

International Technology and Renewable Energy Zone – Project Review

Final Report for Scottish Enterprise

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Contents

[Executive Summary i](#_Toc444177705)

[1. Introduction 1](#_Toc444177706)

[2. Project Overview 4](#_Toc444177707)

[3. Performance Data Review 23](#_Toc444177708)

[4. Project Feedback 30](#_Toc444177709)

[5. Strategic Consultations 47](#_Toc444177710)

[6. Study Conclusions 54](#_Toc444177711)

[7. Monitoring and Evaluation Framework 63](#_Toc444177712)

# Executive Summary

The research focused on reviewing the:

* Partnership approach to delivering the ITREZ project.
* Internal operational mechanisms to deliver the project.
* Project performance against strategic and economic outcomes.
* Recommendations for future delivery.

#### Main Review Findings

**The Project’s vision**: to deliver a high value, industry-driven cluster in Glasgow, stimulating co-location, investment and job creation:

* 10-year collaboration between Scottish Enterprise, the University of Strathclyde and the Scottish Funding Council.
* £25.2m public sector investment to create a global research and development hub with industry and academia to work collaboratively on the development of technology and renewable energy.
* Strong contribution to, and fit with over-arching economic development and renewables policy.

**Performance against** Targets

The project is broadly on target to achieve its SMART targets at the half way point.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Target | Achieved | % Achieved |
| 1. New jobs by 2020 | 700 | 274 | 39% |
| 2. Additional research revenue by 2020 | £20 million | £12.6 million | 63% |
| 3. Tier 1 industry partnerships by 2020  | 20 | 9 | 45% |
| 4. Tier 2 industry partnerships by 2020  | 50 | 17 | 34% |
| 5. Increase research active staff by 40% by 2020 (base of 268 research staff) | +40% (140 new research staff) | +56% (150 new research staff) | 107% |
| 6. World class facilities for researchers by 2015  | 670 | 350 | 52% |
| 7. Deliver industry engagement space by 2013 | 4,800 sqm | 4,800 sqm | 100% |

Project Successes

* Good quality physical infrastructure (and on-site facilities) in a prominent near to city centre site - an industry engagement building, “inovo” and the Technology Innovation Centre (TIC).
* Strategic approach adopted by the University of Strathclyde has helped to:
	+ Increase the international profile and reputation of both the University and Glasgow as a hub for research and innovation in renewable energy, technology and innovation.
	+ Foster and develop new business to academia partnerships and collaborations, spinouts, and attract new research investment.
	+ Generate new economic activity - higher value jobs and Gross Value Added.
* The Offshore Renewable Energy Catapult is located at inovo and brings profile to the development.
* Co-location in the TIC and investment from notable Tier 1 partners, including the Fraunhofer and the Weir Group.
* Within the TIC:
	+ Academic and researcher culture change – new approaches to engagement and working.
	+ Industry and academia events and conferences have raised the profile of the TIC and project.

Missed Opportunities

* Establish an agreed approach to collaboration – governance and performance monitoring.
* The project was unable to secure a Tier 1 private sector renewables partner to co-locate on-site.
* The mix of private sector partners at inovo has meant there has been no collaboration activity (outwith the Innovation Centres) with the academic base in the University to date.
* The cross sectoral nature of the project means it has been challenging to engage SE Sector Teams which could have brought specialist knowledge and input to the project.
* The ITREZ branding and proposition is not well used or understood.

Monitoring and Reporting Performance

There have been challenges with the setting, communicating and measuring of performance indicators:

1. Setting objectives and targets – a lack of evidence that underpins some quantitative targets.
2. Defining objectives and targets - a lack of clarity with regards to what is being measured and the rationale for measurement.
3. Communicating targets - little shared understanding of what the key targets and indictors are for the ITREZ project.
4. Gathering performance data - inconsistencies in project partners sharing and providing the relevant monitoring data with one another, and in a timely and concise manner.
5. Timescales – timescales for measuring performance change across indicators and key partners record/report performance data at different intervals.

#### Recommendations

The recommendations focus on the internal project mechanisms that will support the continued delivery of the project:

* Develop a clear focus and vision for the project – this needs to be clearly defined and communicated – currently being developed by project partners.
* Ensure a strong governance model and monitoring framework is established.
* Project monitoring framework and targets need to be developed in partnership with a clear rationale and understanding of what data is relevant, why it is being collected, and who has responsibility for collecting and reporting - currently being developed by project partners.
* Review how project partners look at opportunities – can these be adapted to ensure greater strategic alignment between partners.
* The project should retain its flexible approach to enable it to respond to market demand and opportunity.
* Consideration of a dedicated resource to help foster and drive business and academia collaborations, particularly between tenants at inovo and the TIC.
* Proactively target and approach companies to relocate to the TIC, for example, the Tier 1 or 2 companies that the University of Strathclyde has an active relationship with, or an interest in collaborating with in the future.

# Introduction

This report has been prepared on behalf of Scottish Enterprise (SE) and key project partners, the University of Strathclyde (UoS) and the Scottish Funding Council (SFC), covering the main results from a review of the International Technology and Renewable Energy Zone (ITREZ) project.

The report focuses on reviewing the:

* partnership approach to delivering the ITREZ project;
* internal SE operational mechanisms to deliver the project;
* project performance against strategic and economic outcomes; and
* recommendations for future delivery.

Please note that the review is not an evaluation of individual project elements.

## What is ITREZ

The ITREZ project is a collaboration between the public sector and academia designed to deliver a high value, industry-driven cluster for technology and renewable energy in Glasgow, which aimed to position Scotland as an internationally-recognised location for research, development, design and engineering of offshore marine renewable energy and a range of associated enabling technologies. The project is led by SE and has links into the research base at the UoS Technology Innovation Centre.

In addition to promoting and supporting Knowledge Exchange (KE) and commercial research, the project consists of two major capital infrastructure developments at the former City Science site on George Street, Glasgow comprising:

* an industry engagement building, named “inovo” which opened in January 2014; and
* the Technology Innovation Centre (TIC), an academic research base, which opened in June 2015.

The TIC is a key driver to support the UoS’s long term strategic ambitions to develop KE and commercialisation activity, and promote collaborative engagement between academia and industry with a focus on innovation and enabling technologies.

The TIC offers a unique value proposition for the ITREZ project and SE contributed funding to its development to support the delivery of project objectives, with the specific aspirations of “*creating an internationally competitive location, investment and research offering in renewable energy and enabling technologies*.”

While the commencement of the capital infrastructure works marks the ‘start date of the project’ it should be acknowledged that significant strategic planning and development works were undertaken by project partners (led by the UoS) to develop new collaborative research and KE programmes at the TIC that would support the wider aspirations and objectives of ITREZ. This approach helped ensure that a) the TIC building would be fully (or close to fully) occupied upon completion – minimising risk for project stakeholders and b) that the ‘right’ stakeholders and research organisation were involved with the project from the outset.

With the completion (and occupation) of the inovo and TIC buildings the infrastructure phase (hereby referred to as Phase 1) of the project is complete. It is now appropriate to review performance to date, and to develop a robust monitoring and appraisal framework to support the delivery of Phase 2 of the project.

## Study Objectives

The key study objectives as outlined in the invitation to tender (ITT) were as follows:

**Objective 1: Initial review of the relevance of targets/objectives**:

* review the job creation targets:
	+ SMART Objective - To create 700 new jobs attributed to ITREZ by 2020
	+ what evidence underpins the figure of 700?
	+ what does SE need to do to achieve 700 new jobs?;
	+ review the research income targets:
	+ to generate £20m of additional research income by 2020 by tripling the number of Tier 1 and Tier 2 industry partnerships and increase research active staff by 40%.
	+ what is the evidence that underpins this objective?
	+ what does SE need to do to achieve this objective?; and
* make recommendations on revision to existing measures and targets
	+ To what extent do we need to reset the objectives and targets for Phase 2?
	+ If so, what revisions are suggested?

**Objective 2: An initial review of progress to date**:

* to review progress to date in terms of outputs and outcomes, covering:
	+ job creation
	+ research income secured (Industry projects and grants?)
	+ Tier 1 and Tier 2 industry partnerships established
	+ numbers of research active staff; and
* qualitative information, in particular:
	+ an assessment of the project’s progress in stimulating greater collaboration within academia and between academia and the public and private sectors
	+ an assessment of collaboration in research activity
	+ as assessment of the impact of the physical space in terms of its role in stimulating collaboration
	+ an assessment of the impact of companies in engaging with the TIC;
	+ assessment of the additionality that ITREZ has created albeit at this stage this seems likely to be on a qualitative rather than a quantitative basis.

**Objective 3: Design a monitoring and evaluation framework**

Design a framework which will allow project partners to capture the above quantitative and qualitative information on an ongoing basis.

The review is structured around two key work streams, with Objectives 1 and 2 comprising **formative review of project performance** and Objective 3 focused on the **future development of the project** (Phase 2).

## Report Structure

The rest of this report is structured as follows:

* Section 2: Project Overview;
* Section 3: Performance Data Review;
* Section 4: Project Feedback – businesses and academic researcher;
* Section 5: Strategic Consultation;
* Section 6: Study Conclusions; and
* Section 7: Monitoring and Evaluation Framework.

# Project Overview

This Chapter provides an overview of the ITREZ project and a brief history of its development, strategic rationale and fit within the wider renewable energy and research landscape, and the activities delivered to date.

## History of ITREZ

The ITREZ project emerged from an unsuccessful bid for Glasgow to host the UK Energy Technology Institute.

SE owned a development site of five acres[[1]](#footnote-1) adjacent to the UoS on George Street, previously branded as ‘City Science Glasgow’, and in 2007, this was chosen in support of Scotland’s bid for the UK Energy Technology Institute. The bid was led by the UoS and there was substantial interest regarding the development of an energy, electronics and engineering innovation “hub”.

Although the bid was unsuccessful, the momentum and interest surrounding the proposition led SE to commission an external assessment of the need for an innovation hub for the offshore renewables sector. The assessment was carried out in two phases – 2008 and 2010. The findings from the 2008 Assessment Report[[2]](#footnote-2) identified a need for an Industry Engagement Building (IEB, latterly named inovo) to encourage the private sector to cluster around the academic space.

In parallel to the development of the IEB, in 2009 the UoS approved a £350m vision to transform its campus and estates over a ten year period to “***support its world class research ambitions***”[[3]](#footnote-3). This vision included the development of the Technology and Innovation Centre (TIC) based directly opposite the City Science Glasgow site.

The TIC concept was developed to ensure a strong partnership approach between academics, business, industry, and the public sector to maximise the impact of the investment. In addition to the notable impact on the UoS research and KE activities, the TIC was intended to deliver a number of wider impacts, including;

* increasing the international profile and reputation of both the UoS and Glasgow as a hub for research and innovation in renewable energy, technology and innovation;
* foster and develop new business to academia partnerships and collaborations, spinouts, and attract new research investment; and
* generate new economic activity - higher value jobs and Gross Value Added.

The TIC approach to collaboration has been recognised internationally within the HE sector, with the UoS being awarded the Times Higher Education University of the Year (2012/13) and Entrepreneurial University of the Year (2013/14).[[4]](#footnote-4)

In addition, during the same period Scottish and Southern Energy (SSE) announced plans to develop, in partnership with UoS, a Centre of Engineering Excellence in Renewable Energy (CEERE)[[5]](#footnote-5).

The original location for the SSE CEERE was on-site, adjacent to the inovo and TIC buildings. However, due to delays in the early development and site preparation stages of the project, SSE decided to relocate (with the support of RSA funding) to a vacant building at 1 Waterloo Street in Glasgow City Centre.

The initial project approval and development coincided with the economic recession (c. 2009) and as a result there was a fundamental change in the growth prospects within the renewables market.

A second market demand assessment[[6]](#footnote-6) was carried out in 2010 and concluded that there was still an identified market opportunity and a need for a dedicated industry engagement space to encourage co-location of industry and collaboration with academia.

It was also identified that this development would have to be led by the public sector, for a number of reason, including; the speculative nature of the building (no anchor tenant secured); the challenges in accessing private finance, and the development sector becoming more risk averse.

The ITREZ project received approval from the SE Board in May 2010, comprising development of the IEB building, financial input into the development of the TIC building, the development of a marketing strategy and promotional campaign to secure investment, and stimulating private investment in the ITREZ project.

The total project expenditure committed by partners was c. £104m, broken down as:

* inovo - £13.2m;
* TIC - £89.7m; and
* project development and marketing - £1.02m.

