



UK Association for  
**Science and  
Discovery Centres**

# The ASDC Response to 'A Consultation on Proposals for long term capital investment in Science and Research'

## By Dr Penny Fidler, CEO of ASDC

This response is written on behalf of The Association for Science and Discovery Centres.

The independent science and discovery centres and museums who are members of the ASDC network will respond individually on behalf of their organisations.

## Executive Summary

- The Association for Science and Discovery Centres (ASDC) brings together over 60 of the UK's major science engagement organisations including Science and Discovery Centres, National Museums and Learned Societies. Together these organisations engage 20 million adults and school children each year with hands-on science and engineering. Over 10 million of those who choose to explore science at these centres are women and girls.
- ASDC fully supports the importance given to Public Engagement in this consultation, and that this should be a key 'UK Science and Research Infrastructure Priority' as listed in Section 2.4. ASDC would support the Government's aspirations to explore innovative ways to get more people involved in the sciences, the need to nurture curiosity and the need to *'build on, and better utilise existing science engagement infrastructure to inspire, engage and involve the public in scientific research and development'* (points 130 - 132).
- **ASDC fully and whole-heartedly supports the proposal in Annex A7.1 of this consultation for £22 million to be invested in an 'Inspiring Science' Capital Investment Fund.**
- The 'Inspiring Science Capital Investment Fund' would catalyse growth and enable the UK's Science and Discovery Centres to increase delivery to satisfy current demand for science from the public and schools, increase their overall impact on the nation's STEM engagement and increase their sustainability.
- ASDC fully supports the proposal in Annex A7 that the 'Inspiring Science 'Capital Investment Fund' should be used to *'Support capital investment for inspirational and involving hands-on science exhibitions and programmes across the UK.'*

In addition, ASDC supports that the eligibility of this fund should be as proposed in Annex 7, targeted for ***'Science and Discovery Centres and other science visitor attractions with a unique role in involving the public in science that cannot access capital investment from public funds'***

- The ASDC membership includes Science and Discovery Centres as well as national museums. Currently in the UK, most charitable Science and Discovery Centres **are EXCLUDED from applying for public funding for capital investment from any public source.** For example they are unable to

secure capital investment from the Arts Council, HLF, other lottery funds or DCMS. The situation is different for National Museums in the ASDC membership who care for collections and are funded by DCMS, and are also eligible to apply for public capital funds through HLF and others. ASDC supports that the 'Inspiring Science Capital Investment Fund' should be targeted to Science and Discovery Centres who cannot currently access capital investment from other public funds. More information on this is in the Appendix.

- In support of the proposal for an Inspiring Science Capital Investment Fund of £22 million ASDC would like to note, the proposed investment fund of £22 million over 2 years would equate to **17p per person** per year for capital investment in hands-on future-focused inspirational science. This compares to the **£11.77 per person that is awarded every year by the Arts Council** to support the Arts. Just think how we could increase the science and engineering skills base across the UK and nurture and develop young scientific and entrepreneurial talent if we had anything approaching this level of investment.
- ASDC fully supports and endorses the Government's stated commitment to investing in the physical infrastructure required to provide a world class research environment in the UK. However, we would like to strongly note that for this great infrastructure to deliver on the investment, capital investment is also required in the infrastructure that creates and nurtures the skilled, creative talents and curious minds. One without the other is insufficient.
- ASDC would like to draw attention to the international research and evidence base that demonstrates the fundamental role that out-of-school science learning, and science learning in family groups play in developing children and young people's curiosity and interest in science and in 'delivering' young people into careers in science and engineering. ASDC is the largest network of family science learning organisations in the UK.
- This capital investment would have a truly national impact. Science Centres already attract large numbers of people to explore science in their leisure time, as well as working with millions of school students and teachers to build up skills in hands-on, practical and cutting edge science in both cities and rural areas throughout the UK. They can reach diverse audiences and over half who visit are girls and women. This capital investment would leverage the huge contribution they already make to the Nation's STEM skills base.
- Science and Discovery Centres operate successfully on a day to day basis. By combining commercial savvy with imagination, fundraising and nimble operations they have created sustainable business enterprises that enable them to inspire and involve schoolchildren and families with the sciences every day. Indeed, the fact that families, teachers and schools across the UK are happy to pay to get into the Science and Discovery Centres shows the high level of value the public place upon their offer. However, because they also largely have no revenue funding from public funds, reserves are rarely built up to re-invest in capital renewal which compounds this pressing and vital issue. Buildings and capital assets age and the millions of happy school children and families who have got 'hands-on' with the science and engineering exhibits has begun to take its toll. Capital investment is urgently needed for exhibitions, buildings, IT infrastructure, laboratories and science learning spaces so we can continue to bring the very latest science to all school students and their families across the UK for many years to come.

