

Global Sourcing of Capital Equipment from China

- Extracting Value and Managing the Risks

www.thebeijingaxis.com

SmartProcurement 2012

Midrand, 13 November 2012

Kobus van der Wath

Founder and Group Managing Director
 The Beijing Axis
 kobus@thebeijingaxis.com

Disclaimer

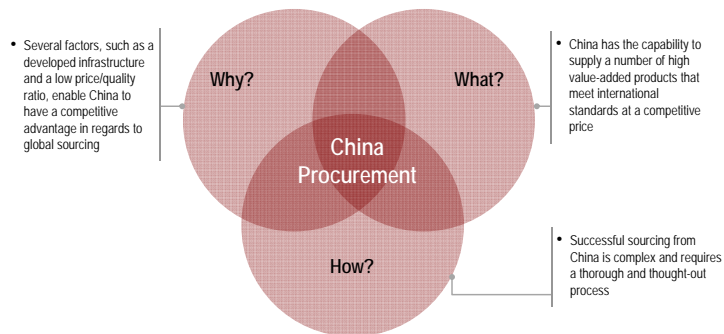
This document is issued by The Beijing Axis. While all reasonable care has been taken in the preparation of this document, no responsibility or liability is accepted for errors or omissions of fact or for any opinions expressed herein. Opinions, projections and estimates are subject to change without notice. This document is for information purposes only, and solely for private circulation. The information contained here has been compiled from sources believed to be reliable. While every effort has been made to ensure that the information is correct and that the views are accurate, The Beijing Axis cannot be held responsible for any loss, irrespective of how it may arise. In addition, this document does not constitute any offer, recommendation or solicitation to any person to enter into any transaction or to adopt any investment strategy, nor does it constitute any prediction of likely future movements or events in any form. Some investments discussed here may not be suitable for all investors. Past performance is not necessarily indicative of future performance; the value, price or income from investments may fall as well as rise. The Beijing Axis, and/or a connected company may have a position in any of the investments mentioned in this document. All concerned are advised to form their own independent judgement with respect to any matter contained in this document.

The Beijing Axis - China-focused International Advisory and Procurement



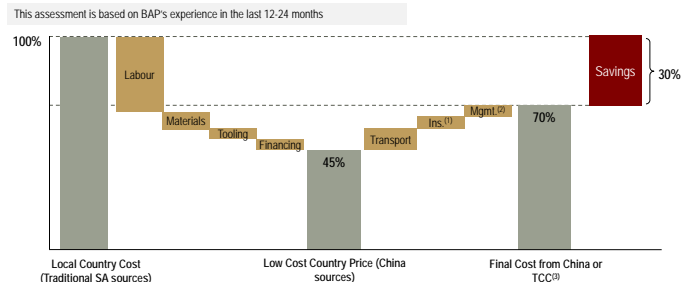
- Founded in 2002; has successfully worked with many international and Chinese MNCs
- Operates in four synergistic cross-border China businesses
- Provides services across various sectors, with a core focus on the MINING, RESOURCES, INDUSTRIAL, ENGINEERING and INFRASTRUCTURE sectors
- Provides solutions to international firms as they act in unfamiliar territory in China/Asia
- Provides solutions to Chinese/Asian firms as they venture out and 'go global'

At the highest level, China is an attractive sourcing destination for various products. Nevertheless, three key questions require a thorough understanding – Why? What? and How?



There is a clear potential to reduce procurement costs when sourcing from China

China Sourcing – Value Proposition & Anticipated Savings (%)



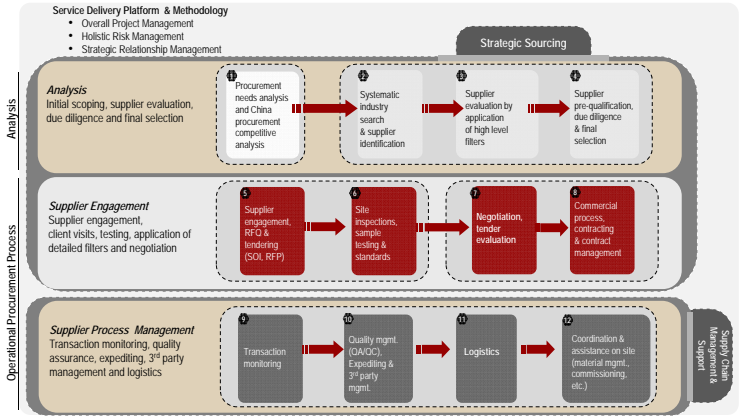
(1) Insurance, including duties and other charges
 (2) Management, including risk management, consultants, QA/QC, trips, time and related 3rd parties expenses
 (3) TCC = Total Cost to the Company

Based on our experience, several products and categories can be competitively sourced from China in a systematic manner

