



**ENN 新奥**

**ENN Energy Holdings Limited**

# 2020 Annual Results Company Presentation

22<sup>nd</sup> March 2021



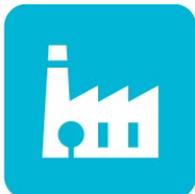
# Resilient Performance amid Challenging Environment



Retail gas sales volume up **10.2%** to **21.95 bcm**



Added C/I customers with **17.08 mil m<sup>3</sup>** installed designed daily capacity & **2.29 million** new residential customers



Added **20** City-gas projects & **21** IE projects  
Further expanded operating regions



Core profit up **18.2%** to **RMB6.24 bil**



Free cash flow up **12.0%** to **RMB3.02 bil**



DPS up **25.7%** to **HKD2.10** + Special Dividend  
**HKD0.32**

# Corporate Social Responsibility



- **Disinfected** workplace, arranged **COVID Test** and provided **personal protective equipment** for employees
- Organized live online **psychological counseling** classes for employees to help them regulate their physical and mental stress
- Provided **free medical counseling** for employees
- Social media online check-in activity to encourage employees to exercise



- Strengthened safety inspection to ensure **safe operation** and **stable gas supply**
- Ensured **gas safety in the rural areas**
- Arranged urgent construction of gas pipelines for crucial users on the front line of epidemic prevention and control such as hospitals, to meet their gas demand **to fight against the epidemic**
- Promptly responded to flooding threats and took urgent measures to eliminate potential hazards



- Solicited and delivered emergency supplies to Wuhan
- **Donated RMB16 million** to medical workers on the front line of epidemic prevention and control
- Launched ENN Charity Day “Food Saving” online campaign
- Joined the **Earth Hour** campaign and proactively invited all employees and business partners to save energy and reduce emissions

# Enhanced ESG Performance & Governance

## Environment



GHG emissions

↓ 20.2%



Helped society & clients reduce emissions

42.11 mil tons

2019: 35.11 mil tons

No. of member company obtained ISO certifications

17

2019: 6

Trenchless pipe laying ratio

35%

34.31 mil m<sup>3</sup>



## Society

22.1%

Percentage of women above mid-level management

2019: 21.6%



94.1%

Customer satisfaction

2019: 93.0%



1.27

Occupational injury case/mil hrs

2019: 1.04

Charity engagement

283,580 hrs

8,176 persons

## Governance

Anti-corruption training for 1,766 key roles

All

Completed compliance training & pledged

0 Corruption case, Complaint, Environmental illegal case



Modify ESG policies & disclosure, strive to achieve international best practices

Whistle-blower protection policy  
Climate change policy

## ESG Rating

Included in

Hang Seng ESG50 Index  
Hang Seng Corporate Sustainability Benchmark Index

A

BBB

Hang Seng Corporate Sustainability Index

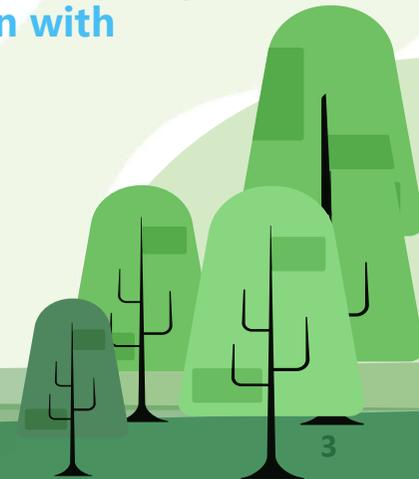
2019: A

MSCI ESG Rating

2019: BB

Plan to identify climate change risk & opportunity, quantify impacts, progressively align with

TCFD



# Growth-Value Creation

Total gas sales volume (mil m<sup>3</sup>)



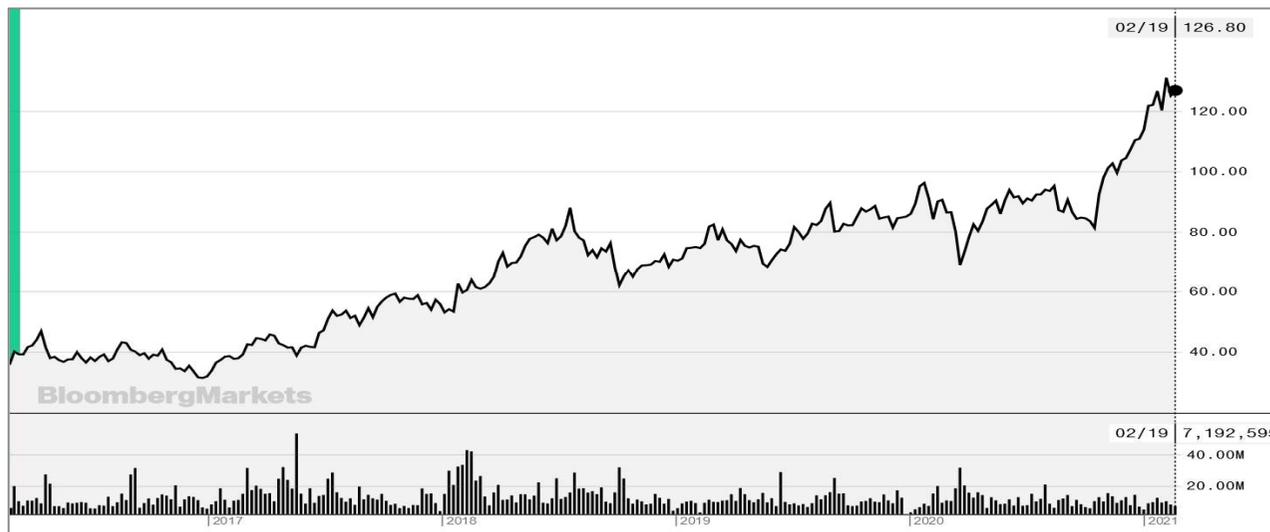
Core profit (RMB mil)



DPS(HKD) + Special dividend



Share price performance (HKD)



Effective business development strategy creates growing returns for shareholders

**Total shareholder return\* in 2020**  
**36.5%**

*Total shareholder return = (Share price movement + total dividend payment)/base price (closing price on 31 Dec 2019 HKD85.15)*



# Content

1. Results Review
2. Financial Highlights
3. Development Strategy
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# Higher Operating Profits

(RMB mil)	2020	2019	Change
<u>Key Financial Data</u>			
<b>Revenue</b>	<b>71,617</b>	<b>70,183</b>	<b>↑2.0%</b>
<i>Segmental Revenue</i>			
Retail Gas Sales	40,510	40,049	↑1.2% Higher vol, lower gas price
IE Business	5,042	2,749	↑83.4% Higher utilisation, new projects commenced operation
Value Added Business	1,685	1,988	↓15.2% Affected by COVID-19
Wholesale of Gas	17,936	18,465	↓2.9% LNG price down, wholesale vol up
Construction & Installation	6,444	6,932	↓7.0% Less connections, stable fees
<b>Gross Profit</b>	<b>12,332</b>	<b>11,265</b>	<b>↑9.5%</b>
EBITDA <sup>^</sup>	12,207	10,960	↑11.4%
Profit attributable to Shareholders	6,278	5,670	↑10.7%
<b>Core Profit*</b>	<b>6,237</b>	<b>5,278</b>	<b>↑18.2%</b>
<b>Core DPS (RMB)</b>	<b>5.55</b>	<b>4.70</b>	<b>↑18.1%</b>

<sup>^</sup> EBITDA = Incl. JCE, Asso, excl. one-off items

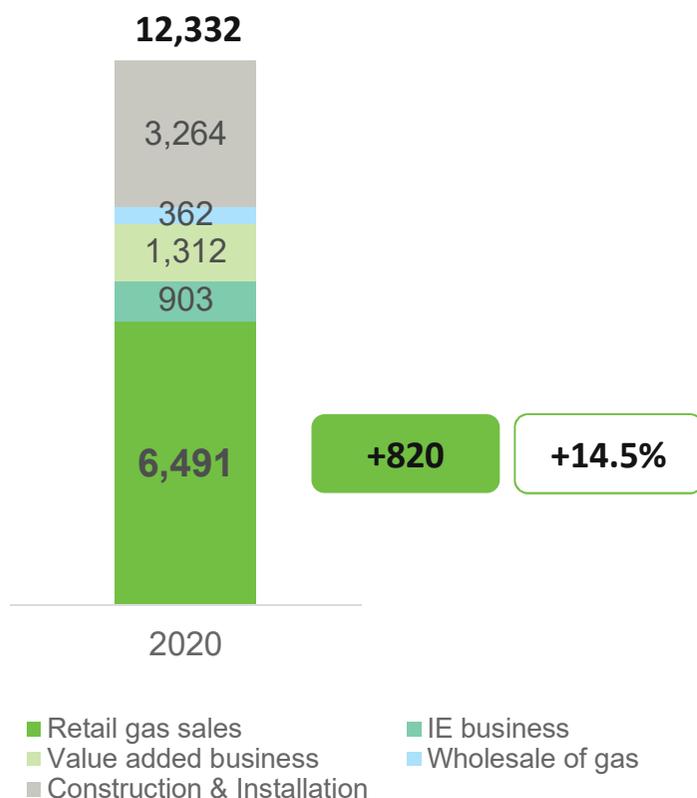
\* Core profit = Profit attributable to shareholders – other gains & losses (excluding net settlement amount realised from commodity derivative contracts) and amortisation of share option expenses

# Retail Gas Sales Business

- Citygate price reduced, coupled with lower LNG import cost, stimulated gas demand from customers
- Volume growth driven by our C/I-focused clientele which benefited from rapid work resumption policy and lower winter temperatures

## 2020 Gross profit (RMB mil)

### Yoy change



## Performance



### Dollar margin increased by 0.01/m<sup>3</sup>

(RMB/m <sup>3</sup> )	2020	2019
Residential	2.81	2.88
C/I	2.76	3.14
Large customer*	2.34	2.77
Small-mid customer	3.14	3.36
Vehicle gas station	3.41	3.93
ASP	2.79	3.14
Average cost	2.14	2.50
<b>Dollar margin (ex. VAT)</b>	<b>0.60</b>	<b>0.59</b>

