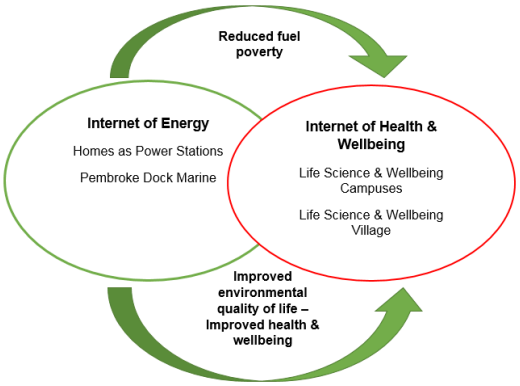
Appendix 1.3 - Synergies

Synergy 1 - Energy and Life Science & Wellbeing



The economic well-being of Wales has been historically reliant on the strength of heavy industry and traditional manufacturing. But with the gradual decline of these industries in recent decades, far greater emphasis is now placed on fostering economic growth, development and social inclusion, while ensuring natural assets continue to provide resources on which our well-being relies.

This further emphasises the importance of the green economy as a key component within the City Deal portfolio, with the investment programme's four themes closely aligning to well-being, the environment, manufacturing and economic growth.

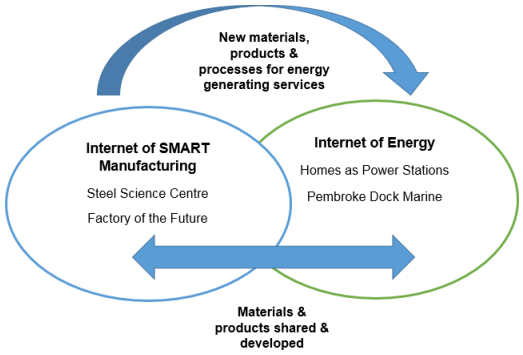
The environmental and resource productivity of the economy is strongly linked to Homes as Power Stations, Pembroke Dock Marine and the decarbonisation elements of the Supporting Innovation and Low Carbon Growth programme, with all aiming to produce and promote sustainable energy.

The production of green energy has a positive impact on the environment as it generates little if any of the water and air pollution associated with traditional fossil fuels which costs public health services an estimated $74.6 billion a year, according to a Harvard University study.

This shows how green energy can directly affect the health and well-being of individuals living and working in the region by reducing the risk of cardiovascular and respiratory diseases associated with traditional energy production. This direct link creates synergy with the Life Science and Well-being Campus and Life Science and Pentre Awel Well-being Village projects.

The Homes as Power Stations project will also help tackle fuel poverty, which has an impact on health and well-being. Research forming part of the project will create an evidence base in support of disruptive innovation to meet this objective.

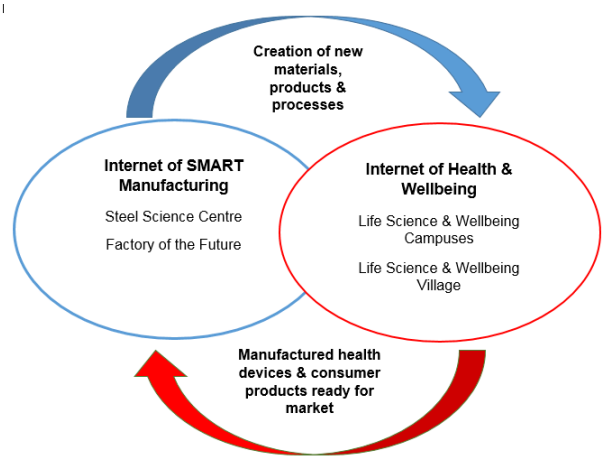
Synergy 2 - Energy and Smart Manufacturing



The Steel Science project will be in a prime position to have a significant impact on the Green Growth agenda. As well as developing and implementing ultra-low carbon steel making technologies, the new materials, products and processes created at the Centre will provide the opportunity to radically rethink the built environment for energy generating services. This will improve the regional natural asset base, helping promote the implementation of good environmental management in primary industries. This substantiates its synergy to Homes as Power Stations and Pembroke Dock Marine where materials and products may be shared and developed.

Furthermore, the Pembroke Dock Marine programme builds on momentum already under way regionally, in developing innovative marine energy solutions. This technology will require a local manufacturing base which builds upon the heavy engineering and steel generating capability of the region. Additionally, Homes as Power Stations provides the opportunity to expand existing pilot activities across the UK steel sector. This extends from smart coatings on steel substrates through to innovative storage and control.

Synergy 3 - SMART Manufacturing and Life Science & Well-Being



The connections between manufacturing and life science and well-being are long-established but the introduction of smart life science and smart manufacturing have placed more importance on this relationship in recent years. The Life Science and Well-being Campus, the Life Science and Pentre Awel Well-being Village and the SWITCH projects are those which illustrate the greatest alignment.

The region already has examples of Life Science and Well-being innovation created locally, manufactured locally and exported from the region to global markets. Examples include therapeutic devices, diagnostic devices and consumer products.

The Steel Science Centre will create new materials, products and processes, many of which will have applications in life science & well-being. This will provide the opportunity to shape the development of intelligent sterile environments, supporting disruptive technologies for telehealth like smart wearables and intelligent dressings.

The demand for next generation healthcare and smarter ways of manufacturing highlights the parallels between the two. They are both areas in transformation where new opportunities in IT to meet demands are creating more opportunities for closer working.

Revised Interdependencies and synergies

The introduction of the Supporting Innovation and Low Carbon Growth project has amended some of the above interdependencies and synergies as explained below.

Advanced, innovative digital infrastructure will also accelerate the delivery and evaluation of marine energy solutions forming part of the Pembroke Dock Marine project, while also assisting the decarbonisation elements of Neath Port Talbot's Supporting Innovation and Low Carbon Growth programme, which includes real-time air quality modelling and monitoring as well as enhanced charging infrastructure for electric vehicles.

Manufacturing elements of the Supporting Innovation and Low Carbon Growth programme, including the SWITCH project, are reliant on the use of next generation technologies.

These technologies – which will further advance and emerge in coming years - include cyber-physical systems, the internet of things, cloud computing and cognitive computing. These are all elements that require a strong digital infrastructure to capitalise on continual advancements in digital manufacturing

Synergies between energy and life science & well-being can also be evidenced by the Supporting Innovation and Low Carbon Growth programme in Neath Port Talbot.

The programme's focus on decarbonisation and improving air quality will lead to environmental benefits in Neath Port Talbot and beyond that will boost the health and well-being of contemporary residents and generations to come. Also forming part of the programme is a drive to encourage greater uptake of electric vehicles, which will lead to environmental benefits throughout the region and elsewhere. This will place South West Wales at the heart of global innovation as an example of best practice for embracing this kind of technology as a conduit to environmental improvements.

As part of Neath Port Talbot's Supporting Innovation and Low Carbon Growth programme, excess energy from solar and other renewable technologies at the Swansea Bay Technology Centre will be converted into hydrogen at the nearby Hydrogen Centre to fuel hydrogen vehicles.