

**Evaluating the Effectiveness and Impacts of Regional Cluster Initiatives:  
The Cluster Initiative Maturity Benchmarking Tool (CIMBT)**

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**ABSTRACT:**

Cluster Initiatives are said to be playing a vital role, both in South Africa and globally, in enhancing the competitiveness of clusters and the firms that participate in them. However, there is still a limited understanding of what regional Cluster Initiatives actually are as well as what the key performance dimensions of successful Cluster Initiatives are. As a contribution towards both enhancing the understanding what a well performing regional Cluster Initiative looks like, as well as providing a tool to monitor and evaluate the effectiveness of regional Cluster Initiatives and formulate recommendations to enhance Cluster Initiative effectiveness, a Cluster Initiative Maturity Benchmarking Tool (CIMBT) has been developed and applied to six Cluster Initiatives in Kwazulu-Natal, South Africa. Lessons are identified both for the support of clusters and Cluster Initiatives, as well as for the evaluation of Cluster Initiatives. The use of the CIMBT holds potential to enhance the performance of Cluster Initiatives and their impacts on improving cluster competitiveness.

**Key Words:** Cluster initiative; Cluster evaluation; Cluster initiative benchmarking; Cluster initiative maturity benchmarking tool; Cluster support.

## 1. Introduction

Recent decades have witnessed a wide variety of perspectives emerging on how proximate groups of firms, in the same or similar value chains, successfully or unsuccessfully interact with one another through both indirect and direct horizontal and vertical relationships. Attention paid to these matters has become a significant feature in national, regional, urban and local economic development programmes, particularly in Europe and North America, but also increasingly in other regions of the world. Clusters and Cluster Initiatives play an important role in strengthening economic competitiveness and exports through improving innovation (Porter, 1990.). As the understanding of clusters have grown, Cluster Initiatives have grown in number over the past two decades.

Whilst neo-classical economic policy doctrines might have argued against the significance of such engagements between firms and furthermore warned that public sector interventions run the risk of generating problematic economic distortions, the combined influence of two processes has seen not just their persistence as a feature of public programmes but also their growing popularisation. Of these processes it is those associated with discussions of 'clusters' of firms (as a description of patterns of firm location and interaction) and 'cluster initiatives' as a set of organised activities to encourage/facilitate and in some way enhance outcomes of firm relationships as well as relationships with other actors). Drawing on some empirical research on these relationships and the growing body of practice, local and regional have been particularly eager to embrace the approach. This trend has been impacted on by forms of decentralisation which have often empowered them (local or regional actors, and in particular the local or regional state) to act to impact on local economic outcomes (often in a context of the lack of attention at other scales to unique local or regional economic characteristics).

Whilst the adoption of such approaches has not been a particularly strong feature of the South African experience (see Morris and Robbins, 2006; Rogerson, 2010) they have nonetheless featured to varying degrees in national industrial policy frameworks and many provincial economic development programmes as well as in some selected municipal, more often metropolitan, programmes. In the early post transition period of the mid-to-late 1990s Michael Porter's consultancy (The Monitor Group) provided some guidance to the national Department of Trade and Industry on industrial clusters, such as that pertaining to the automotive sector. Supported by combinations of somewhat experimental metropolitan local government, provincial government and national government efforts a series of cluster initiatives began to emerge at a sub-national level in sectors such as automotive, stainless steel, clothing and textiles and boat-building. However, these tended to be sustained by differing combinations of local and provincial funding, supported in some cases by industry contributions and irregular national government funding. Many of these earlier initiatives have been sustained and attempts have been made to replicate their efforts in fields such as oil and gas servicing, business process outsourcing/call centres, jewellery, aeronautical services, the film and television industry, furniture, fashion, craft and design. Although national level programmes have, in the late 2000s begun to offer some support to successful applicants running these programmes, and the notion of developing clusters with some regional base has been noted in documents such as the Department of Trade and Industry's Industrial Policy Action Plan (IPAP), the efforts remain somewhat marginal at the national level. The drive for these efforts, such as they are, tends to be located either within selected provincial governments and metropolitan economic development programmes.

The widespread adoption of Cluster Initiatives, in many different contexts, raises the question of how successful they might have been. In this context the issue of cluster evaluations, as an

assessment of performance and impact, have been noted as being particularly important. Evaluating the effectiveness of Cluster Initiatives involves a wide range of challenges associated with what are called complex interventions (Funnell and Rogers. 2011). Complex interventions share a number of characteristics including the following (adapted from Funnell and Rogers. 2011):

- Focus: They are constantly adapting to changing opportunities and challenges and hence their short term intended results are multiple and emergent;
- Governance: Implementation involves multiple and emerging partners, relationships and responsibilities with multiple decision-making levels;
- Consistency: participants in the intervention participate in different ways and the intervention is adapted for each individual participant.
- Necessariness and Sufficiency (a cause being necessary and sufficient to produce an outcome without other interventions or favourable contexts): there are many intervention options and other contextual factors are needed for success i.e. to achieve the intended outcomes;
- Change trajectory: intervention results cannot be predicted (even by experts) “because of the changing nature of the relationship between cause and effect or the many factors affecting it” (Funnell and Rogers, 2011: 89).

In order to contribute towards available evaluation methodologies, which can contribute towards enhancing the effectiveness of Cluster Initiatives, a mixed-methods evaluative rubric called the Cluster Initiative Maturity Benchmarking Tool (CIMBT) is proposed in this paper. The CIMBT has been developed through a review of the literature on clusters and Cluster Initiatives, the development of a Cluster Initiative Theory of Change and logic model, and the authors’ years of practical experience in designing, working with and assessing Cluster Initiatives. The paper does not seek to evaluate the case for or against concepts associated with clusters or cluster initiatives themselves. These debates are present in much of the literature. Instead the paper notes the growing practice of Cluster Initiatives and seeks to promote improved approaches to assessing their effectiveness and impact. The paper begins with some definitions of concepts. The literature on clusters is then briefly discussed prior to a more in depth discussion of various assessment tools associated with Cluster Initiatives. This is then followed with a discussion of the proposed CIMBT tool and an overview of its application in the case of KwaZulu-Natal/eThekweni (Durban) cluster initiatives supported by authorities associated with the province and metropolitan municipality. The paper ends with some concluding comments on possible benefits of wider adoption of the CIMBT.

### **What are Clusters and Cluster Initiatives?**

There is no one standardised definition or view as to what constitutes a cluster (also sometimes referred to as an industry cluster or innovation cluster). One general definition sees clusters as “A geographically limited critical mass (i.e., sufficient to attract specialized services, resources, and suppliers) of companies that have some type of relationship to one another—generally a complementariness or similarity in product, process, or resource.” (Porter, 1998: 199). This definition does not capture the notion of organized (and often strategic) interaction (often involving various kinds of partnerships) between firms, as well as between these firms and related supporting policies and support service providers. Another definition captures this broader understanding of clusters as “Regional innovation (or industry) clusters are geographic concentrations of interconnected businesses, suppliers, service providers, coordinating intermediaries, and associated institutions like universities or community colleges in a particular field.... By facilitating such dynamics as labor market pooling, supplier specialization, and

knowledge spillovers, industry clusters benefit all sorts of firms and regions by enhancing the local and innovation potential, encouraging entrepreneurship, and ultimately promoting growth in productivity, wages, and jobs.” (Muro and Katz. 2010: 11).

A cluster is defined by a regional focus and a process or product grouping where firms share some common supplier or market dynamics and often also some common processes. Clusters are often associated with particular actual or desired comparative advantages of a region for a given product group e.g. textiles. The comparative advantage initially can be based on natural conditions (e.g. micro-climate for fruit or wine production), geographical factors (e.g. closeness to harbour), specific skills available in a region or other factors. As such they can also be seen as being associated with scale effects linked to economies associated with agglomeration as first described by Alfred Marshall (1982). In more advanced clusters, there can often be large numbers of vertical and horizontal business linkages (backward and forward). In the medium- and long-term the evolution of innovation and specialized knowledge within clusters is of critical importance for competitiveness. A continuous process of innovation can be fostered by the regional proximity of the players. This is supported by evolving specialized services, including Cluster Initiatives, amongst groups of firms and often involving the public sector or institutions supported by the public sector (such as Universities).

Clusters are linked to but different from the concept of the Value Chain. A value chain can be described as “the full range of activities that are required to bring a product or service from conception, through the intermediary phases of production and delivery to final consumers, and final disposal after use.” (Kaplinsky. 2004: 80). Parts of the value chain can be concentrated locally but the value chain as a whole is normally stretched over several regions and/or nations (hence the concept of global value chains). Value chains can therefore operate across clusters or outside of them.

The terms clusters, Cluster Initiatives, and networks are often used synonymously in the literature. Cluster Initiatives have been defined respectively as “Organised efforts to increase the growth and competitiveness of a cluster within a region, involving cluster firms, government and/or the research community” (Olvell et al. 2003: 15), as “formally organized efforts to promote cluster growth and competitiveness through collaborative activities among cluster participants” (Muro and Katz. 2010: 11). Others have referred to this notion as being one of joint action which refers to active cooperation between firms. Schmitz and Nadvi (1999) make reference to the term “collective efficiency” which is set out as, “the competitive advantage derived from external economies and joint action” (Schmitz and Nadvi, 1999). Although clusters can exist without an explicit organisational framework, it is this organised joint action that is seen to contribute to harnessing advantages which are those beyond the scale efforts of co-location described by Marshall.

Two terms closely related to the Cluster Initiative concept are cluster association and cluster management. One definition of cluster association is “A membership-based organization of cluster members that can collectively represent the needs and interests of members, provide services, and/or help members network Networks of interconnected firms and supporting institutions that accelerate innovation, business formation and expansion and job creation.” (National Governors Association. 2002: 28). A definition of cluster management is “The organisation and coordination of the activities of a cluster in accordance with certain strategy, in order to achieve clearly defined objectives. Cluster management represents a continuous activity of a cyclical nature. It is a complex, interactive and non-linear process.” (Price Waterhouse Coopers. 2011: 8).

Cluster Initiatives can take many forms, ranging from projects, to programmes to dedicated institutions. Institutional arrangements can also vary in their degree of formality, governance, permanence and business model. Possible Cluster Initiative institutional arrangements include the more traditional industry associations (although generally these have different purposes and objectives to Cluster Initiatives) to formally constituted for-profit or non-profit legal structures, to less formal steering committees and task teams etc. The role of the state also varies substantially in these. In some cases it is the initiator, host and manager of the cluster efforts, whilst in other cases they operate on some basis of public-private partnership or are even entirely run by the private sector. There is also growing practice in the NGO and donor/multi-lateral sector to support clusters, often to try and enhance the position of smaller or marginal firms or marginal actors within value chains (Nadvi and Barrientos, 2004).

