

Annex 2.3: Note on valuation of energy and GHG

Guidance on Energy and GHG impacts

Clear advice on how process to quantify and monetise energy use and carbon emissions impacts is provided in supplementary guidance to the Green Book. However, for most of the projects within this programme there is currently insufficient information available to enable this guidance to be followed exactly and therefore definitive quantification and monetisation of these project aspects has not yet been possible. Nevertheless, the methodology by which such impacts would be quantified and monetised, when sufficient information is available, is discussed below, and examples of such calculations using estimated inputs for the Technology Centre and the Hydrogen Stimulus Project are included in the Annex.

Energy Impacts

To quantify and monetise the impacts of a project on energy use, the first step is to assess what changes are expected to occur, by fuel type, to the energy use associated with a project over the forecast horizon. Where possible this forecast should be specific for the project, and a comparison over the base line expectations of energy use by fuel type for the counterfactual will enable projected changes in energy use to be determined.

Changes in energy use can then be monetised using the long-run variable costs (LRVCs) of energy supply (by fuel type), provided in the Green Book guidance. These costs are used instead of retail energy prices as they exclude carbon costs (which are monetised separately as discussed below), economic transfers such as taxes, and fixed costs which will not change in the long run. LRVCs vary by fuel, end user and over time and thus should be used accordingly to calculate the full costs of energy use changes of the project compared with the counterfactual. Monetisation of changes in energy use could relate to savings associated with reduced energy use, or revenues associated with the sale of generated energy.

GHG Emissions Impacts

Once the forecast energy impacts of a project have been quantified and monetised, it is then possible to analyse the resulting changes in greenhouse gas emissions, and any value created as a result. The first step in this process is to convert changes in energy usage to changes in emissions via the use of fuel-specific emissions factors. These are again provided in the Green Book guidance, and express expected emissions of all greenhouse gases due to energy use in terms of the equivalent mass of carbon dioxide emissions (kgCO_{2e}). For individual fuel types (such as coal or gas) these emissions factors are static, while the emissions factor for grid electricity varies over time due to expected shifts in methods of electricity generation in the UK.

Finally, any changes to greenhouse gas emissions attributable to a project can be valued and monetised using forecast prices per tonne of carbon dioxide equivalent emissions. These are provided in the Green Book under two categories; traded and non-traded. Traded emissions are those produced by sectors or activities included

under the EU Emission Trading System (EU ETS), who are mandated to surrender sufficient emissions credits each year to account for their carbon footprint. Example emissions which should be monetised using the traded emissions price forecasts include changes to energy use by the steel industry. In contrast, non-traded emissions price forecasts should be used to monetise all other forecast emissions changes from a project, such as changes to domestic gas consumption.

Analysis of Environmental and Social Benefits for Early Stage Projects

The SILCG programme includes a number of projects which are still an early stage of development and for which full details are not yet known. While quantification and monetisation of their environmental and social benefits is therefore not yet possible, this will change as details become finalised. Consideration for how this could occur once this is the case are discussed below.

Technology Centre

This project is expected to have a number of environmental impacts which should be considered including:

- Cost savings to the building owner and tenants due to on-site energy generation.
- Potential revenue to the building owner due to export of surplus electricity to the grid or to the H2 Centre for conversion to low carbon vehicle fuels; this is assumed to balance to revenue net zero since on some days the TC will require energy imported from H2 and on other days will be able to export surplus energy
- Carbon emission reductions due to on-site generation instead of use of grid electricity and fossil fuels such as natural gas. This will include some monetisable, traded emissions reductions where surplus electricity is sold back to the grid.
- Improved local air quality due to switch from carbon-based to hydrogen-based vehicle fuels via the H2 Link.

Several of these impacts are monetisable and therefore should be considered within a broader CBA of the SBTC project. However, exact values for several parameters are not yet available and therefore a precise calculation of monetisable impacts is not yet possible.

Instead, calculation of potential monetisable benefits has been approximated using a hypothetical example energy positive building compared to a hypothetical counterfactual, to show the likely order of magnitude of monetisable environmental benefits for the project. This calculation was based on the following assumptions:

- A counterfactual was assumed where all future SBTC tenants would instead occupy average standard UK office buildings consuming 87.5kWh/m² of grid electricity and 88.6kWh/m² natural gas^[1]. Energy costs were based on Long-run Variable Costs and emissions factors based on long run marginal factors as given in Green Book guidance^[2].

- An example energy neutral building was assumed that would include energy consumption equal to the counterfactual, but with all energy supplied by zero carbon on-site generation.

