



THE FUTURE OF MAJOR PROJECTS – A TEN-YEAR HORIZON

Seminar 146 held on 5th February 2009
at 4 Hamilton Place, London

SUMMARY

Financial turmoil, geopolitical developments and rapid changes to the world's economies are resulting in great uncertainty across the globe. In determining future strategies, key drivers include climate change, changing expectations and competitive demands on resources.

Chaired by Douglas Oakervee OBE, Chairman of Cross London Rail Links, this seminar focused on the challenges to be faced 10 years on, and how these will impact on the future of major projects.

Speakers in various fields of expertise looked at the issues and considered a number of questions about companies of the future. For instance, what capability and best practice needs to be developed in order to be successful? How should companies plan and manage their future strategy? Who are the future clients and what will they expect? How will trade be affected by further expansion in IT and e-commerce?

GLOBAL ECONOMIC DEVELOPMENTS AND DEMOGRAPHICS

The last few years have seen an acceleration of the shift in the distribution of wealth in the global economy. Driven by faster growth, rising incomes, high savings ratios, strong investment and export performance, emerging economies have seen their share of global output and wealth rise significantly. Led by China, the BRIC countries (Brazil, Russia, India and China) have accounted for almost 40% of global growth since 2000.

Oxford Economics considered whether the global growth dynamics of the past decade – and the change in patterns of wealth distribution – will continue. The presentation provided a topical and comprehensive overview of the effects of the current global downturn.

Five main questions were addressed:

1. Why the world economy is deteriorating so sharply
2. The likely severity of the recession
3. How long the recession might last
4. How the recession will affect the shifting trends in the global patterns of wealth
5. The risk these trends pose to the continued expansion of emerging markets

The conclusions were summarised as follows:

- The world recession is deep, with no regions immune from downturn; recovery is likely to be slow and volatile.
- Risks to the global outlook are heavily skewed to the downside and could trigger political tensions.
- Given recent upheavals in the world economic order the continued redistribution of wealth in the global economy towards emerging economies is not inevitable.
- Deglobalisation is unlikely; over the next decade growing domestic markets, productivity gains and benefits from improved economic policies point to stronger growth in emergent economies than in developed countries.
- By 2020 the BRIC economies will account for almost a third of global GDP – of which China will contribute 18–20%.

Ernst & Young's [Global Megatrends 2009](#) report provides an overview of their perspective on the major issues faced by business and governments, and a snapshot of the most significant trends in the marketplace. This presentation discussed the most influential of these trends and looked at what effect macroeconomics might have on major projects in the future. Points raised included:

The accelerating shift of economic power from West to East points to the emergence of new market opportunities and new clients, especially in the Middle East and China. Globalisation also means there are moves toward common standards for design and operation, making it easier for contractors to operate in other countries.

The changing financial landscape from boom to bust has triggered a number of effects. For instance, governments in developed economies may spend their way out of recession: in the UK there has been a shift from private to public funding, whilst in the US large amounts of public money is being put into infrastructure projects. At the same time, project finance restrictions will impact on project deadlines and performance in the short term; in the longer term this will impact on the supply chain as assets and spending are reduced.

The global financial crisis has proved the need for an overhaul of the regulatory environment from the local to the global arena to produce more robust, globally consistent regulation; finding the most appropriate model will pose a significant challenge. With the creation of a global marketplace there is a real opportunity to identify and transfer leading risk management practice from around the world and from other sectors and industries.

There will be increasing challenges in managing and developing talent: when today's senior engineering and construction managers leave the industry there will be a large hole in the talent pool, which will need to be filled by a new generation of workers whose demands will include working 'smarter' as opposed to 'harder'.

The next wave of technology innovation must be dealt with: many global company leaders believe that innovations in technology and processes will have the greatest impact on future projects.

The rising economic importance of energy and commodities is very apparent. For instance, fluctuating oil and steel prices makes project planning, forecasting and budgeting more difficult; money will be spent on sustainable energy projects and 'green' buildings, and there is the emergence of a global investment environment. Corporate social responsibility is also firmly on the agenda, driven by customers, investors, insurers, regulators, politicians, employees and the public, and reinforced by factors such as climate change policy.

People constantly make predictions about the future, many of which turn out to be wrong; forecasting the future at a time of such economic uncertainty makes the task even more difficult. The presentation from EDS considered what the short and longer-term future might look like, and the factors that will shape major projects.

Adapting to the effects of climate change, global politics, emerging economies and the shortage of raw materials and skilled human resources will require a fresh insight into the planning and initiation of major projects. It is essential to know how these issues will shape demand, procurement policy, technology and best practice, especially while the global 'credit crunch' continues to bite. For instance, any new regulations concerning climate change will undoubtedly affect the IT industry, which produces as much carbon as the airline industry.

IT has evolved as several waves of change since the days of huge mainframe computers, and is now moving towards being an integral part of infrastructure – just as essential for business as electricity. In the light of its increasing complexity and cost, and concerns about whether it really adds value to the businesses it serves, the presentation outlined some of the latest IT developments and the implications for working practices across the globe.

It was noted that the industry is becoming increasingly service-orientated, with clients requiring bespoke integrated packages that include elements such as storage, servers, network, workplace and security and which support their individual business processes; selling IT in the future will undoubtedly involve advising people how to make the best use of new technologies and facilities.

As far as the major projects industry is concerned, in the short term fewer projects will be planned, more will be postponed, and there will be renegotiation of long-term contracts. The scope of projects will contract because of increasing cost reduction, which will make it harder to realise true efficiency gains, since existing IT hardware will be updated or transformed rather than being replaced with new and more efficient equipment. The presentation concluded with some essential guidance for weathering the present economic conditions, and predictions about what a successful company will look like in the future.

