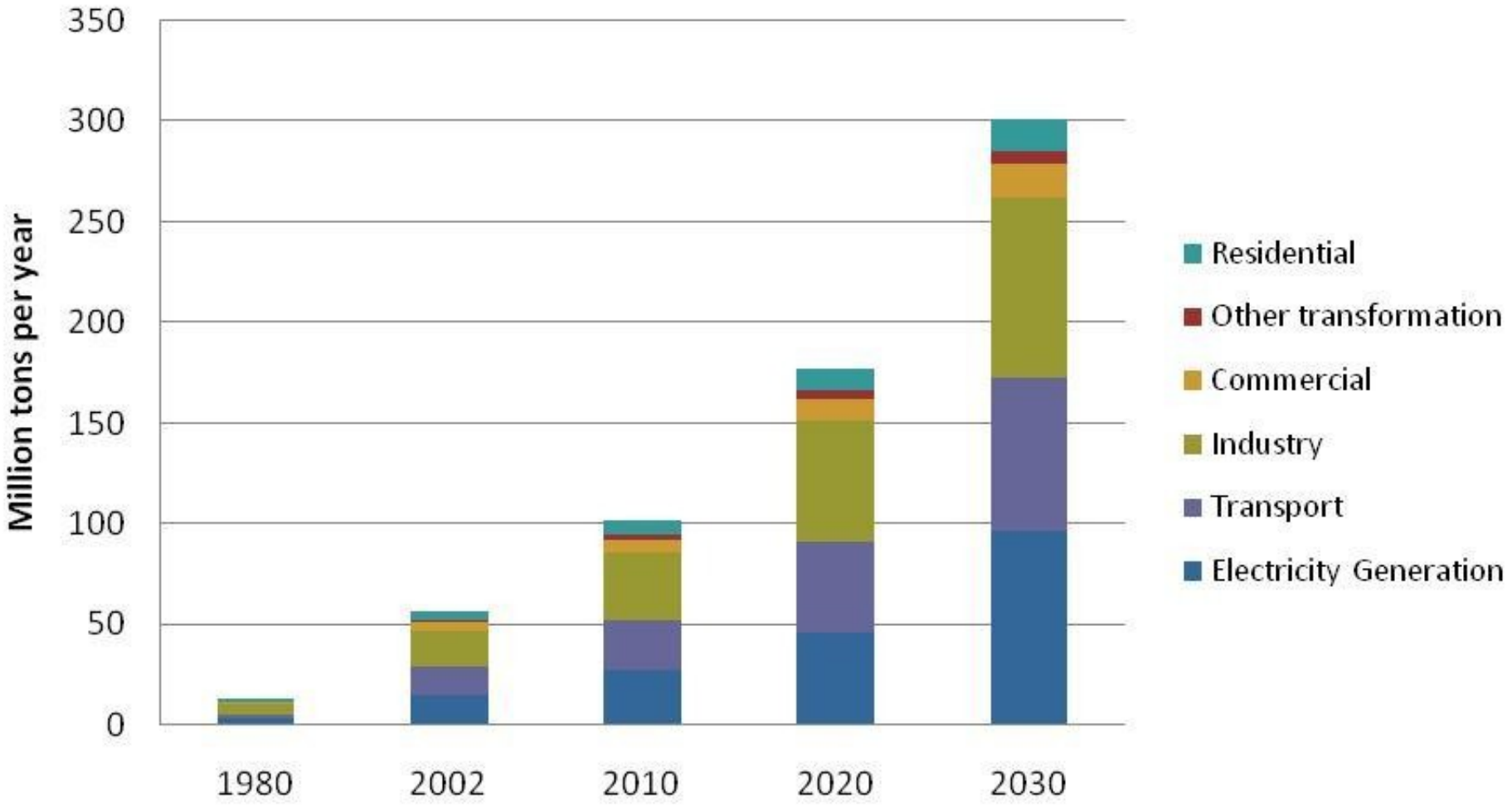
SLR to 1m

Viet Nam

Vietnam's Business As Usual Scenario (BAU)

- Rapid economic development at an average GDP growth rate of about 6% p.a. over the next two decades.
- In 2030, population of Vietnam is expected to reach 108 million and an urbanization ratio of 43% (up from 25% in 2002).
- Primary energy demand will more than double and total energy related GHG emissions will triple from 2010-2030
- Rapid increase in electricity generation from 36TWh in 2002 to 266TWh in 2030, of which about 55% are projected to come from fossil in 2030.

