BRITISH COUNCIL
Northern Ireland

THE ENTREPRENEURIAL SCIENTIST AND THE SUSTAINABLE DEVELOPMENT GOALS

Wednesday 22nd February 2017

Report

Contents:

The Entrepreneurial Scientist and the Sustainable Development Goals: Event

On Wednesday 22nd February 2017, local and international minds came together at Catalyst Inc. in Belfast's Titanic Quarter, for the centrepiece event of this year's partnership between British Council Northern Ireland and the Northern Ireland Science Festival.

Under the spotlight were nineteen scientific minds from eight countries across the globe, all PhD scholars hailing from the Newton Fund, a programme targeting economic development and welfare through science and innovation. Blended with these minds was a group of twenty local experts and academics, each of whom embodied one of the key three pillars of sustainable development: economics, society and environment. Together, they were asked; How can entrepreneurialism go hand in hand with sustainable development, with Northern Ireland leading the way through innovation?

The evening opened with a networking reception, followed by several speeches. CEO of Catalyst Inc., Dr. Norman Apsley, opened proceedings and welcomed Steve Orr, Director of Catalyst Inc. and our first keynote speaker. Steve's address honed in on his vision of Northern Ireland becoming one of the most entrepreneurial knowledge economies in Europe by 2030, as well as giving the Newton scholars tips on developing and furthering their research networks. He was followed by Clare McKeown, Sustainable Development Manager Belfast City Council, who brought a Belfast focus to climate action, renewable energy and poverty, before leading onto the group-based discussions.

In World Café style, participants were divided into five groups and each table given a different scenario correlating to a selection of the United Nation's Sustainable Development Goals. With one participant selected from each group, a feedback panel chaired by Joanne Stuart (Director of Development, Catalyst Inc.) brought the lively discussion together, with conversations focused on Northern Ireland's future in terms of land, health, fuel and cyber security, unveiling a number of interesting and fresh insights. The action was also captured live through artist Brian Spencer's graphic harvesting throughout the night. Following concluding remarks, Newton Fund scholars and local academics from Queen's University Belfast and Ulster University gathered in Titanic Belfast, another partner of the NI Science Festival, to continue their discussions over dinner, and to spark future partnership and collaboration opportunities. This report looks at each scenario individually and what could potentially be done to ensure Northern Ireland remains at the forefront in the global race for sustainable development.

British Council and NI Science Festival: Partnership

The British Council connects people worldwide with learning opportunities and creative ideas from the UK to build lasting relationships between the UK and other countries. Now in our 86th year, we are the UK's international organisation for educational opportunities and cultural relations, on the ground in six continents and represented in over 100 countries worldwide.

One of the British Council's charitable purposes is to encourage scientific, technological, cultural and educational cooperation between the UK and other countries. This is because we see science, the pursuit of knowledge, and innovation, the exploitation of this knowledge, as being integral to culture; and the sharing of scientific knowledge and ideas to be an excellent way of building trust and understanding internationally and creating opportunities for people in the UK and other countries.

We support international collaborations that bring mutual benefit to the UK and partner countries, and promote economic and social prosperity. We run a number of initiatives that support partnerships and collaboration. We believe that higher education partnerships are a very powerful mechanism to engage the UK internationally and to build understanding and trust. By acting as a catalyst and providing support for these, we can help to make them strong and sustainable over the long term.

Society today is faced with a number of pressing challenges, from how to feed a growing population and give everyone access to affordable clean water and energy, to how to respond to threats (such as climate change) to biodiversity and human health. Science and innovation are vital tools to address these challenges and fuel future prosperity, but they cannot solve these problems alone, or in national isolation. If we are to achieve sustainable development, reconciling social, economic, and environmental demands, whilst at the same time protecting the rights of future generations, we need to make connections not just between scientists themselves, but also between scientists and the wider community; government, business and civil society.

The Northern Ireland Science Festival, founded in 2015, this year took place over 11 days between the 16th to 26th February 2017, offering a stimulating and wide range of events focusing on the wonders of science, technology, engineering and mathematics. During the day, the Festival offered locals and visitors talks and interactive activities for young people, parents and schools. By evening, the Festival showcased an eclectic mix of scientific debates, talks, theatre, comedy, music, food and film for adults.