The table below shows the results of this calculation for the first year of SBTC's operation; 2023. The value generated for the energy positive building includes avoided energy costs, electricity sales and carbon emissions reductions.

Annual Cost of Energy avoided under the Counterfactual	£24,739
Value of Carbon reduction by electricity generated and used (Non-traded)	£3,977
Value of Carbon reduction by non-electrical energy generated and used (Non-traded)	£2,956
Annual Value Generated for Energy Neutral Building	£31,686

^[1] Building Energy Efficiency Survey 2014-15 (<https://www.gov.uk/government/publications/building-energy-efficiency-survey-bees>)

^[2] Green Book Supplementary guidance: valuation of energy use & GHG emissions for appraisal (<https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>)

^[3] Sale price based on assumptions used for H2 Link BJC

^[4] <https://gov.wales/sites/default/files/consultations/2019-12/consultation-a-clean-air-plan-for-wales.pdf>

Annex 2.4: Key assumptions in CBA BCR analysis

Technology Centre (TC)

Period of analysis	Construction 2021 Open 2022 Operational until 2053	Employment Accommodated	150
Total capital cost (excluding optimism bias (undiscounted))	£8,500,000	Additional employment (to UK)	120
Operational cost (undiscounted)	£200,000 pa	Salary uplift (per additional employee)	£10,800
Optimism bias	10%	Annual salary uplift (proxy for productivity benefit)	£1,293,000
Discount rate	3.5%	Rent and service charge pa (cash releasing benefit)	£350,000
Facility size	2,500sqm (80% efficiency) 2000sqm lettable	Energy use	Energy neutral over a year, (some days of importing energy from H2 other days exporting energy)
Location	Baglan Energy Park	Energy savings benefit /annum	£24,700
		CO ₂ savings benefit /annum	£6,900

South Wales Industrial Transition from Carbon Hub (SWITCH)

Period of analysis	Construction 2021 and 2022 Open in 2023	Benefit of new products	Valued on an annual basis using estimated greater success rates of projects, their product value to market and the attribution to SWITCH Builds up over years to c £5,900,000 pa
Total capital cost (excluding optimism bias (undiscounted))	£20,000,000	Benefit of research and development, low carbon processes	Valued using research funding attracted C£3,000,000 pa
Operational cost (undiscounted)	£5-7,000,000 depending on year	Benefits of research and development, waste utilisation	C£2,000,000 pa
Optimism bias	15%		
Discount rate	3.5%		
Location	NPT Waterfront Enterprise Zone		

Hydrogen Stimulus Project (H2)

Period of analysis	Capital costs included in the overall SILCG split 50/50 between 2021 and 2022.
Total capital cost (excluding optimism bias (undiscounted))	£2,000,000
Operational cost (undiscounted)	Under development.
Optimism bias	Not included since capital costs are allocated budget with further detail once project is further finalised
Discount rate	3.5%
Location	Baglan Energy Centre, potentially physically linked to the Technology Centre (to be determined)
Benefits	Benefits considered qualitatively.

Air Quality Monitoring Project

Period of analysis	Capital costs included in the overall SILCG in 2021.
Total capital cost (excluding optimism bias (undiscounted))	£500,000
Operational cost (undiscounted)	Under development
Optimism bias	Not included since capital costs are allocated budget with further detail once project is further finalized
Discount rate	3.5%
Location	Within Neath Port Talbot authority area, specific locations to be determined
Benefits	Benefits considered qualitatively.

Low Emission Vehicle Charging Infrastructure (LEV)

Period of analysis	Capital costs included in the overall SILCG split 50/50 between 2021 and 2022.
Total capital cost (excluding optimism bias (undiscounted))	£500,000
Operational cost (undiscounted)	Under development
Optimism bias	Not included since capital costs are allocated budget with further detail once project is further finalised
Discount rate	3.5%
Location	Within Neath Port Talbot authority area, specific locations to be determined
Benefits	Benefits considered qualitatively.

