Innovation and Location in Portuguese mould clusters

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Innovation and Location in Portuguese mould clusters

- Innovation: location matters
- The mould industry and mould clusters in Portugal
- Innovation in Portuguese mould clusters
  - The role of managers

Innovation: location matters

What are the drivers of innovation?

- Factors internal to companies.
- External environment.

  Location matters for innovation and companies should adapt their approaches to the management of innovation to this fact.

Innovative Capacity Framework

Source: Porter and Stern, 2001

1. The common innovation infrastructure.

2. The cluster-specific environment for innovation.

3. The quality of linkages.

1. Common innovation infrastructure

- Human and financial resources available for R&D activity;
- Resource commitment and public innovation policies (intellectual property protection, tax incentives, openness to trade and investment, antitrust policies);
- Level of technological sophistication of the economy (path-dependency).

2. Cluster-specific environment for innovation

- Innovation and commercialization of new technologies tend to take place in clusters.

  Cluster = "geographic concentration of interconnected companies, specialized suppliers, service providers, firms in related industries and associated institutions in particular fields, that compete but also cooperate" (Porter, 1998).

2. Cluster-specific environment for innovation

- Companies are key actors in the innovation process since they introduce and commercialize innovations;

- Four attributes of a location's environment affect the innovation capacity of companies.

2. Cluster-specific environment for innovation

- The presence of high-quality and specialized inputs.
- A context that encourages investment and local rivalry.
- Pressure and insights from sophisticated local customers.
- Local presence of related and supporting industries.

2. Cluster-specific environment for innovation

- Better information about the need and opportunity for innovation;
- Superior flexibility and capacity to act quickly because:
  - Rapid access to components, services and other elements necessary to implement innovations;
  - Local complementary relationships;
  - Pressure from constant comparisons, competitors, customers;

2. Cluster-specific environment for innovation

- Entrepreneurs and firms located within clusters are embedded in **networks** of **personal** and **inter-firm** relations.

- These relations produce **information** benefits and facilitate access to **resources**. Plus, relations contribute to rapid **diffusion of innovations** through imitation.

2. Cluster-specific environment for innovation

- **Weak** ties (casual, eventual relations) to:
  - discover opportunities;
  - search for specialized resources.

- **Strong** ties (frequent, long-lasting relations) to:
  - access resources at competitive prices;
  - exchange tacit knowledge.

3. The quality of linkages

- Reciprocal relationship between the common innovation infrastructure and clusters.

- Institutions for collaboration link the two areas:
  - university and interface R&D institutions;
  - venture capital networks;
  - informal companies networks.

- Brokerage events connect clusters with national/international innovation infrastructure

Location matters but…

- Taking advantage of location for innovation is far from automatic and companies based in the same location differ in their success at innovation.

