CONSTRUCTION INDUSTRY DEVELOPMENT IN DEVELOPING COUNTRIES; LESSONS AND OPPORTUNITIES

R. Milford
Immediate Past President, CIB, Programme Manager; Performance Improvement, Cidb

ABSTRACT
This paper deals with the development of the construction industry, with a particular focus on developing countries. The paper brings together some of the lessons learned from the national programmes around the world, and explores the opportunities for enhancing the role of research infrastructure and national laboratories in supporting such change.
The paper notes that in those countries that have adopted national initiatives to develop the construction industry, opportunities exist for the research infrastructure (the universities and research laboratories) to make a meaningful contribution to the development of the industry. In fact, it is likely that any national activity cannot succeed without the active support and participation of the research infrastructure. Specifically, research organisations underpin the development of the construction industry in any country.

Keywords: construction industry development, research

INTRODUCTION
Ladies and gentlemen.
My address deals with construction industry development, with a particular focus on developing countries. My aim is to:
• bring together some of the lessons learned from the national programmes around the world; and
• explore some of the opportunities for enhancing the role of research infrastructure and national laboratories in supporting such change.

WHAT IS CONSTRUCTION INDUSTRY DEVELOPMENT?
• Construction industry development is the deliberate and managed process to optimise the contribution of the construction industry in:
meeting national construction demand;
• promoting national social and economic development objectives;
• promoting industry performance and competitiveness; and
• providing improved value to clients.
This definition was crafted by, amongst others, Prof George Ofori, Jill Wells and Spencer Hodgson at the 1st Conference on Construction in Developing Countries in Arusha, Tanzania, September 1998, organised by TG29 of the CIB.
PARTICIPANTS IN CONSTRUCTION INDUSTRY DEVELOPMENT
This definition of construction industry development addresses the role and the contribution of all participants who add value to the delivery process;
• from project inception to project handover and maintenance; and includes
• the public and private sector clients, build environment professionals, constructors, materials manufacturers and suppliers, training delivery institutions, regulatory bodies and research institutions.

Furthermore, this definition does not differentiate between the local industry and the foreign industry – but in developing countries a component must clearly include a focus on the development of the local (or indigenous) industry.

AN INTERNATIONAL PERSPECTIVE
Internationally, several countries have established formal or informal national programmes to support the objectives of construction industry development. The ‘drivers’ that have led to the creation of these national initiatives show both common elements and local dimensions.
Common elements include (after Roger Courtney, 2002):
• a recognition that construction accounts for a significant proportion of national economic activity and that the effectiveness of the sector has implications for other industries and for public services;
• a perception that construction, in contrast to other industry sectors, has not improved its use of labour and its overall productivity as much as other sectors in recent decades and that as a consequence its outputs are becoming relatively more expensive;
• a view that a key factor in the allegedly poor performance of construction is the number of different parties who have responsibilities within the construction process and therefore a desire to bring about a more integrated process; and
• overall, a view that construction should, by integrating its internal processes and adopting new information and production technologies, seek to become more similar to manufacturing sectors.

Before looking at these factors in more depth, it is useful to look at construction industry development from a developing country perspective.

A DEVELOPING COUNTRY PERSPECTIVE
Although many of the challenges facing the construction industry in developing countries are similar to those in developed countries (and hence much can be learnt from the initiatives in developed countries), there are also significant differences between the developed and developing countries. In particular, Ofori (1999, 2001) notes that:
• although construction may account for a significant proportion of national economic activity in developing countries, in many cases the indigenous
industry is weak and under-developed, and much of the construction activity is undertaken by multinationals;
• the construction industry in many developing countries is facing reduced levels of demand as a result of adjustment programmes which invariably involve cuts in governments’ capital investment; and
• with public funds under severe strain and chronically short, ways must be found to structure funding strategies which are suitable for the developing countries.