A detailed breakdown of project expenditure committed and drawn down is presented in Section 3.1.

The project design and construction for the buildings was tendered separately and construction of both buildings started onsite during 2012, with both developments starting later than forecast due to minor site preparation issues. The inovo building was officially opened in January 2014 and the TIC building in July 2015.

#### Change in Focus

While the overall focus for the ITREZ project at the outset was renewable energy and enabling technologies, inovo has to date tended to focus more on offshore renewables whilst the TIC has continued a wider remit, taking in enabling technologies as well as other areas of energy production, low power carbon, distribution and management.

In 2012 the UoS started to redefine its main research priorities and areas of commercial activity at the TIC (in line with their industry engagement strategy), with the five key areas being identified as:

1. Low carbon power generation and energy management.
2. Future cities.
3. High value manufacturing.
4. Enabling technologies (particularly advanced sensors, sensor systems and ICT technologies; photonics, laser technologies and intelligent lighting; advanced materials and nanoscience; and power systems and electronics).
5. Health technologies.

A SE Stage 5 review in June 2013 and Investment Committee paper later that year recognised a decline in activity within offshore renewables companies and advised that partners should reflect on the project scope.

This prompted a refresh of the original Optimat report (2014/15) to consider changes in the market and identify future opportunities. In addition, this refocus would allow the project to align with the UoS’s Low Carbon Power and Energy Programme.

As a result in 2015, there was a widening of project focus from offshore renewables to include low carbon and enabling technologies, and the eligibility criteria for occupying space at inovo were amended in line with this refocus.

Figure 2.1, over, summarises the timeline of activities.

Figure 2.1: Timeline of Activities



## The ITREZ Project

#### Background

The ITREZ project is a ten-year joint collaboration between SE, the UoS with financial contributions from the SFC, and ERDF.

The Project was approved by the SE Board with the ambition to:

“*create a global research and development hub with industry and academic working collaboratively on the development of offshore renewable sectors, stimulating co-location, investment and job creation*”[[7]](#footnote-7)

The main objective of ITREZ was to

“*position Scotland as an internationally-recognised location for research, development, design, and engineering of offshore marine renewables and a range of associated enabling technologies*”[[8]](#footnote-8)

As highlighted above, with the slowing down of the offshore renewables market and a shift in UoS research focus, the project’s scope widened to include low carbon and enabling technologies in early 2015[[9]](#footnote-9). This change in focus was seen as important to ensure the continuing commercial viability of the project, and synergy between project partners’ strategic objectives and aspirations.

Underneath this high level objective, a number of strategic and SMART objectives were adopted:

**Strategic objectives**[[10]](#footnote-10):

* deliver an internationally competitive Scottish locational, investment and research offering within marine renewable energy to maximise the scale and number of investments in Scotland;
* stimulate co-location by industry and benefits;
* strengthen the link between science and engineering university research and economic benefits and industry development;
* the development of an international marketing strategy and promotional campaign;
* encouraging and supporting knowledge exchange through the Energy Technology Partnership (ETP); and
* Encouraging investment from key industry stakeholders.

**SMART objectives**[[11]](#footnote-11):

* create 700 new jobs by 2020;
* generate £20m of additional research income by 2020;
* ensure delivery of world class facilities for collaborative research involving 670 researcher by 2015; and
* to creative 4,800sqm of speculative industry engagement space by 2013 (revised down from the original floorspace of 6,000sqm based on a market demand assessment).

A review of the SMART targets is presented in Section 3.

#### Project Description

ITREZ consists of a number of elements that were designed to be closely aligned and linked, these are:

* the development of the TIC;
* the development of inovo;
* the development of an international marketing strategy and promotional campaign;
* encouraging and supporting knowledge exchange through the Energy Technology Partnership (ETP); and
* encouraging investment from key industry stakeholders.

A brief description of the two buildings is detailed below.

#### TIC

The TIC is a key strategic investment for the University of Strathclyde, supporting the objectives of both its industry engagement strategy and over-arching Strategic Plan to ensure that the University is “*a leading international technological university, inspired by its founding mission, that makes a positive difference to the lives of its students, to society and to the world.”*

The development was led by the UoS and covers 22,000 m2, situated on George Street, Glasgow. The total capital cost of the TIC was £89.7million with funding contributions from the UoS (£57m), SFC (£15m), SE (£11m), and ERDF (£6.7m).

The rationale and wider aspirations for partner’s investment in the TIC are summarised below:

* SE funded £11 million in the TIC to help create an ‘*internationally competitive location, investment and research offering in renewable energy and enabling technologies*’;
* SFC funded £15 million in the TIC proposition to ‘*underpin enhanced academic-industry engagement and KE in Energy and Enabling Technologies’*; and
* The UoS invested £57 million (and leveraged in £6.7m ERDF funding) into the TIC to ‘*support enhanced academic-industry engagement, research, KE, Innovation and Commercialisation with an emphasis on Low Carbon Power, Renewable Energy and Enabling Technologies’*.

In addition to the capital investment, the UoS expenditure on TIC staffing and overheads is c. £37m per annum[[12]](#footnote-12), plus there has been investment of c. £22m in “state of the art” research equipment, which is already delivering considerable success to the University, partners and stakeholders in terms of academic, reputational, economic and financial benefits.

In addition, the TIC provides conference and event facilities over nine floors[[13]](#footnote-13), including:

* 450-seat auditorium, separable into three 150-seat auditoriums;
* eight conference rooms;
* ten seminar/break out rooms;
* a 150-seat tiered lecture theatre;
* flexible foyer spaces across a number of levels, which can be used for exhibiting, networking, and catered events; and
* a self-contained executive suite on Level 9, containing a reception desk, foyers, and conference room suitable for 64 delegates.

The original research focus of the TIC have been retained in line with the UoS investment case and business plan rationale, but has expanded in response to market conditions, see Table 2.1.

Table 2.1: Changing Research Focus of the TIC

|  |  |
| --- | --- |
| Proposed Research Activity | Research Activity 2015 |
| Power and EnergyBio-NanometrologySensors and Asset-ManagementAdvanced Science & TechnologyAdvanced Engineering & ManufacturingPhotonicsFraunhoferCIM-CMACWeir Advanced Research CentreHASS/SBS cross-cutting | Atoms, Beams & Plasma Centre for Ultra Engineering Centre for Microsystems & Photonics Centre for Excellence in Signal Imaging Processing Centre for Intelligent Dynamic Communications Intelligent Light CentreInstitute of PhotonicsOil & Gas InstituteEEE: Power and Energy – Micro grid, Demand Side, Power Electronics, HV & Sensors and AutoclaveFuture CitiesStrathclyde Zone for Satellite Applications/ Space CatapultWeir Advanced Research Centre Continuous Manufacturing & Crystallisation BioNanoTechnologyFraunhoferEnergy Technology Partnership (ETP) |

#### inovo

The inovo building, located next to the TIC, was developed by SE and spans 4,800m2, over five levels. The building provides flexible office space across the top four floors, and the ground floor hosts a reception space, business lounge, meeting room and café. Car parking facilities are provided in the basement alongside bike storage, and lockers/shower facilities. The total capital cost for inovo was £13.2 million, funded solely by SE.

The original floorplate design was for larger companies (for example, occupying one floor each), however, with the dampening of the renewables market, it was recognised that a more flexible approach was needed. Consequently, the ground and first floors have been split into a number of smaller units based on demand from (potential) tenants.

Following changes in the offshore renewables market, the focus of inovo widened to include businesses/organisations that could be considered as enabling technologies aligned with renewables. Currently there are 10 companies and an onsite café located at inovo employing 124 people.

In order to retain an element of flexibility to respond to the market, there is no prescribed eligibility criteria for inovo and tenants are assessed and ‘endorsed’ by the SE project manager to make sure they are a good fit with the project’s strategic objectives, who will assess suitability on a case by case basis. Within the lease there is a clause that tenant’s main business activities should remain focused on renewables and enabling technologies. As of October 2015 there were 10 companies and a café on the ground floor.

The current list of tenants in the inovo building is presented in Table 2.2.

Table 2.2: inovo Tenants, October 2015

|  |  |
| --- | --- |
| Tenants | Activity |
| ORE Catapult | Not-for-profit business that provides support to accelerate the development of offshore wind, wave and tidal technologies |
| CENSIS | Sensor and Imaging systems technologies |
| IBioIC | Innovation Centre for Industrial Biotechnology |
| LyncNode | Mobile 3d visualisations apps and services; used for on shore and offshore renewables projects. |
| Sgurrcontrol | Wind and turbine controls |
| Taylor Hopkinson | Human resources consultancy and recruitment agency within specialist renewable energy and clean technology |
| Smartest Energy | Energy Trading: electricity purchase, supply and trading; gas trading; trading in renewables and carbon capture |
| Lean IP Ltd | Patent attorney firm |
| Dataytics Technology Ltd   | Data analysis services – renewable energy |
| Spartan Solutions Ltd | Software and App development |

Figure 2.2: TIC and inovo Buildings



**Technology Innovation Centre**

**inovo Building**

Source: Image - Strathclyde University

## Geographic Focus

While the ITREZ project was strongly based on the core physical developments on the UoS campus, there is, however, a lack of clarity regarding the geographical focus and whether this extended to other parts of Glasgow, or to Scotland as a whole.

The UoS TIC has a pan-Scotland remit and has engaged industry partners from across Scotland and beyond. However, at the project level there has been no consensus amongst partners as to the specific geographic scope and remit of ITREZ.

This has obviously been less of an issue for Phase 1 (developing the capital infrastructure) of the project, but should be clarified for the purposes of Phase 2 – i.e. what are the aspirations of the partners in terms of the project ‘reach’.

## Governance and Management

In terms of project components, SE is responsible for management of the inovo building and appointed GVA Grimley to act as letting agents. The UoS (Executive Team) is responsible for the co-ordination and management of the TIC and the related on-site activity.

The current governance and management structure in place for delivering the project comprises a Management Board which consists of UoS (TIC Director and Associate Deputy Principal), SE (Senior Responsible Officer), and SFC (Assistant Director). The Board meets quarterly and is responsible for the strategic direction and overall delivery of the project.

During the review it was not possible to identify any papers or documents that formally set out the Board’s membership or the specific roles and responsibilities of individual members.

However, it should be noted that at the project outset, the SE Business Plan highlights a number of obligations on the UoS to operate the TIC as set out in the project contribution offer letter (page 29-30). This includes adopting an appropriate and robust governance structure and monitoring framework.

The UoS provides updates annually at the end of the academic year with progress towards its targets. As the project has evolved there has been a reduced emphasis on delivering against these obligations.

There have previously been proposals put forward (through, for example, the internal SE Gateway 5a review) to develop a more formal governance and management structure: these proposals have never been taken forward.

## Contextual Landscape and Strategic Rationale

This Section provides some commentary on the renewable energy and policy landscapes within Scotland at the time ITREZ was developed in order to assess strategic fit. In addition, we consider the market failure rationale for public sector investment.

#### Contextual Landscape

The ITREZ project was positioned to fit within the offshore renewable energy **and** enabling technology sectors, both of which have experienced increased policy and strategic focus over the past 10-15 years.

For example, the renewable energy sector[[14]](#footnote-14) (a key growth sector of the Scottish Government) has become a key focus of Scottish, UK and European Government policy, with each outlining ambitious targets to be achieved by 2020. The Scottish Government has targeted renewables to supply the equivalent of 100%[[15]](#footnote-15) of gross annual electricity consumption and 11% of heat consumption by 2020.

Offshore Wind

Offshore wind was expected to play a significant role in achieving this target and the sector has attracted international attention and investment e.g. from Samsung, Gamesa, and MHI.

In more recent years however the energy sector has, and still is, facing some uncertainties. The uncertainties surrounding offshore subsidies has caused companies to halt or reduce the level of investment in new offshore wind developments. The Optimat 2015 Baseline Information Report produced for ITREZ found there only to be three offshore wind projects currently under construction.

Wave and Tidal

Optimat[[16]](#footnote-16) reported Scotland (and the UK) to be global leaders in terms of marine energy, finding that there are more wave and tidal systems installed in the UK than in the rest of the world combined.

The sub-sector is forecast to 20,000 people throughout the UK over the next 20 years (2035)[[17]](#footnote-17), contributing to Scotland’s employment and economic growth.

The main economic policy drivers can be summarised as:

* enhancing the research base;
* attracting inward investment to Scotland;
* creating ‘high value’ jobs;
* supporting economies with limited ‘higher value’ economic development opportunities – coastal/rural areas; and
* developing a strong supply chain (manufacturing and service based).

