



HOCHIMINH CITY AIM TEAM – STUDIES ON EMISSION INVENTORY

THE 20th AIM INTERNATIONAL WORKSHOP

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 - ...
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INTRODUCTION ABOUT HCMC AIM GROUP

❖ **Number of members: over 20**

- Includes Professors, Doctors and Researchers in the field of Environment (environmental management, environmental engineering), Meteor-Hydrology, Land Administration, Economics of Natural Resources and Environment and informatics.
- Worked at HCMC University of Natural Resources and Environment and some institutes and universities in HCMC.
- Expert in collecting data for emission inventory in HCMC and other provinces



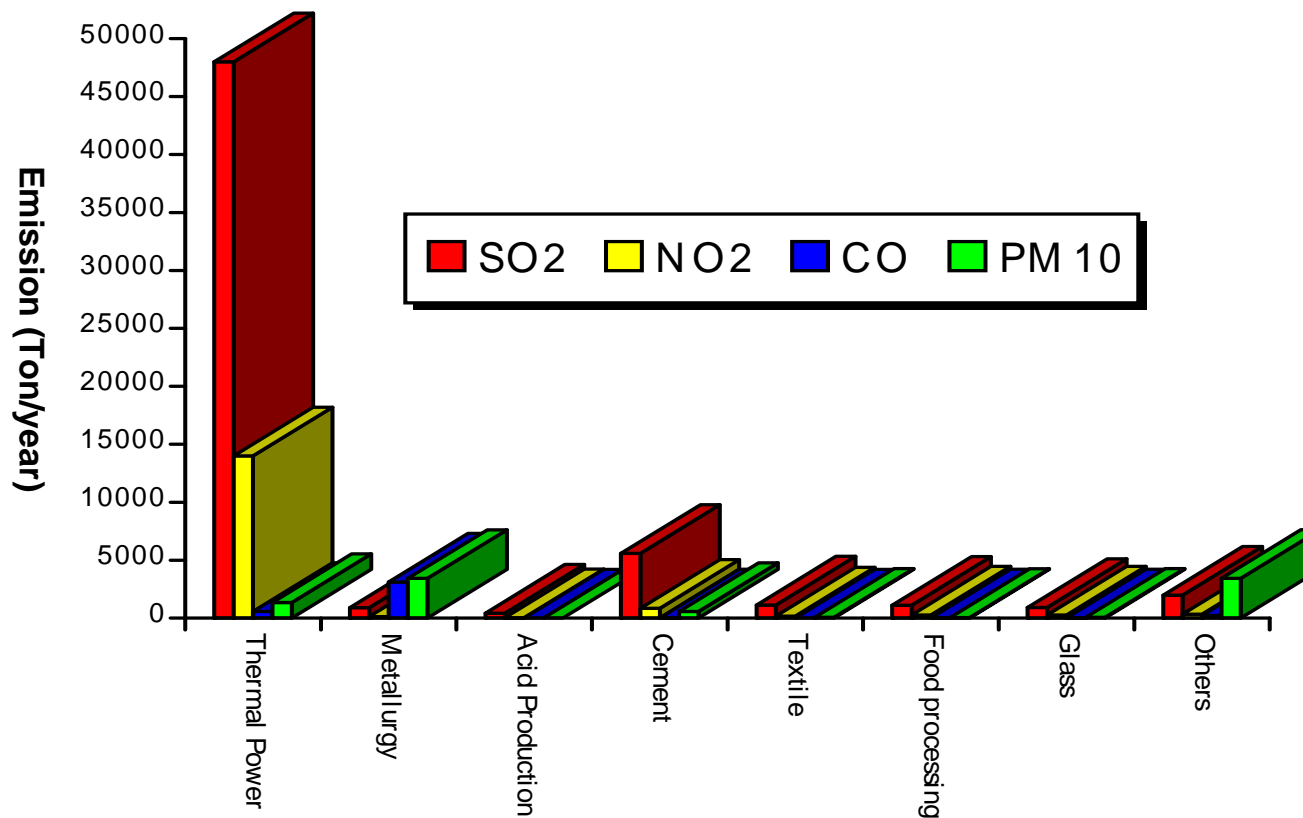


SOME RECENT STUDIES RELATED TO GHG EMISSION INVENTORY USING IPCC FACTOR



GHG EMISSION INVENTORY IN TRANSPORT IN HCMC

❖ Emission of typical air pollutants in some industries in HCMC (Ton/year) - 2002