### Diversified gas source

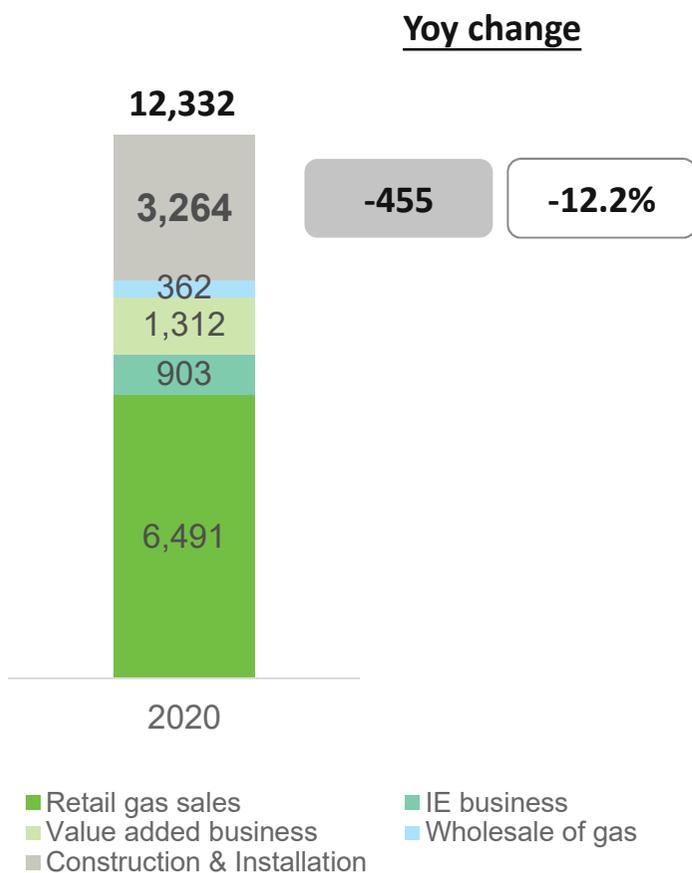
- ✓ Imported 1.95 mil tons of LNG
- ✓ Average all-in import cost was 10-15% below citygate prices
- ✓ Non-majors conventional & unconventional gas purchase
- ✓ 56 member companies were qualified to use PipeChina's transmission capacity, lowering gas cost
- ✓ Intelligent dispatching system optimised gas supply & demand matching

\* Large customer refers to annual gas consumption capacity of over 50 mil m<sup>3</sup>

# Construction & Installation

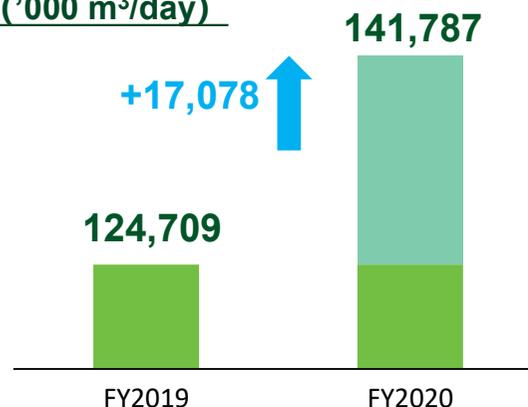
- Affected by COVID-19, number of new residential connection reduced by 104,000 households, newly installed C/I daily designed capacity reduced by 1.08 mil m<sup>3</sup>
- Continue to explore C/I users development potential, push forward industrial coal replacement progress
- Urbanisation & people's pursuit of quality life, brings huge opportunity of urban residential users development

## 2020 Gross profit (RMB mil)

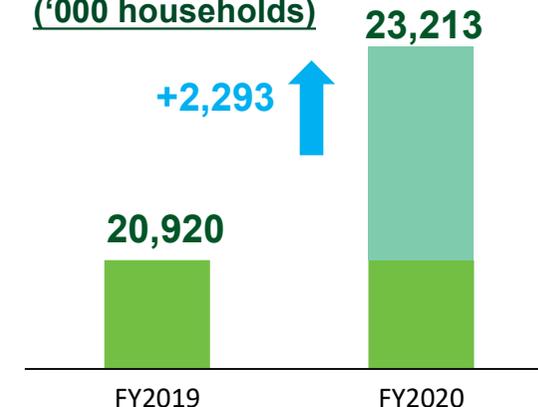


## Performance

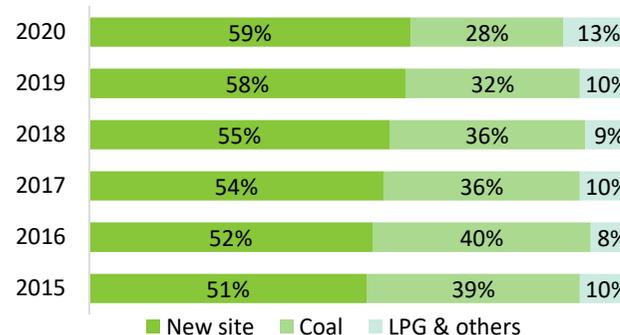
### Accumulated C/I installed capacity ('000 m<sup>3</sup>/day)



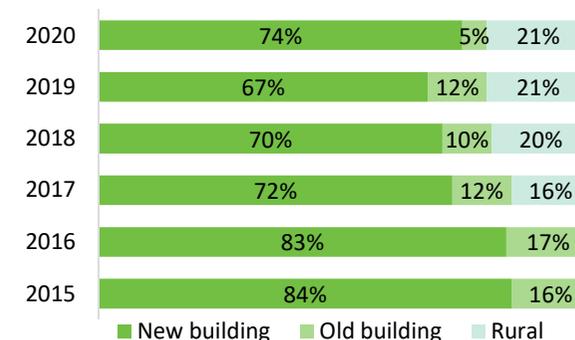
### Accumulated residential customers ('000 households)



### New C/I customers breakdown



### New residential customers breakdown

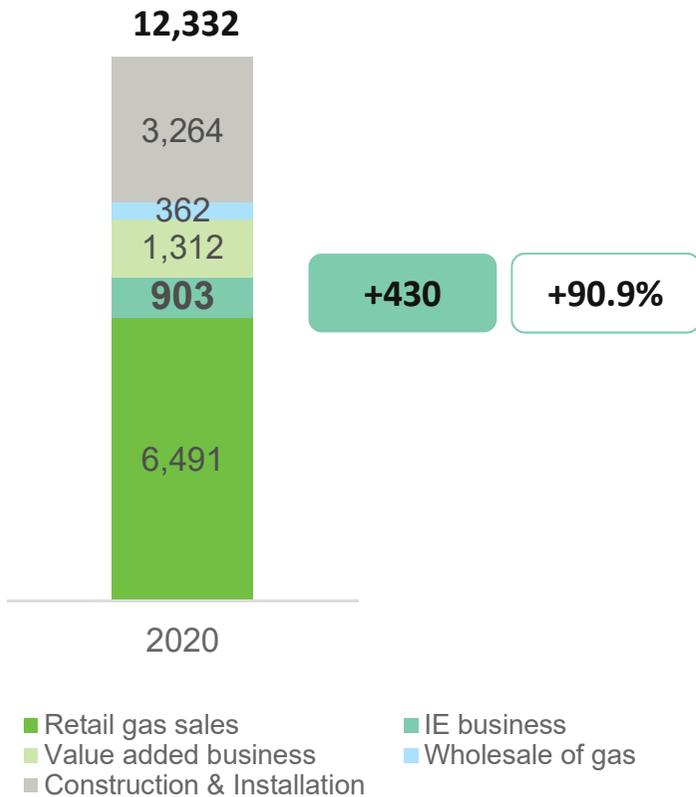


# Integrated Energy Business (IEB)

- Projects gradually ramped up, integrated energy (cooling & heating, electricity, steam) sales volume increased significantly
- Developed IE projects incorporating the use of low-carbon sources such as biomass, solar & geothermal heat, and tapped into distributed clean heating projects around Yangtze River areas

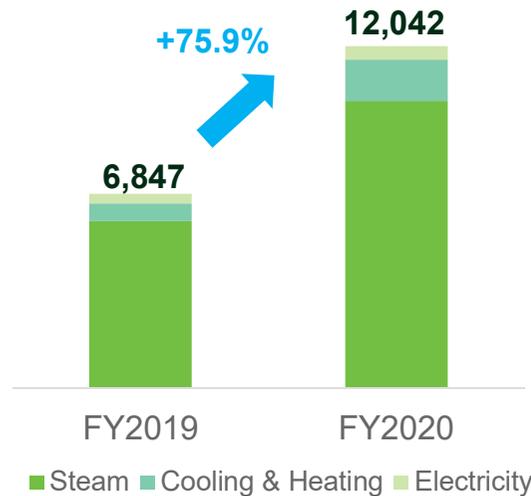
## 2020 Gross profit (RMB mil)

### Yoy change



## Performance

### IE Sales Vol (mil kWh)



### Operational



119

### Under Construction



24

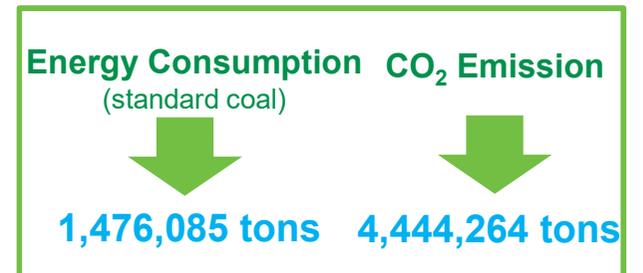
Energy Sales Potential

>30 bil kWh

### Clean energy solutions for customers:



### Positive environmental impact for customers:



# IEB – Typical Projects

- According to the local resources available and customer needs, choose the best technical route and provide customers with low-carbon energy solutions based on renewable energy
- 30% out of 143 IE projects in operation and under construction adopt renewable energy such as biomass, photovoltaic and geothermal energy

## Hainan Yangpu Industrial Park Project Phase I



✓ Solution: Designing & Planning + Integrated Energy Station Construction + PV + Heating Network



Steam  
**600,000 tons/yr**



Clean power  
**16 mil kWh/yr**



Standard coal  
**107,000 tons/yr**



Reduce CO<sub>2</sub> emissions  
**280,000 tons/yr**

## Inner Mongolia Deyu Biomass Cogeneration Project



✓ Solution: Biomass cogeneration unit + steam pipeline network



Steam  
**160,000 tons/yr**



Clean power  
**66 million kWh/yr**

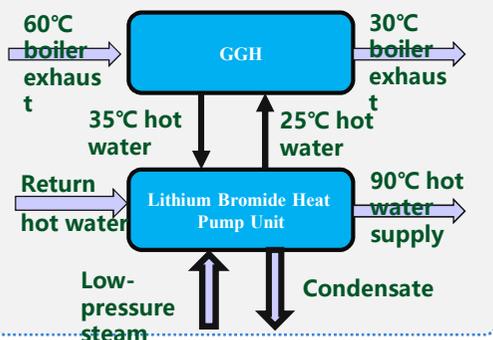


Standard coal  
**170,000 tons/yr**



Reduce CO<sub>2</sub> emissions  
**426,000 tons/yr**

## Pharmaceutical evaporation and concentration process – Shijiazhuang Weisheng Pharmaceutical



- ❖ ENN managed gas boilers for this customer which is not located in our concessions
- ❖ Installed GGH+lithium bromide heat pump to recover flue gas waste heat from the boilers
- ❖ It's expected to save 870,000 cubic metres of gas per annum
- ❖ We will continue to explore more business opportunities with this customer in terms of waste heat recovery & central control of more gas boilers