Advanced Manufacturing Production Facility (AMPF)

Period of analysis	Construction 2022-2023 Open 2024 Operational until 2053	Employment Accommodated	281
Total capital cost (excluding optimism bias (undiscounted))	£17,200,000 (including £12,000,000 construction and £5,200,000 equipment budget)	Additional employment (to UK)	225
Operational cost (undiscounted)	£500,000 pa	Salary uplift (per additional employee)	£10,800
Optimism bias	Not included at this stage as capital cost is an allocated budget	Annual salary uplift (proxy for productivity benefit)	£2,1423,000
Discount rate	3.5%	Rent and service charge pa (cash releasing benefit)	£344,000 (approx. £10psf)
Facility size	4,000sqm (80% efficiency) 3,200sqm lettable	Annual public research income attracted (as proxy for research benefit value)	£500,000
Location	NPT Waterfront Enterprise Zone		

Property Development Fund (PDF)

Period of analysis	Construction 2021-2023 with take up 10%, 20% and further 70% in consecutive years Units open in 2022, 2023, 2024 Operational until 2053	Employment Accommodated	400
Total capital cost (excluding optimism bias (undiscounted))	£10,000,000 (55%)	Additional employment (to UK)	200
Operational cost (undiscounted)	£300,000 pa once all units operational in 2024	Salary uplift (per additional employee)	£10,800
Optimism bias	Not included at this stage as capital cost is an allocated budget	Annual salary uplift (proxy for productivity benefit)	£2,156,000 once all units operational for 15 years (earlier years proportional to units operational 10%, 30% 70%)
Discount rate	3.5%	Rent and service charge pa (cash releasing benefit)	£516,000 (approx. £10psf)
Facility size	Total 6,000sqm (80% efficiency) 4,800sqm lettable		
Location	NPT Waterfront Enterprise Zone		

Annex 2.5: Summary of evidence, local demand for facilities

Neath Port Talbot Firm's Enquiry Database

Introduction

Neath Port Talbot record enquiries from firms for land and/or floorspace and follow their progress to record how many of those enquiries are satisfied in the area and to the extent possible the reason if not. The records also aim to record the industry sector of the enquiry where possible.

The aims to record whether they are high tech, spin out, associated with low carbon; factors which relate to policy and target outcomes but which are to some extent, subjective. It might be useful across SBCR to standardise the process and recording to enable this data to contribute to performance assessment in the future and include the source of enquiry to assist in ascertaining additionality, particularly in contributing to analysis of place impact, to SBCR as well as to the UK.

The enquiries include direct enquiries to the authority or indirectly through the Welsh Government or other sources.

For the analysis, the following assumptions/ cleaning of the data were adopted:

- Data refers to enquiries from December 2019 to December 2020
- Where no size requirement was recorded, the enquiry is counted but the size is recorded as zero. Of the total 107 enquiries, 11 are recorded as zero because they are unknown
- In the database, size is recorded by industrial office and laboratory, and land (included in the notes where applicable). Where subcategories were recorded but they did not align with the total, the subcategory total was taken as the total. Where the total and one subcategory were recorded but they did not align, the subcategory was adjusted to align with the total.
- Those that were recorded as not progressing were split into 2 further categories to provide insight on why. Based on the notes and comments in the database, those not progressing were divided into 'nothing suitable' i.e. there were no suitable premises (NS) / accommodation to suit the enquiry and retracted demand (RD), such as where in the notes COVID/ Brexit etc were given as reasons that the enquiry was not being pursued. The former sheds some light on whether IF suitable accommodation had been available NPT might have been able to satisfy the enquiry i.e. unsatisfied demand, against those that were withdrawn for external reasons

Overall key findings, status and type of business

Key findings of analysis of the Enquiry Database, as at December 2020, data starting from December 2019.

- Total number of enquiries was 107

- Total floorspace requirement was about 320,000sqm (Note that 10% of enquiries were recorded as zero) but this includes a few very large enquiries
- Of those enquiries 34 (32%) of total enquiries and some 48,000 sqm (15%) of floorspace were completed during the year
- Of the total number, 23 or 12% are still ongoing
- Of the total 47, 44% are not progressing, of those 20% because no suitable accommodation or location could be offered and 24% because of external factors

Total Enquiries, by status and floorspace

	No Enquiries	% Enquiries	Floorspace	% Enquiries
C	34	32%	48,360	15%
OG	23	21%	39,433	12%
OH	3	3%	25,000	8%
NS	21	20%	158,429	49%
RD	26	24%	49,603	15%
Total	107	100%	320,825	100%

C=Completed; OG=Ongoing; OH= On Hold; NS=no suitable accommodation available; RD=Retracted Demand (for external reason)

- The largest number of enquiries came from businesses classified as manufacturing.
- Research, development and innovation and innovative manufacturing were also significant with 17% and 18% of enquiries, respectively.
- Manufacturing and innovative manufacturing made up the majority of enquiries by floorspace.
- Assuming ICT, RDI, IM and E are included in the target high tech, innovation and low carbon sectors of SILCG the number of enquiries was 46 or 43%.

