



贵州省环境保护国际合作中心
Guizhou International Cooperation Centre
for Environmental Protection

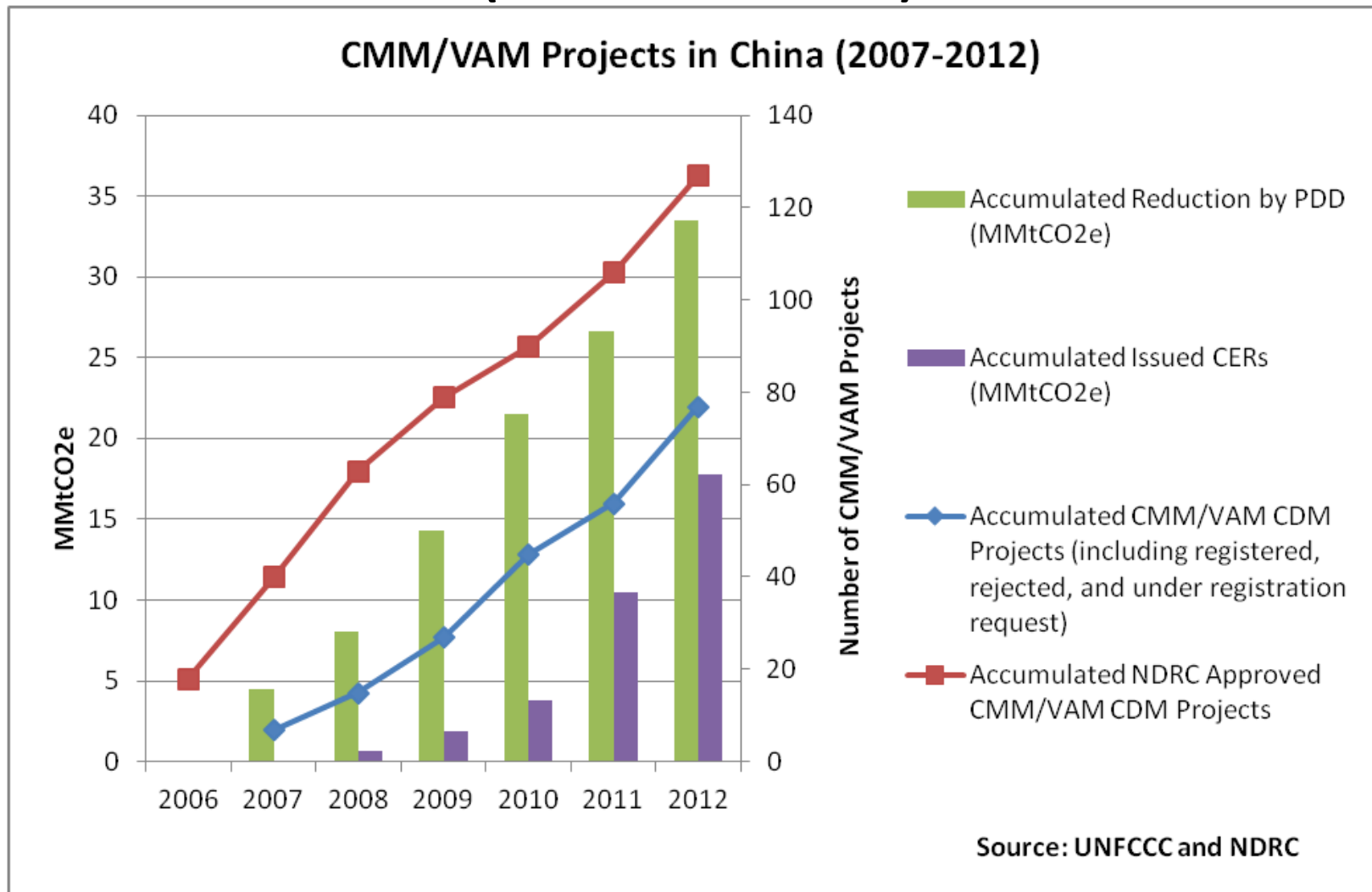
Business Models for CMM Utilization after the Kyoto Protocol

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Success during Kyoto Protocol Period (2006-2012)



What Contributed to the Success

- Technology development
 - Low concentration CMM power generation
 - VAM destruction or utilization
- Policy and regulation changes
 - Government pressure on emission reduction
 - Other incentives: subsidies, tax credit etc.
- Carbon credit incentive

