

偉人故里
大美湘潭

Xiangtan 2028 City Emission Peaking Roadmap and Action Plan (CEPRA)

Achieving High Quality Development:
Low Emission,
Innovation & Inclusion

2018.10



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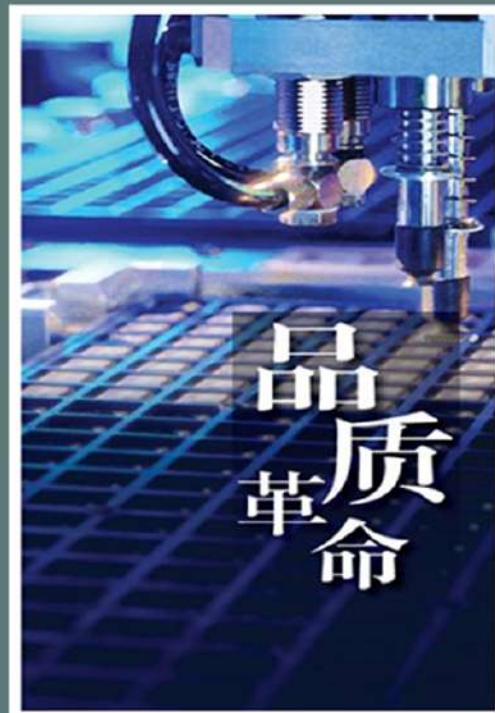
Policy Recommendations

1. Background & Methodology

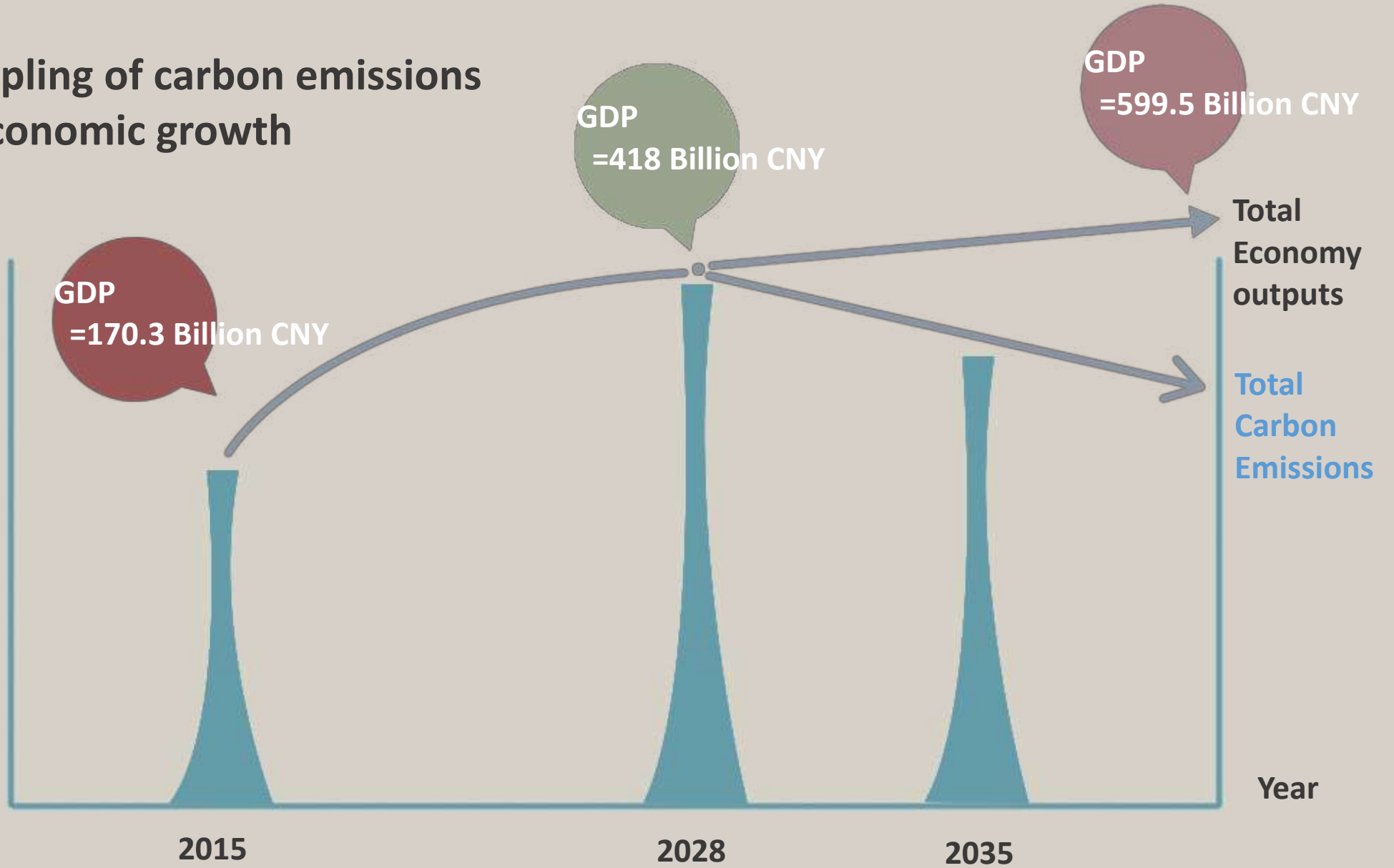


From High Speed Growth to High Quality Development

**High Quality Development =
Low Emission + Innovation + Inclusion**



Decoupling of carbon emissions and economic growth



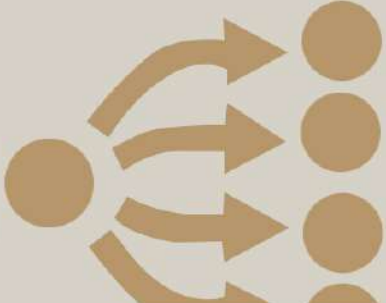
The Ideal Curves of Economics and Emission Peaking in Xiangtan city