Total Enquiries, by business type and floorspace

	No enquiries	% Enquiries	Floorspace	% Enquiries
ICT	4	4%	1,255	0%
RDI	19	18%	5,158	2%
SO	1	1%	93	0%
IM	18	17%	158,856	50%
E	5	5%	9,693	3%
M	33	31%	126,801	40%
PS	8	7%	1,334	0%

O	19	18%	17,635	5%
Total	107	100%	320,825	100%

ICT=Information, communications, technology; RDI=Research, development & innovation; SO=Spin Out; IM=Innovation Manufacturing; E=Energy; M=Manufacturing; PS=Professional Services;)=Other

Key findings and insights relevant to SILCG

Whilst the analysis of the overall database is interesting in terms of the overall scale of enquiries and their progress, the findings by floorspace are more meaningful if broken down by size relevant to the type of spaces potentially available under the SILCG programme i.e. relatively small units in the Technology Centre and the Advanced Manufacturing Production Facility and larger potential accommodation for developer/bespoke build under the property development fund.

Enquiries with Floorspace Requirement over 3,000sqm:

- There were 20 enquiries for floorspace over 3,000sqm. Noting that the property development fund total floorspace amounts to about 6,000sqm with an intended 2 or more investors, size requirements of more than 3,000sqm are not the target for accommodation under SILCG.
- Of these larger requirements only 12% was completed.
- Almost 70% was not progressed due to either nothing suitable (55%) or external reasons (14%)
- One notably large enquiry of some 90,000sqm that was categorised as low carbon innovation manufacturing, made up the majority of the not progressed because nothing suitable category

Enquiries over 3,000sqm, by status and floorspace

	No Enquiries	% Enquiries	Floorspace	% Enquiries
C	3	3%	33,457	12%
OG	4	5%	28,810	10%
OH	1	1%	23,234	8%
NS	6	7%	153,327	55%
RD	6	7%	39,394	14%
Total	20	23%	278,222	100%

C=Completed; OG=Ongoing; OH= On Hold; NS=no suitable accommodation available; RD=Retracted Demand (for external reason)

Enquiries with Floorspace Requirement less than 200sqm (but not zero) and less than 400sqm (but not zero)

- There were 30 enquiries for floorspace less than 200sqm but not zero, a total of about 2,900sqm.

- There were 43 enquiries for floorspace less than 400sqm but not zero, a total of about 6,500sqm.
- Noting that the technology centre and the advanced manufacturing facilities are targeting SMEs and spin outs with small size requirements, these enquiries could be potentially suitable for accommodation in these facilities, subject to other location, type and other requirements.
- These enquiries relate to a single year, 2020, which was unprecedented in terms of disruption to the economy from COVID and also the implementation of Brexit.
- Of the smallest enquiries of less than 200sqm, around one third were completed, with 27% not pursued as no suitable accommodation or not pursued for other reasons. The 27% where no suitable accommodation could be found, could be viewed as an opportunity lost, if the SILCG accommodation was available, could these enquiries be satisfied?
- Of the enquiries less than 400sqm around one third were completed, with 26% not pursued as no suitable accommodation and 21% not pursued for other reasons. The 26% where no suitable accommodation could be found, could be viewed as an opportunity lost, if the SILCG accommodation was available, could these enquiries be satisfied?

Enquiries less than 200sqm (but not zero) by status and floorspace

	No Enquiries	% Enquiries	Floorspace	% Enquiries
C	10	33%	748	25%
OG	4	13%	446	15%
OH	0	0%	-	0%
NS	8	27%	716	24%
RD	8	27%	1,055	36%
Total	30	100%	2,965	7%

C=Completed; OG=Ongoing; OH= On Hold; NS=no suitable accommodation available;
RD=Retracted Demand (for external reason)

Enquiries over less than 400sqm (but not zero) by status and floorspace

	No Enquiries	% Enquiries	Floorspace	% Enquiries
C	15	35%	2,170	33%
OG	7	16%	1,375	21%
OH	1	2%	372	6%
NS	11	26%	1,385	21%
RD	9	21%	1,287	20%

Total	43	100%	6,589	15%
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*C=Completed; OG=Ongoing; OH= On Hold; NS=no suitable accommodation available;
RD=Retracted Demand (for external reason)*

No's of enquiries over less than 400sqm (but not zero) by status and business type

	C	OG	OH	NS	RD	Total	%
ICT	2	0	0	0	1	3	7%
RDI	8	1	1	3	2	15	35%
SO	0	0	0	1	0	1	2%
IM	0	2	0	0	0	2	5%
E	0	2	0	0	0	2	5%
M	1	0	0	2	1	4	9%
PS	1	2	0	1	3	7	16%
O	3	0	0	4	2	9	21%
Total	15	7	1	11	9	43	100%