Despite this growing focus on Cluster Initiatives, practical frameworks and models to evaluate the effectiveness of Cluster Initiatives, and inform recommendations to enhance their effectiveness, are still under-developed.

## **2. Literature review**

The purpose of the literature review is to inform the development of the Cluster Initiative Maturity Benchmarking Tool (CIMBT). The literature review has two inter-related components: a brief review of the economic development roles of clusters and Cluster Initiatives and a review of cluster performance frameworks. This review is used to inform both the development of a Cluster Initiative Theory of Change as well as the development of the CIMBT.

### **Brief review of the economic development roles of clusters and Cluster Initiatives**

The literature on clusters is vast and has grown rapidly over the past two decades. Economic growth theory recognises productivity and on-going productivity growth is the key determinant of a country's level of living standards. On-going productivity growth is needed for firms to compete and operate locally in open markets and to trade globally. Innovation and entrepreneurship are key drivers of firm productivity growth and thus can contribute towards sustainable job growth. An economy that is dominated by technologically dynamic firms will tend also to grow faster. A firm's performance depends primarily on the drive and entrepreneurship of its managers and owners whose investment decisions, worker training, marketing, R&D, etc., determine the pace of technological improvements. UI Haque (2007) argues that "Part of the process of structural transformation and technological improvement is autonomous and may be facilitated and promoted by the market as investors seek out profitable opportunities. But this may be too slow a process in relation to a country's own growth aspirations or in relation to technological improvements occurring elsewhere. Indeed, in an increasingly competitive and globalized world, technologically lagging firms may not survive for long."

Hausmann *et al.* (2007) provide a clear economic argument or context for a particular approach to Industrial Policy, as well as indirectly for the potential role of Cluster Initiatives, in enhancing economic and business outcomes. Of particular relevance, three types of market failures are identified and which provide a rationale for industrial policy and the implementation of interventions having differential effects on some economic activities over others, as follows:

- a) Self-discovery externalities: Learning what new products can be produced profitably in an economy, and how, is an activity whose social value greatly exceeds its private value.

- b) Coordination externalities: New economic activities often require simultaneous and lumpy investments upstream, downstream, and in parallel forks, which decentralized markets are not good at coordinating.
- c) Missing public inputs: Private production typically requires highly specific public inputs – legislation, accreditation, R&D, transport and other infrastructure specific to an industry – of which the government has little ex-ante knowledge.

Hausmann *et al.* postulate that these three types of market failures lie behind slow economic structural transformation, and hence low economic growth and that obvious government failures (e.g. poor governance, corruption, and macroeconomic mis-management) are inadequate to explain slow economic growth. Because neither economists, firms nor public officials are likely to know what distortions exist, processes are needed to identify and respond to these.

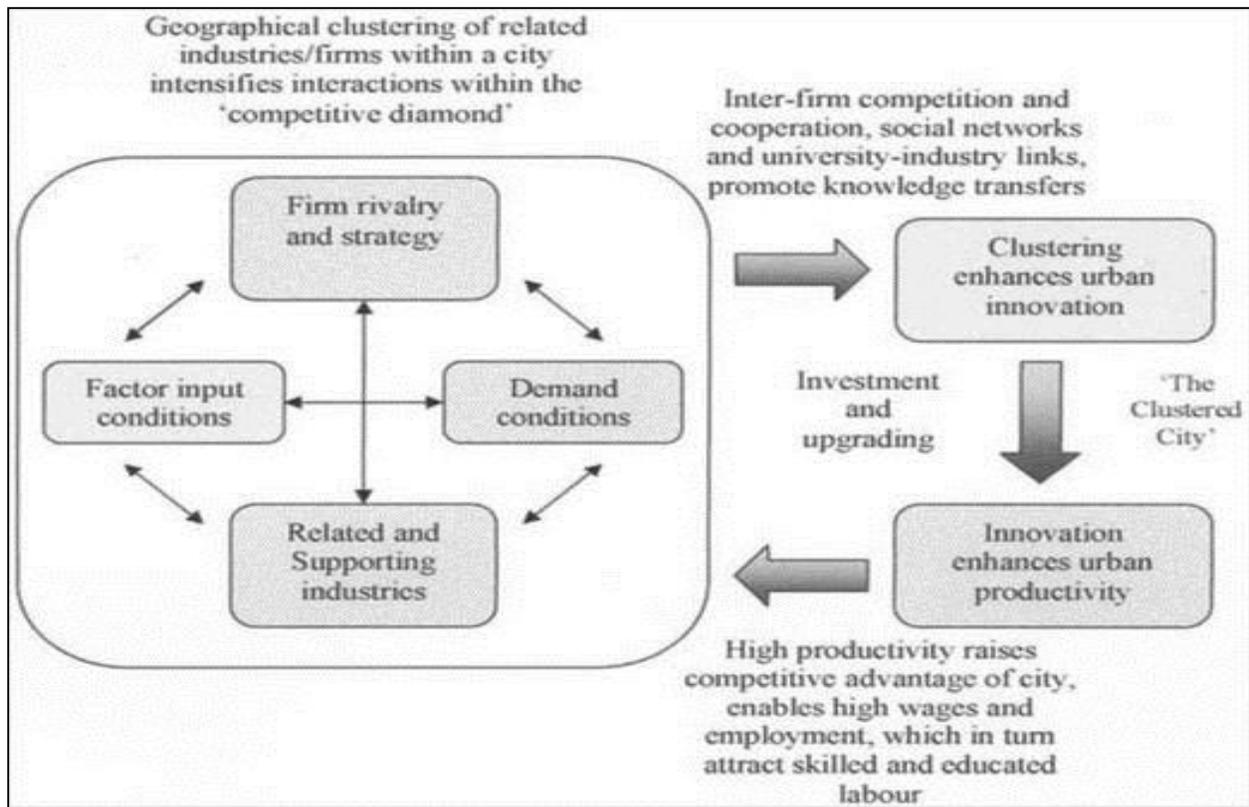
Government intervention may become necessary when competition alone does not propel business firms to innovate and undertake productivity enhancing investments. Clusters, together with firm behaviour, the quality of the business environment, and other contextual dynamics (location, natural resources, history and culture) are seen as key drivers of competition and productivity which impact on business and economic performance in turn (European Cluster Observatory 2010).

Growth, competition, productivity and innovation dynamics are enhanced by geographically concentrated clusters (Porter, 1990). Porter (1990) argues that clusters have the potential to affect competition in three ways: by increasing the productivity of the companies in the cluster, by driving innovation in the field, and by stimulating new businesses in the field. A paper on the role of regional clusters in the economic performance of industries, clusters and regions found, after conducting a detailed econometric modeling exercise of industry data in the United States that:

“...there is significant evidence for cluster-driven agglomeration. Industries participating in a strong cluster register higher employment growth as well as higher growth of wages, number of establishments, and patenting. Industry and cluster level growth also increases with the strength of related clusters in the region and with the strength of similar clusters in adjacent regions. Importantly, we find evidence that *new* regional industries emerge where there is a strong cluster environment. Our analysis also suggests that the presence of strong clusters in a region enhances growth opportunities in *other* industries and clusters. Overall, these findings highlight the important role of cluster-based agglomeration in regional economic performance.” (Delgado *et al.* March 2011: 1)

Cluster Initiatives can enhance interactions which promote knowledge diffusion and innovation and which increase firm productivity. Clusters and Cluster Initiatives are one tool to accelerate firm level and value chain-wide improvements in productivity, including the strengthening of firm-level innovation and regional innovation systems. For Cluster Initiatives to be effective they need to have a dual focus on both improving productivity and competitiveness at both the firm level as well as the business environment level.

**Figure 1 Geographic clustering and potential impacts on knowledge transfer, innovation, urban productivity, labour force skills, wages and employment**



Source: unknown

A key rationale for cluster initiatives is that they allow geographically concentrated actors to participate collectively in a strategic analysis of growth and competitive challenges and opportunities. This, in turn, can inform the development of a shared vision, strategy, and set of programmes, projects and actions for growing and developing the cluster. Rodrik (2004), argues, in the context of industrial policy, that what matters is “strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them.” Developing clusters requires collective action (which Cluster Initiatives can facilitate) and could include the following aspects, for example:

- Integration with other actors in the value chain.
- Improved supplier networks through joint actions.
- Outsourcing and/or consolidation of phases in the productive cycle or product manufacturing with other companies.
- Collaborative initiatives in joint research projects and market access initiatives to grow exports
- Training programs tailored to the specific needs of groups of companies.
- Upgrade of key support and logistics infrastructure.

- Identification of new niche high growth markets in which companies could specialize

### **What do Cluster Initiatives do?**

Cluster Initiatives exhibit wide variety in terms of their objectives, priorities and activities, partly because the institutional contexts within which Cluster Initiatives exist are different (i.e. different complementary support organisations as well as support service gaps exist in different contexts) and the level of cluster sophistication and nature of industry needs are different.

Cluster Initiative objectives range from facilitating networks between firms, people and support organisations; promoting innovation and new technologies, marketing, branding and attracting investment and new talent, promoting skills development including technical training, facilitating benchmarking improvement initiatives, lobbying for improvements in the business environment as well as in specific support measures, coordinating international market entry and expansion and exports etc. (Solvell et al. 2011).

Cluster initiatives, and their strategy, focus and priorities evolve and can become more sophisticated over time to meet the ever-changing and advanced needs of cluster members. Cluster Initiatives and clusters need to be dynamic and change over time to continuously improve global competitiveness and strategic positioning. For example, one continuum could span the range from “pre clusters” all the way to “globally branded mature clusters” at the more advanced or mature cluster stage (although continuous innovation is required even at that stage). However, it is not necessarily the case that all Cluster Initiative have to evolve along this path to be successful as some might best serve the interests of their participants by focusing on a more limited progression or even reverting to a less complex arrangement if appropriate.

### **Some criticism of Cluster Initiatives**

The evidence for clusters and the significance of Cluster Initiatives in regional and local growth and competitiveness has been contested by more than a few authors. This paper has not, in any comprehensive manner, discussed the merits of evidence for clusters and cases for Cluster Initiative impacts. It will also not discuss in any detail the critiques. However, these will be noted here in some limited terms as they are worth keeping in mind as they might have some value in being explored when tools, such as the CIMBT, are considered.