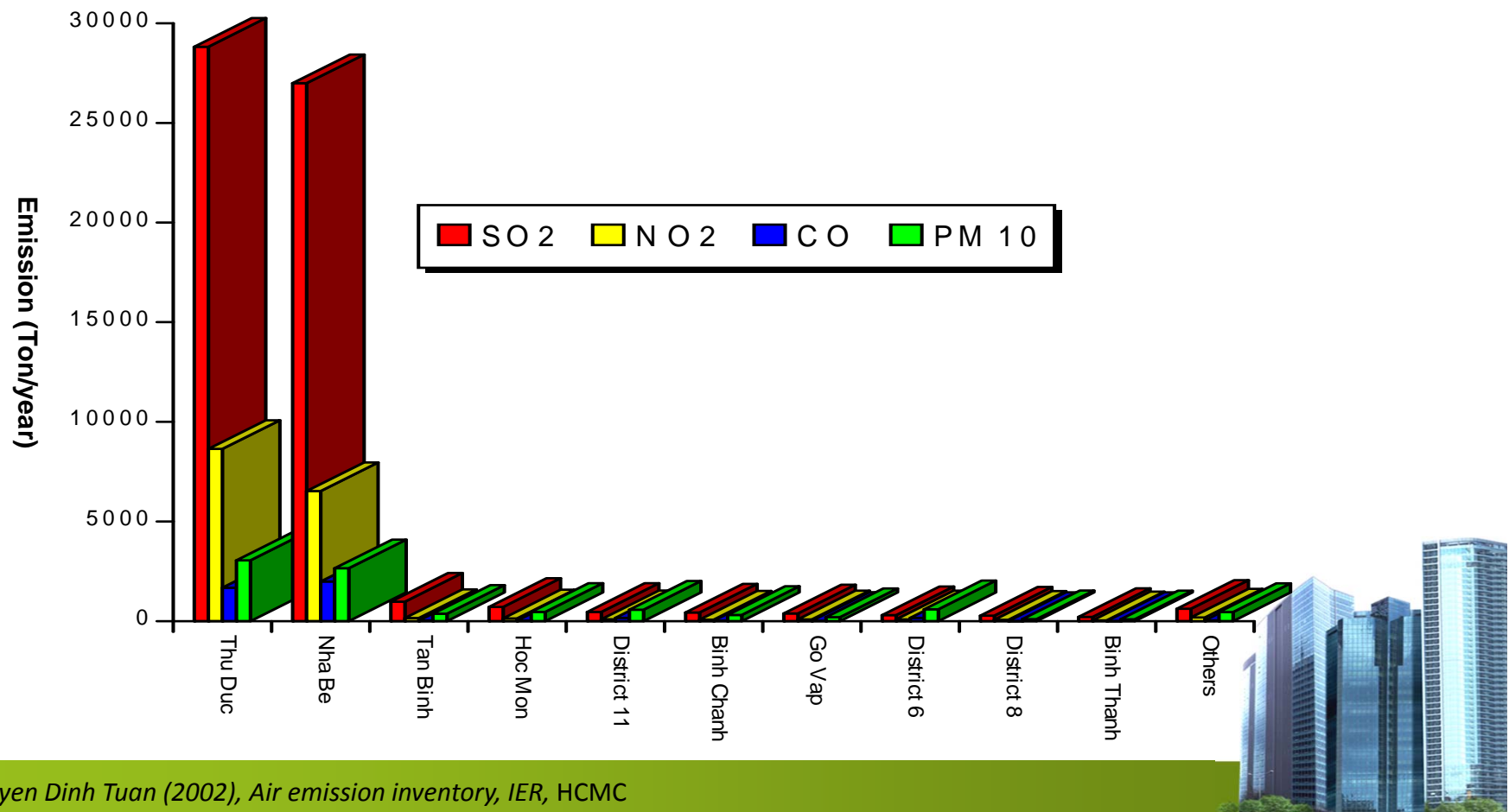


Source: Nguyen Dinh Tuan (2002), Air emission inventory, IER, HCMC



GHG EMISSION INVENTORY IN TRANSPORT IN HCMC

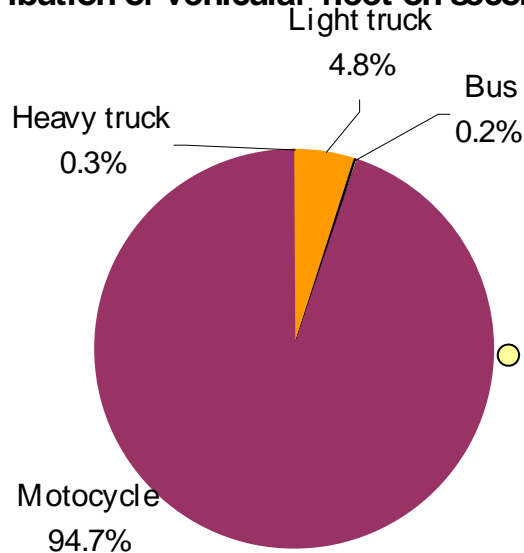
- ❖ Emission of some key pollutants such as SO₂, NO₂, CO and PM₁₀ were calculated for different districts in HCMC - 2002