Enquiries less than 400sqm (but not zero) by status, business type and total floorspace

	C	OG	OH	NS	RD	Total	%
ICT	279	-	-	-	232	511	8%
RDI	1,399	279	372	414	232	2,695	41%
SO	-	-	-	93	-	93	1%
IM	-	232	-	-	-	232	4%
E	-	400	-	-	-	400	6%
M	28	-	-	297	186	511	8%
PS	37	465	-	56	311	869	13%
O	428	-	-	525	325	1,278	19%
Total	2,170	1,375	372	1,385	1,287	6,589	100%

Conclusions for SILCG

- There are enquiries for a range of sizes and from a range of industries, a large proportion of which are the target sectors under SILCG

- Total floorspace demand for a single year (2020) for accommodation under 400sqm (the likely size for TC and AMPF) was about 6,500sqm. Given that 2020 was a very unusual year, it would be prudent to consider that this is a lower bound estimation of demand in a less unusual year.
- Of this about 20% was not able to be satisfied due to a lack of available accommodation and 20% demand retracted for other reasons.
- RDI is an important source of enquiry for those for less than 400sqm by number of enquiries 35% and by floorspace, over 40%.
- The analysis suggests that the Tech Centre and Advanced Manufacturing Production Facility could potentially satisfy a significant proportion of enquiries, given the size and type of business.

Baglan Bay Innovation Centre

Introduction

Baglan Bay Innovation Centre is located on Baglan Bay Energy Park, a 73 ha (180 acre) business/industrial park located just off the M4 motorway in Neath Port Talbot.

Baglan Bay Energy Park is the location of two of the SILCG projects, the Technology Centre (TC) and Hydrogen Stimulus project (H2).

Baglan Bay Innovation Centre is a business incubator, providing accommodation and an environment for young, innovative, high tech, sustainable technology-led businesses to grow. The incubator provides about 3,600 sqm (39,000sq ft) of space, including 32 units, as well as meeting rooms, a business support facility. The centre has close links with universities, particularly Swansea University.

Occupation of the Baglan Bay Innovation Centre

Key findings of analysis of the Innovation Centre, as of December 2020.

- Total number of units available to tenants is 32; some are subdivided with a total of 37 units available, a total of 2,205sqm available to rent
- The Innovation Centre is 94% occupied. Of the 37 units, only 2 are vacant, (6% of floorspace)
- The dominant business type is RD&I which accounts for 43% of the space (19 units), whilst product development/technology accounts for a further 7% (3 units) a total of 50% (22 units)
- Other significant business types are ICT and energy which together amount to a further 27% (7 units), with a further 4% (4 units) in life science
- Total ICT, RDI/Product devt/technology, energy and life science amount to 82% of floorspace (31 units)
- Corporate tenants account for just over half of the floorspace (52%)
- University tenants are very significant, some 41% of floorspace, with the remaining occupied space taken by private sector companies/corporates

- All of the university tenants are engaged in RD&I

Business Type	Number	Floorspace (m2)	Floorspace (%)	Tenant	Number	Floorspace (m2)	Floorspace (%)
ICT	3	305	14%	University	18	911	41%
RD&I	19	944	43%	Corporate	17	1,155	52%
Product Devt/Technology	3	163	7%	Vacant	2	139	6%
Energy	4	286	13%	TOTAL	37	2,205	100%
Life science	2	99	4%				
Other	4	269	12%				
Vacant	2	139	6%				
TOTAL	37	2,205	100%				

SWITCH

The projected demand for SWITCH is based on activities to date at its predecessor, the Steel and Metals Institute, as well as stakeholder and industrial analysis to identify future opportunities with expanded equipment infrastructure and research focus. Additionally, the University has extensive experience working with funding partners on a wide range of research projects, which informed the assumptions around the nature of industrial partnerships, match funding and the likely research landscape and funding opportunities available.