DRIVERS FOR CHANGE; LOCAL ELEMENTS
Other factors, or local elements, have been prominent in many countries which have created the need for a national or industry focus on the development of the industry, including:
• in the UK, major clients (notably utility companies that had been previously public sector organisations) wished to achieve better value from their investments in construction and sought new relationships and procedures to obtain this;
• in the UK also, the poor image of construction, as perceived by prospective employees and the Stock Market, caused firms to consider how new forms of operation could both provide more attractive employment conditions and higher levels of profitability;
• in Singapore, there was a realisation that the industry was heavily dependent upon relatively unskilled operatives, many from outside Singapore, and a principal focus of the review was therefore skills requirements and means of making more effective use of labour;
• in South Africa, the need to create an enabling environment for the transformation of the industry to create economic opportunities for all participants;
• in Hong Kong, some prominent defects in new construction works, such as inadequate foundations, had revealed shortcomings in quality practices, and – in the extreme – corrupt practices. Institutional arrangements for both procurement and in the carrying out of the works (e.g. the use of multi-layer sub-contracting) became a principal focus of the review;
• a desire to increase the international competitiveness of the construction sector, so that it could secure a higher proportion of business from other countries, was a factor in Hong Kong, Singapore and Australia.

It is seen from these examples that the focus of the development of the industry is very context specific, and depends on the needs of the country at a specific point in time.

NATIONAL PROGRAMMES
Internationally, the national programmes to support construction industry development broadly fall into three categories, namely:
• those that have established national initiatives to develop the construction
sector, involving a wide range of actions (e.g. UK, Australia, Hong Kong, Singapore, South Africa, India, Denmark);

- those that have recognised many of the needs of construction industry development in research programmes and other activities, but have not brought these together in a national initiative (e.g. Finland, the USA, Sweden); and

- those that have no national programme, but have some activities that address construction industry development (e.g. France, Malaysia, the Netherlands, Chile, Japan).

These categories do not have sharp boundaries, and some countries (e.g. Denmark) might be placed in a different category.

My presentation to follow will only focus on national initiatives.

THE SOUTH AFRICAN EXPERIENCE

While the need for, and focus of, the development of the industry differs from country to country, it may be useful to reflect on some aspects from the South African experience in developing the construction industry.

The impetus to the start of the reform process in South Africa began before the democratic elections in 1994, in which political power was transferred from a minority to the majority.

But the passage of transfer of economic opportunities to the majority was not going to be easy. Prior to 1994, the black population was excluded from most economic and many social opportunities (including meaningful education and skills development). Amongst others, a clear need therefore existed to promote the development of black contractors and participants – most of which had been excluded from meaningful participation in the construction industry.

A DECLINING CONSTRUCTION INDUSTRY

While the need for transformation was clear–prior to 1994 (like many other countries), the demand for construction in South Africa was in decline, resulting in increased competition, shedding of labour and skills, limited recapitalisation of equipment, and so on.

Simply transferring economic opportunities from one sector to another was not a viable option, and the development of the industry depended on:

- growth in infrastructure investment - providing increased opportunities;
- growing the capacity of the industry to meet the increased demand – and particularly amongst the previously disadvantaged sector; and
- improving the performance of all participants to deliver value for money to clients and to meet socio-economic objectives.

THE SA GREEN AND WHITE PAPERS

The process for setting up the framework the development of the construction industry in South Africa included the development of a government Green Paper in 1997, a White Paper in 1999, and legislation for the establishment of the
Construction Industry Development Board (cIDb) in 2000. The South African Green and White Papers parallel in many ways the frameworks developed in other countries, such as:

- the Latham and Egan Reviews in the UK;
- the Australian Construction Industry Development Agency (CIDA) and the National Building and Construction Committee (NatBACC) Action Agenda – Building for Growth; and, more recently
- Vision 2020 in Singapore.

**THE CONSTRUCTION INDUSTRY DEVELOPMENT BOARD (SA)**

The cIDb was established in South Africa in 2000, reporting to the Minister of Public Works, and currently has a staff complement of about 120 people, grouped around:

- corporate functions;
- registration of contractors and projects;
- procurement and delivery management;
- growth and contractor development; and
- performance improvement.

Again, the cIDb parallels in many ways the institutional structures developed in several countries, including:

- the Rethinking Construction, Constructing Excellence, Better Public Buildings and other initiatives in the UK;
- the performance improvement programmes of the Building and Construction Authority (BCA) of Singapore;
- the initiatives of the Construction Industry Development Board (CIDB) of Malaysia;
- the Australian Construction Policy Steering Committee (CPSC) Construct NSW and other initiatives of the government of New South Wales.