Analytical Toolbox



GHG Inventory Module

- City GHG emission profile
- Benchmark comparison
- Identification of weakness



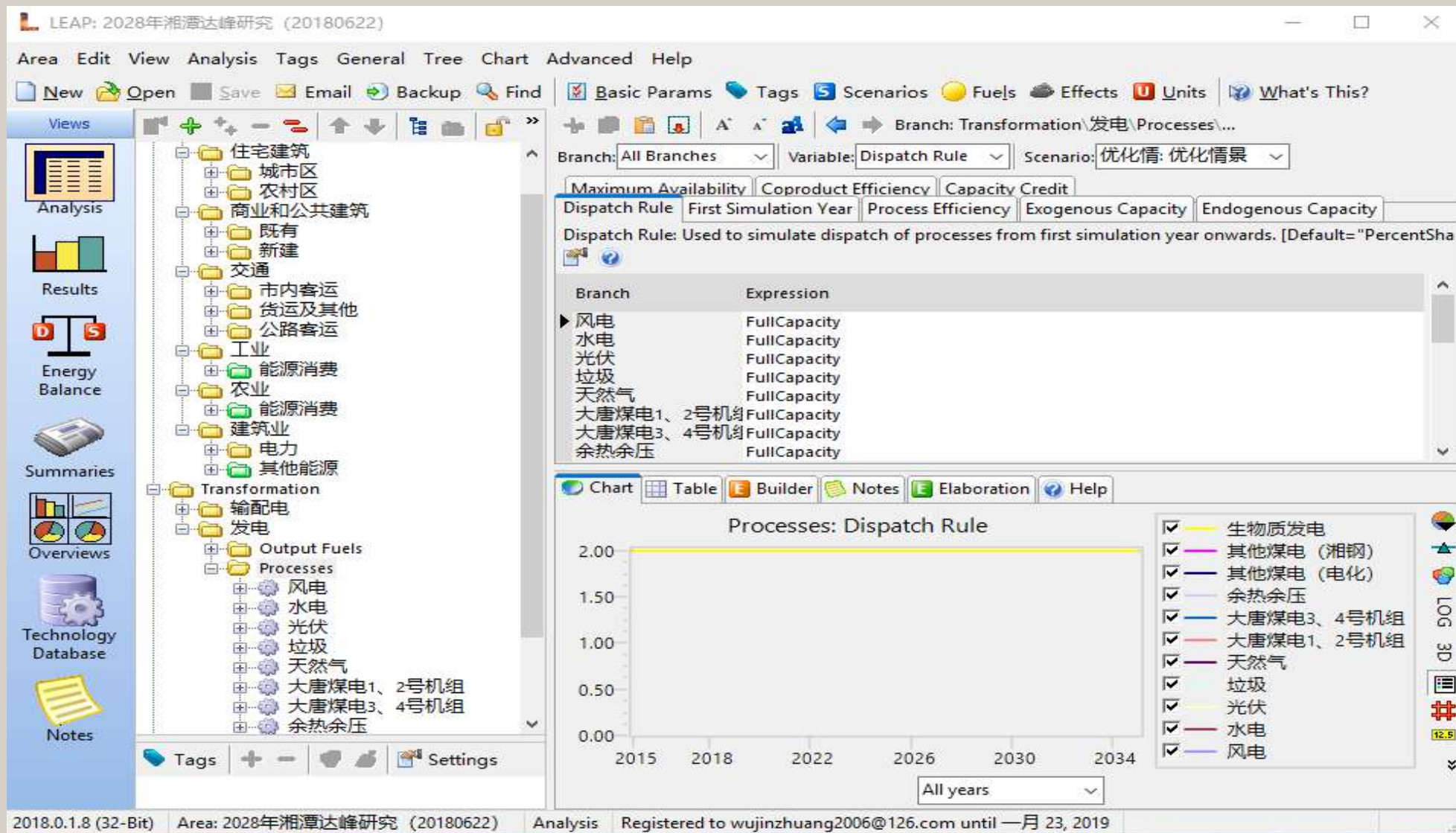
Scenario Planning Module

- Emission trend simulation
- Peaking amount projection
- Target allocation

Peaking Investment Module



- Cost-benefit analysis