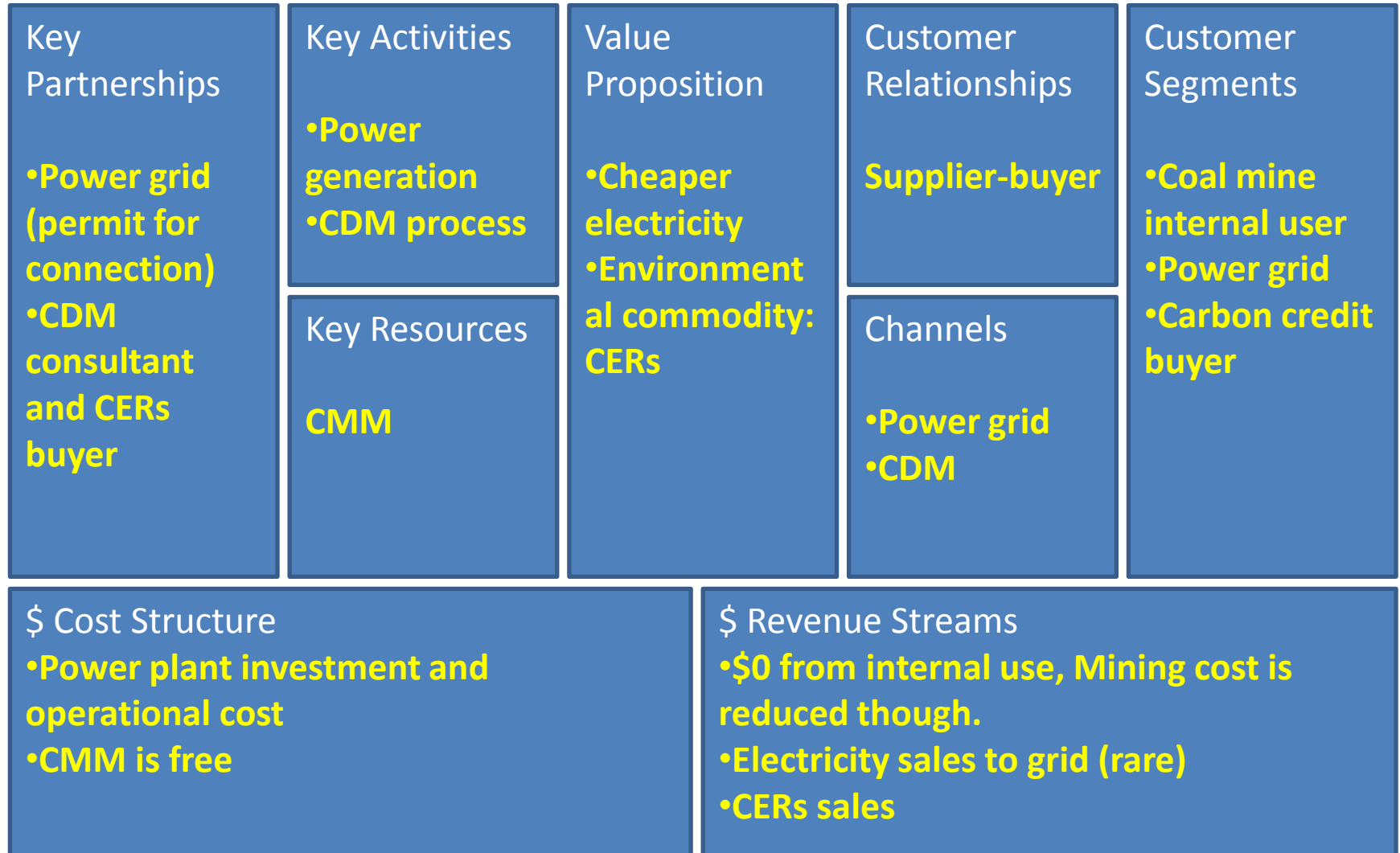
Business without Carbon Credit

- What has been observed?
 - 127 NDRC approved CMM/VAM utilization projects, only 29 got CERs issuance.
 - Unknown number of projects did not even go through NDRC and CDM.
 - CMM gas engine companies continue to sell more units.
 - Several CMM to natural gas projects are under development without considering CDM.
- What does it mean?
 - Most CMM utilization projects can survive without carbon credit.