GHG EMISSION INVENTORY IN TRANSPORT IN HCMC

❖ Emission from transportation - 2007

Distribution of vehicular fleet on secondary street



the highest number vehicles are motorcycles, after the light truck

■ Heavy truck ■ Light truck ■ Bus ■ Motorcycle

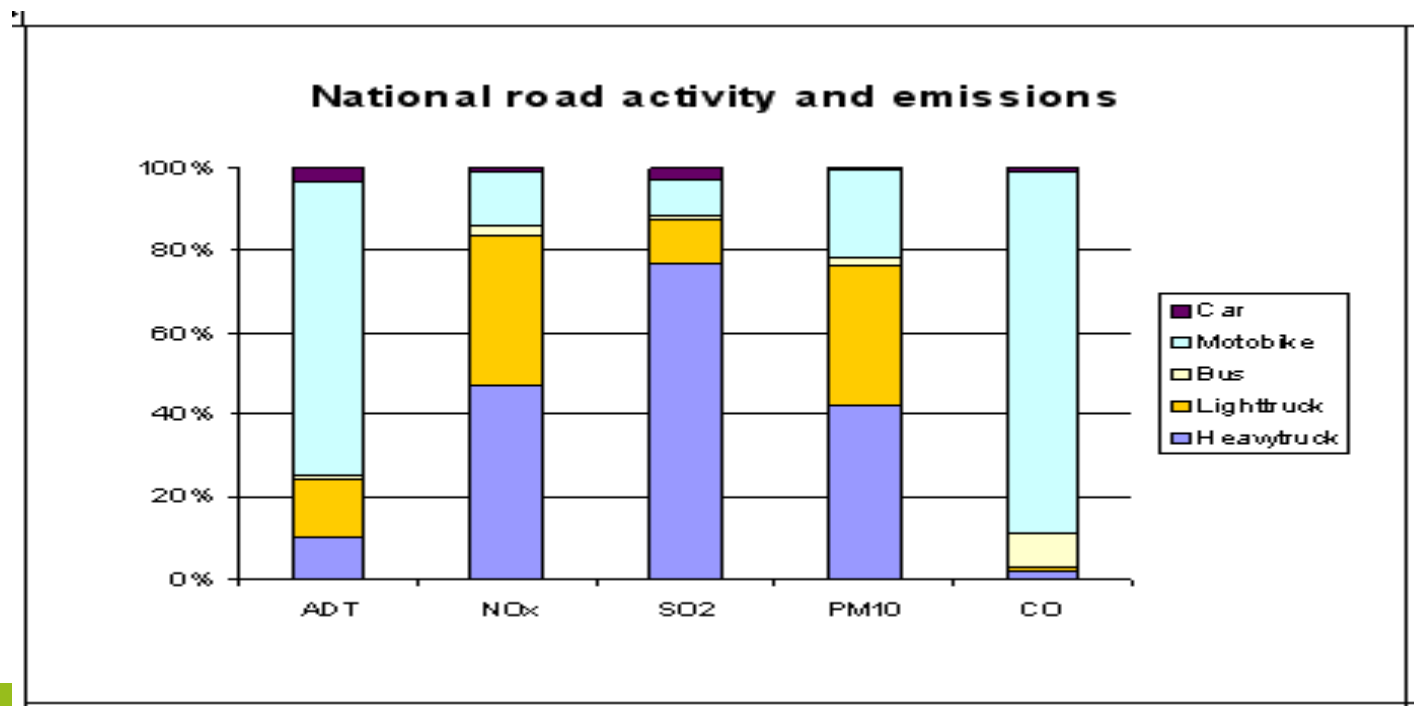
Source: Nguyen Dinh Tuan (2002), Air emission inventory, IER, HCMC