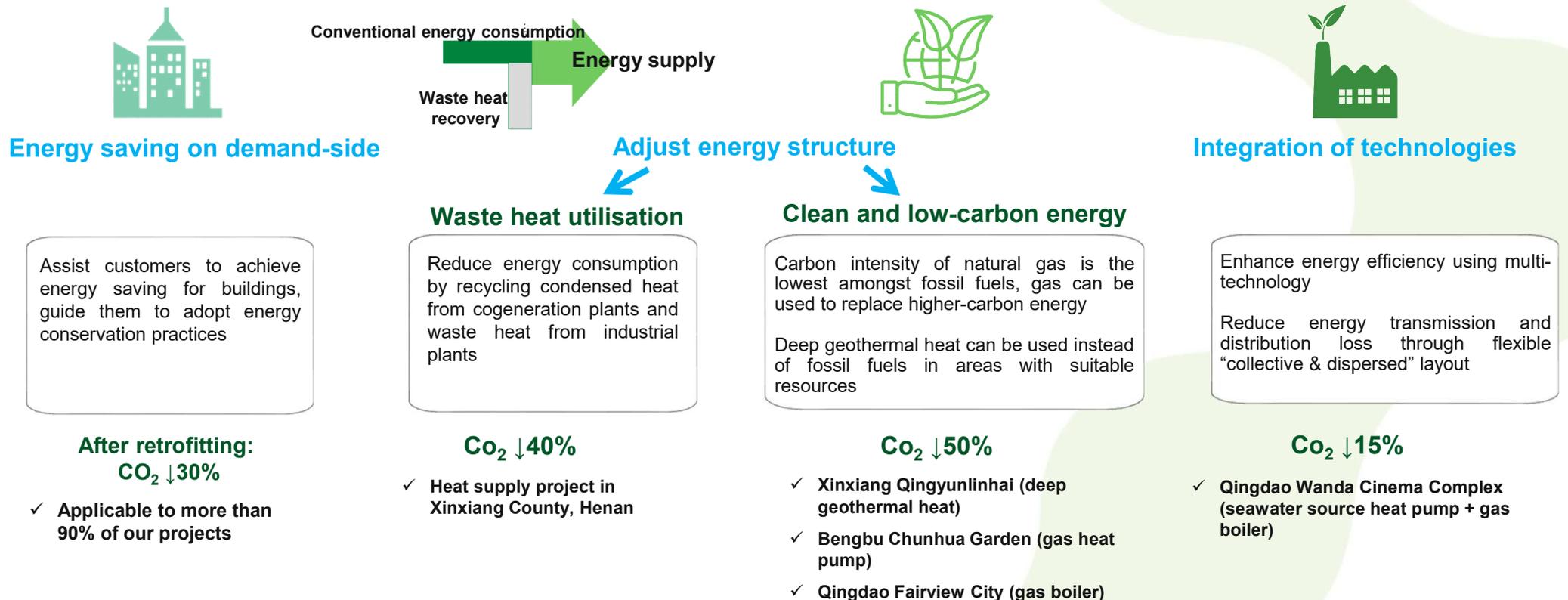
## Low-temperature drying room for furniture production – Qidong Zhuolang Furniture



- ❖ Using air source heat pumps to replace biomass boilers to supply energy for the drying room, resolved customers' pain points due to environmental non-compliance, developed customers outside our concessions
- ❖ Continued to retrofit other drying room energy facilities, strive to tap into electricity sales and develop integrated energy business in this industrial zone

# IEB – Green and Low-carbon Heating Solutions Adaptive to Local Conditions

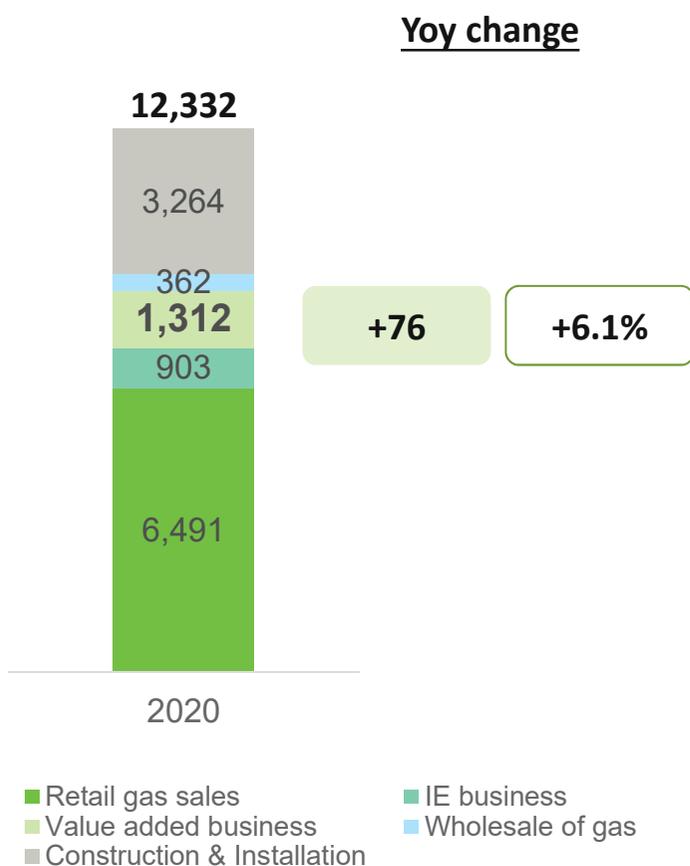
- Reduce total energy consumption through energy saving on demand-side and waste heat re-use
- Reduce CO<sub>2</sub> intensity by adjusting energy structure; priority use of zero carbon resources such as waste heat re-use and geothermal energy, supplemented by low carbon energy such as natural gas
- Based on users' distribution and demand, incorporating centralised, distributed and individual heating methods to reduce energy loss, and achieve CO<sub>2</sub> reduction, energy saving and economic benefits, through multi-technology use and integration, ensuring sustainable development of the project
- Tapped into traditional heating areas incl. Hebei, Shandong, Henan, emerging heating areas incl. Jiangsu, Anhui, Zhejiang and Shanghai, contracted heating areas of approx. 20 million sq.m. and have been supplying heating covering over 5 million sq.m.



# Value Added Business (VAB)

- Grounded on our superior customer services and products, provided one-stop solutions for customers, enhanced per customer value
- Expanded the width & depth of our product mix, innovated new business model to create value

## 2020 Gross profit (RMB mil)



## Performance

### Penetration Rate

New customers

**20%↑**

2019: 15%

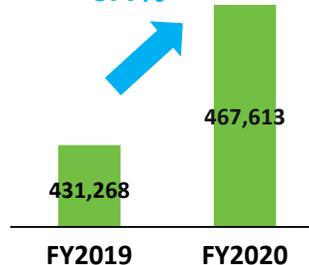
Existing customers

**7% ↑**

2019: 6%

### "Gratle" Sales Vol

**+8.4%**

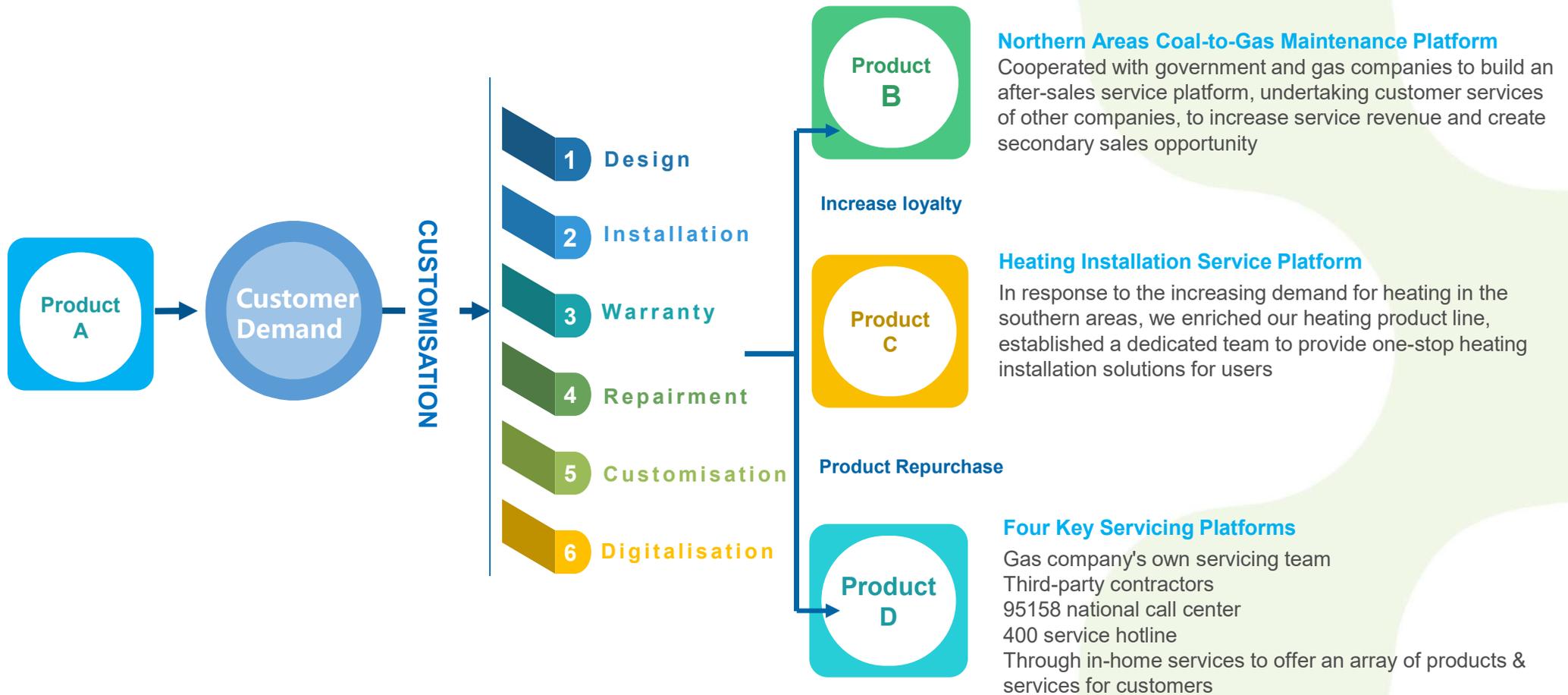


### Enriched Product Mix

360° Kitchen Products		Heating Products	
	<p>Cooking stove, range hood, gas heater</p> <p>Kitchen cabinet, electronic appliances</p>		<p>Space heater, heat pump...</p> <p>Floor heating pipes, heating plate</p>
Safety & Security Products		Extended Products	
	<p>Automatic shut-off valve, alarm, insurance (Gas insurance, home insurance)</p>		<p>Solar-powered heater, ventilation system</p> <p>Water-proof materials, ceramic tiles, thin-film solar cells</p>
Services		Design, installation, repairing, maintenance...	
<p>Gratle 格瑞泰 + Partnering Brands + Customer base sharing</p>			

