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Institutional Challenges

Case Study on Low Carbon District Heating in Inner Mongolia Autonomous Region in the People's Republic of China

Session on Institutional Challenges

Na Won Kim, Senior Environment Specialist, East Asia Energy Division, ADB



Content

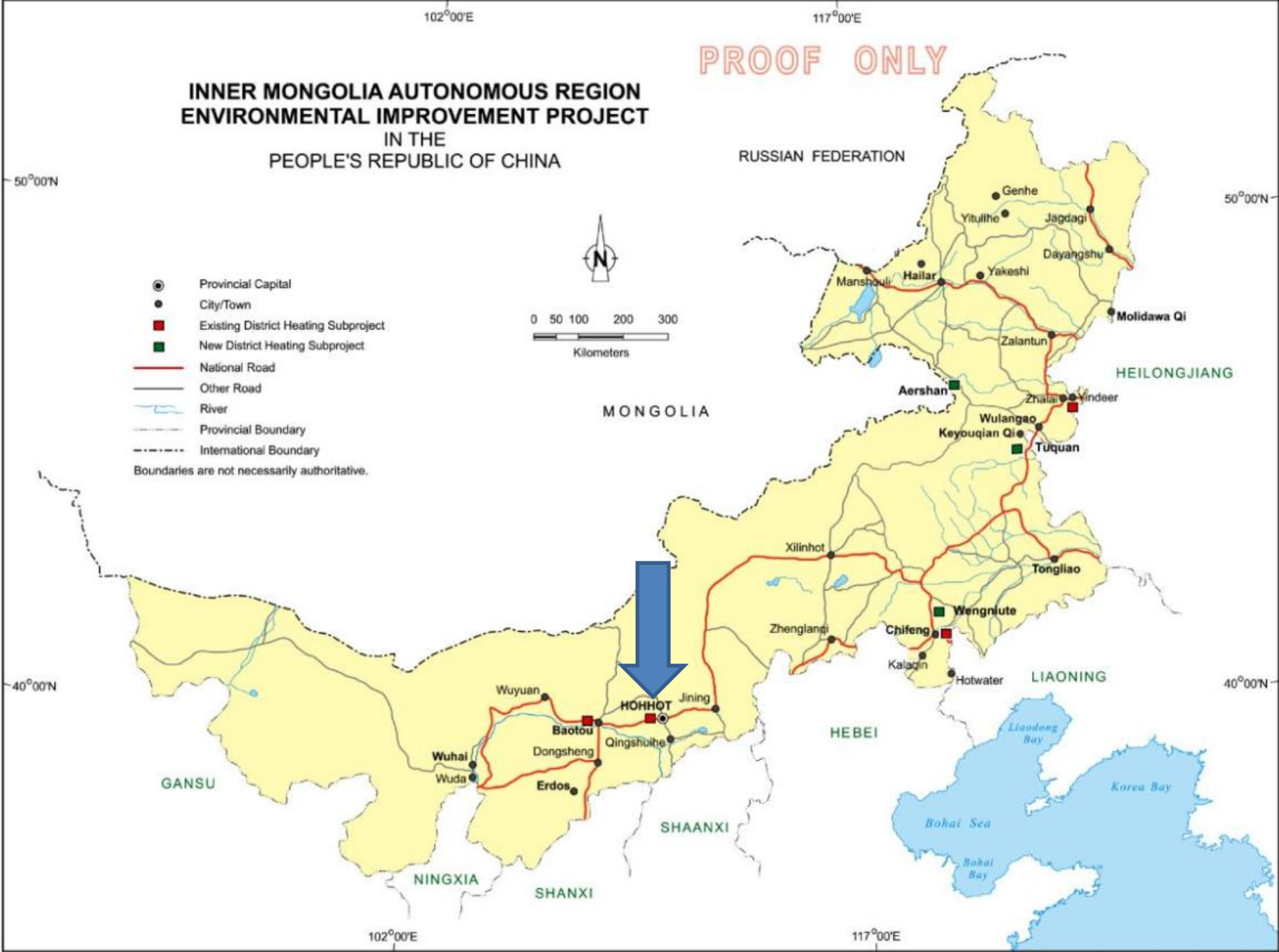
- Resources in Inner Mongolia Autonomous Region, the PRC
- Project Design Changes
- Institutional Challenges

