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ForTaMP: ERDF Summative Assessment

PREPARED FOR:
CPI

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NORTHERN POWERHOUSE HM Government

European Union
European Regional Development Fund

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Executive Summary

This report provides an ERDF summative assessment of the ForTaMP project. Desk research, data analysis, and various stakeholder and beneficiary consultations methods were used to conduct this independent assessment.

Justification

The ForTaMP project supported SMEs in the Leeds City region to develop new to company products, new to market products and increase employment in key regional SMART specialisations through the application of additive manufacturing processes.

The activities supported by the ERDF project were well aligned with previous and current government policy at a regional and sub-regional level.

The ForTaMP project aligns with broader objectives of the Leeds City region, as CPI proactively engaged with regional support networks to allow the project to complement, rather than duplicate, existing business support. It is the ambition of West Yorkshire Combined Authority to develop a thriving and well-connected innovation system, by providing resources to local businesses. The ForTaMP project works to meet this objective, by supporting SMEs to commercialise their innovation and scale up.

Delivery

The project started on the 1st of April 2020 and will run until the 31st of March 2023. ForTaMP will be delivered on time and on budget, with a total spend of £2,598,124. The ForTaMP project benefitted from the experienced and agile delivery team, who adapted to challenges posed by the COVID-19 pandemic. As a result, ForTaMP will meet or exceed the majority of the original ERDF targets at project closure.

Value for money and strategic impact

The support provided by the ForTaMP project was good value for money and had a significant impact on beneficiaries. Approximately 96% of SMEs surveyed felt their business was in a stronger position than it was previously because of the ForTaMP project.

The ForTaMP project also had a significant strategic impact for CPI itself. Crucially, CPI have developed key strategic partnerships with anchor institutions and businesses in the Leeds City region that will accelerate future economic growth. CPI has also developed positive relationships with sub-contracted organisations, which they hope will lead to future collaboration on innovation-related projects in the region.

Lessons learnt

Beneficiary and stakeholder perceptions of the ForTaMP project management and delivery were overwhelmingly positive. Through our survey it was revealed that 96% of beneficiaries would apply for a similar support project in future or recommend to other businesses, reflecting the value of these projects to beneficiaries. On average, survey respondents also rated the ForTaMP project 4.93 out of 5, reflecting the high satisfaction of beneficiaries supported.

The ForTaMP project increased product and process development in SMEs, increased technology readiness levels in 70% of beneficiaries, helped SMEs to leverage additional funding and created new collaborations for both beneficiaries and CPI. By project closure, the ForTaMP project will have supported the development of 14 new to the market and 16 new to the firm products.

A couple of opportunities to improve the business support activities of ForTaMP were identified. For example, several beneficiaries felt that an increase in the number and diversity of organisations available to support them would have enhanced the project. Beneficiaries also felt additional support to find follow-on funding, beyond this project, would have been useful.

However, overall, the project management team demonstrated great agility to adapt to the COVID-19 restrictions in place at the time of the project. CPI ensured that virtually all the project outputs were delivered on time and on budget, despite the challenging global economic circumstances.

1. Introduction

This evaluation report provides a summative assessment of the outcomes, impact, and value of the ERDF funded ForTaMP project.

The **For**mulation **T**echnology **a**pplied to **M**aterials and **P**roducts (ForTaMP) project supported SMEs in the Leeds City region to develop new to company products, new to market products and increase employment in key regional SMART specialisations through the application of additive manufacturing processes.

The summative assessment took place between December 2022 and February 2023 and included the use of both primary and secondary research methods.

The evaluation methods and this report were designed in accordance with ERDF guidance (ESIF-GN-1-033 and ESIF-GN-1-034) for conducting summative assessments.

In identifying and attributing changes achieved by the ForTaMP project, this summative assessment report covers the following key themes as prescribed by ERDF guidance:

1	Project Context
2	Project Progress
3	Project Delivery and Management
4	Project Outcomes and Impact
5	Project Value for Money
6	Conclusions and Lessons Learnt

2. Project Context

An intervention to support SMEs in the Leeds City region develop new products in key regional SMART specialisation areas through the application of additive manufacturing.

2.1 The Opportunity

Centre for Process Innovation (CPI) seeks to support SMEs to develop new products or processes, from laboratory scale, right through to pilot and prototyping across sectors. Companies in the Leeds City region have historically struggled to engage with and exchange knowledge with local knowledge providers in the area of manufacturing innovation. Therefore, the ForTaMP project seeks to coordinate cohesiveness in the local manufacturing innovation system and spread local expertise.

The project helps to support broader smart specialisation and additive manufacturing (3D printing) opportunities at both an EU and local level. Smart specialisation is a place-based approach which identifies and prioritises specific strategic areas for intervention based on Key Enabling Technology (KET)[1]. Advanced manufacturing (which uses encapsulates technologies such as additive manufacturing, 3D printing and high-performance computing and modelling) has been identified by the European Commission as a KET. Investing in these KETs will result in an increase in the competitiveness of core European Industries.

This smart specialisation approach has been employed at a local level as part of the Leeds City Region Enterprise Partnership Innovation Strategy[2], to help develop a strong innovation ecosystem in the region.

Additionally, the EU supports R&D capacity building, particularly relating to advanced manufacturing, additive manufacturing and 3d printing[3]. It is recognised that the manufacturing industry drives employment and prosperity more broadly, incentivising the support of associated sectors and projects.

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[1] https://s3platform.jrc.ec.europa.eu/what-we-do

[2] https://www.the-lep.com/media/2290/lep-innovation-strategy-2014.pdf

[3] https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/key-enabling-technologies/advanced-manufacturing_en

2.2 The ForTaMP Project

The aim of the project is to support SMEs within the Leeds City region to develop innovative and market-leading products and processes using additive manufacturing processes. The ForTaMP project involves the provision of outreach and technical support to SMEs, to create new relationships and promote supply chain integration.

As the grant fund recipient, CPI is responsible for overall project management and the delivery of the ForTaMP project.

The project includes CPI providing SMEs with access to its technical knowledge, equipment and facilities. This support is to help SMEs develop new to the market/firm products and processes, increase employment and cooperate with the local knowledge base.

A minimum of at least 85% of SME beneficiaries were required to operate in the Leeds City region. The remaining 15% of SME beneficiaries were allowed to operate outside of the region, but must form a part of the regional supply chain.

The managing authority approved ERDF support for the ForTaMP project under Priority Axis 1 (Promoting Research and Innovation Investment Priorities). The aims of Priority Axis 1 are to improve how SMEs commercialise research and how they collaborate with research institutions.

The project launched on the 1st of April 2020 and is projected to finish by the end of March 2023.

2.3 Delivery Structure and Team

The delivery team was made up of predominantly ad-hoc staff from CPI, who were responsible for the implementation of the ERDF funded ForTaMP project, alongside responsibilities for other CPI business units and projects.

The ForTaMP delivery team was overseen by a Project Manager from CPI, who had 5 functions reporting into them. This is illustrated in Figure 1.

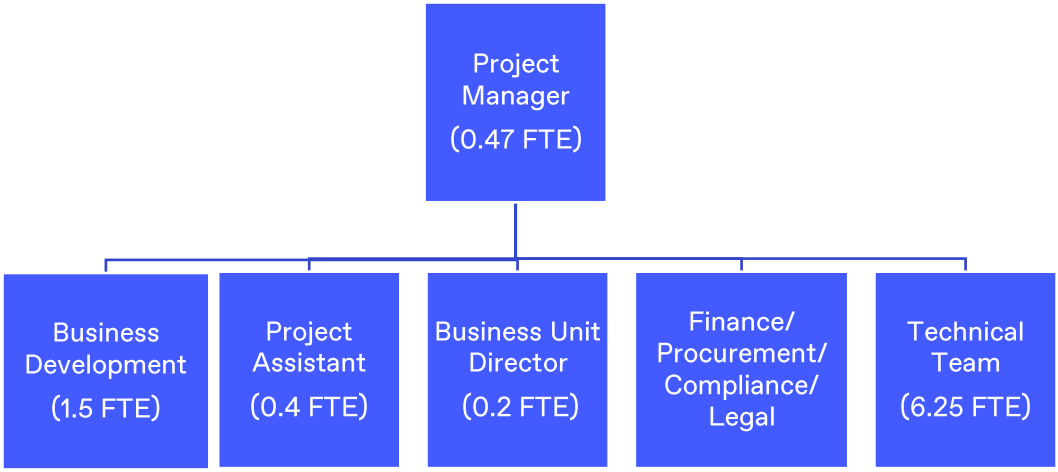

Figure 1 - ForTaMP Project Delivery Team Organisational Chart

2.4 Aims & Objectives

The main objectives of the ForTaMP project are as follows:

- Supporting SMEs in their development of market-leading products and processes via the provision of specialist technology support and infrastructure
- Providing scale-up, prototyping and pilot plant capabilities
- Bringing innovative products to market rapidly through prototyping and then to market introduction
- Creating a product development ecosystem to drive sustainable regional economic growth.
- Introducing SMEs to the UK CR&D landscape and appropriate regional knowledge base sources
- Sign-posting SMEs to sources of business funding.

The ERDF output targets set for the ForTaMP project are summarised in Table 1.

Table 1 - ERDF ForTaMP Output Targets

Indicator	Target
C1: Number of enterprises receiving support	55
C4: Number of enterprises receiving non-financial support	55
C5: Number of new enterprises supported	3
C8: Employment increases in supported enterprises	5
C26: Number of enterprises cooperating with the knowledge base	20
C28: Number of enterprises supported to introduce new to market products	10
C29: Number of enterprises supported to introduce new to firm products	12

Further details on the outputs, and how this relates to potential outcomes and impacts can be seen in the ForTaMP logic model (Appendix I).

2.5 Geographic Context

The majority of the SME beneficiaries supposed by the ForTaMP project were required to operate in the Leeds City Region (85%). 15% of SME beneficiaries were allowed to operate outside of the region, so long as they played an important role in regional supply chains.

The local authorities within the Leeds City Region include the following:

- Bradford, Leeds. Wakefield, Calderdale and Kirklees in West Yorkshire.
- Scarborough, Ryedale, Hambleton, Selby, Harrogate, Richmondshire and Craven in North Yorkshire.
- York.

This geographic context is significant, due to the historical decline of heavy industry within the Leeds City Region which resulted in pockets of deprivation and lower than average economic productivity. As a result, local SMEs engage less in research and innovation activities (in comparison to the national average). This highlights the importance of the ForTaMP project in reversing this negative long-term trend by supporting local SMEs to scale their innovation capabilities.

2.6 Economic Context

This section provides the economic context in which the project was originally designed and developed.

The local authorities supported by the ForTaMP project constitute the combined local authorities of West Yorkshire (WY), North Yorkshire (NY) and York. The local authorities included in these regions are the following:

- Bradford, Leeds. Wakefield, Calderdale and Kirklees in WY.
- Scarborough, Ryedale, Hambleton, Selby, Harrogate, Richmondshire and Craven in NY.
- York.

The main economic considered as part of the economic context of WY, NY and York are:

- Employment
- Businesses
- Production
- R&D expenditure

This section proposes the economic justification of the ForTaMP project in WY, NY and York, particularly surrounding actions which incentivise the regional economy in terms of output and employment growth from the supply-side, and to perform as leverage for economic recovery after the COVID-19 crisis.

Employment

During 2021, the number of jobs in WY, NY and York was 1.46 million, of which WY contributed to the largest extent with 1.08 million jobs (74%), followed by NY contributing 0.27 million jobs (18%), and York contributing 0.11 million jobs (8%). As the total number of jobs in the UK was 30.21 million, the number of jobs in WY, NY and York represented 5% of the total employment in UK in 2021.

Using Office for National Statistics (ONS) data[4], Figure 2 shows that employment growth in WY, NY and York is closely associated with employment growth in the UK. However, employment growth on a regional level is more sensitive than at the national level. This is explained by the fact that when employment growth in UK drops, employment growth in WY, NY and York decreases below the national level. For instance, during 2020, there was a decrease in employment of -2.65% in WY, NY and York, which was below the employment growth in UK in the same year (-1.94%) as a result of the COVID-19 economic crisis (Figure 1). Employment has recovered its pace of growth in 2021 with a growth rate of 3.06% in the UK and 4.73% in WY, NY and York.

[4] https://www.nomisweb.co.uk/reports/lmp/la/1946157112/subreports/bres_time_series/report.aspx?

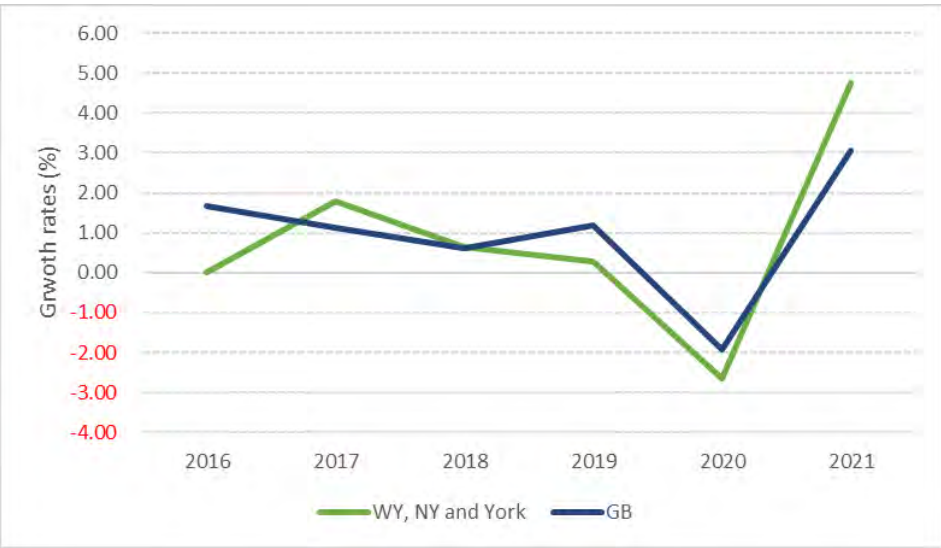

Figure 2 - Employment growth in WY, NY, and York compared to Great Britain, 2016-2021

The average growth rate of employment from 2016 to 2021 in WY, NY and York was 0.80%, which was below the average growth in UK, which was 0.95% (2016-2022). Employment growth has also underperformed in WY, NY and York, in comparison to the UK average. The creation of jobs via R&D funding, including projects such as ForTaMP, would support employment recovery after the COVID-19 economic crisis.