# VAB - Create Value with Services

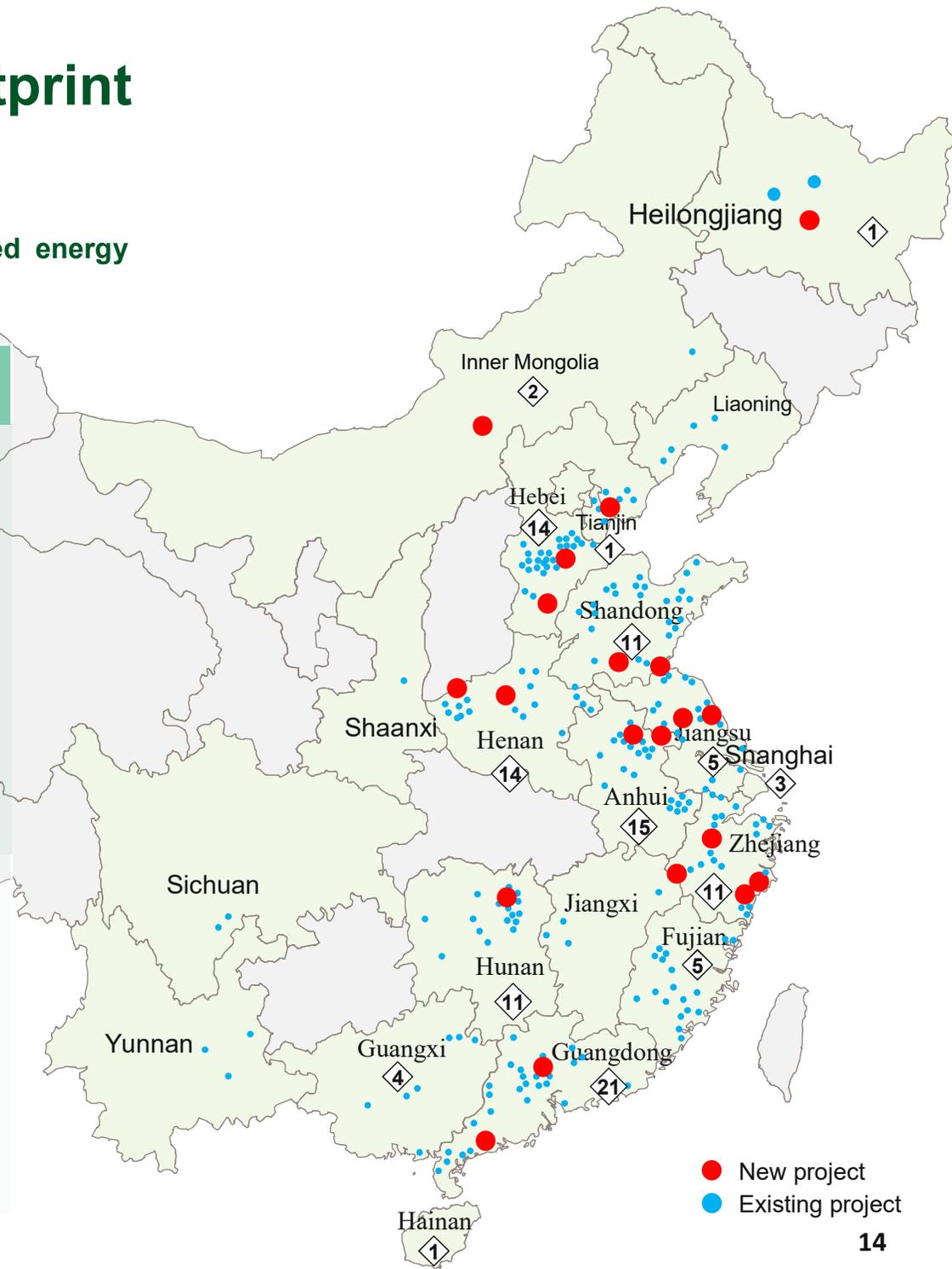
➤ Formed a value creation cycle, through regular customer service to explore business opportunity, expand product mix to meet customer demands, and after-sales services to enhance customer loyalty and stickiness, thus, creating a 1+N multiplier effect for value creation



# Expanding Operational Footprint

Added **20** new city-gas projects and **21** new integrated energy projects, covering 21 provinces, cities and autonomous regions

Total Projects	New Projects	
<b>City-gas Project</b> 235 	<ol style="list-style-type: none"> <li>Zhejiang Rui'an Project</li> <li>Zhejiang Pujiang County</li> <li>Ganyu District in Lianyungang</li> <li>Tianjin China-Germany Daqiuzhuang Eco-City Park</li> <li>Tumd Right Banner in Baotou</li> <li>Henan Yima Coal Chemical Industry Cluster</li> <li>Linyi Luoxi Jinshan Low-carbon Industrial Park</li> <li>Hunan Qu Yuan Management Area</li> <li>Henan Dingzhou Township Project</li> <li>Shuangcheng District in Harbin</li> </ol>	<ol style="list-style-type: none"> <li>Jiangsu Ning-Huai Special Cooperation Zone</li> <li>Anhui Guzhen Township Project</li> <li>10 Townships in Xinghua</li> <li>Shenshan Area, Jianggao Town, Baiyun District, Guangzhou</li> <li>Township in Linying County</li> <li>Qiuchuan Township in Changshan County</li> <li>Zhejiang Yuhuan Industrial Park</li> <li>7 Townships in Tinghu District of Yancheng</li> <li>3 Townships in Wuchuan</li> <li>3 Townships in Ningjin</li> </ol>
<b>Integrated Energy Project</b> 119 	<ol style="list-style-type: none"> <li>Shanghai Zhongfen</li> <li>Hainan Yangpu Development Zone</li> <li>Neimeng Chifeng</li> <li>Mudanjiang Biomass Project</li> <li>Neimeng Wuhai Xilaifeng</li> <li>Guangxi Longzan</li> <li>Lufthansa Foods</li> <li>Flower Street Town</li> <li>Ning Hua Building Materials</li> <li>Guangzhou Jiaheng Industry</li> <li>Shijiazhuang Medical Products Administration</li> </ol>	<ol style="list-style-type: none"> <li>The Fourth Hospital of Shijiazhuang</li> <li>Tianying Township in Jieshou City</li> <li>Qingdao Red Star International Plaza</li> <li>Greater Bay Area No.1 in Dongguan</li> <li>Shuangxing Tire Factory</li> <li>Chuzhou Anbang Polymer High Tech</li> <li>Qingdao Qinggang Town</li> <li>Xinxiang Xiaoji Group</li> <li>Quanzhou Weibo Food</li> <li>Dongguan Chubang Paper</li> </ol>

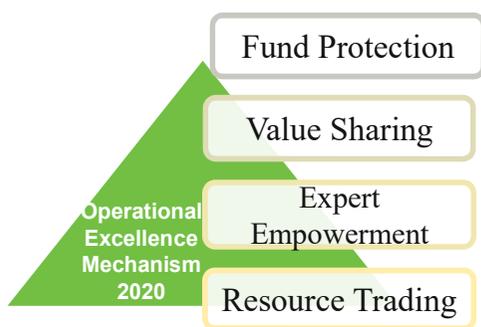


 New project  
 Existing project

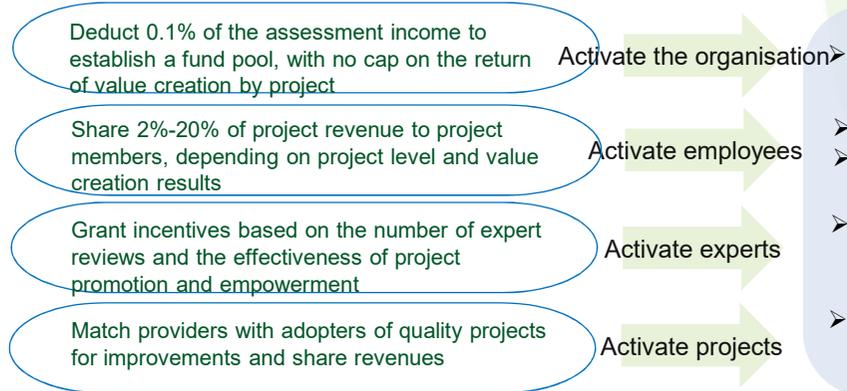
# Operational Excellence - Reduce Costs and Increase Efficiency

- In 2020, we established a new operational excellence mechanism and four implementation rules involving more than 3,800 people, completed 434 projects, contributed to an annualised return of RMB150 million, and promoted 193 outstanding projects, forming a corporate culture of full participation and encouraging innovation and value creation

## Operational Excellence Ecosystem



## Implementation Rules



## Bringing Vitality

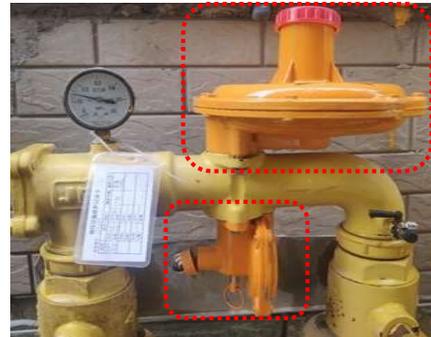
- Self-driven organisations increased to 84
- Participants totaled 3,800
- 80% of whom were front-line employees
- Expanded expert pool with more than 40 experts in 2020
- Release the value of outstanding projects and promoted 193 cases so far

## Case Study Construction cost reduction



Replace excavators with grooving machines in part to reduce construction costs

## Pipeline operation



Replace old regulator by parts to avoid overall replacement and reduce operating costs

## Customer service



Activate bill reminder and bill payment functions via WeChat official account to reduce phone and printing costs

## Safety operation



Apply intelligent warning pile to achieve real-time monitoring of pipeline network and reduce the pipeline loss



# Content

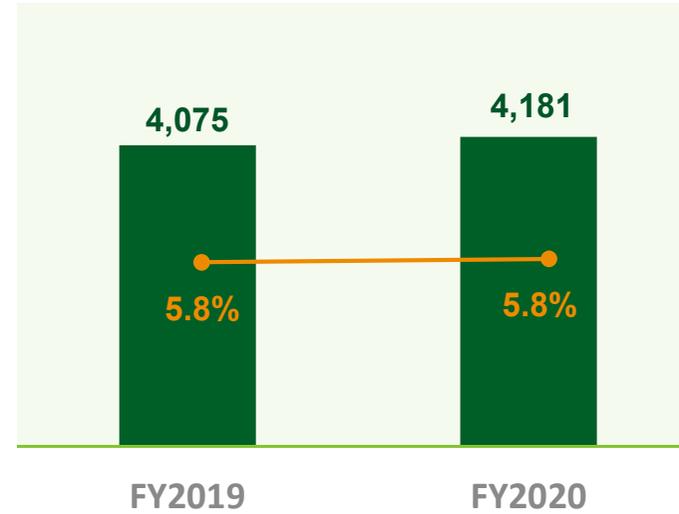
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# Increasing Operational Efficiency

