

Cluster Development TOOLKIT

PHASE I - APPRAISAL



September 2021
Saskatchewan Economic Development Alliance



Phase I Appraisal is targeted to ‘quick starting’ your cluster development efforts.

All clusters are existing – they may be operating informally and underachieving or maximizing their competitive advantages. More than simply identifying clusters, scaling and strengthening them requires additional work to determine what is constraining and/or what opportunities there are to enhance cluster competitiveness and to develop suitable responses that are able to draw on the capabilities and resources of the cluster’s members.

Any cluster-based economic development strategy must be able to answer these basic questions, which is not achieved by simply identifying the existence of a cluster.

1. What is the opportunity?
2. What is constraining that opportunity?
3. Does it make sense to address constraints collaboratively?

A list of supporting resources is found on the last page of this document. They may be downloaded from the Saskatchewan Cluster Development Network webpage.

To conduct a basic appraisal or assessment of the existing or emerging cluster, we recommend the following three steps:

1. Identify cluster scale, proximity & interdependencies
2. Document Cluster SWOT
3. Map the cluster

1. IDENTIFYING CLUSTERS: BASIC CRITERIA

Since clusters generally cannot be built from scratch, it is important that practitioners attempt to distinguish between what looks like a similar group of firms and a true cluster. The basic criteria for a cluster are that it must contain: (a) a critical mass of firms that are (b) geographically proximate and (c) economically interdependent.

Scale

- There are no minimum or maximum number of actors required.
- Clusters have been built around groups of fewer than 10 firms.
- Some propose that critical mass occurs when a core group of firms has attracted specialized suppliers, but there are also no universal criteria for how many of these are needed to qualify as a cluster.
- Others emphasize that a cluster must contain not only firms, but also institutions that address their shared needs.

Proximity

- Clusters are generally built on information spillovers between workers and firms, so the geographic scope of clusters tends to align with labor markets.
- Obvious connections between firms are sometimes local but regional markets are usually the appropriate scale for understanding a cluster and its needs.

Interdependence

- Not simply cooperating or networking - it refers to firms that gain a competitive advantage from being near related firms. Inter-dependencies can be described as vertical or horizontal.
 - Vertical: group of trading partners that may draw upon very different labor pools, technologies, and inputs.
 - Horizontal: group of firms, often competitors, that produce related products and operate at the same stage of the production process; may not formally cooperate or transact, but draw from a similar labor pool or rely on similar technology.



Breaking down the interdependencies

Of the three aforementioned criteria, interdependence is the most complex and demands the most attention to understand how to approach cluster development. Determining how firms are related is more challenging than identifying whether a group of firms meet the relatively straightforward thresholds for scale and proximity.

Interdependencies include economic exchanges that should be measurable, as well as factors like trust, culture, and institutional dynamics.

Generally speaking, there are three basic sources of interdependency that we can search for: 1) industry product value & supply chains, 2) occupations, and 3) technologies.

In larger regions, each of these three approaches might identify multiple, overlapping clusters; in smaller regions, one approach might reveal clusters that the other two missed.

Products, Value Chains & Supply Chains

Supply chain analysis is a critical piece to this process. Once you've identified the core industries in your clusters, you can look at the inputs from other industries that those core industries purchase. You can also analyze how much of that amount is spent inside the region versus outside the region. If an industry can't buy what it needs in the region, it buys what it needs from outside of the region, which means that money has left the regional economy.

Assessing value chains is also important to determine means of enhancing competitiveness.

Occupation & Skills

An area's occupational or skills profile can be a driver of industry growth. A firm is over 100 times more likely to diversify into an industry that is strongly skill-related to its core activity, compared to an unrelated industry. Recognizing this, as well as shifting skills demands of industries, economic development leaders must focus on skills and workforce development to spur business expansion and retention efforts.

Technology and Know-how

Businesses can be prone to clustering in emerging, pre-commercialization industries in which general purpose technologies are being developed and applied in a variety of fields. In this ecosystem, firms are part of a process of learning between suppliers, customers, universities, R & D organizations, government, and other institutions.

