

## Written evidence submitted by International Synergies Ltd

### 1. Who we are and what we do:

International Synergies Ltd is an SME based in Birmingham, Belfast and Brussels that is the world leader in the delivery of industrial symbiosis to drive change towards a low carbon, sustainable economy.

International Synergies Limited is the founder of the UK NISP (National Industrial Symbiosis Programme) officially launched ten years ago. Through NISP, International Synergies have created a blueprint for replication around the world by applying a systems approach, holistically addressing not just material 'waste' but energy, water, logistics, capacity, expertise, knowledge of assets that are being under-utilised, eco-design and cleaner production.

### 2. Our Submission

One aspect of sustainable development that is frequently overlooked is the beneficial impact on businesses of becoming resource efficient.

To promote the beneficial impacts a new approach to the use of all resources and the role of economic instruments in promoting a more circular economy is required. A greater emphasis on greater resource efficiency and improved design is a way of avoiding some of the damaging, environmental impacts of extracting resources and the negative aspects of waste. By preventing losses of value from materials flows, economic opportunities and competitive advantages are created on a sustainable basis.

The competitiveness of UK industries can benefit from adding value to all the resources in our economy. Efficient management of resources will protect industry from future shortages of vital materials, protect the environment, reduce the impacts of climate change and create jobs.

To achieve a truly zero waste economy a mind shift is required in business, both in the models used and in engagement of suppliers and companies beyond an immediate supply chain. Production chains have to be engaged to keep materials circulating in the economy for longer. This will involve product design, re-designing industrial systems, encouraging the

re-use of materials to prevent waste, and fostering eco-innovation to aid inward investment and economic development.

Resource security will become increasingly important in the future. We need to put foundations in place now, before the markets start to reflect scarcity of raw material supply, and price volatility issues affect business continuity. The supply of some raw materials is already vulnerable to shortages, high prices and political instability. Used unsustainably they can be a cause of environmental degradation.

### **3. Agriculture and resource efficiency**

Agriculture is heavily dependent on mined rock phosphate, a non-renewable source and only present in some regions. Prices of phosphates have risen in recent years and, despite a new mine opening in the UK, are likely to continue to rise. The recovery of phosphorus by better utilisation of plant wastes and recovery from animal wastes and sewage would minimise the need for imported mined phosphorus.

It would also be beneficial to identify and develop new and innovative processing chains for the efficient use of local ligno-cellulosic biomass currently available as farm waste, co-products and by-products providing potential new sources for bio-products in the agro-food and bio-economy sectors using a 'cradle-to-cradle' approach. Converting this currently low value biomass through integration of decentralized new bio-refinery and carbonization processes into valuable bio-based chemicals and materials would create new value chains in the farming and processing sectors.

### **4. Barriers that need to be addressed:**

There are inevitably some barriers to the circular economy and industrial symbiosis in particular that we hope will be addressed as the result of this consultation. These include:

- Skills and training, particularly in product design
- Recognition of the value of materials, the composition of products and where they are able to be re-used.
- Fiscal incentives to encourage businesses to engage beyond their normal supply chain.
- Knowledge of elements likely to be in short supply in the future.
- Investment into innovation and new technologies.
- Policy coherence and stability.

- Improved data and resource flow mapping.
- Support for facilitated services such as industrial symbiosis to encourage innovation and engagement beyond traditional business boundaries.
- Improved peer-to-peer communication.

### **5. Industrial symbiosis in practice:**

Through the industrial symbiosis network, best practice is promoted and diffused through peer-to-peer communication which is more effective than Government to business or consultant to business. The NISP network has many good examples amongst its record of work including companies like Toyota and Ricoh demonstrating quick ROIs on adopting LED lighting and variable speed drives, leading to uptake by others. Entrepreneurs and innovators gain access to potential partners and potential clients. For example, Phytotech - providers of innovative separation technology – were introduced by NISP to Heineken and Alliance Boots to develop a means to extract phenolic compounds from yeasts.