Gross profit & gross profit margin (RMB mil)



SG&A, SG&A to revenue ratio (RMB mil)



EBITDA & EBITDA margin (RMB mil)

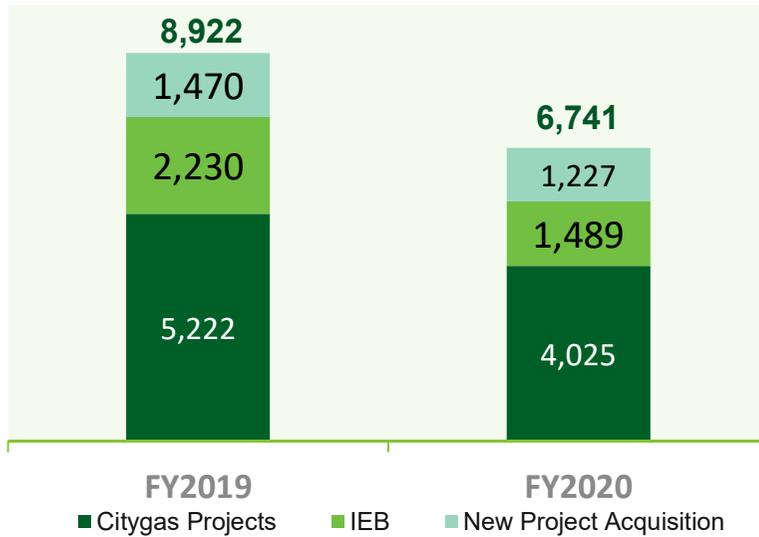


Core profit & core profit margin (RMB mil)

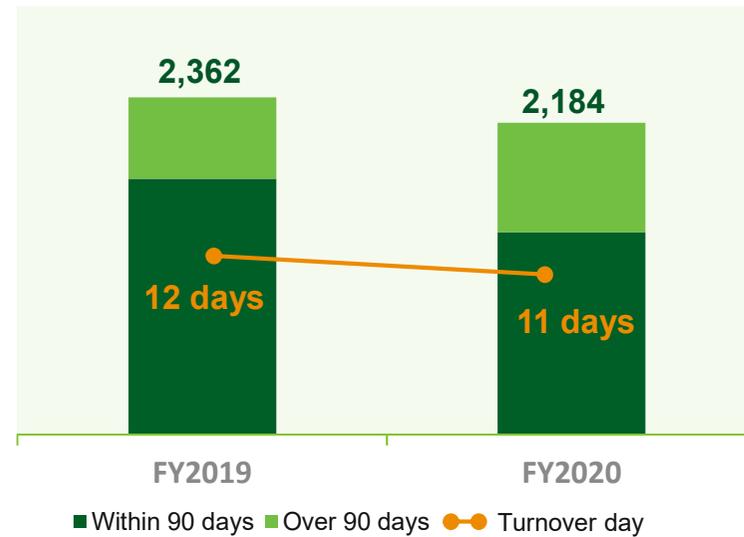


# Superior Financial Management

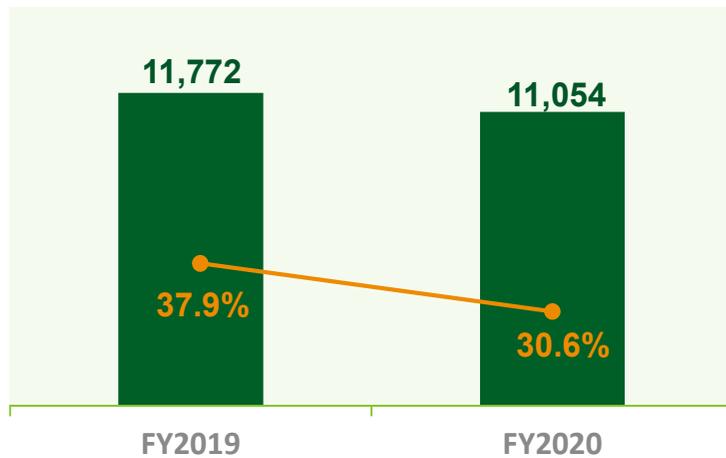
CAPEX (RMB mil)



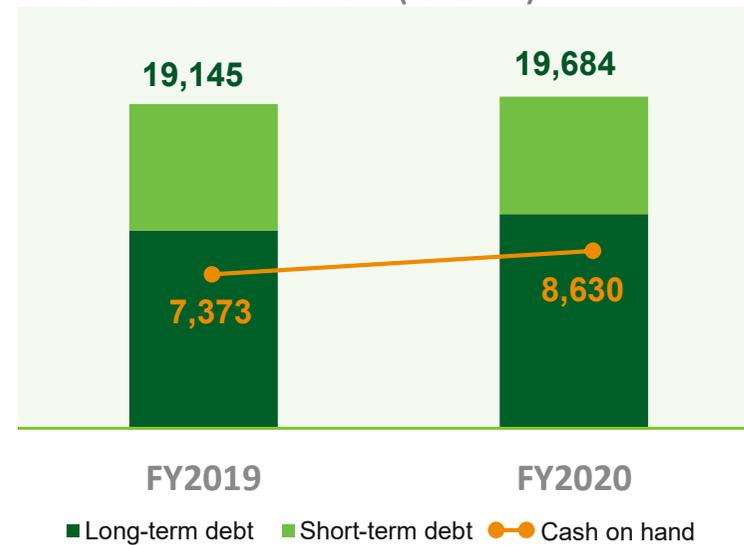
Account receivables & turnover days (RMB mil)



Net debt & net gearing ratio (RMB mil)



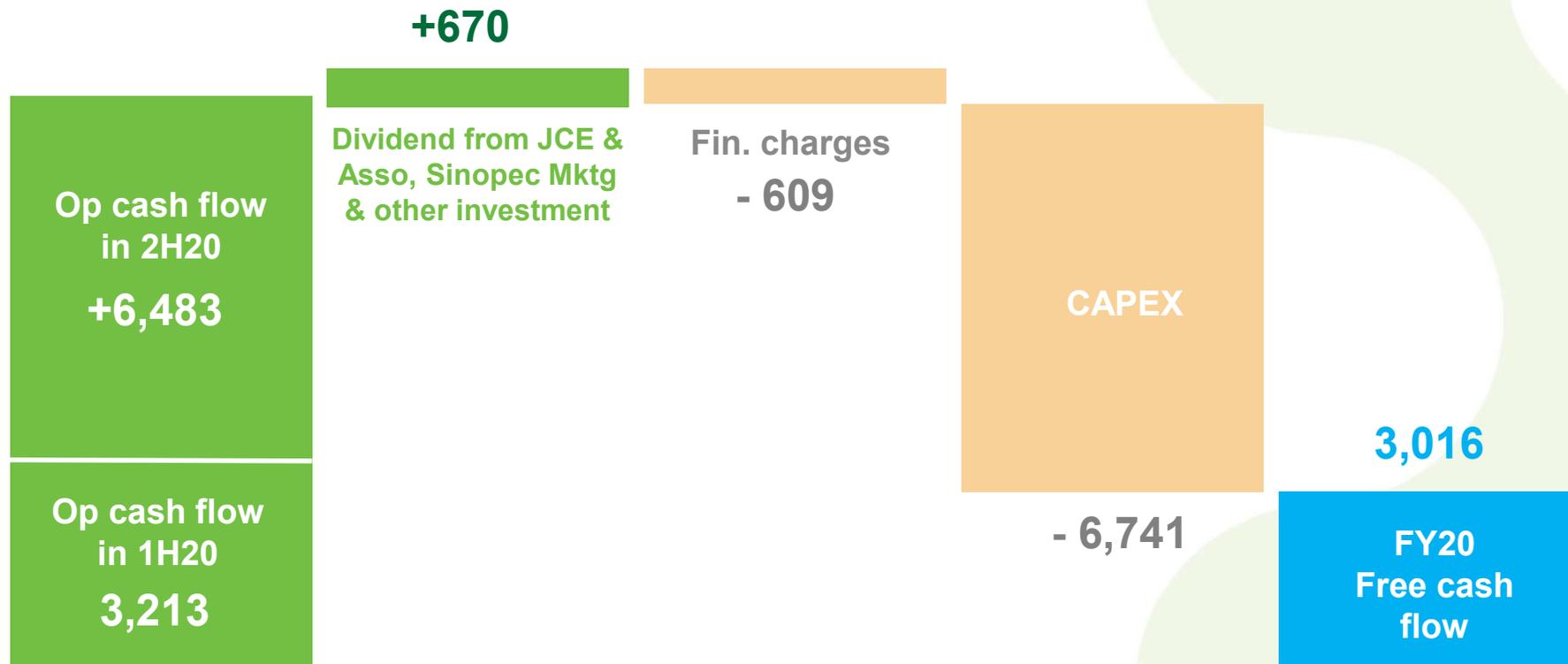
Total debt & cash on hand (RMB mil)



# Cash Flow Analysis

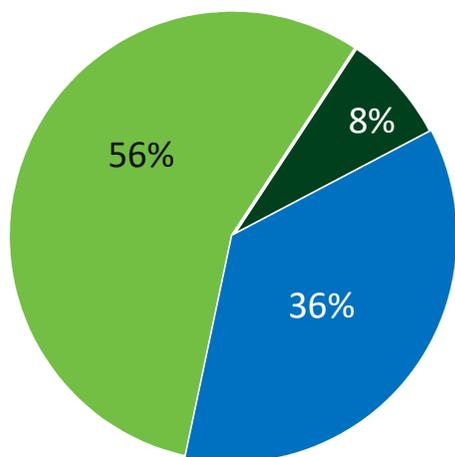
- Business activities resumed normal in 2H20, operating cash flow increased significantly
- Free cash flow increased by **RMB322 mil**

(RMB mil)

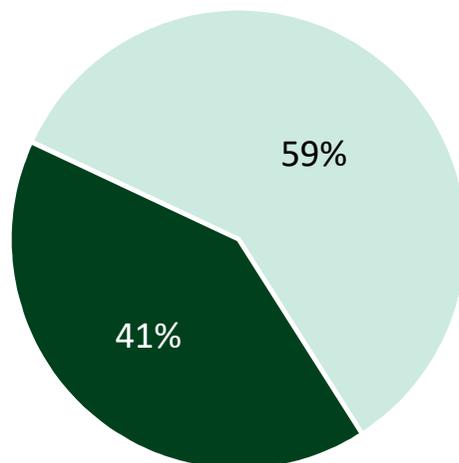


# Ample Financial Resources & Liquidity

Debt Structure  
(by currency)