In terms of the significance and presence of clusters themselves it has been suggested that insufficient evidence exists to make the collective term cluster empirically demonstrated. This is in part because the term ‘cluster’ has been used very loosely with the result that comparing clusters or identifying common features has been a challenge. Often the evidence is argued to be more subjective than objective. This is made somewhat more challenging by the fact that in some cases Cluster Initiative processes set out to convince groups of firms and other local institutions that they are clusters even if it has not occurred to all of them, or that can potentially develop cluster type characteristics through a programme of joint activities. Whilst demonstrating firm interactions of various sorts can be relatively easy to show, demonstrating meaningful benefits to firms can be more of a challenge as can demonstrating wider economy benefits.

Some have suggested that clusters can generate some negative effects in that they might raise barriers to entry or could act to capture public resources for selected actors or even capture public attention in a manner that might generate some distributional distortions. Competition concerns have also been raised whereby forms of collaboration between cluster actors might

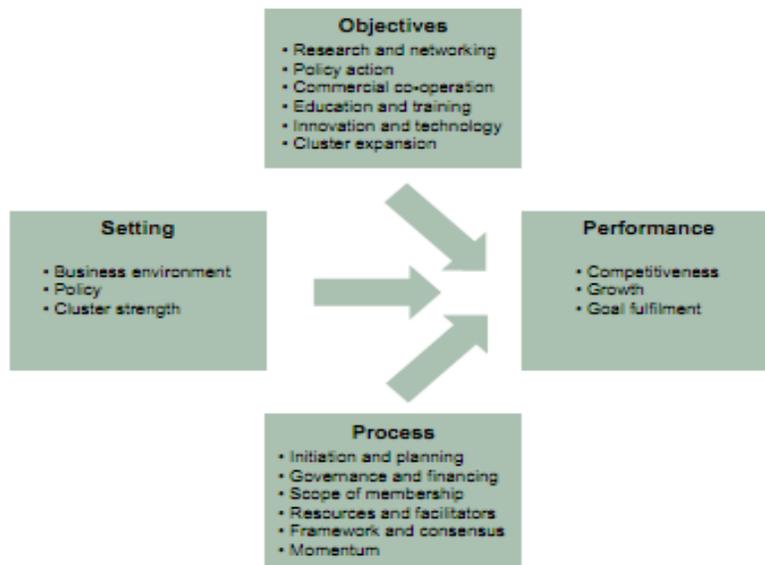
include price setting or marketing information distorting effects. A key element of the response to these concerns has been for those supporting Cluster Initiatives to demonstrate useful public good-type outcomes so that the benefits are not simply captured within a Tiebout-type club environment (Tiebout, 1956).

### Review of existing Cluster Initiative performance and evaluation frameworks

There is a growing literature which examines the range of factors which contribute towards the success of clusters as well as Cluster Initiatives (Solvell *et al.* 2013. National Governors Association. 2002, Kocker, 2011). However, this literature has focused primarily on the cluster performance level and cluster outcomes and impacts, and less so on implementation level in terms of inputs/ resources, activities and outputs, and the organisational and governance dimensions of Cluster Initiatives. For the effective evaluation of the effectiveness of Cluster Initiatives to take place, it is important that the relevant implementation dimensions are included in the evaluation. For without effective Cluster Initiative implementation, it is unlikely that one will achieve effective broader cluster performance. In order to generate meaningful findings and lessons on what is working well and what is not working well with Cluster Initiatives, the implementation or process level must be meaningfully evaluated.

Sölvell *et al.* (2003) developed the Cluster Initiative Performance Model (CIPM), which aims at describing how a cluster initiative should be designed. The CIPM suggests that the overall cluster's performance should be measured by means of international competitiveness, cluster growth, and achievement of goals. According to the authors, three drivers affect the cluster's performance: the social, political and economic setting within the nation; the objectives of the cluster initiative; and the processes by which the Cluster Initiative develops.

**Figure 2 Cluster Initiative Performance Model**



Source: Solvell *et al.* 2003.

Carpinetti *et al* (2008) proposes a performance management model for industrial clusters in which performance measures and collective actions are identified in four areas. However, the focus is primarily on the enterprise dimension of clusters and not the organizational dimension of Cluster Initiatives:

1. Economic and social results;
2. Company's performance;
3. Collective efficiency; and
4. Social capital.

This conceptual performance measurement system proposed by Carpinetti *et al* (2008) uses Kaplan and Norton's (1996) balanced scorecard perspective on performance as follows:

1. **Economic and social results:** Measures related to local gross product, workforce occupation and any result that brings economic and social benefits;
2. **Firms' performance:** Measures related to the results in terms of growth and competitiveness of the firms and measured by financial and non-financial performance of the firms in the cluster;
3. **Collective efficiency:** Measures related to external economies and actions of cooperation among companies in the cluster; and
4. **Social capital:** Measures related to cultural values such as trust and cooperation.

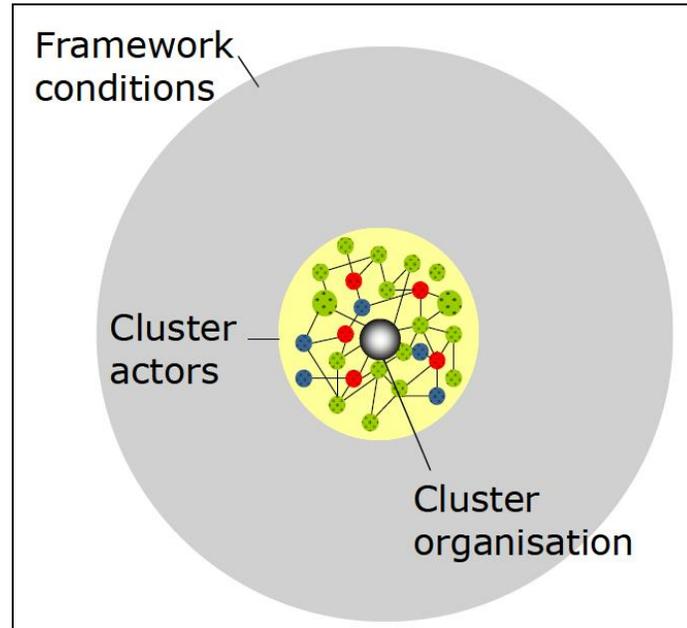
**Table 1 Industrial Cluster Performance Management Model Linked to Balance Scorecard**

Perspective	Objective	Metric definition
Company's performance	Market increase	Average unit sale price
	Improve productivity	Value added per employee
	Reduce costs	Total cost
	Increase profit	Profit
Social/economic results	Improve employment opportunities	Total labor force
	Improve availability of specialized labor force	Total number of trained people
Collective efficiency	Reduce costs, improve cooperation	Total amount of Collective acquisition of raw material
Social capital	Increase number of participants	Percentage of companies involved with cooperation

Source: Carpinetti *et al* (2008)

Kocker *et al.* (2011) identify fifteen criteria for world-class clusters (based on a review of about 30 cluster initiatives) with three broad areas of performance which impact on the development and performance of clusters as follows: framework conditions, cluster actors, and cluster organization. This framework begins to recognize the importance of the cluster organization dimension and hence the management of the Cluster Initiative and not just the impact dimensions:

**Figure 3 Three Performance Dimensions for World Class Clusters**



Source: Kocker *et al* (2011).

1. **Framework Conditions:** The framework surrounding the cluster's main actors is of importance for the cluster's potential to reach world class level. Relevant elements in this aspect are R&D and educational institutions of quality as well as a dynamic business climate when it comes to innovation policy and general regulation for start-ups, which together create an attractive environment for cluster development.
2. **Cluster Actors:** Clusters provide fertile eco-systems for firms to thrive, which drives innovation, regional development and competitiveness. The excellence of clusters depends, among others, also on the competitiveness of their main actors.
3. **Cluster Organisation / Management:** The strength and future prospects of a cluster are very much linked to the strengths and professionalism of the cluster management, which provides or channels specialised and customised business support services and added values to the cluster members. Cluster management of high quality is therefore seen as essential to promote cluster excellence and is very characteristic for world-class clusters.

The literature on cluster management and governance starts to address the detailed organisational issues involved in the management and governance of Cluster Initiatives and therefore on how Cluster Initiatives can achieve their objectives (Price Waterhouse Coopers, 2011, German Federal Ministry of Economics and Technology, 2010). In this approach, the focus on excellence in processes is seen to drive excellence in outputs. Price Waterhouse Coopers identifies the following fairly generic 6 stages of the cluster management cycle: (1) Define; (2) Design; (3) Implement, (4) Monitor, (5) Evaluate, and (6) Revise. Importantly, cluster management goes beyond management of an individual organization and involves mediating and facilitating a wide range of cluster member and related organizational relationships. It is generally understood that "Each of the cluster members has own agenda, and a key challenge

for cluster managers is to make sure those agendas are united into common objectives and collective actions, that conflicting interests are resolved, and the relevant organisations see enough added value from their participation in cluster activities”. (Price Waterhouse Coopers. 2011: 12). Cluster governance refers to the intended collective actions of cluster stakeholders to advance the cluster and develop a sustainable competitive advantage. Cluster governance thus represents the interests of cluster stakeholders (e.g., universities and research institutes, large and small companies, government, supporting structures etc.), while cluster managers strive to serve the needs of cluster stakeholders. Good practices in both cluster management (and the cluster management cycle) and cluster governance are identified however it is found that “there is no golden recipe for excellence in cluster management. Not only do different clusters require different approaches, but even the same cluster is likely to require new approaches as it passes through various stages of its development, or in response to various external drivers.” (Price Waterhouse Coopers. 2011: 27). Attending to these dimensions of cluster performance allows for some tackling of some of the risk factors of Cluster Initiatives highlighted earlier: for instance where appropriate governance indicators are developed one can guard against possible benefit capture.