Industrial Partners	Company size	Research themes	Collaborative opportunities
Primary steel and metal producers	Large	Low carbon steelmaking Waste utilisation Product Development Process and product optimisation	Research projects Co-location of research staff Studentships & training
Steel and metal suppliers (including refractories, waste management and hardware)	SMEs/Medium	Decarbonisation Waste management and utilisation (circular economy) Product Development Process and product optimisation	Research projects Co-location/hot desks Studentships & training
End users (including transport, construction and other sectors)	Various	Product development Integrity testing and analysis Process and product optimisation	Research projects Studentships & training

SWITCH Demand Overview

Demand forecasting has been carried out based on existing enquiries and research partnerships at SaMI, as shown in the table below. It is envisaged that with increased capacity and capability at SWITCH, there will also be increased opportunities to engage with the industry for both private and public research projects. The initial focus for potential partnerships has been on steel and metals producers in line with the identified research themes, however with an emphasis on collaboration, significant opportunities to work with the wider supply chain including suppliers and end users in key markets such as construction and automotive are being developed. Similarly, an initial focus on regional opportunities in steel and metals is broadening to create prospects and synergies more widely across the UK and in other foundation industries. A key factor to achieve this will be building on the existing research partnerships and relationships with other academic institutes including Cardiff University, Warwick University and Sheffield University, RTOs and other research partnerships such as SWIC through the benefits of co-location and collaborative research.

Key: Existing partnerships Developing partnerships Early engagement

Industry	Type	Demand
Steel producer A	Primary steel and metal producers	Directly funded research projects, collaborative publicly funded research projects, co-location of industrial research staff, studentships & training
Steel producer B	Primary steel and metal producers	Directly funded research projects and collaborative publicly funded research projects, potential hot desks
Steel producer C	Primary steel and metal producers	Collaborative publicly funded research projects, potential hot desks
Steel producer D	Primary steel and metal producers	Collaborative publicly funded research projects, potential hot desks
Steel producer E	Primary steel and metal producers	Collaborative publicly funded research projects
Metal alloys producer A	Primary steel and metal producers	Directly funded research projects and studentships
Metal alloys producer B	Primary steel and metal producers	Directly funded research projects, collaborative publicly funded research projects and potential hot desks
Metal alloys producer C	Primary steel and metal producers	Directly funded research projects and collaborative publicly funded research projects

Metal alloys producer D	Primary steel and metal producers	Potential for directly funded research projects and collaborative publicly funded research projects
Metal alloys producer E	Primary steel and metal producers	Potential for directly funded projects and collaborative publicly funded research projects
Metal alloys producer F	Primary steel and metal producers	Directly funded research projects
Construction products	Secondary steel producer	Directly funded research projects
Coated construction semi finished products	Secondary steel producer	Directly funded research projects, collaborative publicly funded research projects, potential hot desks and studentships
Tubes for construction and oil & gas	Secondary steel producer	Directly funded research projects, collaborative publicly funded research projects and potential hot desks
Packaging semi finished products	Secondary steel producer	Directly funded research projects, collaborative publicly funded research projects, potential hot desks and studentships
Automotive semi finished products	Secondary steel producer	Directly funded research projects, collaborative publicly funded research projects, potential hot desks and studentships
Aerospace and energy semi finished products	Secondary steel producer	Potential for directly funded projects
Coated semi finished products	Secondary steel producer	Potential for directly funded projects
Waste management and recycling	Steel and metal suppliers	Collaborative publicly funded research projects
Raw material recycling	Steel and metal suppliers	Directly funded research projects and collaborative publicly funded research projects
Refractory materials	Steel and metal suppliers	Directly funded research projects and collaborative publicly funded research projects
Wood products	Other industry	Directly funded research projects
Rail sector	End users	Directly funded research projects
Packaging sector	End users	Potential for directly funded research projects, collaborative publicly funded research projects and studentships