Categories	Selected Products ¹	Price ²			Quality ²			Comments
		VC	C	NC	H	M	L	
1. Material Handling Equipment	Conveyors, conveyor parts & accessories Train loading and unloading systems Cranes and hoists Mining trucks and vehicles	■	■	■	■	■	■	China's strength lies in the mid-low end of market Int'l quality standards, lead times may vary Competitive prices and international standards JV with world's largest mining truck supplier
2. Ore Dressing Machinery	Crushers and spares Grinding mills and spares Flotation cells and spares Magnetic separators	■	■	■	■	■	■	Prices almost 30% less than European prices Very competitive prices and int'l quality standards Largest producer has 70% domestic market share Comparable to international standards
3. Electrical Equipment	Electrical wires & cables Electrical equipment and components Generator sets Motors	■	■	■	■	■	■	High quality at a competitive price Comparable to international standards Competitive price and int'l standards China's strength lies in the mid-low end of market
4. Mechanical Equipment	Blowers Boilers Compressors and air systems Valves	■	■	■	■	■	■	Comparable to international standards Competitive prices and high quality standards Competitive prices and int'l standards Valve producers occupy lower end of the market
5. Steel Vessels and Structures	Agitators Furnaces Heat exchangers Structural steelwork	■	■	■	■	■	■	Int'l standards at a competitive price Comparable to international standards Competitive price and international standards Readily available with international standards
6. Mine Consumables	Pipe fittings Chemicals Steel cable and wire/rope Safety items	■	■	■	■	■	■	No availability concerns; competitive price Comparable to international standards Similar to European and American standards Low-tech consumables with a large local market

¹Note: Only serves as a broad outline of products to source and should not restrict the consideration of other goods. Product assessment based on TBA's experience, may change based on specs and complexity. ² Price: VC = Very Competitive, C = Competitive, NC = Not Competitive. Quality: H = High, M = Medium, L = Low
 Source: The Beijing Axis Analysis

With offices across Asia Beijing Axis Procurement has a tried and tested service delivery platform & methodology for sourcing from China and Asia

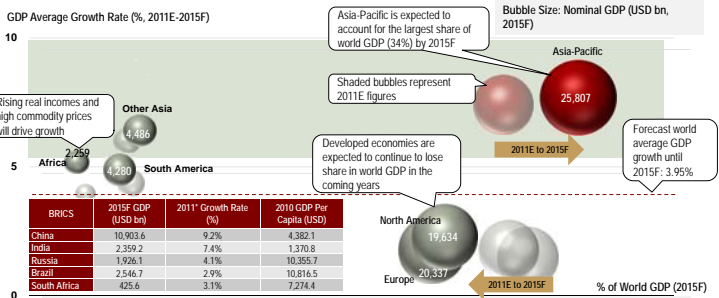


Agenda

1. Why to pursue LCC Sourcing
2. What to Procure for Capital Projects and MRO
3. How to Approach and Implement LCC Procurement in order to Deliver Value
4. Case Studies
5. Final Word

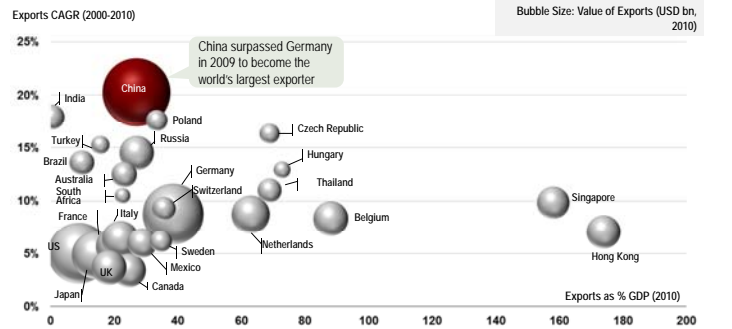
Emerging economies are outperforming the developed world in terms of economic growth. Asia is leading this transformation in the global balance

Regional GDP Comparison (USD bn, 2015F)*

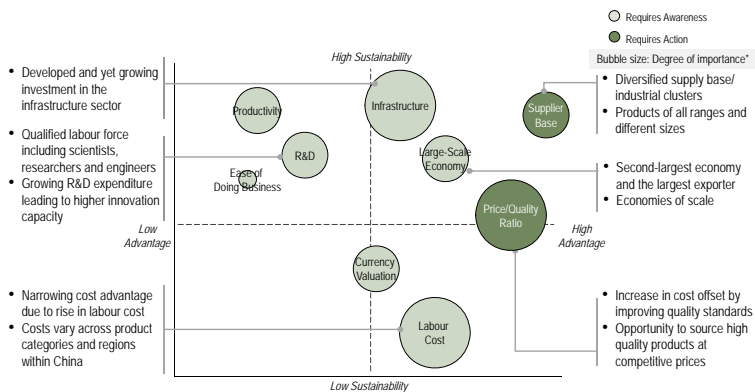


China is both the world's largest and fastest-growing exporter

World's Top 25 Exporters (USD bn, 2010)

