CRN
Cluster Research Network

Clustering
on the Island of Ireland: A Gap Analysis

CLUSTER RESEARCH NETWORK:

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Foreword

The Cluster Research Network (CRN) was established in 2021 as an all-island network, initially of individual researchers from The Cluster Centre, Ulster University, University College Cork and Munster Technological University. We came together with the aim of examining and informing the strategic development and operation of clusters on the island of Ireland.

Our initial work, supported by InterTradeIreland's Synergy programme, has been to complete this all-island cluster gap analysis. The project set out to gather the views and increase the transfer of knowledge between SMEs, Cluster Managers, Policy Makers, Policy Makers, State Agencies, as well as between all-island cluster researchers and academics. The subsequent workshops and discussions turned into a unique and diverse North/South blend of expertise and perspectives. Critical to the success of the project has been the inputs and contributions of the 104 stakeholders who gave their valuable time to engage in a collaborative conversation about cluster challenges and opportunities. We would like to record our sincere thanks to each and every one of the contributors and have worked to ensure that the report captures and expresses their views as we heard them across the Autumn of 2021.

In the future, we are keen that the CRN becomes a network in which a core expert group of academics and researchers can gather to focus and inform the future of clusters and clustering on the island of Ireland. International experience would suggest that a collaborative ecosystem for academics and applied researchers can become a key piece of infrastructure in building a common research engine and agenda for cluster policy, particularly as we move from achieving a common understanding towards an optimal delivery framework.

For now, we hope you enjoy reading this report and that it provokes a continuing or new interest in how clusters can assist in the economic development of the island.

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Executive Summary

The principle aims of the Clustering on the Island of Ireland a Gap Analysis of report is to examine and inform the strategic development and operation of clusters across the island, through identifying a series of gaps in the overall ecosystem which are inhibiting growth. Recommendations are proposed to close these gaps and to strengthen and deepen the knowledge, coordination and sharing across an all-island clustering ecosystem.

To understand the challenges, opportunities, and current needs for cluster development across the island of Ireland, the Cluster Research Network facilitated a series of six workshops to better understand the views and perspectives of six different cohorts who are integral to the quadruple helix. These included:

i) Cluster Managers;
ii) Local Economic Development Personnel;
iii) Regional Economic Development Personnel;
iv) Cluster Business Leaders & Directors
v) Policy Makers; and
vi) Academic Researchers.

Three primary questions were asked of each cohort:
1. **What is their organisation's experience with clusters and clustering?**
2. **What challenges for clusters exist - from their organisation's perspective?**
3. **What policy and implementation supports are required?**

Six stakeholder workshops took place between September and November 2021, via two-hour online Zoom calls with breakout rooms, where required, to allow over 104 participants the opportunities for sharing their considerations of the discussion questions.

Each stakeholder workshop was designed to include contributions from Northern Ireland and Ireland-based participants, and there was an overall 40:60 split in respondents. The workshops are reported on here with accuracy and confidentiality made the key priorities.

THE GAPS

The six workshops were quite consistent in identifying the same 'pain points' and concerns. Table 1 in the Gap Analysis section (page 24) highlights this commonality of themes identified. Each theme (e.g. lack of cluster policies or training and education) was identified in at least four of the six workshops. The report identifies the subsequent gaps under three headings:

1. Moving to clarity from confusion
A consistent view across the workshops was that 'cluster' as a concept remains confusing and lacks an agreed definition, and that this position is likely to continue without Departmental leadership across the island driving ahead with cluster goals, programmes and criteria.

2. Policy development, implementation and funding
The workshops echoed similar views about the need for any cluster policy that would be developed on the island to take account of factors including life cycles of clusters, the need to include both mature and nascent industries, the scale (geography and resources) at which clusters best operate and the understanding that the trust and collaborative relationships upon which clusters thrive take a longer-term timescale to develop.

3. Learning, education and career progression

The need for the development of a professionalised group of cluster managers was stressed across the workshops as a pre-requisite for the success of any cluster policy and that this needed to be backed up by an appropriate support infrastructure.

RECOMMENDATIONS

1. Leadership and buy in is required at national government level if a clustering programme of substance, aligned with international best practice, is to be formalised to drive competitiveness in key areas of national importance across the island.

The Department for the Economy (DfE) in Northern Ireland and the Department of Enterprise Trade and Employment (DETE) in Ireland are the appropriate bodies to provide the necessary leadership and drive the development of clustering goals and programmes.

2. Agree appropriate definitions for Cluster, Cluster Organisations and Cluster Initiatives to be applied in the development of policy, programmes and infrastructure across the island of Ireland and differentiate them clearly from alternatives.

From an all-Island perspective it would be optimal for DfE and DETE to jointly agree on a definition in order to support alignment and encourage potential for deeper co-operation around cluster development on cross-border and all-island bases.

3. Develop a Cluster Policy which includes programmes with appropriate time scales and cycles.

Medium to Long term time scales and cycles are key to any successful Cluster Policy, along with agility and dynamism in the policy making process to support clusters of national importance which have different sectoral requirements and cultures. Cluster organisations and initiatives should target

best international practice and examples by developing explicit links with strong international clusters in areas identified as appropriate for learning, given local (on the island) needs.

4. Establish a Centralised Cluster Financing Programme which is based on Key Performance Indicators relevant to the cluster focus aligned with strategic priorities.

Presently, agencies in both jurisdictions offer several funding options so that certain activities receive different levels of cluster funding under a particular programme but are not even eligible under others.

5. Provision of professional and accredited Training, Education and Career Progression Opportunities for Cluster Managers and practitioners operating within cluster ecosystems.

The cluster development professionals across the island of Ireland who support the establishment, maintenance and ongoing development of cluster organisations to drive competitiveness, need training and support to appreciate best practice consistently. A varied basket of skills is required to support the development of cluster organisations both for cluster managers and economic development professionals, and CPD opportunities provided for this cohort of interested individuals would support career progression in tandem with their management remit.

6. Develop a centralised hub to connect and inform clusters across the island of Ireland and promote them nationally and internationally.

DfE and DETE would be the optimal organisations to commission centralised resources to showcase clusters across the island to help cluster organisations promote their activities and provide opportunities for other interested companies (locally and internationally) to directly connect

with clusters and their members. DfE and DETE would manage which 'clusters' are showcased on the 'hub' to reinforce all recommendations above. Furthermore, the hub and its staff would be in a position to connect, educate and support those organisations seeking to transform their activities towards clustering, or realignment of their activities to gain more traction and impact for members regarding R&D and internationalisation.

CONCLUSION

The gap analysis identifies a series of potential opportunities and recommendations that the authors believe can lead to better defined and more sustainable supports for the development of clusters across the island of Ireland with the mutual benefits this can give rise to. The opportunities are designed to be picked up by actors across the quadruple helix who gave of their time in this research. Where the opportunities are specifically cross-border in nature or where all-island coordination is appropriate, InterTradeIreland can take a lead role.

Background to Clustering on the Island of Ireland

The development and promotion of clusters has increasingly become an instrumental and accepted part of enterprise policy since the early 1990s. Publications by Michael Porter popularised earlier ideas of industrial districts and gave us the new concept of clusters. By 2007 the Organisation for Economic Cooperation and Development (OECD) concluded that the concept had become so widespread in policy circles that *'at both the national and regional basis the key concepts that underlie the cluster approach continue to be at the centre of policy formation.'*