- Carbon economy prioritization



2. Baseline study:

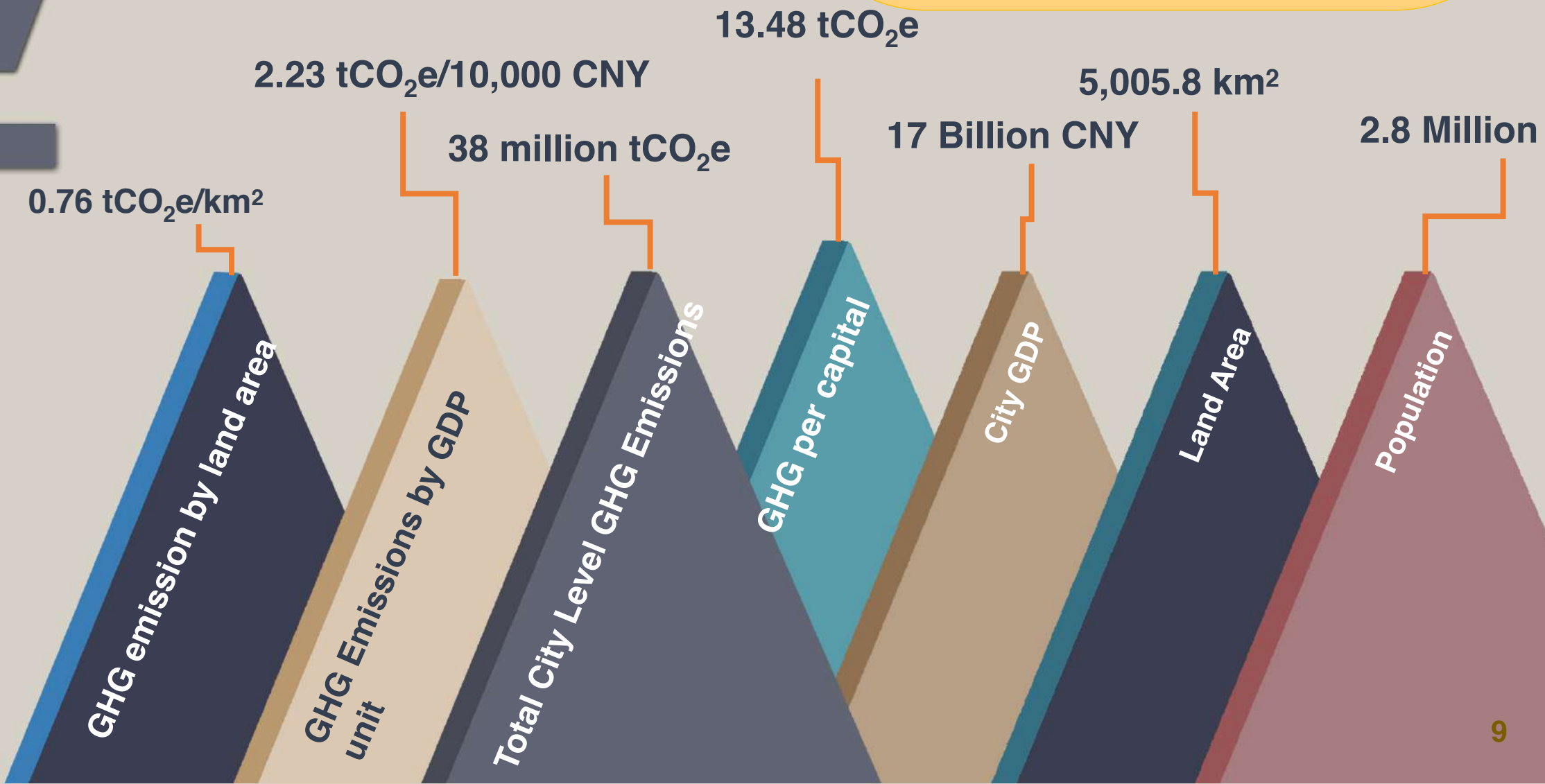
Xiangtan GHG emission inventory



2

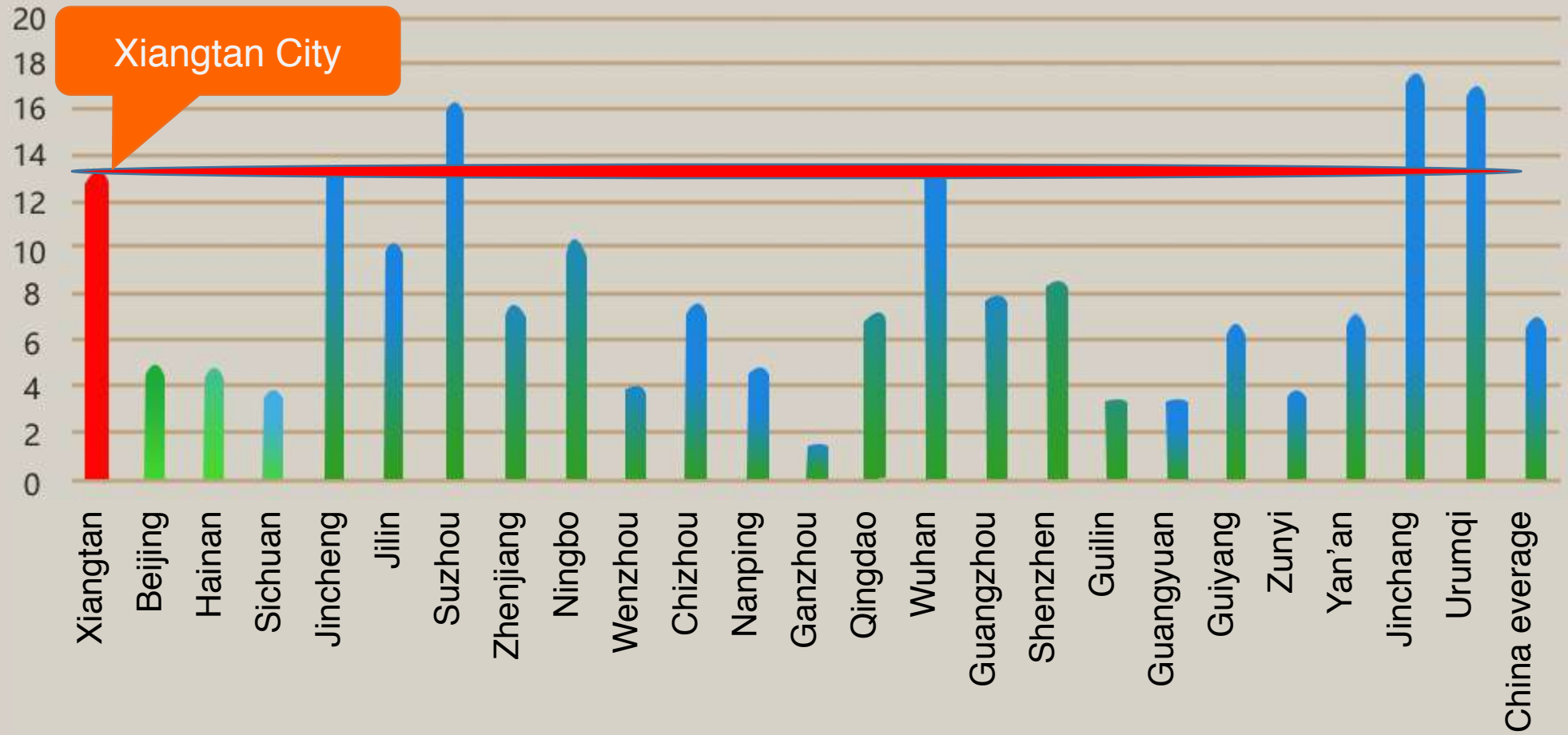
Basic Data of Xiangtan city (Y2015)

EU level X 1.9
GHG per capital in Xiangtan equals
China average level X 1.8
Changsha city level X 1.4