Organised by Science Festivals NI, the Festival was a unique collaboration of major STEM outreach organisations in Northern Ireland funded by the Department for the Economy, Belfast City Council, Tourism NI, Queen's University, Ulster University, MCS Group, the Matrix Panel and the British Council. The programme of 183 events consisted of a mixture of international and local speakers

through events developed by both the Festival and its partners. Events took place across 62 different venues throughout Northern Ireland.[1]

Now in its third year of partnership, 2017 saw British Council Northern Ireland and the Northern Ireland Science Festival join forces in two principal capacities. Supported by British Council Northern Ireland, 'Predictable Contact' was exhibited at Queen's University's Naughton Gallery for the duration of the Festival. The exhibition was the work of Michael Hanna, the 2017 official Artist in Residence for the Festival. Inspired by scientific methodology and classification, the exhibition reflects the artist's interest in psychological research on learning.

This year's partnership culminated in our main event: "The Entrepreneurial Scientist and the Sustainable Development Goals"; the subject of the present report.

Participating Newton Fund scholars

[1] NI Science Festival Evaluation Report 2017

The United Nations' Sustainable Development Goals and the Newton Fund: Context

In 2015, the Member states of the United Nations agreed upon and adopted a set of goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years. The goals are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.

Research and innovation are, today, seen as the keys to unlocking and encouraging sustainable economic growth and further development. The view is shared by the vast majority of countries worldwide, whatever their income level or status. This was one of the key conclusions reached by UNESCO Science Report: towards 2030.

The 17 SDGs adopted by the United Nations

Globally, funding for R&D is increasing and scientists are more mobile than ever, thanks in part to government grants – including the UK's Newton Fund.

The Newton Fund builds research and innovation partnerships with 17 partner countries to support their economic development and social welfare, and to develop their research and innovation capacity for long-term sustainable growth. It has a total UK Government investment of £735 million up until 2021, with matched resources from the partner countries.

The Newton Fund is managed by the UK Department for Business, Energy and Industrial Strategy (BEIS), and delivered through 15 UK delivery partners, which include the Research Councils, the UK Academies, the British Council, Innovate UK and the Met Office.

Programmes and projects funded through the Newton Fund range from combatting dengue fever in Mexico to recycling electronic waste in Vietnam.

The Newton Fund not only supports sustainable development by providing funding, but also by allowing researchers and universities to make new connections through international networks - as well as strengthening links between the private sector, universities and public research institutions

For our event in February, we welcomed to Northern Ireland, Newton Fund PhD scholars currently enrolled at universities across the UK, with research interests ranging from wind resource design, to marine environment, to zoonotic disease. Scholars hailed from China, Colombia, Egypt, Philippines, Kazakhstan, Vietnam, Thailand and Turkey.

Event

The Newton scholars joined with local experts and academics to discuss and find solutions to the following five scenarios. Solutions were proposed by each of the groups and fed back in the plenary with a lively panel discussion. The following quotes and graphic harvesting capture some of the flavour of the discussion. The views and quotes captured do not necessarily represent those of the event organisers.