On the island of Ireland the idea of clusters becoming a practical policy tool has been slower to gain traction among policy makers than in other advanced economies. The idea was first raised in the Culliton Report (1992) in Ireland and later in Michael Best's 'Innovation and Capabilities' work in Northern Ireland (NI) (1999), but scepticism about its application or benefits to the island economy have meant that interventions to assist the development of clusters have been much slower to become mainstreamed as enterprise supports or a key plank of policy. In Ireland a number of programmes have come and gone, often as pilots. In NI, the Collaborative Growth Networks programme has had 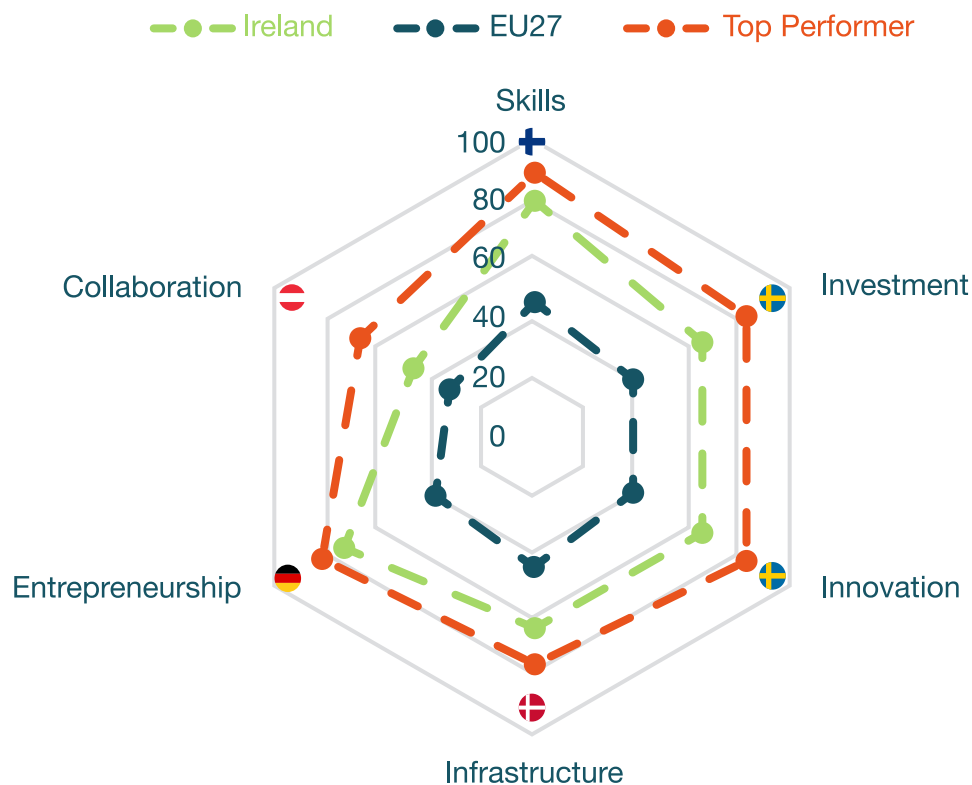a much longer lifespan, in existence since 2009 and supporting a broad variety of networking projects. There have also been a range of EU-funded INTERREG projects supporting cross-border networks and clusters, as well as inter-regional knowledge transfer initiatives. The Enterprise Ireland-supported Regional Technological Clustering Fund and InterTradeIreland's Synergy programme are among the latest additions to the funding landscape.

The scepticism about clusters has been based on contested definitions of what a cluster is, and a sense that, although there are some clear specialisations or sectoral concentrations across the island, clustering (as a process of collaboration) starts from a low base. This has been accompanied by a concern that barriers to collaboration between different parts of the ecosystem are high. Figure 1 shows the country-enabling conditions to support Advanced Technologies and how Ireland is well behind the top performing country (i.e Denmark).

There also continues to be a debate over the evidence of the benefits of clusters to broader economic development (Grashof & Fornahl, 2021). This has created doubts about how to establish the appropriateness of government action to support cluster-based economic

Figure 1: Enabling conditions for Advanced Technologies for Industry; Ireland, EU average and top performing country, 2020
Source: Southern Regional Assembly (2021)

development agendas and how best to evaluate the impact in terms on competitiveness, productivity, resilience and internationalisation. A consequence of these doubts has been an ad-hoc approach, both North and South, to embed a culture of clustering, collaboration and coopetition and, in turn, a difficulty in communicating the benefits of a clustering approach to SMEs, universities, local authorities, MNCs and other actors. A stop-start approach to support and funding programmes for clustering in both NI and Ireland has also probably served to minimise the potential performance of clusters and prevented any leveraging of this strategic opportunity.

However, more recently there appears to be the beginning of a growing interest and potential commitment among policy makers and others involved in enterprise development to more fully explore the potential for clustering as a key part of enterprise policy on the island. For example, the 2021 strategy released

by Department for the Economy (DfE) in NI, 10X Economy: Northern Ireland's Decade of Innovation, has identified five areas of the economy where the potential for priority clusters to develop is strong (and the benefits are expected to be greatest) and commits to supporting these (or others in future). Specifically, the policy quotes approvingly from Julie Wagner and Bruce Katz about 'tightening an economic strategy from broad sectors to strong or emerging specialisations'. The Department of Enterprise, Trade and Employment (DETE) in Ireland is currently exploring what a policy framework to support clusters as part of driving wider economic growth might look like. **The key challenge appears to be one of agreeing whether clusters are a vehicle for further economic growth, an important addition to the enterprise ecosystem on the island, or both.**
At the same time as these policy developments, there have been growing efforts in academic research and data science to create a better evidence base for any cluster policy and programme development and

evaluation. Mindful of the arguments over what a cluster is, or is not, there has been significant effort in the area of the identification of sectoral concentrations and clusters. Notable among this has been the development of improving the method of identifying concentrations (which formed the basis of the 2015 InterTradeIreland report on sectoral ecosystems), the cluster mapping work of the V-LINC research unit in the Munster Technological University, and the work of other academics and researchers across the island, in particular those seeking better indicators of collaboration among firms and other partners and the behavioural aspects of these efforts. One workshop held as a part of this project showed the level of research interest in this space, while also challenging the validity of the clustering concept (as opposed to a broader ecosystem approach), the meanings of proximity among actors and what counteracts this and the basis on which the effects of clustering could be fully evaluated.

InterTradeIreland has been committed to the development and support of all-island clusters and business networks since its establishment in 1999 and has been the source of many of the examples of cross-border cluster cooperation, others arising from EU funding programmes. However, the slower development of clusters on the island has meant that the amount of cooperation has accordingly been curtailed. The growing level of clustering activity on the island now offers an opportunity for greater levels of cooperation in the clustering space between NI and Ireland. The question of all-island clustering forms one, important part of the overall gap analysis in this report.

Research Approach

To understand the challenges, opportunities, and current needs for cluster development across the island of Ireland, the CRN developed a series of six workshops to understand the views and perspectives of six different cohorts who are integral to the quadruple helix.

#1: Cluster Managers
#2: Local Economic Development Personnel
#3: Regional Economic Development Personnel
#4: Cluster Business Leaders & Directors
#5: National Policy Makers
#6: Academic Researchers

The six stakeholder workshops took place between September and November 2021, via two-hour online Zoom calls with breakout rooms, where required, to allow over 100 participants the opportunities for sharing their considerations around identified discussion questions. Each stakeholder workshop was designed to include contributions from Northern Ireland and Ireland based participants and an overall 40% and 60% balance was achieved.

As key contributors to Workshop #5 were unavailable for the scheduled on-line workshop, one additional meeting was arranged to ensure adequate consultation on the main focus areas of the project was achieved. This meeting included five stakeholders from one organisation, with one facilitator. The findings generally reflect the views of participants from both jurisdictions, and where not, attention is drawn to whether points

refer specifically to Ireland or Northern Ireland. The objective of each workshop was to ensure opportunities for specificities of jurisdictions to be raised freely, but without drilling into characteristic features of each geography separately. At each workshop discussions were organised around three questions:

Q1. What is your organisation's experience with clusters and clustering?
Q2. What challenges for clusters exist - from your organisation's perspective?
Q3. What policy and implementation supports are required?

For the first workshop with Cluster Managers, Q2 - challenges for clusters - was supplemented by focusing on three additional elements:

- **What are your current challenges?**
- **What challenges are internal to your cluster/network?**
- **What challenges are external to your cluster/network?**

This is the first time on the island of Ireland that research on clustering has been analysed by deconstructing the various elements of the quadruple helix to assess their experiences, challenges and report their reflections on policy and implementation supports required. The facilitators agreed to take notes concurrently during each workshop. Other key participants in the NI

ecosystem, who were unable to make Workshops 3 and 5, were consulted in a separate session.

To ensure as accurate reporting of the discussions as possible were made, each facilitator wrote up their individual notes immediately following each workshop. In break-out sessions where more than one facilitator attended, individual facilitators wrote up separate workshop reports and then collated final reports following discussion and agreement with their co-facilitators. Where it was not possible to have more than one facilitator (due to the larger number of participants at workshops, i.e. Workshop 1 and some of Workshop 2) the report notes were compared across each facilitator which allowed consideration of the extent to which different cohorts within a workshop reported on similar issues, or otherwise.

It was agreed from the outset (and indicated in the invitations to attend workshops) that confidentiality was assured to participants in order to encourage as much in the way of open and free contributions as possible. This meant that no recordings of the workshop discussions would be made, and it was also agreed that no comments made by individual participants would be attributed to individual contributors. This approach was selected to increase the likelihood that members of each cohort might speak openly and freely with people delivering in similar roles with some similar responsibilities. Had the experience of clusters been more mature, it would have been more likely that some familiarity might have previously developed through networking across the cohorts either organically or by design. The approach also offered a networking benefit (and opportunity) within each stakeholder group where participants could learn from and appreciate the shared perspectives and points of view from within their regional, national and cross-border context.