Enabling Technologies

Enabling Technologies can be described as “***knowledge and capital intensive technologies that will make an essential contribution to the development of products and solutions that will address grand societal challenges***”[[18]](#footnote-18). Examples include, but are not limited to:

* advanced manufacturing systems;
* advanced materials;
* micro/nanoelectronics;
* nanotechnology;
* photonics; and
* industrial biotechnology.

The main economic policy drivers can be summarised as:

* translating R&D into commercialisation activity in Scotland;
* stimulating new market opportunities;
* developing and supporting early stage SMEs; and
* investing in key emerging sectors and themes.

#### Strategic Fit/Rationale

The project benefitted from a strongly supportive policy and strategic environment during the years in which ITREZ was being developed. This was manifest at the Scottish, UK and European levels, with strategies at that time calling for increased investment and R&D in the renewables sector.

At the Scottish level, particularly ambitious targets were adopted by the Scottish Government: to produce the equivalent of all of Scotland’s energy needs through renewables by 2020; and to produce at least 30% of overall energy demand from renewables (heat, transport and electricity) by 2020[[19]](#footnote-19).

There are two main cross-cutting themes which the ITREZ project fits with: emissions and economic opportunity.

#### Emissions

The first is a strong strategic fit with Scottish, UK and European policy to reduce CO2 emissions and to increase the generation of energy from renewable sources. Indeed, the Scottish Government’s Economic Strategy (GES, 2007 – 2014) puts “***increased sustainable economic growth***” as its central purpose, and the “***transition to a low carbon economy***” as a strategic priority[[20]](#footnote-20).

This mirrors UK and European policies which prioritise sustainable economic growth, increased use of renewable energy sources, and greater energy efficiency. For example, Directive 2009/28/EC of the European Parliament states that control of energy consumption, increased use of energy from renewable sources energy savings and increased energy efficiency constitute important parts of the package to reduce greenhouse gas emissions[[21]](#footnote-21).

As the ITREZ project sought to help position Scotland as a leading centre for the application of renewable energy technologies, it is clear that there is a good strategic fit across all levels, and that the ITREZ project echoed the widespread policy-push for investment in renewables at that time.

#### Economic Opportunity

The second main strategic theme which ITREZ met was the opportunity to maximise sustainable, low carbon economic growth.

The development of ITREZ was part of wider efforts by Scottish public sector bodies to invest in the renewables sector, helping it to grow and seeking to maximise economic benefits. Examples of this have included:

* SE investing over £100m in infrastructure, technology and supply chain development projects relating to building Scotland’s offshore wind sector, as well as helping to attract the HQ of the Green Investment Bank to Edinburgh[[22]](#footnote-22);
* SE supporting 1,200 companies operating within the sector (between 2007 – 10), generating an additional £174m GVA to 2017[[23]](#footnote-23); and
* significant investment from the public sector in skills provision for the energy sector, including the Low Carbon Skills Fund and SFC Spirit Funding (£1.2m to UoS towards developing the Scottish Energy Research Academy)[[24]](#footnote-24).

The Scottish Government also estimated that by 2020, renewables in Scotland could provide up to 40,000 jobs and £30 billion in investment to the Scottish economy[[25]](#footnote-25).

Achieving this requires that the necessary physical and business infrastructure is in place to support the creation of new businesses and jobs, which ITREZ seeks to help provide. Further, involvement of UoS could encourage collaboration between academia and industry, and may allow for opportunities such as graduate placements to ensure that there is a continued pipeline of talent from university into local companies operating within the sector.

Research, development and innovation (RDI) within the sector are of primary importance to ensuring that costs are reduced (both operational and capital), and that the likelihood of adoption is greater – a continued focus on RDI, as encouraged and facilitated through ITREZ, will go some way to ensuring the successful realisation of the considerable economic potential of the sector.

A focus on renewables in Scotland also capitalises on a comparative advantage in terms of available natural assets (i.e. wind and tide). As of 2013, Scotland had:

* 25% of Europe’s offshore wind potential;
* 25% of Europe’s tidal energy potential; and
* 10% of Europe’s wave resource[[26]](#footnote-26).

The ITREZ project will help to support businesses involved in capitalising upon Scotland’s significant natural assets, and could strengthen RDI in the sector, helping to maximise the potential of these assets.

#### Changing Context

There is “considerable uncertainty”[[27]](#footnote-27) at the UK level regarding renewables, with the Conservative Government taking steps such as the year-early closure of the Renewables Obligation (in 2016 rather than 2017) which was used to provide subsidies to wind farms[[28]](#footnote-28).

That said, public sector support for the renewables sector continues to be strong – in Scotland at least – where the Renewable Energy Investment Fund (REIF) delivered by the Scottish Investment Bank has achieved total investment of around £65m in 2014/15 - £55m of which was from the private sector[[29]](#footnote-29).

Earlier this year, the Scottish Government published a refreshed economic strategy: Scotland’s Economic Strategy (2015), in which the focus remains on sustainable economic development.

Four priority themes are outlined in the strategy and ITREZ can contribute towards three of the four, *viz*:

* investing in our people and our infrastructure in a sustainable way;
* fostering a culture of innovation and research and development; and
* promoting Scotland on the international stage to boost our trade and investment, influence and networks.

#### Market Failure

Market failure occurs when there are barriers to the achievement of economic efficiency[[30]](#footnote-30), and which can provide justification and a rationale for public sector intervention. In the case of ITREZ, market failure has been identified across three levels – the individual company, industry to academia engagement, and physical infrastructure.

There was limited discussion of the market failure rationale for the project through the consultations, although the Gateway Stage 5 review paper does confirm that this was based on two main types of market failure, viz:

* information failures and asymmetries, regarding issues such as poor knowledge and awareness of market opportunities, the benefits from innovation generally and more specifically in terms of academic-industry collaboration; and
* the potential to exploit positive externalities, achieved through innovation spillovers.

Both are highly relevant to the ITREZ context, especially in relation to the higher-level aims of translating research into commercial applications and of encouraging corporate innovation as a means of securing net additional, and sustainable economic growth.

In the ITREZ context, there is also the market constraints regarding private sector provision of appropriate physical facilities, where again it is likely that information failures (resulting in inappropriately risk averse behaviour) were responsible for the lack of private interest secured in providing the inovo building.

# Performance Data Review

This section provides a brief review of the project’s progress towards achieving performance targets.

## ITREZ Expenditure

Proposed and actual project expenditures are summarised in Table 3.1, which also provides a split by the three main areas of project activity and by funding partners.

Table 3.1: Approved Budget and Actual Project Expenditure

|  |  |  |  |
| --- | --- | --- | --- |
|   | **TIC**  | **inovo** | **Project development and marketing** |
| Budget | Actual | Budget | Actual | Budget | Actual |
| University of Strathclyde | £57m | £57m | - |  | - |  |
| Scottish Enterprise | £11m | £11m | £13.2m | £12.7m | £1.02m | £0.9m |
| Scottish Funding Council | £15m | £15m | - |  | - |  |
| ERDF | £6.7m | £6.7m | - |  | - |  |
| **Total** | **£89.7m** | **£89.7m** | **£13.2m** | **£12.7m** | **£1.02m** | **£0.9m** |

Source: Scottish Enterprise and University of Strathclyde

Note: SE spend includes funds committed but not yet drawn down

TIC actual capital expenditure figures based on UoS estimates

The total budget for the ITREZ project is £25.2m (for capital infrastructure works and project development and marketing) and is funded entirely by SE. The SE investment in the TIC was designed to support the ITREZ project objectives of catalysing R&D growth in offshore renewables and enabling technologies. Further, this investment of £11m helped to leverage the SFC and ERDF support to co-invest in the project, resulting in an overall funding breakdown of: UoS 64%, SFC 17%, SE 12% and ERDF 7%.

The inovo building was funded by SE, which also contributed £0.9 million towards project development costs (including development of a site masterplan and a project plan to Royal Institute of British Architects (RIBA) Stage D), and marketing support.

The project has been delivered slightly under budget, with the inovo building coming in at around £0.5m below approved levels of spend. In total, SE has around £0.7 million budgeted for the remainder of the project period, up to 2020/21.

## Performance against Targets

We have set out the ITREZ project’s performance against the SMART objectives, Table 3.2. Please note that through the review process we identified a number of inconsistencies with regards to the setting of targets, indicator definitions and capturing performance data.

While the legal agreement between SE and UoS contained information on a proposed monitoring framework, there is no guidance within the original and updated SE Approval Papers/reviews as to the planned approach to monitoring – roles, responsibilities, etc. The SMART targets set out lacked clarity in terms of their definitions and as a result, there was a lack of shared understanding as to what data would be collected.

Further commentary on the issues and challenges with regards to project monitoring is provided in Section 3.3.

The Table below sets out the progress towards achieving the project’s SMART objectives, and below we have set out a clear definition which forms the basis for performance assessment. Achievements are based on SE and UoS monitoring data.

Table 3.2: SMART Objectives 2010/11 to 2014/15

|  |  |  |  |
| --- | --- | --- | --- |
|  | Target | Achieved | % Achieved |
| 1. New jobs by 2020 | 700 | 274 | 39% |
| 2. Additional research revenue by 2020 | £20 million | £12.6 million | 63% |
| 3. Tier 1 industry partnerships by 2020  | 20 | 9 | 45% |
| 4. Tier 2 industry partnerships by 2020  | 50 | 17 | 34% |
| 5. Increase research active staff by 40% by 2020 (base of 268 research staff)\* | +40% (140 new research staff) | +56% (150 new research staff) | 107% |
| 6. World class facilities for researchers by 2015  | 670 | 350 | 52% |
| 7. Deliver industry engagement space by 2013 | 4,800 sqm | 4,800 sqm | 100% |

Note on timescales.

* SE reporting based on financial year up to March 2015 – Objective 1 and 7
* UoS reporting based on internal systems, up to October 2015 - Objective 1, 2, 3, 4, 5, 6

\*UoS targets for increasing research staff is on a base of 268 staff in the TIC at Year 0 with +140 new staff relocating into the TIC by Year 6 – note that this represents an increase of +52% in research staff numbers, not +40% as per the target definition

|  |
| --- |
| Our review of project performance against the SMART targets is based on the following assumptions.1. **New jobs** - based on the gross on-site jobs located at inovo and new staff located at the TIC. Reporting timescales for jobs (inovo – up to March 2015, TIC – up to October 2015). The jobs breakdown is 124 gross jobs within inovo and 150 net jobs in the TIC. Data on the wider employment impacts leveraged by the project e.g. SSE have not been gathered – from consultation with former project managers this was an intended performance indicator for the project, however, it was subsequently agreed that this would not form part of the project monitoring – note that there is no Approval Paper that identifies the rationale for discounting the wider impacts. 2. **Additional research income** – is the net incremental income that the research activity located at the TIC has generated. This is based on an annual gross income figure with attribution of 50% applied. By 2020 the project is expected to generate £20m net additional research income per annum.3. **Tier 1 industry partnerships** – Tier 1 partners are defined as companies that lead research projects and sit on the Board of the Research Centres. This target is based on the number of Tier 1 partners engaged with research departments located on-site at the TIC, but does not include other Tier 1 partners that are working with the University. This is captured via UoS’s **SUnBIRD** monitoring system.4. **Tier 2 industry partnerships** – Tier 2 partners are defined as companies within the supply chain who want to keep up to date with developments in the industry or companies who would like to be in supply chain. This target is based on the number Tier 2 partners engaged with research departments located on-site at the TIC, but does not include other Tier 2 partners that are working with the University. This is captured via UoS’s **SUnBIRD** monitoring system.5. **Research active staff** – this is based on the number of additional researchers that will be based in the TIC by 2020.6. **World class facilities for researchers** – this is based on the gross number of research staff based on-site at the TIC (on the building’s opening) and includes academic staff, researchers, Knowledge Exchange (KE), business development staff, and professional staff. 7. **Deliver industry engagement space** – this is defined as the Gross External Area (GEA) floorspace delivered. |

Based on these assumptions, and at broadly half-way through the ten year lifetime, the project is broadly on target and it is expected that it will achieve all its SMART targets by year 10. In particular, the project is already ahead of, or achieved the targets for generating new research income and increases in the number of research active staff based at the TIC.

It should also be noted that delays in implementing the infrastructure developments, and uncertainties amongst businesses surrounding the outcome of the independence referendum, are likely to be among the main reasons for slippage against targets at this time.

