

China's nuclear energy companies that adopt global competencies will fare far better in the race to win the west

By Robert Barrett

The Global Management Challenge for Chinese Nuclear







Chinese nuclear companies have been actively seeking participation in global nuclear projects in recent years. This is understandable given the growth of the domestic Chinese nuclear industry and the desire for Beijing to invest its funds in global infrastructure as a means to diversify and increase its global footprint.

As companies make the leap from building nuclear plants in China to building plants in the United Kingdom or elsewhere in Europe, a whole new set of challenges will be encountered. The entire regulatory, economic and environmental landscapes will be different. Consequently, the competencies Chinese nuclear companies have relied on for success domestically cannot simply be exported abroad. Rather, competencies will need to be globally applicable, while also catering to specific local market conditions. The areas where gaps exist between accepted practice in China compared to more developed and regulated markets are not constrained to regulation alone, but extend from fundamental project execution through to portfolio management and into local delivery.

Governance and control

Governance and control in China is markedly different from Western markets.

For many reasons, fragmented responsibility, low control thresholds and consensus oriented decisions are the norm and work well in China. However, this will likely slow the progress of projects in developed markets. For example, approval limits for senior managers can be extremely low in China, even a US\$50,000 expenditure may require as many as ten approvals. This is manageable when all the approvers are in the same office, but when many are located in a different country and thousands of kilometres away, it will increase project risk.

Another feature of Chinese governance is that control is often enforced both at the budget approval and expenditure level. This means that while a large, and properly detailed project budget is approved through an elongated process, each individual operational decision is

often subjected to a similar detailed approval process. When the ‘funders’ are located in China and the project decision makers are located in another country thousands of miles away, this sort of approval process will inevitably slow development and inhibit effective execution.

Further, with regard to design and quality related decision making, this type of hierarchical model can lead to an opaque system of accountability, which can frustrate regulators that are used to clear and defined responsibilities.

A straightforward solution for companies in China facing this potential burden will be to adopt the RACI concept (Responsible, Accountable, Consult, Inform) matrix, and set reasonable approval thresholds that empower managers to make effective and timely decisions.



Portfolio management

As the Chinese nuclear sector grows larger, with increasingly segmented technologies and is geographically diverse, the challenges for managing the nuclear business become infinitely more demanding.

The nuclear fleet will move from individual station projects to regional groupings to a country mass and on to a global footprint.

Chinese nuclear companies will need to hone their capabilities and begin thinking beyond the project and the program, to focus on the complete portfolio of new build nuclear assets at an international scale, rather than confined only within Asia or China. Such companies will evolve their thinking from unique project management processes that are tailored to individual stations and site managers, to approaches that are designed to accommodate a fleet-wide program of projects, regardless of the reactor type, plant scale or country location.

In this endeavour, companies may benefit from forming 'best-in-fleet' models that enable broad learnings from each station to drive performance standards for engineering, construction, quality assurance, procurement and, start-up, as well as project management. This 'best-in-fleet' model has the potential to form the basis for continuous excellence in project delivery and ultimately build an integrated portfolio and model for how to optimize project execution.

Chinese nuclear companies will need to hone their capabilities and begin thinking beyond the project and the program, to focus on the complete portfolio of new build nuclear assets at an international scale, rather than confined only within Asia or China.



Program management

In many Western markets it is not uncommon for construction companies to encounter delays with infrastructure programs.

Many construction companies in China seem to find ways to complete massive infrastructure projects on schedule. While there is a trade-off here, managing large programs with vast supply chains in an overseas markets will require a level of planning, coordination and transparency that is even more demanding than what is currently required in China.

In China, the large state-owned constructors have a high level of control over their main suppliers and resources. The commercial mandates of these state-owned firms differ to those of western companies. Often, all the supplier enterprises are part of the same state enterprise umbrella which facilitate solutions that meet both

political and commercial goals. These objectives work well within China, but may well prove challenging to independent and more commercially oriented stakeholders in developed markets, which, in turn, may lead to program risk.

Program management in a more regulated and commercially oriented market will require greater schedule transparency, integration and agility. However, while these large Chinese companies have all the right software to support the design, schedule, procure and, build processes, many still have a lot of room to further improve their integration. Companies that are able to drive truly integrated solutions that facilitate genuine integrated program management will see far more rapid progress than the companies that are less able to adapt.

Procurement

Procurement processes in China vary significantly from other international markets.

The norm is that there is a long line of competitors, both domestic and international, each promising to offer more for less. This long term trend has had an impact on the culture of procurement where, for most of the state companies, low price trumps most other criteria. This feature appears to have become more pronounced in recent years, where highly specific procurement mandates are including an increasing onus on encouraging the lowest price.

The long-term implications of price-sensitive priorities will become clearer in time, but there are already signs that the period of 'low price' awards in many areas could ultimately lead to greater costs. As a broader definition of value which incorporates 'the cost of quality' and the 'total cost of ownership' along with the rationale behind is embraced, a more informed approach to decision making will be enabled.