There is widespread agreement that a stakeholder framework is useful in the analysis of strategic and normative challenges faced by organisations and that solid stakeholder relationship are key to organizational viability and success (Freeman, 1994; 2004). There is also agreement both practical and theoretical challenges stand in the way of stakeholder salience and efforts are required to evaluate and balance various, and sometimes conflicting goals and claims of multiple stakeholders (Maak, 2007). The workshop design selected for this project was an appropriate means to pro-actively engage with identified cluster stakeholder groups in facilitated dialogue. In the first phase of data description we reported on the main themes and issues that emerged from each workshop (in the findings section). This then allowed us to identify across the workshops not only where resonances arose across the three main focus questions, but also where significant issues were identified, worthy of focus in the gap analysis.

In the next section, Workshop Findings, we first set out the main themes and findings that emerged from each stakeholder group in each workshop separately. This data allowed us to generate a comprehensive gap analysis in the following section and, on the basis of this, recommendations aimed at improving the understanding, development and functioning of clusters on the island of Ireland were identified.

Workshop Findings

WORKSHOP 1: CLUSTER MANAGERS

Workshop 1 took place on 14/09/2021, with 23 attendees who were split into four groups, each with a facilitator from the project team, to allow each participant the time to speak openly and freely.

There was a varying level of experience amongst the cohort of managers, some of whom are in new organisations started with state funding over the past 6-9 months whilst other organisations are privately funded and have been in operation for 25 years. The managers attending represent clusters/networks with a range from eight to 200 member companies, some of which employ membership/subscription models and others which have not had the time to introduce such models. The managers represent broad sectors or groupings across the island – some of which operate at a very local level and others with a national remit. The sectors they encompass include bioeconomy, financial services, STEM, construction, tourism, creative industries, IT, engineering, advanced manufacturing, digital and maritime.

Q1. What are your current challenges?

There were a number of points raised by the managers which they identified as current challenges. These can be broadly organised under four main headings:

Lack of a National Cluster Policy:
The managers highlighted that one of the largest challenges they all share is the current lack of a national (which was taken to mean standalone policies for Ireland and NI) cluster policy to provide a strategic direction for clustering in both parts of the island. This for the group highlighted that clusters are ill-defined, underrated and their true value of same to national policy makers and funders was not understood.

Differentiation from other Networks / Industry Associations:
Another challenge for the managers cohort was that there are many different organisations who refer to themselves as clusters. As such there is no clear distinction between the different roles delivered by or configurations of a cluster, network or industry association. This lack of clarity leads to clusters operating in silos across the island, even when there is significant overlap regarding certain activities.

Financing & Sustainability:
There are substantial discrepancies between the different funding programmes for clusters across the island of Ireland. In Northern Ireland the programme 'Collaborative Growth Networks' run by Invest NI is available to SME-led networks to support costs associated with facilitation, in order to scope out innovative collaborative projects with the potential to increase business competitiveness. There is a six month funding period provided in Phase 1 and 2-year funding in Phase 2 after an application process to support industry-led networks as they establish themselves. In the Republic of Ireland two Enterprise Ireland programmes – Regional Economic Development Fund and Regional Technological Clustering Fund – support clusters for periods of three years with varying project-specific levels of funding for facilitation and operational costs. Other organisations have funded clusters/networks through different mechanisms, including de minimis state aid and local supports for periods of six months to two years. There were suggestions from the group that financing should be provided over a longer term to contribute greater potential for the sustainability of clusters, recognising the time required to develop meaningful collaborations.

Covid-19 - Engagement:

Of particular concern (and especially for the newer managers) was the difficulty in building a common understanding of cluster members and alignment of their needs at present during the Covid-19 pandemic. Due to public health guidelines clusters are missing the face-to-face element and this is limiting trust building and participation by members over an extended period.

Q2. What challenges are internal to your cluster/ network?

Cluster Governance:

The managers group believe that there are numerous issues around cluster governance which pertain to the size and composition of an effective board for cluster organizations. These include clarity in outlining roles and responsibilities and ensuring that board members have a solid understanding of clusters and what can be achieved by the organisation.

Access to National and Local Data:

To support the understanding and promotion of a cluster ecosystem, the managers were cognisant of the need for and difficulty in accessing national and local data pertaining to their industry and sector. This would showcase to stakeholders the economic importance of the sector and, over time, its contributions to growth in outputs, exports and employment.

Engagement with Members:

Along with building a common understanding of cluster members, come other difficulties such as balancing the day-to-day work of a cluster organisation, and the time that should be allocated to e.g. setting a cluster strategy, place making, 1-1 meetings with members, running/hosting of events, skills development, internationalisation, RD&I etc. Many participants

highlighted the challenges in finding the right balance of time and impact, suggesting a need for agreement on clearer priorities.

Long-term Funding:

Models of sustainable finance are a great challenge for the cohort of managers. In the absence of certainty around funding and if/when more cluster organizations are to be delivered by state agencies, there is a strong worry about how the organisations may become sustainable. Some organisations fear their current members will discontinue their engagement/membership if they move to a subscription-only model, implying (implicitly) that limits exist to the perceived value created for members via cluster organisations.

Q3. What challenges are external to your cluster/ network?

Long-term support and financing:

Long-term support and financing is also an external challenge as there is a gap in national policy for provisions in this context to support the cluster community. Managers pointed to medium and long term (i.e. 3-5 and 5-10-year) programmes for cluster support and finance in other countries, such as Germany, Austria and the Netherlands.

Funding comes with handcuffs:

Another challenge is the overlap and confusion between various different cluster/network supporting programmes. The goals and aims of certain programmes are aligned to different KPIs and finding the correct mechanism for a particular cluster/network was identified as challenging by the managers as there are certain activities important to one particular sector that are not as high a priority for another. Lack of clarity and policy guidelines in the clustering space exacerbate this issue.

No central connection point for clusters:
A number of participants suggested that having no central connection point (physically and/or virtually) across cluster organizations is to the detriment of clustering across the island. Participants were envious of regions that have this facility e.g. the role ACCIÓ - Agency for Business Competitiveness in Catalonia provides a virtual and physical connection to the region's 24 industry clusters. This absence makes it more difficult for industry (potential cluster members) to connect with clusters or for international organisations wishing to connect with the Irish or NI quadruple helix in a particular sector/cluster.

Q4. What do you need to address the challenges faced?

Overall National Funding: The managers cohort (particularly in Ireland) felt that one way to address a number of the challenges was through a structured national funding programme which provided the context for supporting clustering built on a definition of what constitutes a cluster. A certain amount of confusion was identified which appears to be due to differences in funding opportunities, mechanisms, and relevant criteria across different programmes. One funding programme or agreement on the same criteria across various programmes, would provide a level of comparability and clarity regarding funding for management supports and programmes run by these organisations.

Centralised Training and Collaboration point for Cluster Managers:
It was apparent from the feedback that managers considered there was a lack of cluster management

expertise and training for same. Similarly, because of the lack of co-ordination between cluster funding programmes no one organisation can bring together all of the cluster managers. Some joined up thinking within the context of agreed national cluster policies could generate and provide training and collaboration opportunities for clusters (and their managers) across the island.

Financing & Sustainability:
Given the longer-term nature of cluster support and funding programmes provided in other countries, such as Germany, Austria and the Netherlands managers considered that the clustering landscape on the island of Ireland would benefit from such stability.

Data on the Impact of Clusters and their Initiatives:
Data to showcase the economic impact and growth of cluster ecosystems would provide substantial evidence-based support to the cluster/network managers who participated in the workshop. Access to number and size of firms, employment, average wages, export and import data for their sectoral ecosystems would allow them to showcase more effectively the nature of the ecosystem and how it has evolved over time. Due to difficulties in the coding of data with SIC/NACE codes (and at different geographical levels) this may or may not be possible to achieve. However, it was identified as important to make progress in this area, assuch data-driven approaches exist for the US, Canada, India, Mexico, and regions of Italy.

Recognition of Clustering at a National/Regional Level:
Recognition of clustering – its aims and potential - through a defined national policy would be transformative for the managers involved in this workshop. This would provide

clarity and a key anchor to point members of the quadruple helix to regarding the scope and role of clustering across the island and its territories.

Q5. Where do you see opportunities for the island of Ireland for clusters?

Strategic long-term approach to clustering & collaboration:

There was a shared view that a strategic joined-up cross-border approach to clustering and collaboration would open significant opportunities for clusters across the island. Further reference to a definition and clear national cluster policies was made here.