Businesses

There were 120,515 enterprises in the WY, NY and York in 2022, representing 4.5% of the total enterprises in UK. Using ONS data[5], Figure 3 shows the number of enterprises in WY, NY, and York compared to the UK average, in terms of growth rates. From 2019 to 2022, the growth of enterprises followed a decreasing trend. In 2019, the number of businesses grew by 1.83% and 1.49% in UK, as well as WY, NY, and York, respectively. In 2022, there was a growth of 0.05% and 0.25% in UK, as well as WY, NY, and York; respectively. Therefore, the rate of business growth appears to have slowed due to the COVID-19 crisis, in line with national averages. In fact, the slow creation of new enterprises affects the supply chain, negatively influencing employment and output.

[5] https://www.nomisweb.co.uk/reports/lmp/la/1946157112/subreports/idbr_time_series/report.aspx?

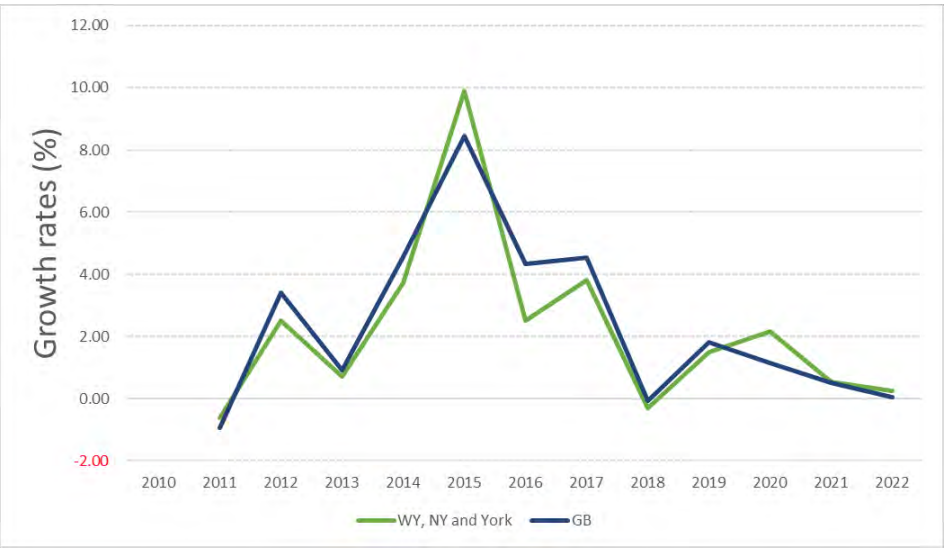

Figure 3 - Number of enterprises growth in WY, NY, and York compared to UK, 2010-2022

The size of enterprises in the region can be classified by the number of employees: micro (0-9 employees), small (10-49), medium (50-249) and large (250+). The composition of enterprises by size indicates that most of the enterprises in WY, NY and York are micro-enterprises (Figure 4). During 2022, there were 106,820 micro enterprises (88.64 % of the total), 11,230 small enterprises (9.32%), 1,980 medium enterprises (1.64%) and 485 large enterprises (0.40%). The percentage of micro and SMEs in WY, NY and York were 99.60% in 2022. Figure 2 shows that the share of Micro and SMEs in WY, NY and York have been above 99% from 2011 to 2022. Therefore, R&D funding to micro and SMEs in WY, NY and York cover a large share of enterprises because the vast majority are classified in this category[6].

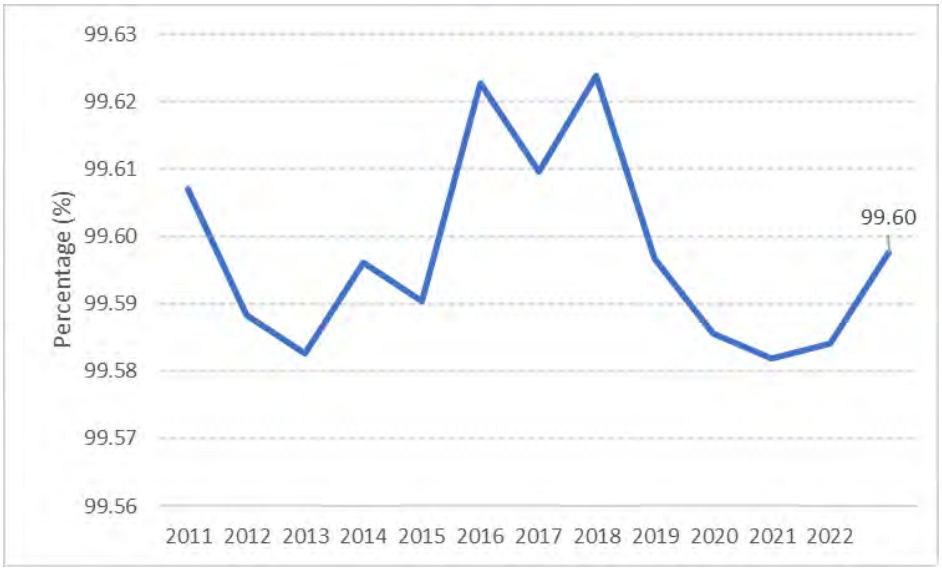

Figure 4 - Share of Micro and SME in WY, NY and York, 2011-2022. (Percentage, %)

[6] https://www.nomisweb.co.uk/reports/lmp/la/1946157112/subreports/idbr_time_series/report.aspx?

Output

Figure 5 shows production in WY, NY and York was also severely affected by the COVID-19 economic crisis[7]. During 2020, Gross Domestic Product (GDP) growth in WY, NY and York decreased by -11.65%, while in the UK GDP decreased by -9.69% in real terms. The region of WY, NY and York also exhibits a sensitive reaction to GDP growth in periods of crisis. For instance, GDP decreased below the national level during the financial crisis of 2008 and the COVID-19 crisis. Therefore, R&D funding for businesses can be leveraged to help businesses improve their technical and technological efficiency thus enabling production recovery post COVID-19.

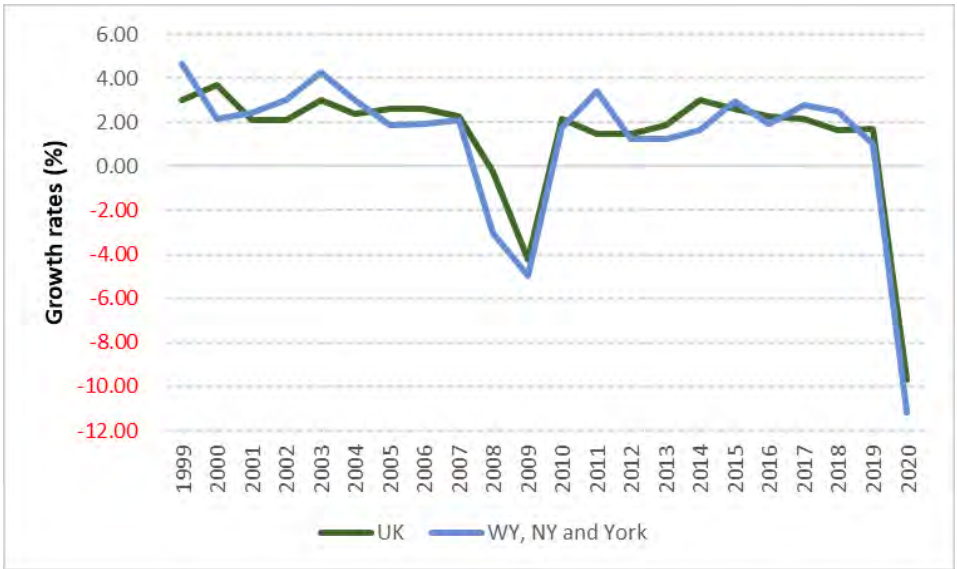

Figure 5 - GDP growth in WY, NY, and York compared to the UK in real terms, 1999-2020. (Growth rates, %)

GDP in WY, NY and York represents 3.96% of the GDP in the UK. Figure 5 presents the percentage composition of GDP in WY, NY and York by geographical locations from 1998 to 2020. Overall, the percentage composition in WY, NY and York has remained without significant changes. Figure 6 indicates that during 2020, the share of NY was 19.13%, Bradford had 12.86%, Leeds had 33.32%, followed by Calderdale and Kirklees (16.61%), Wakefield (10.41%) and York (7.61%). As a result, the local authorities in WY concentrate 73.21% of the GDP in WY, NY and York. The economic capacity of Leeds is particularly significant because this local authority concentrates one third of the GDP in WY, NY and York. This result is in line with the R&D support to business by local authorities of the ForTaMP project. This indicates that the R&D support to Leeds is significantly higher than the other local authorities. A possible reason for that composition is that there is a higher economic concentration in Leeds than their counterparts (Figure 6).

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7 https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossdomesticproductallnutslevelregions

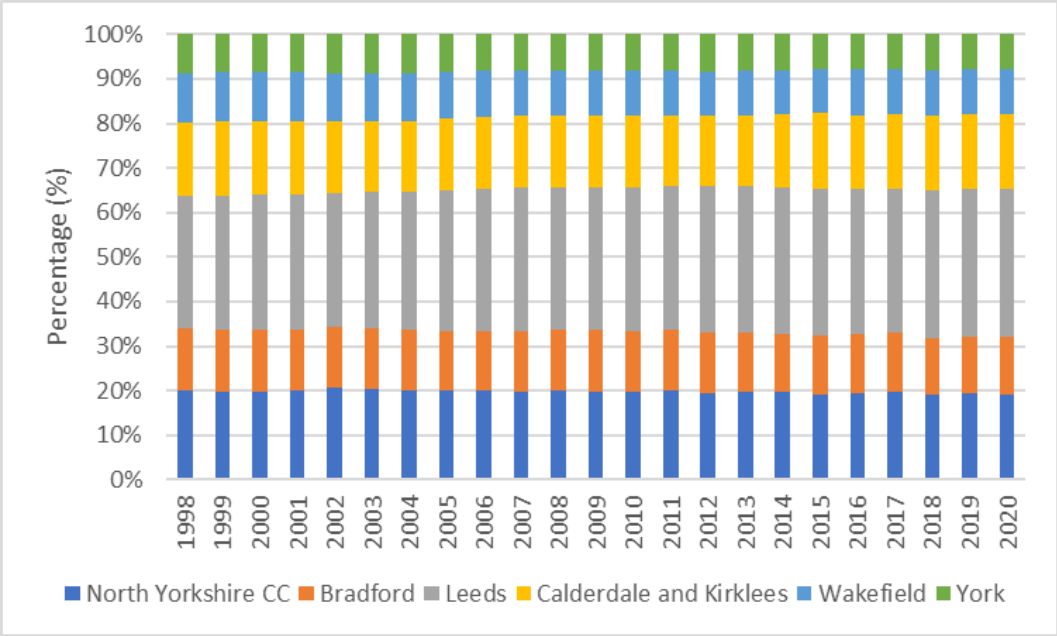

Figure 6 - Percentage composition of GDP by geographical locations in WY, NY and York, 1998-2020.

In addition, the ForTaMP project supports four sectors: Food & Drink (including Agrifoods), Health and Life Sciences (MedTech), Packaging and Materials (including "green" production and bio-materials) and Chemicals. It is difficult to allocate these sectors to the Standard Industry Codes used by the ONS to produce statistics on economic output. Table 2 presents Gross Value Added (GVA) by sector during 2020 in WY, NY and York to identify the share of the production that the ForTaMP project is targeting in four proxy sectors. The red text in Table 2 also indicates the target sectors included within the ForTaMP project in WY, NY and York. In total, the target of the ForTaMP project represents a share of 15.89% of the GVA in WY, NY and York during 2020.

Table 2 - GVA in WY, NY and York composition in constant prices by economic sectors, 2020 (ONS[8]).

SIC description	Pounds million	Percentage
AB (1-9) Agriculture, forestry and fishing; mining and quarrying	644	0.89
CA (10-12) Manufacture of food, beverages and tobacco	2,261	3.12
CB (13-15) Manufacture of textiles, wearing apparel and leather	748	1.03
CC (16-18) Manufacture of wood and paper products and printing	788	1.09
CD-CG (19-23) Manufacture of petroleum, chemicals and other minerals	2,088	2.88
CH (24-25) Manufacture of basic and fabricated metal products	1,043	1.44
CI-CJ (26-27) Manufacture of electronic, optical and electrical products	524	0.72
CK-CL (28-30) Manufacture of machinery and transport equipment	1,151	1.59
CM (31-33) Other manufacturing, repair and installation	881	1.22

8 https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/nominalandrealregionalgrossvalueaddedbalancedbyindustry

DE (35-39) Electricity, gas, water; sewerage and waste management	2,462	3.40
F (41-43) Construction	3,943	5.44
G (45-47) Wholesale and retail trade; repair of motor vehicles	8,325	11.49
H (49-53) Transportation and storage	3,027	4.18
I (55-56) Accommodation and food service activities	1,283	1.77
J (58-63) Information and communication	2,990	4.13
K (64-66) Financial and insurance activities	5,702	7.87
L (68) Real estate activities	9,842	13.58
M (69-75) Professional, scientific and technical activities	4,555	6.28
N (77-82) Administrative and support service activities	3,224	4.45
O (84) Public administration and defence	3,992	5.51
P (85) Education	4,640	6.40
Q (86-88) Human health and social work activities	6,379	8.80
R (90-93) Arts, entertainment and recreation	914	1.26
S (94-96) Other service activities	992	1.37
T (97-98) Activities of households	77	0.11
Total	**72,475**	**100.00**

R&D expenditure

R&D expenditure was £130m in Yorkshire and the Humber during 2019, which represented 3.90% of the R&D expenditure in the UK. Figure 7 displays that the evolution of the R&D expenditure in Yorkshire and the Humber as a share of the UK increased from 2.61% in 2001 to 3.90% in 2019.