The presentation from the global multi-disciplinary design company Halcrow started by summarising and comparing some national responses to perceived future trends and requirements, particularly in respect of ICT and climate change. The main external and internal drivers of change for major projects were examined; based on the most significant of these Halcrow have recently decided on five key corporate research and development themes.

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A key theme centres on the use of ICT in project management. Two examples were given: the development of professional communications techniques supporting a shared project model, and the increasing use of the modelling technique 'building information model' (BIM) – which has been defined as the process of creating and using digital models for design, construction and/or operations of projects.

BIMs extend the number of dimensions, with potential extensions into the use of object-based models. Integrated BIMs, in which there is a seamless integration of spatial, analysis, quality and cost data, would help the development of 'the single project model' and 'asset life cycle management', allowing much more powerful use of data and information. More than 50% of new projects in Halcrow's property design business are now undertaken within a BIM environment, and the intention is to increase that to 100% by the end of 2009.

As far as dealing with sustainability issues is concerned, one of the problems is the lack of clear, universally accepted definitions of the terms involved, without which standards cannot be set. At the moment organisations in the broad built environment use more than 400 separate methods to assess sustainability.

The presentation concluded with a number of possibilities and probabilities for major construction and infrastructure projects 10 years hence, and a list of key points:

- Change is inevitable, we either embrace it or get left behind.
- A number of different drivers need to be aligned for real change to happen.
- There will never be a one-size-fits all among the different techniques. Different market segments (e.g. buildings, roads, railways) are likely to need different approaches on account of their different procurement, compliance and regulatory environments.
- Successful project teams will increasingly need to include companies with compatible technology approach/outlook and maturity.
- The biggest changes over the next 10 years are likely to be driven by both cost and carbon waste reduction.
- Agreed definitions and techniques are needed in some key areas, for example, 'sustainability', 'carbon footprint', 'BIM' and 'object based models'.
- And finally: the future is frequently overstated, but always underestimated.

The Defence Acquisition environment has altered dramatically over the last 30 years, and it is now time for a change in the way in which the Ministry of Defence (MoD) increases and manages its military capability. [The Defence Industrial Strategy](#) (DIS), begun under the tenure of Lord Drayson, has given rise to the Defence Acquisition Change Programme, a major thrust of which is the change to Through Life Capability Management (TLCM).

TLCM ‘translates the requirements of Defence Policy into an approved programme that delivers the required capabilities, through life and across all Defence Lines of Development (DLoD):’ The eight DLoDs – training, equipment, personnel, infrastructure, doctrine, organisation, information and logistics – are interdependent, and understanding how they interact is vital for acquisition and procurement.

BAE Systems outlined the background to TLCM, the successes, challenges and lessons of implementing it so far, and explained how it is arguably the most challenging restructuring of defence business seen to date.

Delivering defence capability in a timely way is a multi-layered problem; there has been considerable focus on delivery of projects and kit, which has not always led to the required capability. Programme and project management are related and their modus operandi must be complementary, but each demands a very different way of thinking and working

After several preparatory phases, TLCM phase 4 concentrates on holistic programme management to deliver a coherent military capability; its effort is focused through Programme Boards, which have the remit to coordinate all the DLoDs across a number of projects. The presentation looked at how these new teams will shape up, and the challenge of equipping them with the necessary skills and sufficient degrees of freedom whilst retaining the right levels of responsibility and control.

A PERSPECTIVE ON THE FUTURE

Arup’s Foresight team was established in 2002, not to predict the future, but to help the organisation better understand the long-term drivers shaping both their business and that of their clients. This presentation described this initiative and its outputs, how Arup and its clients are using it, and what might be required in the major projects field in the years ahead.

As well as research, exhibitions, lectures and publications, the team has organised over 50 workshops around the world, involving more than 3,000 participants. The output from the workshops – organised within the societal, technological, economic, environmental and political (STEEP) framework – pointed to the key external driving forces that people thought were going to be important in the next 10 or 20 years.

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Following research into six of the drivers distilled from the workshops, six boxed sets of 'Drivers of Change' cards were produced – first published in 2006, republished in 2007 and currently being extended. Each card has an image and a rhetorical question on the front with some relevant information on the back.

Engagement with the Drivers of Change research helps Arup and its clients to:

- Establish consensus as to what the most pertinent drivers are
- Understand implications of drivers
- Plan for a range of future scenarios
- Identify opportunities and mitigate risks
- Generate thought leadership

The six main drivers were considered in detail: demographics, energy, waste, urbanisation, climate change and water. All of these drivers present serious and difficult challenges for the future, and none of them exist in isolation; they all impact on one another. It was noted that the most important single characteristic of many major projects in the future will be that they are holistic, taking account of many more factors than projects did in the past.

CONCLUSION

At the end of the seminar groups of delegates had the opportunity to consider the key points arising from the day's proceedings. Points raised included:

- Major projects of the future will be operating in an increasingly uncertain environment, dominated by issues such as climate change, resources and energy demand.
- Projects will be larger and more complex, making radical changes more difficult.
- Leaders able to define and drive projects will be vital to success.
- With many projects going wrong because of poor communication, development of communications skills will be a main driver.
- Other skills required in the future may be significantly different from those required now, for example high-level programme and change management skills will become a priority.
- The need for relevant information to flow round an organisation will increasingly condition the approach to the selection of IT systems and protocols.
- Providing clearly defined career development paths for young engineers will be a challenge; equipping people with the appropriate skills must be addressed.
- We should not try to predict the future, but we need to think intelligently about it.



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