## 1. Introduction

As a nation and as a global society we have some major challenges ahead, especially in relation to climate and energy. Now, more than ever we need our young people to be inspired by science and engineering and to see it as something they want to be part of, both for our future economy and our future well-being. We also want every UK citizen to feel sufficiently confident with science and the process of science to understand the evidence, ask the questions they need and discuss matters and policies that will have a big impact on their lives.

The UK Association for Science and Discovery Centres brings together over 60 of the nation's major hands-on science engagement organisations who are collectively working to address this, including science and discovery centres, national museums, environment centres and learned societies.

Together, these trusted organisations encourage over 20 million children and adults every year (385,000 every week) to explore and delve into science in a hands-on, intriguing and personal way. Over ten million of those who choose to participate every year are women and girls. Teachers bring over two million school students from all backgrounds to support and widen the range of science that can be delivered in schools. Many students take part in high-tech science practicals, science workshops, discussions and science events. However, the majority of charitable Science and Discovery Centres are excluded from applying for capital funding from public funds.

Currently, as a nation, we invest heavily in making the Arts publically accessible for schools, young people and families through a variety of capital awards. We feel that to achieve the ambitious goals within this science and research consultation, the time has come to also invest capital funds to support the national infrastructure that celebrates science in a future-focussed, engaging, lively and publically accessible way. Of particular note is how these science centres also successfully reach underserved audiences in all regions of the UK, the topic of a recent ASDC report commissioned by BIS<sup>1</sup>.

This Consultation on Long-term Capital Investment in Science and Research examines how capital investment could be used most effectively to grow the UK's position in world science, technology and innovation. As part of this it asks what is the best split of investment between major national projects versus investment in individual projects and institutions. We have chosen not to comment on this areas, feeling others organisations are better placed than us to comment here.

However, the area of the consultation we are commenting on is the need for capital investment in the national infrastructure that underpins all UK science - that of inspiring and nurturing the curious and brilliant minds needed to maximise the investment and secure world-leading success.

**ASDC strongly supports the need to engage people of all ages and diverse backgrounds in all parts of the nation with UK science, giving fair and equitable access to all.**

**ASDC strongly supports the proposal in Annex A7 of this consultation for £22 million to be invested in an 'Inspiring Science' Capital Investment Fund.**

We support that this capital investment of £22 million would be invested in the successful national infrastructure that can inspire young people with science, support primary and secondary schools to do

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<sup>1</sup> UK Science and Discovery Centres: Effectively Engaging under-represented groups. By ASDC, commissioned by BIS. Published May 2014 <http://sciencecentres.org.uk/reports/underserved/index.html>

exciting hands-on and practical and investigative science and act as a place to discuss and celebrate the latest UK research with the public. We propose that this capital is over two years with the opportunity for further capital investment within the 5 year term of this consultation.

The consultation also asks for views on what are the priorities for UK capital investment. Again we would champion that high on the priority list would be investment in capital programmes that enhance the pipeline of scientific and engineering talent, helping to give every schoolgirl and schoolboy - and every family - from every background, access to high-end cutting edge science run by specialists in a centre that can be accessed by multiple schools in a region, serving teachers, children and parents.