Our Urban Environment and Ageing Population: Scenario 1

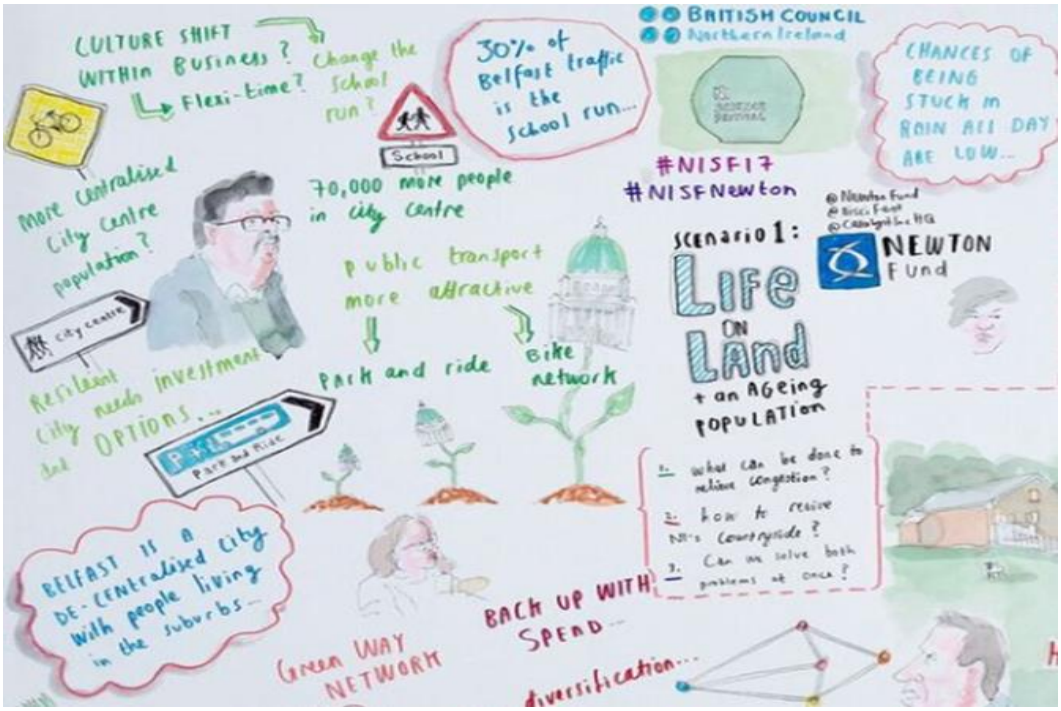
"It is now 2040 and Belfast has become the most congested city in Europe, with congestion levels now at 70%. Commuters coming in to the city face a 1 ½ hour delay, with the worst times to travel being Monday morning and Friday evening.

This leads to an 'unacceptably high' level of air pollution. According to a report published by the Institute of Air Quality and Human Health, air pollution in cities across the globe has increased significantly over the last twenty years and for the first time has overtaken tobacco smoking as the leading cause of lung cancer.

Less visible to the naked eye, modern pollution is a cocktail of dangerous particulate matter which comes from many sources, including chemical plants, power stations and, in this case; vehicles. At the same time, Northern Ireland's population is growing older, but with a marked split in population age between town and country. More and more young people are settling in towns and cities, while older people are retiring to, or remaining in, our countryside.

A recent publication shows that the net production rate in almost all European countries is insufficient to keep the population stable in the long term. Dramatic decreases are forecast particularly in rural areas. Northern Ireland farmers are on average, more than ten years older than the general public. Many of them have no successors (with only 2% of the farming population being under 30) and when they retire, no one to take their place, so large areas of arable land are lying fallow. In many villages, local shops are disappearing and the general level of services is rapidly deteriorating.

Locals in rural Northern Ireland have called for a new bypass to revive their economy; however this cuts through a protected wetland and area of cultural significance. Protesters are up in arms and the proposal fails to gain support."



Live graphic harvesting of scenario 1

Selection of ideas and comments offered to questions covered in scenario 1

What can be done to relieve congestion?

"In Northern Ireland, we need an entire culture shift about how we do business. Employers need to be open to the idea of flexi-time and home-working and there needs to be a new way to create a service economy on the peripheral areas."

"Because of the legacy of the Troubles, Belfast has become centralised, with the bulk of the employment in the city centre – but with a very decentralised suburbia. In these areas, children don't walk or cycle to school and this needs to change. The reasons they may not currently be inclined to walk include; a lack of pavements, high volumes and speeds of traffic, unsafe road crossings, worries about children travelling on their own, and high rates of car ownership."

"We need to change this, as currently we're now at a crunch point in changing our cultural mindset. To do this, we need to educate both children and parents and make cycling and walking a safer option - perhaps through increasing bike lanes and government-funded programmes."

How do we revive Northern Ireland's countryside?

"To revive our countryside, we need to decentralise employment and encourage people to migrate away from the city centre. This will include the development of a coherent spatial planning policy, with special emphasis on the demands of Northern Ireland's aging society - it should include - flexible public transport; preservation of rural shops, post offices and other amenities; access to the

countryside; support for training younger people in the agricultural workforce; and measures aimed at preserving rural diversity and distinctiveness."

"Green farming systems can also revive the countryside by creating job opportunities. Low-input farms such as organic and mixed are, by nature, more labour-intensive and are associated with on-farm processing, local marketing and other activities."

Can we solve both problems at once?

"We need to set a strong short-term vision and a longer vision for Northern Ireland and be savvier about how we do things. We can do this, by for example, making use of new technology, such as the Newtownards Company, See Sense. They enhance the safety, performance and enjoyment of cycling by bringing technology to the cutting edge of cycling design."