GHG EMISSION INVENTORY IN TRANSPORT IN HCMC

■ National roads:

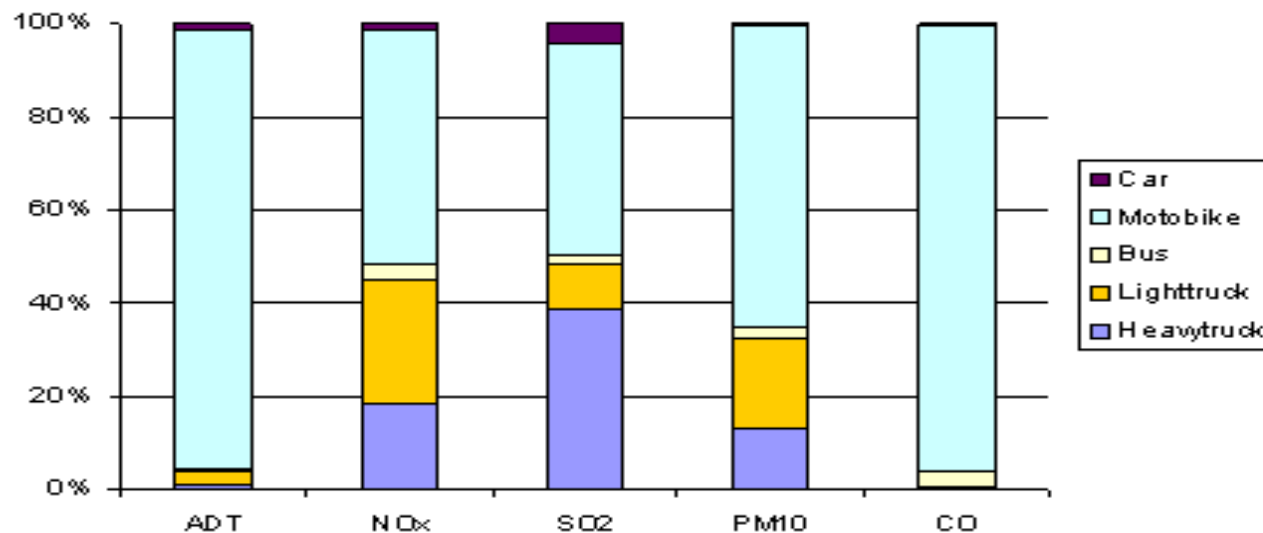
- Trucks and cars (more than 7 seats) contributed only 7% of those exhaust emissions are varied between 30 – 40 % of total emissions for NO_x , SO_2 and PM_{10} , respectively
- Motorbikes are the major source for CO , PM_{10} and NO_x , respectively



GHG EMISSION INVENTORY IN TRANSPORT IN HCMC

- **Province roads:**
 - Trucks accounted very small percentages (only 2.6 %). However they are major exhaust emitted sources (41 – 58%) for NO_x , SO_2 and PM_{10} , respectively
 - Motorbikes are the major source for CO and PM_{10} , respectively