In more mature industries, firms may cluster together to monitor and replicate innovations produced by competitors, share facilities and equipment, and jointly solve technological problems. Understanding clusters on the basis of shared technology enables regions to develop industry-relevant research centers, shared lab facilities, and incubators or accelerators. It also enables regions to leverage "smart specialization," making investments in specific technological capabilities.

How do we undertake further identification?

1

Quantitative Analysis

Secondary data will start to highlight the concentration of economic activity in a region. Analysis will be dependent on the depth and availability of data, often limited in rural markets.

Location Quotient(LQ) identifies the extent to which an economic activity is over or under represented in a region relative to the province or county as a whole

Input-output Analysis is useful if there is regional data available.

Shift Share Analysis, an economic development technique that tracks changes in economic activity over time, may be useful if regional production and employment data is used.

Export Data is useful if available at a regional level.

2

Business/Organization Interviews

The primary aim of interviewing principal stakeholders(businesses, support institutions, public sector) is to gain an in-depth impression of the actual business environment in which they are operating (which is often very different from what secondary sources and data may suggest).

This process aims to document the main business functions, the value and supply chains they are operating from, degree of interaction with support institutions and the current status and reasons for low or adequate demand; product turnover and employment distribution and other challenges/opportunities.

Questions to assist in the interview process are available by sector on the Toolkit webpage.



For understanding the complex linkages between firms and sectors, there is no substitute for on-the-ground business intelligence.

Hard data has limitations

Relying on NAICS codes can either overstate the size of a cluster (because firms with a similar NAICS code do not necessarily relate to one another) or understate it (because a cluster may be centered around a few NAICS codes but also draw in a broad network of suppliers).

Another shortcoming in the NAICS system is its inability to accurately describe fast-evolving industries or companies that make products that span traditional boundaries.

Location quotients (LQ), a measure of specialization, can be misleading. There is no clear “cutoff” at which an industry should be considered a cluster: Studies have used values ranging from 1.25 to 3 (indicating that the industry is up to 3 times more concentrated in the region than nationally).

Another measurement problem is that, since certain industries are very highly concentrated in just a few regions, a local industry can be a top performer but still have an LQ below one. An industry may have a low LQ but have considerable growth potential.

Emerging cluster industries, such as environmental technology, may have a relatively lower current economic concentration comparatively, but have the potential to become more economically significant in the future. These are younger industries in their early stages of development.

2. Cluster SWOT

Undertaking quantitative and qualitative analysis will provide necessary information for a basic Strengths, Weaknesses, Opportunities & Threats assessment of the existing or emerging cluster. You should now possess key information such as:

The Production System:

- Location and size of firms
- Skills, technology and production processes
- Products (quality/price)
- Degree of organization of the private sector

The Markets

- Are they growing or shrinking? How large are they?
- Identified barriers and opportunities.

Value and Supply Chain Integration

- Description of existing or potential relationships. How stable are they?
- What are the key challenges that each partner is facing?
- What type of leadership or governance frameworks exist and implications for expanding or upgrading?

Strength of the Support System

Includes public, private & non-profit institutions; educational system

- Are the enterprises and other related institutions well linked in the cluster?
- Are the enterprises and other related institutions well linked along the value chain?
- What linkages could be strengthened? What new linkages could be created?
- How could you facilitate this?

Framework conditions

- Status on infrastructure and policy, technology utilization, innovation and workforce

Strengths

Insert the cluster's strengths relative to:

- Raw materials
- Location
- Human resources
- Product cost
- Market access
- Public policy & institutions
- Other?



Weaknesses

Insert the cluster's weaknesses in the following areas:

- Marketing
- Production processes
- Input supply
- Financing
- Policy & business environment
- Infrastructure
- Regulatory



Opportunities

Profile:

1. Potential niche products or markets.
2. Unrealized value-added opportunities
3. New market access opportunities locally, regionally, nationally or internationally
4. Public institutions that could help enhance market access
5. Trends in terms of market access, trade, policy that could create new opportunities





Threats

Profile:

1. What buyers think about the quality of the cluster's products.
2. Major domestic & global trends that could have an adverse effect on the cluster.
3. What the competition doing.
4. Possible substitute products that could displace cluster producers?
5. Changing standards nationally and internationally – is the cluster prepared to meet them?