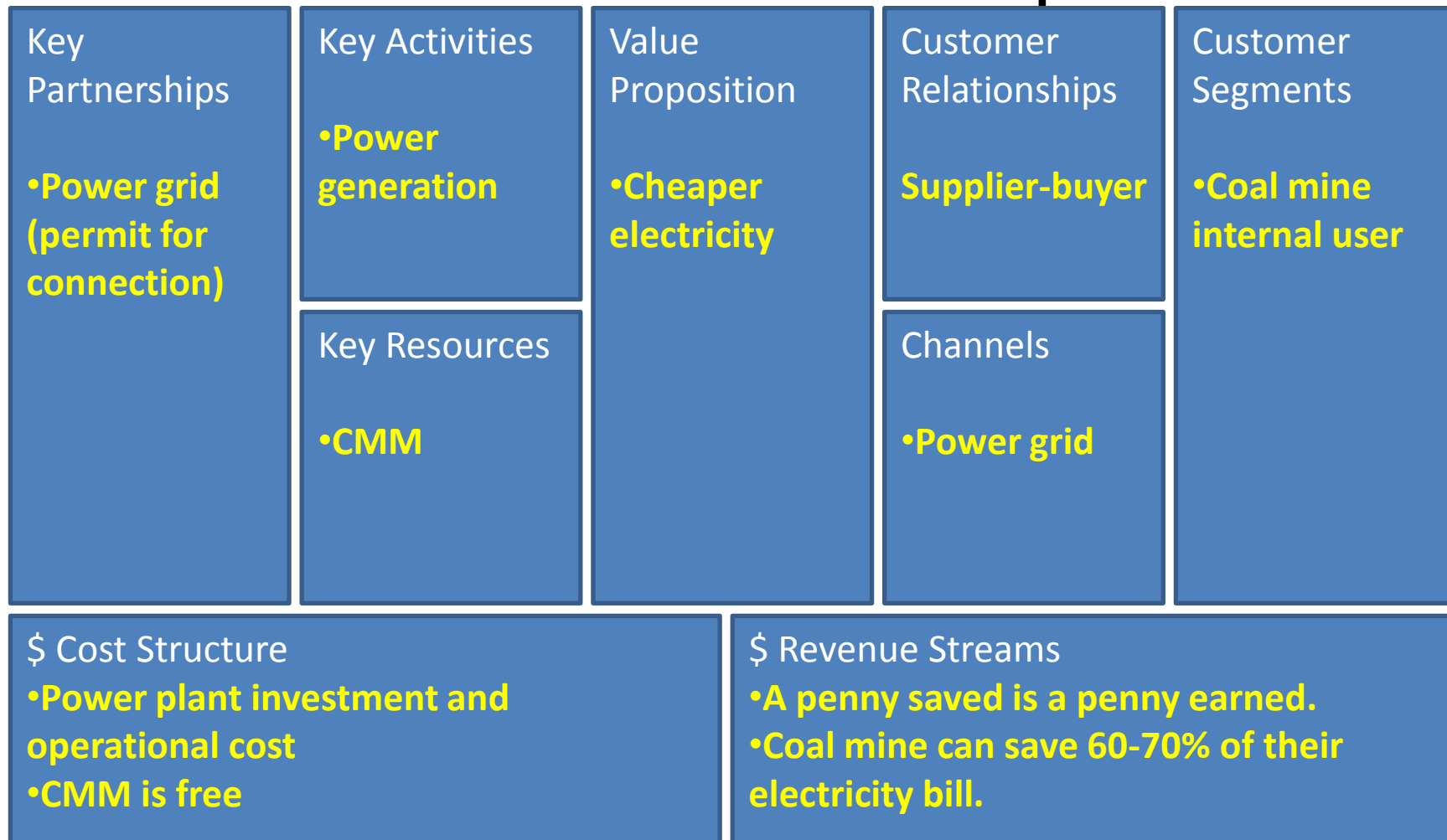
Business Model Matters



Previous Success Analysis: CMM to Power as an Example