## 2. An overview of the UK's Science and Discovery Centres

The UK Association for Science and Discovery Centres brings together over 60 of the UK's major science engagement organisations including Science and Discovery Centres, National Museums, Learned Societies and others. 20 million visits are made by adults and children every year to engage with science and engineering at these centres<sup>2</sup>, where people take part in hands-on creative science challenges, activities and practical science<sup>3</sup>. This includes around 10 million school-age students, two million of whom are brought by teachers to participate in inspirational curriculum-linked hands-on science programmes and activities.

The network of UK Science and Discovery Centres and Museums is the UK's largest publically accessible network dedicated to out-of-school science learning and family science engagement. Collectively every week, 385,000 adults and children choose to come to experiment, explore, discuss and delve into the world of science, technology, engineering and the environment. This is vital given that school students spend **80% of their waking time out of school**<sup>4</sup>, and that young people say, although they received careers advice from a variety of sources, family was the most common and most useful.<sup>5</sup> Many other nations (China, Finland and others across Europe) see Informal science learning as an integral and important part of their national science learning strategy and invest in it accordingly.

The science centres within our membership support school students and teachers particularly with future-focussed and practical science. In a recent multicentre national study, 89% of the hundreds of students taking part in a single molecular biology hands-on workshop said the experience had increased their interest in science and 95% felt it increased their confidence in them doing science<sup>6</sup>.

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<sup>2</sup> For clarity, within the ASDC membership of 60 science engagement organisations there are around eight National Museums funded by DCMS. Together they engage over half of the 20 million people across the network. They offer free entry and care for heritage collections. These museums (and some others) fall outside the scope of this response as they currently have access to some public funds for capital renewal.

<sup>3</sup> Visitor numbers: Each science centre or museum publishes annual visitor numbers, which ASDC collates across the membership. These are closely verified by the independent BIS-commissioned report in 2009. For free entry National Museums they are collected via DCMS-approved methods. For charitable science centres that must charge admission, visitor numbers derive from the numbers of entry tickets sold. For the avoidance of doubt, they are not necessarily unique visitors and if in a single year one person visits twice, or visits two centres they would be counted twice.

<sup>4</sup> Bell, P *et al*

<sup>5</sup> 2013: Wellcome Trust Monitor Wave 2

<sup>6</sup> 2012: Hands-on DNA programme, supported by Wellcome Trust

### 3. The need: Capital Investment to support future-focussed accessible science

Unlike traditional Galleries, Arts Organisations and Museums, the nation's future-focussed charitable Science and Discovery Centres have little in the way of on-going revenue support from public funds. Science and Discovery Centres have become adept at generating income to cover their operating costs and most charge an entry fee to visitors. The fact that visitors (including families and schools) are happy to pay for entry indicates the value that parents, teachers and other adults place on what they deliver.

However, the conditions of application of all major publically-funded capital funds are currently constituted in a way **that excludes applications from future-focussed science at Science and Discovery Centres.**

The UK Science and Discovery Centres cannot apply for capital investment from (for example):

- Arts Council England
- The Heritage Lottery Fund
- Other National Lottery funds
- DCMS Wolfson Museums and Galleries Improvement Fund
- HEFCE Museums, Galleries and Collections Fund

**Setting up the 'Inspiring Science' Capital Investment fund is critical to enabling schools and families in all parts of the UK to engage with the latest science, and to maximise the potential of these successful and proven regional hubs of publically accessible science.**

### 4. Supporting Proposal 7.1: The Inspiring Science Capital Investment Fund

ASDC fully supports and endorses the proposal within this consultation to create a £22 million 'Inspiring Science' fund as listed in Annex 7.1.

Further ASDC fully supports the scope of this fund which is outlined in Annex 7.1 of the consultation, and copied here proposing that it would be used:

*'to support capital investment for involving hands-on science exhibitions and programmes across the UK. This would be open to, amongst others, science and discovery centres and other visitor attractions with a unique role in involving the public in science, that cannot access capital investment from other public sources.'*

- This proposal would equate to 17p per person per year across the UK<sup>7</sup>
- Arts Council England awards £11.77 per person per year.

