

---

*China/Canada CO2 ECBM Project  
(Qinshui Basin)*

*For Consideration for CSLF  
Recognition*

**Alberta Research Council (ARC) Inc.**

Edmonton, Alberta Canada

# China ECBM Project



**Canadian International  
Development Agency  
(CIDA)**

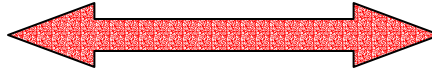
**Ministry of Commerce  
(MOFCOM)**

**Canadian Climate  
Change Development  
Fund (CCCDF)  
(CA \$ 5 million)**

**China United Coalbed  
Methane Corporation  
Ltd. (CUCBM)  
(CA \$ 5 million)**

**3.5 - year CA \$ 10 million  
Project (Started March 02)**

# Participants



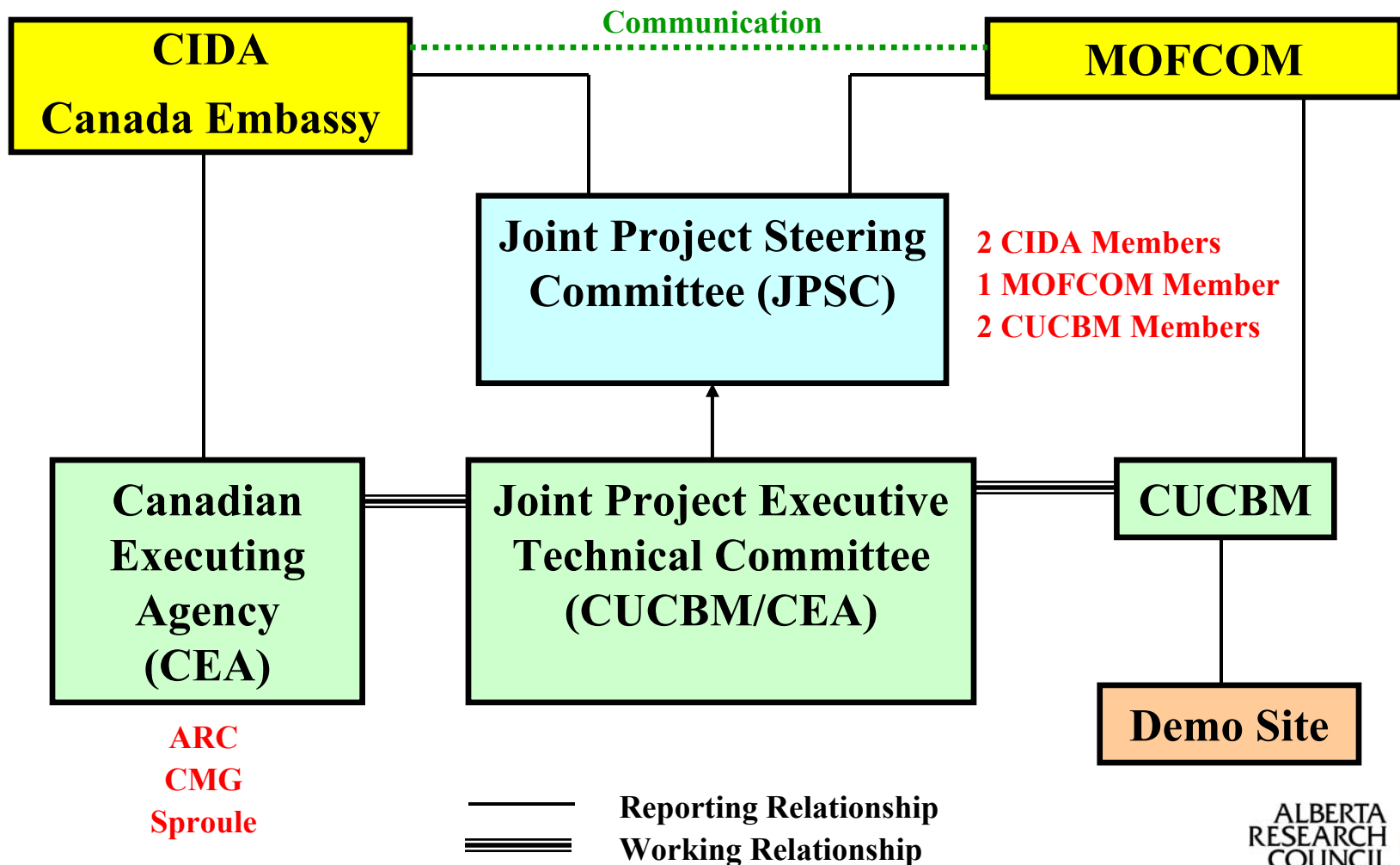
## CIDA

### Canadian Consortium:

- **Alberta Research Council (ARC)**