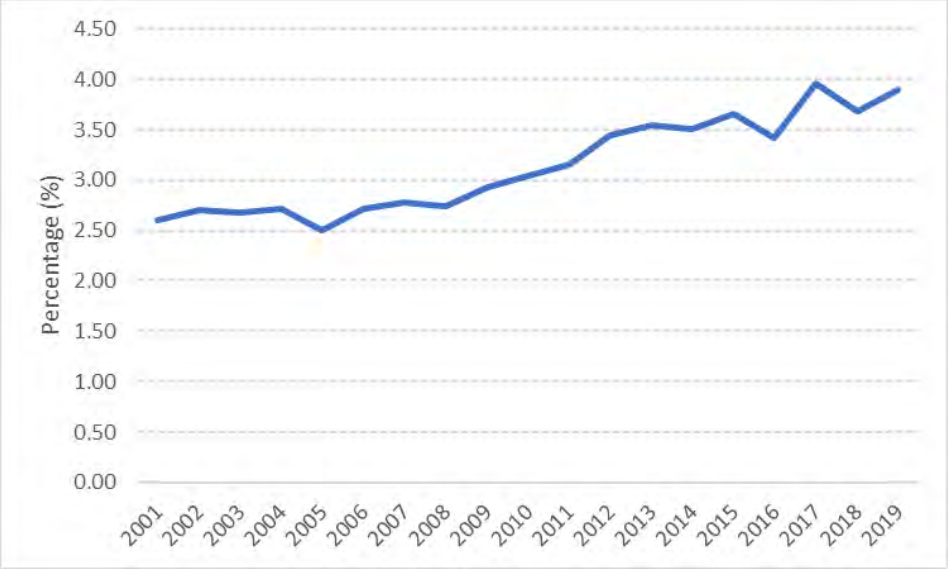

Figure 7 - R&D investment in Yorkshire and the Humber as a share of the UK, 2001-2019 (ONS[9]).

9 https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/bulletins/ukgrossdomesticexpenditureonresearchanddevelopment/2020

Even though R&D in Yorkshire and the Humber as a share of the UK has followed a positive trend over recent years, its contribution to the national level is low in comparison to other regions. Figure 8 presents the percentage composition of R&D in the UK by regions during 2019. In that year, Yorkshire and the Humber had a share of 4%, which is significantly lower compared with the largest share of R&D (23%) in the South East. The rebalance of the economic activity by regions motivated by the policy 'levelling-up' also implies to rebalance the share of R&D expenditure by regions to build more equal technological capabilities across regions.

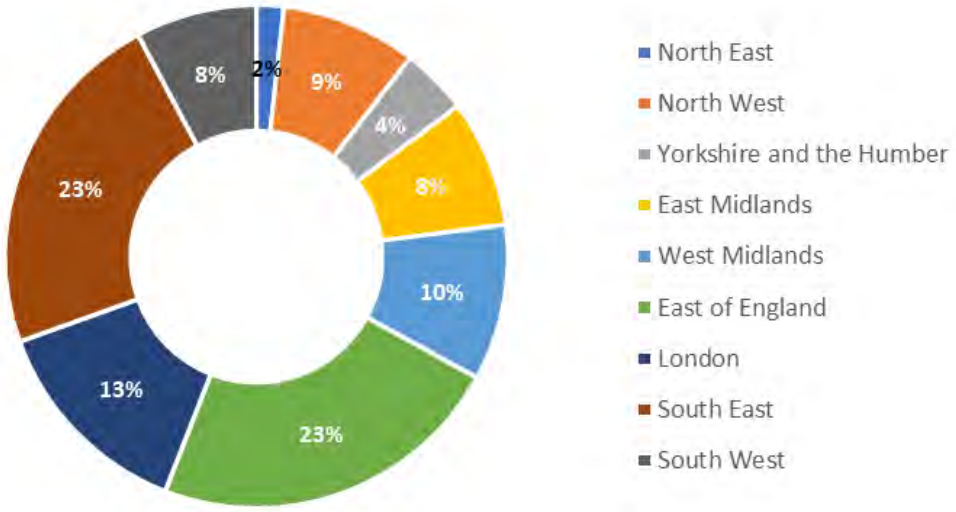

Figure 8 - Percentage composition of R&D in the UK by regions, 2019(ONS[10]).

The R&D support of the ForTaMP project has also been regionally concentrated. Table 3 displays the R&D support of the ForTaMP project by local authority. The data provided by CPI in Table 3 indicates that R&D support is highly concentrated in Leeds. The ForTaMP project supported 26 enterprises with £194,982 in that city.

Table 3 - R&D support of ForTaMP by local authorities.

Local authority	R&D support (UKP)	%	Enterprises supported	%
Bradford	34,388	8.04	4	6.35
Calderdale	20,282	4.74	2	3.17
Craven	14,153	3.31	1	1.59
Harrogate	61,974	14.50	8	12.70
Kirklees	16,756	3.92	3	4.76
Leeds	194,982	45.61	26	41.27

10 https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/bulletins/ukgrossdomesticexpenditureonresearchanddevelopment/2020

Selby	8,473	1.98	2	3.17
Wakefield	28,176	6.59	7	11.11
York	41,247	9.65	8	12.70
Hambleton	7,055	1.65	2	3.17
Total	427,486	100.00	63	100.00

2.7 Strategic Context

The strategic approach of CPI is to support businesses to accelerate product and process development, from laboratory scale to pilot and prototyping. CPI typically achieves this by supplying technical resources, assets, people and expertise to SMEs through public and commercially funded projects.

The strategic rationale for the ERDF-funded ForTaMP project was to specifically intervene on economic, market and commercial conditions that have caused historically unfavourable levels of investment in manufacturing innovation and business growth within the Leeds City Region.

In doing so, CPI will contribute to development of a more vibrant regional innovation ecosystem by working closely with local businesses to meet the innovation commercialisation needs.

A focus group session with members of the ForTaMP delivery team also highlighted several internal organisational strategic reasons for CPI to deliver this project. For example, the ForTaMP project helped to expand the geographical reach of CPI's activity into a new market, where more SMEs could be supported and new potential collaborations would become available. The ForTaMP project also held the potential to increase CPI's future pipeline of work in the region by enabling the organisation to build relationships with local partners and businesses, thereby raising awareness of CPI's support services more broadly across the UK.

ForTaMP has remained aligned with various key national, regional, and industrial policies that were in place before and after the project had begun. As a result, the policies and ForTaMP's relevance to them is split into Table 4 (depicting the policy context before the start of the ForTaMP project in April 2020) and Table 5 (reflecting additional policies introduced during project delivery up to 2023).

Table 4 - Strategic policy context before the ForTaMP project

Policies, plans and strategies in operation at the outset of the project		
Level	**Policy**	**Summary**
National	Smart Specialisation in England (2015), Department for Business Innovation & Skills	The ForTaMP project aligns with England's SMART specialisation ambitions through its support of Key Enabling Technologies (KET) designated as the 'Eight Great Technologies'. The ForTaMP project contributed to the development of 'Advanced Materials and Nano-technology' through the application of formulation and colloid science to deliver radical and incremental product innovation. The report also refers to ERDF Investment Priority 1B: Promoting Business Investment in Research and Innovation by delivery of innovation in the areas of formulation, nano-technology and materials integration, which is also supported by ForTaMP.
Regional	Leeds City Region Enterprise Partnership Innovation Strategy (2014), Leeds City Region Enterprise Partnership	This strategy showed that the Leeds City Region (LCR) performs relatively poorly on innovation indicators. 25% of LCR firms invest in R&D and only 8% of SMEs seek external R&D support. LCR SMEs accessing InnovateUK support is not commensurate with the scale of the regional business base: ranking 14th nationally. In terms of Intellectual Property performance, LCR stands 23rd (39 LEP areas) in terms of EU Patent Office awards per 10,000 residents. The core objective of this strategy is to develop a thriving innovation system. One building block to achieve this includes the provision of resources to generate new ideas and commercially exploit the potential of local businesses. The support offered by the ForTaMP project does just this, by supporting SMEs to commercialise their innovation and scale up.
Regional	Leeds City Region Business Survey (2017), BMG Research	The Leeds City Region Business Survey recognised that key regional barriers to SME investment in R&D included: lack of time, financial constraints, too risky, lack of knowledge & expertise of the process and of potential markets. The ForTaMP project aligns with these findings and has partially bridged the gap in the regional innovation support ecosystem. CPI has dedicated resources and expertise using ERDF funding to reduce the risk to SMEs and support the development of new products and processes.
Regional	Leeds City Region Local Industrial Strategy - Our draft priorities (2019), Leeds City Region Enterprise Partnership	The Leeds City Region Local Industrial Strategy sets out the strategic growth plans for the region, building upon its industrial heritage. At present there is a £11 billion productivity gap between Leeds City Region and the rest of the UK. To begin to tackle this, the ambition is to join up business support services and provide finance for businesses scaling up. The ForTaMP project aligns with these ambitions by offering additional business support services in the region, to boost productivity and help SMEs to scale up processes and develop new products and processes.

By analysing the policies introduced after the start of the ForTaMP project (Table 5), it is clear the project continued to respond to key emerging policy and strategic areas. The new policies are still well aligned to the objectives and targets of the project. It can be concluded that the context in which the project was developed has not changed materially, and therefore did not affect project's relevance, nor the ability of CPI to perform well against its targets.

Table 5 - Strategic policy context after ForTaMP project started.

Policies, plans and strategies currently in place		
Level	Policy	Summary
National	Building the future economy - plan for action for UK business innovation (2021-2025), UKRI	This document outlines the core ways in which UK businesses will be supported to innovate between 2021 and 2025. As part of this, it is suggested that the UK should be at the forefront of global opportunities. Additionally, it is imperative that innovative businesses continue to grow and fuel the UK economy. As a result, this report recommends supporting all companies to grow. The ForTaMP project aligns with these ambitions through its commitment to increasing innovation capacity by boosting the number of SMEs engaged in knowledge exchange and collaborative research and innovation to bring new products to market. This assistance strengthened the offering of SMEs and will support their growth in the long term. As well as promoting research activity to those SMEs not currently engaged, ForTaMP assisted existing research-intensive SMEs.
National	UK Shared Prosperity Fund Prospectus (2022), HM Government	The UKSPF aims to support the government's commitment of Levelling Up areas of the UK. The UKSPF will replace sources of European funding, such as those available through ERDF. Additionally, the UKSPF seeks to boost productivity across the UK. Therefore, learnings developed as a result of the ForTaMP project will inform the creation of future projects using Shared Prosperity Funding.

Regional	Leeds City Region Innovation Framework: Innovation for everyone (2021), Leeds City Region Enterprise Partnership and West Yorkshire Combined Authority	This framework outlines the vision for the Leeds City Region which relates to the development of an "open, inclusive, thriving and coherent innovation ecosystem, where SMEs, budding entrepreneurs and individuals are inspired to innovate, and can easily navigate the support landscape and connect and collaborate with others". The ethos behind the ForTaMP project aligns with this vision, by providing SMEs with the resources and capacity to innovate and develop their product concepts, encouraging progression on the TRL scale.
Regional	Business Productivity and Resilience Plan (2021) West Yorkshire Combined Authority	This plan connects a host of regional policies and strategies to uncover how the priority of 'boosting productivity' will be tackled. The plan warns that productivity growth may slow in the post-COVID recovery, highlighting the need to prioritise this area. A key finding within this plan is that innovation and R&D is highly correlated with productivity. However, Yorkshire & Humber spends 1.4% of GVA on R&D – less than any other English region, hindering the region's growth. The ForTaMP project will help to boost the innovation and R&D capacity of the beneficiaries it supports, increasing spend on R&D and ultimately boosting local productivity.
Regional	West Yorkshire Economic Recovery Plan (2021) West Yorkshire Combined Authority	Within this Economic Recovery Plan, supporting local businesses is integral to the fair and just economic recovery of West Yorkshire. The COVID-19 pandemic had a severe impact on jobs and businesses in West Yorkshire, necessitating tailored support to avoid a long-term impact on productivity and living standards. The plan commits to "[working] with existing SME businesses to access the most relevant support to boost their productivity, increasing provision where we can add new value". The ForTaMP project is complementary with this commitment, by providing SMEs with access to specialist knowledge and facilities to support their growth and product development capabilities.

2.8 Addressing Market Failure

ERDF projects provide funding to overcome market failure and enable activity which would not happen without intervention.

There were several market failures that ForTaMP originally set out to address to improve the regional support landscape for SMEs. The five largest market failures that ForTaMP attempted to address were:

1	**Imperfect information** - Stakeholders and partners often lack a validated evidence-base to make an informed decision, particularly regarding an emerging technology.
2	There is subsequently a need for a **Demonstration Effect** - to identify potential constraints, address them prior to commercial roll out and provide a validatory function including prototyping and product development to a conservative market.
3	**Coordination Effect** - ForTaMP has been developed to address fragmentation within the existing innovation ecosystem and splintered supply chains (encouraging more localised sourcing of expertise).
4	**Absorptive Incapacity** - companies within the region do not have the ability to either engage with local knowledge providers or adequately absorb any knowledge transfer.
5	**Principal/Agent Failure** - this mainly relates to knowledge providers. Greater exposure to the commercial market will encourage focus on products/processes (applied research), creating a virtuous cycle.

In addition, through the ForTaMP project, CPI has been able to deliver a complementary offer to the priority markets of the Leeds City region. Key target sub-sectors within the ForTaMP project fit with regionally important sectors such as: consumer goods, chemical and lubricants, food and drink, healthcare, industrials, energy and security, materials, packaging and personal care.

3. Project Progress

ForTaMP will be delivered on time and will exceed the majority of the original contract output targets, with only employment increase targets not being met.

The original project start date was April 2020, with the initial financial and activity end dates set for March 2023. This final deadline for ForTaMP remains unchanged and the project is still set to be delivered on time. No formal Project Change Requests (PCRs) were submitted for this project.

3.1 Progress Against Milestones

The original key ForTaMP milestones versus actual completion dates are shown in Appendix II. This shows that overall, ForTaMP has managed to maintain its overall scheduled start date and end date.