Carpinetti's et al (2008) performance model also includes a process dimension. The process aspects of this performance model includes the following fairly standard processes:

1. *Step 1 – Identification of the stakeholders*: the first step is to identify the stakeholders directly or indirectly related to the cluster activities (large enterprises, SMEs, local partners, local associations, the local chamber of commerce and industry, universities, public authorities, financial institutions, etc.;
2. *Step 2 – Strategic orientation and definition of objectives*: formulation of a strategic plan that balances the interests of local companies as well as other interested parties, such as local authorities and the community;
3. *Step 3 – Implementation of improvement and innovation projects*: based on the elements formulated in Steps 1 and 2, a series of joint initiatives should be developed to take advantage each partner's capabilities as well as to increase trust among companies;
4. *Step 4 – Performance evaluation and measurement*: definition of a process to measure and evaluate the performance and impact of joint actions;
5. *Step 5 – Supporting infrastructure for the management process*: establishment of the infrastructure necessary to support cooperation projects, such as a regional office or a regional development agency.

A set of requirements and evaluation questions for the three components are identified (and which can form the basis of a benchmarking model).

In the South African context a local consultancy active in designing and managing Cluster Initiatives has proposed a number of critical success factors (Benchmarking Management Analysts, 2011) which includes the need for public-private partnerships (and achieving a balance between private sector and public sector objectives/interests), strong industry leadership, and relationships of trust developed through consistency and transparency (between Cluster Initiative facilitators and industry, between government and Cluster initiative facilitators, and between industry and government) consistency and transparency.

In conclusion, the existing evaluation/ performance frameworks all tend to focus on various combinations of the following aspects: cluster framework or business environment (enabling or constraining) conditions (e.g. support for R&D, availability of infrastructure and labour force skills); cluster outcome/ impact performance both at a company and at a cluster-wide level, and

Cluster Initiative process aspects (e.g. Cluster Initiative management and governance including the importance of meaningful participation, leadership and relationships of trust between stakeholders, partnerships, networking, programme and project implementation, and monitoring and evaluation). However, the existing performance frameworks do not detail the organisational performance components of Cluster Initiatives, nor do they provide an evaluation framework to benchmark key Cluster Initiative organisational performance components. As a result, the existing performance frameworks provide an insufficient basis to evaluate Cluster Initiatives. This paper therefore integrates a wide range of performance components related to cluster outcome/ impact performance, factor / business environment conditions, and Cluster Initiative organisational and process components in order to both deepen the understanding, and highlight the importance and contribution of, Cluster Initiative implementation and process issues as a precondition to supporting broader cluster performance. The authors' experience in South Africa has shown Cluster Initiatives sometimes struggle with Cluster Initiative implementation, organisation and governance processes and applying the CIMBT can assist in addressing these challenges and thus contribute to enhancing the effectiveness of Cluster Initiatives in positively contributing towards broader economic development goals such as job creation, poverty reduction and competitiveness.

### **Combining impact and institutional effectiveness in Cluster Initiative evaluations: The Cluster Initiative Maturity Benchmark Tool (CIMBT)**

As a core component of both a formative evaluation (otherwise known as a process or implementation evaluation and aimed at improvement) and summative evaluation (otherwise known as an impact evaluation) a Cluster Initiative Maturity Benchmarking Tool (CIMBT) was developed to evaluate a number of Cluster Initiatives in Kwazulu-Natal, South Africa. The CIMBT is a type of evaluative rubric, or "a table that describes what the evidence should look like at different levels of performance, on some criterion of interest or for the intervention overall" (Davidson, 2014: i).

It is beyond the scope of this paper to discuss the range of possible evaluation designs (e.g. experimental designs, quasi-experimental designs, and theory-driven designs), approaches and methodologies and to situate and contextualize the CIMBT approach within these. However, in summary both experimental and quasi-experimental designs are not feasible for evaluating Cluster Initiatives for a range of reasons including the impossibility of identifying control or comparison groups as well as applying random selection. The CIMBT broadly falls within the theory-driven approach to evaluation and as such follows a mixed-methods methodology which involves the collection of both quantitative and qualitative data from a variety of sources.

The CIMBT has been developed to provide a holistic framework to evaluate and understand relevant cluster and Cluster Initiative performance factors. As such, the CIMBT is able to identify key areas of weak Cluster Initiative and implementation performance which can then inform recommendations to address and improve these areas in order to ultimately impact on improved cluster/ economy wide performance.

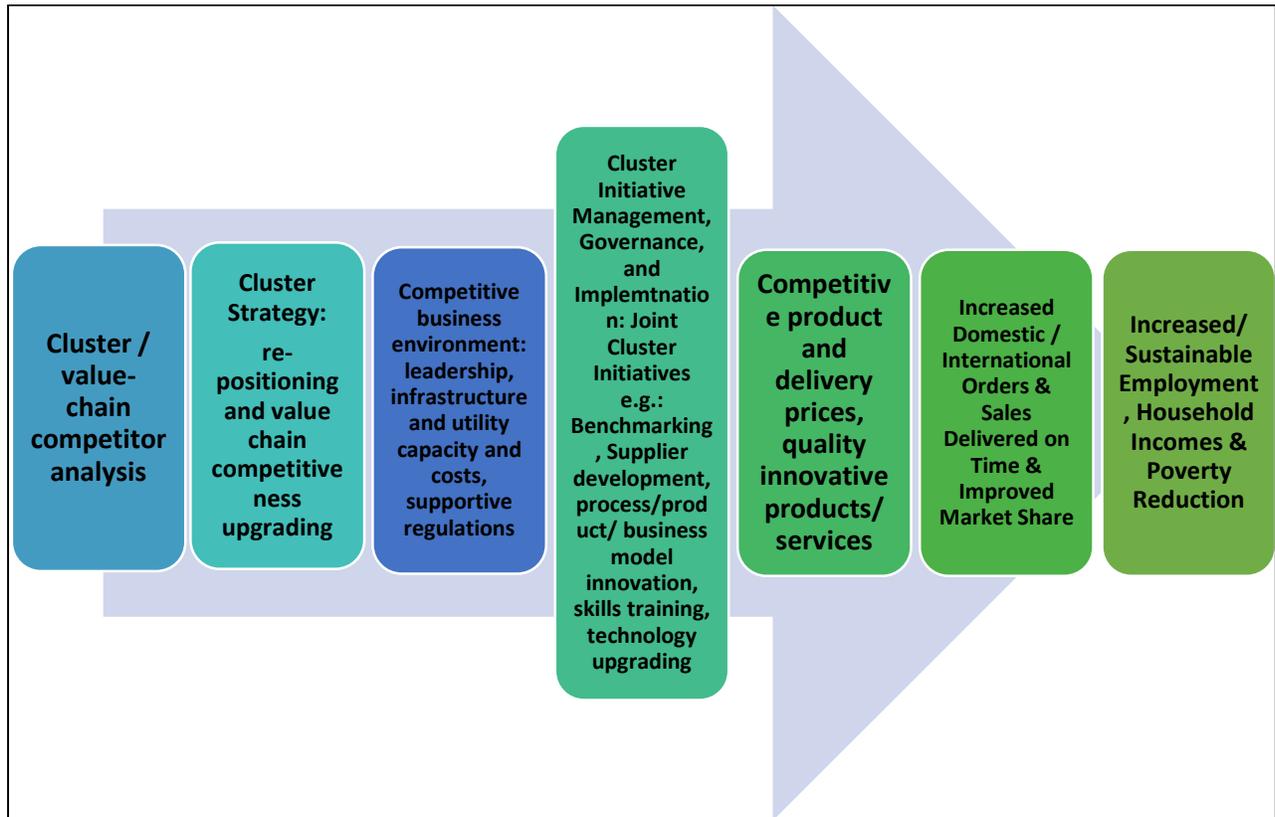
In addition to the review of existing performance frameworks, the CIMBT has been informed by a high level Cluster Initiative Theory of Change (ToC) and logic model (which was also informed by the previous literature review). Care (2012) provides methodological guidance for using this approach for value-chain initiatives. A generic results chain for value chains is included in a collection of private sector development results chains (GIZ. 2014). which they expect the project's interventions to lead to positive effects on impact group and target group members

over time. Importantly, in contrast to logical frameworks - which also remain a key aspect of many M&E plans - causal models are non-linear, allowing users to illustrate how interventions, effects and impacts are related to one another vertically, horizontally, diagonally, etc. This flexibility is important for systemic interventions like Cluster Initiatives which often defy linear logic. A logic model is a tool used to consolidate, in one summary graphic the intended outcomes/ results (with different results / outcomes / impacts time-frames and levels leading to higher / longer term results levels), the logical linkages between intervention activities and outputs and the expected effects/results/outcomes, and the assumptions being made about how these linkages / change processes /mechanisms work and will play out in practice (i.e. necessary conditions, risks etc.).

For Cluster Initiatives and value chain projects, ToCs and logic models can show how project interventions will directly influence specific firm performance aspects, the key aspects of the cluster and value chain and what the impacts are intended to be on job creation, poverty, and transformation. ToCs and logic models are useful tools at any stage in a Cluster Initiative and can be used as part of the Cluster Initiative design and strategy development phase, as an ongoing communication and/or reflection tool between stakeholders, as well as for ongoing monitoring and evaluation. At all stages, the causal model is helpful in communicating project intent to a wide range of clients including potential donors, internal audiences, partners and project participants.

The following Cluster Initiative ToC represents a very high level generalized Cluster Initiative ToC. This ToC does not show detailed Cluster Initiative services and how these produce different kinds of outcomes firstly at a firm level and how these firm level outcomes then impact on different kinds of economy wide outcomes (such as employment). It also does not identify and communicate a range of assumptions which need to hold true for the range of envisaged changes to be achieved. Nevertheless, this high-level Cluster Initiative TOC identifies a range of Cluster Initiative inputs, processes, programmes/ services/ projects, and outcome levels which need to be included when evaluating Cluster Initiatives. This ToC has therefore informed some of the components and focus of the CIMBT.

Figure 4 High Level General Theory of Change for a Cluster Initiative



The CIMBT has been designed to use a range of different quantitative and qualitative data sources as part of a mixed-methods approach. The data sources used to inform the CIMBT include a before-and-after quantitative firm-level survey study looking at the quantitative impacts on both participating and non-participating firms in Cluster Initiatives (although strictly speaking one cannot compare participating and non-participating firms as they are likely to have different characteristics), interviews with Cluster Initiative implementing managers as well as Board Directors, and a document review of Cluster Initiative cluster research, strategies and business plans.