Overall, feedback was positive that the project is on target and partners identified that there is increasing interest and enquires with regards letting opportunities at inovo in recent months, while the TIC expects to relocate a number of other research departments over the coming months.

#### TIC Monitoring Information

The UoS undertakes its own monitoring of activity generated at the TIC via its internal SUnBIRD monitoring system, which includes a breakdown of staff activity, research income and collaborations with industry.

Based on a review of the TIC monitoring data, some of the key achievements delivered to date (2011/12 to 2014/15) include:

* there have been 191 conferences and events held at the TIC, which together have attracted around 16,000 attendees;
* there are nine Knowledge Exchange Intermediaries and 106 Industry Partners located on-site: Energy Technology Partnership (ETP); Fraunhofer UK and Fraunhofer CAP; IBioIC Innovation centre; CENSiS Innovation centre; High Value Manufacturing Catapult; Future Cities Catapult (Future Cities Demonstrator City Observatory); Satellite Applications Catapult (Scottish Centre of Excellence); Offshore Renewable Energy Catapult (Energy Systems Catapult); Power Networks Demonstrations Centre (PNDC);
* the hosting of 5 Centres for Doctoral Training in Wind, Marine, Grid, Bio-Metrology, CMAC and Med-Tech, and International partnerships with MIT, NYU, Stanford, HK-UST, Nanyang as well as emerging partnerships with Entrepreneurial Scotland and the Hunter Centre;
* £32.5 million of gross additional research income has been generated as a result of the TIC. The UoS has also made internal assessments regarding the additionality of the TIC i.e. assessing how much of this research income wouldn’t have accrued without the TIC project – this is estimated at £12.6 million; and
* Around £6 million of additional research income has been leveraged via the TICs Innovation Centre and Centre of Excellence partnerships e.g. Fraunhofer, CMAC, and Catapult.

## Issues and Challenges with Project Monitoring

As highlighted above, there were a number of challenges in reviewing the project performance against the SMART objectives/targets. More specifically, five areas have been identified:

1. **Setting objectives and targets**

The project employment targets were based on an Economic Impact Assessment carried out in 2010 and revised in 2011 and that the employment figures were based on UoS and SE occupancy assumptions at that time. However, there is no evidence that underpins the 700 new jobs figure that acts as the headline target for the project (i.e. what was the original rationale for the occupancy assumptions) – this makes it difficult to comment on the relevance and appropriateness of the target.

In addition, while the UoS has adopted a robust approach with regards target setting (as per the requirements of the University Court) for the additional research activity, this has not been well communicated or understood by partners.

1. **Defining objectives and targets**

There is a lack of clarity with regards to what is being measured through the ITREZ project and the rationale for measurement.

For example – the additional income target is incremental (i.e. by year 2020) and not the total income generated to year 2020 – this is not highlighted within the targets and was not well understood by project partners.

In addition, based on the reporting requirements of the University Court, the UoS adopts its own assessment of additionality with regards to the research income generated (applying a 50% additionality assessment to new research income), which again is not highlighted within the definition of project indicators.

Further, from the information available, it would appear that the basis for measuring the 700 new jobs target includes the gross jobs located at inovo, the net jobs located at the TIC, as well as net jobs leveraged within the wider region. Again, this is not explicitly defined in any of the SE project approval or background papers.

1. **Communicating targets**

There is no shared understanding of what the key targets and indictors are for the ITREZ project. As a result, project partners are adopting their own approach to measuring performance.

1. **Gathering performance data**

There have been issues with project partners sharing and providing the relevant monitoring data with one another, and in a timely and concise manner.

1. **Timescales**

There are two issues with regards timescales. First, the timing of gathering and reporting against performance – the timing of SE reports is based on its financial year-end of March, while the UoS reports in November. Secondly, there is a lack of consistency in the timescales for delivering objectives, with some being set against a six-year business plan, some against a ten-year project plan, and others at year 0 i.e. the year of completion and opening of the buildings.

The challenges around project monitoring and data gathering appear to stem from a lack of clarity regarding the definition of the ITREZ project, and what it is aiming to deliver. Given the different partners and interests involved, the project needs a strong and clear strategic vision. Additionally, the project needs to be supported by the appropriate internal mechanisms and resources (from the outset), particularly around defining individual roles and responsibilities.

Section 7 presents a number of proposed actions and recommendations to help support the monitoring and evaluation of the Phase 2 project, as per study Objective 3.

# Project Feedback

## inovo Tenants

This section presents feedback from tenants of the inovo building. A total of seven interviews were completed – four face-to-face; two self-completed and returned by email; and one completed by telephone.

The following organisations participated in the research:

* CENSIS, sensor and imaging systems technologies, it facilitates collaboration between industry and researcher;
* Lean IP, a patent attorney firm;
* Taylor Hopkinson, a human resources consultancy and recruitment agency within specialist renewable energy and clean technology;
* Link Node, mobile 3d visualisations, applications and services;
* Offshore Renewable Energy Catapult (ORE Catapult), a not-for-profit organisation that provides support to accelerate the development of offshore wind, wave and tidal technologies;
* Smartest Energy Ltd - energy trading comprising electricity purchase, supply and trading; gas trading; trading in renewables and carbon capture; and
* IBioIC, the Innovation Centre for Industrial Biotechnology.

### Respondent profile

Some key characteristics of the tenants include that:

* three are private limited companies, three are public sector/not for profit organisations, and one is a public limited company;
* four tenants are “*independent*” with the remaining three being subsidiaries of larger organisations;
* three tenants located to inovo in 2013 when the building first opened, a further three in 2014 , with one moving in 2015;
* the sample employ 100 people at the inovo, ranging from two to 50. When an outlier employing 50 staff is excluded, the average is eight staff;
* six tenants are expecting an increase in staff over the next three years, with a total increase of 29 employees. The other tenants do not envisage any change;
* the sample has a combined annual turnover of £108 million, ranging from £100,000 to £75 million and averaging at £2.3 million when two outliers (£75 million and £22 million) are excluded;
* six tenants expect turnover growth in the next three years, ranging from 18% to 700%. One tenant is forecasting a decrease in turnover, citing wider UK Government policy changes which it expects will impact adversely on the key markets in which it operates;
* all respondents derive at least some of their turnover from Scottish customers, with proportions ranging from 5% to 100% of turnover, and an average of 63%. Two tenants have non-UK based customers, accounting for 5% or 50% of turnover; and
* most tenants expect to remain operating broadly similar geographic markets, although one is aspiring to become active in international markets and another one looking to become more active across the rest of the UK.

### Decision to locate to inovo

Prior to moving to the inovo building, five tenants were based elsewhere in Glasgow, whilst one relocated from Stirling. One, the ORE Catapult was a new start-up at the inovo building. Please note that one of the tenants is a London based company that set up a subsidiary within Glasgow in 2008 and there relocation to inovo is recorded by Scottish Development International (SDI) as ‘expansion of an inward investor’..

Of those previously based elsewhere in Glasgow, two utilised office space in the city centre, one at Glasgow University, and one mixed working from home with taking space at the MAKLab.

Tenants were asked to identify the main reasons for deciding to locate to inovo and the most common responses, each cited by three respondents, were:

* the renewables focus/ethos of the building;
* quality of the building/office space; and
* opportunities for collaboration/partnership working with the university and other businesses.

One tenant indicated that its most important consideration was the energy efficiency of the building (in terms of power-saving, energy efficient lighting, etc.) which is important to its values of to reducing its carbon footprint.

Using closed responses, the opportunity to co-locate with other technology businesses and being located in the city centre were the most important factors in tenants’ location decisions while the costs of being located there were also an important consideration. Figure 4.1 provides a full breakdown.

Figure 4.1: Importance of various aspects in deciding to locate to inovo

Other important factors included the opportunity to network; the focus on renewables; and the energy efficiency performance of the building.

Only one tenant had considered other location options before deciding on inovo. These were both in Glasgow:

* George House – rejected as the facilities at inovo were better, and could offer IT infrastructure which was not available at George House; and
* re-furbished offices within the UoS, which did not provide the same ‘front door’ for clients as inovo does.

If inovo had been unavailable, three tenants would have remained in their previous location (all Glasgow based); one would have sought serviced office space within Glasgow; and the company which relocated from outside Glasgow would have sought alternative space, not necessarily within Glasgow.

### Innovative Activity

All but one tenant consider themselves to be ‘innovation active’. When asked to expand on what this means for their organisation, this typically involved hands on development of new projects and processes, sometimes in collaboration with others; continued work with researchers, industry and/or academia; product innovation; sourcing commercial and market opportunities for new technology and ideas; and promoting and fostering collaboration.

### Previous Collaboration Activity

Prior to locating to inovo, five tenants had experience of collaborating with academia on RDI projects, compared to just two having had prior experience of either collaborating with other companies or accessing public sector grants to support RDI projects (Figure 4.2).

Figure4.2: Collaboration experience prior to locating to inovo



N=7

Tenants were also asked to provide further details regarding the nature of their engagement, with examples of tenants’ work including:

* collaboration with academia:
	+ working in partnership with the Fraunhofer Institute to develop a project
	+ working with UoS graduates and academics
	+ running PhD, Masters and HND programmes in conjunction with HEIs across Scotland
	+ running project competitions which bring together industry and academia, to develop collaborative projects;
* collaboration with other companies:
	+ supporting both industry and academia to develop products/processes (two tenants)
	+ running project competitions to develop collaboration between industry and academia (two)
	+ offering financial support to SMEs to help business and product development; and
* accessing public sector grants:
	+ accessed the New Glasgow Business Fund, which pays part of the company’s rental costs – without this, the business would not have been able to locate to the inovo building
	+ looking to engage with the public sector to secure funding to help develop additional projects, although no funding has been won as yet.

### Resources Allocated to RDI

Tenants were asked a number of questions relating to the resources allocated to RDI. Three respondents indicated that they do not undertake any RDI projects, including the one tenant that does not consider their business to be ‘innovation active’.

Three tenants were able to quantify their organisation-wide expenditures on RDI and reported that a total current expenditure of just over £3.5 million. Table 4.1 provides further details.

Table 4.1: Expenditure on RDI, current financial year and by 2018/2019

|  |  |
| --- | --- |
| Current expenditure | Forecast by 2018/2019 |
| £60,000 | Will increase by £15,000 |
| £1.5 million | Will increase by £48.5m over the next three years (i.e. total spend of £50m on RDI projects in that time) |
| £2 million | Will increase, but unable to quantify  |

Whilst one respondent was unable to quantify its expenditure on RDI, it does expect expenditure to increase over the coming years. It should be noted that the future RDI spend figures are heavily skewed by the innovation centres which account for over 99% of this expenditure. Further, the future RDI activity is reported as a target and not necessarily a forecast of RDI expenditure.

Similarly, tenants were asked to quantify levels of staff resources currently used on RDI. Values ranged from 0.1 to 16 (FTE). Table 4.2 provides further details, however, please note that the figures are skewed by the activity of the Innovation Centres – Outside of the Centres there is little activity dedicated to RDI.

Table 4.2: Staff resources on RDI, current financial year and by 2018/2019

|  |  |
| --- | --- |
| Current staff levels dedicated to RDI | Forecast by 2018/2019 |
| 16 | Growth of up to 10 staff |
| 3 | Will not change |
| 0.1 | Will not change |
| 7 | Will increase, but unable to quantify |

Four tenants are currently involved with a total of 102 RDI, and this is expected to increase to 208 live RDI projects by 2018 (Table 4.3).

Table 4.3: Currently live projects and forecast growth over the next three years

|  |  |
| --- | --- |
| No. of RDI projects currently running | Forecast by 2018/2019 |
| 2 | 3 additional projects |
| 10 | 20 additional projects |
| 10 | 85 additional projects |
| 80 | 100 additional projects |

### Current and Future Collaborative Activity

No tenants are currently collaborating with other tenants, although two indicated that they had held preliminary discussions about potential future collaborative opportunities. Further, three tenants are not currently collaborating on RDI projects with any external organisation.

Figure 4.3 details the current collaboration partners of tenants – all collaborations are with academia.

Figure 4.3: Current collaboration partners



N=7. N.B. Multiple responses possible.

Of those currently collaborating with other universities, these are Glasgow University (two tenants); Heriot Watt University; and the University of Sheffield.

Whilst no tenants have yet collaborated together, two have stated future collaboration is likely, while a further four suggested this was possible. Future collaboration with other organisations (UoS, other universities or companies in Greater Glasgow) was seen as “definite” or “highly likely” by four, see Figure 4.4.