Localisation

The tendency for many global nuclear developers is to think that each project is similar to the last one and just an extension of the generic plant project.

In reality, these companies need to rethink their approach and emphasize how to deliver a common plant, but within a tailored local delivery model.

Solely exporting Chinese talent is not the solution for entry and execution in many countries. Nuclear companies from China could also benefit from developing a more integrated local model that blends home office, distributed and local resources, from owners, developers, contractors and, other specialized parties. This integrated delivery model will place a premium on blending technical expertise, manufacturing capacity and skilled resources regardless of the entities involved. This does not mean that these nuclear companies are not

comprehensively and actively engaged in project leadership and delivery, rather it means they do not need to turn-key the project solely with Chinese expatriates.

Companies that are successful in building the right blend of 'local content' will find that the economics can be effectively managed and controlled for the benefit of the project. This 'local content' may need to be built from local or regional bases, but will evolve over time to secure a deeper and more committed workforce.

Working across the globe requires developing a differentiated model for in-country project development and execution.



Cost accounting and management

Along with program management and procurement, genuine 'cost management' is in its infancy in China.

The cost implications of decisions have been considered less relevant since costs were low or simply did not matter. Universities are beginning to teach management accounting, the development and use of standards, price and quantity variances, time value of money, return on investment and earned value accounting. However, for a generation of Chinese managers, these are emerging concepts and will take time to hone.

As companies from China participate in more complex and global funding schemes for projects, banks and regulators will require knowledge and transparency of program costs. Shareholders and other stakeholders will want an understanding of program revenue recognition, costs and return on investment. As a result, the most successful program managers and financial controllers in China will become increasingly familiar with the management accounting techniques that are commonly employed outside of China.

Standards and regulatory compliance

China's domestic nuclear program has developed rapidly, benefiting from a range of factors. Ongoing success at home and abroad will require that the guiding regulations and adherence to accepted industry standards are able to match this pace of industry growth.

Influential international markets such as the United States and European Union have complex regulations and sometimes onerous standards in place. However, there is a historic basis for most of these regulations and public awareness is high. Chinese regulators, with a much newer industry to regulate, often do not have a similar historic basis to rely upon.

Further, the public have only recently begun to express concern, in light of rising awareness of some of the challenges involved. Chinese companies that are able to swiftly improve their competencies around adherence to and engagement with regulators and other stakeholders are likely to fair better in Western markets.

China's state owned enterprises are currently able to proceed swiftly though the domestic regulatory

framework, licensing, audits and regulatory approvals encountering a lower risk of program delays. In more regulated markets, procedures are not likely to go so smoothly. Even experienced companies like Areva in its home and nearby markets have struggled bringing new design bases into development.

The companies that do not cut corners but respond to local professional advice will be best placed to ensure compliance with local standards and regulations. Over time these companies will learn how to navigate the layers of standards that exist for labour, industrial health, nuclear safety, environmental control, government contracting, local jurisdiction reporting and related factors, and use this knowledge to drive greater efficiencies.

Partnering

Many international companies have forged influential, winning partnerships to facilitate entry into China.

Finding the right partner takes time, and requires using a structured evaluation process. Establishing the right partnership structure, be it joint venture, contractual, or acquisition, also takes time and depends on forging mutual objectives and expectations. Chosen correctly, companies will likely find more valuable longer-term partners and potential acquisitions to support their global growth plans.

Certainly, forward-looking companies in China's nuclear sector have already established productive partnerships, working with major international companies such as Areva, EDF and Westinghouse for many years. However, there are targeted areas where even more beneficial partnerships could be forged, including EPC contractors, regulatory compliance, public relations and, local construction firms, each of which can bring complementary benefits to their programs.

Chinese companies can also look to local partners to work with as a means to accumulate local knowledge and extend access in foreign markets.



Conclusions

The world has much to learn from the Chinese model of nuclear development, and China's leading nuclear companies stand to develop their capabilities while running a global business at the local level. This process will be facilitated by understanding and prudent adoption of accepted practices from emerging markets, and blending them with a distinct Chinese model.

Chinese development in more regulated markets, such as mining in Australia, Automotive in Korea, Oil & Gas Joint Ventures in Africa, have not always been straightforward. Chinese nuclear companies can learn from other firms' experiences in these sectors. The nuclear sector is not a forgiving industry in the global marketplace and even small slips can create major problems.

This publication has been prepared for general guidance on matters of interest only, and does not constitute professional advice. You should not act upon the information contained in this publication without obtaining specific professional advice. No representation or warranty (express or implied) is given as to the accuracy or completeness of the information contained in this publication, and, to the extent permitted by law, PricewaterhouseCoopers LLP, its members, employees and agents do not accept or assume any liability, responsibility or duty of care for any consequences of you or anyone else acting, or refraining to act, in reliance on the information contained in this publication or for any decision based on it.

© 2016 PricewaterhouseCoopers LLP. All rights reserved. In this document, "PwC" refers to the UK member firm, and may sometimes refer to the PwC network. Each member firm is a separate legal entity. Please see www.pwc.com/structure for further details.

160608-163403-KG-OS