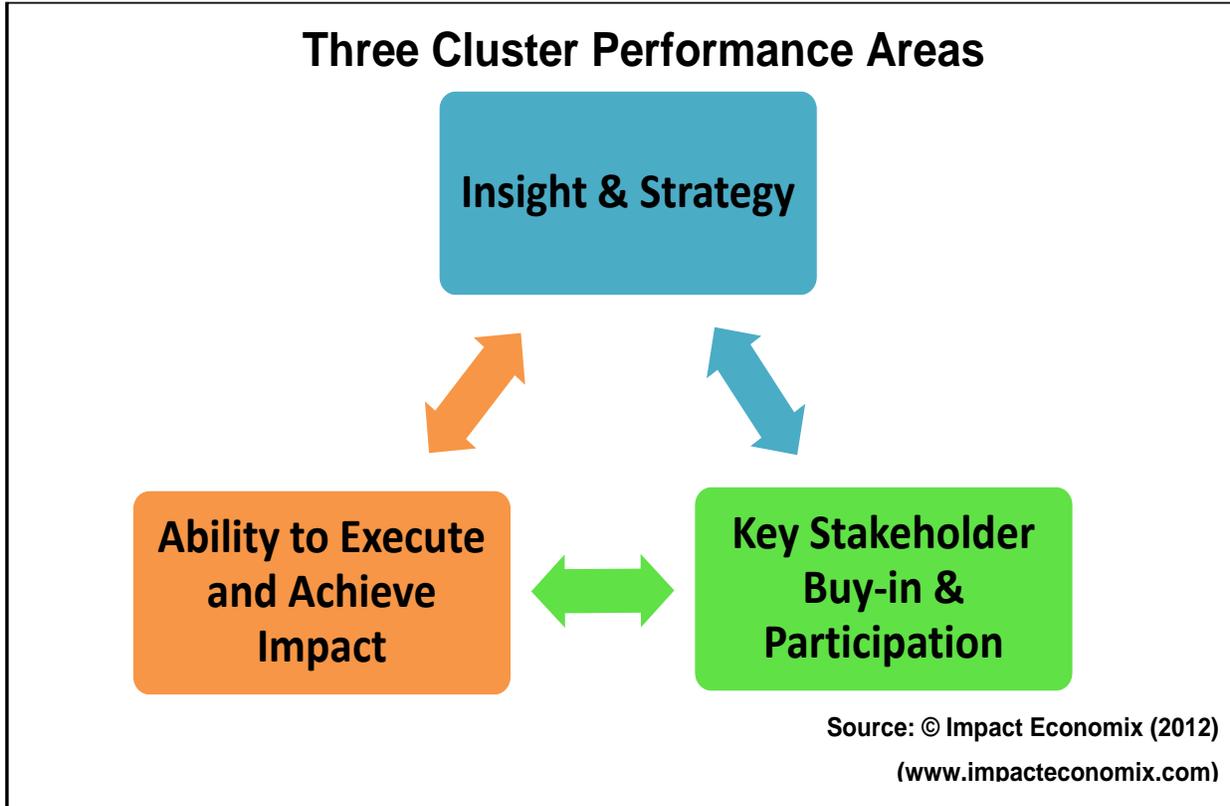
The Purpose of the CIMBT is two-fold: First, to facilitate a learning process involving dialogue between Cluster Initiative stakeholders on priorities that need to be addressed to strengthen Cluster Initiatives. Second, to identify areas of strength and weakness which can inform specific recommendations for improvement.

The CIMBT framework is based on three Cluster Initiative Key Performance Areas:

- **Insight and Strategy:** doing the right things and focusing on the priority cluster competitiveness and value chain upgrading issues.
- **Key stakeholder buy-in and participation:** maximising the resources available to address these issues through the support and participation of all relevant role-players.

- **Ability to execute and achieve impact:** doing the right things well by ensuring appropriate governance and management structures and processes are in place which support focused and effective action.

**Figure 5 Cluster Initiative Benchmarking Maturity Tool and Three Cluster Initiative Performance Areas**



These three Cluster Initiative Performance Areas are further divided into the following performance components (see

Table 2) which have been identified both in the literature and from practical experience. These ten performance components are then further disaggregated into key sub components through the identification of relevant indicators as well as the development of a total of 45 evaluation questions . These indicators and evaluation questions then informed the design of the various data collection instruments (economic trend statistics, the firm survey of both Cluster Initiative members and non-members, firm benchmarking trends for selected Cluster Initiatives, the key informant interviews with Cluster Initiative managers/ facilitators and Board Directors as well as other public sector officials, and the literature review of key Cluster Initiative documentation).

**Table 2 Cluster Initiative Maturity Benchmark Tool: Key Performance Components**

<b>Cluster Initiative Performance Area</b>	<b>Cluster Initiative Key Performance Components / Constructs</b>	<b>Rationale</b>
<b>1. Insight &amp; Strategy</b>	1.1 Understanding of the cluster's competitive position and core upgrading challenge including quality and depth of value chain research (including the business environment, relevant policy, and cluster competitiveness & strength.)	An in depth understanding of key value chain success factors and competitiveness challenges is needed to inform a Cluster Initiatives strategy to enhance cluster competitiveness and growth.
	1.2 Strategic, Sound and Shared Cluster Vision, Objectives, Strategies, Expectations.	A strategic, shared, and focused long term vision of cluster success, objectives, strategies, and expectations between key stakeholders is vital for effective and aligned action.
<b>2. Key Stakeholder Buy-in &amp; Participation</b>	2.1 Industry Social Capital: Awareness, Quality of Relationships incl. Membership.	Active participation from Cluster Initiative members is a vital pre-condition for Cluster Initiative success and this also contributes to improved communication and joint action between industry.
	2.2 Participation & Support from key partners incl. Cluster Governance, participation, buy-in, and commitments.	Active participation and support, including leveraging funding and expertise, from key value chain organisations, especially those relevant to labour force skills development and innovation is vital if sustainable competitiveness is to be improved.
<b>3. Ability to Execute and Achieve Impact</b>	3.1 Cluster Initiative Governance Relationships & Processes.	Good Cluster Initiative governance policies and processes, an effective Board, and strategic Board leadership is vital to enhance the Cluster Initiatives reputation and trust and ability to attract and manage funding in a transparent and accountable manner.
	3.2 Cluster Management Quality & Processes.	Highly skilled Cluster Initiative management and effective management processes are essential to facilitate complex partnerships, and implementation of Cluster Initiative strategies and programmes.
	3.3 Pragmatic, well-designed, and adequately resourced Cluster Initiative programmes and action plans.	Clear, well-structured and resourced programmes and action plans are needed to ensure Cluster Initiative strategies are logically broken down into activities with appropriate resources so as to allow for ongoing monitoring and accountability.
	3.5 Implementation Impacts.	Outputs , processes and outcomes which ultimately improve both firm-level and cluster-wide competitiveness will be achieved if

Cluster Initiative Performance Area	Cluster Initiative Key Performance Components / Constructs	Rationale
		excellence can be achieved in the above key performance areas.
	2.6 Systems & Processes for Monitoring, Evaluating, Learning, and Revision.	Monitoring and reporting of both Cluster Initiative and cluster performance against plan is essential to maintain focus, check progress and maintain accountability. Evaluation processes for Board performance, management performance, and Cluster Initiative performance are needed to learn lessons and make adjustments to enhance performance.

Source: © Impact Economix (2012).

An example of key indicators and evaluation questions relevant to Cluster Initiative Insight and Strategy is provided in Table 3 :

**Table 3: Cluster Initiative Evaluation Questions**

Cluster Initiative Performance Component	Key indicators	Evaluation Questions
<b>Insight &amp; Strategy</b>		
<b>1.1 Understanding of the cluster's competitive position and core upgrading challenge incl. quality of research</b>	<ul style="list-style-type: none"> <li>• Depth of understanding of cluster's global and national positioning by management, chairperson.</li> <li>• Quality /depth of value chain research which has informed Cluster Initiatives strategic plan.</li> </ul>	<p>a) Is there a clear approach to cluster/ value chain re-positioning/ upgrading/ growth which is well informed by quality value chain research/ evidence and widely supported by industry?</p> <p>b) Are detailed value chain studies available which also examine the strength of the cluster in specific niches and identify the customer critical success factors (incl. business environment, policy, and cluster strength)?</p> <p>c) Are the primary competitiveness challenges and opportunities as well as the current constraints/barriers to effectively dealing with these issues clearly defined in the Cluster Initiative business plan?</p>

Source: © Impact Economix (2012).

The CIMBT has been used to evaluate Cluster Initiatives in Kwazulu-Natal South Africa (see Section 3). This process involved using the data collected from the various sources, together with a rating scale and guide with score options from 1-5 which was developed and tailored for each evaluation question. The scores for all questions relevant to a particular performance component were then averaged to obtain an overall score for that performance component.

### 3. Experiences in applying the CIMBT in Kwazulu-Natal

The KwaZulu-Natal Provincial Government and Ethekwini Metropolitan Local Government has both been funding a range of Cs since 2001/02. A total of about R60 million was allocated by the Provincial and Metropolitan Government over this period. However, there is still limited

awareness of Cluster Initiative success factors, especially at a political level, and under-developed M&E systems at a Cluster Initiative level.

In addition the Cluster Initiatives leveraged additional membership contributions and national government funding. The nine Cluster Initiatives ranged in age at the time of the evaluation (2012) from between ten to three years. Initially the evaluation intended to evaluate the following nine Cluster Initiatives, however, it was only possible to obtain detailed data from five of these Cluster Initiatives for a range of reasons including problems with the functioning of three Cluster Initiatives and low firm response rates from the fourth Cluster Initiative:

1. Durban Automotive Cluster (established in 2002);
2. Durban Chemicals Cluster (established in 2008);
3. eThekweni Maritime Cluster (established in 2009);
4. eThekweni Materials Recovery Cluster (established in 2009);
5. KZN Clothing and Textile Cluster (established in 2005);
6. KZN Arts and Craft Cluster (established in 2007);
7. KZN Fashion Council (established in 2009);
8. KZN Furniture Initiative Cluster (established in 2009); and
9. KZN Tooling and metals Initiative (established in 2007).