Direct CO2 Emissions under BAU Scenario



Overview of Climate Change in Vietnam

Challenges	Opportunities
- IPCC: Vietnam is one of several countries seriously hit by climate change and sea level rise (SLR). - In last 50 years, annual average tº has increased about 0.5-0.7ºC, SLR is app. 20cm, CC => Disasters, storms, floods, droughts.. - Coastal Deltas, especially Mekong Delta is projected to be most severely inundated; - Vulnerable sectors: agriculture & food security, water resources, public health, and habitat; - Vulnerable community includes farmers, indigenous groups, women, children and poor people.	- Human behavior changes and economy reconstruction towards effective energy use, cleaner productions, environment protection; and low-carbon economy; - Global concerns increase => better Int. Cooperation

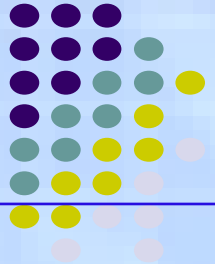
Vietnam Response to Climate Change:

Determination of Government

Vietnam Response to Climate Change
Determination of GOV (1)

- Vietnam ratified UNFCCC (1992-1994) & Kyoto Protocol - KP(1998-2002):
- MONRE was assigned to take lead in developing **National Target Program** to Respond to Climate Change **(NTP-RCC)** & it was approved on 02.12.2008 (Decision No. 158/2008/QĐ-TTg);
- The Scenarios of Climate Change and SLR for Vietnam was developed and launched on 09.9.2009;
- **The Vietnam initial National Communication** under UNFCCC submitted in 2003 and **the Second one** is proposed to finalize within 2010 which focuses on the GHG related issues.

Vietnam Response to Climate Change
Determination of GOV (2)



- Designed National Authority of CDM (DNA - KP) in Vietnam, has been assigned and functioning
- The National Steering Committee (NSC - UNFCCC) in VN was established in 2007, at present there are 18 members (14 ministries, sectors)
- MONRE: National Focal Point of Climate Investment Fund (CIF) which consist of Strategic Climate Fund (SCF) and Clean Techology Fund (CTF)

  Working group: DG of ICD/MONRE is the Head and its members are representative of line ministries => a Country Investment Plan (CIP) has drafted to use CTF in Viet Nam.

Vietnam Response to Climate Change

- **NTP-RCC**
  - Effectively use & save the energy (Energy Efficiency - EE);
  - Develop and maximize the exploitation of new energy sources (especially Renewable Energy - RE);
  - Apply advanced Technology in energy sector
  - Traffic jam reduction
- **National Energy Development Strategy**
  - EE Phase 1: 3-5% reduction in energy use in 2006-2010
  - EE Phase 2: 5-8% reduction from BAU in 2011-2015
  - RE share of 3% by 2010, 5% by 2020, 11% by 2050
  - Public transport: modal shift from 10-15% to 50% by 2020
  - Renewable fuels: E10 & B10 by 2020

Country Investment Plan For Vietnam

CIP Priority Sectors

Energy Efficiency/Renewable Energy

- GHG reductions: industry - 20%, power supply - 20%, transport - 15%, commercial & residential - 10%
- Accelerate development of small hydro, biomass, wind
- Create new financing mechanisms to support EE & RE investment via commercial banks & private sector

