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<p>Let's Construct Europe's Future With Innovative Buildings and Infrastructures Construction and Societal Challenges</p>			<p>Radisson Blu Centrum Hotel - WARSAW 04 / 05 October 2011</p>	

Construction Research: Its Role in Overcoming Europe's Debt Crisis

Terry Hill, Chairman, Arup group Trusts

We have talked this morning about construction research, its role in benefitting society, and the need for low carbon construction. But I have been asked to talk about construction and the recession. Out in the market place, the economies of Europe are struggling and so I believe there are better ways of pumping money into the economy than simple pouring it into banks.

I am from ARUP; technology designers and analysts for the built environment. From Sydney's Opera House to Berlin's Reichstag, from Europe's High Speed Rail network and Copenhagen's city metro to the Zlote Tarasy complex here in Warsaw we deliver world class infrastructure.

I want to explain why construction is uniquely placed to power Europe out of recession, but why it uniquely needs help. Of course we could simply pour huge quantities of money into Keynesian hole digging and backfilling. But to what end?

More preferable would be to invest in the vast infrastructure deficit that Europe has; water, energy, transport that would leave a totally beneficial legacy, and remove the physical constraints to growth. In times of high unemployment a new construction job spending €1 of construction, costs €0.44, and produces benefits of €4-€5. That would solve unemployment and inject money into our economies. But how to do this?

Without innovation and research investment, our only option is to build infrastructure the mid-20th Century way – high carbon, low innovation and high, very high cost – and so, all very wasteful and inefficient. But construction is notoriously difficult to bring the benefits of innovation to. In other sectors innovation occurs in young, small, entrepreneurial companies. Big construction is risky, and generally, well, err big. Innovation in construction is constrained by the risk aversion of lenders that want tried and tested techniques using established technology.

What are these barriers to technology adoption in Construction?

- Training – we always do it this way.
- Standards – too prescriptive and not outcome-based
- Over-Regulation
- Blunt Financial Instruments
- Low Risk appetite

Across Europe we have an urgent need to modernise construction delivery and I doubt industry will do it on its own – the risks and the OJ public procurement mitigates against it. So it is vital that we improve infrastructure delivery for ourselves, and to remain competitive; no – to become globally competitive. Across Europe we are seeing the influx of US investment and technology professional services companies crowding out European players, and this in turn causes Europe to lose out in global markets. And of course Chinese companies are advancing first at lower cost and increasingly and impressively in innovative delivery efficiency.

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The Commission must take on the drive and obligation to support step change advances in construction research, in energy efficient built environment, in intelligent infrastructure retrofit upgrades and in city renewal for the 21st century. Markets alone will not do this – the risks and the scale daunt the private sector, and are beyond what single nations can optimally achieve. Construct now, and the benefits accrue for a hundred years. Infrastructure is increasingly an inter-dependent system; transport, energy, water, communications are now totally trans-national, and no respecters of boundaries. Construction is being called upon to deliver and support a modern urban realm that only a systems view can succeed in. Rising sea levels, safe and speed transport, energy demands using renewables means that our living systems have to be intelligent and responsive to both demand and supply; resilient and future proofed. How best to smooth the peaks and not waste the troughs?

This ask, this joint task is pretty amazing – quite honestly we do not have all of the answers, but as we become more informed about the tasks, they become ever more vital – the infrastructure imperative is with us now. And it needs all of us to use our collective guile and resources to find solutions. Coordination and directive investment is needed to avoid overlap, conflicts and wasteful effort. The challenge is far too important for that. This is not self-starting and the scale is too daunting for single companies, let alone SMEs.

There are a lot of optimistic initiatives across Europe, whether through the Technology Innovation Centres or Fraunhofer, and university centres of excellence, agendas are being set. Our own European Construction Technology Platform has initiated the Energy Efficient Building research agenda: E2B and the through Commission funding, 230 industry players (a quarter of them SMEs) have been mobilised. Next out is **reFINE**: research for Future Infrastructure Networks In Europe to create the new green competitive and inclusive society.

However, current public procurement processes limit research agendas and inhibit innovation. They foster conservatism in the hope of avoiding legal challenge and safe if uninspiring solutions. This must change – procurement must open up to innovation, alternative solution bids and lateral thinking. This in turn will of course lead to the need for highly motivated, intelligent and inspired research commissioners. So it is not just money that will solve this enormous dysfunctionality of markets not delivering the right research and innovation – the single market across Europe needs unlocking as never before; academic institutions, public procurement, EU programmes all need transparent porosity to bring innovation through tumbling boundaries – nothing short of an open source knowledge transfer facility to broker new low carbon, efficiency and economic growth success strategies.

Standards of investment-specification and OJ procurement experience must target innovation as never before. This will require a level of risk understanding and capability to back multiple research agendas to respond to the drivers of the new European infrastructure programme:

- Demographics; aging and population growth
- Low Carbon
- Aged Infrastructure Legacy
- Technology Change
- Resource Constraints; land, water, energy
- Societal unrest

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Perhaps nowhere is the paradigm so acutely apparent and in need of being addressed than in our future concept of the city. Home to more than half of humanity, 75% of the world's GDP and 80% of its carbon emissions - solve cities and we solve most of the issues I have been describing. In this there is the most fundamental conundrum facing Europe. Europe, a grouping of nation states, needs a strategy for cities. Each of the EU's 27 countries see cities as their responsibilities, yet the infrastructure they need will be solved only by European if not global remedies.

I HOPE THAT IN THIS SHORT CANTER THROUGH THE CONTRIBUTION THAT CONSTRUCTION WILL PLAY IN EUROPE BUILDING, I have demonstrated that (i) infrastructure and investment in the built environment are the best way of securing a sustainable path out of recession; and (ii) pan-European remedies are vital to delivering this.

And that needs substantial research investment – the long term nature of Construction's investment risk/reward asymmetry is the cause of a fundamental market failure. But this in turn places the Commission and the EU's Parliament in a uniquely rewarding position to back our construction research agenda.

Thank-you