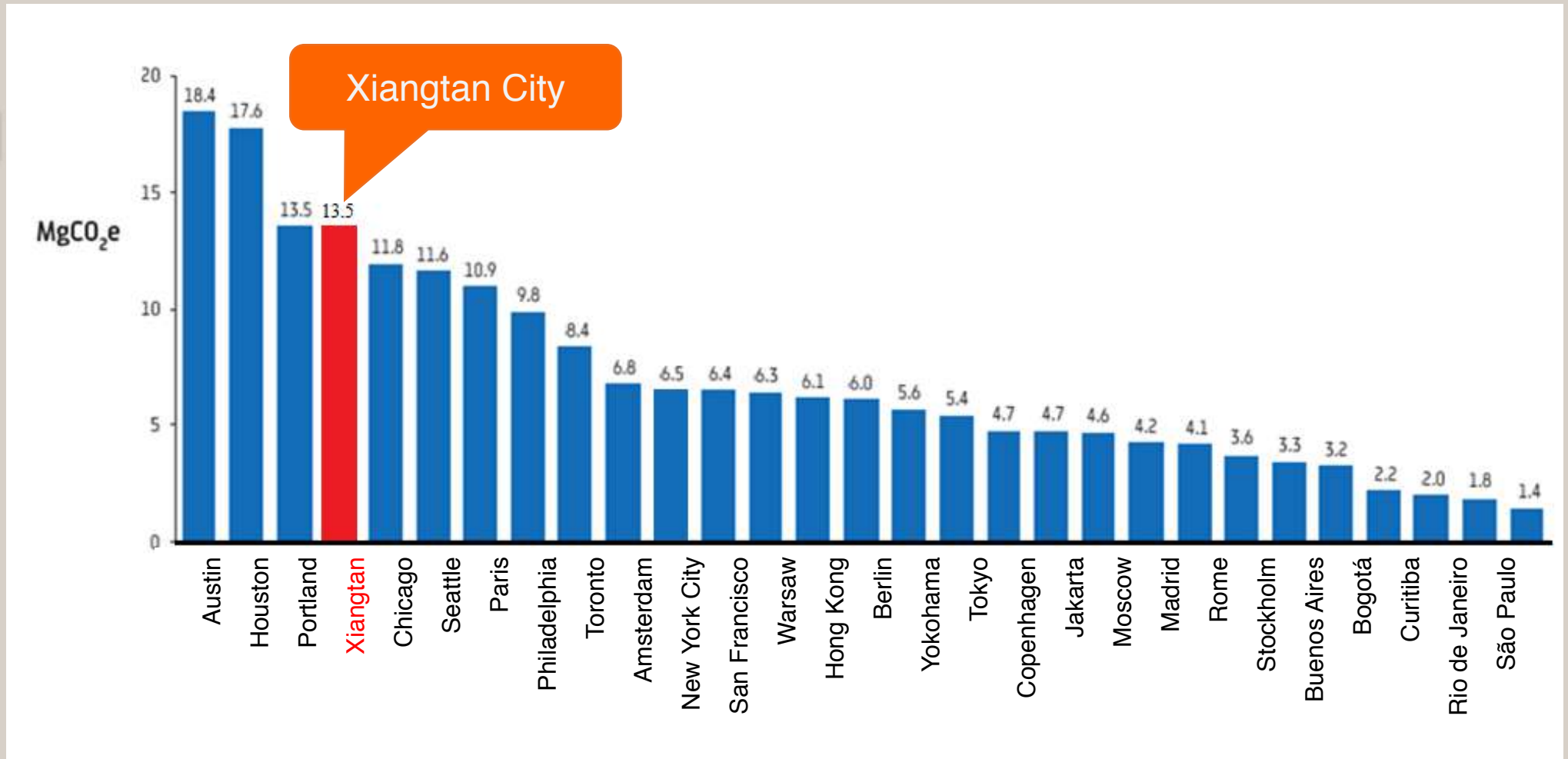


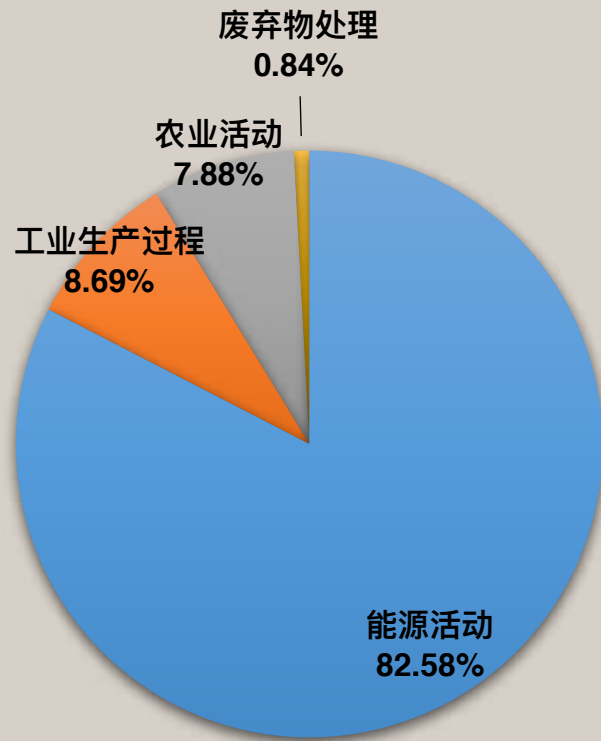
Comparison of carbon footprint among Chinese cities (tCO₂e per capita)

2

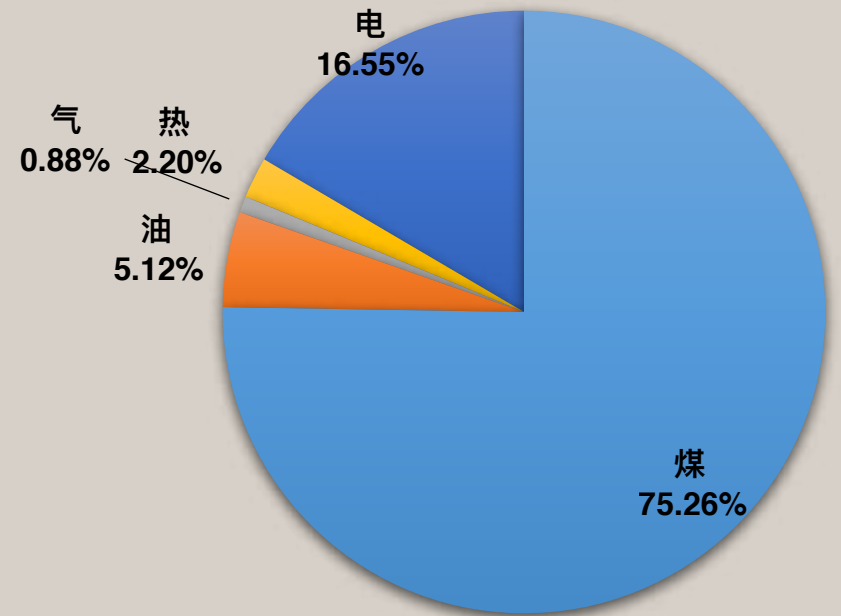


Comparison of carbon footprint among International cities (tCO₂e per capita)



