**Developing a Business Case for an International Research Infrastructure**

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In this contribution I will explore how to make a strong business case for investment in a an international research facility such as the African Light Source.

I will start from the viewpoint that scientific and technical Innovation is essential if we are to address the biggest problems we face. These include the global challenges of energy, climate, environment, and healthcare - It’s not enough to roll out existing technologies and demand societal adjustment – our toolkit is simply not sufficient. Scientific and technological innovation is also essential to address the economic and societal challenges in both developed and developing economies driven by globalised supply chains in an increasingly knowledge-driven world. These are complex problems and I don’t believe anyone really has the answer – but we do know that innovation and STEM skills will position economies and societies dramatically better to weather these challenges by generating higher-value knowledge-based employment. And of course, the experience with Covid-19 during 2020 and 2021 has served to dramatically re-emphasise the importance of scientific capacity and capability in dealing not just with the challenges we know about, but with the unexpected.

The key requirements in building sustainable support for any science megaproject are:

* A strong science case, endorsed by acknowledged experts in the field.
* Technical R&D carried out to the level where the remaining risks are understood and cost estimates can be made, including appropriate contingency at perhaps the 30% level.
* A project management plan following international best practices.
* A credible funding and governance plan.
* Stakeholder engagement – support for the project from a wide range of actors.
* A compelling investment case – including the anticipated societal benefits of the project

I will explore how these questions can be addressed to the satisfaction of governments and funders, using a number of examples but in particular the European Spallation Source (ESS) as a case study. ESS is a three billion Euro project to build the world’s most intense neutron scattering facility on a green-field site in Sweden. ESS is roughly 75% complete and science experiments should begin towards the middle of the decade. It provides us with a successful example of a major new, inter-governmental investment in a research facility for materials science.