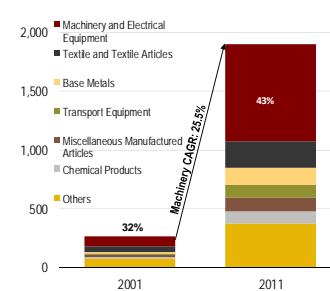


Various factors underpin China's attractiveness as a global sourcing destination

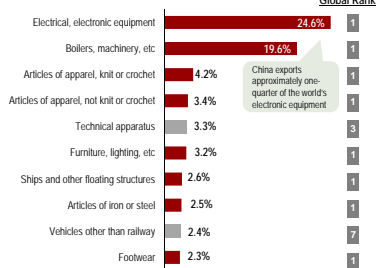


China is the leading exporter of many categories of goods, mainly electrical equipment and machinery – expect the trend to continue

Exports of Commodities Produced in China (USD bn, 2001-2011)

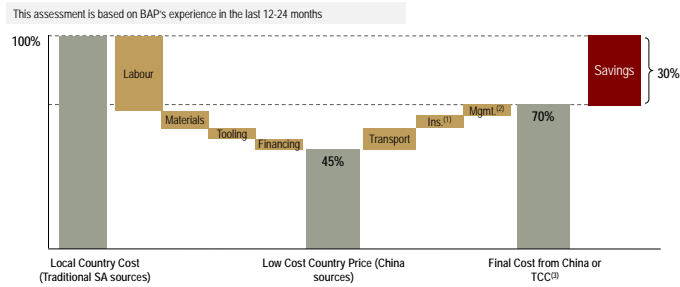


China's Top 10 Export Commodities and % Share of World's Total Exports (HS 2007 2-digits, 2010)



There is a clear potential to reduce procurement costs when sourcing from China

China Sourcing – Value Proposition & Anticipated Savings (%)



(1) Insurance, including duties and other charges
 (2) Management, including risk management, consultants, QA/QC, trips, time and related 3rd parties expenses
 (3) TCC = Total Cost to the Company

Agenda

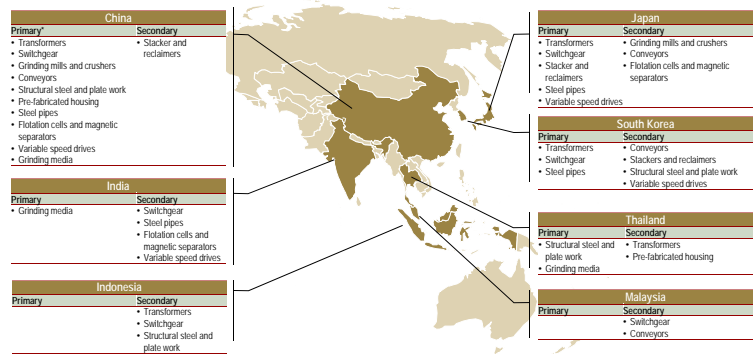
1. Why to pursue LCC Sourcing
2. What to Procure for Capital Projects and MRO
3. How to Approach and Implement LCC Procurement in order to Deliver Value
4. Case Studies
5. Final Word

Based on our experience, several products and categories can be competitively sourced from China in a systematic manner

Categories	Selected Products ¹	Price ²			Quality ²			Comments
		VC	C	NC	H	M	L	
1. Material Handling Equipment	• Conveyors, conveyor parts & accessories • Train loading and unloading systems • Cranes and hoists • Mining trucks and vehicles	VC	C	NC	H	M	L	• China's strength lies in the mid-low end of market • Int'l quality standards, lead times may vary • Competitive prices and international standards • JV with world's largest mining truck supplier
2. Ore Dressing Machinery	• Crushers and spares • Grinding mills and spares • Flotation cells and spares • Magnetic separators	VC	C	NC	H	M	L	• Prices almost 30% less than European prices • Very competitive prices and int'l quality standards • Largest producer has 70% domestic market share • Comparable to international standards
3. Electrical Equipment	• Electrical wires & cables • Electrical equipment and components • Generator sets • Motors	VC	C	NC	H	M	L	• High quality at a competitive price • Comparable to international standards • Competitive price and int'l standards • China's strength lies in the mid-low end of market
4. Mechanical Equipment	• Blowers • Boilers • Compressors and air systems • Valves	VC	C	NC	H	M	L	• Comparable to international standards • Competitive prices and high quality standards • Competitive prices and int'l standards • Valve producers occupy lower end of the market
5. Steel Vessels and Structures	• Agitators • Furnaces • Heat exchangers • Structural steelwork	VC	C	NC	H	M	L	• Int'l standards at a competitive price • Comparable to international standards • Competitive price and international standards • Readily available with international standards
6. Mine Consumables	• Pipe fittings • Chemicals • Steel cable and wire rope • Safety items	VC	C	NC	H	M	L	• No availability concerns: competitive price • Comparable to international standards • Similar to European and American standards • Low-tech consumables with a large local market