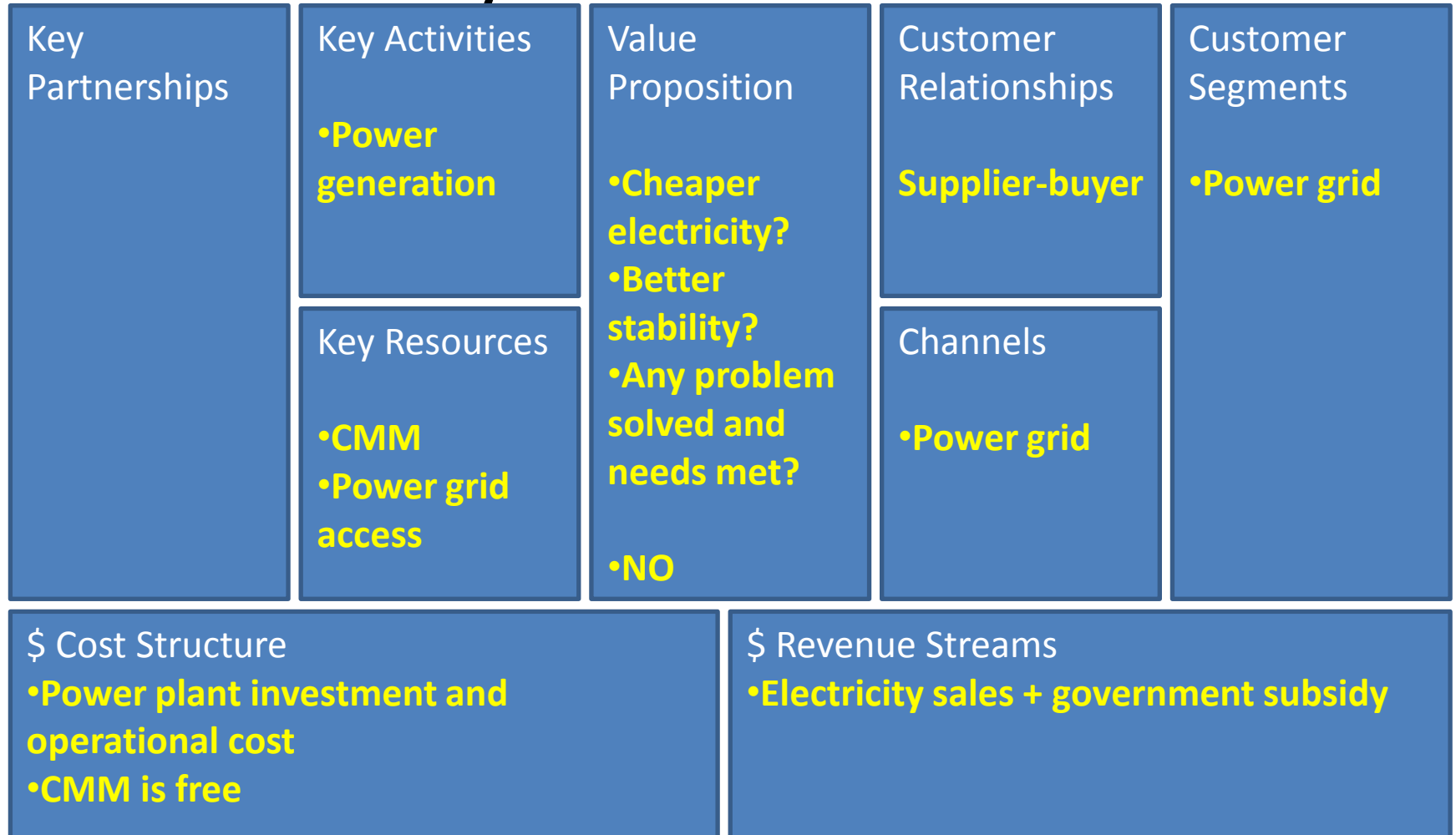


The Core of Success: CMM to Power Example



CMM to power for coal mine internal use is the corner stone of success.