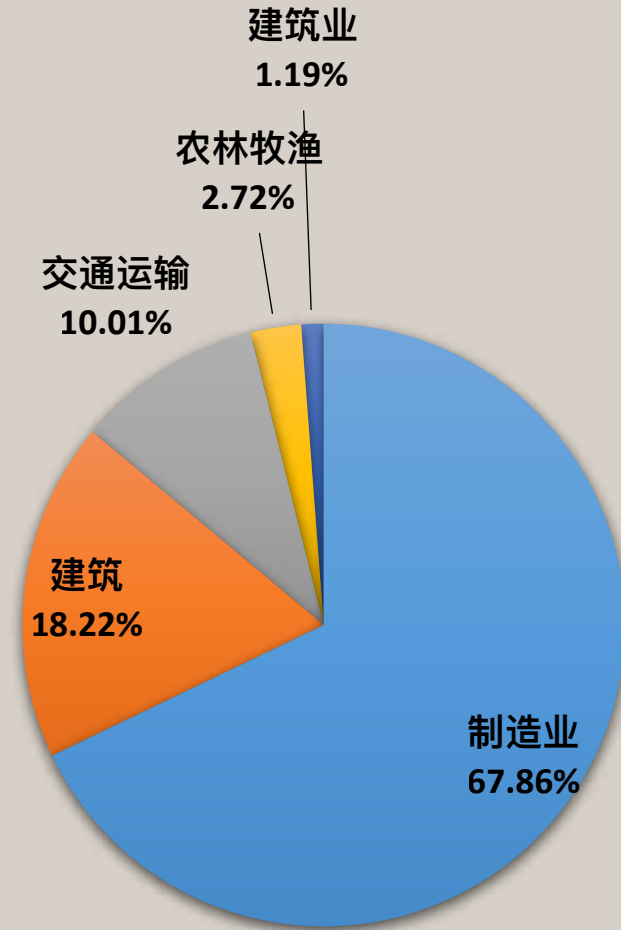


Emission Sources Category

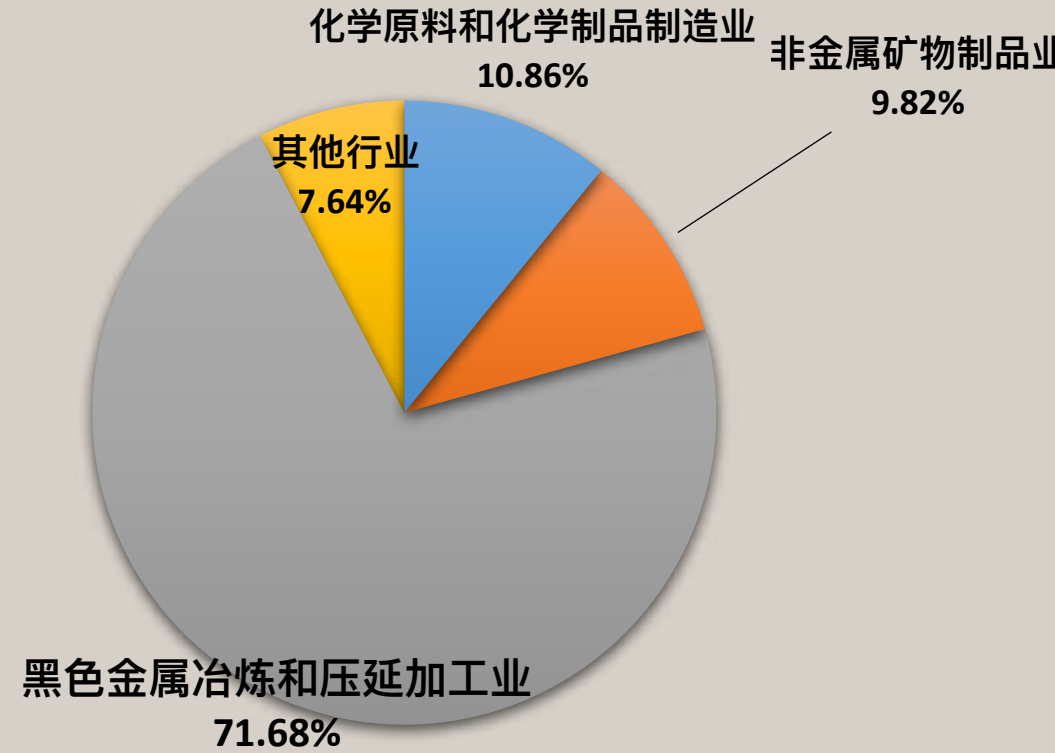


Energy related Emissions

2



**Energy related Emissions
by Sectors**



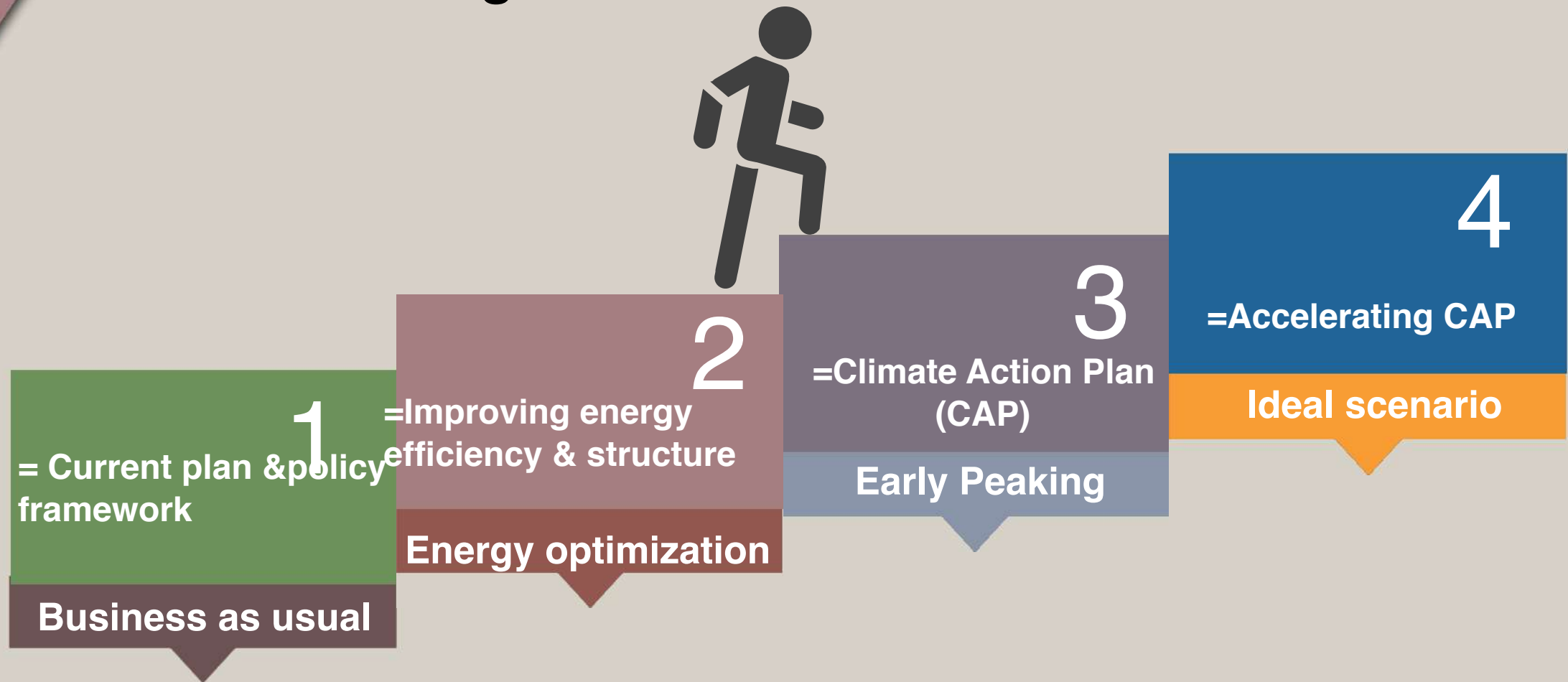
**Manufacture-based Emission
by company types**