- **Sproule International Ltd.**
- **Computer Modelling Group (CMG)**
- **SNC-Lavalin Inc.**
- **Computalog**
- **CalFrac Well Services**
- **Porteous Engineering**

- **China United Coalbed Methane Corporation Ltd. (CUCBM)**

# Project Organization and Management Structure



---

## *Major Tasks*

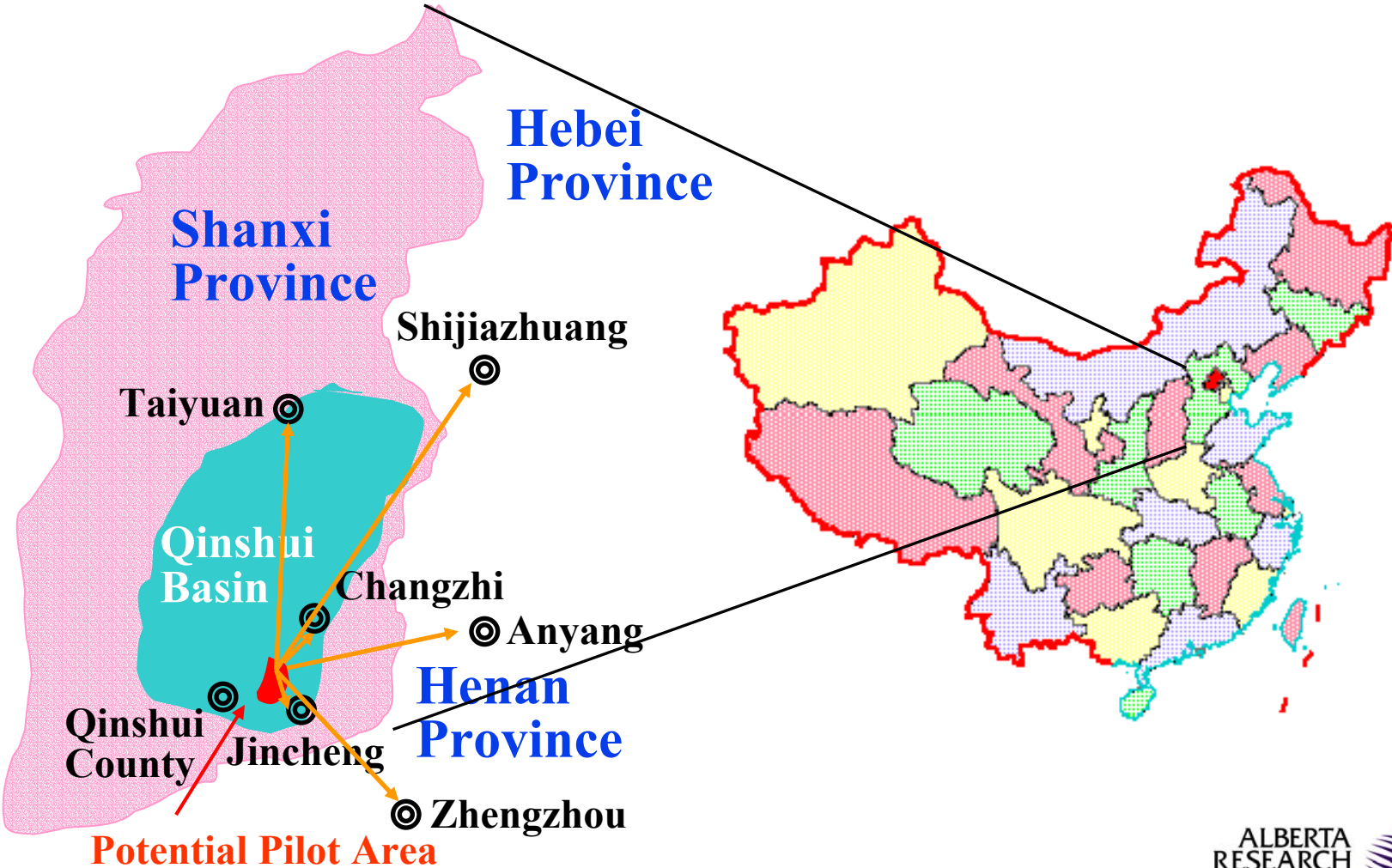
- Potential pilot sites selection
- Ranking of selected 3 pilot sites
- Design procedures to evaluate CBM reservoir properties
- Carry out a single well micro-pilot field test at the best suitable site
  - Selection of existing wells or drilling new wells
  - Up to three micro-pilot tests will be performed if first two tests do not show commercial potential

