Research Bulletin 19/12 | Cluster Policy in NI: Lessons from Best Practice and Sectoral Perspectives

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Summary

The development and support of clusters has increasingly become a mainstream tool in many national and regional economic strategies since the 1990s. A report from the Ulster University Economic Policy Centre, entitled *Cluster Policy in Northern Ireland*, which can be downloaded from the Department for the Economy website, looks at how such development and support for clusters might work within a Northern Ireland (NI) context. It takes the current ideas of best practice in cluster policy design and implementation elsewhere and tests this against the current practices within two emerging and one more mature sector in the NI economy (High-Tech Creative, Immersive Technology and Materials Handling). This research bulletin provides a summary of some of the key findings from these consultations, which are covered in more detail in the full report.

Introduction

The idea of clusters as an economic development tool was popularised by Michael Porter in 1990.[i] Porter's definition of clusters was as follows:

> *Clusters are geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions in particular fields that compete but also cooperate.*

Porter was most interested in the inter-linking of firms and institutions and in the 30 years since there has been further refinement of his arguments over what happens within clusters, their contribution to wider economic growth and how their development might be supported by policy. Equally there has been significant focus on geographic concentrations of businesses and how these contribute to regional and national economies.

These geographic concentrations can lead to economies of scale and scope, greater access to specialised resources or larger pools of labour and consequent reductions in transaction costs and risks associated with investment or innovation. These factors and others associated with clusters of firms can contribute to increased productivity, economic growth, employment growth and wage growth. Given this, governments have become over time understandably keen to be involved in cluster promotion and development.[ii] A balance needs to be struck, however, with any risks of increasing costs for participants (e.g. congestion costs pushing up input prices) and thus consideration be given as to how government might be most appropriately involved in order to maximise benefits and minimise potential downsides.

At present, Northern Ireland (NI) has no formal cluster policy in place. However, there is a growing body of work where collaborative activity between industry, education / research bodies and government in NI is supported through a range of programmes. These include Invest NI's Collaborative Growth Programme – which began in 2007 – and a number of Competence Centres. The MATRIX panel, which began its work in 2008, has adopted a sectoral approach from the start and identified five priority sectors in NI (Advanced Manufacturing, Agri-Food, ICT Digital, Advanced Materials and Life & Health Sciences), to which MATRIX has applied capability analysis and foresight research.[iii]

This research bulletin reviews best practice from policy and academic research in the formation, management and development of clusters. It then discusses the findings of a recent report into the levels and nature of collaboration between organisations in three specific sectors and offers evidence on the reasons why collaboration is not much more widespread and productive in the NI economy. It concludes with some remarks on the factors which a cluster policy needs to take into account in NI, and recommendations to assist a successful implementation.

Lessons from best practice

The purpose of public policy – in the context of clusters – is to address key market failures including information asymmetries, coordination and network failures, and to encourage positive externalities around investment. The types of information asymmetries might include a lack of knowledge about firms in similar or related industries - creating a potential role for a cluster policy in matchmaking / coordination activities, specific collaboration projects or in developing an appropriate incentive structure for knowledge sharing.

The lessons from elsewhere point to some conditions being necessary for cluster policy to work best. The obvious ones include an enterprise-focused macroeconomic environment where innovation is prioritised and markets function well (especially flows of knowledge, labour, capital and trade). Crucially, however, there is a need for both a critical mass of firms who can (sometimes simultaneously) combine competition and cooperation, and strong, strategic leadership for the clusters which emerge.

In general, the experience across countries implementing cluster policy has identified several necessary stages in the introduction of cluster policy, including analysis of local strengths and opportunities, reviews of cluster tools and good practice, implementation alongside monitoring, evaluation and policy learning. Cluster policy requires an approach which combines top-down (government-led) and bottom-up (meaning an element of co-design with diverse stakeholders) elements, and a clear decision about the resource which is being made available to the initiative. Above all, in policy design, there is a need for cluster policy to be complementary to wider business-related policy, rather than implemented as a stand-alone intervention. Mirroring the ideas of triple and quadruple helix in innovation policy, an inclusive approach should be employed, given the significant degree of overlap with other policy areas.

The other aspects of policy design – the sectors to be selected and the objectives to be set – also need to be clearly thought through. In terms of sector selection, the literature suggests that any policy must reflect the stage of maturity

of sectors and existing clusters that are identified for support. In other words, as the experience of Innovation Norway shows, room needs to be made for support for both emerging sectors as well as supporting more mature sectors and clusters to become world leaders in their field.[iv] There are also lessons here about any cluster policy addressing real market failures and opportunities, as opposed to being an end in itself.