Figure 4.4: Likelihood of future collaboration on RDI projects



N=7

### Barriers to Collaboration

The main constraint to collaborative activity was finding relevant opportunities on which to collaborate (three responses), with other barriers including a lack of opportunities within the inovo building (one response); and wider organisational constraints.

Tenants identified a range of barriers/constraints, suggesting that different tenants face different barriers to undertaking collaborative activity. The most commonly identified challenge was that the tenants lacked awareness of the complementary activities of others (three stated this was a key issue). Figure 4.5 provides a full breakdown.

Figure 4.5: Relevance of barriers/constraints

Five tenants indicated that they would like to see SE play a bigger role in formally facilitating collaboration/networking activity among tenants. Two highlighted that there are informal monthly get-togethers over drinks, but these are arranged by tenants themselves and there is a sense inovo could do more to help in this respect, with one describing it as “a missed opportunity”.

Other steps which tenants indicated they would like to see to help encourage collaboration (one tenant each) included:

* offering graduate schemes in collaboration with UoS to access new talent and ideas;
* assisting with access to Scottish trade bodies to help facilitate networking; and
* improving the mix of tenants in the building to ensure that tenants can access relevant collaborative opportunities.

Three tenants identified issues with the mix of companies taking space in inovo, with comments including that there is not an appropriate mix to allow them to undertake collaborative activity; tenants are too diverse/not renewables focused; and that the building is not as busy as would have been expected due to low occupancy level. However, it should be noted that two suggested that there is a good mix of tenants in the building.

A further two tenants suggested securing the involvement of the Scottish Government and/or Glasgow City Council as it was felt that as key drivers of policy, it would be beneficial for tenants to have a clear channel to them and this could help drive future research.

### Importance of inovo to Future Growth

Three tenants indicated that being located within inovo will be very important/important to the future growth/success of their business, whilst the remainder did not consider this important or unimportant – Figure 4.6.

Figure 4.6: Importance of being located in inovo to future growth

 

N=7

### Additional Comments

A number of tenants offered additional comments with regards to the inovo building. Two commented that the building is easily accessible and in a good location, and two stated that is good for them/their business credibility to be seen as being based at the inovo building. Other comments, as suggested by one tenant each, included:

* the building provides the business with the conditions to grow;
* the building feels like it is missing some of the bigger players in the sector; and
* it feels like some of the ambition has left the development, and would like to see the building and the area revitalised again.

## Academics and Researchers

Eight senior academics from six research departments at the UoS were consulted as part of the review:

* Continuous Manufacturing and Crystallisation (CMAC);
* Fraunhofer UK;
* Institute of Sensors, Signalling and Communication;
* Institute of Energy and the Environment;
* Wind Energy Centre; and
* Weir Advanced Research Centre.

### Understanding and Awareness of ITREZ

The academics’ understanding and awareness of the ITREZ project was limited, with few able to identify what activities are being delivered under the ITREZ project banner.

The ITREZ branding was reported to be initially used during the construction of the buildings, however, the UoS then shifted its focus towards marketing and promotion of the TIC; it is claimed that “ITREZ” is not commonly used by the university community as this is only a small part of the wider TIC activity.

In addition, a majority of academics were unaware that SE are a partner and had contributed towards the construction of the TIC, which is very much viewed as an asset focused on supporting the UoS’s research activity and ambitions.

While academics were aware that inovo was established to help facilitate industry engagement, there was limited awareness of what private sector tenants were there and, to date, the academics had not made any approaches or enquiries with regards to potential collaborations with the private sector businesses. This has been due mainly to a perceived lack of commercial opportunities within the current private sector base at inovo.

It should, however, be noted that the UoS is currently engaging with three Innovation Centres based at inovo - ORE Catapult, IBIOIC and CENSIS.

As academics had a generally limited understanding of the wider ITREZ project, they were only able to identify what they felt the role, and objectives of the TIC were. This was generally seen as being to foster industry-academic collaboration and to work closer with other UoS departments on RDI.

Only one academic highlighted the renewable energy focus of the TIC; the others believed the building and its academics within it, would provide opportunities across a variety of sectors and a focus on innovative technologies – reactive to market, not sector opportunities. .

### Engagement

All academics reported that they had relocated part of, or all departmental research activity to the TIC. The size of relocation varied by department, ranging from 10 researchers occupying a few rooms, to 150 staff/researchers.

Three reported that relocating to the TIC had a strong fit with their departments’ agenda of fostering collaboration and RDI. For another two, the new building provided a better working atmosphere where academics and researcher could be located in one area as opposed to over a number of floors/rooms etc. For the remaining researcher, the opportunity to access bespoke labs and work areas was viewed as an attractive proposition.

### TIC Facilities

The TIC building and the wide range of on-site facilities has had a positive impact on research activity and on the day-to-day activities of the various research departments: all identified that the building was a high quality facility. For example, facilities (conference/seminar/meeting spaces) were identified as being excellent and meeting their needs.

As the building is still relatively new, with academics only relocating to the building since September 2014, there have been some initial ‘teething’ problems related to the relocation, however, these were “to be expected” with a project of this scale and nature.

From an operational perspective, undergraduate teaching activity is not undertaken at the TIC, however, feedback did not identify this as having any impact (positive or negative) on the delivery of the ITREZ project.

### Linkages

#### Industry

Responses varied regarding perceptions of how the TIC was promoted and used as an asset to leverage additional research activity and funding. Three reported that the TIC has been very well promoted (by UoS and individual departments) and has had a good level of penetration into the private sector, helping to attract new or additional research income.

Others reported that wider engagement has been limited and they have yet to reach a ‘new audience’:

Given the strategic approach adopted by the UoS to develop long-term relationships with Tier 1 partners before the commencement of the capital infrastructure works, most were still engaging with stakeholders/companies with which they have a long-standing relationship or collaboration. It should be highlighted that the UoS has added an additional five Tier 1 partners over the past four years[[31]](#footnote-31).

Please note that this represents direct feedback with the academic and research staff, who may not be aware of the wider activity that the UoS is engaged in.

One of the key tools for promoting the TIC and its research capabilities is through hosting events and conferences with industry/wider partners, and it was identified that this would continue to be a key source of ‘marketing’ and awareness raising for the UoS.

#### inovo

To date there has been limited engagement between academics/departments located in the TIC and inovo tenants: one academic is in the early stages of talks with the ORE Catapult whilst another is currently engaging with Censis.

Two other academics are more closely aligned to inovo as board members of Censis and Sgurr Controls.

Overall, academics had little knowledge of activity at the inovo or of the current tenants and it was suggested that encouraging linkages and collaboration would require some form of dedicated resource or “business development support”.

#### Networking and Engaging with other Research Departments

The majority of researchers are currently working collaboratively with other academics from all over the UK, Europe and the rest of the world. Although difficult to quantify the level and value of new collaborations that have been generated by the TIC, consultees did feel it would further establish the UoS as an important research partner on an international stage, and that it is a significant asset that will continue to enable them to compete with other HEIs at home and abroad.

### Collaboration

Collaboration is embedded within each of the academics’ research activity and this made it difficult for them to separate collaborative activity that occurred pre and post relocating to the TIC. In particular, it should be noted that in the pre-construction phase the TIC was a key engagement tool to ‘sell’ the UoS’s proposition and was part of the strategic approach to develop and build industry collaborations.

The UoS was already engaged in developing its collaborative research and KE programmes before the commencement of the physical infrastructure works, it is therefore challenging to comment on collaboration activity pre and post TIC as there is significant overlap. The water is muddied further as a number of academics submitted funding proposal before moving to the TIC which have now been, or are currently being realised, and which may or may not be directly attributable to the building.

Academics provided brief details about the type of collaborative projects undertaken:

* engaging with private businesses, key stakeholders, and other academics;
* securing project finance from funding bodies/organisations e.g. Innovate UK, EPRSC, Marie Curie, KTP, etc;
* projects ranged from novel concept design, bespoke systems/design, product implementation; and
* project sectors included: health, renewable energy, oil and gas, minerals.

Academics found it difficult to quantify the direct attributable impact of the TIC building: two academics were able to provide a best estimate:

* £500,000 academic funding and £300,000 industry funding covering sectors such as sensing, defence and security, and renewable energy; and
* development of a new generation research centre (opening in November 2015), although value of this project was not provided.

Consultees highlighted a number of wider benefits and impacts that have been generated through the TIC development, which included;

* giving the UoS a greater international presence;
* supporting existing and future collaboration relationships with partners; and
* ensuring the UoS remains competitive and at the leading edge of research activity.

In the future, academics envisage collaborative projects will also be bigger, of increased value and easier to develop as a result of cross departmental working and the international profile generated via the TIC.

### Attracting New Research Activity

Half of the academics consulted reported that they are already very proactive in generating their own research leads, for example; developing their own marketing and communications strategy to promote their departments’ research expertise, developing action plans for collaborative activities, and working with Scottish Development International’s (SDI) international network. Others reported hosting conferences and events which encourages networking and the opportunity to promote their work.

The key issue identified for attracting new research activity was one of capacity and resources, although consultees recognised that engaging with ‘new’ Tier 1 and Tier 2 partners will be a key departmental focus in the future.

### Benefits

The main benefits of the TIC for academics and their research activity can be summarised into two main areas:

* showcasing the UoS as a place for innovation. The building portrays the UoS to be forward looking and committed to engaging with industry (four responses); and
* enables and promotes closer working and networking between research departments as they are located in an open plan office (four responses).

The working environment also encourages cross department/cross sectoral working (two responses), whilst the building and inovo are providing an environment for easier academic-industry collaboration (one response).

### Attitude towards Collaboration

Given the research focused nature of the UoS, the development of the TIC has had little impact on changing attitudes towards collaboration: engagement with industry and other academia was already a fundamental part of their activities. The main benefit that the TIC is likely to generate in future is through promoting more opportunities to develop new, bigger and ‘better’ research activities.

### Strengths and Areas for Improvement

Academics were asked to identify what they felt were the strengths of the project, but also what improvements could be made. Responses are summarised below.

#### Strengths:

* quality of the building and environment;
* opportunity to network with other research departments
* positive statement about the UoS’s direction and commitment to collaboration.

#### Areas for improvement:

* limited linkages and engagement with the inovo building and tenants;
* too strong a focus on the energy sector with a need to promote the wider expertise within the TIC;
* with it nearly at capacity there is a need for a “strategy for growth” and consideration of how best to manage the space without losing the TIC “ethos”;
* there is a need for affordable space for start-ups located close to the TIC, this could either be a new development or a dedicated incubation space within inovo; and
* there is a need for dedicated resource to help facilitate the development of collaborations between academics and industry.

# Strategic Consultations

Consultations were undertaken with a variety of stakeholders to provide further insight into the project, this included:

* strategic management team, responsible for the strategic development and focus of the project; and
* operational staff, comprising project managers and those involved during the project inception and delivery stages.

Table 5.1 provides a breakdown of the stakeholders engaged by the study.

Table 5.1: Strategic and Operational Stakeholders

|  |  |  |
| --- | --- | --- |
|  | Organisation | Role |
| **Operational Stakeholders** |
| Carol Malcolm  | Scottish Enterprise | Project Manager |
| Ellen Stevenson | Scottish Enterprise | Infrastructure team |
| Ellie Jones  | Scottish Enterprise | Marketing |
| Kim Robertson  | Scottish Enterprise | Project Management |
| Vince Percy | Scottish Enterprise | Appraisal and Evaluation |
| Ian Murray | Scottish Enterprise | Former Project Manager |
| David Jack  | Scottish Enterprise | Former Project Manager |
| **Management Team** |
| Steve Graham  | University of Strathclyde | TIC Director |
| Tim Bedford   | University of Strathclyde | Associate Deputy Principal |
| Paul Hagan  | Scottish Funding Council | Director of Research and Innovation |
| Julia Brown  | Scottish Enterprise | Senior Responsible Owner |

## Project Development

The original rationale and objective of the project was well understood by stakeholders: to develop a cluster for research and innovation that would link industry and academia and establish Glasgow and Scotland as an international leader within offshore marine renewables. There was, however, less of a shared understanding regarding the sectoral focus of the project: solely focused on offshore renewables or whether the remit of the project extended to enabling technologies and complimentary sector activity.