**DRIVING CHANGE**

Turning again to international experience, the ability and approach adopted to influence stakeholders under a national initiative varies significantly from country to country. However, there are many commonalities.

Firstly, internationally, many governments have assumed the lead responsibility for driving reform initiatives in the context of national socio-economic objectives. Governments are more able to organise public sector clients around reform initiatives (*albeit* usually under the instructions of a higher authority), driving change within their own business functions (such as procurement reform), and driving change amongst their suppliers (largely through the procurement regime). On the other hand, there are only a few successful examples of private sector clients collectively driving change and reform initiatives amongst themselves or amongst their suppliers – other than amongst a small number of forward looking
committed private sector clients. Similarly, there are few successful examples of construction industry suppliers collectively driving change amongst themselves – with the most notable examples being the benchmarking initiatives in the USA.

AFFECTING CHANGE
International experience has shown that effecting change at a national or sector level is complicated, resource intensive, and can only be achieved over a relatively long period of time (in some cases up to 10 years or even longer). Notwithstanding the huge challenges, numerous reform initiatives have been initiated around the world to support the necessary development of the construction industry – and many of these have shown progress towards their objectives for reform. An assessment of these reform initiatives (some of which themselves have been in existence for 10 years or longer) highlights key criteria for the success of such reform initiatives, and collectively these point towards a structured framework that can be adapted to national performance initiatives.

The international reform initiatives reviewed by the authors include, amongst others:
- the Rethinking Construction, Constructing Excellence, Better Public Buildings and other initiatives in the UK;
- the performance improvement programmes of the Building and Construction Authority (BCA) of Singapore;
- the Australian Construction Industry Development Agency (CIDA) and the National Building and Construction Committee (NatBACC) Action Agenda – Building for Growth;
- the Australian Construction Policy Steering Committee (CPSC) Construct NSW and other initiatives of the government of New South Wales;
- the initiatives of the Construction Industry Development Board (CIDB) of Malaysia;
- the recently initiated Process and System Innovation in Building and Construction (PSIB) programme in the Netherlands; together with
- a range of government and client driven initiatives aimed at furthering sustainable development, and in particular environmentally sustainable development.

Some key elements of these initiatives are described in the following sections.

LEADERSHIP
Without exception, the role of leadership by individuals and/or organisations has been fundamental to the success of every one of the more successful international reform initiatives. Common forms of leadership that are observed in the international reform initiatives include:
• Leadership by government (either individuals of government departments) – demonstrating commitment and willingness to the reform initiatives. Examples of such leadership by government include the procurement reform initiatives being carried out in the Office of Government Commerce (OGC) in the UK, the Better Public Buildings initiative in the UK, and the Construction Client Charter and Demonstration Projects initiatives in the UK.

• Leadership by influential forward thinking and progressive private sector organisations, and in particular private sector clients, is relatively common internationally. Examples include those initial private sector clients participating on the UK Construction Client Charter, and members of influential organisations such as the World Business Council for Sustainable Development.

OBJECTIVES CREATE THE FOCUS
Performance improvement programmes are generally driven by high level goals and objectives. For example, the Singapore programme to promote buildability derives from the national objective to limit the need for imported labour by improving productivity. Clarity on priority reform objectives is of the utmost importance to ensure focus, and is usually informed by policy, legislation and industry reviews. The objectives usually have to be cascaded out from higher level objectives to more manageable lower level objectives, which can them be prioritised. For example, the Construct NSW agenda set out an integrated framework of 20 strategies and 85 supporting actions to enable the government to achieve best value for money from its construction procurement, to support its economic and social goals through construction procurement and to assist the industry to achieve it potential. These strategies were then grouped under 8 headings-analogous to objectives – including:
  • strategic information for decision making;
  • business ethics and practices;
  • security of payment;
  • management and workforce development;
  • continuous improvement;
  • towards an ecological sustainable industry; and
  • encouragement and recognition.