Foreign Currency Risk Exposure  
Management  
– long-term USD debt



■ USD Bonds ■ USD Bank Loans ■ RMB Bonds & Loans

■ Unhedged ■ Hedged

➤ Interest rate was lowered due to loans with preferential rates were obtained by some project companies

	2020	2019	2018	Change
Avg. effective interest rate	3.63%	3.90%	4.05%	↓ 27 bps

## Investment-Grade Credit Ratings

Rating agency	FY2020
<b>S&amp;P Global Ratings</b>	<b>BBB</b>
<b>MOODY'S INVESTORS SERVICE</b>	<b>Baa2</b>
<b>FitchRatings</b>	<b>BBB</b>

## Sufficient Financial Resources

RMB mil	Available Quota
Unutilised credit facilities	<b>12,001</b>
Green bond quota approved by NDRC	<b>5,000</b>



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# New Opportunities and Challenges

✓ **Targets of “peaking carbon dioxide emissions and carbon neutrality”**

✓ **Accelerated energy reform**

✓ **Dual-circulation economy**

✓ **Rapid development of digitalisation**

## Macro Factors



# Expand and Strengthen Gas Distribution Business

## Market understanding

- More choices are available for customers, and there is a strong demand for differentiated services
- Diversified resources are available with an increasing trend of pipelines liberalisation
- Develop innovative distribution model based on digitalised products

## ① Expand customer base



- Innovate customer service for large users
- Strengthen cooperation with customers
- Optimise the development of residential users, small and medium-sized C/I users



- Complete quality projects acquisitions
- Strengthen cooperation with different distribution companies

## ② Coordinate gas sources



- Optimise procurement from the oil majors
- Strengthen cooperation in offshore gas, unconventional gas and other diversified resources
- Innovate procurement model



- Advanced planning for the use of key pipelines capacity
- Flexible access to storage/pipeline capacity

## ③ Smart matching of supply & demand



- Precise forecast of customer gas load
- Optimise the matching of customer-resources-channels
- Flexible pricing

# Improve the Efficiency of Pipeline Transmission and Distribution

## Improve infrastructure construction

### Diversify transmission and distribution channels to ensure gas supply

- Add resource download points in the city
- Connect to the surrounding gas pipeline network
- Construct core available pipeline network

### Optimise the pipeline network to improve utilisation

- Collaborate with the government on special city gas planning
- Focus on customer distribution and make rational planning and deployment of gas network



## Improve pipeline efficiency

### Life cycle management of pipeline networks

- Ensure operational stability



### Management of city gas pipeline network

### Smart dispatching management

- Reduce costs and improve efficiency

Comprehensive prognosis | Integrated control | Adaptive optimisation

Real-time monitoring    Online simulation    Dispatch balancing    Pipeline network optimisation

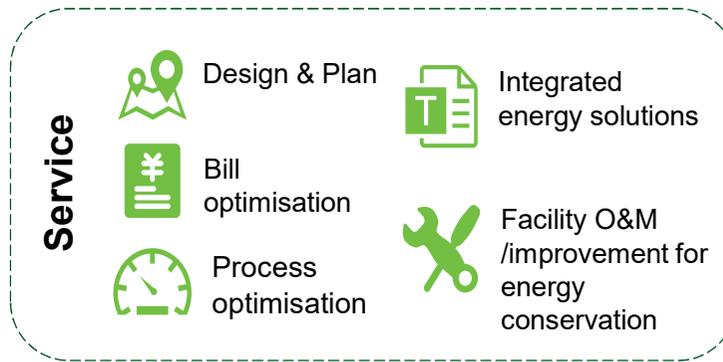
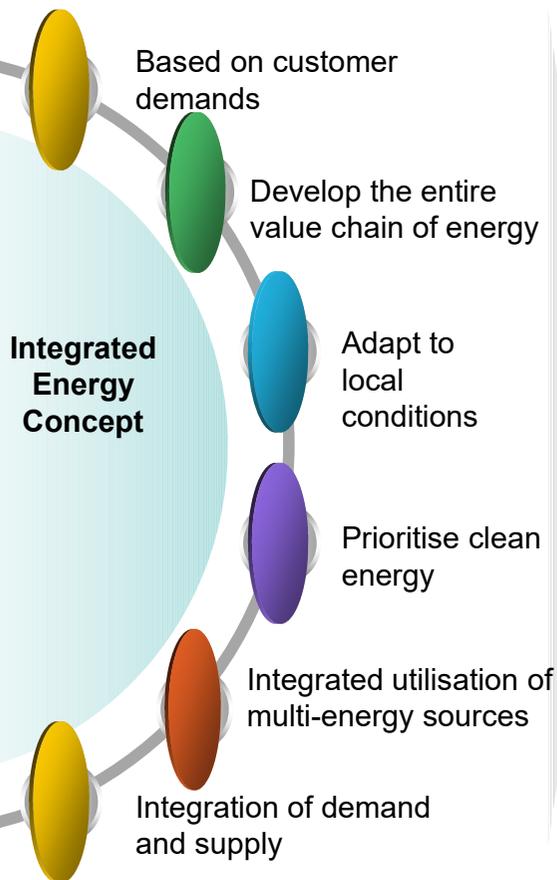


# Develop Integrated Energy Business Adaptive to Local Conditions

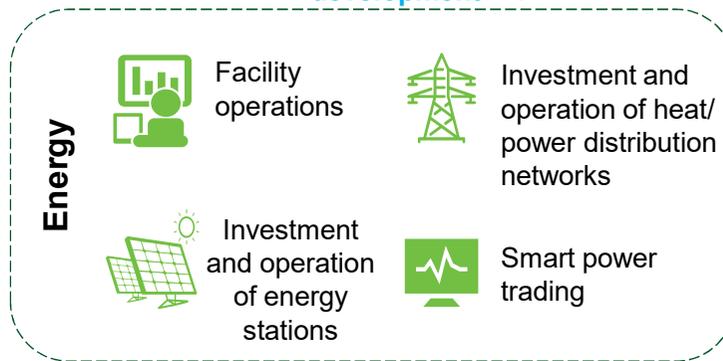
Develop integrated energy business under the guidance of the integrated energy concept

Provide “Service + Energy” product portfolio based on customer demands

## Case Study



Achieve synergy and promote mutual development



### Flue gas waste heat recovery – Jingbin Integrated Energy Station



- ❖ Installed lithium bromide heat pump to recover waste heat from gas boiler exhaust gas, increasing gas efficiency by 7%, saving ~330,000 cubic metres of natural gas in one heating season, equivalent to increasing heating areas by 24k sq.m.
- ❖ Suitable for gas-fired hot water or steam boilers and can reduce visual pollution from smokes

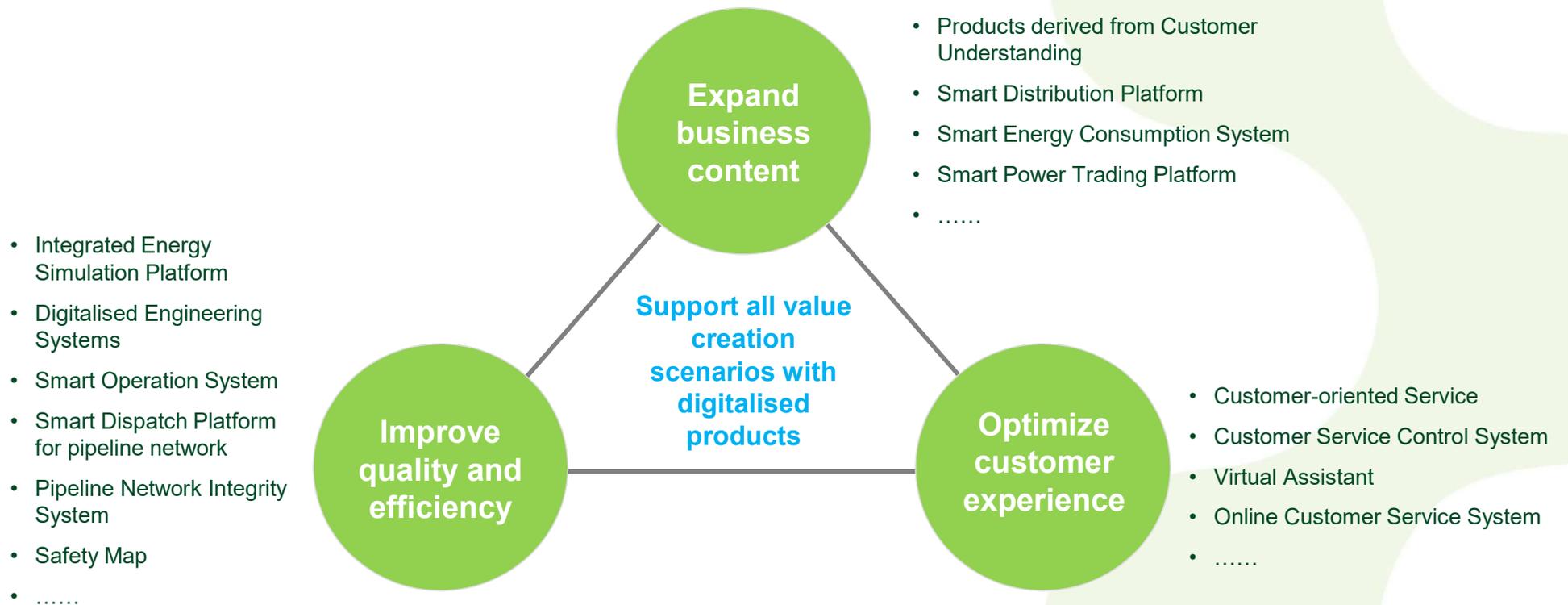
### Glass furnace waste heat recovery – Nanjing ARC



- ❖ Newly developed integrated energy and direct gas supply customer. Deployed waste heat recover boilers to recycle high temperature flue gas waste heat from customer's glass kilns, to produce steam for surrounding paper mills, and provide hot water for domestic use and for heating in winter
- ❖ Realised synergy of energy consumption and supply in a single project, enhancing project value

# Develop Digitalised Products to Support Business Upgrade

Digitalisation is an effective means to connect and serve customers. ENN develops digitalised products for all business scenarios to strengthen our core capabilities to expand business content, improve service quality and optimise customer experience