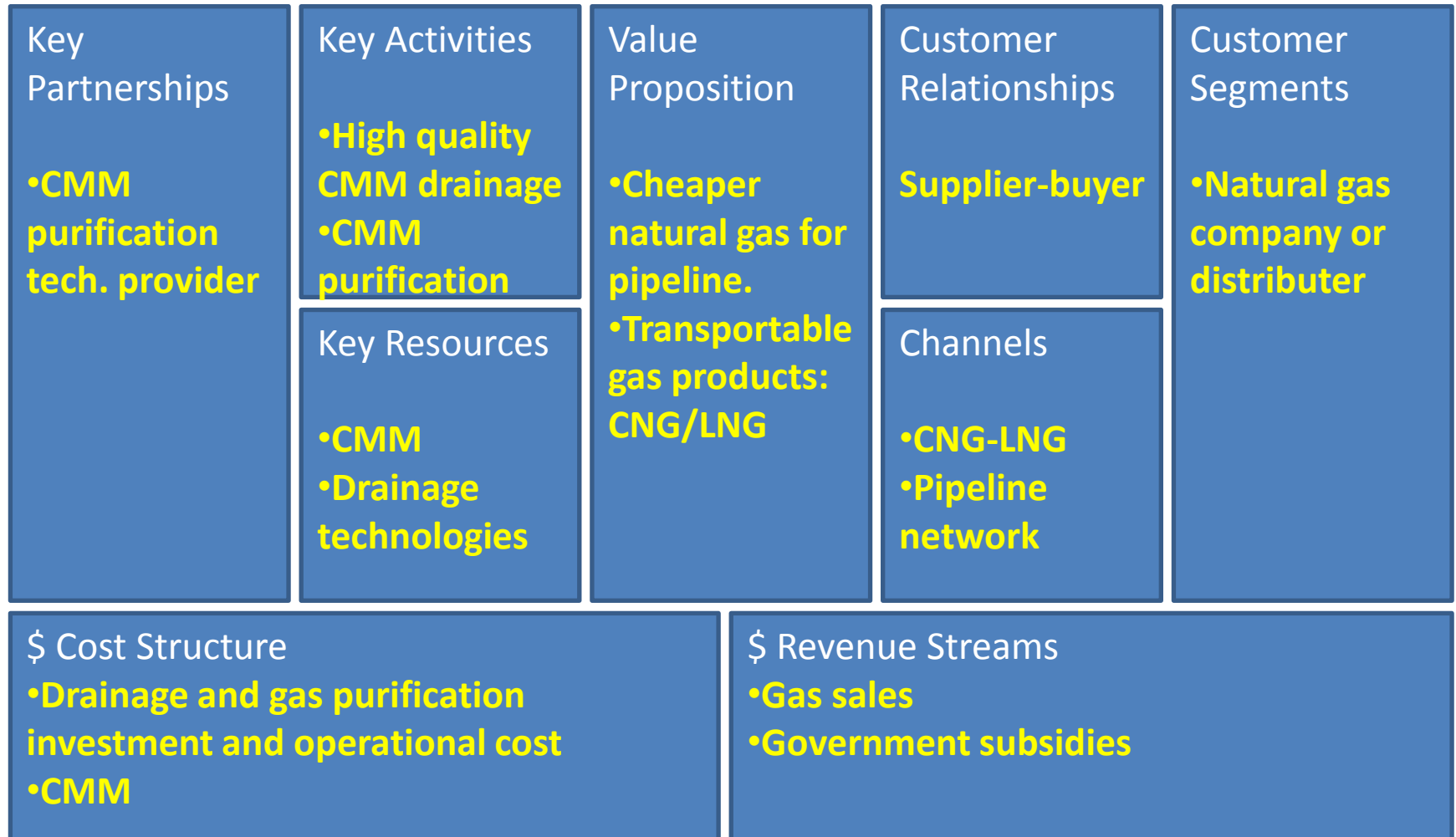
CMM Power to Grid: Why it did not work



Coal mine does not create any value for the only customer: power grid.

BUSINESS MODELS POST KYOTO PROTOCOL

Model 1: CMM-to-Gas Markets



Why CMM-to-Gas Model Will Work?

- Transportable and cheaper CMM-based natural gas creates value for its customers, thus creates value for coal mines.
- Gas markets are much more open than the power market.
- Infrastructure (pipeline network) is improving rapidly and the market keeps growing .
- CMM reaches its maximum value as natural gas: this model is financially self sustaining.

Zhongliangshan: A Great Example

- Coal production: 500,000 t/a
- CMM production: 50 million m³/a
- CMM supplies more than 40,000 households and commercial users
- CMM sales becomes significant revenue source for coal mine

Zhongliangshan slogan: “Mining coal preserves our rice bowls, pumping gas makes us well-off”.

CMM-to-Gas Market Model: Barriers and Recommendations

- CMM quality and quantity need to be improved.
- Gas purification technology should focus on CMM above 30%.

Model 2: CMM-to-Power (Internal Use)

- CMM to power for internal use model will continue to succeed in China.
 - There is not any barrier for this model.
 - Low concentration CMM power generation has become mainstream in China.
 - This model does not encourage high quality CMM drainage practice and can only utilize limited amount of available CMM.

Model 3: CMM Power to Grid

- How to create value for power grid in order to get the access:
 - Cheaper electricity seems to be the only choice.
 - Coal mines need to be ready to share profit with the power grid.
 - Grid related companies are positioned to become CMM-to-power project developer.

Model 3: CMM Power to Grid

- What can government do:
 - Subsidy of 0.25 RMB/KWh goes straight to the CMM power plant owner instead of going through the grid.
 - Electricity sales price shall be negotiated between the power plant and the grid, leaving profit margin for the grid company.

Summary

- CMM-to-gas markets model shows great potential for post-Kyoto time.
- CMM to power for coal mine internal use will continue to be the core of CMM utilization in China.
- CMM based power to grid is possible, but changes need to happen.

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Thank You!

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