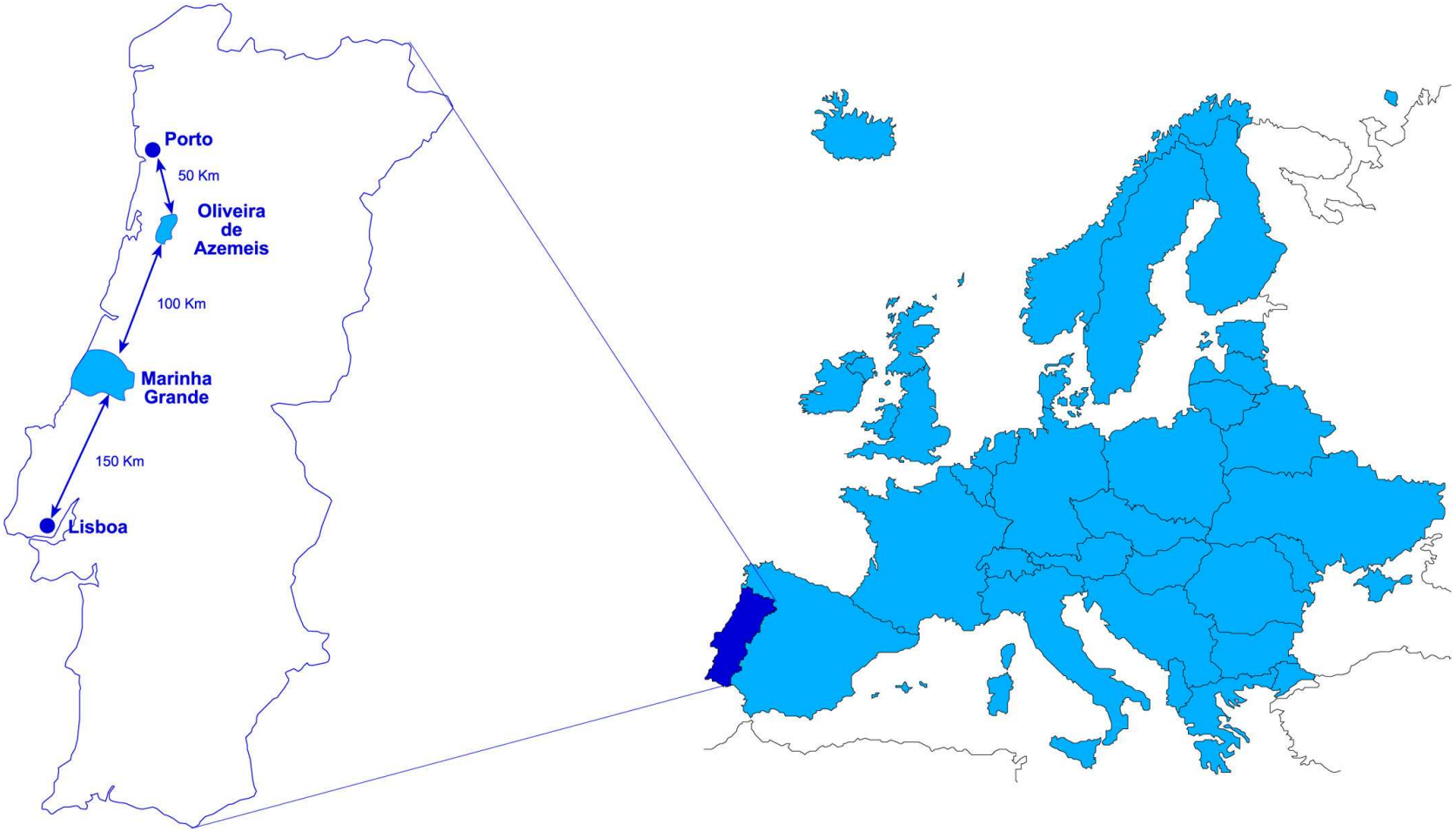
Two mould clusters in Portugal

- origin: glass industry (17th century);
- mid 1920s - first moulds for glass;
- 1944 - first moulds for plastic materials;

- mid 1950s – first exports of moulds to UK, USA;

- Late 70ties and 80ties - rapid growth trough a process of spin-offs.

Two mould clusters



Two mould clusters: the firms

Marinha Grande

- 200 mould-makers;
  - 4000 employees;
  - Sales = € 177 m (62% of total);
  - 2/3 of total mould exports
- 100 ind. entrepr.;
- 50 engineering or trading firms.

Oliveira de Azeméis

- 50 mould-makers;
  - 1600 employees;
  - Sales = € 73 m (26%of total);
  - 1/3 of total moulds exports
- 20 ind. entrepr.;
- 5 engineering or trading firms.

Mould clusters: producers & suppliers

- 15% of subcontracting in total turnover (one of the highest values among ISTMA countries)
- 16,6% of sales are invested (technology, equipment and training)

- Suppliers:
  - Equipment, steel and standardized components are imported. There are local representatives.
  - Other inputs and services (design, programming,...) are sourced locally

Mould clusters: customers

- 90% of production is exported: 75% by mould makers and 25% by mould traders;
- 105 export destinations between 1994-99; 10 most important: 7 EU countries (F, G, UK, Sw, Nd, S, B-L), USA, Brazil and Israel;
- Most important customer industries are: automotive, packaging, electronic and telecommunications.

Customers of the two clusters

- Customers are located far away

+ Customers are **diversified:**

  - in terms of industries (mould-makers are part of several industrial value-added chains);
  - in terms of countries.

Learning and innovation

benefit from **diversification.**

Mould clusters: local institutions

- Local specialized institutions:
  - Cefamol (1969) – national moulds industry association;
  - Centimfe (198?)– technological center for the metal and mould making industries;
  - Cenfim (198?)– professional training center for metallurgic and mechanical industries;

- Other local and national institutions

Implications for management

- Locate R&D investments in environments with strong innovative capacity
- Proactively access the local strengths
- Enhance local innovative capacity

Environments with strong innovative capacity

- There tend to be only a few true innovation centers in each industry.
- Disparate locations can slow down innovation and commercialization.
- Strong local knowledge spillovers can make it harder to protect ideas from local competitors.
- Competitors are also source of complementary ideas, products or services.

Proactively access the local strengths

Invest to tap into the local strengths:

- active participation in industry associations;
- invest in deep relationships with local universities;
- assist programs that train skilled personnel.

Companies may differ on how they leverage local capacities.

Enhance local innovative capacity

- Companies can individually encourage public policies that improve the cluster and innovation environment.
- Industry associations can offer a unified voice in encouraging appropriate policies.
- Collective organizations also have an important independent role:
  - Establishing training programs, creating research center, supporting local organizations...

Final remarks

- Entrepreneurs located within clusters can benefit from networks of local relations:
  - Strong ties with economic agents internal to the cluster
  - Weak ties to economic agents external to the cluster

Final remarks

- Weak ties are important to
  - spot potential opportunities for cooperation;
  - identify potential partners;

- Strong ties are necessary to:
  - select (trustful) partners;
  - govern relationships.