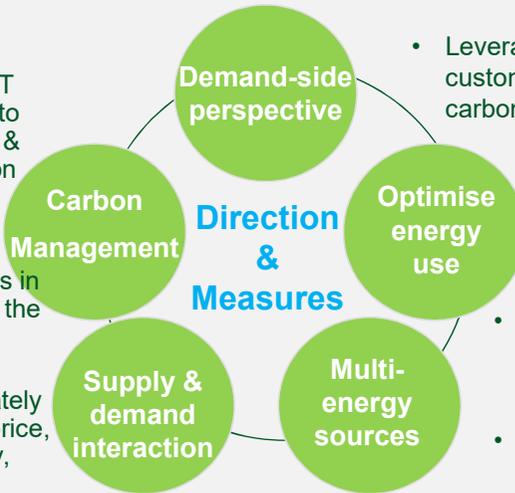


# Strive to Achieve CO<sub>2</sub> Emissions Peak and Carbon Neutrality

## (1) Serve the community, innovate solutions for CO<sub>2</sub> emissions peak and carbon neutrality

Satisfy customer needs of clean, safe, economic, efficient & convenient energy solutions

- Carbon footprint management through IoT & IE scorecard system, to optimise energy system & establish decarbonisation mechanism, release the value of carbon assets
- Leverage digitalised tools in demand response, drive the use of renewables in demand-side
- Assist customers accurately forecast energy load & price, optimise trading strategy, facilitate green energy / carbon trading



- Leverage IoT+energy diagnosis, help customers reduce energy consumption and carbon emissions
- Leverage digitalisation to tailor integrated energy solutions and optimise operations, modify energy distribution & storage, thereof enhancing energy security & efficiency
- Develop distributed energy system using renewables, and supplemented by gas, facilitate the use of local renewable sources
- Leverage digitalisation to satisfy personalised customer needs, encourage efficient & extensive use of gas

Assist customers, cities & the country to achieve both targets

## (3) Digitalisation to support targets achievement



## (2) Decarbonisation from us

- System energy saving & decarbonisation
- Energy technology+digitalisation to optimise energy saving at our citygates, IE stations & other facilities
  - Conduct building energy saving, 100% green buildings for new construction
  - Electrify vehicles with smart dispatching

- Strengthen methane emissions management & control
- Comprehensive management+smart operation ensure pipelines safety
  - Adopt visualisation system to conduct pipelines safety check
  - BOG recycle use, reduce methane venting

- Multi-measures to offset carbon emissions
- Plantation
  - CCUS

Strive to achieve net zero CO<sub>2</sub> emissions by the Group

# 2021 Guidance

## Proactive New Customers Development

- ✓ New C/I development of at least 18mil m<sup>3</sup> daily installed capacity
- ✓ New residential development of at least 2.4mil households
- ✓ 20-30 new city-gas projects & 20 new IE projects in operation

## Accelerate New Businesses Development

- ✓ IE business revenue at least RMB 8-10 bil
- ✓ VAB gross profit up at least 30%



## Ensure Volume and Quality of NG business Growth

- ✓ Volume growth at least 15%
- ✓ Dollar margin stable

## Create Higher Returns for Shareholders

- ✓ Core earnings growth at least 15%
- ✓ Dividend payout 35%

# Q&A

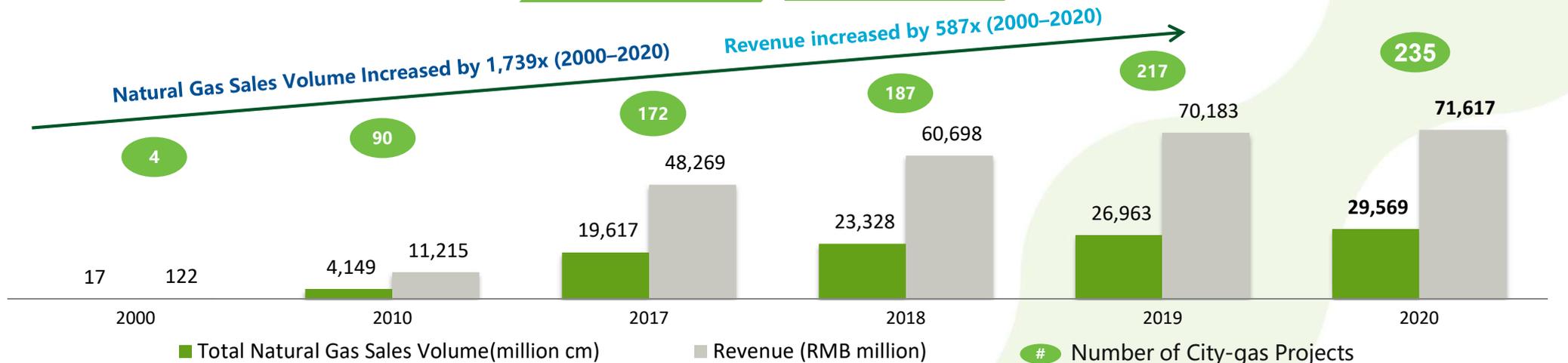
# ENN – To Build an Industry-leading Integrated Energy Service Provider

## Company Overview

- Established in 1993, ENN is one of the leading privately-owned clean energy distributors in the PRC
- ENN’s principal business includes sale and distribution of piped gas, investment in, and the operation and management of gas pipeline infrastructure, vehicle/ship gas refuelling stations, integrated energy business, sales and wholesale of piped gas, as well as sales of LNG and multiple energy forms. It also develops integrated energy business and wholesale of gas business, while providing other energy-related value added business
- ENN was listed on the GEM in 2001 and transferred to the Main Board of HKEX (stock code: 2688) in 2002

## Key Business Segments

Retail Gas Sales Business	Integrated Energy Business	Value Added Business	Wholesale of Gas	Construction & Installation
				
<ul style="list-style-type: none"> <li>• Sell piped gas to residential households and C/I customers</li> <li>• Construct and operate CNG/LNG gas refuelling stations</li> </ul>	<ul style="list-style-type: none"> <li>• Based on customers’ need, provide multi-energy products according to energy sources available locally, and customise integrated energy solutions for users</li> </ul>	<ul style="list-style-type: none"> <li>• Provide energy-saving technologies, retrofitting services, and facilities inspection and maintenance services</li> <li>• Provide gas-related products and material sales</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct natural gas wholesale business to fully utilize its advanced dispatch system, logistics fleet and upstream resources</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct gas pipeline construction and installation for residential and C/I customers</li> </ul>



# Explore the Application of Low-carbon Energy – Distributed Solar

## Case Study –Yangkou Distributed Solar Station in Shandong Shouguang

### Summary

- Installed capacity: 11.33MW
- Utilized customer's rooftop of 146,000 m<sup>2</sup>
- Investment amount: RMB70.98mil
- Operation: Grid connection & all-on-grid
- Generation Capacity: 16mil kWh in 2019
- Tariff Subsidy: RMB0.98/kWh
- Return: IRR 12%



- **Government's front:** "14 · 5 Year Plan" is expected to continue to drive the use of clean energy, and to implement renewable power generation quotas and license waiver policies
- **Customer's needs:** Pressure to digest renewable-generated power, demand for cost reduction and efficiency enhancement
- **Competitive Edge:**
  - ENN Energy possesses tremendous C/I customers resources (>3GW rooftop resources)
  - Gas concession areas, IE projects, and incremental power distribution networks will create synergy, able to reduce operating costs & mitigate receivables issues

# Explore the Application of Low-carbon Energy – Hydrogen

**Government's front:** China pledged to reach peak level of carbon emission by 2030, and carbon neutral by 2060

**Characteristics of H<sub>2</sub>:** High heat value, zero emission, burns fast

**Competitive Edge:**

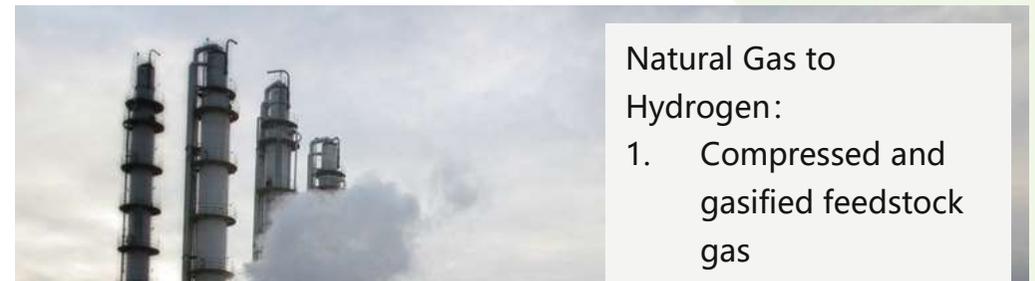
- H<sub>2</sub> can be blended into natural gas pipelines at specific concentration (10% or below according to international practice) and pressure, can be supplied to commercial and residential users as fuel, reduce carbon emission
- ENN's technological know-hows of operating CNG & LNG transportation & storage provide support to develop compressed H<sub>2</sub> or liquified H<sub>2</sub> business
- Possesses resources and technology of natural gas to hydrogen production

Founding member of "Yangtze River Delta Hydrogen Infrastructure Industry Alliance", aims at exploring the development of hydrogen refuelling infrastructure following the policy of "Yangtze River Delta G60 Hydrogen Corridor"

## Hydrogen Supply Project – A Pharmaceutical Company in Liaoning Huludao

### Summary

- H<sub>2</sub> production capacity: 1,500m<sup>3</sup>/h
- Customer's need: 12.48mil m<sup>3</sup>/year
- Use of existing pipelines, factories and land for free, reduced investment cost, revitalized customer's assets
- Investment amount: RMB17.39mil
- Expected return: IRR 20%
- Status: Under construction, expected commencement in April 2021