Science and Discovery Centres act as publically accessible science hubs for their regions and communities. They are successful social enterprises with a strong reputation with teachers. Yet whilst there is clear demand for what they offer, they need capital investment to grow and update their offer, especially where cutting edge science is involved. They want to make investments in their buildings, labs and classrooms so they can service the demand from teachers and families, and grow their corporate hire capabilities so they can become more financially sustainable. There is clear evidence that many science centres are currently at

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<sup>7</sup> Assuming a UK population of 63 million (63,181,775 2011 census) and an English population of 53 million. Arts council funding in 2011-12 was £624.5 million annual investment divided by population of England [www.artscouncil.org.uk/what-we-do2/advocacy/faqs/](http://www.artscouncil.org.uk/what-we-do2/advocacy/faqs/)

capacity and turning away schools and corporate business. Investment would enable them to capitalise on this demand.

Capital Investment would enable this, in a similar way to how the Arts Council and Heritage Lottery enable this for Arts venues and museums.

**Setting up this capital investment fund is critical to secure and expand what Science and Discovery Centres can achieve in the coming years.**

#### **4. Long-term legacy and reaching diverse audiences**

Capital investment which is focussed on inspiring young people to get involved in science and engineering has a legacy that extends far beyond 2021. Children inspired now could be working in the science and engineering sector for the next 50 years, and of course there is clear evidence that families where one person works in science (family science capital) are far more likely to inspire their children to work in science careers, meaning the investment is passed down the generations.

Currently the UK STEM workforce does not reflect the makeup of the UK population as a whole. This needs to change to attract a wider base of skills and experience to tackle the challenges we face. Science and Discovery Centres across the nation reach wide and diverse audiences through schools and community programmes, highlighted through the 22 case studies in the recent ASDC Report.<sup>8</sup> These interventions and different approaches are vital to ensure girls and underserved groups get more involved in science. Simply doing what we have always done will result in the same future demographic within UK science.

Capital investment is needed in this infrastructure so the science centres can also continue to engage and support primary and secondary schools and teachers with the latest cutting edge practical science and prepare them with the skills and enthusiasm for a life in science. Of note ASDC would support the highlighted importance of investment in skills noted in point 52 of section 1 of the consultation but would contest that this 'starts with research students' and refer readers to the now large body of academic evidence that shows it actually starts in primary schools. Currently few primary schools have even a single teacher with a science degree and it is clear there is a nervousness amongst many primary teachers to undertake chemistry and physics experiments with younger children. The science centres can easily support them in this, and capital investment in the facilities of the science centres is an easy and cost effective way to achieve this and support primary and other teachers.

#### **5. Ensuring the Public have access to great UK science**

Science and Discovery Centres are found across the UK in cities and rural locations. A very large proportion of the UK population is within an hour of a science centre. Capital renewal in exhibitions and labs would enable a celebration of the very latest UK science at these venues, in a place where schools and the public already come. ASDC and centres already run a number of programmes that make it easy for scientists to come and meet the public to talk about their science. For example, ASDC runs a national strategic programme called 'Explore Your Universe' (funded by STFC) which brings the very latest UK science to school children and the public. In one year, 156,880 people took part in the programmes' family shows and schools workshops and over 50,000 people met and spoke with a scientist or engineer. The science that is

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<sup>8</sup> UK Science and Discovery Centres: Effectively Engaging under-represented groups. By ASDC, commissioned by BIS. Published May 2014 <http://sciencecentres.org.uk/reports/underserved/index.html>

celebrated ranges from UK particle accelerators to space science and from the UK's role in CERN and the Higgs work to climate observations from UK-made satellites.

Academic evaluation of this programme showed that girls and boys were equally inspired by the physics workshops. After a one-hour workshop, 56% of both boys and girls said the experience had made them more interested in studying science.