AWARENESS
Awareness creation and promotion is fundamental to furthering the objectives of reform initiatives, so as to continually reinforce the reform message, and to broaden the awareness and understanding of the reform initiatives. There are numerous examples of successful (and unsuccessful) awareness creation and promotion activities internationally, including:
  • targeted awareness creation in the popular and technical press;
  • award systems, such as the Considerate Contractor Scheme and the Prime Minister's Better Public Building Award in the UK;
• forums, benchmarking clubs, and demonstration projects, and
• periodic reporting, on the state of the industry or industry reform.

INFORMATION AND TOOLS
The development and dissemination of appropriate information and tools to support the attainment of reform objectives is a further key success factor, and as illustrated below can take various forms. Note, however, that many of the systems outlined below are in fact enforced through various instruments in many of the reform initiatives around the world, but the systems themselves provide a tool together with information to equip various stakeholders for change:
• codes, standards and guidelines, both voluntary and enforced through legislation;
• best practices, applicable to almost every reform initiative around the world;
• management systems, together with supporting implementation tools, specifying processes to be adopted and reported on, varying from full ISO 9000 and 14000 accreditation (which is currently required on selected projects in Singapore), to the management systems developed to target specific issues – such as the NSW Australia OHS&R Management Systems and Environmental Management Systems;
• accreditation and rating systems together with supporting implementation tools, such as the LEED environmental design accreditation of design professionals in the USA, the NSW Contractor Best Practice Accreditation System, and accreditation systems for buildings – predominantly environmental and quality systems;
• triple-bottom line reporting schemes and methods, which are becoming increasingly common around the world.

CAPACITY BUILDING
Capacity building is key to several of the international reform initiatives, including:
• formal training programmes for public sector officials that support reform initiatives;
• the establishment of public sector Centres of Excellence (such as the OGC Programme and Project Management Centres of Excellence in the UK), whose aim is to achieve significant improvement to central government capability to deliver successful programmes and projects;
• the sponsorship of formal and informal training programmes for private sector participants impacted on by reform initiatives.

In addition, many of these capacity building programmes in the public sector are supported by the development and implementation of performance management systems for public sector officials that are aligned to the reform initiatives.

ENFORCEMENT AND COMPLIANCE
All reform initiatives around the world are dependent to a greater or lesser degree
on enforcement and compliance mechanisms. These mechanisms vary significantly, and include:

- **legislation** to seek compliance with minimum acceptable standards (such as safety and health, and certain environmental considerations). In NWS, legislation has also been introduced to effect the prompt payment of subcontractors;
- **procurement instruments**, which are one of the most powerful instruments used in all reform initiatives for effecting change amongst suppliers, i.e. clients (typically government clients) specifying their requirements (aligned with the reform objectives) for other parties wishing to do business with them – often requiring compliance with codes of conduct, standards, and guidelines, or the mandatory use of management systems;
- **registration and accreditation** of contractors, designers, etc. according to specified criteria for different types of activities – including “construction registers”, which is typically implemented through legislative or procurement means; and
- **commitment to voluntary compliance** together with review mechanisms, to charters, codes of practice and/or conduct, management systems, reporting, including:
  - the UK *Construction Client Charter Improvement Programme*, in which clients commit to continually improving their performance in 4 themes;
  - the numerous environmental and social responsibility charters – such as the *Equator Principles* developed by leading international financiers; and the *FIDIC Integrity Management System*, adopted by the World Bank and others.

**MONITORING, EVALUATION AND REVIEW**

Regular monitoring, evaluation and review is an essential requirement for the successful implementation of any strategy, and is a key element of all international reform initiatives – and takes place at both the “macro-level” and the “micro-level”. For example:

- at the “macro-level” the UK has instituted the *Construction Industry Indicators* and the *Quality of Life Indicators* – setting high-level performance targets for the industry together with ongoing monitoring against these targets; and
- at the “micro-level”, the UK has initiated the OGC “*Gateway*” review process for acquisition programmes and procurement projects, and the CABE “Design Review” for buildings that will have a significant impact on their environment, while Singapore and Australia require closeout reviews of projects against certain criteria (which will also shortly be introduced in South Africa).

**RESEARCH INFRASTRUCTURE**

Turning now to the role of the research infrastructure in supporting national initiatives.