Some internal milestones experienced a slight delay. For example, the ForTaMP internal kick-off meeting occurred in May 2020 rather than April. Additionally, the ForTaMP formal stakeholder launch event occurred in May 2020, rather than in July, as a result of challenges posed by the COVID-19 pandemic. The completion of the summative assessment was also shifted from January to March 2023.

Despite a significant portion of initial project delivery occurring during the COVID-19 pandemic, the project team were successful in mitigating its impact of on key project milestones. For example, planned in-person outreach events were moved to an online format instead.

Any delays to internal milestones have been successfully mitigated, and the ForTaMP project is still on track to finish before the scheduled activity end date of 31st of March 2023.

3.2 Spend and Output Performance

3.2.1 Spending progress

The entirety of the funding budget for ForTaMP is for revenue spend, at £2,598,124. This spend began once the project started in April 2020.

Of the total funding of £2,598,124, 50% was provided by ESIF under an ERDF Investment Priority Axis 1 (Promoting Research and Innovation) grant. The remaining 50% was funded through CPI Match Funding.

This budget is being spent on staff salaries (9.82 Full-Time Equivalent resources), travel and subsistence, laboratory consumables, chemicals and reagents, outreach and subscriptions and professional fees.

By the end of the project, the ForTaMP is projected to be on budget for a total spend of £2,598,124.

Table 6 sets out the overall budget expenditure for the ForTaMP project to date and what it is forecast to reach by the end of the project:

Table 6 - Contracted and projected spend performance.

Funding / Expenditure	Contracted	To date (by End Jan 2023)	Forecast at closure (by end Q1 2023)
ERDF Funding (Revenue)	£1,299,062	£1,178,350	£1,299,062
Catapult Funds / CPI Match Funding	£1,299,062	£1,178,350	£1,299,062
Total Funding	£2,598,124	£2,356,700	£2,598,124

3.2.2 Output progress

Table 7 summarises the ERDF output performance for the ForTaMP project to date (End of January 2023) and what it is forecasted to reach by the end of the project (end of Q1 2023).

By project closure CPI will meet or exceed all but one of the target outputs, which relates to employment increase. It must be noted that achieving increased employment within the supported enterprises is a challenging target within the current economic climate and skills shortage in the UK. Therefore, it can be concluded that the project is largely a success, by overdelivering on 6 of the 7 output targets by project closure.

This success can be partly attributed to the proactive nature of the project manager and delivery team, who identified outputs needed every quarter to keep the delivery on track.

Table 7 - ForTaMP ERDF Output Performance

Output Indicator	Original target (GFA)	Claimed by Q1 2023	% Of target at time of evaluation	Forecast at closure	% Forecasted to be declared at closure
C1/C4 – SME support (>12 hours)	55	54	98%	63	115%
C5 – New Enterprises supported	3	10	333%	12	400%
C8 – Employment increase	5	2	40%	2	40%
C26 – Collaboration with research institute	20	27	135%	29	145%
C28 – new product to market	10	10	100%	14	140%
C29 - new product to firm	12	12	100%	16	133%

4. Project Delivery and Management

SME and stakeholder perceptions of the ForTaMP project management and delivery were overwhelmingly positive.

Project activities have been delivered to a high standard and in a timely manner throughout the duration of the project.

CPI, as the grant fund recipient are responsible for the vast majority of project delivery activities. However, sub-contractor agreements were used to procure organisations with specialist knowledge and expertise to assist SMEs as required. Two organisations, Campden BRI and Leeds University, were sub-contracted as part of the ForTaMP project. Campden BRI provided support for 3 subcontractor agreements through their ability to do "taste testing" in clean labs, while Leeds University was responsible for 1 subcontractor agreement.

4.1 SME Beneficiary and Stakeholder Consultation

The following section provides feedback from the ForTaMP project stakeholders, gathered using online surveys and in-depth interviews. This involved representatives of the delivery partners, supporting organisations and SME beneficiaries.

In December 2022, an online survey was sent to the SMEs signed up to the ForTaMP project. Responses were received from 27 of the beneficiaries by the time the survey closed in late January 2023.

Furthermore, during January 2023, 5 in-depth interviews were conducted, alongside a detailed 'project debrief' focus group with the ForTaMP project management and delivery team to gather various stakeholder perspectives on all aspects of the project. Three of the interviews engaged project partners or key strategic players, namely: Campden BRI, Bradford University and West Yorkshire Combined Authority. A further 2 interviews with SME beneficiaries explored their experience of receiving CPI's support within the ForTaMP project. Full details of SMEs and stakeholders interviewed are in Appendix III.

4.2 Quality of Management and Delivery

As stated in section 2, the ForTaMP project is projected to be delivered on time, on budget and delivering on all but one of its c-output targets. On output metrics alone, ForTaMP would be considered to be successful from a project management perspective.

Positive aspects of the project management process were identified during the stakeholder interviews that were key to achieving this are outlined below:

1. The ForTaMP project benefitted from an experienced project delivery team

The ForTaMP project benefitted from a highly experienced, multidisciplinary business development and technical team. ForTaMP's project manager, business development mangers and administrative team all had past experience in the delivery of similar business innovation support ERDF projects. This means they were familiar and skilled in using established monitoring and delivery processes that could be adapted to meet the changing needs of the project.

2. The project delivery team developed a positive relationship with subcontracted organisations

The relationship between CPI and sub-contracted delivery organisation Campden BRI was deemed extremely positive. CPI reported that they were very satisfied with the assistance Campden BRI provided to SMEs. The ForTaMP project has fostered new relationships between CPI and Campden BRI, which will likely result in future collaboration beyond the ForTaMP project.

> *"Working with CPI was excellent. We did reciprocal visits to learn more about each other's capabilities". "There has been lots of discussion about future collaborations" (Representative of Campden BRI)*

3. CPI implements learnings across all of their projects

As previously mentioned, CPI has extensive experience of delivering ERDF projects. Members of CPI's ForTaMP project team stated that lessons learnt in from previous ERDF projects are implemented on every subsequent ERDF project across the business. This creates continuous improvement across all of CPI's work. For example, ForTaMP project benefitted from the application of learnings from current (e.g., SONNET, PROSPECT) and previous ERDF projects (COAST, Spotlight), by removing barriers to entry for SMEs and increasing the quality of the project delivery.

4. The project delivery team took an agile approach to marketing

In terms of the marketing of the project, the delivery team showed an agile approach. Due to a lack of engagement with initial internal webinars hosted by CPI themselves, the business development team associated with this project began to write articles and attended additional external networking events to raise awareness of ForTaMP. For example, one member of the delivery team wrote articles in for the local cosmetics cluster newsletter, attended a PAPI (Product and Process Innovation) Innovation Workshop and additionally presented at the Innovation forum, chaired by West Yorkshire Combined Authority. This engagement not only raised awareness of CPI and

the ForTaMP project, but also increased uptake by businesses.

5. The delivery team mitigated against challenges posed by the COVID-19 pandemic

The COVID-19 pandemic resulted in some challenges relating to the delivery of planned workshops in Q1 2020, and resulted in the adjustment of some internal milestones. This demonstrated that enough flexibility been built into the original design of the project and that the team proactively addressed setbacks.

In person events have historically been a successful mode of developing leads for CPI's ERDF business support projects. As a result, several internal milestones within the ForTaMP project related to the delivery of in person workshops. The COVID-19 pandemic disrupted the delivery of these events. These challenges were mitigated by the delivery team, who adopted the delivery of the workshops to an online format to continue to increase awareness of the ForTaMP project despite restrictions on in-person engagement. A representative of the project team felt that online presentations provided less scope for interaction. However, we conclude that the project team did all they could to mitigate against these extenuating circumstances, by reaching out to their networks and adopting an innovative approach to engagement.

While ForTaMP still managed to engage numerous SMEs within the region, the criteria for engaging larger companies was only partially met. This can be attributed to broader macro events, such as the COVID-19 pandemic, Brexit, and the cost of living crisis, which have meant that larger SMEs have been unable to focus on innovation projects.

4.3 Quality of Support Given to SMEs

Overall, the ForTaMP project delivered it's intended activities to a high standard, according to the 27 businesses supported by ForTaMP which had replied to our survey.

On average, survey respondents rated the overall ForTaMP project 4.93 out of 5. This extremely high score represents a level of high satisfaction amongst beneficiaries.

The survey also confirmed that:

- 96% of supported businesses would apply for a similar support project in the future or recommend to other businesses.
- 96% of supported businesses felt that their business was in a stronger position than it was previously because of the ForTaMP project.

The SME surveys and interviews also highlighted several key aspects of the ForTaMP project which drove positive SME satisfaction levels. This includes:

1. Providing high quality and timely support

The ForTaMP project was regarded as a success by both the delivery team and the project beneficiaries. All SMEs provided extremely positive feedback surrounding the support they had received from the ForTaMP project and in some cases reluctant to provide areas for improvement.

"They did an excellent job in the timeframe they had"
(Representative of Starbons - beneficiary)

"The quality of delivery was exceptional. So many of the projects were useful for clients. Customers were delighted with what we provided."
(ForTaMP project team representative)

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2. Enabling SMEs to access expert support.

A major benefit of the ForTaMP project relates to the advice and activities it was able to offer to SMEs who would not otherwise be able to access the services. This is reflected in the C1/C4 output indicator data, which has confirmed that 54 enterprises have received support (including non-financial support) so far. By the end of the project, ForTaMP is projected to have supported a total of 63 SMEs, which will significantly surpass the target of 55. This will result in an over delivery on the C1/C4 output of 115%.

Beneficiaries found that having an external view from people with specialist knowledge was particularly useful, as often SMEs lack the capability or resources within their own organisations to overcome extremely technical challenges. CPI were able to objectively evaluate a business's manufacturing process and suggest areas for improvement.

Additionally, it was noted by the project delivery team that the revenue spent on technical delivery within the ForTaMP project was lower than CPI's previous ERDF funded projects. As CPI had not previously worked in the Leeds City region, the project delivery team felt that smaller business engagement may have had a disproportionately large impact on ForTaMP beneficiaries, who had never experienced this type of support from CPI.

CPI's partners, Campden BRI also supported SMEs through access to services, such as their pilot plant, guidance, and connecting them to other businesses within the industries. A representative of Campden BRI and a beneficiary they supported both stated that funding is often a barrier for SMEs to receive high-quality consultancy services of this nature.

"Often our services are too expensive for SMEs to access. It is generally a problem

for small businesses to access consultancy services, so I'm supportive of what the project was trying to do". (Representative of Campden BRI)

"CPI provided access and introductions to subject matter experts within food and beverage manufacturing. Without the support of ForTaMP we would not have been able to afford to engage the consultancy with whom we worked to deliver the project" (Beneficiary of the ForTaMP project)

This was echoed within beneficiary interviews, which confirmed that access to funding was a constraint for SMEs. A representative of one beneficiary, Starbons, stated that "the ForTaMP project was straightforward for a bootstrapped start-up with no cash flow" to use, due to the fact that all activities were delivered in house. Starbons had previously received funding from a project which provided SMEs with the money to go out and gain support from consultants themselves. The representative shared that this method was far easier to administer and suitable for her SME.

3. Assisting SMEs to overcoming barriers to product/process development and scale up.

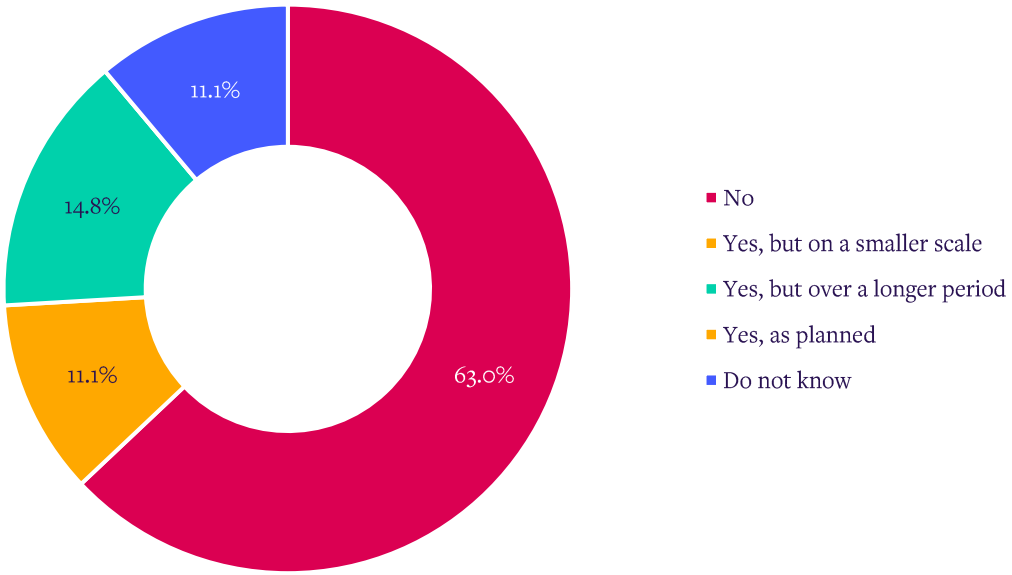

Figure 9 - Would SMEs have been able to realise these benefits without the ForTaMP project?

To understand the full impact of the ForTaMP project upon its beneficiaries, we asked survey respondents whether they would have been able to realise the benefits they had seen without support from CPI (Figure 9). 63% of respondents said no, 11.1% said yes but on a smaller scale, and 14.8% said yes, but over a longer period of time. From these results it is clear that the ForTaMP project had a profound impact on SMEs, by enabling access to knowledge and resources.

""I can't tell you how helpful the funding in research and testing has been to my business. Without the help I received I would have given up. I wouldn't have gotten anywhere if it wasn't for this project. I can't praise the CPI enough. They opened doors and contacts" (Representative of Gingingers – beneficiary).