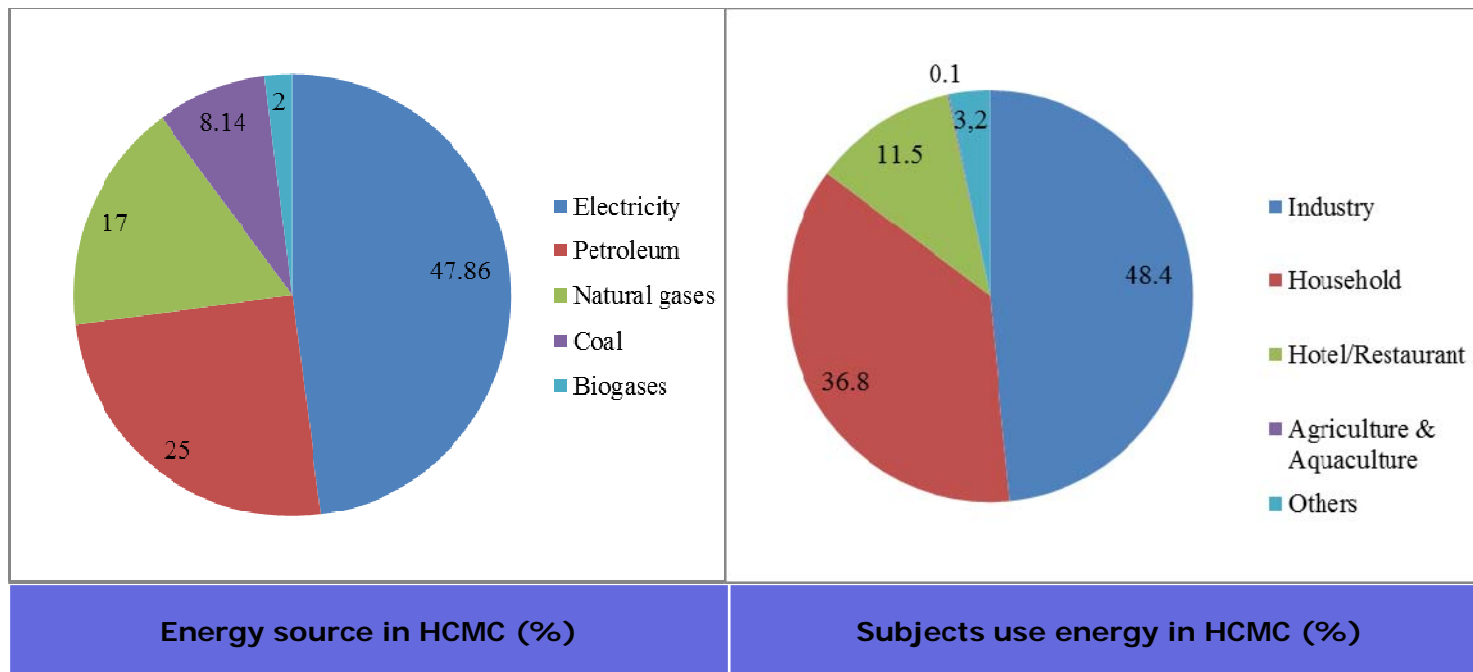
Province road activity and emissions



GHG EMISSION INVENTORY IN HCMC (2011)

1. Energy:

- There are many energy sources used in HCMC, such as electricity, petroleum/diesel, natural gases, LPG, kerosene and biogases, etc.



The total amounts of GHG emissions from energy consumption in HCMC in 2011 (not include electricity) was 9,280,463 tons CO_{2eq}/yr.

Source: Ho Chi Minh City Energy Conservation Centre, 2011



GHG EMISSION INVENTORY IN HCMC

* **Thermoelectric production:**

In HCMC, there are only one thermoelectric power plant which is operating is Thu Duc Thermoelectric Company with total of capacity 592,539 MWh/yr. This plant uses 100% of fossil fuels (DO, FO) for combusting. **The amount of CO_{2eq} emitted in thermoelectric production is 572,510 tons.**


* **Industry:**

Until 31 Dec, 2011, there were 1214 enterprises in 15 industrial parks with 3,521.37 ha. **1,200,000 tons CO_{2eq}/yr** is emitted in industry sector in HCMC.

* **Transport:**

There are 6 bus stations with 1,200 buses/day and transport 41,000 passengers/day. The average total amount of CO_{2eq} emitted from transport sector in 2011 was **3,018,189 tons CO_{2eq}/yr.**

Source: Le Thanh Hai, (2012), *Study on assessing the current state and forecast GHG emissions in HCMC and proposing mitigation measures*, IER, HCMC