3. Cluster Mapping



A cluster map provides a summary diagrammatic description of (a) the types and number of stakeholders involved, (b) nature of linkages of various stakeholders with the firms and (c) strength of such linkages.

The map drawn at the time when an agency starts working in a cluster is called the *current cluster map*. The cluster map projected by at the conclusion of intervention is called the *future cluster map*.

The visual difference of these two cluster maps provides information about linkages that need to be developed, critical stakeholders who need to be implanted in the cluster, the links that need to be created thereafter, etc.

Cluster mapping is also a very useful tool to demonstrate to cluster stakeholders, related institutions and policy makers the importance of “linkages” in cluster development.

What to map?

A cluster map describes in the form of a diagram:

- ⚙ Important cluster actors and their numbers
- ⚙ Value and distribution of business among principal cluster actors
- ⚙ Business related linkages among various cluster actors

A cluster map provides information about:

- ⚙ Linkages that exist but need to be strengthened
- ⚙ Linkages that do not exist and need to be developed
- ⚙ Absence of critical linkages
- ⚙ Absence of critical cluster actors
- ⚙ Changes in macro indicators that we perceive for the principal cluster actors

Include:

Core firms / principle enterprises in the cluster:

- Number and Turnover
- Sources of raw materials
- Major markets
- Marketing channels

Support firms:

- Number
- More issues if required

Associations of core firms:

- Types of services provided to firms
- Types of interaction with other cluster actors
- Associations of principle suppliers
- Service providers and supplier firms: relationship with core and supplier firms
- Institutions: relations with core firms, supplier firms, associations

Connecting the actors



Parenthesis to show the number of stakeholders in a group/network.



A thick/dotted two-sided arrow to show a well/underdeveloped linkage between two stakeholders that have a subcontracting relationship.



A thick/dotted one-sided arrow to show a well/underdeveloped linkage between two stakeholders; the point of the arrow meets the stakeholder that receives goods/services from the other stakeholder.



A thin-bordered rectangular box for a group of stakeholders. The firms in a group are near similar and are not necessarily linked to each other.