Representing scenario 1: Jonathan Hobbs, NI Greenways

Food Security: Scenario 2

"A new 'wonder vaccine' has been developed, which claims to protect all livestock from disease.

Without thorough testing, but with a clever marketing campaign, the vaccine goes global. But two years later, the millions of animals that had been treated with the vaccine start to develop a wasting disease. Their meat could not be used for human consumption and they all had to be slaughtered.

Unfortunately, the disease jumps the species barrier to humans as Chronic Wasting Disease (CWD) and 220 cases are confirmed worldwide, with a number of deaths.

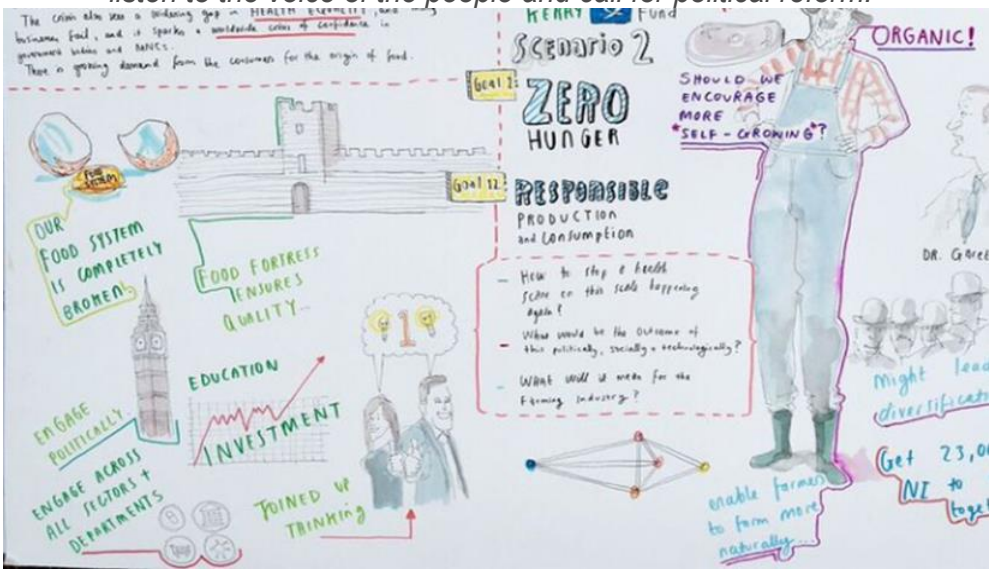
Northern Ireland is only 60% self-sufficient for food, wastes 1/3 of food purchased, with three times as much of the agricultural land in Northern Ireland being used for cultivating crops 50 years ago.

Therefore, almost overnight, people in Northern Ireland are forced to either become vegetarians or pay enormous sums for organically produced meat imported from the few countries in the world which have not adopted the vaccine. There are major food shortages as food prices go up and Northern Ireland's agri-food industry, which relies heavily on dairy and meat, comes under strain. Many people lose their jobs and farms become bankrupt.

The crisis also sees a widening gap in health equality, with people from lower socio-economic backgrounds worse off. They have come to rely on the more affordable meat and dairy and not fruit and vegetables.

This is one of the worst in a long series of food-related health disasters and sparks a worldwide crisis of confidence in government bodies and multinational corporations. There is a growing demand from the consumers for the origin of food.

The crisis has a far-reaching impact on local and global politics. People now demand leaders who listen to the voice of the people and call for political reform."



Live graphic harvesting of scenario 2

Selection of ideas and comments offered to questions covered in scenario 2

How can we stop a health scare on this scale happening again?

"Currently we live in a world where demand has led to the creation of complex food supply chains which have limited traceability and accountability mechanisms, increasing the likelihood of food scares. We need to have greater clarity and consistency of where our food comes from. There is currently a need for new categorisation structures in our food chain which enables a food scare to be classified according to both its physical manifestation and the origins of the scare."

"The key to this is education and for people, including both farmers and policy makers – to understand the true value of food. Hopefully with this, there will be a reduction in meat consumption – with a movement towards more plant-based foods."