4.4 Opportunities to Improve the Project

The majority of SMEs who responded to the survey and were willing to be interviewed expressed both great satisfaction and gratitude for the support they received. However, some beneficiaries did suggest some learning opportunities could be taken from the ForTaMP project, which could improve future support projects. Key aspects reported as potential improvement opportunities from the perspective of the beneficiary were:

1. Increase ability to provide longer levels of support

Some SMEs suggested that one slight negative of the ForTaMP project was the time constraints it was under. They noted that their constraints surrounding technical resource and scale up capability were assisted within this project, but longer-term support would be extremely beneficial. This is not a criticism of this project, but rather a lesson that further follow-on SME support schemes are needed, particularly within this region, to fill this gap in provision.

2. More support to find further funding

A commonality amongst beneficiaries was the need for additional financial support beyond the life of the ForTaMP project to continue to advance their work. A number of beneficiaries felt that advice relating to how they can raise funds, apply for funding, or signposting to funding sources would be beneficial.

3. Greater variety of company linkages

Companies valued the experience of being able to work with partner organisations such as Campden BRI and Leeds University, which had been subcontracted within the ForTaMP project. Several beneficiaries felt they would benefit from the assistance of additional companies and academic institutions.

4. Maintenance of face-to-face support

One suggested area for improvement related to increased face to face contact, which was initially constrained by COVID-19. Within the context of the pandemic, CPI cannot be faulted for reducing face to face contact in the initial stages of the ForTaMP project. However, a key learning to take away from this insight relates to the value beneficiaries still place upon in-person support post pandemic.

4.5 Beneficiary Selection

The ForTaMP project did not constrain engagement to one specific industry sector unlike some previous ERDF projects CPI have delivered, such as Spotlight (Healthcare). This allowed CPI to engage with a diverse range of key sectors within the region, which aided uptake on the project.

Due to the high application rate to participate in the ForTaMP project, the project team were able to be selective and support projects where they believed they would be able to add the most value. CPI prospected and selected SMEs based upon an assessment of whether support did have the potential to lead to new product development. This allowed CPI to select the right beneficiaries for the ForTaMP project, resulting in a significant number of positive outcomes.

Once selected, beneficiaries received introductory diagnostic assistance to define their technical challenges and development needs. Following initial laboratory/desk-based technical work/consultancy, the benefits of more extensive support were assessed.

4.6 Delivery of Project Activities

The following are further insights on the key activities specified in the original logic model that ForTaMP set out to deliver:

4.6.1 Provision of outreach support to SMEs

As part of the ERDF ForTaMP project, BD activity sought to connect with multiple SMEs in the region. Though not all the connections translated into a claimable output (e.g. C1/C4), they made many local SMEs more aware of the wider innovation and grant ecosystem available.

In total, the ForTaMP project allowed CPI to connect with over 180 SMEs throughout the project lifetime, the majority of which were eligible for support. The project delivery team had more detailed discussions with over 96 of these SMEs, and over 89 businesses were further assessed to gather information required for the application process.

It should be noted many SMEs were struggling with the COVID-19 pandemic, as well as the consequences of Brexit and supply chain issues at the time of the outreach. Therefore, some SMEs were electing not to invest in R&D at the time and did not ultimately sign up to the project for that reason. However, when conditions change in favour of investment in R&D, the SMEs contacted will now be aware of the types of R&D support available, which CPI can offer to assist with post ForTaMP.

In interviews, SME beneficiaries were particularly complementary of the quality of ForTaMP's delivery. Additionally, the project team believed that ForTaMP had been a success in providing meaningful and value-added support to SMEs.

"We're very proud of this project and what it has achieved"
(ForTaMP project team representative)

"It was easy to communicate and work with CPI. The team had the ability to absorb the information presented and develop a project concept."
(Beneficiary of the ForTaMP project)

The business development managers, who were usually the first point of contact for SMEs, were credited for the excellent quality of their delivery and flexibility in raising awareness of the project despite COVID-19.

"The BD team were extremely helpful, professional, and easy to work with"
(Beneficiary of the ForTaMP project)

"CPI's BD manager was exceptionally well organised. She and her colleagues at the CPI are ex industry so they understand our scale up needs"
(Beneficiary of the ForTaMP project)

Equally, a number of beneficiaries complemented the professionalism and expertise of ForTaMP's project delivery team as a whole, including the work of the technical team.

"The most valuable aspect of the project was the absolute dedication of the team at CPI. The scientific work was fabulous" (Beneficiary of the ForTaMP project)

When beneficiaries were asked what the most valuable element of ForTaMP's support was, the following key themes emerged:

- The technical expertise, skills and knowledge of CPI's staff.
- Financing of research to help to grow their business.
- Use of CPI's facilities and/or access to equipment and high-class lab facilities.
- Access to grant funding.
- Independent technical analysis of challenges facing the business.
- Provision of solutions to identified challenges in actionable reports, which could be integrated into business decision-making processes and plans.

"CPI's skillset and facilities have been an amazing benefit to our project and will be highly beneficial going forward" (Beneficiary of the ForTaMP project)

4.6.2 Scoping and delivery of technical support to SMEs in furtherance of product and process development

Despite COVID-19 restrictions, CPI was still able to adapt and safely keep its lab

facilities open. This enabled CPI to continue provision of technical support as needed by SMEs. While beneficiaries noted that they valued in person engagement, they also understood that this was not possible due to the challenges posed by the COVID-19 pandemic.

By providing technical support to SMEs, 63% of beneficiaries were able to introduce new processes or manufacturing capabilities and 52% introduced new to firm products. Additionally, the ForTaMP project helped beneficiaries to improve their processes or product functionality. This will have a significant impact on the productivity of SMEs supported.

"The most valuable aspect of the ForTaMP project was the introduction of a new manufacturing technique for our product and the possibility to patent it"
(Beneficiary of the ForTaMP project)

"ForTaMP helped us to advance the functionality of our product"
(Beneficiary of the ForTaMP project)

Even if the support offered by CPI did not create a new to firm or new to market product or process, it did assist SMEs in progressing ideas and proving the viability of their concept.

"The best thing about the ForTaMP project was the ability to access high level testing and knowledge around product development"
(Beneficiary of the ForTaMP project)

"We are a very early-stage spin-out. The ForTaMP support gave robust confirmation of the potential for producing our novel materials"
(Beneficiary of the ForTaMP project)

4.6.3 Creation of enduring relationships between SMEs and appropriate knowledge base providers

Beneficiaries felt that the ForTaMP project enabled them to access specialist knowledge and advice from organisations with the capability to assist in scale-up or recommend improvements in their formulation. While 63% of SMEs surveyed were able to collaborate as a result of the ForTaMP project, as mentioned previously, some beneficiaries felt that the project could be improved through an increased offering of companies which they could collaborate with.

"The ForTaMP project could be improved by having more companies in their portfolio. We were only offered introductions to Campden BRI or Leeds University

at the time" (Beneficiary of the ForTaMP project)

4.6.4 Promotion of supply chain integration enabling SMEs to take products to market

Approximately 33% of the beneficiaries surveyed introduced new to market products as a result of the support offered by ForTaMP.

The ForTaMP project has been successful in promoting supply chain integration. Using an example from one beneficiary, CPI suggested looking at an alternative natural ingredient as part of their product and connected this SME with a supplier. That supplier then suggested 3 manufacturers and a packaging supplier to the beneficiary. The beneficiary then selected one of these manufacturers to produce their product. This example illustrates the contacts this SME gained as a result of the ForTaMP project, and the additional long-term benefits associated with this.

"Not having the expertise available is a barrier. The ForTaMP project has opened doors and introduced me to new contacts" (Beneficiary of the ForTaMP project)

4.7 Horizontal Principles

This section explores to what extent the ERDF horizontal principles/themes have been integrated into the design and delivery of the ForTaMP project.

Three themes need to be reflected in all ERDF Strategic Interventions and Operations (ESIF) projects: Equality Between Men and Women, Sustainable Development, and Equal Opportunities and Non-Discrimination[11].

Support for Equality Between Men and Women

The ForTaMP project has proactively encouraged female participation and has been able to engage a higher than usual level of female participation in this project (based on previous CPI ERDF Programmes).

The delivery team looked for opportunities to encourage female participation and the project benefitted from already targeting food, personal care and health care, as these are areas where more women work in senior roles, than other sectors. The ForTaMP project supported a total of 22 women in senior positions, ranging from CEO to owner and technical manager. The full list of businesses and the senior leadership role within this organisation is detailed in the appendix iv.

[11] https://ec.europa.eu/regional_policy/sources/docgener/guides/blue_book/blueguide_en.pdf

The ForTaMP Project also participated with the Cosmetics Cluster UK which has a particularly strong following in the Leeds area. This sector has a high level of female participation in terms of both company owners and directors, as well as a high level of female participation in STEM roles, such as production and other technical roles. Due to COVID, there were limited in-person events, but CPI were able to join Cosmetics Cluster meetings on-line and promote our project in their newsletter.

CPI representatives also attended Papi Project's first Women Leading Innovation business event in York which enabled us to engage with new female led businesses.

During the project CPI developed a relationship with Clarion Solicitors, as they are focus on supporting women in business with over half their staff being female, including senior roles. They introduced CPI to Fund Her North, an organisation designed to both encourage female entrepreneurs to invest in new companies but also to help organisations with female owners and leaders become investment ready. This relationship is now being managed by CPI Enterprises.

Internally, the project also initially benefitted from having three female BDs, each with different areas of expertise.

Support for Sustainable Development

There are companies which helped to develop green products, in line with the green agenda. Examples of the green products developed include bio renewable lubricants, a green ethical chemical, and bamboo insect repellent nightwear.

Additionally, a number of beneficiaries made a conscious effort to develop products using green-sourced material. For example, one business used green sourced materials to develop thin film food packaging and another used rice husks as green-sourced material for spray bottles for cleaning fluids.

Support for Equal Opportunities and Non-Discrimination

The delivery team believed the ForTaMP project had diversity and equality and respect for all human resource policies in place. This included a commitment to recruit/retain a high calibre of staff whilst still creating a workforce both ethnically and culturally diverse. CPI and also stated that they supported eligible beneficiaries on a non-discriminatory basis.

5. Programme Outcomes and Impact

The ForTaMP project increased the technology readiness level of SMEs, helped leverage additional funding, and created new collaborations for both beneficiaries and CPI.

This section evaluates the economic impact attributable to the ForTaMP project, including intended and actual outcomes and impact set out in the logic model. It also provides conclusions about the specific result indicators relevant to the project, strategic added value, and difference it has made.

5.1 Outcomes

The following outlines the progress the ForTaMP project made towards achieving the two outcome indicators set out in its logic model (Appendix I):

5.1.2 Increase SME engagement with Research Technology Organisations (RTOs)

The C26 output indicator data has confirmed that 27 collaborations between SMEs and research institutes were completed to date, surpassing the original target of 20 collaborations set out in the GFA. A total of 29 collaborations are expected by the end of the project. As a result, the ForTaMP project will have exceeded this outcome by 145% by the time of project closure.

As shown in Figure 10, approximately 63% of SMEs surveyed stated they were able to collaborate with other RTOs, as a result of the ForTaMP project. Approximately 37% of SMEs collaborated with one organisation. 15% of SMEs surveyed claimed to have collaborated with 2 different organisations, 12% collaborated with 3 different organisations and 1 SME even managed to collaborate with 4 different organisations.

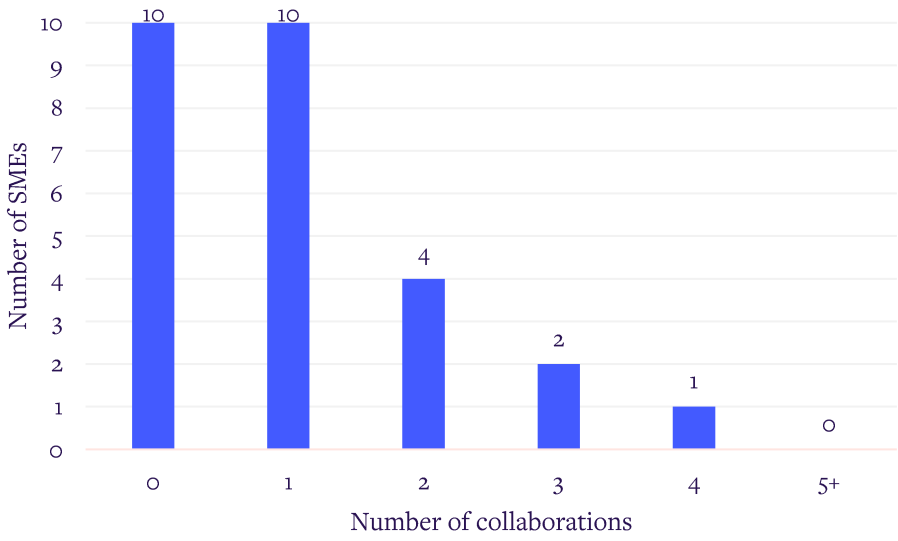

Figure 10 - Collaborations developed as a result of the ForTaMP project.

Most SMEs stated that they had collaborated with the grant recipient, CPI. Other organisations that SMEs claimed to have worked with included Campden BRI, Leeds University, University of Bath Department of Chemical Engineering, Brunel University London, University of Bradford, Sheffield University, UK Space, regulatory and compliance for botanical medical products, SEDA, Leeds University Medical School and MDCL. As a result, ForTaMP was extremely successful in meeting this outcome objective of fostering new collaborations and creating longer-term relationships between SMEs and RTOs.

5.1.3 Increase product and process development in SMEs

The ForTaMP project was successful in supporting the devopment of new products and processes within SMEs which engaged.

The C28/29 output indicator data has confirmed that 10 “new to the market” and 12 “new to the firm” products have been developed thus far. A total of 14 “new to the market” and 16 “new to the firm” products are forecasted by the end of the project. This means that at closure, the ForTaMP project is projected to overdeliver on its original GFA target by 140% and 133% respectively.

In addition, one SME interviewed stated they hoped to launch their product within the next 3 months, which will extend beyond the life of the ForTaMP project, and therefore cannot be counted as a C28/C29 output.

Appendix V provides more details on the specific new products and process developed by beneficiary businesses, thanks to the support of ForTaMP.

5.1.4 Increase TRL level of SMEs engaged with

30 SMEs engaged within the ForTaMP project provided information to CPI regarding changes to their TRL status as a result of their participation in the project. For these beneficiaries, ForTaMP increased the average TRL from 4.6 to 5.5.