*Note: 1) Only serves as a broad outline of products to source and should not restrict the consideration of other goods: Product assessment based on TBA's experience, may change based on specs and complexity; 2) Price: VC = Very Competitive, C = Competitive, NC = Not Competitive; Quality: H = High, M = Medium, L = Low
 Source: The Beijing Axis Analysis

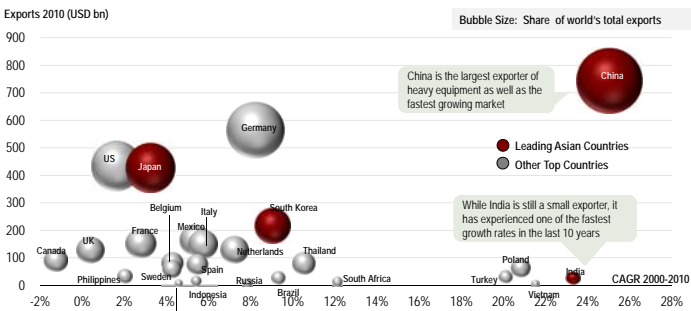
China stands out and can be targeted for most procurement packages. For other Asian countries the sourcing potential is limited to a few select packages



*Note: Primary relates to a country's sourcing potential for each procurement package
 Source: The Beijing Axis Analysis

In the last decade, China has seen the fastest export growth in heavy equipment, becoming the largest exporter in the process

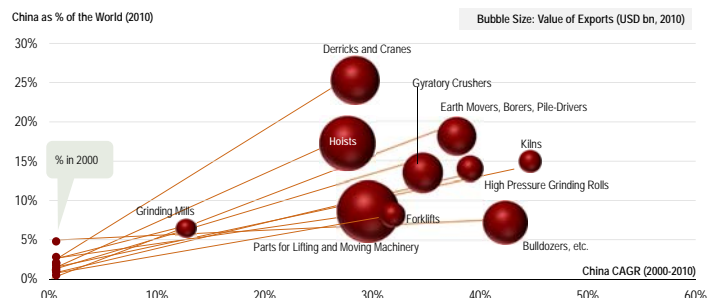
World's Major Exporters of Machinery Equipment and Transportation Equipment (USD bn, 2010)



*Note: HS Codes here include: 84 (Machinery), 85 (Electrical equipment), 86 and 87 (Vehicles)
 Source: UN Comtrade; The Beijing Axis Analysis

Kilns and high pressure grinding rolls are some of the fastest-growing items exported from China. China is progressively increasing its world export share for all the selected items

Growth and Share of Selected Heavy Equipment Exports from China (USD bn, 2000-2010)

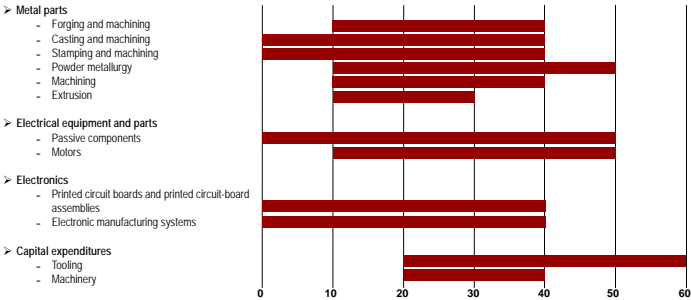


Source: UN Comtrade; The Beijing Axis Analysis

Savings are particularly substantial for heavy machinery and equipment

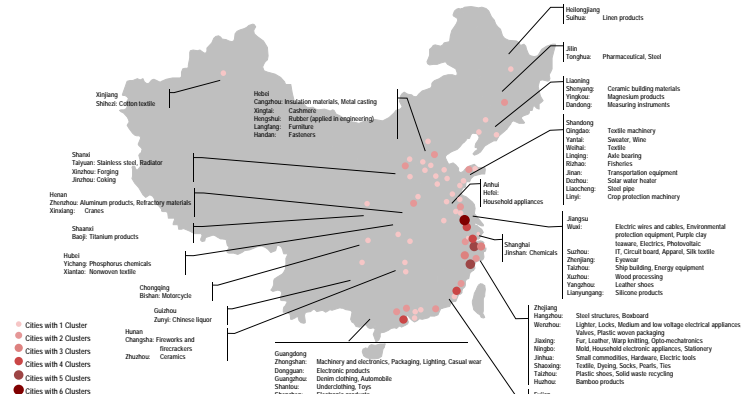
Range of Expected Savings on Products Sourced from China (%)

This assessment is based on BAP's experience in the last 12-24 months



Source: Leading China Sourcing Practices; Beijing Axis Procurement (BAP) RFO Data

The top 100 industrial clusters in China are scattered throughout the whole country



