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Dr. Gao Qingxian

Organization for preparing inventory in China

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- **Introduction of National Coordination Committee on Climate Change of China**
- **Introduction of GEF/UNDP Project-Enabling China to Prepare Its Initial National Communication (ECPINC)**
- **Introduction of Preparing for Inventory of Greenhouse Gas Emission from Municipal Waste Sector**

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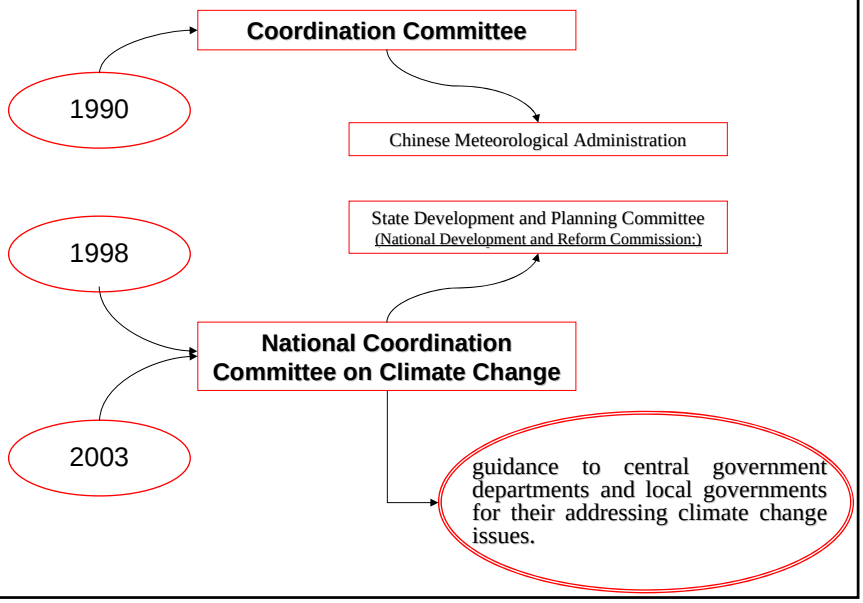
1 Introduction of National Coordination Committee on Climate Change of China



National Coordination Committee on Climate Change

Division of work of the National Coordination Group:
National Development and Reform Commission:
Coordination on Climate Change Policies and Actions Adopted by Various Departments;

Ministry of Foreign Affairs:
Take the Lead for Participating in International Climate Change Negotiation;

State Meteorological Administration:
Take the Lead for Participating in the Work of Intergovernmental Panel on Climate Change (IPCC).

The Office of the NCCCC
responsible for routine work of the Committee

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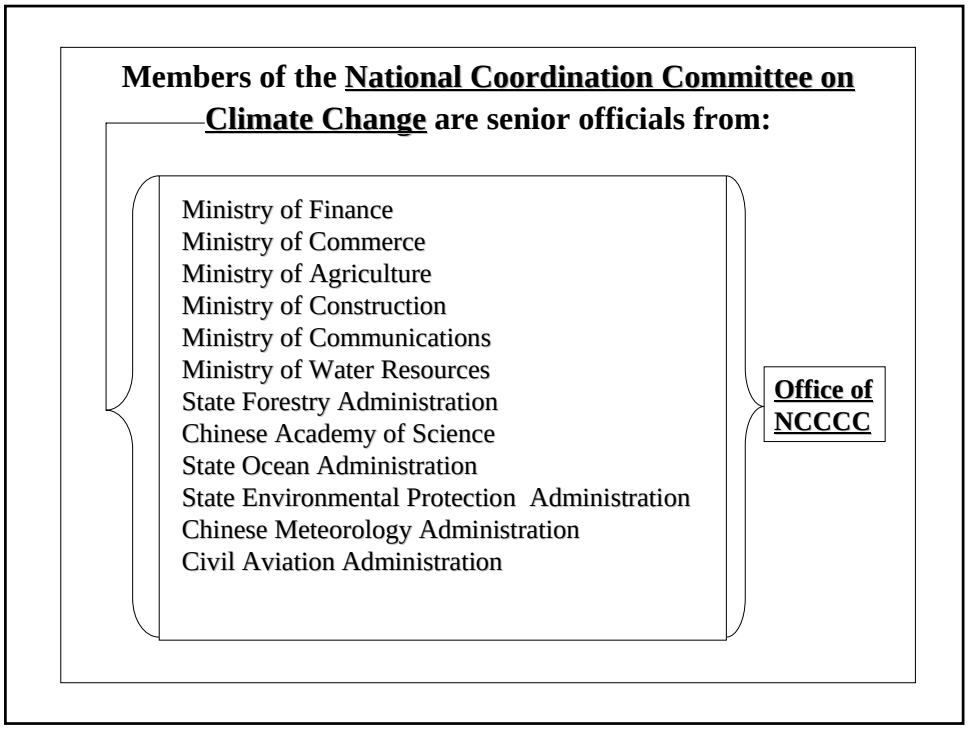