Prior to the support, the most common TRL status of SMEs involved in the ForTaMP project was 4, followed by 2 and 3 (Figure 11). After the ForTaMP project the most common TRL status of SMEs was 7, followed by 9 and 3 (Figure 11Figure 11).

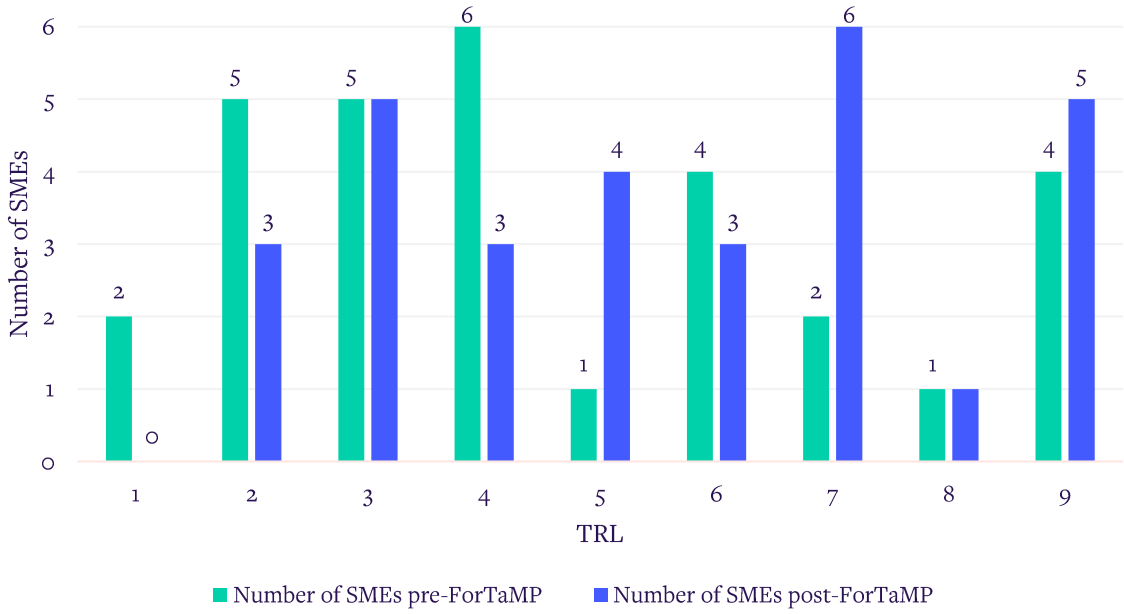

Figure 11 - the TRL status of SMEs before and after the ForTaMP project

70% of SMEs made progression up the TRL scale as a direct result of the ForTaMP project, highlighted within Figure 12. A total of 9 SMEs made no progression up the TRL. 50% of the total number of SMEs moved 1 TRL position, with 16.7% moving 2. One SME was able to move 3 TRL levels.

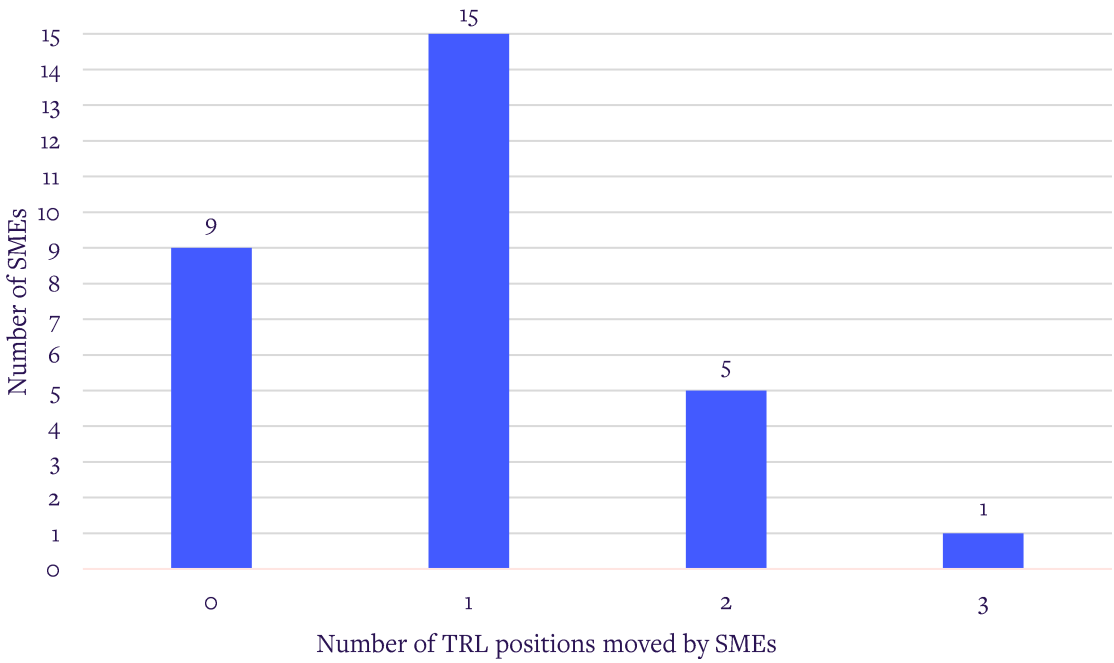

Figure 12 - The number of TRL positions SMEs moved post-ForTaMP

This significant increase in TRL progression by ForTaMP has played an important role in improving these beneficiary businesses' ability to commercialise, increase revenue, become more investable and increase future growth prospects.

5.1.5 Increase in productivity / sustainability of SME

The specialist facilities and knowledge beneficiaries were able to access through the ForTaMP project helped SMEs to overcome constraints within their organisation.

> *"CPI understand scale up and have huge capabilities within their organisation. We are constrained by technical resource and scale up capability. CPI was able to look at parts of our process and suggest ways to improve."*
> *(Beneficiary of the ForTaMP project).*

Using data collected in a survey of 27 of the beneficiaries, we conclude that as a direct result of the ForTaMP project 63% of the SMEs supported introduced new processes or manufacturing capabilities to their firm that would help improve their productivity (Figure 13).

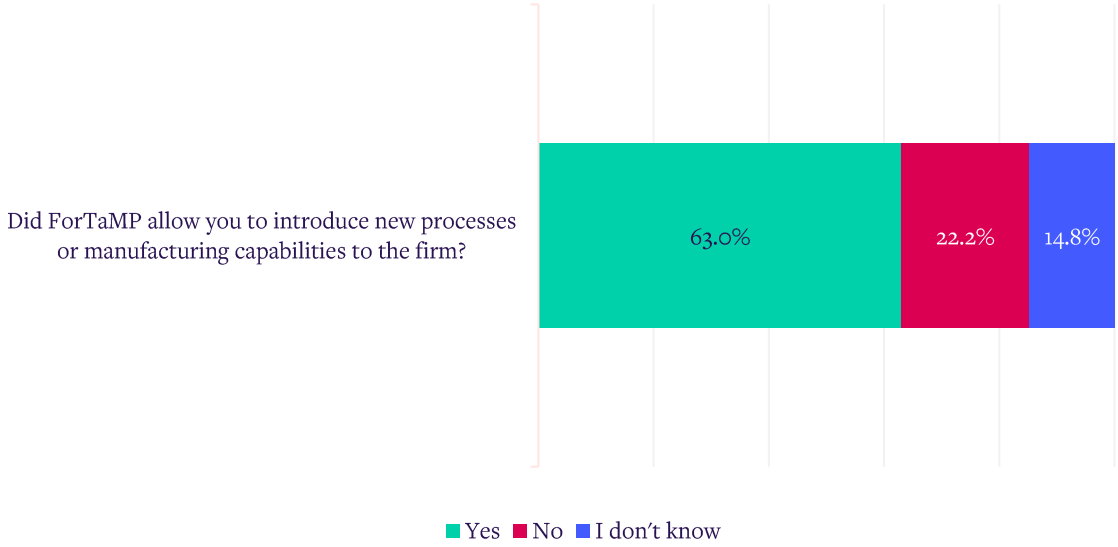

Figure 13 - Survey responses relating to the creation new processes that would improve productivity.

5.2 Impacts

5.2.1 Increase in the number of SMEs developing new to market products.

The provision of CPI resource resulted in a reduction in product development time and cost for SMEs, as they gained advice from expert technical specialists who were able to progress their concepts.

> *"The ForTaMP project has helped with product development. CPI helped me to move forward, by improving my formulation and mixing methods. I hope to launch in 3 months." (Beneficiary of the ForTaMP project).*

Using data collected in a survey of 27 of the beneficiaries, we conclude that as a direct result of the ForTaMP project approximately 52% of SMEs introduced new to the firm products and approximately 33% of SMEs introduced new to the market products (Figure 14).

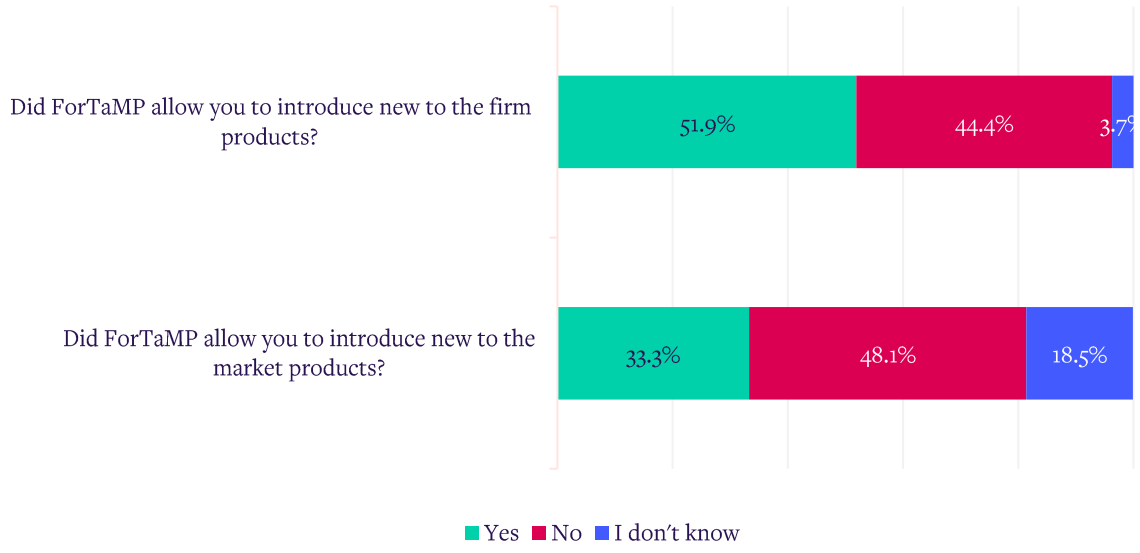

Figure 14 - Survey responses relating to the creation of new to market & firm products

Specific examples of new to market and new to firm products developed as part of the ForTaMP project can be seen in Appendix V.

5.2.2 Increase in High Value Jobs

The ForTaMP project created 2 new jobs within the Leeds City region, which is 40% of the target set out within the logic model (Appendix I). Achieving an employment increase within business support projects is challenging in the current climate due to broader macroeconomic events such as the COVID pandemic, economic crisis and shortage of skilled workers in the UK. Therefore, while the ForTaMP project did not meet the target number of C8 outputs it set out to achieve, the 2 new jobs created should be marked as relatively successful when considering the broader business environment.

The 2 jobs were created in Cable Coatings Limited (trading as AssetCool) which operates in the energy sector. This Leeds-based start-up is working to improve the efficiency and lower the environmental impact of overhead powerlines through the use of their patented coatings.

Additionally, through our survey we uncovered that one other beneficiary gained a new employee outside of the region, due to the support received from the ForTaMP project. This employee's salary fits in the range of £20,000-£39,999. While this could not be recorded as a C8 output due the geographic location falling outside the Leeds City Region, it does work to contribute to the national economic impact of the ForTaMP project.

5.2.3 Increase in number of SMEs actively pursuing enduring relationships with the knowledge base

Approximately 74% of beneficiaries surveyed felt that the research institution connections or networks accessed as part of the ForTaMP project were helpful or very helpful to overcome research and testing barriers.

This upskilling collaboration will not end with the close of the ForTaMP project, as CPI have developed long-lasting relationships with some of the beneficiaries supported. For example, CPI has agreed to provide extra support to one of the beneficiaries, Gingingers, beyond the life of the ForTaMP project. This includes funding for testing and to get the product COSMOS registered (organic and natural certification standard for cosmetics).

> *"There's still constant support, even though the work as part of ForTaMP has finished" (Representative of GinGingers – beneficiary).*

As a result, SMEs such as these are actively maintaining their relationship with CPI, which will create the long-term impact hoped for by the regional authority.

> *"We hope that longer term the relationship between CPI and businesses continue, and SMEs use this as a hook to get additional support. Just because the project has ended, the support shouldn't end" (Representative of West Yorkshire Combined Authority).*

Campden BRI also felt that they developed connections with the SMEs they supported, who may "come back and use [their] services as they scale". This could result in further future benefits for both ForTaMP project beneficiaries and Campden BRI, as a result of the ForTaMP project.

5.2.4 Increase in investment

3 of the 27 (11.1% of) SMEs surveyed felt that the company's sales turnover had increased as a direct result of the support received within the ForTaMP project. Of this increase in turnover, one SME quantified this sales turnover increase as £100,000 per year, while another valued the increase at around £20,000.

Additionally, 3 beneficiaries stated they received additional external financial funding because of the ForTaMP collaboration, all in the form of public grants. The source of funding for each of these SMEs is detailed below:

SME 1 – £50,000 Innovate UK grant and £7,500 Santander grant.

SME 2 – £20,000 through CPI's ERDF-funded SONNET Programme.

SME 3 – Innovate UK grant (value not disclosed).

5.3 Additionality – Has ForTaMP made a difference?

This section explores some of the additional benefits the ForTaMP project has brought to beneficiaries, partners and the region. In other words, these observations account for the added value the project did not expect to see, in addition to the intended output/outcome targets achieved.