"There also needs to be some standardisation of food – we could change how we do things – such as 'Best Before' dates to reduce food waste. Unlike 'Use By' dates, 'Best Before' dates do not indicate a time after which the food becomes unsafe to eat - rather it defines a time, months or even years away, when the quality of the food diminishes and it might not taste as good – but is still edible."

"We also require a great deal more innovation and support for local business – it would be wonderful if farmers could get more support to look at different food systems – and this in turn would lead to diversification of the food industry and a move away from relying so heavily on milk and cheese. We should be giving farmers incentives for sustainable food in the realms of organic farming, sustainable fishing and plant-based meat alternatives."

Representing scenario 2: Kerry Melville, Belfast Food Network

World Energy Crisis: Scenario 3

"It's 2040 and a world global energy crisis hits. War started when terrorists blew up an oil pipeline in Russia and soon pipelines all over the Middle East are being attacked.

The West panics, not only because oil prices are rocketing, but also because reserves are running out — Europeans need to find a new way to make energy.

This is a huge problem globally — especially in regions like Northern Ireland, where there is still a huge dependency on non-renewable energy resources. Two potential fracking sites in the eastern region of Northern Ireland have been found – however, because of environmental concerns, further exploration has yet to begin.

The government has also been slow to action in regards to energy, with limited investment in this area and slow movement to a low carbon economy – allocating only 7% of its total budget to green measures.

After the energy crisis, people in Northern Ireland can no longer afford to have cars and resort to working from home. In some ways this is beneficial, as people begin to form more cohesive, tight-knit communities, but there is also widening social isolation – with more of the population suffering anxiety, depression and mental health problems. The crisis leads to widespread migration as people move to more affordable, rural areas where house prices are cheaper.

The agriculture sector also suffers as people have to find new ways to produce food – the energy crisis has changed the balance of the world economy and people in Northern Ireland can no longer afford to import food from abroad. Farming techniques also have to improve as oil is used in pesticides, fertilizers, transport and cultivation machinery.

More food banks begin to pop up as more of the population lives below the breadline, crime rises by 10% and public services are failing."

Live graphic harvesting of scenario 3

Selection of ideas and comments offered to questions covered in scenario 3

How can we address this fuel crisis and how would government policy and technology need to change in line with this?

"This fuel crisis would result in people burning what they could find for heat – and ultimately lead to the development of a demand for renewable energy resources. Offshore wind generation has been meeting resistance in Northern Ireland, so we would need to focus on anaerobic digestion, energy from wind and from tidal power."

"We also should become less dependent on a global food supply and make much shorter lines between production and consumption. We need to change our attitude towards food and return our diet to a more vegetable-based one, focusing on vegetables, proteins and starch. Farming should move to something more high-tech and increasingly organic."

Representing scenario 3: Dr. Duncan Morrow, Research in Social Sciences, School of Criminology, Politics and Social Policy, Ulster University