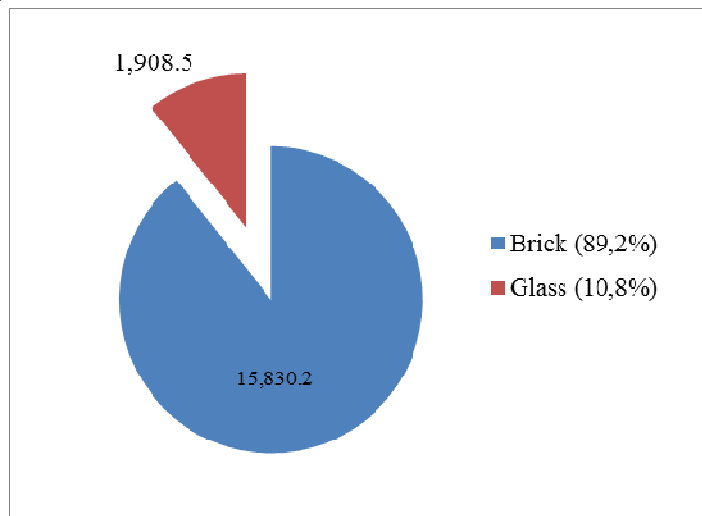
GHG EMISSION INVENTORY IN HCMC

2. Industrial processes and product use:

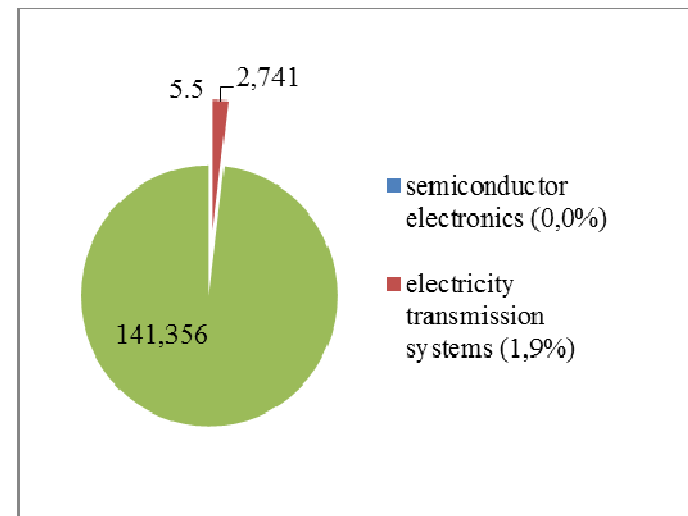
In the field of industrial processes and product use of HCMC, there are sectors: **non-metallic mineral (brick and glass production)** and electrical & electronics engineering (semiconductor electronics, electricity transmission systems and air-conditioning systems).

The amount of CO_{2eq} emitted from non-metallic mineral sector is 17,738.7 tons, with 89,2% of brick production and 10,8% of glass production.

Moreover, CO_{2eq} emission from electrical & electronics engineering is 144,102.5 tons.