Transport

- realize full potential benefits of public transport in major cities

Proposed CTF-Supported Projects and CO2 Reduction Potential

CTF-Supported Intervention	Direct Reductions with CTF ($MtCO_2e/y$)	Reductions with Replication and Scale-up ($MtCO_2e/y$)
Industrial EE – (ADB) ESCO and EE Fund (ADB)	1.8	7.8 10.0
Transmission System Upgrade with AC3 (ADB)	0.156	1.56
Smart Grid (WB)	0.5	Enables 2000 MW of small hydro and other RE with up to 4.8 $MtCO_2e/y$ reductions
EE and RE Risk Sharing (IFC) RE Fund (IFC)	1.235 3.6	Enables additional 1000 MW of RE power with up to 2.4 $MtCO_2e/y$ reductions
Public Transport Enhancements (ADB)	1.3	1.6
Totals	**8.09**	**21.76**

Proposed Project (1)
Industrial Energy Efficiency (ADB)

- CTF investments in waste heat recovery and other measures at 10 cement enterprises (about 25% of the cement sector output), will lead to at least 10% savings of energy consumption.
- Total energy savings of 26% of energy consumption at the 10 enterprises would deliver a total of 1.8 MtCO2e/y reductions.
- The CTF co-financed investments will be replicated throughout the sector, covering up to 40 enterprises by 2030, with total emissions reductions of 7.8 MtCO2e/y.

Proposed Project (2)
ESCO and Energy Conservation Fund (ADB)

- CTF will support an expansion of energy service company (ESCO) business to promote energy savings in small and medium size enterprises (SMEs) and the commercial sector;
- CTF will provide start-up capital for the Energy Conservation Fund to accelerate expansion of EE investments.
- Replication using these investment vehicles would result in an additional 10 MtCO2e/y reductions.

Proposed Project (3)
Transmission System Modernization (ADB)

- CTF will upgrade of existing lines with advanced composite core conductors (AC3) has the potential to reduce system losses an additional 3% below BAU operations, and would postpone the construction of new high-voltage lines.
- AC3 technology has yet to be adopted in Vietnam due to higher capital cost compared to conventional steel core conductors and perceived technology risk.
- A successful deployment in a “test” section of the transmission network could be readily scaled up to at least 1000 km of high-voltage lines.

Proposed Project (4)
Transmission & Distribution System Upgrade (WB)

- CTF will support use of newer grid operations technology, including substation automation and “smarter grid” technology, which will reduce system losses and enable the optimum use of intermittent renewable energy sources such as small hydropower and wind power.
- Smarter grid upgrades could reduce losses by an additional 3% below BAU, representing about 0.5 MtCO2e/y from the CTF-supported activity alone. Significant additional saving would result from replication of the smarter grid technology throughout Vietnam's electricity grid.
- Including 2000 MW of new RE generation that could be enabled by the smarter grid upgrades, long-term emission savings could be substantially higher, as high as 4.8MtCO2e/y.

Proposed Project (5)
Private Sector Financing for EE and RE (IFC)

- IFC provide a tailor made package of capacity building and financing instruments to help transform the behavior of local financial institutions so that they will build up their in-house capacity to assess the technical and market risks of EE and CP projects and become ready financiers for the sector.
- Target borrowers: SMEs in textile, pulp-paper, plastics, construction materials, food/seafood processing, agri processing, electronics, equipment vendors, etc.

Proposed Project (5)
Private Sector Financing for EE and RE (IFC) – cont'd

- Combined with CTF funding, IFC will provide appropriate incentives for qualified developers and financiers to fast-track the implementation of RE projects, such as hydro power plants, biomass energy and wind power projects among others.
- IFC would work with private sector RE developers, equipment manufacturers and financial institutions interested in entering the Vietnam power sector, but who need additional incentives or risk mitigation to make their investments feasible.