CPI have developed new relationships with organisations in the region and created new opportunities for future collaboration

As previously mentioned, Campden BRI had been sub-contracted to support the business support activities for 3 of the SMEs. Through this collaboration, CPI and Campden BRI created a strong working relationship, which is likely to result in future partnership.

CPI also assisted Bradford University through collaborative business development work as part of the ForTaMP project. Bradford University was not involved in the delivery of the ForTaMP project, but instead was responsible for the delivery of the similar ERDF-funded project called CAYMAN (Chemistry Assets for Yorkshire Manufacturing). Through a project cross-referral process, CPI identified businesses which would benefit from different innovation support from the Cayman project. Vice versa, The Cayman project referred businesses they worked with to the ForTaMP project for support needs they could not provide. A representative of Campden BRI stated that "the two projects in conjunction had a more positive impact on beneficiaries". Not only did this process of cross-referral between the projects benefit beneficiaries, but it has also benefitted Bradford University.

"Because of the contacts we established through ForTaMP CPI has commissioned us to do separate analysis. The ForTaMP project helped us to meet our ERDF targets" (Representative of Bradford University)

The cross-referral enabled the Cayman project to meet its targets, generating success for Bradford University. Additionally, CPI has commissioned Bradford University to complete a separate piece of analysis, strengthening the relationship between the two organisations. As a result, Bradford University and CPI are expected to collaborate on future projects, as a direct result of the relationship developed through the ForTaMP project.

"We will continue to work with CPI on a commercial footing and we will absolutely look to work with CPI in the future".
(Representative of Bradford University)

Additionally, by engaging with bodies such as the West Yorkshire Innovation Network, CPI developed a relationship with West Yorkshire Combined Authority. The project team noted that in hindsight they would have liked to have developed a stronger connection with West Yorkshire Combined Authority to ensure that the success of the ForTaMP project remained visible to the organisation during its current transition to a new governance structure. The project team plan to engage with West Yorkshire Combined Authority further at the project closure event in February 2023, to increase the visibility of ForTaMP's successes and CPI's capabilities, so that CPI can become established as a core innovation delivery partner in the region in future.

The ForTaMP project supported career progression within CPI's technical team

The ForTaMP project contributed to promotions and career advancement within the CPI's own technical team.

The technical delivery team brought a broad range of expertise to the ForTaMP project. Whilst assisting SMEs, the team was able to apply their skills to a broad range of technical areas. Each project provided a new opportunity for the technical team to scope and deliver unique projects, while simultaneously developing internal capabilities in an iterative learning process. As a result, junior staff were able to learn from both senior experts within CPI and the SMEs themselves. This contributed to career advancement within the technical team and meant that the experience was therefore mutually beneficial for both junior staff and SMEs.

"CPI's junior staff directly benefited from the project as well. They became empowered and made the most of the opportunity to work directly with businesses" (ForTaMP delivery team representative).

5.4 Strategic Added Value

Developing regional relationships to enable future work within the region

The ForTaMP project has helped to establish CPI's presence within the Leeds City region, an area it had not previously worked in. The project has provided a great deal of value to local SMEs, and simultaneously enabled CPI to develop relationships with core local actors. As previously mentioned, a representative of Bradford University was hopeful for the two organisations to collaborate in future. Similarly, representatives of West Yorkshire Combined Authority spoke highly of the ForTaMP project and CPI more broadly, recognising the value in the expertise they provided to local SMEs.

> *"The engagement CPI managed to achieve in the region was huge. It helped to raise awareness of CPI and was a good example of a focused investment with significant results" (Representative of West Yorkshire Combined Authority)*

In a focus group with the delivery team, it was noted that the region is home to a range of innovative SMEs of a substantial size, which could provide a pipeline for future opportunities. The ForTaMP project has enabled CPI to develop their geographical reach, and tap into this pool of innovative SMEs in need of additional support. The ForTaMP project delivery team noted that there is room to further expand the innovation ecosystem within the region.

> *"This was our first grant support project in the region. We gained intelligence on the kind of support needed there. For example, the level of economic activity in the Leeds City region is on a different scale to the North East of England, where we normally operate. Yet the support we offered in the Leeds City Region has previously been not available to these companies"*
> *(ForTaMP delivery team representative)*

As a result, CPI hope to do further work within the region following the success of the ForTaMP project.

CPI worked to complement existing business support within the region

CPI proactively engaged with local framing organisations to ensure that the ForTaMP project complemented other business support activities within the region. CPI representatives attended local outreach events to understand the existing innovation landscape. For example, a CPI representative engaged with the West Yorkshire Innovation Network to share innovation knowledge and understand areas of complementarity. A representative of West Yorkshire Combined Authority regarded this regional engagement as a key strength of the ForTaMP project, to increase the visibility of the project itself but also in ensuring that the project added value to the regional innovation ecosystem.

> *"CPI have been really hands on in getting involved in the local ecosystem and becoming part of the conversation. That doesn't always happen. It's a massive positive of this project. CPI shared a presentation on ForTaMP at one of the Innovation Network meetings to show how ForTaMP stands out from other activities" (Representative of West Yorkshire Combined Authority)*

6. Programme Value for Money

The financial and non-financial support provided by the ForTaMP project provided good value for money and had a positive impact on beneficiaries.

This section provides an objective analysis of the cost effectiveness of the ForTaMP project and its value for money.

As per ERDF guidance, the evaluation report provides a cost per output analysis. It was not possible to estimate GVA impacts due to the reported job creation value of 2 being too small a sample size to robustly measure GVA impacts.

The project's most prevalent outputs were businesses supported and product launches. Whilst these are important precursors to economic growth, we would recommend the project team continues to monitor the job creation generated in the businesses which have benefited from ForTaMP, so as to understand the longer-term impacts on economic growth.

Cost per output analysis

Table 8 provides a breakdown of the cost per output, set out within the Logic Model.

For the analysis, the total project spend, £2,598,124, was divided by the total of 6 outputs. This makes the assumption that the total project budget was split equally in the delivery of each individual output indicator, meaning that we assume that £433,020.67 was spent on each output indicator. This was used to calculate a cost per output for each individual target indicator associated with the project.

The C1/C4 outputs relating to the support of enterprises had the lowest cost to deliver, at around £6,873.34 per business. SMEs in the Leeds City region had not previously received CPI funding; therefore, they saw greater value from these initial engagements. This point was illustrated by a business development manager of the ForTaMP project, who stated that "smaller initial engagements had a big bang for their buck". As a result, we conclude that the overall financial and non-financial business support offered by CPI was good value for money and had a large impact on beneficiaries.

In contrast, the C8 output, which necessitates employment increase in enterprises supported throughout the ForTaMP project, had high cost per output at £216,510.34. Again, the low number of outputs achieved is a result of macro events such as the COVID-19 pandemic, national skills shortage and the cost-of-living crisis, which have made employment increase a challenging target for business support projects more broadly.

The average cost per output across the whole project (dividing total spend by the total number of outputs forecast at closure) is £19,103.85. Output C26 relates to the number of enterprises cooperating with the knowledge base and had a cost of £14,931.75 per output. Below the average cost per output across the project, the C26 output offered good value for money. The ForTaMP project managed to foster 29 collaborations between SMEs and the knowledge base, which could lead to future support and may have a long-term impact on these beneficiaries.

The final three output indicators, C5, C28, and C29, have a cost per output which is above the project average, at £36,085.06, £30,930.05 and £27,063.79 respectively. While this cost per output is relatively high, the progress the ForTaMP project has made in assisting SMEs to introduce new to market and new to firm products is a significant achievement.

Table 8 - Cost per output

Output Indicator	Forecast number of outputs at closure	Cost per output
C1/C4: Number of enterprises receiving support	63	£6,873.34
C5: Number of new enterprises supported	12	£36,085.06
C8: Employment increases in supported enterprises	2	£216,510.34
C26: Number of enterprises cooperating with the knowledge base	29	£14,931.75
C28: Number of enterprises supported to introduce new to market products	14	£30,930.05
C29: Number of enterprises supported to introduce new to firm products	16	£27,063.79
Total	136	£19,103.85

Additional Value for Money benefits

Due to the innovative nature of ForTaMP project, many of the impacts are likely to be more long-term than the average ERDF project. Improved skills, new collaborations, new products and processes and TRL progression will all unlock innovation in SMEs, setting them on the path for future job creation.

These benefits from ForTaMP are not captured by the value for money assessment above, which focuses on cost per output analysis. Therefore, looking at wider financial benefits and economic value created by ForTaMP we see:

- Average TRL progression of SMEs from 4.6 to 5.5
- Equivalent commercial value of access to CPI's National Innovation Centres.
- An estimated annual sales turnover increase of £20,000 and £100,000 for 2 SMEs (from survey)
- Helping at least 3 SMES attract additional public funding (e.g., Innovate UK, Santander grants and other ERDF-funded projects) worth between £7,500 to £50,000 (from survey).

7. Conclusions and Lessons Learnt

This section synthesises the analysis to provide a final overall evaluation of the ForTaMP project and lessons learnt.

7.1 Overall Assessment

The ForTaMP project aimed to support SMEs in the Leeds City region to develop innovative and market-leading products and processes through the provision of outreach and technical support. This support has helped SMEs develop new to the market/firm products and processes, increase employment and cooperate with the local knowledge base.

This summative assessment highlights that the project will be successful in meeting or exceeding most of the output indicators set out in the GFA by the end of the project (with the exception of job creation).

Consultations with both stakeholders and businesses confirmed that the ForTaMP project benefited from some good delivery processes and support activities. The SMEs surveyed rated the ForTaMP project 4.93 out of 5, reflecting the high satisfaction levels associated with this support. This included expert technical support, access to state-of-the-art facilities and equipment, and specialist knowledge sharing.

The ForTaMP project sought to address barriers faced by SMEs, particularly in relation to the facilities, equipment, knowledge and skills needed to innovate and develop new products and processes. SMEs surveyed reported that they had achieved additional success because of the support provided by the ForTaMP project. 63% of SMEs confirmed that that they had achieved growth and further investments that would not have possible without support from CPI, with an additional 15.9% stating that they may have been able to achieve these benefits but on a smaller scale or over a longer period of time. This is partially reflected by the £77,500 of total additional funding for two of the supported SMEs. The ForTaMP project enabled 70% of beneficiaries to make progression up the TRL scale. The average TRL of project beneficiaries shifted from 4.6 to 5.5 once project activities had been completed.

The activities supported by the ERDF project were well aligned with previous and current government policy at a regional and sub-regional level. The project was successful in connecting with the innovation support ecosystem in the Leeds City region.

It should be recognised that there is scope to improve some aspects of the ForTaMP

project. For example, the C8 output (job increase) target was not met, meaning that further support would be needed to achieve more significant increases in employment. Additionally, beneficiaries felt that an increase in number and diversity of organisations available to support them within the ForTaMP project would have enhanced the project. Beneficiaries also felt, to support their long-term growth, additional help to find funding which could support them after the project has ended would be useful.

The project management team demonstrated great agility to adapt to the COVID-19 restrictions, and only three internal milestones experienced minor delays. This had no material impact the overall project timings.

A summary list of the major strengths and weaknesses of the project is shown in Table 9.

Table 9 - Summary of ForTaMP project strengths and weaknesses

Strengths	Weaknesses
The ForTaMP project is projected to meet or exceed 6 of its 7 output targets.	The C8 output target relating to increased employment were unable to be met.
The experience and adaptability of the project delivery team resulted in an excellent quality of management. The project was delivered both on time and on budget.	Beneficiaries felt the project could be improved through an increased number and diversity of organisations for the SMEs to collaborate with.
Beneficiary satisfaction and feedback has been overwhelmingly positive.	SMEs felt that they would benefit from support to find further funding beyond the ForTaMP project to assist with their continued growth.
CPI have successfully integrated themselves into the local innovation ecosystem to ensure the ForTaMP project would complement existing regional innovation support and align with the needs of SMEs.	
The ForTaMP project has generated a significant increase in product and process development, increased turnover for 3 SMEs, and an increase in TRL level for 70% of beneficiaries.	
The ForTaMP project has fostered the creation of new relationships between the beneficiaries and delivery organisations with the Leeds City region.	
The ForTaMP project has enabled CPI to develop strategic regional relationships which will result in future collaboration in Leeds City Region.	

7.2 Lessons Learned

The following are key lessons from the perspective of grant recipients and those implementing similar interventions, policy makers and beneficiaries that were identified during the evaluation.

7.2.1 Grant recipients and those implementing similar interventions

The following are lessons for the grant recipient or project delivery body:

Continuing to maintain relationships with key strategic players is valuable and could support future opportunities.

During the delivery of the ForTaMP project CPI has been extremely successful in developing relationships with key strategic players. As noted by the project delivery team, more could have been done to strengthen the relationship between CPI and West Yorkshire Combined Authority specifically, which could support future strategic opportunities for CPI within the region.

Beneficiaries see the value in an increased portfolio of partner organisations.

Beneficiaries saw the value in working with sub-contracted organisations such as Campden BRI and Leeds University, and felt that an increased and more diverse portfolio of potential organisations to collaborate with would be beneficial. CPI could expand its introduction to other partner organisations that reside beyond the Leeds City Region, if appropriate.

Face to face interactions are still valued by beneficiaries.

Beneficiaries noted that COVID-19 restricted their ability to engage with CPI in person. While this is not a negative reflection of CPI's overall success in adapting their delivery methods to align with COVID-19 restrictions, beneficiaries noted the high-value they still place on face to face interactions. While they understood it was not possible to always have face to face interactions, due to unprecedented global events such as COVID, this is still a useful learning when designing similar projects post pandemic.

Provide SMEs with additional support to find funding beyond the life of the ForTaMP project.

While the ForTaMP project was extremely beneficial to SMEs, beneficiaries felt that the support could have a longer-term impact in terms of assisting SMEs to find or apply for future funding opportunities. Accessing the kind of support provided by CPI within this project is often difficult for SMEs, meaning that assistance in this area would be beneficial for long-term growth.

Increasing employment in innovative sectors is a long-term endeavour.