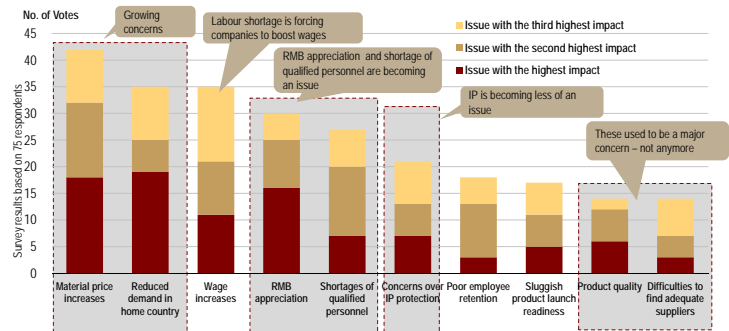
Source: Li & Fung Research Centre; The Beijing Axis Analysis

Agenda

1. Why to pursue LCC Sourcing
2. What to Procure for Capital Projects and MRO
3. How to Approach and Implement LCC Procurement in order to Deliver Value
4. Case Studies
5. Final Word

A number of new issues and trends are reshaping the procurement landscape in China - rising material and labour costs are the major concerns; quality is increasing less of a concern (but only for those buyers that lead in experience)

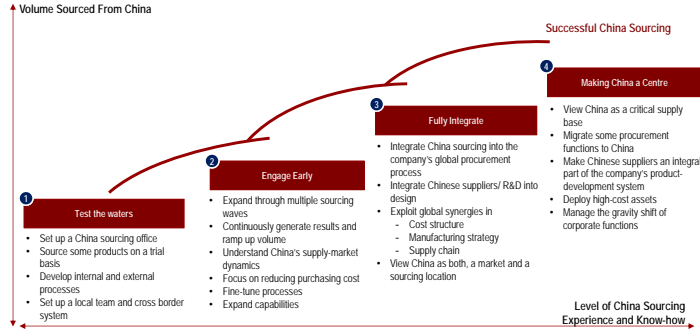
Major Issues in Terms of Impact on Foreign Companies in China (2009-2010 survey)



Source: Booz & Co. China Manufacturing Competitiveness Study; The Beijing Axis Analysis

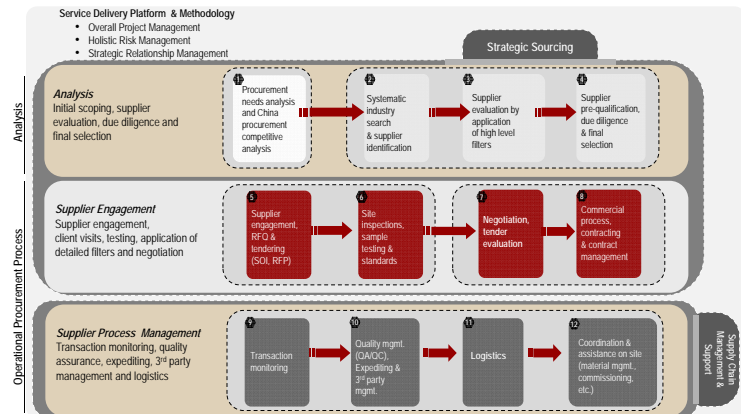
A successful China sourcing strategy starts with an initial framework that gradually becomes more complex as companies increase their China know-how and product volume

Four Stage Process for Successful China Sourcing



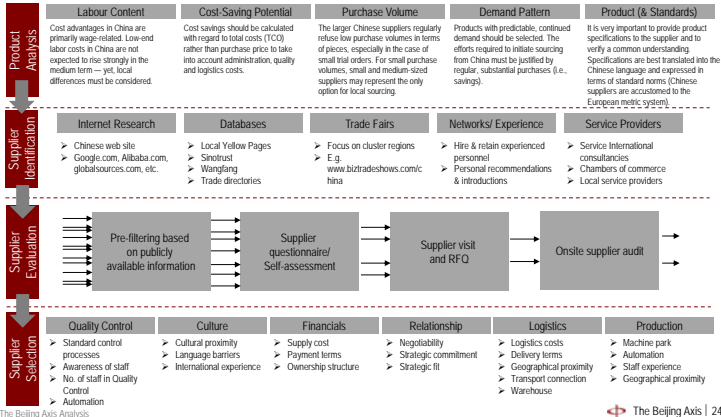
Source: BCG; The Beijing Axis Analysis

Beijing Axis Procurement has a tried and tested service delivery platform & methodology for sourcing



Source: The Beijing Axis Analysis

Identifying, evaluating and selecting Chinese suppliers requires a systematic methodology



International mining companies are using various 'models and sourcing structures' for China procurement