Develop further inter-cluster collaboration opportunities:

Managers reported many opportunities for inter-cluster collaboration to occur; however, none of this occurs in a co-ordinated manner. If implemented correctly there are opportunities for sharing of knowledge – in e.g. the green and digitalisation spaces – and integrating key learnings and technologies into different industry sectors.

Interaction with InterTradeIreland (ITI) to develop cross-border inter-cluster collaboration:

A key role is identified for ITI to be a conduit to connect clusters across the border, and there was an appetite for learning more about how this could be achieved by those at the meeting.

Potential for Synergy to have a specific clustering support:

Cluster managers proposed that there may be a role for specific cluster support as part of ITI's Synergy programme be that matchmaking, facilitation supports etc.

Promotion of Clusters across the Island at international level:

Something which is being missed at present is the ability to promote clusters in a meaningful way abroad. This relates to a lack of centralised supports and a national policy or plan, as all cluster/networks are currently 'rowing their own boats' and not co-ordinated by any public body or funding programme.

Development of a portal for upskilling (micro-credentials) and internships:

Another opportunity proposed by the managers cohort relates to the provision of an online portal for sharing of cluster management training and potential for the award of micro-credentials which could be aggregated towards modules and ECTS Credits. The potential for hosting internships and collaboration with other clusters to share management expertise was also mentioned.

WORKSHOP 2: LOCAL ECONOMIC DEVELOPMENT

Workshop 2 took place on 21/09/2021, with 20 attendees who were split into three facilitated breakout groups.

The attendees were drawn from local economic development practitioners across the country, eight from Northern Ireland and twelve from Ireland, the majority working in the economic development departments of Local Authorities whilst others work within Local Enterprise Offices providing services and supports to industry. The main themes identified from responses to three question prompts are provided.

Q1. What is your organisation's experience with clusters and clustering?

Local Economic Development support clusters/ networks on primarily an ad hoc basis:
Numerous participants had been engaged with and had funded clusters/networks. This ranges from annual funding for facilitation/management to short-term payments for events and initiatives or sponsoring specific activities. In some instances, local economic authorities are more involved in providing centralised staff resource (both full-time and part-time) to facilitate clusters/networks locally in their constituent counties and districts.

Mostly financial and facilitative support to clusters/networks that have developed outside the council/regional authority scope:
In general, the group of participants had funded or were funding clusters/networks registered as legal entities outside the local authority. The economic development departments were generally those involved with supporting specific initiatives, due to mutual alignment of identified goals and outcomes. Other respondents proposed that the local authorities

provided a conduit or environment within which clustering takes place (e.g. through infrastructure provision and planning permissions).

Q2. What challenges for clusters exist – from your organisation's perspective?

How best to support/implement clusters and having a flexible budget for same:
One of the shared challenges for the participants identified in Workshop 2 related to how local authorities can best support clustering and collaboration in a flexible manner. The budgetary context was reported as being very rigid and the ability to support such organisations as quite constrained, and lacking the flexibility required to support follow-on initiatives or activities, where deemed appropriate.

Lack of managers and the key skills needed to facilitate cluster organisations:
Participants spoke of difficulties around the lack of availability of personnel and skills within local authorities that would be needed to manage, stimulate and facilitate clusters. They identified that as a particular set of skills are required, and that these tended to be undervalued, from being able to ensure the facilitation and engagement of SMEs and MNC enterprises as part of a cluster, through developing events of interest to both cohorts, or bring different parties of industry/academia/government together to build trust and open avenues for information exchange and collaboration.

Financial challenges and how to support clusters in time-lag between funding periods:
Provision of funding on a regular basis for specific clusters/

networks proves challenging for local authorities, with limited budgets available to support various activities within their local economic development demands on an annual basis. Furthermore, funding for associations/ networks/clusters which have a remit outside of a local authorities' geographic boundaries (this can also apply to the border) do not fit with supporting such organisations (with members outside of the local or regional remit). A particular challenge was raised in Northern Ireland focusing on the time period between Phase 1 and Phase 2 of the Collaborative Growth Networks programme where councils are asked to support networks in such time lags.

Lack of an overall Cluster Policy at a national level:
The lack of a national (or standalone for NI and Ireland) policy represents a key challenge for local authorities, as there is a view that with such a policy, alignment of supports could be easier for local authorities to provide. Following agreed criteria would make it easier and more transparent for local authorities to facilitate supports to clusters, or the animation or extended development of networks towards clusters.

Q3. What policy and implementation supports are required?

How can local authorities become more involved in cluster implementation:
Local authorities related that they should be involved in clustering and have a key role to play in facilitating and funding same to support enterprise development in their region. They acknowledged that clarity and transparency provided by a cluster policy at NI/Ireland level would allow further focused funding streams from local authorities to support clustering to be developed.

Training for cluster managers:
A view was expressed across the group that, at present, training for cluster managers is quite unplanned and disjointed. A shared observation was voiced that if training was provided succinctly and centrally then this could be accessed by cluster managers and economic development staff on an as-needed basis to assist in growing cluster sustainability and the cohort of knowledge of clustering on the island of Ireland over time.

Agreed Definitions / Shared Language and Collaboration point for Clusters:
The cohort identified several contributions to the development of clustering on the island of Ireland. Specifics mentioned related to the development of a shared language and agreed definitions of clustering and cluster organisations for example. Also, the local authorities identified a virtual collaboration point as potentially transformative for clustering in the country where clusters across the island could be showcased to allow firms easier access to clusters. That this represented a paradox – that a shared definition is needed to showcase clusters for such virtual collaborations to be organised appropriately, whilst specific clusters are needed that reflect an agreed definition in an Island of Ireland context – was recognised by the cohort.

WORKSHOP 3: REGIONAL ECONOMIC DEVELOPMENT

Workshop 3 took place on 30/09/2021, with 14 attendees who were split into two facilitated groups.

The attendees were drawn from a cohort of regional economic development practitioners, offering a mixture between staff from regional authorities, regional offices of government agencies and national business associations across the island. This ensured quite a varied cohort of different backgrounds and responsibilities which provided the inputs for this stakeholder discussion.

Q1. What is your organisation's experience with clusters and clustering?

Clustering is a priority element within Regional Planning:
There is a responsibility for regional authorities in Ireland to ensure there is consistency in policy at regional level and that Local Economic and Community Plans (LECPs) connect with regional plans and these with national plans. It is clear from the discussions with the cohort that clustering as a term has become engrained and a key constituent element in national policy and, as such, is reflected in regional policy, and trickles down to local policies. This particular group of attendees sit on the periphery of clustering, creating a supporting policy environment but in the main not actively involved in the day-to-day activities of clustering facilitation or hosting of same.

Seeking to support from a data and analytical perspective:
The cohort spoke about obstacles to their ability to support clusters/networks given little availability or access to analytical data from an Irish perspective,

as there is currently a gap in this area of support for clustering. Reference was made to the European Cluster Observatory or US Cluster Mapping Project as exemplars in this space. However, access to the data is proving difficult as the European categorisation system (NACE) is quite limiting for numerous reasons related to the ability to report data at different geographic boundaries and the overlap of sectors between NACE codes. A similar point – and perhaps a sharper one – was made for NI, where detailed sub-regional data (beyond broad SIC level) is scarce.

Some broad experience with networks/clusters:
Some of the participants engaged in the workshop reported having come across clustering through their collaborative work on EU projects. This work has focused on e.g. regional smart specialisation policies to support clustering. In some cases, work has commenced on mapping sectoral strengths to inform on implementation and monitoring of cluster/networks across Ireland and NI (latter completed in 2015), and to identify how best to put further supports in place.

Q2. What challenges for clusters exist - from your organisation's perspective?

Understanding the motivation / rationale for cluster organisations: The cohort identified a big challenge in understanding the motivation / rationale of cluster organisations. Through understanding same this can help to work with business in identifying emerging opportunities (or competitiveness barriers requiring removal) and hence understand which priority sectors are seeking to build capacity or grow competitiveness and where (spatially). Cyber Ireland was cited by participants as an exemplar to taking a challenge-based approach

where the challenge was identified - tied to a market-led focus as identified through a series of meetings with businesses – and, through this, a better understanding was built of what supports were available already and what new supports/initiatives were needed to buttress same. Although regional actors identified a business-led approach for clustering as the most appropriate approach, however, participants were not 100% sure how to implement such a model specifically in terms of how to engage actors individually and collectively within and beyond business to secure impact.