Due to global issues and the wider business environment out of CPI's control, increasing the number of employees within the SMEs supported through the ForTaMP project proved extremely difficult to achieve. Therefore, we would recommend the project team continues to monitor the job creation generated in the businesses which have benefited from ForTaMP beyond the project, so as to understand the long-term impacts on economic growth.

7.2.2 Policy makers

The following lessons have emerged from the evaluation of the ForTaMP project and may help to inform policy makers:

Developing additional innovation support activities within the Leeds City region is crucial to the continued growth of SMEs.

ERDF funding has been extremely valuable and filled in gaps in innovation support funding in UK. The delivery of business innovation support through ERDF-funded projects like CPI's ForTaMP project have been proven to be hugely beneficial for regional growth in the last decade alone. However, as the UK moves away from ERDF funding, it is vitally important that resources of this kind continue to be available to high-potential SMEs.

This is confirmed by ForTaMP beneficiaries and the local authority who expressed the urgent need for additional innovation support activities for SMEs. Access to funding and knowledge continue to be a barrier for the growth of SMEs in the region. Therefore there is still room to bridge R&D innovation support gaps and increase the accessibility of funding, to assist with scale up, resilience building and increased productivity within SMEs through the support CPI can provide.

7.2.3 SME Beneficiaries

The final lesson relates to the beneficiaries of the ForTaMP project:

Stay connected and up to date on supports available within the region.

While we recognise that there is space for CPI and other bodies to provide additional support for SMEs to find other sources of funding, it is also the responsibility of the individual beneficiary to expand their awareness of support activities in the region. West Yorkshire Combined Authority recognises that this is a key challenge facing SMEs in the region and is currently attempting to 'connect the dots' been the support available through its own activities.

APPENDIX

APPENDIX I ForTaMP Logic Model

Context

Edit

Decline of Leeds City Region (LCR) heavy industry has left a legacy of pockets of serious deprivation & an economy with lower productivity than the UK average. The LCR Innovation Strategy (Regeneris, 2014) identified that LCR performs relatively poorly on most innovation indicators. Only 25% of LCR firms invest in R&D and only 8% of SMEs seek external R&D support. LCR SMEs accessing InnovateUK support is not commensurate with the scale of the regional business base: ranking 14th nationally. In terms of Intellectual Property performance, LCR stands 23rd (39 LEP areas) in terms of EU Patent Office awards per 10,000 residents. The 2017 LCR Business Survey identified the main barriers to SME investment in R&D as: lack of time, financial constraints, too risky, lack of knowledge & expertise of the process and of potential markets. Today the % of LCR SMEs engaged in research & innovation activities is well below the national average. Consideration of LCR's priority markets & the ForTaMP offer (formulation & colloid science, nano-technology, powder processing & material science) highlights applicability to the following target sub-sectors: 'consumer goods'; 'chemical & lubricants'; 'food & drink'; 'healthcare'; 'industrials, 'energy & security'; 'materials'; 'packaging' and 'personal-care'.

Market Failure Assessment

Edit

ForTaMP has been developed to address the following market failures:-

*Imperfect Information: Stakeholders and partners often lack a validated evidence-base to make an informed decision, particularly regarding an emerging technology.

*There is subsequently a need for a Demonstration Effect: to identify potential constraints, address them prior to commercial roll out and provide a validatory function including prototyping and product development to a conservative market.

*Coordination Effect: ForTaMP has been developed to address (i)fragmentation within the existing innovation ecosystem and (ii)splintered supply chains (encouraging more localised sourcing of expertise).

*Absorptive Incapacity: companies within the region do not have the ability to either engage with local knowledge providers or adequately absorb any knowledge transfer.

*Principal/Agent Failure: this mainly relates to knowledge providers. Greater exposure to the commercial market will encourage focus on products/processes (applied research), creating a virtuous cycle.

Project Objectives

Edit

ForTaMP will
(i) support SMEs in their development of market-leading products and processes via provision of specialist technology support and infrastructure,
(ii) provide scale-up, prototyping and pilot plant capabilities,
(iii) bring innovative products to market rapidly through prototyping and then to market introduction,
(iv) create a product development ecosystem to drive sustainable regional economic growth,
(v) introduce SMEs to the UK CR&D landscape and appropriate regional knowledge base sources, and
(vi) sign-post SMEs to sources of business funding.

Rationale

Edit

ForTaMP supports SME product/process development from laboratory scale to pilot & prototyping. SMEs will be prospected proactively & selected based upon an assessment that support will lead to new product development. Beneficiaries will receive introductory diagnostic assistance to define their problems/technical development needs. Following brief laboratory/desk-based technical work/consultancy, the benefits of more extensive support will be assessed, eg via (i)an enduring relationship with CPI, (ii)CR&D participation, (iii)support for new product development & market introduction- primary driver for engagement. CPI's RTO remit is to make strategic resources (assets, people & expertise) available to SMEs. CPI will contribute to development of a vibrant innovation ecosystem, working with local providers to create sustainable innovation clusters.

Inputs

What	Value
ERDF Grant	£1,269,062.50
Catapult Funds	£1,269,062.50
Staff: Full-Time Equivalents (FTEs)	9.5

Activities

What
Provision of outreach support to SMEs
Scoping and delivery of technical support to SMEs in furtherance of
Creation of enduring relationships between SMEs and appropriate
Promotion of supply chain integration enabling SMEs to take

Outputs

What	Value
C1: Number of enterprises receiving support	55
C4: Number of enterprises receiving non-financial support	55
C5: Number of new enterprises supported	3
C8: Employment increases in supported enterprises	5
C26: Number of enterprises cooperating with the knowledge	20
C28: Number of enterprises supported to introduce new to	10
C29: Number of enterprises supported to introduce new to	12

Outcomes

ID	Intended Outcome	How is it Measured?	Level	Baseline	Actual
1	Increase SME engagement with RTOs	Measure in conjunction with C26 data	Business		
2	Increase product/process development in SMEs	Measured by C28/29 claims and summative assessment	Business		
3	Increased TRL level of SMEs engaged with	Assessment before and after engagement	Business		
4	Increase in productivity / sustainability of SME	Assessment before and after engagement	Business		
5					

Intended Impacts

What
Increase in number of SMEs developing new to market products.
Increase in High Value Jobs
Increase in number of SMEs actively pursuing enduring relationships with the knowledge base.
Increase in investment

APPENDIX II Project milestones original versus actual delivery dates

#	Milestone	Start date	Planned completion date	Actual delivery date
1	MHCLG Project Initiation Visit	April 2020	April 2020	July 16th 2020
2	Set-up of ForTaMP project documentation systems and templates	April 2020	April 2020	April 2020
3	ForTaMP internal Kick-off meeting	April 2020	April 2020	5th May 2020
4	ForTaMP communications plan in place	April 2020	April 2020	8th April 2020
5	ForTaMP launch press release issued	April 2020	April 2020	28th April 2020
6	Identify and compile initial target SME list	April 2020	May 2020	May 2020
7	Create initial marketing plan and contact first 15 SMEs	April 2020	May 2020	May 2020
8	Create marketing collateral and assemble case studies/ demonstration test pieces	April 2020	June 2020	June 2020
9	ForTaMP Formal Stakeholder Launch Event	July 2020	July 2020	19th May 2020
10	Outreach Events plan in place	August 2020	August 2020	August 2020
11	Create detailed marketing plan: including technical offer, target customers and prioritisation of customer contacts.	April 2020	September 2020	September 2020
12	First SME Outreach Event (6x events planned throughout the delivery period).	October 2020	October 2022	October 2022
13	Publication of first series of case studies and second press release followed by annual issue of case studies and press	February 2021	February 2023	February 2023

	releases.			
14	Refresh marketing collateral and case studies/ demonstration test pieces annually (May 21, May 22).	May 2021	May 2022	May 2022
15	Review of ForTaMP communications strategy	September 2021	September 2021	September 2021
16	Summative assessment completed	November 2022	January 2023	March 2023
17	ForTaMP Stakeholder Close-out Event	February 2023	February 2023	February 2023

APPENDIX III Details of the stakeholders interviewed.

Organisation	Reason for Interviewing	Role of representative
Bradford University	Cross-referrals between the ForTaMP and Cayman project	Director of the Analytical Centre
Campden BRI	Delivered 3/6 subcontractor agreements within the ForTaMP project	Head of Advanced Innovation
West Yorkshire Combined Authority	Key strategic player within the region	Head of business support, policy and delivery Senior service manager for innovation
Starbons Ltd.	Beneficiary	CEO
Gingingers	Beneficiary	CEO

APPENDIX IV Senior female roles within beneficiary organisations

Business	Senior female role within beneficiary organisation
Starbons Ltd	CEO, who also works with organisations to develop female participation in the Humberside region.
Transdermal Alert	Director
Orean Personal Care	Technical Director
Myroo Skincare (Myroo Ltd)	Founder and Managing Director
Cable Coatings T/A AssetCool	Key technical contact
ConsoneAI Ltd	Director/technical lead is female and BAME. She also secured a Women in Innovation award to take forward her business idea.
LC AuxeTec Ltd	Director and founder of the University spin out. She is also Head of Physics at University of Leeds.
Crystec Pharma	Business manager who runs the day-to-day operations. She is also responsible for the SME's outreach and innovation.
Videra Services Ltd	Research Director.
Josie Rose Skincare	Owner and Director
Beautiful Ethical	Owner and Director
The Yorkshire Pasta Company	Founder, Owner and Director
The Yorkshire Nit Nurse	founder and owner (sole trader)
Nuspec Oils	Founder and CEO of manufacturing business for replacements for petrochemical products
MEDQP	Founder, director and owner of pharma development business
BindEthics	Founder and owner of company using brewing waste to make green adhesives.
Ecotech Holdings	Main contact and R&D Manager
GinGingers	Owner and sole director of personal care business

We Drifters	Owner and director
Korkie	50% owner and director
CO2 Sustain	Technical Manager – food and drink
Stream Bio Imaging	Co-Founder & Chief Operating Officer

APPENDIX V Examples of new to market and new to firm products and processes, developed as a result of the ForTaMP project.

Starbons **C28 & C29**	A new process has been developed by CPI to remove a problematic raw material and apply an alternative approach to product isolation. These changes not only reduce the variable costs for the product but make it much more amenable to scale-up and manufacture at a broader range of toll manufacturers, thereby substantially improving the potential economics for their process. Starbons has tested samples from CPI, and they are broadly comparable with products, which are still to be fully commercialised, produced from their current process. Consequently, Starbons is planning to incorporate the economics for this new process into their costings and use these to support funding applications to assist in their commercialisation.
Chapter 6 **C29**	Chapter 6 are developing an advanced superior transparent panel utilising Magnesium Aluminate Spinel. Crucial to the invention is the development of a process to form a purified spinel powder of sub-micron size which will sinter at lower temperatures resulting in lower production costs and times and to produce a superior panel (strength/transparency etc). CPI has developed a new and unique process for Chapter 6 to form the spinel powder which is industry scalable.
Clear Screen **C29**	CPI assisted Clear Screen in their development of a New Product/Process of a sustainable eco-friendly screen wash system for the transport market and its first product targeted at car users with a new product to extend the useable range of the product, down to -25 °C, and therefore enabling the expansion of markets for the product.
Transdermal Alert **C28 & C29**	CPI supported Transdermal Alert Timer to aid commercialisation of their new product which was a timer device located on or near a transdermal device which administers medication via the skin′. A colour change on the timing device would alert the user that the device requires removal or replacement. The product is still in development and is described in UK Patent Application GB 2582 L62 A
Faraday Drinks **C28 & C29**	Subcontracted to Campden BRI - Campden has helped Faraday Drinks develop their raspberry flavoured energy drink.
Orean **C28 & C29**	CPI have been working with Orean to identify, process and raw material changed in relation to the manufacture of their 'hot melt balm with the aim of improving process reproducibility and product quality thereby reducing costs and improving customers satisfaction.
Io-Cyte **C28 & C29**	Io-Cyte has developed a new type of wound dressing which has antimicrobial properties. Through ERDF ForTaMP, CPI has provided analytical support during Io-Cyte's development of this new products which is now finalised for regulatory approval.

Agrifood **C28 & C29**	AgriFood X's aim is to develop a sustainably sourced, biodegradable film-based packaging material. Apple pomace, brewery spent grain and few other waste materials such as starches have been identified as potentially viable materials for conversion into film-based packaging for application in the agricultural sector. In this project CPI assessed the feasibility of incorporating barley spent grain in a commercially available bio-based compostable thermoplastic polymer (Ecoflex C 1200) and optimised the amount and conditions for extrusion processing. A compression moulding process followed with the formulated granules to convert them into flat sheet. This has provided AgriFood X with a new product to market in bio packaging.
Hydro Yorkshire **C28 & C29**	Via Campden BRI (a sub-contractor to CPI) Hydro Yorkshire have been supported in the development of their manufacturing process to introduce a 'new to firm' product, developing and pilot scale carbonation trial of tonic water incorporating Hydro Yorkshire spring water.
Cable Coatings **C28 & C29**	AssetCool is working to develop a new version of their coating which has improved performance characteristics such as enhanced processibility and wear resistance. CPI has supported their product development process by testing samples to help AssetCool optimise the formulation of their coating for high-capacity overhead power lines. This coating reduces resistance within the cable, thereby reducing power losses and carbon emissions. It also results in higher ampacity and reduced capital and operational costs. Version 1 of their product is currently undergoing field trials and the initial results are very encouraging. It is envisaged that their new product will improve the commercial prospects for this exciting new technology.
Korkie **C28 & C29**	CPI Manufactured and provided 2 types of composite panels to develop their manufacturing process. CPI manufactured and provided 2 sample composite panels which have cork as the cork and the skin sourced from end of life/sustainable/bio-based materials suitable for the end use application. For the Flax fibre based prepreg, an innovative (i.e., new) one stage curing process was used without the use of a separate adhesive film. Both the prepreg curing in the top and bottom skin layer with the cork core bonding were achieved in a single process using a compression mould press.
Gingingers **C28 & C29**	CPI Supported Gingingers in the development of their apple cider vinegar cream by improving their manufacturing process to optimise production through different mixing methods. The final product us currently undergoing trials in packaging and will be launched early 2023.

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