Chairman:

Ma Kai, Chairman of National Development and Reform Commission

Executive Deputy Chairman:

Liu Jiang , Vice Chairman of National Development and Reform Commission

Deputy Chairmen:

Zhang Yesui,Deputy Minister, Ministry of Foreign Affairs

Deng Nan, Deputy Minister, Ministry of Science and Technology

Qin Dahe, Administratorl, China Meteorological Administration

Zhu Guangyao, Deputy ministerl, State Environmental Protection Administration

Members:

Li Yong, Deputy Minister, Ministry of Finance

Yi Xiaozhun, Assistant Minister, Ministry of Commerce

Zhang Baowen, Deputy Minister, Ministry of Agriculture

Qiu Baoxing, Deputy Minister, Ministry of Construction

Hong Shanxiang, Deputy Minister, Ministry of Communications

E Jingping, Deputy Minister, Ministry of Water Resources

Li Yucai, Deputy Director-General , State Forestry Administration

Chen Yiyu, Deputy President, Chinese Academy of Science

Chen Lianzeng, Deputy director general, State Ocean Administration of China

Liu Shaoyong, Deputy director general, Civil Aviation Administration of China

2 Introduction of GEF/UNDP Project-Enabling China to Prepare Its Initial National Communication (ECPINC)

- Project brief

Project No.: CPR/00/G31/A/1G/99
Project Title: Enabling China to Prepare Its Initial National Communication (ECPINC)
Duration: 2 Year and 4 Months
Management Arrangement: National Execution
Designated Institution: State Development Planning Commission
(National Development and Reform Commission:)
Project Sites: Beijing and Provinces

The project of **ECPINC** will enable China to fulfill its commitments under the United Nations Framework Convention on Climate Change (UNFCCC) to communicate to the Conference of Parties to the Convention:

- a national inventory of emissions and sinks of greenhouse gases;
- a general description of steps taken or envisaged by China to implement the Convention;
- any other information China considers relevant and suitable for inclusion in its Communication.

In addition, the project will enable China to strengthen and expand its activities for increasing public and political awareness and action related to climate change.