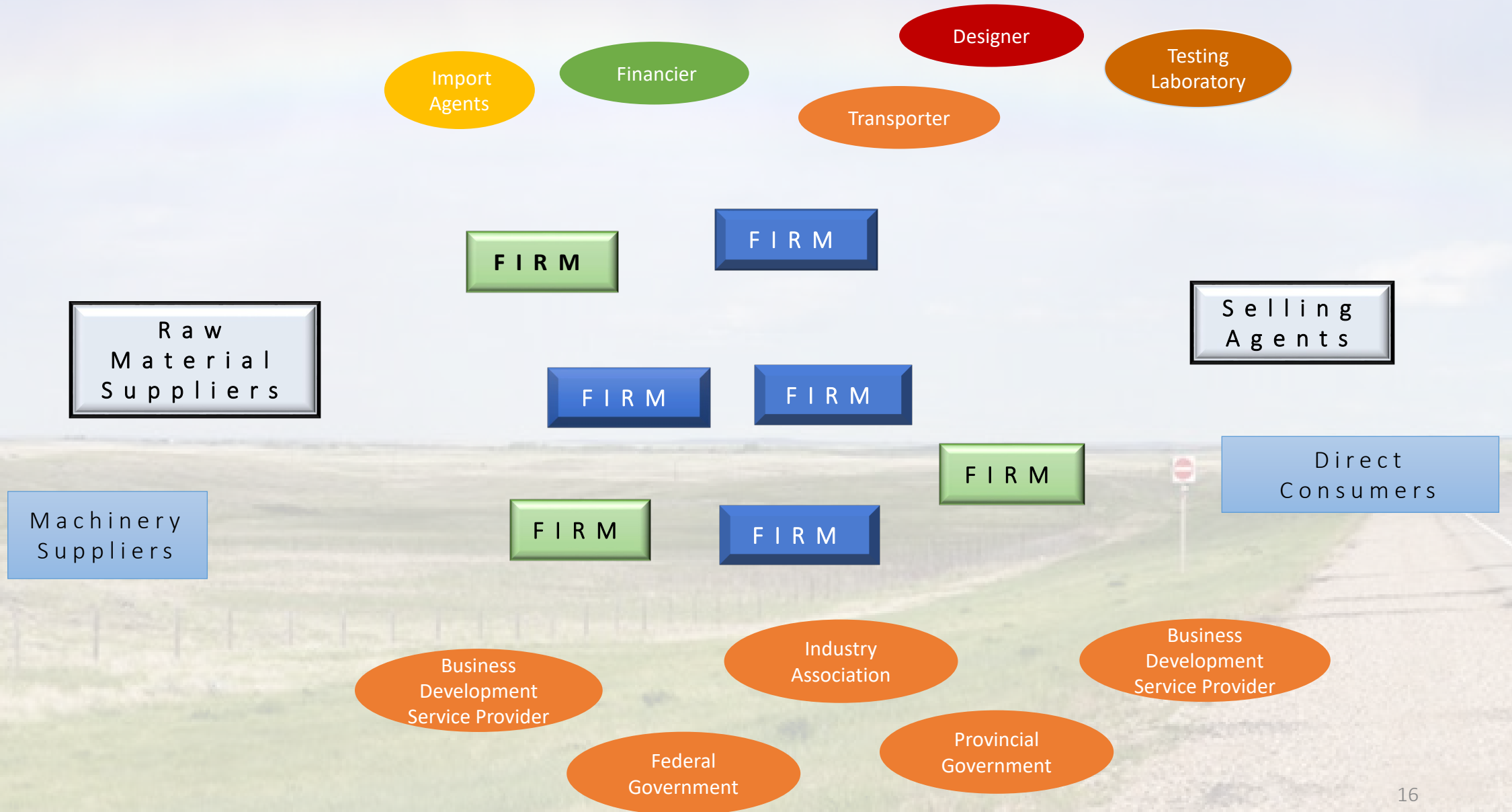


A thick/dotted-bordered rectangular box for showing a well/poorly functioning network of inter-related stakeholders.

