Session 3: CHAMPIONING SCALE; RAPID CONSTRUCTION METHODOLOGIES
Addressing execution of KK Housing Project with measures that ensure quick & quality delivery; CITIC's capacity and experience in Africa.

Speaker: Wu Zhixin
Chief Expert of Building Sector &
Advisor to President of Regional Division of Africa of CITIC Construction

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BACKGROUND CITIC Group, CITIC Construction Ltd.

- **CITIC Group** was initiated by Mr. Deng Xiaoping, and founded by Rong Yiren, former Vice President of China in 1979.
  - CITIC Group was listed in HK on April 16th, 2014.
  - It is a multinational conglomerate boasting a broad range of operations well balanced between financial and non-financial sectors, covering about 56 industries.
  - By the end of 2013, the total asset was 700 bn USD, annual revenue 63 bn USD, net profit 6.3 bn USD, ranked 174th among Fortune 500.

- **CITIC Construction** is a tier-one wholly-owned subsidiary of CITIC Group.
  - Focuses on civil Engineering, infrastructure, industrial, agriculture, mining and energy sectors.
  - Operates in 16 countries in Africa, Latin America, Mid-Asia and East Europe with 95% of revenue gained from overseas markets.
  - Total ongoing contract value is 40 billion USD, ranks 42 among ENR Top 250 international contractors.
  - Strategy: Obtain contracts through pre-construction service including project financing, and boost business in related industries. Being an integrated service provider of EPC/Turn key-Property
Africa Regional Division is one of regional divisions of CITIC Construction Ltd. in global business.

- Established on 9th December, 2013, formerly known as Regional division of Southern Africa.
- Business covering some African countries including Angola, Kenya, Cameroon, Ethiopia, Nigeria, South Africa, Uganda, Rwanda, etc. with Angola as its major business focus.
- 6 Main Businesses: Housing & infrastructure construction, Agriculture industrialization, Mineral & geological survey, Resources & energy and Urban planning.
- Contracts’ value under execution: 10.6 billion US dollars; Contracts’ value to be signed in the near future: 5 billion US dollars approximately.
- Construction of KK Housing Project and five RED Projects in Angola, with a total number of apartments of 54000.
- Partnership with 40 Chinese and foreign companies of large and medium size, forming a “joint fleet”.

Purpose
- Release severe pressure on housing demand in Angola, improve urban infrastructure, and then boost related industries contributing overall economy development of Angola.

Challenge
- In Angola, almost everything needed to be rebuilt after 27 years civil war ended in 2002.
- With the population of 18 million, the living condition was very poor and housing was in urgent need.
- Short of Living goods, building materials & equipments as well as construction machinery.
- Short of Skilled labor.

Importance
- K.K. Project is a key of Angola National Reconstruction Program.
EPC+F “turn key” Contract of Kilamba Kiaxi (KK) new satellite town Project was awarded to CITIC Construction Ltd. on November 14, 2007.

- Total Contract Value: USD 4.2 billions; Construction Duration: 54 months.
- Covers 8.8 square kilometers of land area and 3.31 million m² floor area
Project Brief

- Project includes:
  - 20,002 units of apartments (710 buildings)
  - 24 kindergartens
  - 9 primary school
  - 8 secondary school,
  - 246 ground floor shops
  - 3 parks
  - 2 churches
  - 2 60kv/15kv power substations (240MVA)
  - 1 water purifying plant (40000t/d)
  - 1 sewage treatment plant (35000t/d)
  - All the municipal/ community roads
  - Power distribution system
  - Drainage/sewage pipeline
  - Telecommunication utilities
  - Traffic signal systems

Project Brief

- Roads

- Kindergartens
Project Brief

✓ Primary school

✓ Secondary school

Project Brief

✓ Power substation

✓ Water purifying plant
Project Brief

✓ Water intake

✓ Sewage treatment plant

Project Brief

✓ Lakeside Park

✓ Central landscape

✓ Living room
✓ Bed room
Solutions against Challenges

- With urban planning as forerunner, infrastructure investment, development and delivery parallel with houses simultaneously.
  - Either housing development without infrastructure or constructing infrastructure after housing development will cause investment useless or backlog. Phase I of KK Housing Project sets a successful example of “Urban planning as forerunner, simultaneous investment and delivery for infrastructure and houses”.

Project financing
- Assist to secure the oil backed pre-export finance from Chinese banks.
- Obtain funding based on confirmed future oil trade contracts.

Local Labor Promotion
- Accumulated 60 thousand workers participating KK Project construction during 4 years and among them 60% are local workers.
- Trained thousands of local workers in filed based on master-apprentice training model.
- Encouraged working enthusiasm of local workers through combination of regulatory education and economic incentives.
- CITIC established CITIC Century (Angola) Occupational Training School fully free of charge.
  - Accept young people between 16-25 years old from poverty-stricken families.
  - One year full time boarding school.
  - 500 graduates per year.
Proper adoption of design codes and standards

Adopt suitable design codes and standards appropriate to the local conditions (level of local economic development, obtainable construction materials, hydrological and geological conditions), taking the balance between safety, comfort and budget into account.

For example, to cope with the collapsible subsoil in KK site, after careful comparison between pile foundation recommended by British Standard and strip/raft foundation on consolidated cushion recommended by Chinese Code, we finally adopted consolidated sand cushion method with combination of strengthening the superstructure and controlling of ground water. It’s proved that under the premises of structure safety, this method greatly reduced the cost and gained significant economic and social benefits.

Proper adoption of building system & construction method

- Adopt the building system of masonry & RC frame structure that absorbs more labor force;
- Adopt mechanized or semi-mechanized construction method that is easier to learn for local workers.
Solutions against Challenges

- **Local production of construction materials + Whole Course Logistics System for importation**
  - Cost saving by establishing 111 local building material factories
    - brick factory, sand & stone quarries, paint factory
    - Aluminum door & window factory, RC pipe factory, precast factory
    - concrete batching plant, pitchblende station, nursery garden, farm etc.
  - Punctual & safe delivery of imported materials by “Whole-course Logistics System”
    - Established several logistics center
    - Obtain priority of vessel berthing
    - Seamless link up between ocean shipment and inland transportation system
    - Integration of purchase, goods collection, customs clearance and materials management

Solutions against Challenges

- **Construction machinery procurement & management in large scale**
  - Centralized purchase of machinery helped the controlling of quality & cost.
  - Centralized spare parts inventory and garage ensures prompt repair and maintenance.

- **Strict quality control**
  - Monitoring and confirming material & workmanship quality by testing.
    - Invested and established 8 engineering laboratories.
    - Entrust national-level building material testing center to monitor the quality of imported materials.
  - Established a sole duty Quality Control Team and a set bilingual check lists for quality inspection.
  - The project was awarded “Lu Ban Award”, the highest quality prize for construction projects in China and was nominated by Angola Government as the sole candidate of Lee Kuang Yew World City Prize.
Positive Economic & Social Effects

- **Drive related industries & economy growth in Angola through housing development**
  - The project filled in the blank of at least ten kinds of building materials in Angolan industry and introduced more than 100 kinds of exotic flowers and trees.
  - Drove the development of industries such as finance, commerce, trade, furniture, household appliances and property management, which amounted to billions of USD.
  - Created more than 100 thousand jobs directly and indirectly.

- **An African housing project with complete functions, consummate facilities, supporting services, beautiful environment to the resident’s satisfactory**

Thank you!