Other sector

End users

Potential for collaborative publicly funded research projects and studentships

Annex 2.6: Detailed economic CBA results

	Programme		TC		SWITCH		H2		AQMP		LEV		AMPF		PDF	
	Undiscounted	Discounted	Undiscounted	Discounted	Undiscounted	Discounted	Undiscounted	Discounted	Undiscounted	Discounted	Undiscounted	Discounted	Undiscounted	Discounted	Undiscounted	Discounted
Costs in the Appraisal of Public Value																
1. Total Direct Public Costs (to originating organisation)	101.3	71.9	3.0	2.9	76.6	49.6	-	-	-	-	-	-	17.2	15.2	4.5	4.1
1.1 Capital	44.7	41.1	3.0	2.9	20.0	18.8	-	-	-	-	-	-	17.2	15.2	4.5	4.1
1.2 Revenue	56.6	30.8	-	-	56.6	30.8	-	-	-	-	-	-	-	-	-	-
2. Total Indirect Public Costs (to wider public sector)	98.8	55.5	5.5	5.3	87.8	45.2	-	-	-	-	-	-	-	-	5.5	5.0
2.1 Capital	11.0	10.3	5.5	5.3	-	-	-	-	-	-	-	-	-	-	5.5	5.0
2.2 Revenue	87.8	45.2	-	-	87.8	45.2	-	-	-	-	-	-	-	-	-	-
3. Wider Social Costs	42.8	23.0	6.4	3.7	12.3	5.9	-	-	-	-	-	-	15.0	8.3	9.1	5.1
3.1 Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.2 Revenue	42.8	23.0	6.4	3.7	12.3	5.9	-	-	-	-	-	-	15.0	8.3	9.1	5.1
4. Total Risk Costs	5.0	4.7	0.9	0.8	3.0	2.8	-	-	-	-	-	-	1.2	1.1	-	-
4.1 Optimism bias	5.0	4.7	0.9	0.8	3.0	2.8	-	-	-	-	-	-	1.2	1.1	-	-
4.2 Estimated or measured risk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Total of Costs	247.9	155.1	15.8	12.7	179.7	103.5	-	-	-	-	-	-	33.4	24.6	19.1	14.2
Benefits in Appraisal of Public Value																
6. Total Direct Public Sector Benefits	137.9	77.5	-	-	137.9	77.5	-	-	-	-	-	-	-	-	-	-
6.1 Cash releasing benefits (CRB)	137.9	77.5	-	-	137.9	77.5	-	-	-	-	-	-	-	-	-	-
6.2 Non-cash releasing benefits (NCRB)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7. Total Indirect Public Sector Benefits	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.1 Cash releasing benefits (CRB)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7.2 Non-cash releasing benefits (NCRB)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8. Wider Social Costs	315.9	172.3	53.6	30.9	115.4	55.3	-	-	-	-	-	-	98.0	54.2	48.9	31.9
8.1 Cash releasing benefits (CRB)	152.6	76.3	11.2	6.4	115.4	55.3	-	-	-	-	-	-	10.3	5.7	15.7	8.8
8.2 Non-cash releasing benefits (NCRB)	163.3	96.1	42.4	24.4	-	-	-	-	-	-	-	-	87.7	48.5	33.2	23.2
9. Total Value of Benefits	453.8	249.8	53.6	30.9	253.3	132.8	-	-	-	-	-	-	98.0	54.2	48.9	31.9
Net Public Value	205.8	94.7	37.9	18.1	73.6	29.3	-	-	-	-	-	-	64.6	29.6	29.8	17.7
Benefit Cost Ratio	1.8	1.6	3.4	2.4	1.4	1.3	na	na	na	na	na	na	2.9	2.2	2.6	2.2

Annex 2.7: Summary employment analysis, sector concentration and diversity

Key findings

Key findings of analysis of employment data by industry section 2015 and 2019 provides context and a baseline for future comparison. It should be noted that this data does not include data for 2020 and thus does not include the impact of the COVID19 pandemic. Data is extracted from NOMIS Business Register and Employment Survey, Office of National Statistics, January 4 2021. Totals for areas reflect the sum of reported industry sections and are not subject to NOMIS rounding.

- Total employment in Neath Port Talbot (NPT) is about 50,000. Total employment increased about 4% 2015 to 2019.
- Swansea Bay City Region (covering NPT, Swansea, Camarthenshire, Pembrokeshire) total employment is about 280,00; employment decreased slightly 2015 to 2019 in the region.
- NPT accounts for about 18% of employment in the Swansea Bay City Region (SBCR).
- A location quotient (LQ) measures the concentration of a particular industry section in a geographical area relative to a wider geographical area, in this case, Great Britain.
 - A LQ of >1 means there is a greater concentration of the industry than in GB as a whole, or the sector is 'overweight' in the area
 - A LQ of <1 means there is a lower concentration of the industry than in GB as a whole, or the sector is 'underweight' in the area
- Of the industry sections employing more than 1,000 people NPT is overweight in the following:
 - Manufacturing
 - Transportation and storage
 - Public administration and defence
 - Education
 - Human health and social work
- Apart from manufacturing above sectors generally have lower levels of labour productivity than, as such the concentration in these sectors partly explains the lower overall productivity and relative GVA when compared to GB. SBCR shows similar concentration in sections with generally lower productivity levels.
- Notably there is a 50% increase in employment in information and communication section, albeit only from a small base.
- A diversity index is calculated measuring the spread of employment across industry sections between 0 and 1, where 1 means perfect distribution across all sectors and low scores means employment is concentrated in a few sectors:
 - NPT has an index of 0.84 in 2019, slightly lower (less diverse) than in 2015. It is less diverse than SBCR as would be expected for a smaller area.

- SBCR has an index of 0.86 in 2019, lower (less diverse) than in 2015.