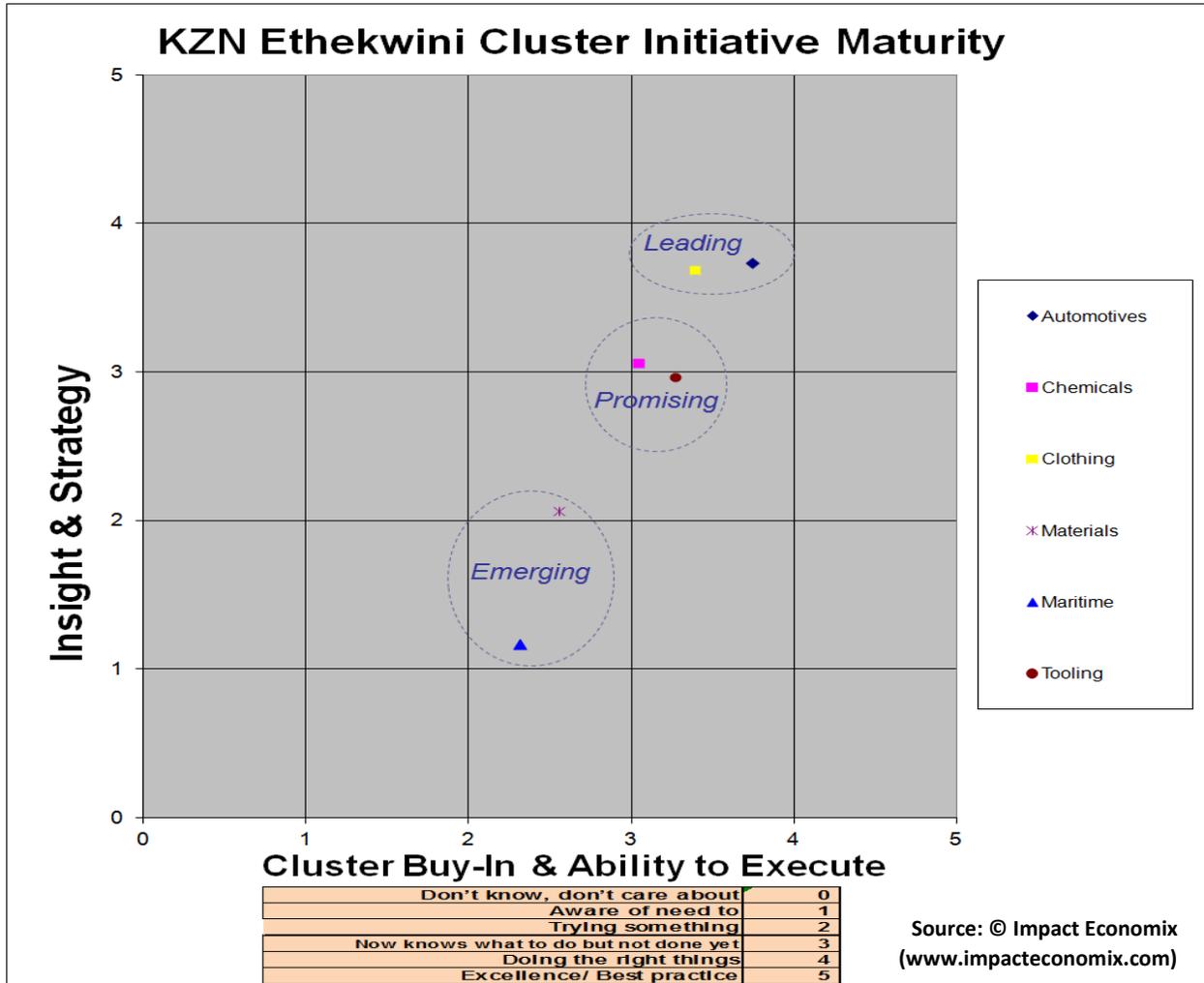
All of the nine Cluster Initiatives are unique in many ways as a result of their different historical trajectories, their different industrial dynamics and structures, the different personalities involved, and their different stages of development and maturity. As the literature review demonstrated, Cluster Initiatives can take many years before they reach a level of maturity where meaningful and large-scale impact on the overall clusters performance can be achieved- and even then there is no guarantee that this will happen. Eight of the nine Cluster Initiatives are non-profit organisations and there are at least three different Cluster Initiative delivery models being utilised to deliver, manage, and govern the nine Cluster Initiatives as follows:

- Section 21 non-profit managed by a CEO with staff;
- Section 21 non-profit managed by an appointed service provider; and
- Section 21 non profit managed by a Programme Manager.

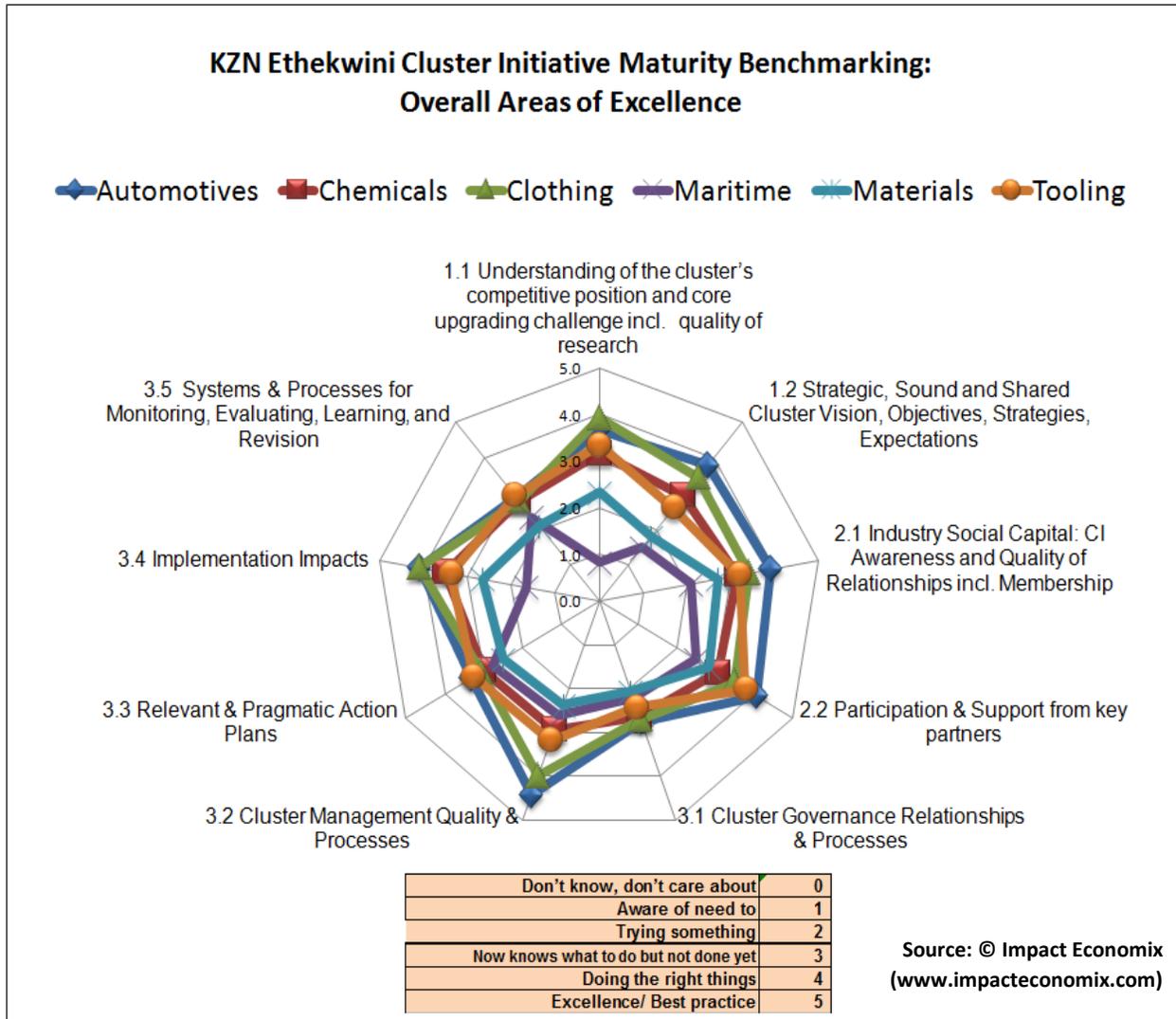
The overall summary results from the benchmarking exercise are illustrated in the overall cluster buy-in and ability to execute and achieve impact scores were combined into one average score so as to allow. The positive correlation between the overall average Insight and Strategy score and the combined cluster buy-in and ability to execute and achieve impact average score is striking and appears to illustrate a strong positively correlated relationship between the quality of Cluster Initiative insight and strategy and the degree and strength of Cluster Initiative buy-in and ability to achieve impact. Of course, there may be a range of other intervening variables at play, including how long the Cluster Initiative has been established.

Caution needs to be exercised when benchmarking or comparing cluster initiatives as the effectiveness and impacts of Cluster Initiatives are heavily influenced by a wide range of factors including, but not limited to, the following: length of time the Cluster Initiative has been in operation, how supportive or not the government policy and regulatory framework is for the cluster, and the nature of financial and human resources available to the Cluster Initiative.

Figure 6 Overall KZN Cluster Initiative Maturity Benchmark Tool (CIMBT) Findings



**Figure 7 Overall KZN Cluster Initiative Maturity Benchmark Tool (CIMBT) Findings by Nine Performance Components**



The detailed evaluation report identified both overall, as well as Cluster Initiative-specific, findings in relation to the 25 evaluation questions related to the nine performance components. These findings then informed a range of recommendations to address weaknesses identified in Cluster Initiative strategy, governance, business plans, programmes, resourcing, management, and monitoring and evaluation frameworks and systems. These findings and recommendations were shared with both the government funders of Cluster Initiatives as well as the Cluster Initiative managers/ facilitators/ service providers and their Boards of Directors.

Given space limitations, it is only possible to summarise some of the high level findings from the evaluation as follows:

1. Regarding the impacts of Cluster Initiatives, it is clear that the performance of many firms have improved as a direct result of participation in the Cluster Initiatives and many additional firms have benefitted indirectly through the backward and forward linkages with Cluster

Initiative member firms. While the evaluation methodology has gathered firm performance data on Cluster Initiative members and non-members, this does not provide definitive answers to what impacts the Cluster Initiative has had on members as compared to non-members, but instead provides indicative information which needs to be interpreted with caution and informed by an understanding of the impact evaluation limitations. In terms of the cost-efficiency of Cluster Initiatives, we believe the cost per job created of the Cluster Initiatives is highly efficient when compared to other job creation programmes. For example, the Industrial Development Corporation's R10 billion Grow-E-Scheme (which provides finance at prime – 3% to growing businesses), established in mid-2011 and to be in place for the next five years, is creating 1 job for between R300,000-R500,000. According to the eThekweni Materials Cluster (EMC), USE-IT, waste beneficiation is creating jobs at an average cost of less than R100,000.