Various Sourcing Models in China

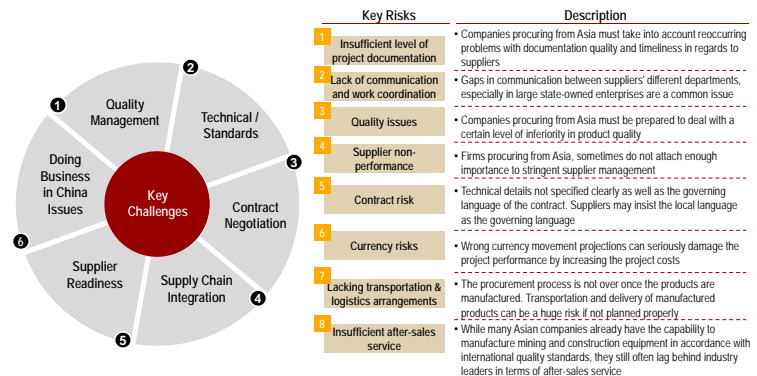
Primary and Secondary Channels	No China Sourcing	Sourcing via Agent	Fly-in-fly out (FIFO)	via a Procurement Service Provider (PSP) (1)	Office in China		
					Small	Medium	Large
• No agents	• No agents	• High use of agents	• Medium use of agents	• Light use of agents	• Very light use of agents	• Very light use of agents	• Very light use of agents
• No fly-in-fly out (FIFO)	• No fly-in-fly out (FIFO)	• Light FIFO (2)	• High FIFO	• Medium FIFO	• Medium FIFO	• Light FIFO	• Light FIFO
• No PSPs	• No PSPs	• Light use of PSPs	• Medium use of PSPs	• High use of PSPs	• High use of PSPs	• Medium use of PSPs	• Light use of PSPs
• No Office	• No Office	• No Office	• No Office	• No Office	• Small Office	• Medium Office	• Large Office
• Examples:	• Examples:	• Examples:	• Examples (2):	• Examples (2):	• Examples:	• Examples:	• Examples:

Note: (1) Also use EPCMs for projects
(2) Selected BAP clients
(3) FIFO: Fly-in-fly out

Level of Engagement and Commitment

Source: Various: The Beijing Axis Analysis | The Beijing Axis | 25

Various challenges and risks arise when sourcing from China



However, these challenges can be overcome and the risks mitigated

Critical Success Factors	Description
1. Create an internal project team	• Dedicated internal project team must be created to coordinate the process from the project owner's side and facilitate interaction with suppliers, contractors and third-party service provider
2. Gather market intelligence	• It is essential to acquire sufficient and comprehensive market intelligence that can influence the country's export competitiveness
3. Establish local presence (directly or indirectly)	• In order to adequately select and efficiently supervise suppliers, it is critical to have a presence in a sourcing country
4. Conduct proper supplier due diligence	• It is critical to perform a meticulous due diligence on a supplier before signing a contract and placing an order
5. Provide and demand as many details as possible	• During the contract stage and throughout the entire manufacturing process, a client should be as specific and meticulous as possible
6. Educate and coach suppliers	• Since Asian suppliers are often unaware of Australian/International quality standards, it is highly advised to coach them on these issues to make sure they understand all the details
7. Be flexible and ready to adapt where possible	• While a high level of stringency and meticulousness are needed to manage suppliers in Asia, excessive rigidity in pursuing contract terms and details can also prove to be counterproductive
8. Minimise design changes	• Any design changes made after the engineering/design part is finalised can have a substantial impact on the project schedule

Source: The Beijing Axis Analysis | The Beijing Axis | 27

However, these challenges can be overcome and the risks mitigated (2)

Critical Success Factors	Description
9. Exercise control and supervision on-site	• It is crucial to exercise stringent control over a supplier's actions. In order to exercise this supervision, it is necessary to have an on-site presence at the supplier's premises, which can be done by deploying expediting and QC engineers in tandem with third-party quality inspectors
10. End-user buy-in (i.e. Engineering)	• Change in mindset from end users – business units, production engineers, project managers, etc.
11. Clear understanding of China's entire SC	• Clear understanding of the strengths of Chinese suppliers, e.g. Chinese vs. international standards, flexible terms, etc.
12. Dedicated personnel	• Dedicated resource combining technical and commercial background at site or in shared services
13. Coordinated efforts of professional 3rd parties	• 3rd parties augment Chinese suppliers' capabilities and have a rich experience servicing international procurement out of China
14. Early and detailed involvement in supplier's post-PO planning	• Early feedback to suppliers' manufacturing schedule, inspection, testing plans as well as overall delivery plans
15. Involvement of China supplier early in project/ spend planning	• Bringing China into equation during planning/ pre-feasibility stage
16. Appreciation and adaption for culture	• Working towards diminishing the impact of cultural differences in regard to ways of doing business

Source: The Beijing Axis Analysis | The Beijing Axis | 28

Agenda

1. Why to pursue LCC Sourcing
 2. What to Procure for Capital Projects and MRO
 3. How to Approach and Implement LCC Procurement in order to Deliver Value
 4. Case Studies
 5. Final Word
- Source: The Beijing Axis Analysis | The Beijing Axis | 29