Identifying and mapping the key relationships within a sectoral concentration:
Aligned with the brief of some participants as seeking to support clustering from a data and analytical perspective, is a lack of ability to bring clarity about how key relationships within a cluster can be mapped. There was a desire to have a convenient and intuitive way of utilising cluster data, through creating maps to visualise clusters and their evolution across regions and over time. Oftentimes, it is beneficial for incumbent cluster actors (across the quadruple helix) or investors to have access to a 'cluster' map rather than a regional map. This is sometimes referred to as network analysis, as its name implies, it is a visual analysis/set of visualisations of the connections between various actors in a cluster ecosystem which can include local, regional, national and international nodes.

A central national clustering policy:
A centralised national clustering policy was seen as a challenge for the cohort of regional economic development practitioners, both North and South, as presently these organisations are not able to meaningfully wrap policy/supports to be able to support the delivery of clustering supports either within the two economies, or across the island. This lack of definition

and clarity was identified as limiting alignment of supports for clustering at regional levels and beyond. Presently the supports for clustering are very different North and South i.e. the Collaborative Growth Networks support SMEs to drive a network for 6 to 24 months whereas the RTCF provides management support for a three-year period directly linked into a HEI – a very different starting point.

The diverse nature and scope of industry clusters:
There was stated confusion across the cohort regarding the diversity and scope of industry clusters across the island of Ireland and their ability to create meaningful collaborative relationships between industry, academia and government.

Q3. What policy and implementation supports are required?

Need to ensure that EU requirements match up with regional interests in RIS3 and Clustering:
Smart specialisation was discussed as a relevant anchor for Ireland and Northern Ireland for further cluster supports. There are requirements, certainly in Ireland, for matching EU requirements with local focus on RIS3 and national priority areas and this requires cooperation between all elements of government to derive a co-ordinated policy that connects with its EU counterparts. In NI smart specialisation methods have also been used and the results are being translated, to a degree, into the priority clusters or technology areas in the new 10X strategy.

Supports need to be aligned to a national policy:
The view was expressed that supports in Ireland and NI need to be aligned to a national policy, with a proportionate reduction of funds over time, which contains echoes of the Austrian model of cluster

supports. The length of time for funding cluster managers needs to be considered from a broader policy perspective, and a balance found between goals, performance and job security.

Agree the role of how clusters can contribute to grand challenges:

Clusters are a central feature in the European Commission's competitiveness and Smart Specialisation strategies (EOCIC, 2019) and in the UK's new industrial strategy (IfG, 2020). Their pivotal role in leading the green and digital transitions, in building resilience and boosting recovery is widely recognised, e.g. by the European Commission (2021) in their European Expert Group on Clusters Recommendation Report. The role for clusters in delivering policy through appropriate engagements with the appropriate decision makers has become more prevalent with the emergence of the Covid-19 pandemic, and a centralised collaboration point could be transformative to support how clustering across the island could coordinate green and digital transitions.

WORKSHOP 4: CLUSTER BUSINESS LEADERS

Workshop 4 took place on the 12/10/2021, with 10 attendees all in the same online platform which allowed for useful networking opportunities and, with a smaller overall group, the opportunity and time arose for each participant to contribute openly and freely.

Q1. What is your organisation's experience with clusters and clustering?

Different levels of experience:

There was a varying level of experience amongst the cohort of cluster business leaders, some of whom have long term experience with their constituent clusters/networks of up to 10 years and hold positions on the board. Others have joined their cluster more recently and were keen to join the workshop and hoping to learn more from counterparts in other clusters/networks.

Cluster provides a key link for the ecosystem:

Those business leaders who joined the workshop believe that their clusters/networks provide a key link for firms to connect with B2B contacts, academia and government. Building a bridge across and between the quadruple helix was agreed as a key element of the benefits that clusters/networks can bring for an ecosystem.

Role for clusters in placemaking and attraction of skills, talent, and people to a region:

A number of members of this cohort of business leaders have been involved in campaigns and initiatives pertaining to placemaking for their ecosystems to attract skills, talent and funding to their locality. These campaigns included mention of clusters at a national level (as identified by e.g. IDA for Ireland) or the regional networks engaged in by members in the workshop.

Q2. What challenges for clusters exist - from your organisation's perspective?

Trust:

Trust or the development of same between members of a cluster/network was mentioned as a real challenge. This focus on trust related to a number of distinct aspects i.e. to the development of trust between 1) a cluster manager / facilitator and members, 2) trust amongst the board of directors / advisory board of the cluster/network and 3) the development of trust between members of the cluster across each element of the quadruple helix.

Difference between a Cluster / Industry Association / Network:

One of the challenges identified by the group of

business leaders engaged in cluster/networks pertains to explaining to members / funders the differences between a cluster / industry association / network. It is often difficult to share understanding of the clustering concept with members and funders in Ireland as it an agreed definition has not been called out in policy terms - where definition is provided in policy, no alignment is evident in support programmes related to clustering/ networking activities.

Balance:

Another challenge identified by the business leaders in clusters who attended the workshop related to finding the balance between progressing the goals and objectives of the cluster and working with individual or groups of collective members. Furthermore, balance was identified with respect to attracting new paying members for the cluster and the provision of services to current members and how time should be divided or balanced effectively on this competing goal, limited by available cluster resources.

The scope and depth of clustering activities:

Two further challenges mentioned by the attendees related to the scope and depth of activities requested or sought by members. Participants highlighted that the mix of activities can be very different for different sectors and the extent to which specific activities should be engaged with depended on the balance challenge referred to in the previous point. Furthermore, the need for independent facilitation/management of a cluster/network was called out as a key requirement as the manager needs to be accepted and trusted by the members and, therefore, prior associations with any singular entity may lead to difficulties.

Q3. What policy and implementation supports are required?

Resources and Manpower:

The participants saw a key need for further investment of resources and manpower into industry clusters and networks. Funding for such resources is difficult to attain from the current set of funding mechanisms in operation across the island. Much of the work of a cluster organisation is related to context-specific tasks and particular skill sets are required, and it can be very challenging for a cluster manager to have all the skills required for the role. For example, a cluster manager is needed to facilitate, manage and run events, workshops and meetings. In addition, they can be expected to organise and run social media communications and campaigns and maintain up-to-date web presence of a cluster. Further requirements can include writing strategic reports, funding applications, economic impact studies, press releases. A range of engagement activities were also outlined as fundamental to cluster management; these involved members, academia and government departments. It was proposed that additional resources (or specialised training) were required to ensure clusters deliver professionally to deliver across the range of all of these areas.

Triggers for Cluster Activities:

Participants noted difficulties in the funding for clusters and the lag between programmes and shortfalls at critical times – this reportedly has led to a fall off in activity levels whilst additional funding and supports are identified to bridge the gap. On the positive side, the ability to connect R&I programmes with clusters and networks was discussed and referenced as transformative for building collaboration between cluster members or even cross-cluster collaboration.

Apprenticeships:

Apprentices were discussed as being relevant for clusters and that cluster organisations might offer an appropriate context for facilitating the identification of organisations open to enrolling apprentices into hybrid training and work-based learning programmes. The identification by businesses of specific skill gaps at local and regional levels was considered useful for matching gaps with learning opportunities for work-informed learning.

WORKSHOP 5: POLICY MAKERS

Workshop 5 took place on 21/10/2021, with 25 attendees who were split into two groups to allow each participant the time to speak openly and freely.

Q1. What is your organisation's experience with clusters and clustering?

Range of experience:

A varied group of policy makers from NI and Ireland participated in Workshop 5. A blend of government development agencies with specific programmes in place to support clusters / networks were represented as well as policy makers from different government Departments. Their involvement in cluster development ranged from a few weeks to six years of experience working with clusters and/or networks.

Supported clusters through different programmes with different aims/goals:

Development agencies on both sides of the border have their different programmes which have funded clusters / networks. Each of these programmes had varying goals and aims. For example, the RTCF Enterprise Ireland programme directly supported the development of 12 clusters across Ireland by providing funding for education outreach managers recruited and operating

from third level institutes (IOTs or TUs). The role of the managers was to inform on opportunities around clusters linked to technological centre gateways with the aim of linking more regional companies to these academic institutes.

In Northern Ireland the programme 'Collaborative Growth Networks' (CGN) run by Invest NI is available to SME-led networks to support costs associated with facilitation, to scope out innovative collaborative projects identified as having the potential to increase business competitiveness. Within the CGN programme here is a 6-month funding support available in Phase 1 and 2 year funding in Phase 2 after an application process to support networks as they establish. The REDF Enterprise Ireland programme provides supports under pillar 3 - Enterprise Clustering Projects. The scheme is designed to stimulate enterprise clustering and support the further growth of established industry clusters regionally; by sector and nationally with funding up to €350k (per project) provided over a 3-year time frame. ITI also shared information on their Synergy network and cluster support programme, which aims to support cross-border cluster to cluster collaboration or projects from cross-border clusters. The output is focused on projects which result in mutual benefits to NI and Ireland.