Stakeholders pointed to three key drivers for the ITREZ project, *viz*:

* the UoS strategy to rationalise its estates and create a world class research facility,
* there was an identified market opportunity in offshore renewables, captured by the Optimat review and a range of wider market assessment intelligence reports, and
* there was a strong political push from the Scottish Government to establish Scotland as leading destination for research and activity within offshore renewables. In addition to the Government push, facilitating engagement and encouraging collaboration between academia and industry was seen as contributing to SEs economic development remit through creating jobs and attracting research monies.

In terms of the rationale that justified public sector investment in the project, consultees pointed to the market opportunity and political push in the renewables sector (Scottish Government growth sector) as the initial driver for investment. Subsequently, after the slowing down of the construction and offshore renewables sector in Scotland on the back of the economic recession, consultees felt it was important to have the infrastructure in place to allow the public sector to react quickly to any future opportunities when the market ‘bounced back’.

It was accepted that the project partners were unlikely to attract a private sector partner to support the delivery of inovo, and initial discussions regarding the establishment of a JV model/approach were unsuccessful, which is unsurprising given the dampening of the market at the time.

Therefore, at the time of project development the stakeholders felt the project had a strong strategic direction and fit, there was a clear market demand and market failure rationale in support of the project.

## Change in Project Focus

The realignment in project focus/scope and the ability to retain a high degree of flexibility to adapt and respond to market circumstances and opportunity was recognised as a key strength of the project.

The opportunity within offshore renewables never materialised to the same extent as market intelligence had forecast and the TIC, in particular, has diversified its research priorities from the original specification, based on market demand and the UoS *Industry Engagement Strategy[[32]](#footnote-32)*.

Retaining an element of flexibility was seen as important during the next phase of delivery, as this might be needed to react appropriately to emerging policy, and market and research opportunities.

It was noted, however, that whilst this change in focus has been successful in ensuring the project has been able to respond to market demand and the research focus of the UoS, this has had a knock-on-effect. There is no longer a strong alignment between partners and the overall vision for the project has become muddied.

One of the main points coming through from consultations is that currently there is no clear understanding or focus (sector or market based) for the project. This need to define “what is the project” was identified as a fundamental issue for consideration during the development of Phase 2.

The alignment (or lack thereof) between project partners is partly due to the fundamentally different approach they adopt to assess markets and opportunity. SE has continued to adopt a sectoral approach with a focus on low carbon and enabling technologies, whilst the UoS has adopted a more technology based approach, recognising potential cross-sectoral applications and opportunities. SE, in particular identified that this as a constraint it faces across other projects, and that there is a general need to improve cross-sectoral working.

There was a consensus among partners that ensuring greater alignment between partners’ aims and foci is a priority action in the development of more concrete plans for Phase 2.

## Operational Challenges

Consultees acknowledged that there had been some ongoing issues and challenges with regards partnership working which has had a knock-on effect with the operational delivery of the project.

It should be borne in mind, however, that these are not unique to this project nor have they had a notable impact on project performance to date.

The operational challenges seem to stem from the outset of the project, during which there was no clear, strong governance structure to ensure that all the project partners discussed and agreed their respective roles and responsibilities.

It was also realised that the timescales and nature of the project (in effect the project has two phases comprising capital infrastructure with a subsequent focus on industry and academia collaborations) has played a part in this.

The focus to date has very much been on delivering the infrastructure and there has been little coordinated planning or activity with regards to the remainder of the project, especially in relation to generating linkages between the TIC and private sector tenants at inovo.

The three areas where partners felt the project could have been improved by adopting a stronger partnership approach from the outset were around:

* governance, including having a single point of senior contact within the joint partner organisations;
* monitoring; and
* fostering and promoting linkages between the TIC and inovo – private sector businesses.

As the project partners are starting to plan and agree the focus for Phase 2, it was identified that a clear and robust project governance model, which defines in full roles and responsibilities, and a monitoring and evaluation framework needs to be in place from an early stage. This is something which can be achieved easily and quickly – this is being progressed by the project working group (February 2016).

In terms of encouraging collaboration and linkages between tenants of inovo and the TIC this is a more challenging issue, and one that requires further planning.

## Project Impact and Achievements

In terms of what has been achieved to date, the quality of the TIC and inovo buildings was highlighted as a key project achievement.

Consultees agreed that the building’s design, on-site facilities and services, and the significant levels of investment deliver a statement about the commitment from partners and their aspirations for the project.

The approach adopted to developing new strategic relationships and collaborations, and then refining the focus of the TIC to respond to market opportunities has attracted both significant levels of investment and delivered a wide range of impacts for project partners. For example, the collaborative partnership approach has contributed to the UoS being awarded University of the Year and Entrepreneurial University of the Year in the Times Higher Education Awards in 2013/13 and 2013/14, respectively. This will have significant positive impact on raising the international profile and promoting the University and wider region as a research and investment hub.

Overall, partners felt the project was performing well and offered a significant opportunity to develop a world class research-focused technology and innovation hub in Glasgow that could drive both research and economic activity at a regional, Scotland and international level.

Reviewing the performance of ITREZ to date, stakeholders felt there had been both successes and missed opportunities. Some of the more notable project successes to date include:

* the high quality business space and research infrastructure at the TIC - creation of a “diverse and multi-faceted research and innovation ecosystem”;
* attracting the ORE catapult;
* within the TIC there has been a significant academic and researcher culture change;
* the TIC has attracted some notable Tier 1 partners, for example the Fraunhofer and the Weir Group; and
* the numerous events and conferences delivered have raised the profile of the TIC.

Areas where partners felt the project could have been improved or could have delivered more, are as follows:

* it was felt that the projects’ inability to secure a headline anchor tenant has been a missed opportunity that could have had a significant impact on promoting the project. Particular disappointment was voiced over the decisions of SSE to relocate to Waterloo Street and Gamesa moving to Strathclyde Business Park;
* the current tenant mix at inovo is not as originally envisaged in terms of numbers and sectoral focus, with some only loosely connected to the renewables and enabling technology sectors. It is believed that this could limit opportunities to encourage, facilitate and/or support collaboration between tenants and academia;
* the cross sectoral nature of the project means it has been challenging to engage SE sector teams which could have brought specialist knowledge and input to the project; and
* ITREZ as a brand was not well understood or used. As the project has developed it was questioned whether there is now a need to ‘rebrand’ or to take a different approach to marketing and promoting the project.

## Phase 2 Delivery

For future delivery, partners felt it was important to reflect that the UoS presents a unique “value added proposition” for the project and that without the close involvement of the UoS it has no “USP”. This led some to argue strongly that the future direction of the project (including its strategic focus, objectives and targets) should be more closely aligned with the UoS’s research priorities.

There were a number of wider issues that should be considered, inter alia

* develop a clear focus and vision for the project – this needs to be clearly defined and communicated;
* ensure a strong governance model and monitoring framework is established;
* project monitoring framework and targets need to be developed in partnership with a clear rationale and understanding for what data is relevant, why it is being collected, and who has responsibility for collecting and reporting;
* review how project partners look at opportunities – can these be adapted to ensure greater strategic alignment between partners;
* the project should retain its flexible approach to enable it to respond to market demand and opportunity;
* consideration of a dedicated resource to help foster and drive business and academia collaborations, particularly between tenants at inovo and the TIC; and
* proactively target and approach companies to relocate to the TIC, for example, the Tier 1 or 2 companies that the UoS has an active relationship, or an interest in collaborating.

# Study Conclusions

This section presents our study conclusions which have been set against the study objectives, as outlined in Section 1.1.

**Objective 1: Initial review of the relevance of targets/objectives**:

1. review the job creation targets:
* SMART Objective - To create 700 new jobs attributed to ITREZ by 2020
* what evidence underpins the figure of 700?
* what does SE need to do to achieve 700 new jobs?

The original project approval papers (2010/11) did not contain any detail on the objectives or targets for the project, instead focusing on the strategic objectives the project was expected to deliver against. The subsequent updated project Approval Papers (2011 and future updates) did, however, contain quantitative targets for measuring performance.

Based on a review of project documentation, and consultation with project staff, the over-arching project target of 700 jobs was based on an Economic Impact Assessment carried out in 2010 and revised in 2011 based on SE and UoS occupancy assumptions. However, there is no information that outlines the method or approach adopted for target setting, including the evidence-base that outlines the rationale for 700 new jobs, i.e. there is no information on the occupancy assumptions applied or the rationale for their inclusion.

In terms of how relevant and appropriate the target is, without the evidence base we are unable to review this. However, we have provided some further thoughts and guidance on measuring employment impacts.

The standard SE (and other public sector agencies’) approach to measuring the employment impacts generated through infrastructure projects involves setting the total new floorspace against an employment density benchmark figure[[33]](#footnote-33), i.e. information about how many jobs you can expect to accommodate in modern properties of different types, from industrial units to commercial offices.

For example, if we consider office space, the average benchmark is 1 FTE per 10sqm floorspace.

Considering the capacity for accommodating jobs (industry and research staff) at inovo and the TIC:

* inovo: total floorspace is 4,800sqm and if it is assumed that 75% is lettable the Net Internal Area is 3,600sqm. If the NIA floorspace is divided by the employment density benchmark for office accommodation (10sqm per FTE) this means inovo could support 360 gross FTE jobs on-site, at capacity;
* TIC: the business plan identities that the final build has a 26,100sqm gross external envelope of which 18,100sqm is net usable core space ; this net usable space breaks down as 6,000sqm research and innovation laboratory space, 4,800sqm research office accommodation and 3,500sqm dedicated for the conferencing and events, meetings and engagement space. The balance of the net space is 2,800sqm of circulation space.

If a higher employment density benchmark is assumed for the TIC, to reflect the nature of on-site activity, (25sqm per FTE), this means the TIC could support c. 725 research staff/jobs based on 100% occupancy. This compares with the SMART target which was to accommodate 670 research staff on-site. It should be noted that given the wide range of activity within the TIC it is challenging to set an ‘average benchmark’ employment density figure;

* leveraged activity: the project was to create a high value cluster of activity within the Greater Glasgow area, by attracting key players in the renewables market (such as SSE, Scottish Power Renewables, and Gamesa) and by growing the base existing companies (such as Doosan and Mitsubishi). Wider cluster activity and its effects have not been captured through the current approach to monitoring.

Therefore, the inovo and TIC buildings **could accommodate up to 1,100 gross jobs** when at capacity, not including any of the additional leveraged activity.

1. review the research income targets:
* to generate £20m of additional research income by 2020 by tripling the number of Tier 1 and Tier 2 industry partnerships and increase research active staff by 40%.
* what is the evidence that underpins this objective?; and
* what does SE need to do to achieve this objective?

Targets for research income, engagement with Tier 1 and 2 partners, and increasing the number of research active staff targets has been set by UoS and is based on the 2009 Business Case prepared by DTZ.

The business case is underpinned by an investment case and financial appraisal that was approved by the Court, the overall governing body of the UoS.

A review of the research targets is considered below:

* additional research income: the research income target has been set based on historical data for 2007-08, 2008-09 and 2009-10 for principle investigators (PI) within the TIC Research Groups. The average research income that is generated by a PI for the base case is £125,000 per annum. The TIC building is expected to offer significant opportunity to the academic research base and it has been assumed that, on average, the PI’s would increase the per capita research income generated to £188,000 per annum (+50%, non-inflated) by year 10.

By Year 10 there is expected to be 173 PI within the TIC and an (inflated) research income benchmark of £237,000 per PI. This will generate gross additional research income of c. £41m per annum. The UoS has then applied an additionality assessment of 50%, which generates the target of £20m of additional research income. It should be noted that this is a net incremental target, not a total target, i.e. by Year 10 the TIC will generate £20m per annum;

* engagement with tier 1 and 2 partners: this is based on internal aspirations as part of the UoS’s proactive strategy to engage industry partners, and on early discussions with industry;
* increase in research active staff: this is based on assumed levels of growth within individual research departments; and
* world class facilities for 670 researchers: this is based on assumed occupancy levels on the TIC, broken down as follows:
	+ academics - 120
	+ researchers - 152
	+ support staff - 68
	+ post graduate research students (including Fraunhofer) - 331

The ‘bottom-up’ approach adopted by the UoS for setting targets for the TIC is based on the case for investment approved by the University Court, and has been subject to rigorous, ongoing internal appraisal and approval.

The UoS has developed an internal process for determining attribution to the TIC, delivery of the TIC business plan deliverables, and its impact for the UoS through its managing, reporting and internal governance processes. This is reviewed by the UoS Executive Team, Governing Court and Audit Committee every six months.