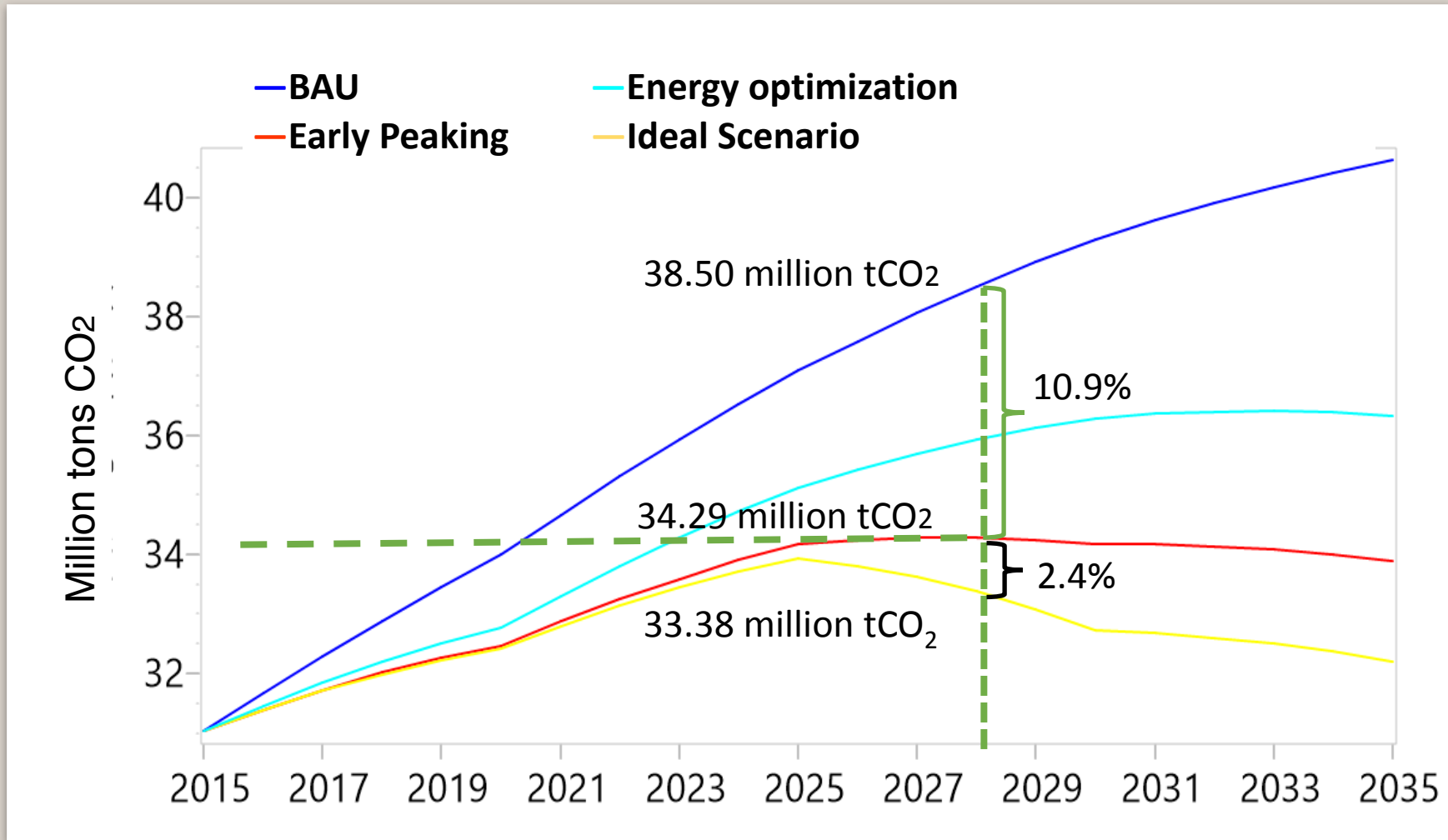
3. Scenario Planning:

Early peaking in 2028?



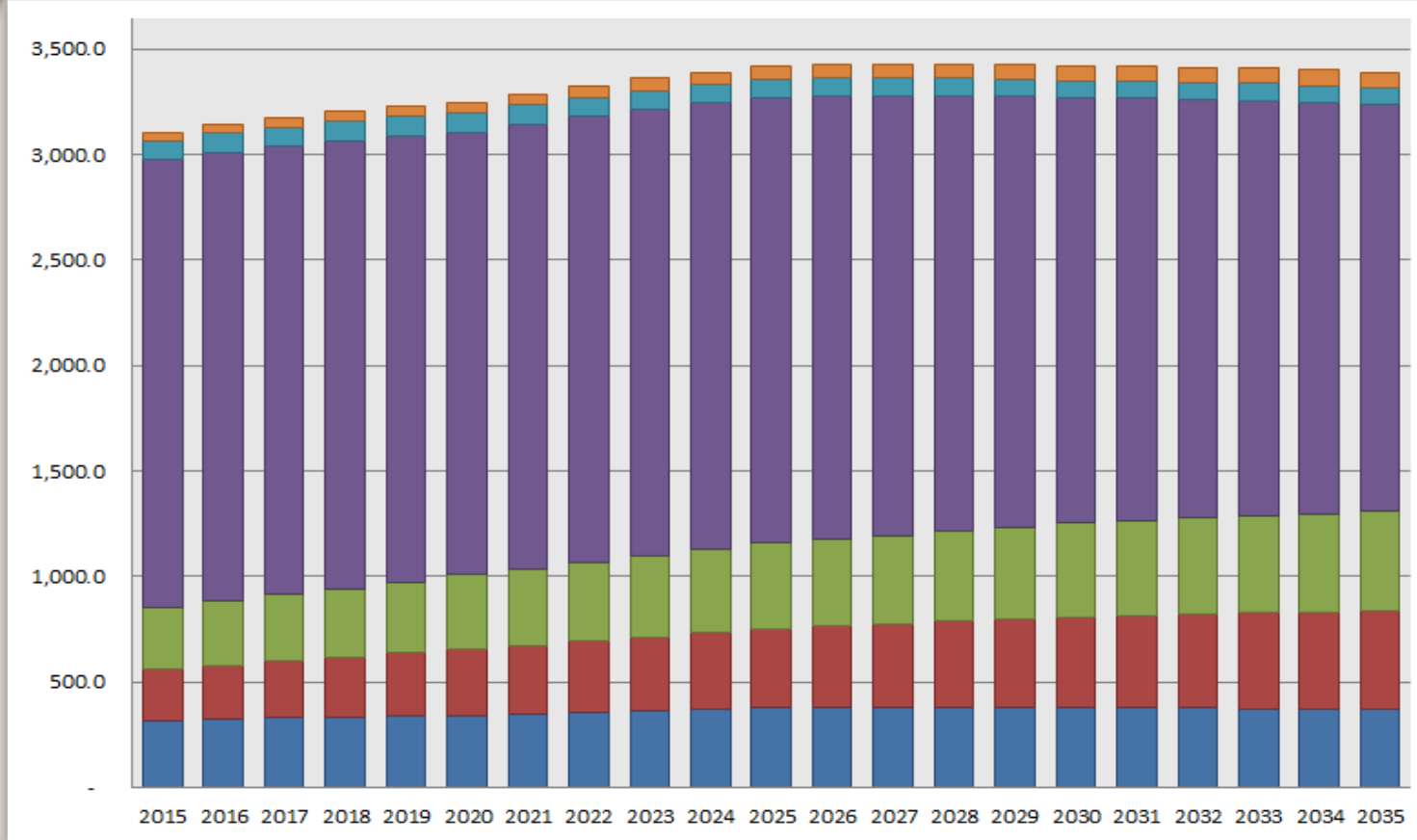
Scenario setting





Peaking vs BAU scenario: Emission reduction of 4.21 million tons CO₂e annually by 2028