Q2. What challenges for clusters exist - from your organisation's perspective?

Need for a National Cluster Policy:

Several speakers pointed to being mindful of the need for a cluster policy (one available in both jurisdictions) for a number of reasons. There was a discussion around the role of government as being one of identification and facilitation/support rather than creation of clusters.

The absence of a national cluster policy brings with it a lack of clarity of the role for clustering for the challenges faced by entities of differing scale and therefore which enterprise agencies they engage with – EI/IDA/Invest NI/ITI. Some expressed the view that larger companies may choose to focus on e.g. CSR and 'giving back' – and clustering activity could align strategically for them in this context, which would help them to engage and further benefit from clustering over time. In the policy context there was further discussion among participants related to issues around the development of trust and transparency within clusters, and how best to demonstrate the benefits of clustering to those outside.

Difference between a Cluster / Network:
Issues around the definition of what denotes a cluster and a network and the differences between these were raised. This was linked to the development of national cluster policies where perhaps this definition issue could be addressed.

Is there a sufficient scale requirement for a cluster?
One of the largest challenges for the development and support of clustering on the island of Ireland pertains to the geographic boundaries of funded clusters within the context of national funding. This was articulated by participants in terms of whether funded clusters should have to operate with a regional remit or a national remit, with much discussion around how a decision on an appropriate geographic scope might be made? Concentration of firms, the nature and extent of collaborative activities, numbers of members, sectoral specialization and connection with RIS3 strategies were all identified in the course of the discussion of potential criteria that might need to be feature in relevant discussions when thinking about scale.

Mapping and Measurement:
The role for cluster mapping and the measurement of KPIs that could be utilised to identify shared challenges and progress made against same were considered important. These practices of mapping and KPI monitoring were identified as relevant for progressing both national and cross-border initiatives. The practices would serve to assist in the identification of the potential for interrelated interests of companies, as a starting point for the process of potential collaborations. Such practices were considered to be most useful where approaches for mapping and measurement and KPIs were standard for the award of subsequent funding draw-down for clusters across the island.

Facilitation:
Cluster facilitation was regarded as key by the cohort. However, there was an interesting divide between those who felt that facilitation skills were vitally important especially in fragmented sectors (such as agri-food where previous efforts in both Ireland and NI were reported to have fallen at this hurdle) and those who considered sectoral/industry knowledge was the key to success. However, a criticism made about this sectoral expertise approach is that the result is more likely to be closed networks of like-minded firms within a sector, rather than a stronger degree of clustering. In either scenario there was agreement about a lack of cluster managers with the experience - or training - required to drive cluster organisations on the island.

Sustainability and Timeframe for Success:
Large challenges were identified related to the sustainability of clusters and how it might be ensured that efforts continue after the initial support begins to end or taper. The timeframes associated with seeing success (or sustainability) was discussed at length with some considered reflections shared regarding the

obstacle created by the lack of criteria around what success would look like (and how it may be measured). Although these were identified as open questions, the questions were stated to feature in policy makers thinking in both Northern Ireland and Ireland.

Q3. What policy and implementation supports are required?

Defined National Cluster Policy:
There was a shared recognition from the group that cluster policies for NI and Ireland could usefully bring equity to the programmes and supports available across clusters (and networks) and could offer benefits, including synergies of collaborative training, driving inter-cluster collaboration and a centralised landing spot for clusters. However, this overall picture and context of clustering is complicated by the existence of many different players operating at different stages of the clustering journey – some benefitting from initial enthusiasm that drive efforts. The absence of a national cluster policy was considered to impact programme provision, where specifically it can be extremely difficult to link appropriate programme supports and goals to clear policy objectives, when the overall definition is problematic and in question.

An issue about funding additionality was raised and the potential for some cluster members to benefit from both 1-2-1 financial supports in addition to supports provided via clustering programmes. It was not raised as an issue across a plurality of clusters but offered an insight into the confusion and fears shared by participants, which might require addressing when evaluating the goals of specific programmes of support.

How clusters might support an ongoing research prioritisation between academia and industry:
A discussion on how clusters can support academia in terms of their research prioritisation processes pointed out that encouraging greater firm involvement within this element of the research process would be very beneficial. This was considered as challenging currently when clusters are quite ad hoc in nature in Ireland and NI and no centralised co-ordination of research funding and enterprise supports and programmes is in operation. It was considered that, in essence, RTCF funding may be an attempt to address this in Ireland; however, it is not set out to do so in either a co-ordinated or prioritised manner and, with its exclusion of the 'traditional' university sector, may struggle to do so.

Addressing how collaboration and knowledge transfer between academia and industry can be enhanced:
Participants mentioned the considerable range of research across the EU which focuses on how collaboration and the transfer of knowledge between academia and industry can be enhanced – including that some of this points to the role clusters can play as bridge-builders between the two cohorts. Finding the common interest areas between both groups of stakeholders and bringing them together for mutual benefits was identified as a role requiring future work, both North and South. Gaps were identified from missing opportunities to address key strategic policy mandates by not strengthening these relationships. For example, grand challenges requiring reorientation to reap benefits from opportunities and imperatives around green growth and digitalisation and the need for higher productivity in a sector such as agri-food with less environmental impact could be shared more broadly. Here the need for innovation was identified as the key aim and focus for collaborations in these spaces.

WORKSHOP 6: ACADEMIC AND ECONOMIC RESEARCHERS

Workshop 6 took place on 19/11/2021, with 12 attendees who were split into two facilitated groups to ensure plenty of time and space for each participant to contribute.

Q1: Own interest to date with regard to clusters and clustering – and experience of developing clusters or cluster policy

Range of experience:
There was good depth and range of experience amongst the cohort of academic and economic researchers who participated in Workshop 6. This experience ranged from those who were engaged in the first studies on clusters in Ireland funded by NESC in the 1990s to researchers who have just started to begin their PhD journey with clusters as a central focus of same. Others included were more tangentially linked to clustering – working in the space of innovation management, entrepreneurial ecosystems, labour economics, worker displacement, spatial regional economics, global value chains and regional development – but with an interest in the cross-overs between their research and that directly on clusters.

Involvement in Clustering:
Only one of the academics (not including the three academics facilitating the workshop) who attended the workshop was engaged in clustering activities as part of a cluster organisation. The respondent reported involvement in clustering as a host institute of one of the RTCF Enterprise Ireland supported clusters. The other academics were members of 'traditional' Universities across the island.

Q2. What are the current challenges for clusters or clustering - from the perspective of your research?

Differentiation between a Cluster / Network:
Issues around the definition of the term 'cluster' and network and the differences between both were raised. Respondents observed a lack of general buy-in to the concept of clusters by industry. Firms were reported to struggle to see the differences in value between clusters and networks in terms of supporting their activities. Without clarity on clusters as an economic development tool on the island, this leads to a lack of understanding and confusion of the concept for industry – and especially, it was argued, for SMEs.

Support and Education:
Attendees referred to evidence generated from their cluster engagements and research that cluster managers reported being overwhelmed, with many pain points and challenges. For example, there was a challenge for cluster initiatives and policy to exhibit benefits in a timely manner and to be able to provide clarity for business on the benefits of same. Furthermore, there was confusion in terms of how to animate, govern, and make cluster organisations sustainable. There is a striking need conveyed for support and education here to upskill managers and economic development practitioners.

Funding:
Attendees mentioned issues with funding criteria being quite prescriptive and predominantly 'tick-box focused'. A particular Creative Industries cluster in Northern Ireland, reportedly found ultimately that the UK funding model was more relevant to their needs and allowed them space to develop. A successful funding application has allowed them to be legitimately identified as a cluster and now this cluster is explicitly mentioned

as a priority in the 10X strategy. Furthermore, a number of participants pointed to the current supports for clusters on the island being both too short-term (>=3-year window) and small-scale, with resources generally being limited to one full-time equivalent resource with all other costs – events, marketing, websites, etc – having to be sourced elsewhere.

Evidence Base:

One of the challenges raised pertained to the evidence upon which the current initiatives supported are based. The question was posed as to whether this funding and allocation was something that was imitated from practice elsewhere or based upon actual research evidence. Attendees also questioned the applicability of clusters as a concept over the longer term. Specifically, it was outlined that the concept may be at risk of becoming outdated in the face of digital transformation and the external shocks (Covid-19) and the shift to greater cross-sectoral emphasis in policy due to geography diminishing in importance for clustering, according to some views.