Development Impact

Energy Efficiency/Renewable Energy

- Financial savings for end-users, especially poor residential consumers and higher productivity for industries
- Enhanced energy security, reduction in future fossil fuel imports
- Reduced emissions from power plants and industrial processes

Transport

- Reduced congestion and associated economic losses
- Promote long-term fuel savings & reduced need for future fuel imports
- Reduced emissions from mobile sources

Implementation Potential

Energy Efficiency/Renewable Energy

- New Energy Efficiency & Savings Law slated for approval & implementation in 2010
- Substantial private sector interest & expertise (e.g., small hydro)
- Low scale-up & replication risk

Transport

- strong commitment from central & local governments
- well-defined investment program
- Initial implementation risk is high, but scale-up & replication risk is low

Additional Costs & Risk Premiums

Energy Efficiency

Upfront cost barriers especially for small and medium size enterprises. Commercial banks are reluctant to lend to EE projects, which typically do not involve physical assets and conventional revenue streams.

Renewable Energy

Production cost of most RE sources is above the current avoidable cost tariff. The non-availability and proximity of the transmission system is another cost and risk factor.

Transport

Connectivity & other enhancements are above & beyond current investment commitments.

Results Indicators for EE

Indicators	Baseline	Investment Program Results
Carbon intensity	0.0004 $MtCO_2e$ per million US$ of GDP at PPP	Arresting anticipated increase
Electricity consumption	65,900 GWh (in 2008)	29,400 GWh saved, which represents 10% of national electricity consumption 2020
Power generation capacity from conventional sources	15,864 MW capacity (in 2009), expected to grow to 60,300 MW under BAU	5,880 MW of avoided capacity additions by (2020)
Annual GHG emissions	33.9 MtCO2e /y emissions from industrial sector	6 MtCO2e /y reduced (60 MtCO2e in the first 10 years)

Results Indicators for EE

Indicators	Baseline	Investment Program Results
Installed RE capacity	769 MW installed RE capacity at present (see Table 4), increasing to 5000+ MW under BAU expansion plans	8000 MW total installed capacity (additional 2000 MW of small hydro, + 500 MW of biomass and 500 MW wind power)
Power generation capacity from conventional sources	15,864 MW capacity (in 2009), expected to grow to 60,300 MW under BAU	2628 MW of avoided capacity additions by 2020
Annual GHG emissions from the electricity sector	27.7 MtCO2e/ y emissions from electricity sector (2010)	8.125 MtCO2e/y reduced (81.25 MtCO2e in the first 10 years)