10,000 tCO₂e

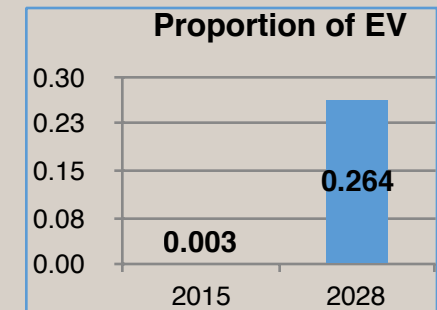
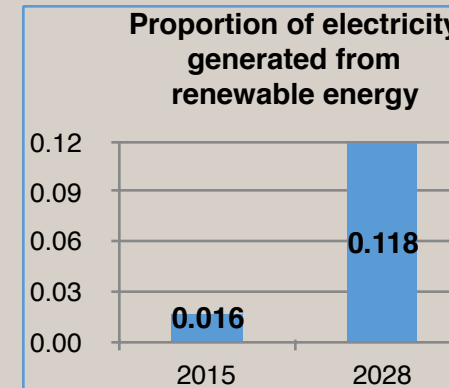
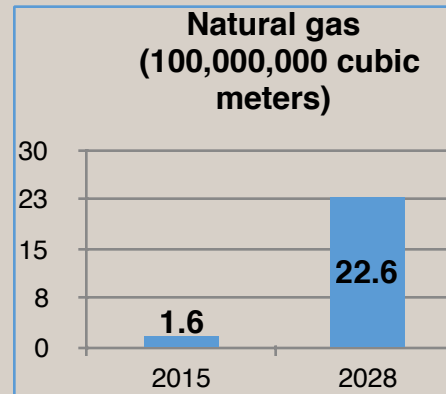
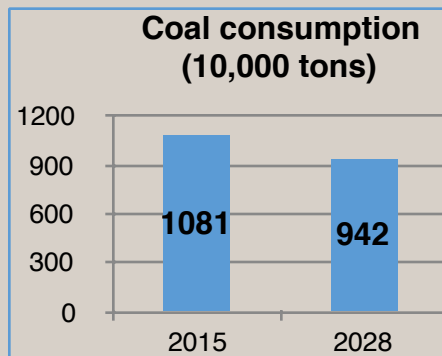
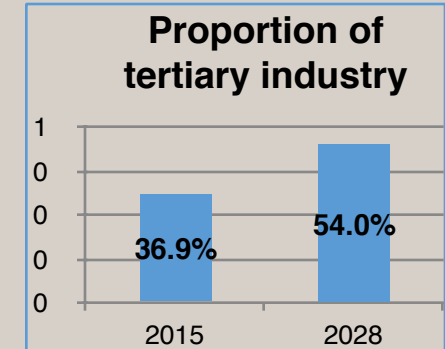
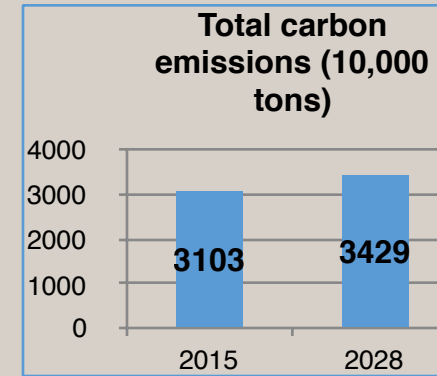
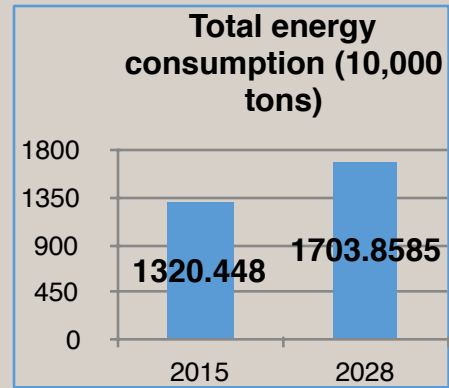
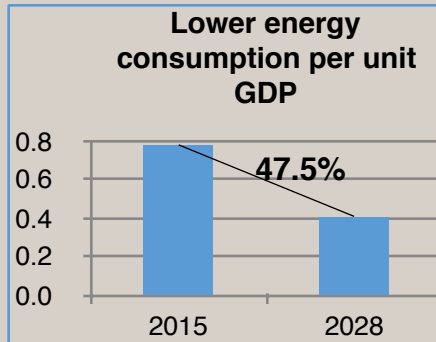


By 2028, carbon mitigation in agriculture and manufacture sectors will 100% offset the carbon growth of building and transportation sectors.

- Construction
- Agriculture
- Industry
- Transportation
- Commercial and public buildings
- Residential buildings