While the UoS approach to determining attribution is outwith the scope of the ITREZ project, for SE reporting purposes (and in keeping with SE working practices) it may wish to consider alternative approaches to evaluating the additionality of the research income. The current approach of assuming an additionality level of 50% for all new research income lacks external validation. As considered within Section 7, phase 2 of the project should focus on measuring and reporting against gross targets.

1. make recommendations on revision to existing measures and targets
* to what extent do we need to reset the objectives and targets for phase 2?
* if so, what revisions are suggested?

As highlighted above in Section 3.2, there was a number of issues with regards the existing SMART objectives and targets, summarised as:

* **setting objectives targets** – there is a lack of a robust evidence base for some of the targets;
* **defining objectives and targets** - there is a lack of clarity with regards to what is being measured and the rationale for measurement;
* **communicating targets** – targets and objectives have not been well understood or communicated between project partners;
* **gathering performance data** – partners need to agree who, how and when monitoring data should be gathered and shared; and
* **timescales** – partners need to ensure timescales are consistent across indicators and targets.

It is therefore recommended that a new monitoring and evaluation framework be designed and adopted to support the project during delivery of phase 2. Section 7 provides further detail and recommendations with regards to developing a new monitoring framework.

**Objective 2: An initial review of progress to date**:

1. review progress to date in terms of outputs and outcomes

Our review on progress is based on the results presented in Section 3.2.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Target | Achieved | % Achieved |
| 1. New jobs by 2020 | 700 | 274 | 39% |
| 2. Additional research revenue by 2020 | £20 million | £12.6 million | 63% |
| 3. Tier 1 industry partnerships by 2020  | 20 | 9 | 45% |
| 4. Tier 2 industry partnerships by 2020  | 50 | 17 | 34% |
| 5. Increase research active staff by 40% by 2020 (base of 268 research staff)\* | +40% (140 new research staff) | +56% (150 new research staff) | 107% |
| 6. World class facilities for researchers by 2015  | 670 | 350 | 52% |
| 7. Deliver industry engagement space by 2013 | 4,800 sqm | 4,800 sqm | 100% |

Overall, the project is making reasonable progress to achieving the SMART targets. However, it is important to note that the infrastructure element of the project has only recently been completed and it will take time for the project to embed.

Based on current performance and feedback from stakeholders the project is likely to achieve its original targets within the timescales. That being said, as identified above, the approach to measuring and quantifying targets is somewhat unclear, and may not accurately reflect, or fully capture, the true impact and achievements of the project.

1. to review qualitative information, in particular:
* an assessment of the project’s progress in stimulating greater collaboration within academia and between academia and the public and private sectors

Feedback from academics/researchers located in the TIC identified that the new facilities have enhanced their understanding of what other research departments and colleagues are working on, and provides an increased opportunity to network and collaborate with others research departments. This was considered as a key benefit of the project and is likely to generate new activity during Phase 2 of the project.

In terms of the project’s impact on stimulating new or greater levels of collaboration with private sector industry partners, feedback suggests this was harder to identify, partly because the UoS already had in place a proactive strategy for industry engagement and had started to develop the academic research/industry groups - the strategic planning work started long before the capital infrastructure works.

Therefore, the UoS was already starting to build some of these relationships and work with their target companies (during the development and construction phase of the TIC). This approach has allowed the UoS to minimise the risk that the TIC building would have a low occupancy level upon completion and ‘hit the ground running’ with regards to the growth in income generated from research activity (grants and industry collaborations) at the TIC.

Whilst it is challenging to unpick the new private sector activity that can be directly attributed to the TIC, it was recognised that the TIC has been a major component of the proposition that UoS has to offer to private sector partners: the substantial investment in the TIC and other campus improvements, has helped to demonstrate the UoS’s longer-term commitment and aspirations, as well as offering state-of-the-art research facilities. As highlighted in the main body of the report, the ‘TIC concept’ has been recognised as ‘good practice’ within the HE sector and was a big part of the UoS winning the Times Higher Education ‘University of the Year’ (2012/13) and ‘Entrepreneurial University of the Year’ (2013/14).

For example, feedback suggests that the Fraunhofer would not be based in the UoS in the absence of the TIC facility, and alongside the research expertise, the access to the on-site facilities was a key factor.

* an assessment of collaboration in research activity

By its very nature, much of the activity that takes place within the TIC will contribute to, and add value to the ITREZ project. In particular, we have highlighted the Institute of Energy and the Environment as a major academia and industry collaboration that provides significant international profile to the UoS and ITREZ project.

The Institute is one of Europe’s largest power systems and energy technology university research groups. The Institute hosts over 200 staff and researchers across a diverse range of collaborative, multidisciplinary research programmes and has a research portfolio of over £35 million.

Key to the success of the Centre is the relationships developed with business, industry and policy partners through strategic Industry Engagement Research Centres (IERCs).

The Institutes research and innovation portfolio cover four major thematic areas

* [Advanced Electrical Systems;](http://www.strath.ac.uk/research/subjects/electronicelectricalengineering/instituteforenergyampenvironment/advancedelectricalsystems/)
* [High Voltage Technologies & Electrical Plant Diagnostics;](http://www.strath.ac.uk/research/subjects/electronicelectricalengineering/instituteforenergyampenvironment/highvoltagetechnologieselectricalplantdiagnostics/)
* [Wind Energy & Control; and](http://www.strath.ac.uk/research/subjects/electronicelectricalengineering/instituteforenergyampenvironment/windenergycontrol/)
* Power Electronics, Drives, and Energy Conversion.

Capabilities within the Centre include; the design, testing and real time simulation of power electronic systems, development of protection relay algorithms, prototyping, intelligent networking, demand side management and associated modelling for future smart grid and micro-grids applications. The Institutes research and innovation portfolio cover four major thematic areas.

The Institute also hosts two UK Government funded EPSRC Centres for Doctoral Training (CDTs) specialising in [Wind & Marine Energy Systems](http://www.strath.ac.uk/courses/research/electronicelectricalengineering/studentshipswindandmarineenergysystems/), and [Future Power Networks and Smart Grids](http://www.strath.ac.uk/courses/research/electronicelectricalengineering/studentshipspowernetworkssmartgrids/).

* as assessment of the impact of the physical space in terms of its role in stimulating collaboration

Feedback was unanimously positive with regards to the quality of both buildings. The significant investment in the TIC (the largest single site investment made by UoS) was considered a very strong statement of intent and commitment and was key for sustaining existing and developing new collaborative relationships with industry.

Even through the events and conferences hosted at the TIC, the UoS is able to promote itself to potential partners and raise the profile of the successful collaborations that are already taking place within the TIC.

Feedback from the tenants at inovo highlights that the physical space and facilities are an asset that would help support collaboration activity. That being said, the building on its own was not enough and there was a need for future public sector support in engaging with HE and helping to identify and drive potential collaborations.

* an assessment of the impact of companies in engaging with the TIC.

Through the review process we did not engage with any of the industry partners engaged with the TIC, therefore we are unable to comment on the impact that has been generated through the collaboration with industry. Anecdotally, feedback from the academics shows that the new facilities have been well-received and will help strengthen relationships and enhance collaboration opportunities in the future.

None of the private sector inovo tenants that participated in the review are currently engaging with the TIC (although the Innovation Centres; ORE Catapult, IBIOIC and, CENSIS are undertaking collaborative research activity) so to date there have been no impacts generated within the private sector inovo tenant base.

* assessment of the additionality that ITREZ has created albeit at this stage this seems likely to be on a qualitative rather than a quantitative basis.

In terms of the net additional impact created by the project, this has been challenging to assess, particularly at this relatively early stage – the inovo building has been officially opened for 22 months and the TIC for seven months.

We have provided some reflection on additionality below:

Assessment of additionality – organisations located at inovo

Prior to relocating to inovo, five organisations were based elsewhere in Glasgow, whilst one relocated from Stirling. The ORE Catapult is a new innovation centre and the development of the ITREZ project and the inovo building was a key part of the bid that was submitted to establish the ORE Catapult in Glasgow and it was the only location that was considered.

If inovo had been unavailable, three organisations would have remained in their previous location (all Glasgow based); one would have sought serviced office space elsewhere in Glasgow; and the company which relocated from Stirling would have sought alternative space, not necessarily within Glasgow.

Therefore, in terms of attracting new companies/organisations to Glasgow the ITREZ project has had limited impacts to date, with the exception of the ORE Catapult.

In terms of supporting employment growth, six tenant companies forecast growth within their employment base, estimated at 29 new employees by 2018.

Whilst the review did not seek views on the impact of inovo on employment growth specifically, tenants have attributed some additionality to the inovo building, with three respondents reporting that being located at inovo would play a significant role in the future success/growth of the business, with a further three indicating it would have no influence.

Assessment of additionality – research and academic staff

The UoS has identified that the TIC has helped generate total gross research income of £32.35m since 2011/12. However, a proportion of this income will have been generated through long-standing relationships with industry, through grant funding, and as part of wider UoS projects i.e. not directly attributable to the TIC development or contributing to the ITREZ project (outwith the scope of the project).

The approach to assessing additionality is further complicated due to the UoS’s strategic approach to industry engagement and collaborative research, with much of the ‘prospecting’ and developing new KE programme activity being undertaken before the start of the capital infrastructure works.

Given the nature of how the UoS operates (research intense institution) the research and management staff found it challenging to accurately quantify the net additional impacts that have been generated through the TIC. For example, anecdotal evidence suggests that the TIC has had a direct impact on growing the levels of research income that the UoS has been able to secure/leverage from existing industry partners (i.e. the project has had an impact on scale additionality).

From a qualitative perspective, feedback suggests that the TIC has already been of benefit, and is likely to become an even more important asset, supporting the UoS’s drive to further engage in RDI.

**Objective 3: Design of a monitoring and evaluation framework**

1. Design a framework which will allow project partners to capture the above quantitative and qualitative information on an ongoing basis.

An outline monitoring and evaluation framework that will support the delivery of phase 2 is presented in Section 7.

# Monitoring and Evaluation Framework

## Introduction

This Chapter presents a monitoring and evaluation framework (M&EF) for the project partners to facilitate performance assessment of Phase 2 of the project.

There are four key points to note:

* the suggested M&EF has been prepared based on project partner’s input and agreement on the appropriate objectives, scope and resourcing of the next phase of activity;
* the M&EF includes treatment of the built components of the project, based largely on practices to date. While this does introduce some additional complications, it basically means adopting a wider M&EF that will also satisfy the required ongoing monitoring of the project’s physical developments;
* the M&EF suggests that a relatively small number of “key performance indicators” (KPIs) be applied. This does not preclude partner-specific indicators being adopted, based on partners’ own management information requirements and systems; and
* the new KPIs suggested include those that are commonly applied in the context of activities to encourage research, development and innovation, including the specific context of academic-industry collaboration.

The rest of this Section covers: vision; strategic objectives; activities; timescales; core performance indicators; and further development.

## Vision

The vision for Phase 2 should build on, and be consistent with, the initial intention of partners to target opportunities in renewable energy and enabling technologies, through better exploiting the research expertise resident at the UoS and other HEIs.

This can be captured through a vision statement type:

“*Phase 2 of the project will develop a high value cluster of research and commercialisation activity targeted at exploiting market opportunities in the Renewable Energy, Low Carbon and Enabling Technology sectors, thereby building Scotland’s reputation as a leader in these fields*”

This statement suggests that the key activities of Phase 2 should include:

* developing an agreed ‘brand’ and approach to communication and marketing of the project – the project steering group are currently (February 2016) reviewing the branding of ITREZ ;
* focusing on the renewable energy, low carbon and emerging technology sectors, in line with the amended scope of Phase 1 of the project. The rationale for the UoS investment was a targeted approach to Renewables in partnership with SE – however, as enabling technology has remained a cornerstone of the TIC proposition, extending the collaborative research activity into enabling technology will help realign the partners objectives;
* exploiting linkages to the research base; and
* emphasising the importance of a commercial focus to future RDI activity.

## Strategic Objectives

The following strategic objectives are suggested, where the final choice will be driven by the detailed scope of Phase 2.

*The strategic objectives of Phase 2 of the project are to:*

1. *Encourage and enable industry-academic collaborations which focus on the translation of research into commercial applications in renewable energy and enabling technologies.*
2. *Encourage and enable industry-academic collaborations which support corporate innovation in pursuit of market opportunities in the renewable energy and enabling technologies sector.*
3. *Widen the geographic scope of the ITREZ project to engage with the wider Scottish academic and corporate base.*

The first two objectives are suggested to reflect the distinction between collaborations which are proactive in exploiting research outcomes from academia, and collaborations in which academic expertise is engaged to enable corporate innovation.