Implications for SILCG Programme

- The simple analysis and supporting data provide a baseline and context estimates of employment in the SILCG projects, as well as for informing future assessments.
- With total employment of about 50,000, employment in public administration, education and health totals 16,500 far outweighs that of manufacturing at 9,000. These industries together account for more than half the jobs.
- Even relatively small changes in employment and growth, particularly in high productivity sectors could support the levelling up agenda within certain industry sections and support the growth of the low carbon cluster.
- However, with such dominance of public service sectors, significant shifts will be required to change the overall profile, the levelling up agenda and diversity for NPT and SBCR.

Summary Employment, Sector Concentration and Diversity, Neath Port Talbot, Swansea Bay City Region, Wales and Great Britain

	Neath Port Talbot				Swansea Bay City Region				Wales				Great Britain	
	2015	2019	LQ2015	LQ2019	2015	2019	LQ2015	LQ2019	2015	2019	LQ2015	LQ2019	2015	2019
A : Agriculture, forestry and fishing	700	900	0.9	1.1	16,050	10,300	3.5	2.3	61,000	43,000	2.9	2.1	479,000	486,000
B : Mining and quarrying	350	350	3.7	4.1	590	675	1.0	1.4	1,500	2,500	0.6	1.1	59,000	53,000
C : Manufacturing	9,000	9,000	2.3	2.3	26,000	24,500	1.1	1.1	146,000	143,000	1.4	1.4	2,389,000	2,424,000
D : Electricity, gas, steam and air conditioning supply	200	150	1.0	0.7	1,400	850	1.2	0.7	11,000	8,000	2.0	1.4	125,000	135,000
E : Water supply; sewerage, waste management and remediation activities	1,000	700	3.3	2.1	3,000	2,325	1.7	1.3	13,000	13,000	1.6	1.5	188,000	203,000
F : Construction	2,500	2,250	1.1	0.9	14,500	13,750	1.1	1.0	58,000	65,000	0.9	1.0	1,392,000	1,563,000
G : Wholesale and retail trade; repair of motor vehicles and motorcycles	7,000	7,000	0.9	0.9	44,000	45,000	1.0	1.1	198,000	202,000	1.0	1.0	4,652,000	4,638,000
H : Transportation and storage	2,000	3,000	0.9	1.2	9,750	10,000	0.7	0.7	45,000	44,000	0.7	0.7	1,360,000	1,506,000
I : Accommodation and food service activities	2,500	3,500	0.7	0.9	23,500	27,500	1.1	1.3	101,000	123,000	1.1	1.2	2,152,000	2,370,000
J : Information and communication	350	700	0.2	0.3	3,700	4,500	0.3	0.4	20,000	28,000	0.4	0.5	1,201,000	1,301,000
K : Financial and insurance activities	400	300	0.2	0.2	6,050	6,350	0.6	0.7	30,000	32,000	0.7	0.7	1,029,000	1,058,000
L : Real estate activities	900	800	1.0	0.8	4,000	3,400	0.8	0.6	20,000	18,000	0.8	0.7	542,000	600,000
M : Professional, scientific and technical activities	2,250	1,250	0.5	0.3	12,250	10,500	0.5	0.4	68,000	66,000	0.6	0.6	2,531,000	2,741,000
N : Administrative and support service activities	2,000	2,500	0.5	0.6	15,000	16,500	0.6	0.7	80,000	84,000	0.7	0.7	2,616,000	2,701,000
O : Public administration and defence; compulsory social security	3,000	4,000	1.5	1.9	21,500	24,000	1.8	2.0	86,000	96,000	1.5	1.7	1,262,000	1,315,000
P : Education	5,000	4,500	1.2	1.1	25,500	25,000	1.0	1.1	125,000	115,000	1.1	1.0	2,621,000	2,607,000
Q : Human health and social work activities	7,000	8,000	1.1	1.2	45,000	48,000	1.2	1.3	200,000	201,000	1.2	1.2	3,854,000	3,971,000
R : Arts, entertainment and recreation	1,500	900	1.3	0.7	8,750	6,150	1.3	0.9	35,000	27,000	1.1	0.8	720,000	767,000
S : Other service activities	800	600	0.8	0.6	5,350	3,950	0.9	0.7	24,000	21,000	0.8	0.8	646,000	647,000
Total	48,450	50,400			285,890	283,250			1,322,500	1,331,500			29,818,000	31,086,000
Total (growth rate)		4%				-1%				1%				4%
Diversity Index	0.85	0.84			0.88	0.86			0.88	0.88			0.89	0.90