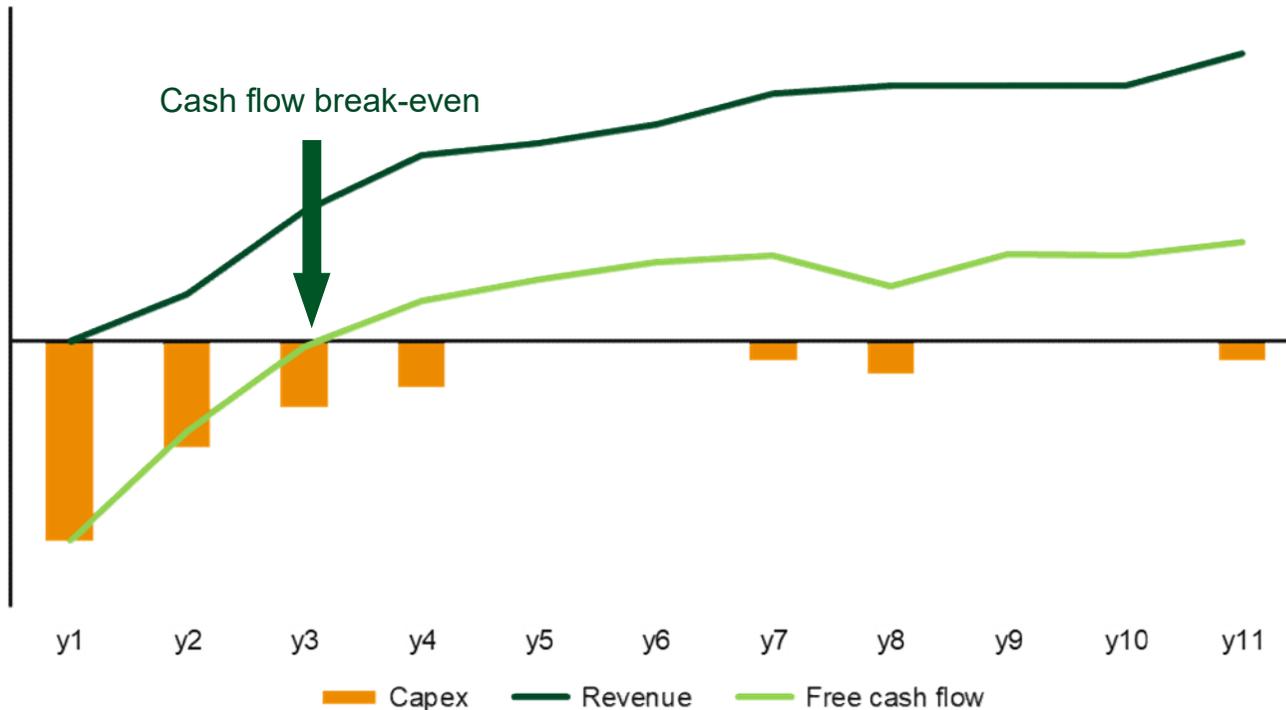


Natural Gas to Hydrogen:

1. Compressed and gasified feedstock gas
2. Desulphurization
3. Conversion
4. PSA H<sub>2</sub> extraction



# Typical Industrial Park IE Project - Cash Flow Projection



## 1. Stable & Recurring Income

- Integrated energy solutions reduce customers' overall energy bills **↓10%**
- Selling the types of energy customer need increases their stickiness

## 2. Rapid Cash Flow Generation

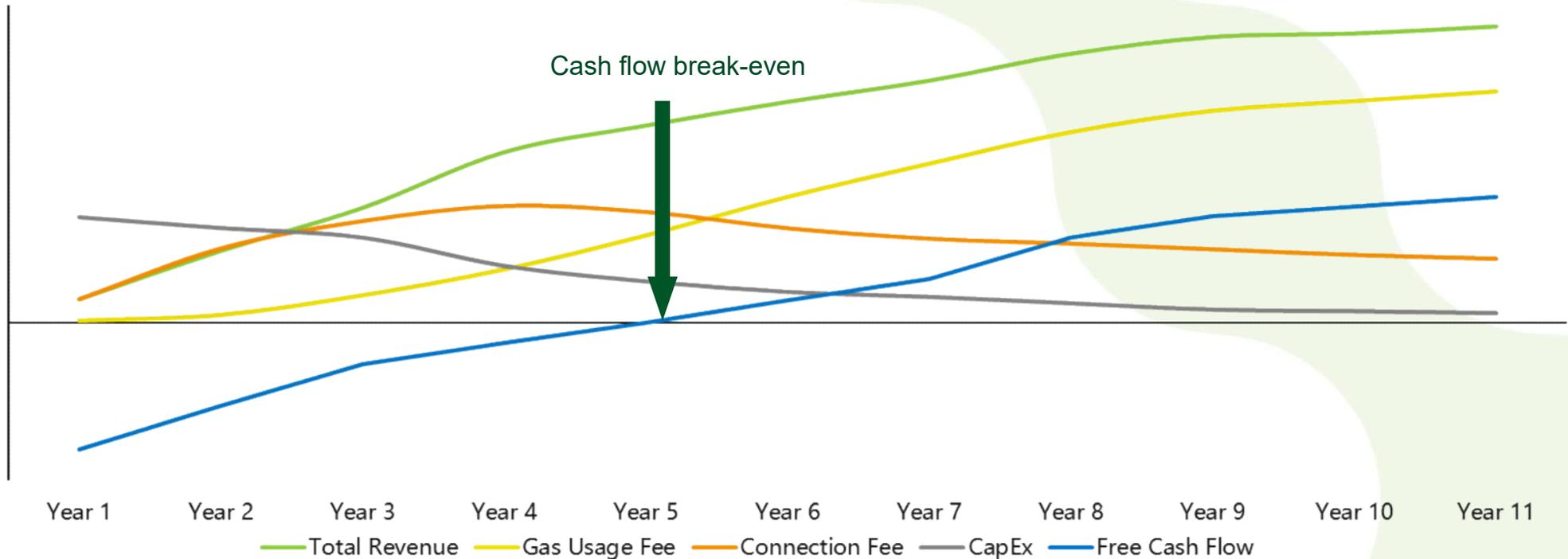
- Capex are invested by stages depending on the number of customers and their energy consumption scale
- Our projects are mostly industrial parks with existing customers, once the energy stations completed, energy sales can be generated
- Payback period: **7-8** years

## 3. Low Risk

- Diversified customer base in industrial parks helps reduce cyclical risks of certain industry
- Sign minimum energy offtake volume and establish automatic passthrough mechanism with customers
- Market-oriented business model with low regulatory risk

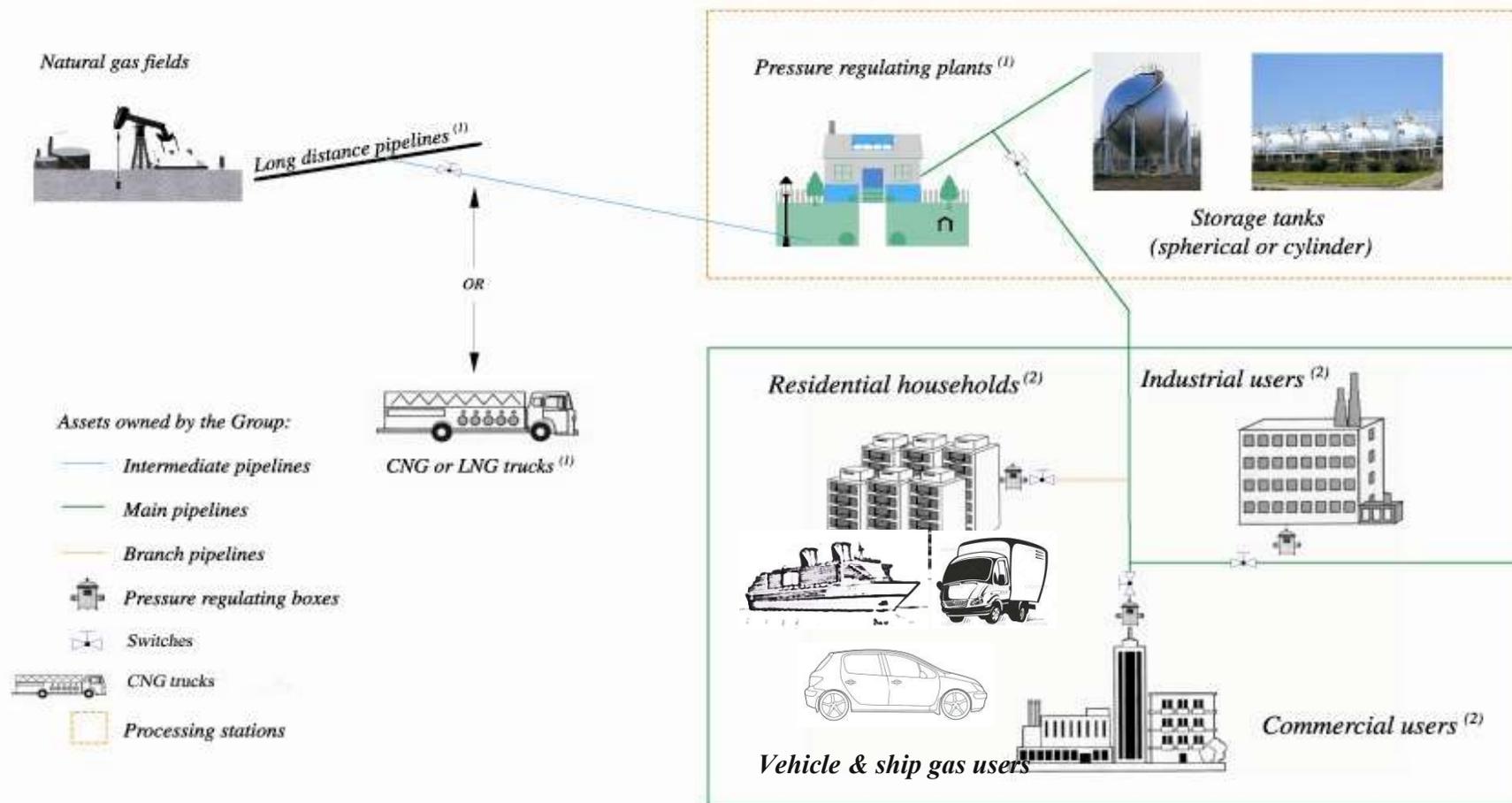
# Simplified Model for a Typical City-gas Project

Revenue/Cost



- Connection fee dominates in early years when the project companies are signing up new customers
- Gas usage increases as projects mature, becoming the major source of recurring income
- Prior to the completion of the whole pipeline network in cities, revenue will be generated as soon as gas supply becomes available in certain districts. Each connection contract normally takes 6–12 months to complete
- In general, gas projects would generate positive free cash flow after 5 years of operation

# Gas Delivery Process



**Notes:**

(1) Gas delivery using either intermediate pipelines or CNG or LNG trucks.

(2) Customers' pipelines and metres which are not owned by the Group are within the customers' premises and are not highlighted in this diagram.

# Latest Benchmark City-gate Price

Province	From 25 May 2018	From 1 April 2019	Province	From 25 May 2018	From 1 April 2019
Unit: RMB/m <sup>3</sup> (Incl. VAT)			Henan	1.89	1.87
Beijing	1.88	1.86	Hubei	1.84	1.82
Tianjin	1.88	1.86	Hunan	1.84	1.82
Hebei	1.86	1.84	Guangdong	2.06	2.04
Shanxi	1.79	1.77	Guangxi	1.89	1.87
Inner Mongolia	1.23	1.22	Hainan	1.53	1.52
Liaoning	1.86	1.84	Chongqing	1.53	1.52
Jilin	1.65	1.64	Sichuan	1.54	1.53
Heilongjiang	1.65	1.64	Guizhou	1.60	1.59
Shanghai	2.06	2.04	Yunnan	1.60	1.59
Jiangsu	2.04	2.02	Shaanxi	1.23	1.22
Zhejiang	2.05	2.03	Gansu	1.32	1.31
Anhui	1.97	1.95	Ningxia	1.40	1.39
Jiangxi	1.84	1.82	Qinghai	1.16	1.15
Shandong	1.86	1.84	Xinjiang	1.04	1.03

Source: NDRC

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