---

## *Project Progress*

- Inception meeting held in Beijing, March 2002
- Designed and implemented two years training plan
- Six potential sites were evaluated
- Three sites were visited August 2002
- **Qinshui Basin** was selected as the top site and will be the site for the first micro-pilot test

# Demonstration Site Location



# *Coal Characteristics*

- Qinshui Basin: 24,000 km<sup>2</sup>
  - CBM Resource: 5.5 trillion sm<sup>3</sup>
- Primary CBM recovery performance in South Qinshui Basin (CUCBM owned 20+ wells)
  - Peak rate: 5,000 – 16,000 sm<sup>3</sup>/d
- High ranked semi-Anthracite and Anthracite coal
  - Vitrinite reflectance: 2.7 – 4%



# *Project Progress*

- Well identified for CO<sub>2</sub> micro-pilot test, July 2003
- Downhole gauges installed to measure reservoir pressure & temperature during micro-pilot, Oct. 2003
- Well put on primary production to establish baseline information - Gas production 450m<sup>3</sup>/day and water 0.9 m<sup>3</sup>/day, Oct, 2003- Feb. 2004
- Shut-in/Buildup test for permeability (1 to 3 md)
- Installation of gas chromatographic equipment for on-line gas compositional analysis, Nov 2003
- Procurement of CO<sub>2</sub> pump to inject CO<sub>2</sub>, Feb 2004
- CO<sub>2</sub> source secured— Zhongyuan Oilfield located in Henan province, Jan 2004

# *CO<sub>2</sub> Injection Strategy*

- Inject 200 tonnes into reservoir over a 12 day period.
- Injection rate to be maintained below reservoir fracture pressure
- Estimate average injection rate of 30L/min over 8-10 hr period



Zhongyuan Oilfield CO<sub>2</sub> Truck Fleet

---

## *Completion of Field Micro-Pilot*

- CO<sub>2</sub> pumping equipment shipped to China
- Pressure test well before CO<sub>2</sub> injection
- Inject CO<sub>2</sub>
- CO<sub>2</sub> soak for 30 days
- Production for 60 days measuring gas composition, pressures and flow rates
- Well shut-in/pressure build up for final permeability estimate

---

## *Final Major Tasks*

- Micro-pilot test evaluation and numerical model calibration and fine tuning
- Large-scale pilot design for assessment of commercial production
- Training and technology transfer being conducted in Canada and China