It stands to reason that research infrastructure, including national laboratories and
academic institutions, can play a strong role in supporting the development of the construction industry and any national programmes. However, the relationship between the research infrastructure and national initiatives has not always been clear—often due to conflicting priorities and conflicting departmental reporting lines.

**FUNDING STREAMS**
The past 20 years or so has seen significant changes in the landscape impacting on national laboratories due to changing funding streams, impacting in particular on national laboratories in Europe, the UK, Australia and South Africa. For example, in the built environment, the Building Research Establishment (BRE) was privatised in the middle of the change programme in the UK, notwithstanding a very strong link between the UK reform initiative being driven from the then Department of the Environment, Tourism and the regions (DETR) and the DETR being a principle funding agency of the BRE. Similarly, although not linked to any national change initiative (but certainly linked with supporting governmental departmental needs and priorities), changes in funding streams from the Department of Transport in South Africa had a major negative impact on transportation and road engineering at the CSIR. Similarly, changes in funding priorities from the Department of Science and Technology resulted in the closure of the structural, materials engineering and other laboratories at the building research facilities at the CSIR in South Africa— and in all probability these facilities have been lost to South Africa (and in fact Africa) for good.

Clearly, if the national research infrastructure is to support national change initiatives supporting the development of the construction industry, then it has to be funded appropriately.

**CONFLICTING PRIORITIES**
However, changes in funding streams have also been associated with changes in research priorities initiated by the research institutions themselves or by government departments. For example, in South Africa, which probably mirrors some countries in the rest of the world, we have seen changes in which the national laboratories were originally set up in the 1950s as “agencies” of government departments to support the developmental objectives of the government departments. With the withdrawal of government funding for research in the 1980s and 1990s, these laboratories followed a more market orientated and commercial approach—resulting in research directions being dictated by commercial opportunities. More recently, in the 2000s, the national laboratories have adopted an increasing blend of "science for science sake" in order to rebuild a deteriorated research base in these laboratories.

All these changes in South Africa, and in many parts of the world, have largely been driven by a disjuncture between:

- research funding streams often determined by departments of science and technology; and
• developmental objectives determined by government service delivery departments and/or industry.

LINKING RESEARCH TO DEVELOPMENT NEEDS
I have always held the view that there has to be a close link between research institutions and national or industry policies and priorities – but these have to be appropriately funded through the same mechanism.

In South Africa, the CIDB (like some other countries in the world) have adopted an approach to consciously build capacity at selected departments within the research infrastructure in South Africa that is aligned with the objectives of construction industry development. It is our aim to build selected Centres of Excellence that can support the CIDB – but in reality this vision will only be realised when the CIDB is able to fund these Centres of Excellence on a sustainable basis. The CIDB is in the process of developing such funding models and funding streams.

SUMMARY
Ladies and gentlemen, it is not for me to pass comment on whether there is a need or an opportunity for a focused initiative on the development of the construction industry in any country – that needs a deep understanding of context specific issues in that country.

But, in those countries that have adopted national initiatives to develop the construction industry, opportunities exist for the research infrastructure (the universities and research laboratories) to make a meaningful contribution to the development of the industry. In fact, it is likely that any national activity cannot succeed without the active support and participation of the research infrastructure.

And where it is not necessary to have a national focus on the development of the industry, or where such national focuses have not been initiated, opportunities still exist for the research infrastructure to make a meaningful contribution to the development of the industry – albeit that it may be more difficult to do so.

Research organisations, such as those represented here today, underpin the development of the construction industry in any country.

CONCLUDING COMMENTS
In conclusion, I am proud to have been a President of the International Council for Research and Innovation in Building and Construction (CIB). The membership of the CIB currently numbers over 400 members originating in some 70 countries. CIB members include most of the major national laboratories and leading universities around the world in building and construction.

The CIB facilitates international cooperation and information exchange in building and construction research and innovation. Individually, and collectively, the members of CIB play an important role in many countries in supporting the development of the construction industry.

BIBLIOGRAPHY
Industry Development: A Developing Country Perspective. CIB W107: Conference on Creating a Sustainable Construction Industry in Developing Countries. Stellenbosch, South Africa.