The amount of CO_{2eq} emitted from non-metallic mineral

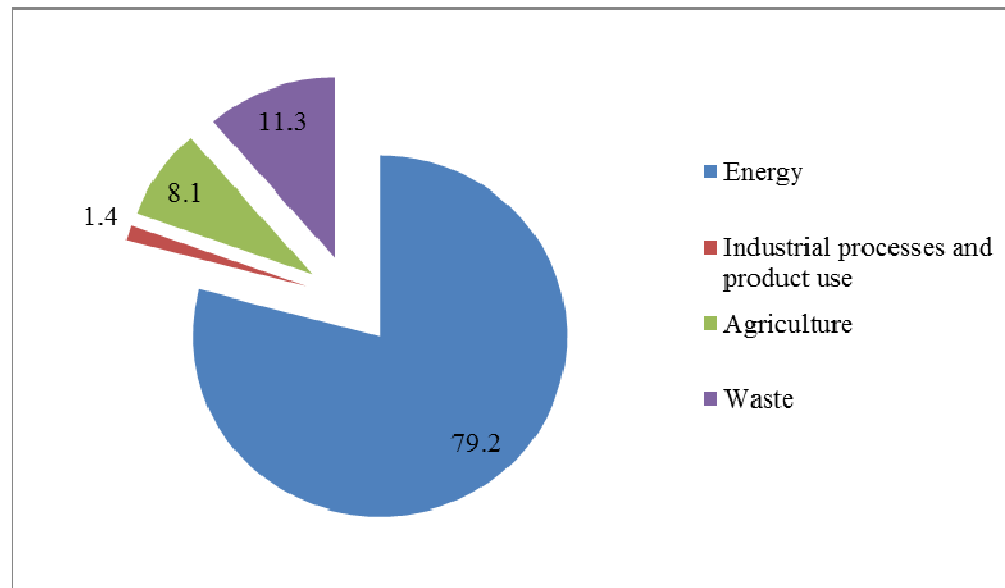


The amount of CO_{2eq} emitted from electrical & electronics engineering

GHG EMISSION INVENTORY IN HCMC

3. Agriculture and waste

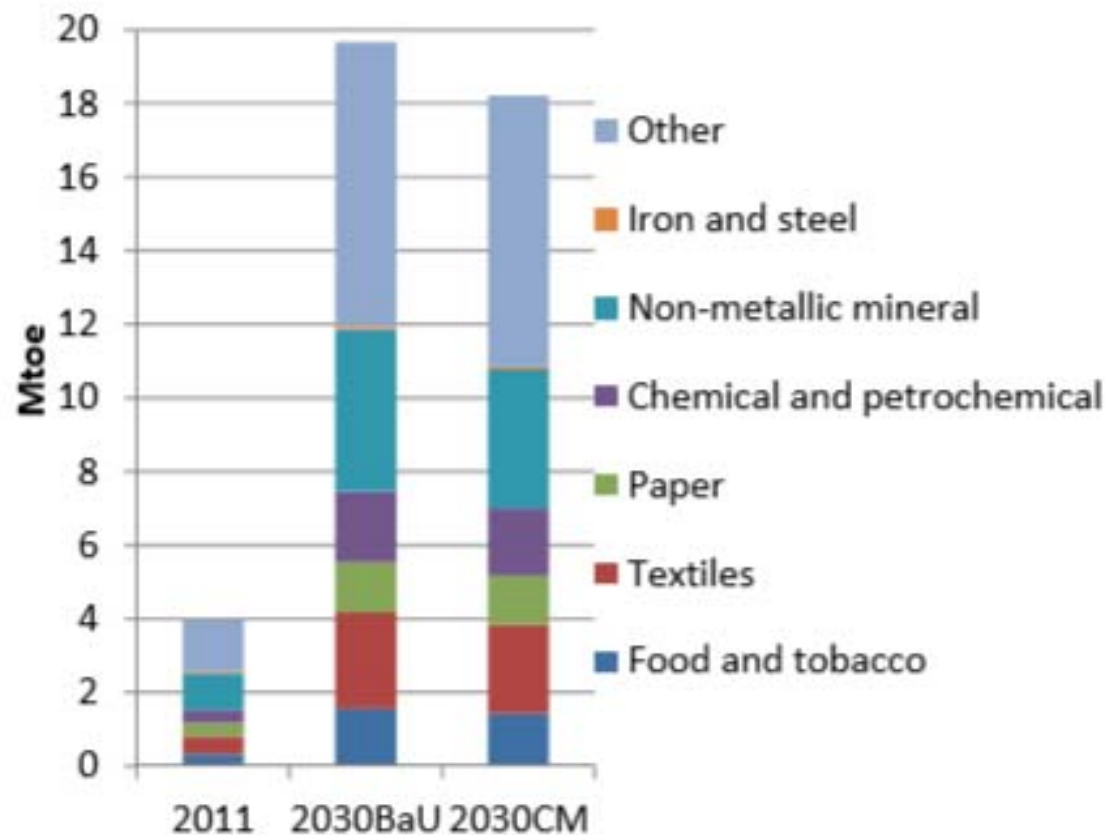
- **GHG emission from agriculture activities is 951,912 tons CO_{2eq}/yr** which is mainly emitted from farming, husbandry and aquaculture.
- Through solid waste treatment (burial, burning and composting), water treatment (domestic or industrial treatment systems), the amount of CO_{2eq} emitted is 1,328,415 tons/yr.
- Therefore, the highest percentage of GHG emissions is from energy use, with 79.2%.