When it comes to the implementation of a cluster policy best practice emphasises the role of Cluster Management Organisations (CMOs). CMOs often originate in trade or sectoral bodies and have a particular sectoral or technology expertise, which can be critical in initial trust and credibility-building work. However, over time successful CMOs tend to develop into specialists in cluster management, technology/innovation management, internationalisation, etc. The typical activities offered by the more than 300 CMOs in Europe include match-making services for firms in the cluster, knowledge exchange, promotion of the cluster and region to international bodies, acquisition of funding for participants and accessing HR/skills development services. In terms of 'managing' the CMOs, the best practice is that funders or economic development agencies need to balance regular reporting of progress against objectives and how cluster participants are performing, with support by the agency for the CMOs to excel at their work (through access to training programmes, international events, etc.).

Evaluation of cluster policy is an area undergoing development.[v] A key difficulty for the evaluation of cluster policy and initiatives is how to disentangle the effects of clustering, in terms of impacts on firm performance and on regional economies, from the effects of other policy inputs and individual firm interventions. A working group on evaluation, led by the TCI Network,[vi] has been developing thinking on how best to evaluate clusters and different methods are emerging in the Nordic countries and the Basque Country which is detailed in the report.[vii] To sum up on evaluation of policy a recent review of cluster evaluation research suggests the following results:

- Significant evidence of a positive impact on firm-level innovation, influenced by connectivity to other actors within and beyond the cluster;
- Less significant evidence of a positive impact on firm productivity, most particularly for newer and smaller businesses;
- No significant evidence of a positive impact on firm-level employment; and
- Evidence of positive impacts on regional competitiveness, including levels of entrepreneurship, rates of GDP/GVA growth.[viii]

Some findings from the consultations: Collaboration and its catalysts and barriers

For the purposes of the report a total of 72 business consultations were carried out across three sectors or business/technology areas in order to better understand the clustering and collaboration landscape in NI. The three sectors are as follows:

- High-Tech Creative Industries;
- Immersive Technologies; and
- Materials Handling and Quarrying Equipment.

A sectoral approach is useful for the analysis of the themes identified by sector but raises questions about the fluidity across some emerging sectors, particularly between High-Tech Creative and Immersive Technology, as firms increasingly self-identify in ways that make the traditional sectoral boundaries less relevant. This is important for clusters which can benefit from 'related variety' or coming together around technological or innovation capabilities as opposed to belonging to any one sectoral definition.[ix]

More than 80% of the businesses consulted collaborated with other partners, with a focus on business activities such as innovation, purchasing, pooling of skills, etc. Consultees highlighted specific supports provided by Invest NI and NI Screen to develop collaboration and encourage enhanced clustering activity. However, in general the consultations reflect a point in time where firms across the three sectors are still working out not only who to collaborate with, but also to what end.

Table 1 shows that a majority of the firms, across all three sectors, collaborate vertically (i.e. with customers and, to a lesser extent, within their supply chain). A key exception to this vertical collaboration is that with higher/further education (HE/FE) institutions. A majority of the businesses consulted have some connection with these institutions, though the proportion is much higher in High-Tech Creative and Immersive Tech than in Materials Handling. From the education provider perspective, it is telling that this collaboration often centres more on the potential for skills development and placements, rather than technology or knowledge transfer. Materials Handling is an exception as both elements are seen as equally important.

Table 1: Collaboration partners by sector

Collaboration Partner	High-Tech Creative Industries (N=25)	Immersive Technologies (N=22)	Materials Handling & Quarrying Eq (N=25)	Total (N=72)
Own supply chain	8	6	5	19
Own customer	13	15	11	39
FE / HE institutions	18	14	10	42
Competitors	10	7	3	20
Related industries	12	10	4	26
Other /not specified	5	6	3	14
No collaboration	2	0	10	12

Note: Consultees often had more than 1 partner.

Among the businesses consulted, 'horizontal' collaboration (i.e. with competitors and/or related industries that develop complementary products and services) was more limited. Consultees in emerging sectors felt that horizontal collaboration is more important (in theory, if not fully realised) than those in a more mature sector like Materials Handling. When asked about the location of collaborative partners, customers (and to a lesser extent suppliers) can often be located outside NI, especially in the case of Materials Handling and parts of High Tech Creative (animation and film & TV). HE/FE partners and those in related industries or competitor firms tend to be located locally. Interestingly, the all-island economy is much less present when it comes to collaboration. A small number of consultees – usually successful and keen to gain access to scaled-up businesses – are collaborating on a cross-border basis, notably in animation and gaming, but this is not the norm.

When the idea of a 'cluster' or 'clustering' was raised with consultees, it is clear that to many this meant that their business was one of a number operating in the same sector and/or in the same general location. This is particularly the case for consultees in the Materials Handling and High Tech Creative sectors. The idea of a 'sectoral concentration' being the same as a cluster is related in the minds of consultees across all three sectors with the existence of critical mass. This could arise from the existence of global firms among consultees, such as Powerscreen and Terex for Materials Handling, or the ability to attract significant levels of FDI in a particular technology stream, such as in Dublin where IDA Ireland have been successful in the case of gaming and animation.