2. Different public and private stakeholders involved in a Cluster Initiative often hold conflicting expectations regarding Cluster Initiative priorities, as well as the expected roles to be played by public sector representatives on the governance structures of Cluster Initiatives. and this can create conflicts which need to be resolved/ addressed. It is inevitable that there will be conflicting expectations from different stakeholders as each of the stakeholders and cluster participants have different needs, from big business to small business to government etc. And these needs have different time horizons from short to medium to long term etc. What is therefore critical is the management of expectations and ensuring that there is a clear understanding of the inter-linkages between expectations and finally what expectations can realistically be met with the available resources (in the broadest sense including tapping into the resources of other relevant organisations and programmes). The key potential conflict is the need for most of the clusters to prioritise and focus on those issues which impact on global competitiveness as this is the key to economic sustainability, vs the need to focus on social and political imperatives such as transformation and small business. It is clear that in the South African context one cannot ignore the latter, however, government needs to recognise that addressing the challenges of transformation and small business development often require significant energy and resources and in order to meaningfully impact on these challenges and objectives more meaningful resources need to be made available over and above those required to meaningfully impact on improving the cluster's global competitiveness.
3. Levels of firm participation in a Cluster Initiative is a good indicator of the overall effectiveness of that Cluster Initiative. The number of firms that are members of Cluster Initiative serves as a critical performance indicator as it reflects the degree to which cluster firms perceive the Cluster Initiative to be adding value to the cluster. As a result, it is important that the Cluster Initiative reach agreement on a realistic annual target for Cluster Initiative membership. It is vital that the Board of each Cluster Initiative develops and agreed membership policy and plan, including future targets to increase membership. This membership plan should include new member targets for each industry representative on the Board, as well as clear support actions that the public sector (KZN, eThekweni) will take to encourage industry to become members. Such support actions could include top leadership attendance and speeches at key industry events, commitment to key projects which improve the business environment for that sector etc.
4. A number of key ingredients were identified that need to be in place if Cluster Initiatives are to be effectively industry-driven, as well as public-sector supported, including the following:
  - a) A cluster upgrading, growth and competitiveness strategy must be developed based on high quality value chain research as well as a well-designed and facilitated process with

key industry role-players. The strategy must be unpacked into relevant programmes with action plans, outputs, Key performance indicators at the impact, outcome and output levels, resources and time-frames and sufficient public sector funds must be made available to allow tangible delivery of these action plans;

- b) Cluster Initiative management/facilitator needs to have deep knowledge of the cluster and be respected by cluster firms. Cluster Initiative management's knowledge needs to be deep enough to ensure that private sector board members do not influence cluster priorities which are designed to only meet the needs of selected firms and which are not necessarily critical to the overall cluster's performance;
- c) Senior management of the leading firms in the cluster need to be persuaded to devote their time and input by serving on the Cluster Initiative Board so as to provide strategic direction and ensure the Cluster Initiative is focused on priority cluster issues;
- d) Cluster Initiative's need to be well managed, transparent, and efficient so as not to waste the scarce time of senior private sector Board representatives;
- e) Cluster Initiative programmes need to deliver tangible benefits and provide quick wins to member firms. Establishing a Technical Steering Committee to manage each programme and which is chaired by one of the private sector Board representatives is one way to ensure programmes meet member needs, however, quality strategic planning processes also need to be in place to ensure programmes address high impact strategic competitiveness issues; and
- f) Public sector leadership's (both political and administrative) understanding of both clusters and Cluster Initiatives needs to be developed and enhanced so that such leadership is able to appreciate it's role and the importance thereof in enhancing an enabling business environment which support's the productivity and growth of key clusters. In this regard, Cluster Initiatives need to have explicit communication processes which communicate the role, benefits and impacts of the Cluster Initiative to the broader cluster community. In addition, the public sector needs to demonstrate its commitment to the cluster and the Cluster Initiatives by ensuring continuity of funding and ensuring that high level officials add value to the Cluster Initiative through their participation at Board level.

#### **4. Discussion on the application of the model**

The process of both developing, as well as applying the CIMBT as part of an evaluation of Cluster Initiatives, has resulted in a number of lessons which are relevant to both support for Cluster Initiatives, as well as the evaluation of Cluster Initiatives.

##### **Lessons for the Support of Cluster Initiatives**

Four key lessons can be highlighted regarding supporting Cluster Initiatives to optimally impact on accelerating the competitiveness, growth, and job creation potential of clusters.

First, Cluster Initiatives need public sector funding in both the establishment phase as well as the implementation stage. Generally, public sector funding is need for at least 3-5 years as the Cluster Initiative clarifies strategies and defines programmes and services which address the priority needs of cluster firms. Critically, this process involves the development of relationships

between the Cluster Initiative and cluster firms and the establishment of trust over time if the Cluster Initiative is seen to be effective and delivering.

Cluster Initiative activities should always include activities which attempt to maximise public goods where cost recovery is difficult or impossible including and/or where various market failures exist:

- the dissemination of knowledge and reducing information asymmetries or failures,
- the improvement of policies, regulations and institutions; and
- addressing a range of coordination and other market failures, for example those relevant to both the development and adoption of new technologies, as well as development of new products and services.

In addition, there are instances where private firms are either unable or unwilling to pay for services but where such services are important to accelerate structural change, transformation and economic growth. Examples include extending Cluster Initiative services to micro and small firms with low affordability levels/ profit margins (such as mentorship), developing new training qualifications, or ensuring innovation systems support product innovation.

Ultimately, Cluster Initiatives need to structure their programmes and action plans so that it is clear what outputs are produced with what resources, what outputs can be funded by the private sector, and what outputs require government funding. Government can then make more transparent choices about what activities and outputs it chooses to fund or not.

At the same time, it may be desirable for government to begin working on an exit policy, approach or strategy to guide when and how it phases out and/or withdraws funding from a Cluster Initiative. Medium Term Cluster Initiative business plans should factor this in as part of a financial sustainability plan.

It must be noted, however, that there are very few Cluster Initiatives internationally that are 100% privately funded for reasons related to public goods amongst others.

Second, in terms of Cluster Initiative models and “success factors”, we believe that there is no one “best” model as Cluster Initiatives inevitably need to respond to both their local and global contexts, the stage of development of the cluster, and the priorities of cluster stakeholders. Instead, we have identified a number of Cluster Initiative key performance areas which we believe need to be in place if Cluster Initiatives are to have a major impact on the performance of clusters. Amongst these key performance areas the following can be highlighted as especially critical:

- a) Clarity of Cluster Initiative strategy, business plan and action plans to enhance cluster competitiveness and value chain upgrading;
- b) Level of industry experience, and leadership, managerial, and inter-personal competencies, of the Cluster Initiative Manager/ Facilitator; and
- c) Quality and level (both senior / top management level within the firm, and the firm being a leading local firm in the cluster) of private and public sector representatives in the Cluster Initiative Board/ governance structure.

Third, Cluster Initiatives represent an important institutional mechanism to promote more effective action by government to provide an enabling environment which addresses the critical constraints faced by key clusters. It is vital to enhance the potential contribution that Cluster

Initiatives can make in enhancing government's understanding of its various roles in providing an enabling environment which is conducive to inclusive growth. This contribution can include the leveraging of private sector expertise and ideas to address business environment constraints in the following three broad areas:

- a) The provision of dedicated infrastructure facilities which meet the needs of the priority clusters is another complementary approach which can accelerate cluster competitiveness and economic growth.
- b) Improvements to the overall business environment in terms of service delivery cost effectiveness, reliability and quality esp. as it impacts on input costs (water, energy, waste, transport logistics)
- c) Red tape reduction in terms of decision-making processes and time-frames as well as improvements to regulations which are negatively impacting on cluster competitiveness.

However, there are major challenges which impede the ability of Cluster Initiatives to work productively and collaboratively with the different spheres of government and to develop public-private or partnership solutions to the numerous business environment challenges which are frequently encountered. At a practical level, and apart from higher level strategic, policy and/or funding model challenges which may exist, the role of relationships and an understanding of the nature and importance of clusters and Cluster Initiatives is fundamental. Government representative on Cluster Initiative governance structures need to come from the top management level of public sector institutions so that they can escalate public sector issues to both senior political leadership and/or facilitate the coordination of different spheres of government and/or departments within institutions where cross-departmental solutions are needed to address business environment constraints. It is vital that creative ways are found to ensure that both top management and political leadership in public sector institutions are exposed to information on both the significance of clusters to the local economy as well as the workings of Cluster Initiatives and their vital role in enhancing clusters and local economic performance. Creative ways to accomplish this can include organising firm-level visits by public sector leaders to both leading firms as well as emerging firms in the cluster and where public sector leaders can hear and see first-hand both what these firms are achieving as well as what challenges they are dealing with.

Fourth, both the public and private sector needs to allocate resources towards the development of high quality strategies, and high quality strategy processes, designed to enhance the upgrading, productivity, competitiveness and growth of clusters as well as a shared understanding of what cluster success looks like in terms of priority objectives. As part of this strategy process, it is vital for both public and private sector leadership to try and develop a shared understanding of what cluster success looks like. Internationally, it is generally accepted that the overarching objective for supporting clusters is to enhance their global competitiveness. Nevertheless, public sector leaders will often emphasise additional objectives such as job creation, poverty reduction, economic transformation (i.e. ensuring that formerly disadvantaged groups can also benefit from economic opportunities), export growth, and/or small business development. However, in some cases public sector leaders do not understand both what global competitiveness means, why it is vital to economic sustainability, and what needs to be done by both the private and the public sector to improve global competitiveness. As a result, the often limited resources of Cluster Initiatives are stretched to try and address issues over and beyond competitiveness issues with the attendant danger that all Cluster Initiative objectives become compromised.

## **Lessons for the evaluation of Cluster Initiatives**

The following three lessons relevant to the evaluation of Cluster Initiatives, as well as the CIMBT, are identified.

First, the CIMBT has provided useful information to Cluster Initiative stakeholders on a range of key Cluster Initiative performance components and which are relevant to the effectiveness of Cluster Initiatives in improving innovation, productivity and competitiveness of clusters. As such, Cluster Initiative stakeholders in Kwazulu-Natal found that the evaluation process which used the CIMBT identified a wide range of factors which needed to be addressed to strengthen the Cluster Initiatives. As a result, important shared learning amongst Cluster Initiative stakeholders took place. This learning can be two-fold. Firstly, a shared understanding of what the priority Cluster Initiative improvement issues are which need to be addressed to enhance the effectiveness of Cluster Initiatives. Secondly, a shared understanding of what needs to be done to address these priority improvement issues can be developed as part of the evaluation and recommendation development process which should involve key Cluster Initiative representatives.

