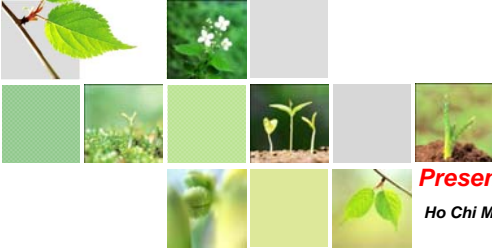



ASSESSING THE STATUS AND FORECASTING THE TREND OF GREEN HOUSE GAS EMISSIONS IN HO CHI MINH CITY AND PROPOSING MITIGATION MEASURES TOWARD A LOW-CARBON CITY




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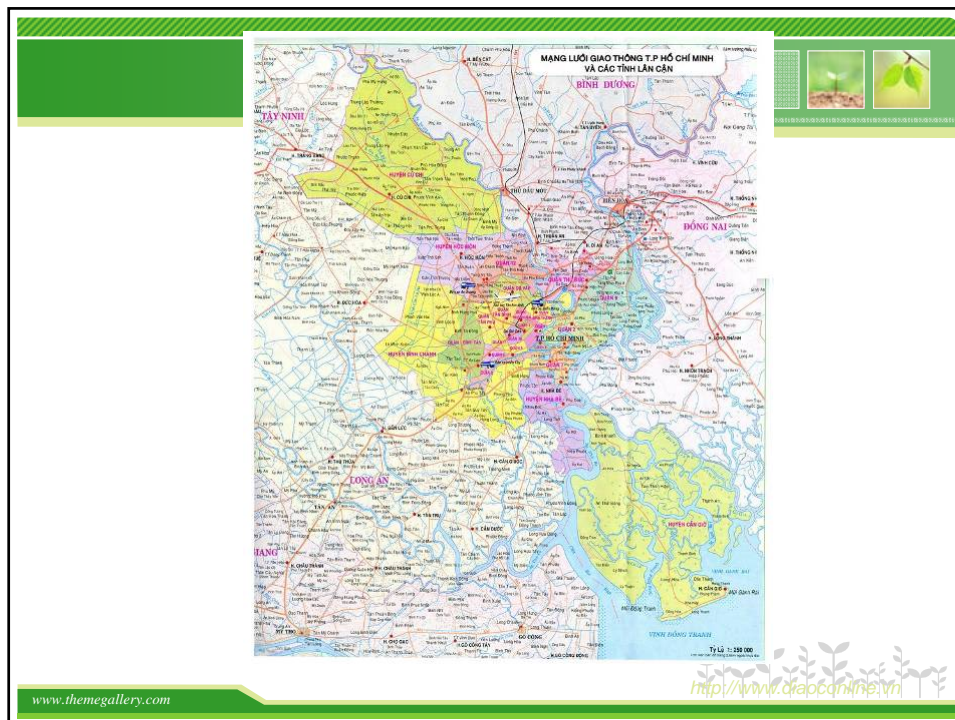
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OVERVIEW OF HO CHI MINH CITY

- Hochiminh City is one of the socio-economic centers of Vietnam
- City profiles:
 - ✓ Area: 2.000 km²
 - ✓ Populations: 7.750.900, accounted for 8% of whole country
 - ✓ The contribution for whole country
 - ✓ 8% of inhabitants
 - ✓ 40% and 25% for industrial production and industrial capacity, respectively.
 - ✓ 40% of vehicle's quantity
- Thus, the air pollution due to industrial, transportation and domestic sources are seriously.
- Therefore it is necessary to carry out emission inventory of air pollutant emission under frame of environmental program, in general and atmospheric quality, in particular.
- However, presently this works have not been fruitful carried out due to several reasons

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SOURCES OF AIR POLLUTION IN HCMC

- **Industries:**
 - Including:
 - 14 industrial zones (IZ) with 1.000 factories in-operation in Hochiminh City.
 - c.a. 30.000 factories and enterprises outsidess of IZ
 - Major industrial types: thermo electricity, metal processing, cement production, chemical production, construction material production, food processing, etc.
 - Characteristics of industries in HCMC:
 - Ancient technology, backward equipments,
 - High demand on raw material and fuels
 - Locating in the residential area
 - Exhaust treatment facilities are not available

→ Seriously atmospheric pollution in several locations of HCMC

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SOURCES OF AIR POLLUTION IN HCMC




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SOURCES OF AIR POLLUTION IN HCMC

- **Transportation**
 - The transportation system includes 934 roads with total length of 1.275 km.
 - The percentage between total areas of road against land are quite low: 3,45km/km².
 - The quantity of vehicles (data from 2013): nearly 7 mil. Motorbikes and 850.000, respectively.
 - Mostly are old and many years used vehicles
 - Due to the low density of transportation route, high quantity of vehicles
 - **The transportation density of HCMC is very high, especially in main routes**
 - **Traffic jams often occurs (average velocity about 20 km/h)**
 - **Increasing air pollution**
- **Other sources**
 - Domestic sources: households;
 - Construction activities;
 - Incinerators, etc.