- Energy and Gender



INNER MONGOLIA AUTONOMOUS REGION ENVIRONMENTAL IMPROVEMENT PROJECT IN THE PEOPLE'S REPUBLIC OF CHINA

PROOF ONLY



Inner Mongolia Autonomous Region- Resource rich region

- **Coal:** Top coal-producing province
(produced 1,062 million tons in 2012, accounting for 30% of the PRC's total coal production)
- **Natural gas:** Estimated at 834.4 billion cubic meters
(19% of the total natural gas reserves of the PRC)
- **Wind:** Could achieve 380 gigawatts (GW) of wind energy installed capacity, using current technologies (*The PRC national wind power information center*). Total wind installed capacity in IMAR is 18 GW (2012), and plan to reach 50 GW by 2020. High curtailment around 20%.

District Heating Project in Hohhot, IMAR

- Provide heating to cover 30 million m² in East and North East of Hohhot, IMAR
- In IMAR, almost 100% heating is from coal
- New idea to utilize wind power in heating
Night time in Winter...
 - strong wind
 - low power demand
 - peak demand for heating.
- New business model utilizing wind power in heating.
 - Triple win-win-win



Low Carbon District Heating Project in Hohhot in IMAR (project design change)

Initial proposal

- 25 MWt by wind
- 1585 MWt by coal boilers

Project Approval

- 50 MWt by wind
- 1560 MWt by natural gas

Scope change

- 50 MWt by wind
- 490+388 MWt by natural gas
- 444.3 MWt by waste heat from coal-based CCHP
- 50 MWt from waste to energy

1. ADB
2. Government of Hohhot
-Natural gas subsidy for residential heating

Governments of PRC & IMAR
-District company shall pay commercial gas price.

Framework for Institutional Challenges

- Institutions:
 - regulative (laws and regulations),
 - normative (work norms, habits), and
 - cognitive (Beliefs and values)
- To put things in action,
 - motivation;
 - knowledge; and
 - Power, resources