Consultees expressed general support for collaboration and an understanding of its benefits for their firm, but they also identify significant barriers to beginning and extending collaborative relationships. Figure 1 provides a 'word cloud' illustration of the key barriers.

Figure 1: Summary of barriers to clusters

However, it is important to note that there are differences in the barriers identified between the three sectors and this is further detailed in the report. These highlight differences between a mature sector and the barriers identified by emerging sectors. For example, critical mass is much less an issue for Materials Handling, while resource requirement is a key barrier for the small firms engaged in High-Tech Creative or Immersive Technology.

A key barrier identified by consultees across all three sectors is the **lack of trust**. Sometimes a fear of losing intellectual property tends to lead to lower levels of innovation collaboration, or it is a concern about losing highly skilled staff to competitors. The lack of social networks to get to know other actors is connected to one other notable barrier identified by consultees: **Information Gaps**. Specifics can include an absence of profiles of potential partners and their capabilities, something which was raised in particular by smaller enterprises.[x] This suggests that creating knowledge networks and trust may go hand in hand.

Figure 2 illustrates the catalysts identified by consultees as being important to assist new or further collaboration. In general, the need to **articulate the benefits** of collaboration and clustering is seen as critical.

Figure 2: Summary of catalysts for clusters

Consultees regularly returned to the idea of risk vs reward. For those not currently engaged in collaboration, they spoke of a need for a clear demonstration of "what would be in it for me", and a need to be convinced that "free rider" risks would be addressed. Even among consultees who had gained from collaborative projects (in terms of turnover or innovations brought to market), there remained a desire to see how improving the sector might benefit their firm. Interestingly, among the more suspicious, improving the "place" rather than the "industry" appeared to be more persuasive.

Although **creating trust** was identified by consultees as necessary to underpin any collaboration, there was little consensus around what initiatives might best achieve this. In some countries (e.g. the Basque Country), building trust has been attached to the (pre)existence of strong social networks or bonded social capital.[xi] The extent to which social networks are part of the context for a cluster policy or something which emerge as a result of it, remains an open and important question. Related to the question of trust is the emphasis placed on a dedicated resource or **Cluster Management Organisation (CMO)** as a catalyst for collaboration. There was a difference of perspective depending on whether the consultee was keen on sparking off a new collaboration – in this case regarded as useful, but not critical – or were looking to deepen existing collaboration. In the latter case, consultees regarded this resource as essential, with sectoral knowledge, impartiality and independence all raised as key success factors.

Within mature, competitive sectors, consultees pointed to potential distrust between incumbents and new entrants and the need to create a strategic vision for the sector into which participants can buy. The consultations show how in the emerging sectors there may be more scope to engage in collaborative activities, as there is less direct competition with other market participants. Allied to the issue of dealing with competitors, another catalyst for collaboration – identified across all three sectors – was the opportunity to work outside their specific industry. This shows a sense that there may be less competition involved in this type of collaboration, as well as a realisation about the potential to work with other complementary areas or skillsets.

The consultations also deal with what the impacts are from collaboration and provide further detail on how this works at the level of the three individual sectors.

Given that the terms 'collaboration' and 'clustering' tend to be used inter-changeably (including by many consultees), the report offers a working definition which might be applied. As the research progressed it became clear that a 'collaboration–clustering spectrum' exists. Table 2 provides an illustration of the spectrum in which, for example, the range of collaboration may be narrow or project-based at one end of the spectrum but can be expected to be much broader and strategic in a cluster.

The consultations suggest that in NI most activity is closer to the 'collaboration' end of the spectrum. What might be described as 'deep clustering' activity remains at an early stage of development, especially horizontal collaboration between businesses. However, this is a dynamic situation and the consultations show how the extent of collaboration differs across individual firms, as much as across sectors.

Table 2: Attributes/activities in the collaboration-clustering spectrum

Attribute / activity	Collaboration	Deep Clustering
Vertical collaboration	✓	✓
Horizontal collaboration	✗ Limited / none	✓
Other collaboration e.g. with FE/ HEIs	✗ Limited / none	✓
Recognition that broader sectoral competitiveness is challenged	✗ Limited / none	✓
Part of sector strategy or action plan	✗	✓
Range of collaboration	Narrow focus, single-project based	Wide-ranging, strategic undertakings
Timescale of collaboration	Finite, project-based	Ongoing, not time-bound
Perspective of participants	Project / Company-focussed	Company / Sector-focussed

A key theme emerging from the consultations was that the degree to which strategic direction underpinning collaborative activity exists **within a business** was crucial to understanding where an individual firm placed itself (and others within their sector) along the collaboration-clustering spectrum. Across all three sectors, in general, collaboration is pursued on a project-by-project basis, often with a specific end or ends in mind. There are only a few

exceptions to this rule, where collaboration is a strategic pursuit by businesses, a means to increasing value across the sector as well as within individual firms.