Sectoral Emission Trends from 2015 to 2035

Early Peaking Targets

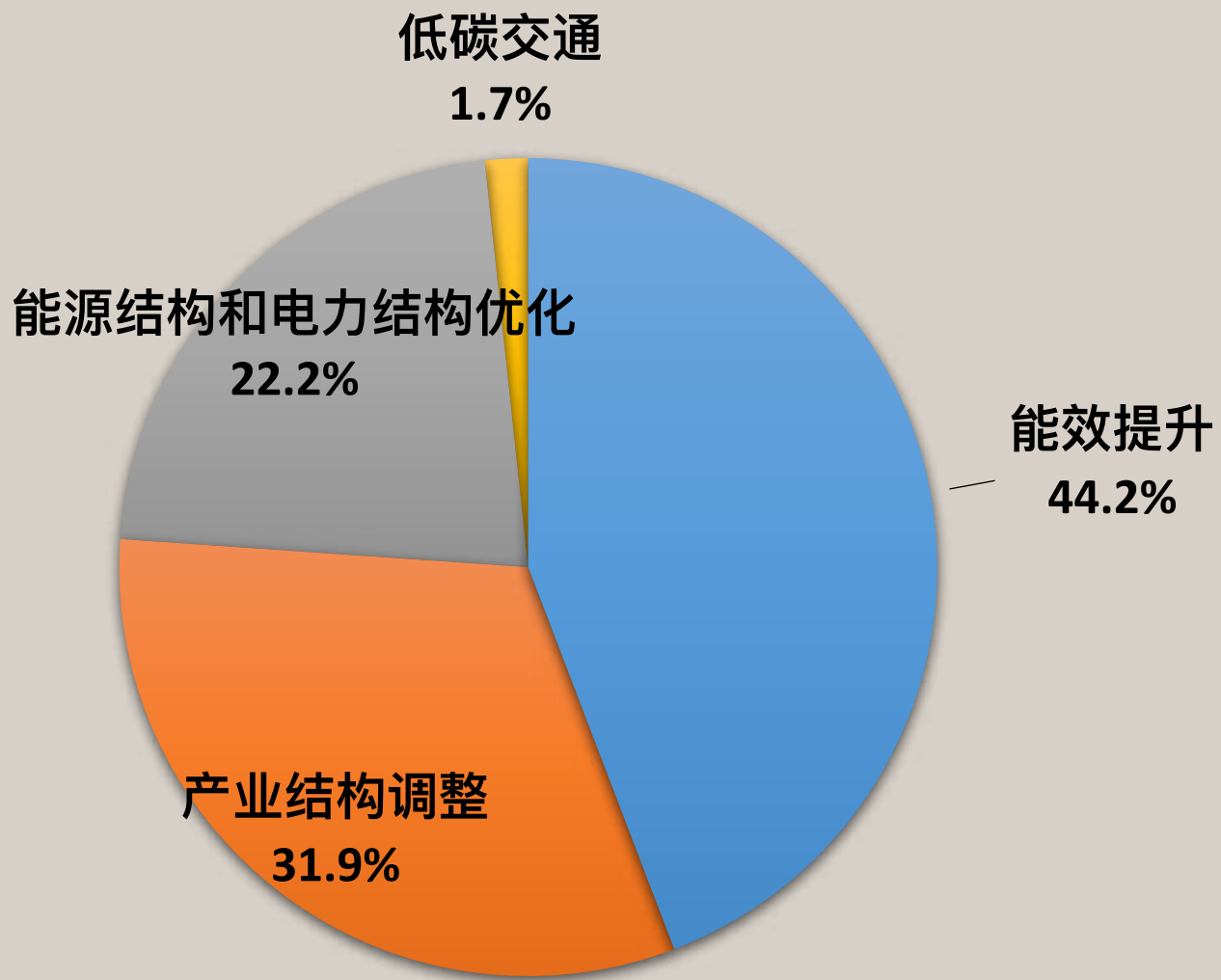


4. Climate Action Pathway:

4 Key Areas and 8 Programs



3



Peaking Contributions by action areas

18 Action Indicators

Improve energy efficiency:

- Energy consumption per value added decrease of 4.5% among big manufactures.
- 1.8 million square meters of existing public buildings are retrofitted .
- 76% of newly-built public buildings are green certified.
- Proportion of prefabricated buildings reaches 51.7%.

Industrial transformation :

- Annual growth of the Tertiary sector reaches 10 billion CNY.
- Annual growth of new strategic industries reaches 8 billion CNY.

Overall Goals:

- Per GDP unit energy consumption decreases no less than 4.8% annually.
- Annual growth of total energy consumption does not exceed 1.2%.
- Increase of carbon emissions does not exceed 3.26 million tons, compared with the level of 2015.

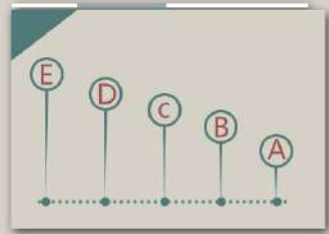
Low carbon transportation:

- Total number of private electric vehicles reaches 150,000.
- More than 75% of taxis are electric cars.
- E-buses numbers reaches 900.

Low carbon energy:

- Solar PV growth of 470MW
- Wind power growth of 308MW
- Waste-generated electricity growth of 34MW
- Biology-generated electricity growth of 35MW
- Shut down No. 1 and 2 coal fired generators - 600MW
- Natural-gas-generated electricity growth of 910MW

4



Improve energy efficiency



Large manufacture energy program



Large scale green building program



Prefabricated residential building program



Industrial transformation



New economy program



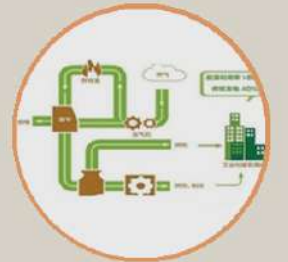
Clean energy



Zero-Waste city program



Zero-Carbon energy program



Gas for all program



Low carbon transportation



E-mobility program

Carbon economy projection for climate action
8 programs and 16 project clusters
Total investment: 225.792 billion CNY
Total emission reduction amount : 25.98 million tons
Annual net benefit: 17.3 billion CNY

Carbon Economy Prioritization of Climate Programs

Key Climate Initiatives	Carbon investment intensity (CNY/Ton CO2e reduction)	Reduction (million tCO2)	Reduction Ratio (%)	Investment (Billions CNY)	Investment ratio (%)
Large Manufacture Energy Program	1600	10	38.5	16	7.1
Industrial Transformation	14049	13	50	182.637	80.8
Gas for All Program	10084	1.36	5.2	13.715	6.1
Zero-Waste City Program	4084	0.285	1.1	1.166	0.5
Zero-Carbon Energy Program	5693	0.95	3.7	5.409	2.4
Large Scale Green Building Program	27745	0.153	0.6	4.245	1.9
Prefabricated residential building Program	29569	0.093	0.3	--	--
E-mobility Program	18714	0.14	0.5	2.62	1.2
TOTAL	8696	25.98	100	225.792	100

5. Policy Recommendations:

Market-Driven and inclusive low carbon development



Allocation of peaking targets and key indicators to collaborative entities

21+ pro-climate policies

**Peaking Target
Oriented Climate
Administration**

Carbon inventory, target allocation and 3rd party MRV as the 3 major components of Climate Administration

Integrating climate action into sustainability programs such as air quality management, smart city, sponge city, pro-public transportation, circular economy and ecological city development

From 2018-2028, annual demand for low-carbon investment is around 20 billion CNY, accounting for 10% of the city's annual fixed assets investment.

4 key action areas
8 programs
16 project clusters

Market-driven Action

Most climate action projects adopt the user-pay principle attracting private investment.

Utilization of green finance instruments such as green bonds and green PPP to support climate action implementation.

Natural gas pipe network, electric public transportation, rural PV for poverty alleviation, waste sorting needs to be implemented by social investment at a scale of 11.8 billion CNY.

If 20 to 30% social investment subsidized by government, the annual fiscal payout will be between 250 and 350 million CNY.

Inclusive Low Carbon Development

e.g. The natural gas pipe network for all districts will cover additional 300,000 households.

e.g. 900 electric buses will be deployed connecting neighborhoods making affordable and clean mobility for all.

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