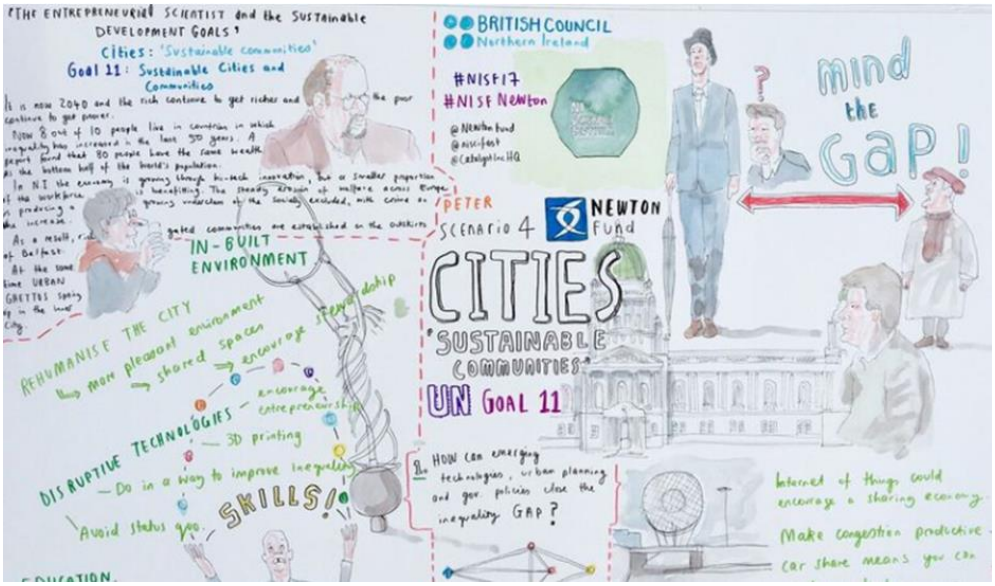
Sustainable Communities: Scenario 4

"It is now 2040 and the rich continue to get richer and the poor continue to get poorer. Now eight out of ten people live in countries where inequality has increased in the last 50 years. In a recent report published by a global humanitarian charity it showed that the richest 80 people in the world have the same wealth as the bottom half of the world's population. Driven by financial competitiveness, this inequality forces governments to turn away from protecting the less fortunate members of society.

In Northern Ireland, the economy is growing through hi-tech innovation, but a smaller proportion of the workforce is benefiting. The steady running down of welfare state across Europe is producing a growing underclass of those socially excluded, with crime on the increase. This sees for the first time, rich gated communities with private security guards, spring up on the outskirts of Belfast. People now desire to live in secure, low-crime areas, mixing with people with lifestyles and backgrounds similar to their own. Internally, these gated communities are seen as socially sustainable.

At the same time, urban ghettos inhabited primarily by poor immigrants spring up in the inner city. (Ironically, Belfast's 'Peace Walls' have become a major attraction in conflict tourism, named as one of the top visitor destinations in the world.) These gated communities have created forced segregation of communities, as well as both social and political exclusion. Many of those living within them are now solely concerned with taking care of themselves and their immediate neighbours, while outside, there is a rise in mental health issues – including drug addiction and depression.

Economic growth, it seems, is not enough as an objective of a sustainable urban economy: there is also a need for equitable income distribution, democratic participation and empowerment. Growth, it seems, is not the answer to inequality. Economist Jeff Sachs has called for a new age of sustainable development which, he argues, "tightly links the human-made world of economics and politics with the natural world of climate and biodiversity and with the designed world of 21st century technology."



Live graphic harvesting of scenario 4

Selection of ideas and comments offered to questions covered in scenario 4

How can emerging technologies, urban planning and government policies close this inequality gap?

"To create more sustainable communities we should concentrate firstly on the built environment. We need to rejuvenate the city and create a more peaceful place where citizens feel empowered and have a sense of stewardship. To do this, we need to create more shared spaces which inhabit mixed communities and encouraged more people to want to live in the same space. On top of this, we need to make our communities more democratic, so more people are involved in the decision-making process."

"We need to improve people's employability skills, through for example, restoring old buildings. This will give people both a new skill-set as well as increase their pride in the local community. These skills would also enable people to obtain more affordable housing and in turn could reduce fuel poverty by enabling people to live in more energy efficient dwellings."

"Another way to close this inequality gap is through disruptive technology – which would encourage businesses to adopt new approaches and open themselves up to new, and more sustainable models of working. For example, the use of nanotechnology or 3D printing would rapidly reshape not only our economy, but our consumption patterns, altering industries such as transportation, travel and hospitality. This could potentially create a more circular economy in Northern Ireland and by taxing international companies and giving incentives to local businesses, Northern Ireland economy could be boosted significantly."

"Economically, Northern Ireland could also bring in a basic income to cultivate sustainable and ethical prosperity. This would replace social welfare payments, child benefit and the state pension as we currently know it. This solution has a crucial role to play in the transition to an economy and society based on the well-being of all and the sharing of resources for the prosperity of all. One of the biggest benefits of a basic income would be restoring a sense of the richness of enough. Nobody wants to pay unfair taxes, but if people see that public monies are raised and invested in ways that enhance the well-being of the community at large, they are likely to participate willingly in this kind of taxation system."