### **Question: Allocation of all funds now, or leaving some for new discoveries**

Because science is ever changing and great advances are somewhat unpredictable, ASDC would support the notion within the consultation that a proportion of funds remain unallocated in the first instance. This would allow for additional support for exceptional programmes of national importance as well as new capital investment in new discoveries.

On a smaller note, ASDC would note that the £22 million for capital investment was proposed as over 2 years, and we would propose further capital funds within the time frame to leverage further investment in the UK science and engineering skills base across the UK.

### **Question: Annex B2: Proposed Criteria for Prioritisation**

The current priority categories of Affordability, Impact, Excellence, Skills and Efficiency and Leverage are all good priorities. ASDC would like to see the additional following concepts added or highlighted:

- Investment in capital infrastructure that will increase the science and engineering skills base across the UK, in terms of numbers, diversity and geographical spread. In addition, investment in capital infrastructure that will support the development of the science skills base from a far younger age and in a more creative and ingenious manner befitting the types of scientists and engineers we want to nurture if we are to become world leaders in new science.
- Investment in capital programmes that will also work to engage families and wider society (including groups under-represented in science and girls) to lead to greater social mobility and equity rather than simply training those who have already decided to have careers in science.
- Investment in capital infrastructure and research that has the potential to increase the well-being of large groups of the population globally, including through research related to climate and carbon use.

## Appendix 1: Details for the Inspiring Science Capital Investment Fund

### Who could apply to the 'Inspiring Science fund'?

- The application process would be competitive, and peer reviewed.
- All Science and Discovery Centres who are NOT currently eligible for capital funding from public funds could apply.
- Applicants must involve at least 50,000 people each year in the sciences (STEM).
- Applications must be focussed on delivering or sustaining the delivery of hands-on inspirational science experiences.
- Applicants must be a registered educational charity.

### What could the 'Inspiring Science' Fund enable?

Capital investment that achieved one of the following goals:

1. Capital development and renewal of science learning spaces, science labs, equipment and science exhibitions (including IT and operational infrastructure) to keep the science programmes offered to schools and families at the leading edge and to increase the delivery of programmes to greater numbers of the public, families and schools.
2. Capital build and equipment to increase the on-going financial sustainability and viability of Science and Discovery Centres (for example improving science centre facilities to increase on-going earned income from corporate hire, or development to kick-start other revenue generating programmes where clear Return on Investment can be shown).
3. Special Hands-on science programmes with a capital component, eg the capital component of setting up a hands-on space engineering lab or a molecular biology laboratory for students.
4. Capital programmes to reduce the environmental and carbon impact of the organisation.

### Logistics

1. In ASDC's original submission into this consultation, we proposed the Inspiring Science Capital Investment Fund would be £22 million over 2 years (17p per person for 2 years). We would still support this funding timeframe, rather than the 5 year time frame within this consultation.
2. We would propose the amount is given in one single funding round, to enable ambitious one off capital projects (large and small) to bid together.
3. Appropriate and robust administrative, financial and evaluation systems are required and it is proposed that a portion of the fund should be set aside to contract an appropriate organisation to administer the fund and ensure that outcomes are delivered and evaluated appropriately.
4. Whilst being aware of all conflicts of interest, ASDC would be willing to play a part on the grants awarding panel, or to work with Government to administer the fund.
5. We would hope that the impact of this capital investment over two years would result in further public funding being made in the science and discovery centre sector to enable the public and schools from all backgrounds to have easy access to future-focussed UK science for many years to come. We would propose that capital investment in popular, proven science engagement begins to approach that of the Arts Council in scope and size.