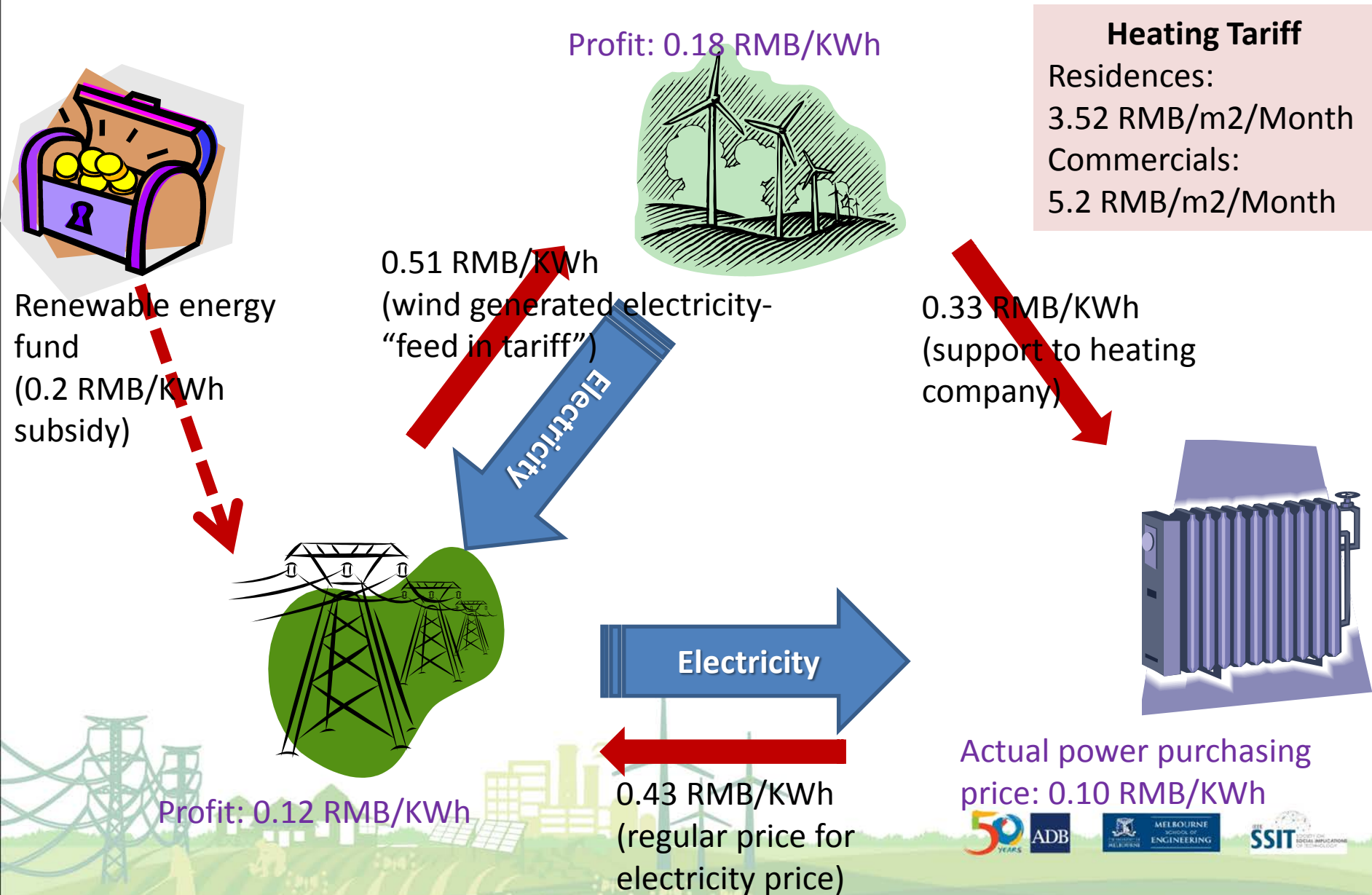


Institutional Challenges (1)

<Initial Proposal>

- **Motivation** was induced by possibility of ADB fund
- Change in **business norms/habits** took more than 2 years
 - Consensus on the use of wind-powered boiler within heating company
 - Three party agreement to be reached among heating company, grid company, and wind farm

New Business model



Institutional Challenges (2)

<Coal to Gas; Wind expansion>

- *(Heating company)* **Motivation** was induced mainly by local government policies
 - In core urban area, no new coal boilers are not allowed
 - Natural gas subsidy for residential heating
 - ADB
- *(Wind farm and Grid company)* Ongoing issue to reach another three party agreement on additional wind power
- *(Heating company)* Still prevailing belief and preference on coal-based heating

Institutional Challenges (3)

<Change to current scope>

- *(Heating company)* **De-motivated** on clean energy use by **policy incoherence**
 - Promotion of wind-to-heat projects
 - Natural gas subsidy for residential heating
 - Natural gas price indicating that heating company needs to pay higher gas price (for commercial use)
- ADB, experts, and heating company **worked together** to find solutions
 - Heating network integration
 - Boiler optimization
 - Long pipeline to get waste (?) heat from coal-based CCHP
 - Additional 50MW waste-to-energy component



What are the obstacles to de-carbonize energy systems in IMAR?

Coal price

Gas price

Area based heating tariff

Lack of right incentive

Incoherent policy

No heat metering

Controlled energy markets

Heating is Free!!!