### **6. The importance of facilitation:**

It is recognised that many businesses will require assistance to maximise the value of materials, design out wasted energy, materials and pollution and also ensure that access is kept to critical materials that may be in short supply globally. The NISP network model is a facilitated model that has operated at the national scale in the United Kingdom for many years.

Facilitation is an essential part of industrial symbiosis and provides an excellent return on investment in public goods including jobs and CO2 reduction. Technology providers and industry are often unaware of opportunities where a technology being used in one sector can be applied in another. NISP's cross-sector approach increases application of innovation as it can spot opportunities; for example, a microbial fuel cell used in the water treatment sector is now applied in the dairy industry as a result of a NISP facilitated action.

Independent facilitation, linked to the ability to access critical environmental and legal advice, if required, helps to break traditional industry and supply chain silos.

Many businesses will need assistance to gain the maximum economic advantages of the circular economy. Businesses have to access advice on logistics, energy and water asset management and also the expertise capable of operating across a network of like-minded businesses from very different sectors.

The success of the NISP programme in the UK and other programmes instigated by International Synergies Ltd have been recognized as offering a business centric approach that also delivers economic and environmental benefits, through a unique combination of independent expertise, facilitation skills, quality data and a cross sector business engagement model.

## **7. The UK NISP record**

Between 2005 - 2013, NISP was engaged with over 15,000 companies in the UK. Opportunities identified and facilitated by NISP (in England) generated £1 billion in sales and cost reductions of £1.1 billion for the participating companies, largely SMEs. It also reduced carbon emissions by 39 million tonnes, diverted 45 million tonnes of material from landfill, and saved or created over 10,000 jobs. The above metrics were independently verified as was the high rate of return on Government investment.

## **8. Industrial symbiosis in the EU and world wide**

In April of this year, the Foreign and Commonwealth Office (FCO) supported International Synergies to work with the United Nation's Environment Programme (UNEP) and associated National Cleaner Production Centres (NCPCs) to provide expertise and tools to enable the implementation of facilitated industrial symbiosis as part of their existing activities.

In May 2015 the regional Global Green Growth Forum (3GF) meeting in Kenya focussed specifically on addressing growth issues for countries across Africa (3GF-AFR 15). Two years ago, 3GF adopted industrial symbiosis as one of its core tracks, led by International Synergies, to explore how public-private partnerships (PPPs) can advance green growth around the world.

In 2013 South Africa's Western Cape Government launched the 'Western Cape Industrial Symbiosis Programme' (WISP) delivered by GreenCape with International Synergies support. WISP's success was the catalyst for advancing industrial symbiosis elsewhere in South Africa with similar programmes already up and running in Gauteng and Kwa Zulu Natal provinces, run by the NCPC. All three provinces have received training from International Synergies and have held cross sector industrial symbiosis workshops.

The inclusion of industrial symbiosis as an exemplar to deliver a resource efficient economy in European policy is helping to pave the way for new programmes. International Synergies

are a partner in NISP France formally launched in May 2015 with L' Institut Economie Circulaire with funding from ADEME and French Provinces. In Finland and Denmark programmes have been supported at regional to national scale, with regional projects continuing in Belgium, Italy, Netherlands, Northern Ireland and Turkey.

In 2015 NISP, has been cited as best practice for delivering the circular economy by, amongst others, [Governments Go Circular](#), developed by De Groene Zaak in association with Accenture and others. The report, part of the Global-Scan series highlights projects for their ability to stimulate actions that contribute towards creating a circular economy. Both NISP and WISP are featured in the top thirty, whilst WISP was also a finalist in the new Circulars Awards.

Additionally, the European FP7 programmes POLFREE and DYNAMIX included industrial symbiosis amongst their top ten recommendations for inclusion in the revised EU Circular Economy package.

In October 2015 the UK city of Birmingham (the home base of International Synergies Ltd) is hosting a two day event on industrial symbiosis as part of the UK's G7 commitments.

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