## Appendix 2: Current Lack of access to Lottery and Arts Council funding

### National Lottery Funds

'National Lottery Money is given out by 12 Independent organisations, each with specialist knowledge of their sectors' <http://www.lotterygoodcauses.org.uk/funding>

1. Arts Council England
2. Arts Council of Wales
3. Arts Council of Northern Ireland
4. British Film Institute (film forever)
5. Big Lottery Fund
6. Creative Scotland
7. Heritage Lottery Fund
8. Sport England
9. Sport Northern Ireland
10. Sport Wales
11. Sport Scotland
12. UK Sport

**None are focussed on inspiring science, engineering or innovation**  
Should there be new National Lottery Fund be for inspiring science?

### The current situation with Lottery funds

The two lottery funds that have some cross-over with the work of Science and Discovery Centres are the BIG lottery and HLF. However, ineligibilities for capital investment are as follows:

**Big Lottery:** are '*Committed to Improving communities and the lives of people most in need*'. Science centres *can* apply for BIG Lottery grants for their specific community outreach programmes working with disadvantaged groups **however** they can't secure funds here for capital investment or for their more mainstream schools and science engagement work.

**Heritage Lottery Fund: aim** '*To preserve and transform the heritage of the UK through innovative projects that will make a lasting impact on people and places, and bring heritage to life for generations to come*'.

**However**, although science and engineering is within their remit, HLF are focussed on heritage and collections rather than inspiring future innovation and experimental science. Their funds are awarded primarily for heritage collections and buildings. Science and Discovery Centres can't access (or can't successfully secure) capital investment for future-focussed science and inspirational hands-on science.

### The Arts Council

Arts Council England '*champions, develops and invests in artistic and cultural experiences that enrich people's lives*. Their mission is to provide '*great art for everyone*'.

**Their mission (above) quite clearly indicates they consider that culture means Art not the Sciences.**

Consequently there is no real access to capital investments for hands-on science centres. There is some support for museums, libraries and archives through the Arts Council but most Science and Discovery Centres can not apply as they do not qualify as museums.

In 2011/12, total arts council investment (including Lottery) was £624,479,000. This is the equivalent of £11.77 per person, or 23p per week. (Ref: [www.artscouncil.org.uk/what-we-do2/advocacy/faqs/](http://www.artscouncil.org.uk/what-we-do2/advocacy/faqs/))

### **Appendix 3: Which ASDC members already get public funding?**

ASDC members are funded in a variety of ways. However, the majority of Science and Discovery Centres in England receive no central public funding for either revenue or capital. These include for example, At-Bristol Science Centre, Centre for Life in Newcastle, Eureka! The National Children's Museum in Halifax, Winchester Science Centre, The National Space Centre in Leicester and Eden Project in Cornwall. One note, is that the lack of any revenue funding also compounds the issue, as it means science centres rarely build up large reserves and endowments to fund capital development or to invest to leverage capital funding from other sources.

The situation differs slightly in Scotland and Wales where some science centres have been awarded public funds from the Scottish and Welsh Governments for programmes - but not for capital.

#### **DCMS Museums within the ASDC membership**

Some ASDC members already receive funds from public sources via DCMS. These include for example the Science Museum, Natural History Museum, MOSI, National Museums Liverpool. Whilst they all undoubtedly would make excellent use of additional capital investment, because they currently have access to some public funds for some capital renewal and revenue, we would consider them outside the scope of this fund which is targeted on those who cannot currently access any public funds. To note, the DCMS-funded museums within the ASDC membership that are already publically funded contribute around half of the visitors to the ASDC network, have free entry and also have a remit to care for the nation's science heritage collections.

#### **Scottish Science Centres**

The Office of the Chief Science Advisor within the Scottish Government awards funding to the following four Scottish Science and Discovery Centres towards their operations but not capital. The figure is different for each centre and is based on the number of children and adults they attract to their science programmes and exhibitions. For Glasgow for example they have secured around 15% of revenue for their 280,000 participants, 90,000 of whom are school children brought by teachers to support school science.

1. Glasgow Science Centre
2. Our Dynamic Earth, Edinburgh
3. Dundee Science Centre
4. Satrosphere, Aberdeen Science Centre

Dr Penny Fidler, June 27 2014