In sectors such as Hi-Tech Creative, business activity tends to be highly collaborative by nature, where a large number of small firms collaborate on individual projects on a freelance basis. In these instances, the project drives the collaborative activity and at the end of the project, individual firms then go in search of the next project – sometimes jointly, sometimes not. **The point being the project is larger than the individual firms that make-up the project.**

Contrast that, with sectors (or firms) operating towards the clustering end of the spectrum which tend to have multiple projects ongoing with a variety of participants at any given time. These projects tend to span a range of industry-relevant activities, rather than a focus on product improvement within a single supply chain. **In these instances, the firm is bigger than the individual project.**

One final remark, which should be important to policy makers, is that a number of consultees saw collaboration as potentially bringing benefits to them, but they did not necessarily see moving along the spectrum towards deeper clustering as a benefit. This can be the case, even if it might be useful to their sector or technology area. This could have an impact on the amount of time and resource that any individual business is prepared to allocate to deeper clustering activity.

Conclusion

Although there can be difficulties in identifying or defining clusters, policy-makers are keen to promote cluster emergence, development and evolution. Successful examples of clusters – software in Silicon Valley, environmental technologies in Austria or games development in Dundee – demonstrate the benefits theorised to result from clustering. These can include improved productivity, increased innovation and the formation of new businesses. Such benefits are typically as a result of realising economies of scale and scope, in addition to positive externalities associated with closer working relationships.

The report includes a series of policy recommendations aimed at supporting the emergence and consolidation of clusters in Northern Ireland. The recommendations, which cover a range of suggested policy actions, are grouped under three headings of 'laying the groundwork' for clusters, cluster policy development and cluster policy implementation. For more detail on the policy recommendations and the analysis underpinning them, please refer to the Department for the Economy's website where the report can be downloaded.[xii]

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[i] Porter, M. (1990), *The Competitive Advantage of Nations*. Basingstoke: Palgrave.
[ii] For this mainstreaming see Wilson, J.R. (2019), 'Cluster policy resilience: New challenges for mature policy', *International Journal of Business Environment*, pre-publication draft.
[iii] For more see https://matrixni.org/challenges/clusters-2/
[iv] For more on this see Wise, E., Wilson, J. & Smith, M. (2017), *Do clusters yield positive effects on firm performance? A review of cluster programme effect analyses in Sweden and internationally*. Swedish Agency for Economic and Regional Growth; and the Innovation Norway website, https://www.innovasjonnorge.no/en/start-page/our-services/growth-companies/.
[v] The Interreg project CLUSTERS3 (Leveraging cluster policy for successful implementation of RIS3) is critical to this ongoing work and has Invest NI and the Department for the Economy as partners.
[vi] The TCI Network was formed in 1998 from a group of people across the world working in clusters and innovation ecosystems. For more see https://www.tci-network.org/.
[vii] Evaluation research in Denmark is increasingly focused on the behavioural changes (eg: propensity to innovate or export) associated with clustering and treats economic impacts as operating on a different timescale; see www.clusterexcellencedenmark.dk. In the Basque Country cluster evaluation is increasingly using both nested methodologies (combining both empirical and contextual approaches) and participatory forms of evaluation; see Aranguren, M.J., de la Maza, X., Parilli, M.D., Vendrell-Herrero, F. & Wilson, J.R. (2014), 'Nested methodological approaches for cluster policy evaluation: an application to the Basque Country', *Regional Studies*, 48(9), 1547-1562.
[viii] Wise et al, *Do clusters yield positive effects on firm performance*.
[ix] For more on this see Hartog, M., Boschma, R. & Sotarauta, M. (2012), 'The impact of related variety on regional employment growth in Finland 1993-2006: High-tech versus medium/lowtech', *Industry and Innovation*, 19 (6), 459–476.
[x] Roper, S., Love, J.H., & Bonner, K. (2017), 'Firms' knowledge search and local knowledge externalities in innovation performance', *Research Policy*, 46(1), 43-57.
[xi] Aragón, C., Aranguren, M.J., Iturrioz, C. & Wilson, J.R. (2014), 'A social capital approach to network policy learning: The case of an established cluster initiative', *European Urban and Regional Studies,* 21(2), 128-145.
[xii] See Cluster Policy in Northern Ireland report at: https://www.economy-ni.gov.uk/publications/cluster-policy-northern-ireland.