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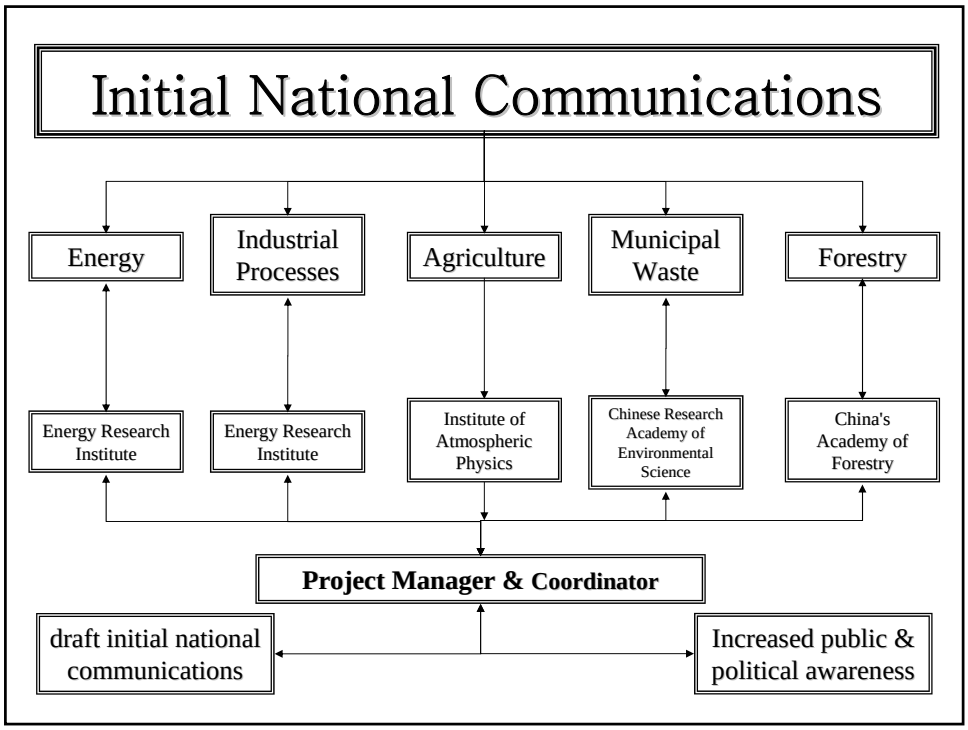
Immediate Objective

- Preparation of 1994 energy sector inventory
- Preparation of 1994 industrial processes inventory
- Preparation of 1994 agricultural sector inventory
- Preparation of 1994 forestry sector inventory
- Preparation of 1994 municipal waste sector inventory
- Drafting of initial national communication and incorporation into development strategy and processes
- Increased public and political awareness and action related to climate change



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Preparation of 1994 energy sector inventory

Output 1:
- Estimate of GHG emissions from fossil fuel combustion

Output 2:
- Estimate of methane emissions from Chinese coal mining and post-mining activity

Output 3:
- Estimates for biomass activity level and emissions factors.

Output 4:
- Estimates of methane leaks and fugitive emissions from oil and natural gas systems

Output 5:
- Estimate of China's total methane emissions from energy activity in 1994

Output 6:
- Estimate of China's total GHG emissions from energy activity in 1994 and energy sector inventory

Preparation of 1994 industrial processes inventory

Output 1:
- Estimate of 1994 GHG emissions from cement production

Output 2:
- Estimate of 1994 GHG emissions from lime production

Output 3:
- Estimate of 1994 GHG emissions from iron and steel product

Output 4:
- Estimate of 1994 GHG emissions from calcium carbide production

Output 5:
- Estimate of 1994 GHG emissions from adipic acid production

Output 6:
- Estimate of China's total GHG emissions from industrial processes in 1994

Output 7:
- Capacity built through workshops and international training for improving methodology to prepare inventory

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Preparation of 1994 agricultural sector inventory

Output 1:
- Estimate of 1994 methane emissions from wetland rice fields

Output 2:
- Estimate of 1994 nitrous oxide emission from croplands

Output 3:
- Estimate of 1994 methane emissions from enteric fermentation

Output 4:
- Estimate of 1994 methane and nitrous oxide emission from animal waste management systems

Output 5:
- Workshop held for the agricultural section of the emissions inventory

Preparation of 1994 municipal waste sector inventory

Output 1:
- Several individuals trained to assist in activities below related to emissions from municipal solid waste and wastewater

Output 2:
- Capacity built through training in measurement and modeling techniques for developing a municipal solid waste and wastewater inventory

Output 3:
- Database of items relevant to emissions from municipal solid waste

Output 4:
- Estimation of lagged emissions from prior waste handling through the development of a model for this purpose