Lack of Clustering Definition:

Attendees mentioned 'now we are seeing clusters everywhere' pointing to examples of 'clusters' with only 5 to 10 members. This, it was argued, did not align with academic definitions, as well-reported examples of clusters tend to include hundreds of companies cooperating, exchanging information, generating and benefitting from spill-overs and externalities from a range of connections and links. Concerns were raised about the self-identification by some small groups of <10 firms as a cluster, as well as practices where groups decide no new companies will be invited in/given space and where membership is essentially 'a closed shop'. This is far removed from the academic theory and questions were raised, therefore, whether it could have any impact.

Furthermore, a discussion of whether clusters exist sub-nationally (i.e. regionally) was raised. Some attendees referenced that certain concentrations of industry should be best viewed through a national or all-island lens e.g. medical, software, pharma and biotech, as there is limited possibly of regional clusters in these areas given their activities.

Q3. What opportunities do you see for the future focus of clusters and any policy to support these?

Success as a Research Opportunity:

One of the research opportunities identified by the group related to the identification of exemplars of successful clusters, though with more analysis that being a case study of policy intervention. A potential direction of research might focus instead on what particular successes tell us about the process of scaling – a challenge for many Irish businesses, North and South – and how this occurs for firms (inside clusters or not). Other potential areas of interest were identified around the balance between collaboration and competition, and the processes of knowledge/people transfer.

New Methods and Future Research:

Recognition for a need for future research to included considering ideas from outside the cluster literature that offer contributions to understanding collaboration – specifically about information flows and relationship-building. Further roles were identified for Social Network Analysis approaches to understanding the soft side of clustering and some of the analysis metrics of success etc. Some consideration of the need for more data was raised to support analytical approaches based on comparable data across clusters.

Cluster Evolution:

Given the range of cluster research carried out over the last thirty plus years, a key role for research on cluster evolution was identified e.g. how clusters come about in the first instance and how they evolve over time. The cluster life cycle was identified as an important issue. In Ireland, for example, certain sectors have grown from relatively low value activities, into integrated global production networks as their production units moved up the value chain and other activities join these. Pharma / biotech were pointed to as having grown in Ireland with a plethora of indigenous support services around these developments. The importance of time was also emphasised, since clusters were considered a long-term phenomena, with implications for policies focusing on clusters being inherently not one-off – and the fact that long-term perspectives matter.

Shared Learning:

Many different clusters were considered as faced with many of the same challenges – in terms of building capacity and sustainability and, therefore, a need and space exist for shared learning. Furthermore, a centralised marketing/educational campaign to outline the benefits and differences between clusters and networks would be beneficial from governmental agencies involved in supporting clustering North and South of the border.

The next section of the report will gather the thoughts, experiences, challenges and opportunities for clusters taken from the cohort of managers (WS1), local authorities (WS2), regional authorities/agencies (WS3), business leaders (WS4), policy makers (WS5) and academic researchers (WS6) in this space. This represents the feedback from across the cohort of 104 contributors brought together in shaping the gap analysis.

Gap Analysis and Recommendations

This section presents the key experiences, challenges, and opportunities proposed and discussed by the workshop participants as a whole. The Gap Analysis that follows Table 1 takes into consideration the feedback from participants of the stakeholder workshops and implications for improving policy and practice for clustering.

In total 104 individual participants contributed to the six Stakeholder Workshops and additional consultation, across the various cohorts of managers (WS1), local authorities (WS2), regional authorities/agencies (WS3), business leaders (WS4), national policy makers (WS5) and academic researchers (WS6) with active interest or experience in in the clustering space.

Table 1 presents in broad outline format the main themes raised within each of workshops and provides indication of the extent to which the varied stakeholder groups raised common concerns or identified issues deserving of particular mention for the gap analysis.

Table 1: Cluster Experiences, Challenges and Opportunities on the Island

CATEGORY/COHORT*	WS1	WS2	WS3	WS4	WS5	WS6
CLUSTER EXPERIENCE						
Active Involvement	✓	✓		✓	✓	
Financial Support Provider		✓		✓	✓	
Active Interest	✓	✓	✓	✓	✓	✓
CHALLENGES						
Lack of National Cluster Policy	✓	✓	✓	✓	✓	✓
Data / Mapping / Analysis	✓	✓	✓		✓	✓
Funding Models	✓	✓	✓	✓	✓	✓
Education and Support	✓	✓	✓		✓	✓
Agreed Cluster Definitions	✓	✓	✓	✓	✓	✓
Activity / Initiative Balance	✓	✓	✓	✓	✓	
OPPORTUNITIES						
Progress towards National Cluster Policy	✓	✓	✓	✓	✓	✓
Long Term Funding Model	✓	✓	✓	✓	✓	✓
Cross Border Collaboration	✓		✓		✓	✓
Promotion of Irish Clusters Internationally	✓	✓	✓	✓	✓	
Strategic Policy Challenges - green/digitalisation/RIS3	✓		✓		✓	✓
Training & Education	✓	✓	✓	✓	✓	✓
Centralised Supports/Resources	✓	✓	✓		✓	

* WS1 - Cluster Managers WS2 - Local Authorities WS3 - Regional Authorities/agencies WS4 - Business Leaders WS5 - National Policy Makers WS6 - Academic Researchers

Evidence of consistency of pain points and concerns is indicated by the relative commonality of issues identified in the workshops across stakeholder groups. Of all the themes identified, each theme in Table 1 was identified by at least four separate stakeholder groups, indicating the breadth of impact that targeting of the theme(s) would have for the stakeholders overall.

1. MOVING TO CLARITY FROM CONFUSION: DEFINITION & CRITERIA

There exists a consistent view across all the stakeholder groups that 'cluster' as a concept remains confusing and lacking a commonly agreed definition. This creates an abundance of challenges such as in outlining the incentives for business participation within organisations of cluster members, in arguing for cluster benefits with government funding agencies, and in identifying clear benefits when growing the membership of cluster organisations, especially, but by no means only, among the SME cohort.

Given the above, across the island of Ireland the slow adoption of clusters as a practical policy tool and lack of clarity about what has been adopted in practice - revealed across the range of workshops - indicates that unless coherent and clear buy-in from the highest levels emerges, the identified need for clarity will remain.

> **RECOMMENDATION 1:**
> **Leadership and buy in is required at national government level if a clustering programme of substance, aligned with international best practice, is to be formalised to drive competitiveness in key areas of national importance across the island.**

The Department for the Economy (DfE) in Northern Ireland and the Department of Enterprise Trade and Employment (DETE) in Ireland are the appropriate bodies to provide the necessary leadership and drive the development of clustering goals and programmes.

To deliver a clustering programme that impacts business development, care needs to be taken not only to differentiate 'cluster' from alternatives but also to define it in line with internationally accepted definitions and its widespread use within internationally accepted support structures for clustering (cluster initiatives, cluster organisations). There is no need to reinvent the wheel in this respect as exemplars across comparator contexts exist, such as (for example) Denmark, Spain, and Austria that are indicative of appropriate definitions, applications and integration relevant for both policy and practice.

Interchangeability between 'cluster' and 'network' in many policies and programmes extends confusion such that they are often assumed to be, and treated as, one and the same. In one sense any group of companies may decide to call themselves a network or a cluster, as 'cluster' is not a controlled appellation.

> **RECOMMENDATION 2:**
> **Agree appropriate definitions for Cluster, Cluster Organisations and Cluster Initiatives to be applied in the development of policy, programmes and infrastructure across the island of Ireland and differentiate them clearly from alternatives.**

From an all-Island perspective it would be optimal for DfE and DETE to jointly agree on a definition to support alignment and encourage potential for deeper co-operation around cluster development on cross-border and all-Island bases.

The definitions should respect the complexity of perspectives that were evident across the workshops that included stakeholders both more and less well-versed and experienced in cluster practice/policy. The ultimate benefit of agreeing a definition is the clarity it provides for development of economic strategies appropriate to the geographical focus of the cluster concept in addition to its business/economic dimensions.

Agreement around definitions would enable tracking of progress/change and benchmarking over time. Best international practice considers several measures noteworthy e.g. specialisation, successful international market presence, numbers of local business/firm members, employment, average wages, and changes in these metrics over time. Such clarity would help to avoid using 'cluster' terminology inappropriately i.e. where both business and territorial aspects are not jointly targeted.