The percentage of GHG emissions from four main sectors in HCMC

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The final energy consumption in industrial sector, in which non-metallic mineral activity is the biggest consumer with 30%, followed by textiles with 15%

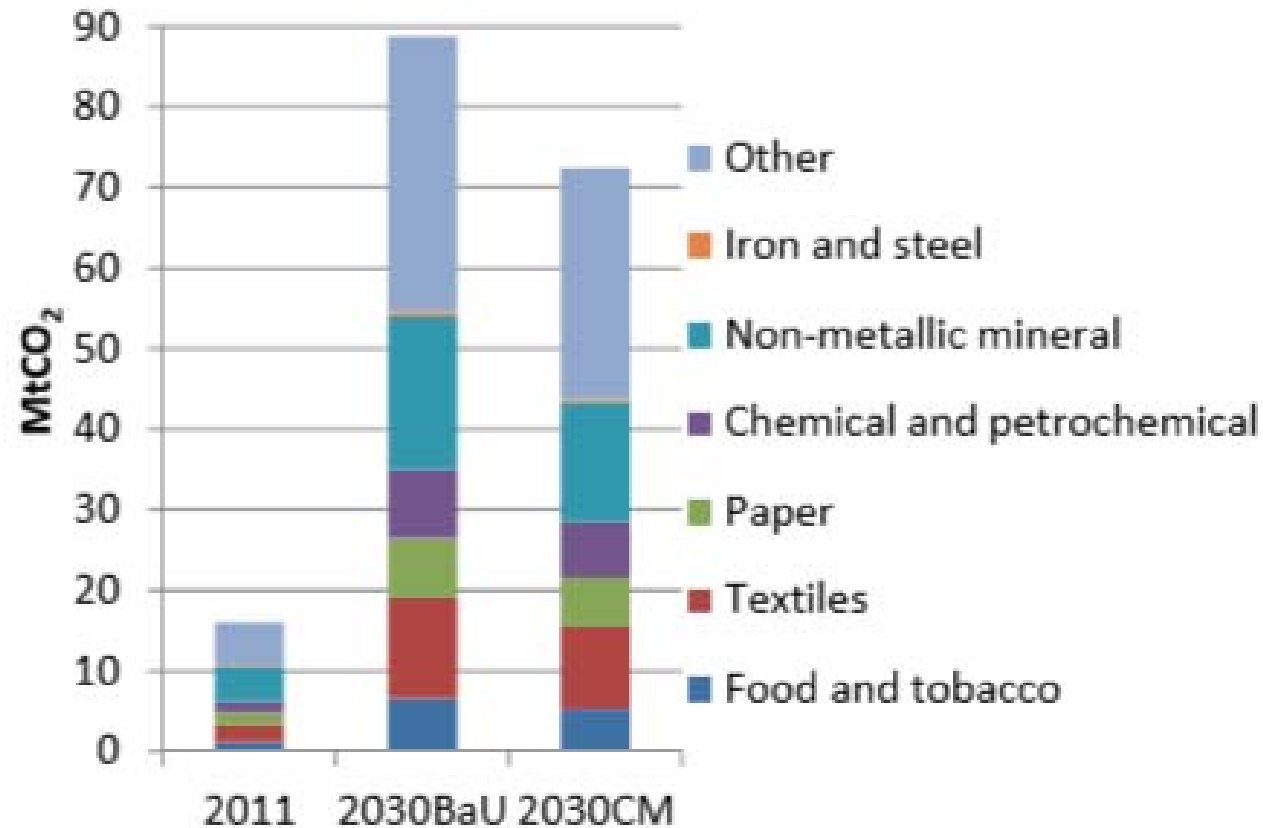


Energy consumption by industrial sub-sector



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As the main energy consumers in industrial sub - sectors, non-metallic mineral and textiles are the main CO₂ emitters with nearly 5 times increase compared to 2011, contributing to 21% and 14% of total emission from industry, respectively.



CO₂ emission by industrial sub-sector





QUESTIONS???

The main CO₂ emitters in HCMC is non - metallic mineral?

- ❖ Wrong in reality
- ❖ Main source of CO₂ emission in exploitation of Non-metallic mineral, such as industrial sand, brick/ clay, industrial stone is energy consumption.
- ❖ However, GHG emissions in energy use was calculated in energy.
- ❖ **Why is the amount of CO₂ emitted in Non-metallic mineral still high???**



RECOMMENDATIONS

- ❖ **Using AIM model to calculate emission inventory in other provinces around HCMC which are key industrial regions, such as Binh Duong, Dong Nai or rice fields, e.g. Mekong delta.**





THANK YOU FOR YOUR LISTENING