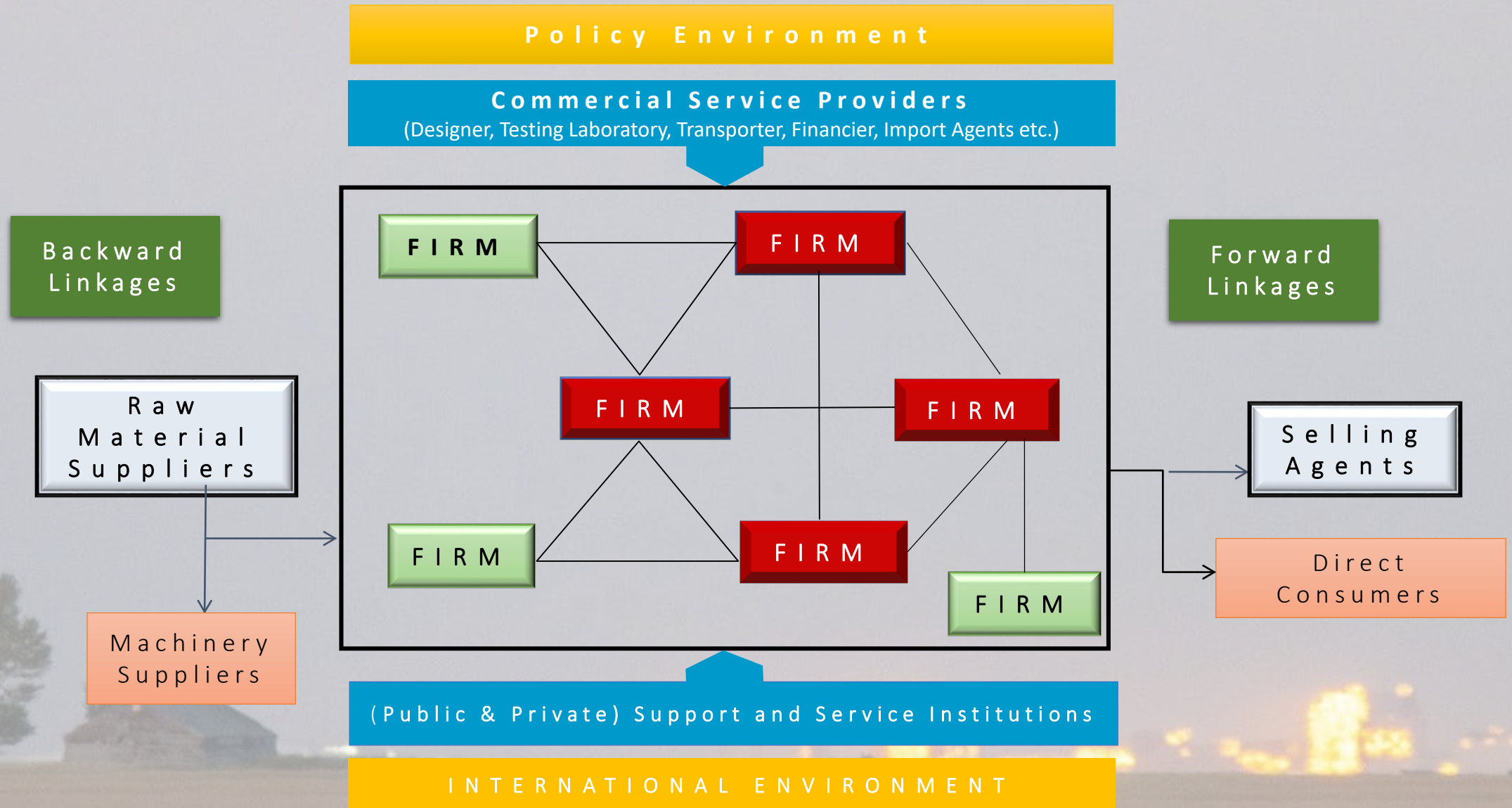
How to Measure Linkages

Strong Linkages	Weak Linkages
1. Relationship between a group/network of principal firms and a group/network of support firm(s)	
<ul style="list-style-type: none"> Support firms have developed a niche in a product/service Principal firms are fully dependent on support firms for this product/service Principal firms depend on support firms for continuous innovation in this product/service to remain competitive There is a continuous growth of support firms in the cluster 	<ul style="list-style-type: none"> Principal firms sub-contract/source a product from support firms to reduce cost Major changes in that product/service come from outside the cluster Support firms engage in price based competition to get subcontracting orders Profitability of support firms is decreasing
2. Relationship between a group/network of principal firms and a group(or single) Business Development Service(BDS)providers	
<ul style="list-style-type: none"> Principal firms are regular users of the services of the BDS providers BDS providers have specialized BDS providers are creating external service providers by creating and delivering new training programmes BDS providers have grown in size and number 	<ul style="list-style-type: none"> BDS providers are rarely used BDS providers do business with different types of firms BDS providers are very secretive about their trade BDS providers are not growing
3. Relationship between a group/network principal firms and marketing channels	
<ul style="list-style-type: none"> Principal firms contribute substantially in product conceptualisation The principal firms earn a premium return from the channel 	<ul style="list-style-type: none"> Principal firms simply carry out the processes as suggested by the channel The channel does price based negotiation with principal firm
4. Relationships within a network of principal firms	
<ul style="list-style-type: none"> Regular interaction for business generation/development issues Interaction generates business for the network members Has opened up new areas of cooperation that were not initially envisaged by the network Existing networks are increasing in size 	<ul style="list-style-type: none"> Infrequent interaction of members No discussion on fiscal or regulatory issues No discussion unimportant business related services Number of active members is decreasing
5. Relationship of an institution with group/network of principal firms	
<ul style="list-style-type: none"> Has regular interaction with (networks of) principal firms Works on business/developmental issues with (networks of) principal firms Actively promotes policy-related issues and introduction of new services Institution grows by working with principal firms and new institutions become involved 	<ul style="list-style-type: none"> Infrequent interaction The institution rarely visits the firms The institution does not have any idea regarding the cluster's policy related issues The institution does not depend on the growth of the cluster

Underperforming or Latent Cluster



Performing Cluster



Associated Resources:

Stakeholder Presentation: Demystifying Cluster Development

Interview Guides:

1. Core Business Data Collection
2. Emerging Clusters
3. Existing Clusters
4. Tourism Sector
5. Manufacturing Sector
6. Natural Resources Sector
7. Agriculture Sector
8. Service Providers

Industry Resource List

Material sourced from:

- Cluster Navigators
- UNIDO