Capital equipment and structural steel for ferrochrome plant expansion

Background

Client

- International mining company, one of the top-3 worldwide ferrochrome producers

Project Overview

- Expansion of ferrochrome smelter in South Africa
- Critical packages considered for placement in China: kilns; mills; structural steel; platework; transformers; switchgear, etc
- Main considerations: delivery time advantage and pricing advantage of Chinese manufacturers

Specific challenges

- Client to procure directly from China for the first time, but unfamiliar with Chinese equipment – previously supplied by international trading and engineering company
- Complex requirements regarding equipment and delivery to site
- Small ownership team leading project with only limited support on procurement from 3rd-party EPCM contractor

Capital equipment and structural steel for ferrochrome plant expansion

Execution

- Beijing Axis Procurement assisted client at every single stage of procurement process:

- Assessment of China procurement feasibility for each package
- Preliminary identification of suppliers
- Preliminary budgeting and delivery schedule
- Drafting of RFP and specifications
- Drafting of commercial terms and conditions
- Contract negotiations
- Expediting and on-site manufacturing supervision
- Management of third-party inspection company
- Management of logistics services provider



- Specific risks addressed during project included: design coordination; understanding of SA and client-specific design requirements; poor supplier documentation control system; schedule slippages due to poor internal coordination at supplier; over-promising from supplier especially on delivery time
- Coordinated work with all involved parties: client's project management office; clients' consulting engineers and their China subcontractors; Chinese suppliers; third-party inspection company; logistics services provider
- The TBA Team was composed of a project manager, 2 commercial managers, 2 on-site supervising engineers, a senior QA inspector, 2 sourcing engineers, a senior project advisor, as well as heavy input from the rest of team as required

Capital equipment and structural steel for ferrochrome plant expansion

Outcome

Outcome:

- The project will last until 2013
- Thus far, there has been USD 30 million worth of orders placed, and significantly more are expected by end of Q1 2012
- Goods have already started being delivered to the site

Lessons Learned:

- Availability of full-time technical and engineering resources to consult the suppliers on technical and design questions on behalf of the client
- Permanent on-site supervision by TBA engineers assisted by third-party inspectors is key in reducing the risk of schedule slippages and quality issues
- Chinese suppliers still need assistance with modern project management tools and communication with the other parties in a complex international project, such as owner's team, engineering consultants, cost consultants, logistics / transportation agencies, and quality inspection companies

Capital equipment and structural steel for ferrochrome plant expansion

Products Delivered

Kiln Support Roller Shaft



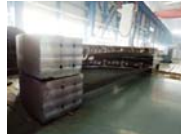
Kiln Shell



Mill Head



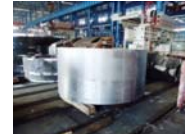
Girth Gear



Kiln Shell



Support Roller



Capital equipment, spares and strategic raw materials for aluminum processing

Background

Client

- Large listed international aluminium company

Project Overview

- A multi-year service agreement whereas TBA acts as client's procurement office in China, providing both procurement and strategic sourcing / market monitoring services to the client
- TBA sources from China and assists client in procuring a wide range of Raw Materials (hardeners, magnesium, etc.), Spares (bearings, belts, rolls, refractory material, etc.), and Capital Goods (casting equipment: charge buckets; gensets, etc.)
- The reasons for originally going to China for procurement were to expand the supplier network and reduce procurement costs
- TBA is handling all China inquiries, quotations, supplier qualification and selection, contract negotiations, order placement, order management (quality control, expediting, logistics coordination) and post-order inquiries
- The total value of orders placed and managed has almost reached USD 100 million

Capital equipment, spares and strategic raw materials for aluminum processing

Execution

Project Implementation

- For **Raw Materials**, TBA scanned the market of raw material producers in China and short-listed the country's top ten producers. The most reputable producers were chosen as suppliers, and market prices and conditions are constantly monitored by our team to ensure an optimal balance between cost of goods and inventory levels for the client
- For **Capital Equipment**:
 - TBA identified reputable industry leaders and helped them bid on the project in formal tender process in order to optimise the initial supplier selection. The filtering criteria was conducted via extensive communication, plant visits, and external expert reviews to ensure the production quality, delivery time and cost advantages had a solid foundation.
 - QA/QC was implemented by TBA engineers and third-party inspectors at the supplier site. TBA engineers monitored the entire production progress and assisted with technical communication due to the weak English skills of the manufacturer
 - At the commissioning stage, TBA accompanied the supplier to manage the installation on site and provided consultancy services to specific adjustments until the caster was able to operate smoothly. After commissioning, TBA has continuously provided support services to manage the communication and the relationship with supplier
- For **Spares**, TBA provides the client with an on-going service to identify and assess the competitiveness of the Chinese market in providing various categories of fabricated parts and spares. When a new category is identified as feasible for procurement in China, TBA then implements a rigorous process of supplier identification, RFQ / quotations, contract negotiation, order placement and management (incl. QA/QC and expediting) and continuous re-assessment of suppliers in terms of quality and service