Representing scenario 4: Peter Ramsey, Business in the Community Northern Ireland

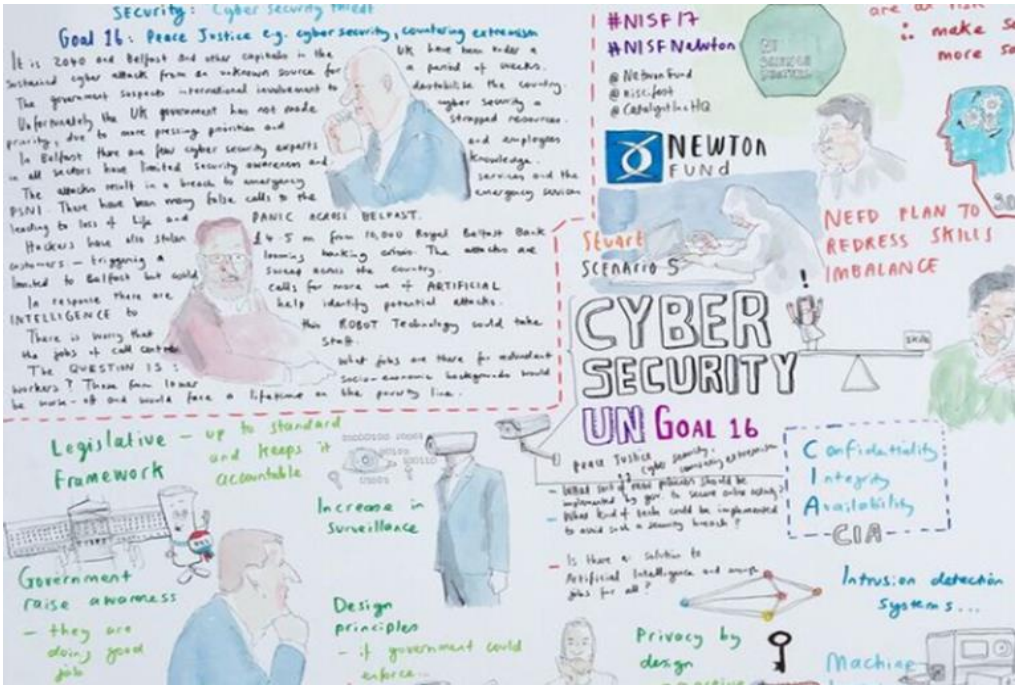
Cyber Security: Scenario 5

"It is 2040 and Belfast and other capitals in the UK have been under a sustained cyber terrorists attack from an unknown source for a period of weeks. The government suspects international involvement to destabilise the country but as yet has not been able to identify the source. Unfortunately, the UK has not made cyber security a priority, due to more pressing priorities and strapped resources. There are few centres of excellences in universities or investment in STEM teaching.

In Belfast, there are no cyber security experts as it is expensive and many decision makers are unable to see the return of investment on having these experts on retainer. Employees in all sectors have limited security awareness and education — and do not have adequate training to better understand their duties and responsibilities.

The attacks result in a breach to emergency services and the Police Service of Northern Ireland. There have been widespread false alarm call out calls to the police, fire and ambulance services while real emergency calls are often not getting through, resulting in loss of life and panic across Belfast. Aside from the emergency services, hackers have already stolen £4.5 million from 10,000 Royal Belfast Bank customers — with the threat of a major banking crisis as customers lose confidence. There is a real threat that the entire UK stock market could be poisoned and collapsed by faulty data. To date the attacks seem to only be targeting Belfast, but there is a risk of the threat sweeping across the country.

In response, there are calls for the use of more Artificial Intelligence — with many believing this technology could help identify correlations and patterns that were impossible for humans to see before. However, there are concerns that this robot technology will increasingly take over from call centre and customer service staff, with the big question being: What new jobs will there be for all these redundant workers? Those from lower socio-economic backgrounds would be worse off and face a lifetime on the poverty line."



Live graphic harvesting of scenario 5

Selection of ideas and comments offered to questions covered in scenario 5

What sort of new policies would need to be implemented by government to secure our online activity?

"To secure online activity, the Government would need to create some sort of stringent legislation framework for each of the sectors which outlines the basic protection requirements against cyber-attacks. If Northern Ireland companies are in breach of the purposed regulations, severe penalties would be imposed."

"The government should also promote privacy by design, whereby SMEs should be encouraged to develop and implement privacy frameworks, identify privacy compliance risks and conduct privacy impact assessments. This is widely used worldwide, but is currently not a legislative requirement. This framework is characterised by the taking of proactive rather than reactive measures and in doing so, anticipates the risks and prevents privacy invasive events before they occur."

"The government is currently trying to raise awareness socially and give people the ability to protect themselves – with the National Crime Centre already doing a great job. However, many businesses are still in the dark about the true scale of cyber risks and more needs to be done. The Government could do more to ensure that in the long term, people with the right skills are available to support businesses."