Strong coal lobby

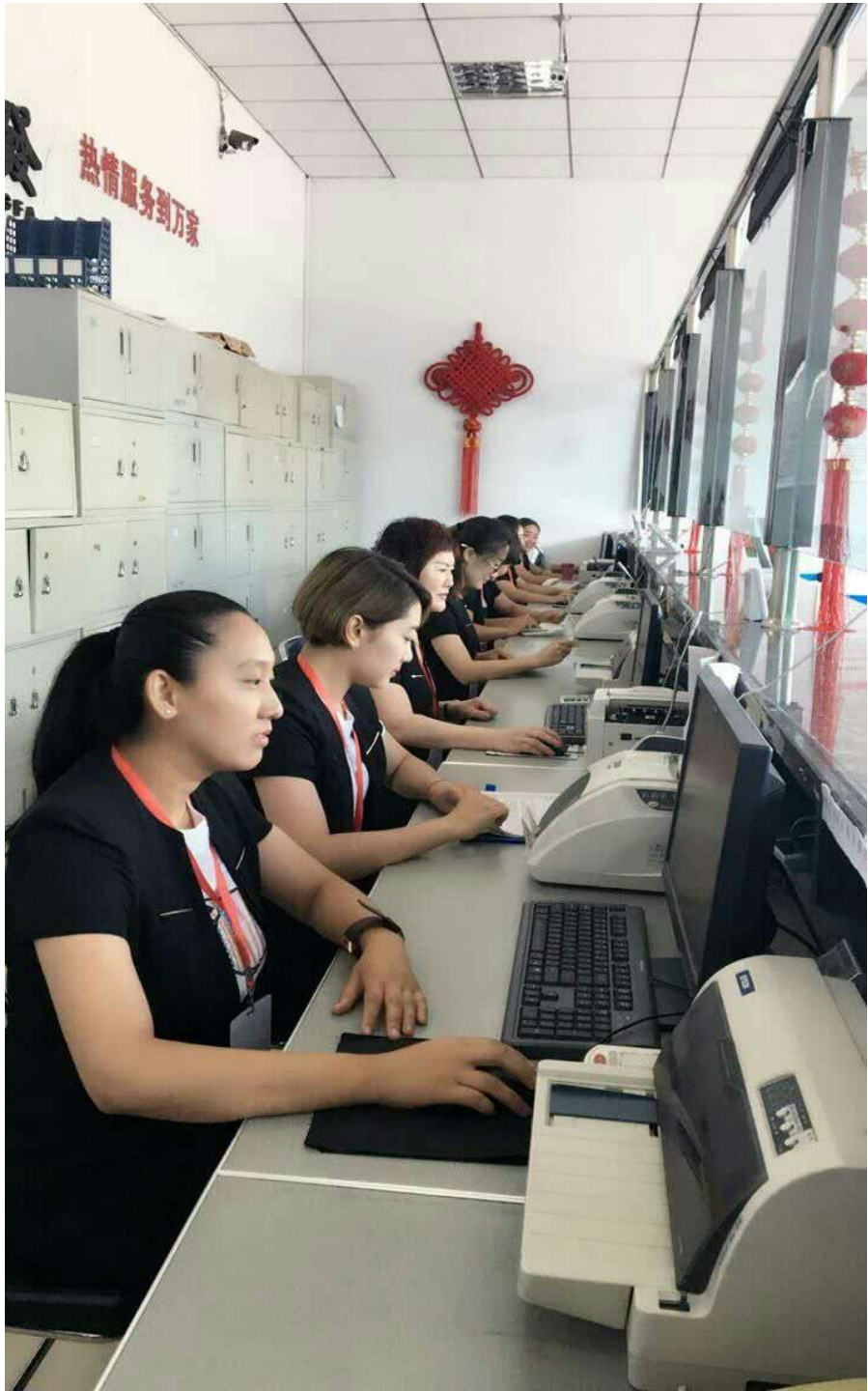


Energy and Gender

- Different dynamics in East Asia
- The project company in Hohhot, IMAR (966 female out of 2008 employees, 400 female staff working on heating efficiency and customer relations)

*“The benefits using female force in heating service quality improvement and efficient heat use are that the character of female is **gentler and kinder than male**, which could build **more trust and closer relations** with the customers. Thus, the **business can be conducted more smoothly**. And females are **more patient and careful**, which could help with providing better service and improving efficient heat use.”*







城发
用热常识
HEATING KNOWLEDGE
PRESENTATION



Energy and Gender

- Room for further improvement is in the area of “Demand-side management”
- Enhancing multi-disciplinary education programs targeting female
(*Multi-energy end uses*)