Second, it is possible for the CIMBT to be further refined and used as an evaluation tool using a rapid evaluation approach which does not require costly and time consuming data collection procedures such as firm-level surveys as well as detailed documentation analysis. Instead, the CIMBT can be used to collect data from a hand-full of Cluster Initiative participants without necessarily compromising the quality and validity of collected evidence. However, in order to achieve this, the CIMBT needs to be implemented by independent researchers with no vested stake in Cluster Initiatives and who also possess deep insight in the functioning of clusters and Cluster Initiatives. It is also important that the implementation of the CIMBT is guided by a clear methodology manual that clearly sets out the rating metrics for the 25 evaluative questions contained in the CIMBT. Further research and refinement of the CIMBT tool is needed to address issues such as the refinement of performance indicators (for example for return on investment and value for money) as well as the possible weighting of performance components to better reflect differences in the significance or importance of Cluster Initiative performance components. A second area of possible future refinement would be a version of the CIMBT design to assess the potential for possible future Cluster Initiatives where none currently exists.

Third, it is vital that Cluster Initiatives design and implement their own monitoring and evaluation systems. We believe that the use of a theory of change and logic model approach by Cluster Initiatives has great potential as a conceptual framework to inform the design of Cluster Initiative monitoring and evaluation systems. In addition, the process of developing theories of change and logic models offers much potential value to the actual process of designing Cluster Initiative strategies as well as implementation programmes. The use of such an approach can help to ensure that such strategies are evidence based, and that they are logical and make explicit key assumptions which need to be valid if they are to work. In addition, these frameworks make it easier to identify a small set of critical indicators at various stages in the implementation process which can be monitored and communicated back to both Cluster Initiative management, governance structures and broader stakeholders. Of course, clusters and economies are dynamic and it would be necessary to refine Cluster Initiative theories of change on an ongoing basis.

## **5. Conclusions and Further Research**

There is value in further refinement and testing of the CIMBT as a participatory evaluation approach and tool for Cluster Initiatives globally. The development of a CIMBT Guide and

Implementation Manual could support such a process and this would also require further support from government as well as donors. The benefits from following a standardised CIMBT evaluation process include the ability to benchmark Cluster Initiatives and as part of this process identify Cluster Initiatives which are outstanding performers with respect to various Cluster Initiative performance components. Such benchmarking could form part of a larger knowledge sharing initiative involving that sharing of Cluster Initiative good practices between Cluster Initiatives at both a national and global level.

To enhance rigour and the ability to make strong causal findings regarding the contribution of Cluster Initiatives to a range of firm level and economic impacts, further work is required on complementary impact evaluation methodologies which can produce credible evidence of causal attribution. The use of modelling methodologies is one such newly emerging methodology which has started to be applied to value chain interventions (see Derwisch and Lowe, 2015. White and Sabarwal, 2014). There are many different kinds of models, both quantitative and qualitative. The use of Theories of Change represents one kind of qualitative model. However, modelling for impact evaluation usually involves mathematical models which range from single equation models (which have unidirectional causality from intervention to outcome), to systems dynamic models (which include feedback loops involving both stocks and flows), as well as vector auto-regressive models which use time-series data (White and Sabarwal, 2014). Modelling can play an important role by making predictions about and estimating the impact of programmes and policies.

## References

B&M Analysts. (November 2011). The changing model for industrial development Enabling industrial growth through sustainable clustering interventions. Durban.

Care. (2012). Guide to Monitoring and Evaluation System Design for Value Chain Projects.

Carpinetti., L. C. R. E., Mateus, E.V.C., Gerolamo, C. (2008). A measurement system for managing performance of industrial clusters A conceptual model and research cases. *International Journal of Productivity and Performance Management*. Vol. 57 No. 5, pp. 405-419.

Davidson, J. (2014). UNICEF Methodological Brief No 4: Evaluative Reasoning. Italy.

European Cluster Observatory. (2010). Methodology Background Paper 1: Benchmarking Regional Competitiveness in the European Cluster Observatory

Funnel, S. Rogers, P. (2011). Purposeful Program Theory: Effective Use of Theories of Change and Logic Models. John Wiley and Sons. San Francisco, California.

Gerolamo, M. et al., (2008). Performance management of regional clusters and SME cooperation networks. *International Journal of Business Excellence*, Vol. 1, No. 4, pp. 457-483.

GIZ. (2014). Example results models and example indicators for projects in the area of private sector development. Germany.

Hausmann, R. Rodrik, D. Sabel, C.F. (August 31, 2007). Reconfiguring Industrial Policy: A Framework with an Application to South Africa.

Kaplinsky, R. (2004). Spreading the gains from globalization: what can be learnt from value-chain analysis, *Problems of economic transition*, Vol. 47, No. 2: 74-115.

Köcker, G.M., Svensson, K., Szechenyi, N. (2011): World Class Clusters- An Attempt to Formulate the Main Criteria of World Class Clusters.

Marshall, A, (1982, 8th edition). Principles of Economics: an introductory volume. Basingstoke: MacMillan)

Maskell P, Eskelinen H, Hannibaldson I, Malmberg A & Vatne E. (1998). Competitiveness. Localized Learning and Regional Development: Specialization and Prosperity in Small Open Economies, Routledge, London

McCormick, D, (2007). Industrialisation through cluster upgrading: Theoretical perspectives. In Oyelaran-Oyeyinka, B & McCormick, D (Eds), *Industrial Clusters and innovation Systems in Africa*. United Nations University: Tokyo.

Morris, M., & Robbins, G. (2006). "The role of government in creating an enabling environment for inter-firm cluster co-operation: Policy lessons from South Africa", in Oyelaran-Oyeyinka B and McCormick D, *Industrial clusters and innovation systems in Africa: Institutions, markets, and policy*, United Nations University Press, Tokyo.

Nadvi, K & Barrientos, S, (2004). *Industrial Clusters and Poverty Reduction*. United Nations Industrial Development Organisation (UNIDO), Vienna.

National Governors Association. (2002). *A Governor's Guide to Cluster-Based Economic Development*, Washington D.C.

OECD Development Assistance Committee (DAC). (2002). *Glossary of Terms in Evaluation and Results-Based Management*. Paris.

Porter, M. (1990). *The Competitive Advantage of Nations*. Free Press. New York.

Porter, M. (1998). *On Competition*. Harvard Business Review Publishing.

Porter, M. (2000). *Location, Competition and Economic Development: Local Clusters in a Global Economy*. *Economic Development Quarterly* 14 (1): 15-34.

Porter, M. (2003). *The Economic Performance of Regions*. In *Regional Studies*, 37 (6-7): 549-578.

Price Waterhouse Coopers. (2011). *Uncovering Excellence in Cluster Management*.

Rodrik D. (2004). *Industrial policy in the twenty-first century*. Paper prepared for UNIDO.

Rogerson, Christian M.(2010) 'Local economic development in South Africa: Strategic challenges', *Development Southern Africa*, 27: 4, 481 — 495

Schmitz, H. & Nadvi, K. (1999). *Clustering and Industrialisation: Introduction*. *World Development* 27(9), 1503- 1504

Sölvell, Ö. et al., (2003). *The Cluster Initiative Greenbook*, Bromma Tryck AB Stockholm.

Tiebout, C, 1956 *A Pure Theory of Local Expenditures*. In *The Journal of Political Economy*, Vol. 64, No. 5. (Oct., 1956), pp. 416-424.

UI Haque. I. (2007). *Rethinking Industrial Policy*. UNCTAD Discussion Paper 183.

United Nations Industrial Development Organisation. (2001). *Development of Clusters and Networks of SMEs*. UNIDO: Vienna

Annexure Cluster Benchmarking Framework (National Governors Association. 2002):

<b>Factor</b>	<b>Description</b>	<b>Typical Measures/Proxies</b>
R&D capacity	Institutes of public or private research in areas related to cluster's products or processes; Expert individual researchers that are available or accessible	R&D expenditures from government and private sources that involve cluster members, products, or processes
Workforce skills and availability	Degree to which labor force skills are tailored to the cluster's needs (i.e., technical skills, general knowledge of the industry, and entrepreneurial skills)	Number of enrollments in relevant programs; Graduates hired by cluster
Education and training	Education and training for the cluster's major occupations, instruction embedded in context of cluster; Instructors with relevant experience; Training for technological and organizational changes	Number of credit and noncredit programs for cluster; Internships/apprentices employed
Proximity to suppliers	Nearby sources of primary and secondary supplies, materials, and services that minimize transaction costs and maximize interaction	Input/output analysis of supply chains; Number of potential first-, second-, and third-tier suppliers; Survey of actual suppliers
Capital availability	Local banks that understand the cluster and know the cluster's key players; Availability of working and startup capital; Access to seed and venture capital to exploit new opportunities	Dollar value of venture capital, loans made in cluster; Participation of bankers in cluster activities
Specialized services	Public-sector services, such as technology extension services, technology centers, export assistance, or small business centers and private-sector services provided by designers, engineering consultants, accountants and lawyers that have special knowledge of the cluster	Number of consultants who specialize in cluster; Services that employ specialists from cluster; Dollar value of local outsourced services
Machine builders and software designers	Access to companies that design and build the machines, tools, and software used by clusters; Working relationships between the tool builders and companies to foster collaborative innovations	Number of companies that produce and sell capital equipment to the cluster
Networks and alliances	Frequency of formal cooperation among cluster members in, for example, joint ventures, production, marketing, training, or problemsolving	Number of joint ventures, skills alliances, marketing consortia, etc.
Social capital	Scale and degree of activity among local business and civic associations in the region; Frequency of interaction; Informal networks of personal business related contacts	Number of professional, business, and trade associations; Membership in each, level of activity; Survey of connections
Entrepreneurial climate	Continual formation of new business ventures by workers and managers within the cluster based on new, complementary, or competitive products or on core competencies	Number of new startups generated by cluster; Number attracted to cluster
Innovation and imitation	New and enhanced technologies and products that are conceived, developed, and adopted or brought to market; Dispersion of innovations to other local firms	Patents and copyrights; Dollar investments in new technologies; New product lines started