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SOURCES OF AIR POLLUTION IN HCMC



The image shows a massive traffic jam in a city street, with hundreds of motorbikes packed closely together. Many of the riders are wearing face masks, suggesting they are trying to avoid the air pollution. The scene is a clear visual representation of the high density of transportation mentioned in the text above.

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OBJECTIVES OF THE PROPOSED PROJECT

This proposed project aims to obtain 2 following objectives:

- To conduct surveys and assess current status of GHG emission sources of Ho Chi Minh City (in term of types and volumes) including CO₂, CH₄, N₂O, HFCs, PFCs and SF₆.
- To propose measures of mitigation as well as policies and solutions toward a low-carbon city for Ho Chi Minh City.

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METHODOLOGY

- Methods of calculating and forecasting GHG emissions based on GHG emission factors of IPCC and other relevant local and regional studies will be used.
- Combining collection of data and literature review, surveyed data with consulting experts to assess emissions in industrial areas of Ho Chi Minh City....
- Data mining and statistic methods.
- Expert method
- **Methods to be used:**
 - Statistical methods and field surveys to collect and process data on the production activities of HCMC.
 - Method of rapid assessment of the IPCC and of Japan (AIM model).
 - The method used to compare the emissions.
 - Application software SPSS statistics processing.
 - Method of making listing to listing the production of greenhouse gas emissions.
 - Expert method: consult researchers and managers of scientific institutions, research institutes, environmental agencies...

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TENTATIVE ACTIVITIES



1. *Survey and assessment of the status of industries and areas of businesses that emissions of greenhouse gases in Ho Chi Minh City.* include 5 main sectors:


- Agriculture and rural development;
- Handling and disposal of wastes;
- Urban traffic activity exterior of HCMC;
- Power generation – transmission - distribution and use of products;
- Emissions of greenhouse gases from industrial activities in the city;




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TENTATIVE ACTIVITIES




- **Agriculture and rural development:** The main object of study for rural households will include:
 - The objects related to livestock (most importantly pig) - animal wastes;
 - The operation of aquaculture (freshwater and brackish, saline) – wetlands;
 - Activities related to agriculture (cropland);
 - The use of products containing greenhouse gases.
- **Handling and disposal of wastes:** All landfill of municipal waste has been active in the city:
 - The system of urban sewage, industrial.
 - The system of waste incinerators (urban, industrial, medical)
 - The activities related to the collection system, storage, transshipment and transport solid waste and industrial market in HCM City.
- **Urban traffic activity exterior of HCMC:** This group of energy groups, the main object of study will include: All motorized vehicles are road traffic on the city (all types of motor vehicles from the 2 wheels or more: motorcycles, cars, trucks and buses).




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TENTATIVE ACTIVITIES




- **Power generation – transmission - distribution and use of products:** industrial processes, use of products and energy.
 - The main object of study will include:
 - The thermal power plants – energy
 - The power transmission project - product use
 - The use of products containing greenhouse gases in the urban areas (residential, commercial area...): The air conditioning systems, air conditioning use HFCs, ...
- **Emissions of greenhouse gases from industrial activities**
 - Industry non-metallic minerals (cement manufacturing, glass, brick, lime...)
 - Industrial metallurgy (steel, aluminum, magnesium...)
 - Electronic - Electric Industry
 - Food and beverage industry
 - Manufacturing of paper, pulp
 - Chemical industry (soda production, carbon production...).
 - Processing industry of petroleum products
 - Other industries such as apparel, textiles, fisheries, etc ...




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TENTATIVE ACTIVITIES



2. *Statistic and assess the current state (emission source and load) and forecast greenhouse gas emissions in HCMC;*
3. *Propose solutions to prevent and reduce greenhouse gas emissions in HCMC towards low carbon cities;*
4. *Short-term study in Japan.*



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