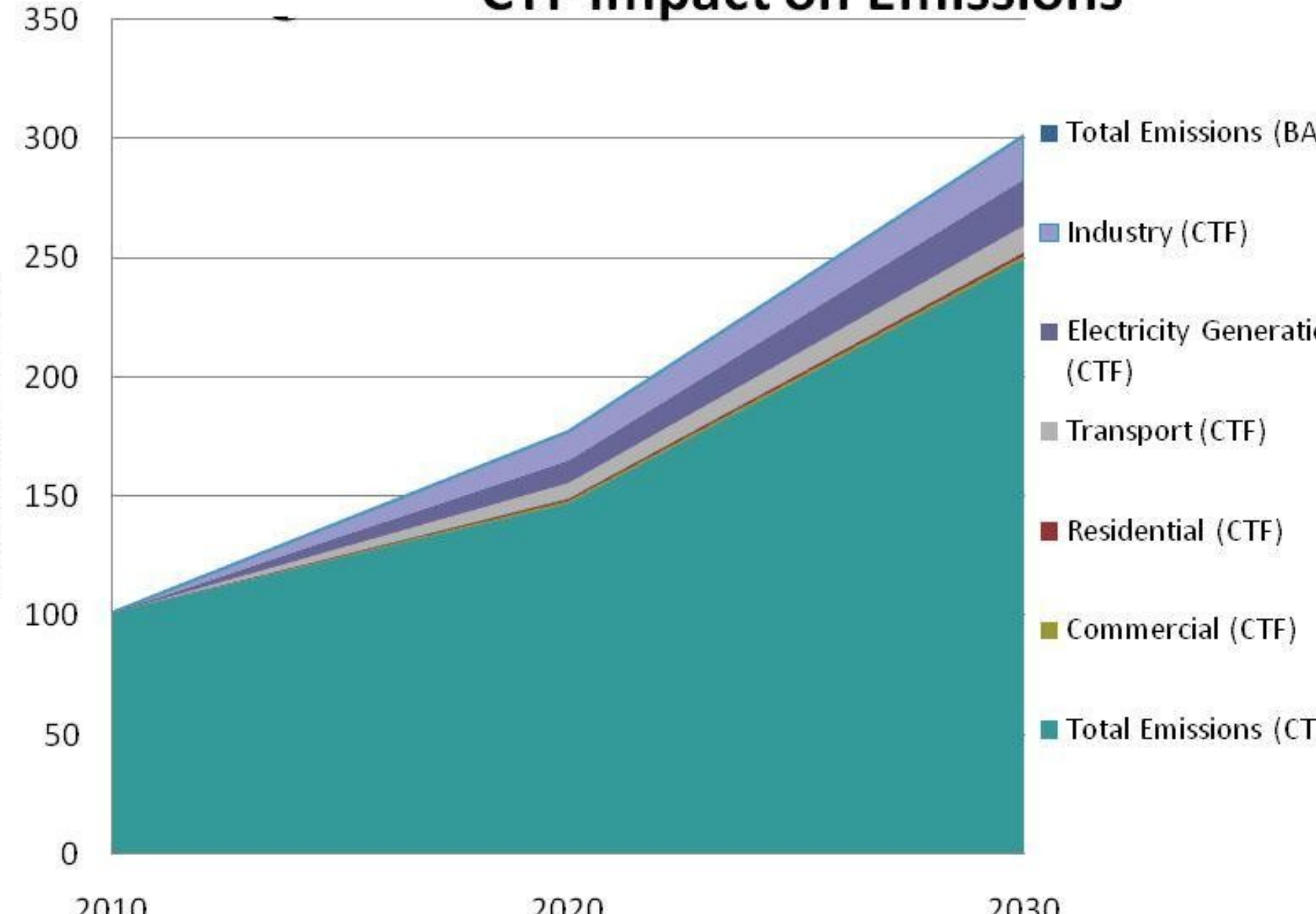
Results Indicators for Transport

Indicators	Baseline	Investment Program Results
Carbon intensity	0.0004 $MtCO_2e$ per million US$ of GDP at PPP	Arresting anticipated increase
Number of cities with low-carbon public transport programs	0	2
Annual GHG emissions	3.7 MtCO2e/y emissions from transport in the target area	1.3 $MtCO_2e$/y reduced by the program (13 $MtCO_2e$ in the first 10 years)
Number of passenger-trips on public transport	10%	44% (by year 2030 in HCMC)

Financing Plan

Financing Source	Proposed Programs and Projects					
	Industrial Energy Efficiency (ADB – Annex 1)	High Voltage Transmission Technology (ADB – Annex 2)	Urban Transport (ADB – Annex 3)	Smart Grid Technology (IBRD – Annex 4)	Clean Energy Financing Facility (IFC – Annex 5)	Total
MDBs	40	260	500	180	200	1,180
GOV	25	40	100	100	0	265
CTF	50	50	50	30	70	250
GEF	0	0	0	0	0	0
Carbon Finance	10	0	0	0	0	10
Other Co-financing	40	200	500	0	0	740
Private Sector	100	500	0	0	900	1,000
TOTAL	265	1,050	1,150	310	1,170	3,445

CTF Impact on Emissions



Viet Nam's Determination

"Response to climate change is the responsibility of the whole political system, the society, sectors and organizations at all levels, and every individual. It requires consensus and a strong determination at local, regional, national and global level. Tasks to respond to climate change must be integrated into development strategies, programmes, plans, planning in all sectors and at all levels; into legal documents and policy institutions; into development of legal documents and their implementation"

(Extract from Premier Minister's Decision on approval of National Target Program)

=> CTF-support would be very significant for Viet Nam: it would help make the government's vision a reality and lead the country on the way to a true low-carbon transformation.


THANK YOU VERY MUCH
FOR YOUR ATTENTION !