Capital equipment, spares and strategic raw materials for aluminum processing

Outcome

Products sourced from China

- 99.95% Magnesium Ingot, low Si, Ca and Na
- Hardeners - Si, FeAl, CrAl, MnAl
- Casters
- Wire belt (Length: 8.18 m, Width: 0.7 m): wire diameter: 3.3 mm; Pitch of wire: 8.5 mm; rod diameter: 6 mm; pitch of rods: 14 mm; working temperature: 250-300(°C); tension: 90,000 N
- Endless corrugated sidewall belt: EP630/4+1 (4+2) mm
- S240-125; TC220-250
- HFM work roll change cylinder
- Generator sets
- Bearing includes IMR bearing number EE126096D/126150 and work roll bearing number B2680D/R2622
- Tool steel - grade H11, H13; diameter 235 mm, 285 mm
- Refractory material tips
- Welded structure steel charging bucket - weight 25 MT, steel grade Q345A
- Spools for the rolling mill (coil mills)



Picture: Caster operational on site

Lessons Learned:

- Holistic project management key
- Owner's team readiness and commitment key
- Even with long-term suppliers, selective quality inspection is a must to ensure success of ongoing procurement efforts
- Technical support from the client is essential for complex equipment

Compendium...

Grinding mills



Gensets



Electric Mining Shovel



Manufactured trailers



Magnesium



Compendium...

Superheaters



Thickeners



Boiler Shells



Pumps



Grinding Media



Interpass Absorption



Compendium...

Round bars



Hollow bars



Flat bars



Pipes



Angle steel



Rails



Case studies key takeaways

Case Study 1

- Supplier involvement in early stage planning and design
- Permanent on-site supervision of suppliers
- Chinese suppliers struggling with project integration
- Dedicated project management team with complementary skills
- Client's technical support is crucial

Case Study 2

- Initial category feasibility assessment for China sourcing
- Periodic analysis of China supply and feasibility review
- Hands-on quality assurance including selective inspection
- Client's technical support is crucial
- Engage supplier in design to benefit from innovation

Case Study 3

- China losing cost competitiveness to other LCCs
- Ample supplier base and product categories keeps China ahead
- Consider diversifying into other LCCs besides just China
- Macro factors need to be factored in when deciding where to source
- Direct sourcing is key to cost reduction; and better indirect

Analysis

Engagement

Process

Agenda

1. Why to pursue LCC Sourcing
2. What to Procure for Capital Projects and MRO
3. How to Approach and Implement LCC Procurement in order to Deliver Value
4. Case Studies
5. Final Word

Final word

- The world is looking to source from LCCs – It's a global phenomenon and its changing from 'additional competitive advantage' to a prerequisite
- Developing countries are becoming more important as new supply bases – This is truly an Asian story
- China ranks at the top of the LCC equation; India is still searching for its place in the global production chain but is positioned in the flying geese formation (along with Vietnam, Malaysia, Thailand, Indonesia etc.)
- Ignoring China (and India et al) is no longer possible or wise; Threat, opportunity; Must form part of a 'global supply chain portfolio'
- Very complicated - many risks i.e. quality/safety, counterparty risk, financing, complexity, contracts, language, trade protectionism, etc. – Watch out!
- Use information well – strategic intelligence is the main aid in risk mitigation
- Communicate well and often; manage engagements – Both with HQ at home and with Chinese counterparties
- Good strategy, good implementation – Processes, systems and people (and partners across SC)
- Analysis, Engagement, Process
- Learn from others!
- Three key questions - Why? What? How?

Source: The Beijing Axis Analysis



Beijing, China
Cheryl Tang
GM, China
cheryl@thebeijingaxis.com

Shanghai, China
Julia Wang
Procurement Specialist
julawang@thebeijingaxis.com

Hong Kong
TBA Secretary Corporate Office
3886 Central Plaza, 18 Harbour Rd,
Wanchai, HK

Singapore
Ankit Khaitan
Manager
ankitkhaitan@thebeijingaxis.com

Perth, Australia
Kobus van der Walt
Founder & Group MD
kobus@thebeijingaxis.com

Johannesburg, South Africa
Dirk Kotze
Director: GM, Africa
dirk@thebeijingaxis.com

London, UK/Europe
Matt Pieterse
MD, Beijing Axis Capital
matt@thebeijingaxis.com

Russia Desk
Lilian Luca (Beijing)
MD, Beijing Axis Procurement
lucal@thebeijingaxis.com

Latin America Desk
Javier Curat (Beijing)
GM, Beijing Axis Strategy
javiercurat@thebeijingaxis.com

Yangon, Myanmar
Dr. Wong Yi Fan
Chief Representative
+951 503599374165

COPYRIGHT© The Beijing Axis Ltd. 2012. No part of this publication may be reproduced or transmitted in any form or by any means without prior written consent of The Beijing Axis.