Output 5:
- Estimates of methane emissions from wastewater handling systems

Output 6:
- A 1994 inventory of methane emissions from municipal solid waste and wastewater in China

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Drafting of initial national communication and incorporation into development strategy and processes

Output 1:

- A team qualified to draft initial national communications

Output 2:

- Adaptation options and other climate change issues considered and incorporated into the nation's sustainable development strategy

Output 3:

- Initial national communication drafted and approved

Increased public and political awareness and action related to climate change

Output 1:

- Awareness raising program

Output 2:

- Documentation, media, and workshop to promote awareness and understanding of climate change to a targeted audience through initial awareness raising program

Output 3:

- Report on national long-term strategies for improving public awareness of climate change issues

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3 Introduction of Preparing for Inventory of Greenhouse Gas Emission from Municipal Waste Sector

- **The Reviews of the Previous Studies on CH_4 Emission Inventory**
- **The Uncertainty Analysis**
- **The Problems Encountered**

The Estimates of Global CH_4 Emissions from Different Waste Sources and Its Percentages

Sources	Emission Amount (Tg/yr)	Percentage of Total Emissions from Anthropogenic sources globally (%)	(Tg/yr)
SWDSs	20~70	5~20	
WWHs	30~40	8~11	Industrial: 26~40 Domestic: 2

IPCC, 1996

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The Reviews of the Previous Studies on CH_4 Emission Inventory in China

1. **The problems and choices of Chinese greenhouse gases control: the sources and sinks of Chinese greenhouse gases in 1990 (WB & GEF)**
2. **National Research on Chinese Climatic Change (USA)**
3. **China's national Response Strategy for Global Climate Change (ADB)**
4. **Research on greenhouse gas emission and countermeasure in Beijing (Canada)**
5. **ALGAS (ADB)**

The Uncertainty Analysis

Project	The Problems and Choices Chinese GHGs Control	National Research on Chinese Climate Change	China's National Response Strategy for Global Climate Change	ALGAS
Foundation	GEF/WB	US Department of Energy	ADB	ADB
Base Year	1990	1990	1990	1990
Recommended Values (Mt CH_4)	0.792	2.5 (2.3 to 2.7)	1.3 (0.6 to 2.0)	0.899
Uncertainty (Mt CH_4)	0.6 to 2.7			

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The Problems encountered during prepare inventory of GHGs Emission

1. **Population Statistics Data**
2. **Data on MSW Generation Rates in China**
3. **The Disposed Rate of MSW to SWDSs in China**
4. **Analysis Composition of MSW in China**
5. **The Degradable Organic Carbon (DOC) Content of Waste**
6. **Categories of Waste Disposal Sites**
7. **Other Default Values Recommended by IPCC**

Population Statistics data:

In revised 1996 IPCC Guidelines for National Greenhouse Gas Inventory:

For developed countries the population data is likely to be the total country population;

For developing countries and countries with economies in transition, the population data may be the total urban population only, because the rural population is assumed to dispose of waste in such a way that CH_4 emissions are extremely low.

But In China today there are more and more people lived in rural region go into urban areas to seek opportunities to work and live there. From our survey there are about 70 million people from rural worked in urban areas in recent 10 years.

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Data on MSW Generation Rates in China:

In revised 1996 IPCC Guidelines for National Greenhouse Gas Inventory:

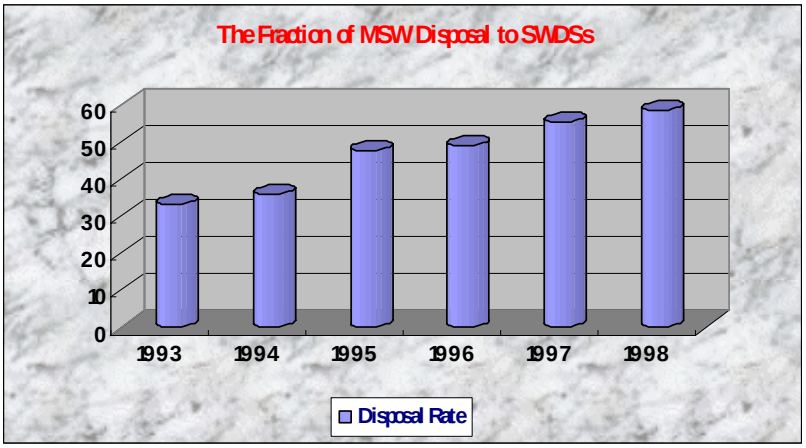
Total MSW can be calculated from Population (thousand persons) x Annual MSW generation rate (Gg/thousand persons/yr).

But In China, we have a Municipal Construction Statistic Year Book which have record of the carrying amount and disposal percentage of municipal waste. With the developing of urbanization, the number of cities increase.

Due to the shortage of manage method, the carrying amount should be modified, through vast investigation on the carrying amount and disposal percentage, the experts group of China concluded that the carrying amount of municipal waste should be multiply a coefficient 0.76.

Considering the real situation of municipal waste collection, there are only 75% municipal waste are carried and **treated into** disposal sites.

During calculation, the different disposal rate in different region a considered.



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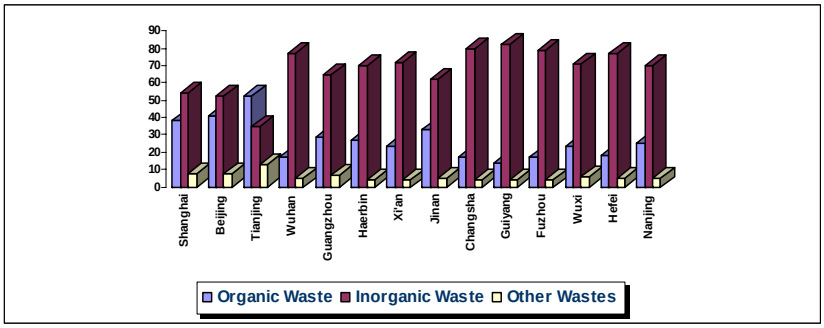
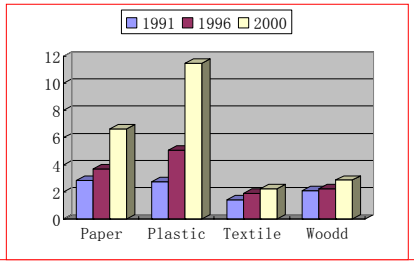
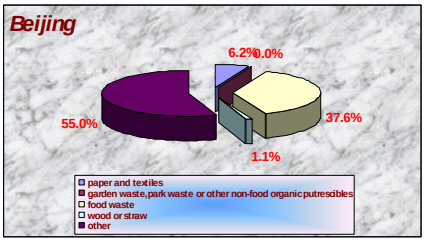
Analysis Composition of MSW in China:

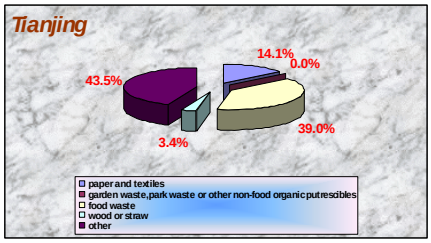




① Organic waste increase rapidly(~50%);
② Inorganic Waste decrease (~23.34%);
③ Recycle waste increase (~26.6%);
④ Combustible waste increase.

the weighted average of carbon content of various components of waste stream





Sample	Tianjing	Beijing	Average
Paper and Textiles	14.08	6.24	10.16
Food waste	39.02	37.63	38.33
Wood and straw	3.4	1.15	2.28
Others	43.5	54.99	49.25

components of waste stream	Organic Caron percentage (Weight)
Paper	26
Wood and straw	28
Textiles	30
Food waste	7

Fresh waste

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The Degradable Organic Carbon (DOC) Content of Waste:

In revised 1996 IPCC Guidelines for National Greenhouse Gas Inventory: **Per Cent DOC (by Weight) = 0.4A+0.17B+0.15C+0.30D**

Default DOC Values for Major Waste Streams	
Waste Streams	Per cent DOC (by Weight)
A: paper and textiles	40
B: garden waste, park waste or other non-food organic putrescibles	17
C: food waste	15
D: wood or straw	30

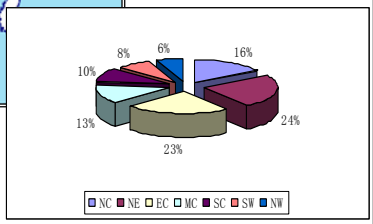
In our calculation,

Per Cent DOC (by Weight) =0.26(A)+0.28(B)+0.30(C)+0.07(D)

Where: A Paper ;
B **Wood and straw** ;
C **Textiles** ;
D **Food waste** 。

Categories of Waste Disposal Sites:

1. **NorthEast**
2. **NorthWest**
3. **North of China**
4. **East of China**
5. **South of China**
6. **SouthWest**
7. **Middle of China**



The Carrying Amount of Waste in 7 Regions of 1994

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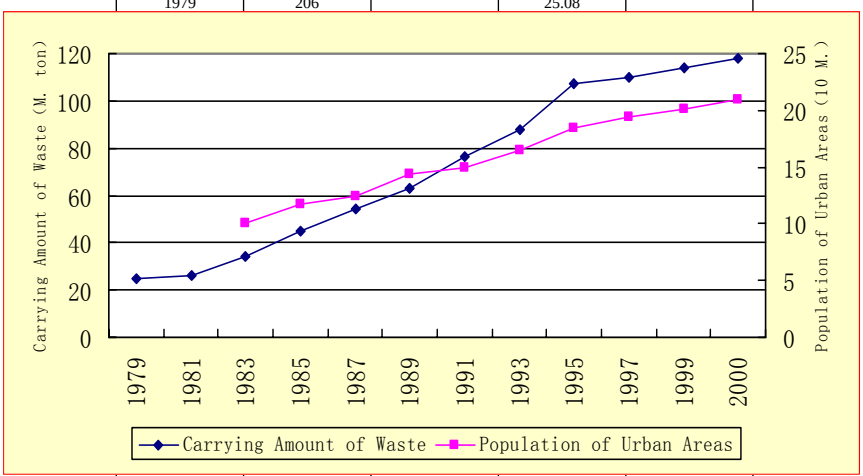
In different region, according the scope of the city, we classified the cities of China into 5 types:
Super City〔＞ 2 Million〕, there 14 super cities in China and we survey 10 cities of them and got the real data of them;
Large City〔1~2 Million〕, there 23 lager cities in China and we survey 15 cities of them and go to site investigation for 6 larger cities;
Big City〔0.5~1 Million〕, there 47 big cities in China and we survey 21 cities of them and go to site investigation for 6 big cities;
Medium City〔0.2~0.5 Million〕, there 159 big cities in China and we survey 39 cities of them and go to site investigation for 11 big cities;
Small City〔＜ 0.2 Million〕, there 425 small cities in China and we survey 52 cities of them and go to site investigation for 2 big cities;

Fro Region, To get investigation information of waste and its treatment from 47 cities in East region of China, 42 cities in North of China, 48 cities in WestMiddle region of China; To carry out site survey in 15 cities in east region, 10 cities in north region and 10 cities in westmiddle region.

The Statistic Chart of Municipal Waste during 1979~2000 of China

Year	Number of Cities	Population in Urban areas (10M)	Carrying Amount of Waste (M. ton)	Increase rate of Carrying Amount
1979	206		25.08	
1997	668	19.47	109.81	1.4%
1998	668	19.86	113.02	2.9%
1999	668	20.16	114.15	1.0%
2000	663	20.95	118.19	3.5%



Thanks!