The third objective reflects the initial intention that the project be a “Scotland-wide” intervention, albeit with some focus on the core at the TIC and inovo buildings.

## Activities

Funding for phase 2 will come from the remaining SE marketing budget. However, it is important to distinguish between the funding mechanism that are specifically for project activity and leveraged support from existing support products within the partners’ portfolios.

The is an important distinction as ***an emphasis on levering support from existing mechanisms introduces issues relating to the attribution of outcomes and the potential for double counting, at least when aggregating to the organisational level***[[34]](#footnote-34).

The collaborative working group is currently defining the project activities to be delivered through Phase 2 and will include:

1. articulate the message - what is the project.

2. develop the project proposition.

3. develop a new brand for the project.

4. develop a new website with shared facilities to promote events.

5. undertake two joint events per year - within group members and wider engagement.

## Timescales

The period over which the Phase 2 will be delivered has been agreed by project partners as a five-year delivery period, commencing in April 2016. Based on this, it has been agreed that performance monitoring be continued through to the end of financial year 2020/21, after which a final project evaluation will be conducted.

## Key Performance Indicators

Table 7.1, over, provides a suggested menu of KPIs for capturing and measuring project performance during Phase 2, along with a suggested allocation of responsibility and frequency of collection/reporting. Please note that the Performance Monitoring Framework has been developed with input from project partners to ensure both robustness and replicability.

One of the challenges identified in Phase 1 was the timing of data gathering and reporting with SE and UoS operating to different reporting dates (time of year). In order to ensure consistency the following approach has been suggested:

* SE collects evidence for the jobs based at inovo in October and provides these to UoS for its annual accounts;
* UoS includes the monitoring information in its annual accounts to send for Executive/Court approval in November; and
* once approved, the UoS shares both sets of information with project partners - this will feed in directly to the SE KMIS system (reports in November each year).

Table 7.1: Project Key Performance Indicators

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Indicator | Definition | Responsible  | Frequency |
|  | **Inputs** |
|  | Project expenditure | Value of expenditure (£, current prices) on Phase 2 activity, broken down by funding partner (public and private). This assumes that a ring fenced project budget is put in place to pursue Phase 2 activity  | SE | On KMIS |
|  | Other resources levered  | Value of funding levered (£, current prices) from existing partner support mechanisms, broken down by partner (including public and private contributions) and mechanism | SE | On KMIS |
|  | **Activities** |
|  | No. of project networking events  | Simple count of the number of networking events under the project banner, broken down between those funded by SE and those not funded by SE | SE | Quarterly |
|  | No. attending project events | Simple count of the numbers attending project events. This can be broken down by academics, public sector and private sector attendees. The latter should distinguish between number of people attending and no of unique businesses represented at the event/  | SE | Quarterly |
|  | No. of campaigns, events, other activity delivered as part of the International Marketing Strategy/ promotional campaign | This should distinguish between delivery of different elements of the International Marketing Strategy that is prepared for Phase 2 of the project. | SE marketing | Quarterly |
|  | **Outputs** |
|  | No. of jobs accommodated on Phase 1 site | Number of jobs accommodated, expressed in terms of gross Full Time Equivalents, at Phase 1 project developments, with separate reporting of jobs at the TIC and at the inovo. Jobs could also be broken down by type, e.g. academic, industry, public sector.  | SE/UoS | Annually |
|  | Gross research income for academia from activity at the TIC | Gross value (£s, current), before any adjustment for deadweight, of research funding raised for activity at the TIC, broken down by source.  | UoS (to provide *un-adjusted* figures) | Annually |
|  | No. research collaborations supported by project | Count of the number of academic-business collaborations supported by project budget. This can be broken down in a number of ways, e.g. by HEI/Department or sub-sector of activity. This could include specific identification of collaborations encouraged via the Energy Technology Partnership.Collaborations based on SE definition*: “The number of new collaborative ventures, formed through support from SE.  These may be established:** *To achieve technology transfer or commercialisation of knowledge/ IP between them two or more organisations.*
* *to bid for collaborative research funding through for example, the TSB or EU framework programmes*
* *·To exploit a market opportunity*

*At least one organisation must have an operating base in Scotland.  Collaborations may be academic with business or business to business.  (Academia only collaborations are not to be included).* | SE | Quarterly |
|  | No. business collaborations supported by project | Count of the number of business-business collaborations supported by project budget. This can be broken down in a number of ways, e.g. by HEI/Department or sub-sector of activity.  | SE | Quarterly |
|  | No. research collaborations supported by other mechanisms | Count of the number of academic-business collaborations supported by levering from existing/other partner interventions. This can be broken down in a number of ways, e.g. by mechanism, HEI/Department or sub-sector of activity. This could again include specific identification of collaborations encouraged via the Energy Technology Partnership. | UoS | Annually |
|  | No of enquiries generated as a consequence of International Marketing Strategy | Simple count of the numbers of enquiries generated by the International Marketing Strategy. This can be broken down by nature of enquiry, geographical area and sector.  | SE marketing | Quarterly |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  | **Outcomes** |
|  | Value of mobile investment attracted to Scotland? | Value (£, current prices) of mobile investment attracted to Scotland and attributable to project, broken down by investment round, geographic source of investment and sub-sector. This should focus on the outcomes associated with new inovo tenants and enquiries generated by the International Marketing Strategy, unless good reason to claim an ITREZ influence on other investments. | SDI | Quarterly |
|  | Gross jobs generated/safeguarded | Number of gross FTE jobs, broken down by those associated with Phase 1, research income generated through TIC, collaborative projects and mobile inward investment attracted | SE/UoS | Annual |
|  | Gross high value added jobs generated/safeguarded | Proportion of gross jobs generated in each sub-category, attracting annual gross salaries in excess of £30,000  |  |  |
|  | Gross GVA generated/safeguarded | Value of gross GVA (£s, current), broken down by those associated with Phase 1, research income generated through TIC, collaborative projects and mobile investment attracted | SE/UoS | Annual |
|  | **Impacts** |
|  | To be assessed by evaluator |  | SE/ evaluator | For Stage 5b |

#### Inputs

Two input indicators are suggested to capture expenditures on Phase 2 activities, where a distinction is made between expenditure from a ring-fenced project budget, and expenditure levered from other partner support mechanisms.

The partners might also choose to make a distinction between in-kind and direct financial contributions if it is felt that this better reflects the nature of activity envisaged for Phase 2.

#### Activities

Three core activity indicators are suggested. The first two indicators are suggested to give an indication of the extent of networking encouraged during Phase 2, where this is related to Phase 2 spending. These indicators could be broken down by HEI, geography, sub-sector, etc.

The final indicator is intended to capture activity specifically relating to an International Marketing Strategy for Phase 2, where the detail of how this indicator is applied will depend on the contents of this strategy.

#### Outputs

The first two output indicators are suggested to ensure continued monitoring of the main outputs from Phase 1 activity – jobs and research income. These indicators are similar to those already being applied, although it should be noted that these are defined in gross terms, i.e. before any adjustment for additionality factors. The observed outputs could also be broken down by, for example, the type of job (academic, industry, public sector) or source of research income. The UoS will be required to supply information on gross income, before making any deadweight assessment: the assessment of deadweight will be an evaluation issue.

The next three indicators are suggested to capture the outputs from collaborative RDI projects enabled/supported by the project. These outputs could apply a distinction in terms of the main target sub-sectors for the new products, services and processes.

The final indicator is to capture the outputs from the International Marketing Strategy and Promotional Campaign, in terms of the volume of enquiries generated.

#### Outcomes

Four outcome KPIs are suggested to capture the value of inward investment attracted (where the main focus will be on inovo tenants and enquiries generated by the International Marketing Strategy) gross turnover, employment and GVA benefits from project activity. This would capture outcomes from both Phase 1 and Phase 2 activity, where these could be further divided to assess the contribution by different activity types

#### Impacts

The impacts captured are to be agreed by project partners as part of an internal SE Stage 5b review, however, we would suggest that this includes; turnover, jobs, GVA, and research income adjusted for additionality factors (deadweight, displacement, substitution, leakage and multiplier effects).

It is suggested that responsibility for assessing net impacts should be allocated solely to the evaluator conducting a final evaluation. However, the partners might also think it prudent to **undertake a mid-term impact evaluation to assess impacts to date and progress towards impact targets**.

## Next Steps

The final step is for project partners to set quantifiable targets based on the agreed indictor menu and project budgets (at least at the aggregate level before breaking down to reflect other characteristics), where target setting can be based on an appropriate blend of benchmarks from other evaluations and the partners’ aspirations.

1. Site for development with provision for 400,000 sqm for science and technology companies, 124 residential units and supporting retail/leisure [↑](#footnote-ref-1)
2. Assessment of Proposed Innovation Hub at City Science Glasgow, Oct 2008 [↑](#footnote-ref-2)
3. Glasgow City Science Innovation Hub (Phase 2 review), March 2010 [↑](#footnote-ref-3)
4. <https://www.timeshighereducation.com/news/strathclyde-picks-up-coveted-title-on-awards-night/421997.article>

<http://ncee.org.uk/entrepreneurial-university-of-the-year-2013-university-of-strathclyde/> [↑](#footnote-ref-4)
5. Located at 1 Waterloo Street in Glasgow [↑](#footnote-ref-5)
6. Glasgow City Science Innovation Hub (Phase 2 review), March 2010 [↑](#footnote-ref-6)
7. SE Approval Paper – December 2011 [↑](#footnote-ref-7)
8. Glasgow City Science Innovation Hub (Phase 2 review), March 2010 [↑](#footnote-ref-8)
9. ITREZ Baseline Information Refresh, 2015 – Optimat [↑](#footnote-ref-9)
10. SE Approval Paper – December 2011

 SE Approval Paper – December 2011 [↑](#footnote-ref-10)
11. SE Approval Paper – December 2011 [↑](#footnote-ref-11)
12. Information provided by UoS, please note that not all of the salary and overhead expenditure is ‘new’ to the economy. [↑](#footnote-ref-12)
13. <http://www.strath.ac.uk/research/technologyandinnovationcentre/> [↑](#footnote-ref-13)
14. Including hydro, wind, wave and tidal, solar PV [↑](#footnote-ref-14)
15. This target was increased from 80% to 100%. [↑](#footnote-ref-15)
16. Optimat ITREZ Baseline Information Report, February 2015 [↑](#footnote-ref-16)
17. “Capitalising on Capability” - the Marine Energy Programme Board, 2015 [↑](#footnote-ref-17)
18. Optimat ITREZ Baseline Information Report, February 2015 [↑](#footnote-ref-18)
19. 2020 Routemap for Renewable Energy (2011) [↑](#footnote-ref-19)
20. Scottish Government’s Economic Strategy (GES) (2007-2014) [↑](#footnote-ref-20)
21. Directive 2009/28/EC of the European Parliament – promotion of the use of energy from renewable sources [↑](#footnote-ref-21)
22. Scottish Enterprise Low Carbon Implementation Plan – 2013 to 2016 (2013) [↑](#footnote-ref-22)
23. Ibid. [↑](#footnote-ref-23)
24. 2020 Routemap for Renewable Energy [↑](#footnote-ref-24)
25. Ibid. [↑](#footnote-ref-25)
26. Scottish Enterprise Low Carbon Implementation Plan – 2013 to 2016 (2013). [↑](#footnote-ref-26)
27. 2020 Routemap for Renewable Energy in Scotland 2015 update [↑](#footnote-ref-27)
28. As reported later, one inovo tenant suggested during interview that UK Government policy was likely to have a detrimental impact on its business in the coming years. [↑](#footnote-ref-28)
29. Ibid. [↑](#footnote-ref-29)
30. HM Treasury ‘*The Green Book: Appraisal and Evaluation in Central Government’*. Available [here](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf). [↑](#footnote-ref-30)
31. Information provided by UoS. [↑](#footnote-ref-31)
32. <https://www.strath.ac.uk/media/1newwebsite/documents/Strategic_Plan_2015_WEB_VERSION.pdf> [↑](#footnote-ref-32)
33. <https://www.gov.uk/government/publications/employment-densities-guide> [↑](#footnote-ref-33)
34. For example, if ITREZ claims the outputs from a collaboration which was supported by an existing SE product, which itself would also claim these outputs. Unless this is addressed, aggregating across SE activity would mean the same outputs being claimed twice, overstating performance. [↑](#footnote-ref-34)