2. POLICY DEVELOPMENT, IMPLEMENTATION AND FUNDING

The appropriate timescale in which to discuss the relevance of clusters is evident from how the term is used in innovation, investment, and growth debates - all of these are concerned with long-term economic development. The elaboration of programmes to support Smart Specialisation (RIS3) in the European context, for example, calls out an emphasis on economic evolution and how structural change may be accelerated through focusing on regional cluster strengths and concentrating

on how to position regions, and their businesses, to better exploit global value chains.

With the maturity evident in some international regions from experienced application of cluster practice and policy, the themes of cluster evolution and 'cluster life-cycle' have emerged. This shift calls for the acknowledgment of the changing dynamics that characterise international value chains and their development over time as new locales for sources of competitiveness emerge. This sense of both time scales and time cycles would be key to any desired agility and dynamism in policy making around clusters.

The implication for the cluster definition to be adopted for Ireland is that alignment of definition with long-term economic orientations of growth, innovation and development would support development of short/medium/long term targets and programmes.

Clarity on definition and criteria is required to develop programmes that align with internationally agreed initiatives i.e. those supported by cluster organisations. Inconsistency and lack of comparability were themes raised in many of the stakeholder workshop discussions relevant to funding cluster organisations and cluster initiatives. One inconsistency identified as a particular difficulty facing businesses and cluster organisations in applying for and securing funding to deliver on their goals was different funding treatments where different activities qualified for different types and levels of funding.

Where economic development agencies offer several funding options so that certain activities currently receive 'cluster' funding under one programme source, but not another, the underlying rationale for the importance of the activity for cluster development suffers, adding to confusion as to what the relevant cluster goals are and

how they may be achieved. Greater certainty on which activities qualify for funding irrespective of the cluster support programme through which funding is provided serves to clarify cluster strategies and programme goals. The workshop discussions also provided little by way of reference to explicit or implicit links between cluster practitioners and policy makers to international counterparts or benchmarks. Building in links between clusters and leading international examples could contribute to catch-up for local cluster initiatives in terms of both policy and practice.

RECOMMENDATION 3:
Develop a Cluster Policy which includes programmes with appropriate time scales and cycles.

Medium to Long term time scales and cycles are key to any successful Cluster Policy, along with agility and dynamism in the policy making process to support clusters of national importance which have different sectoral requirements and cultures. Cluster organisations and initiatives should target best international practice and examples by developing explicit links with strong international clusters in areas identified as appropriate for learning, given local (Irish) needs.

Increasingly cluster policy internationally has expanded beyond focus on deepening areas of current strength, towards smart-specialisation approaches that support diversification from those strengths and further to include potential for growing nascent areas with potential to become areas of strength. The implication for clustering programmes means they should differentiate between focusing on:

- **building on/diversifying from identified strengths through successful international performance (e.g. food)**
- **developing nascent positions in areas with potential based on foresight and/R&D.**

RECOMMENDATION 4:
Establish a Centralised Cluster Financing Programmes which is based on Key Performance Indicators relevant to the cluster focus aligned with strategic priorities.

Presently, agencies in both jurisdictions offer several funding options so that certain activities receive different levels of cluster funding under a particular programme but are not even eligible under others.

With a range of examples identified across workshops around useful and productive networking practises, it is quite possible that shorter-term networking programmes could evolve into longer-term relationships of mutual benefit between members across the triple and quadruple helix and so networking supports have potential withing cluster-based strategies. Transactional exchanges can transform into reciprocal relations of deeper impact: without the latter the presence of extensive clustering is absent. Invariably, across the stakeholder workshops, the challenge of developing the underlying trust necessary for interactions to become valuable to partners was raised, and while the creation of trust cannot be assured through any programme or intervention, the likelihood of its emergence from short-term interactions is lower than if longer-term interactions can be envisaged from the outset of a specified programme.

Programme design and delivery can address this through provision of a tiered programme where shorter-term 'network' development can be supported to evolve into a 'cluster' over the medium/long term within which relationships of mutual benefit, services, R&D and internationalisation can be developed across the quadruple helix.

Caution is required in programme design so that programmes that target e.g challenges and opportunities for companies at stages of growth (start-ups, scale-ups), or groups of companies with similar training needs - the more appropriate nomenclature of networking is used. Where no focus of territorial improvement is mentioned, clustering and clustering programmes should be avoided.

In addition, greater agreed clarity on the scale appropriate for a cluster organisation, e.g. minimum critical mass of members, minimum share of international exports etc. This would offer clarity on the types of concentrations of businesses working for mutual benefit that are likely to generate impact thorough clustering efforts. While this is an issue independent of specific policy prescription, the case of Denmark is revealing. Currently Denmark has 14 identified national clusters after over 20 years applying the concept in practice across companies, local authorities, innovation networks, cluster organisations and knowledge transfer institutions. In quite a short space of time, over the last two years, a strategy reform process has resulted in consolidation of cluster organisations into fewer but larger organisations, from over 40 (publicly funded) to the selected 14. This intentional reorientation was designed to permit accessibility for companies anywhere throughout the country. While the example is not provided as instructive in a prescriptive sense, it points to the scale issues identified earlier, among other issues.

3. LEARNING, EDUCATION AND CAREER PROGRESSION OF CLUSTER PROFESSIONALS

International experience points to a breadth of activities delivered via cluster organisations and programmes including knowledge dissemination, matchmaking across triple and quadruple helix, branding, transformation (e.g. digital, circular economy, Industry 4.0), accessing finance, innovation, competence development, upskilling and attracting talent, internationalisation, incubation and operating funded programme. While this is not an exhaustive list, the specifics of cluster membership, given its evolution and its locality's strengths within its international value chain, will define the most appropriate activities required ideally through processes facilitated by staff skilled in cluster and business development.

With the development over the last decades of cluster professionals that supported the establishment, maintenance and ongoing development of cluster organisations a new type of professional practice developed demanding a varied basket of skills to support development of these organisations. The demands on individual Cluster Managers tasked with establishing local cluster organisations outlined in stakeholder workshops pointed to the challenges created for those appointed to these new roles in the Irish context.

This implies a need for initial and ongoing training needs to develop a suitably qualified cadre of support and leadership staff appropriate to lead and animate cluster organisations. The generally small-scale reported in Irish cluster organisations (one main Cluster Manager) is a common feature, which can contribute to burdensome and wide-ranging demands on some cluster organisations that may potentially set structures

up for failure given the limited resources available when compared to the often-ambitious intentions and goals.

RECOMMENDATION 5:
Provision of professional and accredited Training, Education and Career Progression Opportunities for Cluster Managers and practitioners operating within cluster ecosystems.

The cluster development professionals across the island of Ireland who support the establishment, maintenance and ongoing development of cluster organisations to drive competitiveness, need training and support to appreciate best practice consistently. A varied basket of skills is required to support the development of cluster organisations both for cluster managers and economic development professionals, and CPD opportunities provided for this cohort of interested individuals would support career progression in tandem with their management remit.

In addition to the human resource infrastructure appropriate to develop clustering, the Danish case is instructive in terms of the support system and breadth of professional staffing supporting delivery of cluster supports. In the case of one of 14 the publicly funded cluster organisation (Energy Technology), it consists of six separate offices providing support across the nation through an aggregate staffing complement of 33, supporting a CEO and with a Board of 22 members.

Clarity on what the ultimate goals of the cluster organisations are, clarity around the appropriate number and scale of cluster organisations plus targeted focus on key areas seem to characterise the maturity phase

of cluster supports and structures evident across many European regions.

Although late to cluster-based programming, there is substantial opportunity for Ireland to leapfrog into leading-edge applications of what is most likely to generate impact, given the range of experience developed internationally, if applied appropriately to the Irish contexts.

RECOMMENDATION 6:
Develop a centralised hub to connect and inform clusters across the island of Ireland and promote them nationally and internationally.

DfE and DETE would be the optimal organisations to commission centralised resources to showcase Irish clusters across the island to help cluster organisations promote their activities and provide opportunities for other interested companies (locally and internationally) to directly connect with clusters and their members. DfE and DETE would manage which 'clusters' are showcased on the 'hub' to reinforce all recommendations above.

A virtual hub of centrally available resources, learning and development opportunities would benefit development of impactful cluster organisations in Ireland. Furthermore, a back end of the virtual hub could provide resources and connections which support cluster upgrading by offering a means to benefit from what works, or not, in different local contexts from links to international organisations and experience. Centralised connections and pooled learnings can benefit the development of impactful cluster organisations in Ireland.

Connecting researchers and other members of the quadruple helix to the virtual hub can support the development of the relationships necessary to cluster enhancement and expansion.

Furthermore, the hub and its staff would be in a position to connect, educate and support those organisations seeking to transform their activities towards clustering, or realignment of their activities to gain more traction and impact for members regarding R&D and internationalisation.

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