"We need to adopt an approach similar to the US experience where the flow of information between business and law enforcement (notably the FBI) is much more of a two-way street."

What kind of technology could be implemented to avoid such a security breach?

"Technically, one simple but widely-applicable security model is the CIA triad; standing for Confidentiality, Integrity and Availability; three key principles which should be guaranteed in any kind of secure system. This principle is applicable across the whole subject of Security Analysis, from access to a user's internet history to security of encrypted data across the internet. If any one of the three can be breached it can have serious consequences for the parties concerned."

Is there a solution to Artificial intelligence and enough jobs for all?

"35% of all current jobs are at risk in the next 20 years due to Artificial Intelligence (AI) – which is fairly low."

"What's important is making sure that the potential gains from automation are shared more widely across society and no one gets left behind. Responsible employers need to ensure they encourage flexibility and adaptability in their people so we are all ready for the change."

"In the future, knowledge will be a commodity so we need to shift our thinking on how we skill and upskill future generations. Creative and critical thinking will be highly valued, as will emotional intelligence. It's impossible to predict what jobs there will even be in the future, so life-long learning and a positive attitude to embracing change needs to be a fundamental aspect of Northern Ireland's future success."

Representing scenario 5: Stuart Millar, Queen's University Belfast, Centre for Secure Information Technologies (CSIT)

Creating International Links: Feedback

A huge element of the event was the chance for Newton scholars to not only share their global R&D expertise, but also, for them to make new international connections and gain stronger links with Northern Ireland's sustainable development and academic sectors. Below are some reflections from the festival's Director as well as some of the Newton scholars:

"Our partnership with the British Council has been absolutely central to our goal of internationalising the Festival. Through utilising the network of Newton Fund scholars, we have been able to connect some of the best international minds in science with local innovators in Northern Ireland, providing a catalyst for conversation and cooperation across borders. The British Council's support has also helped us connect with likeminded organisations in countries such as the United Arab Emirates, Norway and the USA."

Chris McCreery, Director NI Science Festival

"The event is very meaningful for scholars, especially from abroad, to understand and learn about Belfast. Also it is a very good opportunity to strengthen our communication."

Ma Yanhong, CHINA

"It was a nice opportunity to see the universities and learn about them. The visit to the Animation Suite in Ulster University was very interesting. I think it was a good link with the entrepreneurial spirit of the event."

Gabriela Doria, COLOMBIA

"Very constructive and fruitful. I had been allocated to a mixed group where the diverse experience from the attendants provided me a multidimensional perspective about the topic. Very helpful discussion. I absolutely benefitted from the discussions with the scholars about my topic. These results have been integrated into my study and helped me a lot."

Tien Duc Le, VIETNAM

"It helped me to think about the broader context of my research and how to communicate it to people in different areas."

Anonymous

Considering a world energy crisis in group 3

Joanne Stuart chairs feedback panel discussion

Summary

The event provided an opportunity for a selection of international Newton scholars to make new connections and network with each other and Northern Ireland stakeholders during the NI Science Festival. Their participation in the event also helped bring an international dimension to the festival.

The event highlighted the value of both a cross-discipline approach to problem solving as well as the new insights that can be provided when a diverse group of international experts work together on issues of local concern but with global impact. Throughout the scenarios, the three pillars of sustainable development – the economic, the environmental and the social - came up time and time again, but the most common thread throughout, was education.

According to both our scholars and local experts, it seems that if Northern Ireland is to succeed in becoming more sustainable, we must start equipping people with the knowledge from a very young age. This knowledge is something Northern Ireland already possesses in abundance, and can be easily tapped into, simply by drawing on the rich wealth of individual and organisational world-class expertise on our doorstep.

Group 5 discusses cyber security threats

Acknowledgements

British Council Northern Ireland, in partnership with the Northern Ireland Science Festival, would like to thank the following individuals, all of whom made contributions on the night or in preparation for the event, adding value and impact, and ultimately helping to make 'The Entrepreneurial Scientist and the Sustainable Development Goals' a success:

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Nuchpicha Intakhan - ***Thailand***
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Pareenart Sungkeeree - ***Thailand***
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Ma Yanhong - ***China***
Aidyn Yeszhanov - ***Kazakhstan***
Yifan Zhou - ***China***

Brian Spencer
artwork