Innovation policy developments in the Netherlands: From cluster policy to the adoption of the DIS Model

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Overview

• Historical perspective
• Cluster policy roles
• Policy learning
• Cluster types
• Systemic imperfections
• Strategic framework & cluster policy process
• Leading Technological Institutions (GTIs or TTIs)
• Innovation performance & conditions in the Netherlands
• Dynamic Innovation System
• Concluding remarks
Historical perspective

- MoEA: Industry and sector based policies
- Cluster policy initiated by Michael Porter 1990
- Netherlands as early adapter from 1991
- Policy study 1993: ‘Competing with Knowledge’
- Policy study 1995: ‘Knowledge in Action’
- 1995: R&D subsidies: From industry to cluster based
- 1997 Cluster policy roles defined: Framework policy, Organising stakeholders, Innovative Procurement
- 1998 LTIs - Leading Technological Institutes
- 2000 Strategic Framework
- 2001 DIS - Dynamic Innovation System
Cluster policy roles

• Framework policy
  - Competition policy & deregulation
  - General technology policy
  - Macro economic policy
  - Solid and reliable infrastructure

• Organising stakeholders
  - Strategic information
  - Organisational capacity
  - Subsidies

• Innovative Procurement Policy
Policy leaning

• Leaning by doing i.s.o. benchmarking, mutual learking
• Clustering should be a market-induced process
• Each clusters is unique
• Role government *possible*, but *not* always required
• Develop various policy roles depending on cluster type
• Options for government roles in clusters: Chairman, Catalyst/Initiator, Process manager, Brokers, Connecting Networks, Finance
Critical learning points

• Generate shared vision
• Follow up is shared responsibility
• Cooperate with champions
• Clusters too broadly defined
• Core players and periphery
• Focus on high-tech prevails
• Pay attention to non-technical innovations
• Emerging vs mature clusters
• Limited role of the regions in the Netherlands
• Tendency to a sectoral bias
Different roles per cluster

• Demand: homogenous-differentiated & advanced-standard
• Type of knowledge: tacit-codified & embodied-disembodied
• Generating v. absorbing knowledge
• Concentrated v. dispersed
Systemic imperfections (1/2)

• Limited interaction between firms in cluster
  - Lack of cohesiveness e.g. brokerage
  - High cognitive distance e.g. joint research programme

• Informational imperfections
  - Lack of insight in technology or business trends
    e.g. foresight studies or roadmaps
Systemic imperfections (2/2)

• Mismatch knowledge infra – business needs
  - Developed knowledge to far from business needs — e.g. joint research programme
• - Knowledge not commercially promising
  - Institutional set-up knowledge infrastructure — TTIs
• Lack of demanding customers
  - Innovative customers demand innovative inputs – e.g. Japanese car industry
Strategic framework

• From experimentation and variety to structure and integration
• Purpose: support tool policy makers
• Goals:
  1. Managerial – allocate resources
  2. Support tool – adjust policies to cluster
  3. Provide transparency – public accountability
• Process: Guiding model with three phases
  1. Information
  2. Initiation
  3. Implementation
Strategic framework - Process

1. Information phase:
Purpose: Which cluster proposals are relevant for NL economy?
- Collect strategic information and cross-validate
- Bias toward new technologies & market trends
- Involvement by government or industry
- Bottom-up or top-down

Gate 1: Towards the initiation phase
- Cluster assessment – Potential Y/N
- Assessment government role – Systemic imperfections Y/N?

Only if Gate 1 criteria are cumulatively positive it will enter the initiation phase, otherwise no added value government role
2. Initiation phase:

Purpose: How do stakeholders tackle systemic imperfections?
- Knowledge & technology instruments
- Business tools
- Cluster monitor
- Bottom-up or top-down

Gate 2: Towards the implementation phase
- Level of urgency
- Associated Risks
- Required input
- Sufficient return on public investment
- Professional approach
3. Implementation phase:

Purpose: How to remove systemic imperfections?
- Brokerages
- Establishing platform organisations
- Providing strategic information
- Removal of constraining regulatory conditions

Future cluster policy upgrading could involve:
- Non-technical innovations
- National versus International
- Inter-ministerial relationships
- The learning policy maker
Leading Technological Institutions

- Knowledge now overrides geography in the Netherlands
- Real & virtual institutes initiated by MoEA in 1997
- 4 LTIs: WCFS, DPI, NIMR, Telematics Institute
- Basic research with long term focus only
- 50% industry and knowledge institutes, 50% MoEA
- Open to foreign companies, R&D in NL
- MoEA financing limited to two times the lowest
- Increasing participation of companies
- External foreign auditing
- No MoEA influence on investment decisions
Example: Dutch Polymer Institute

- Multidisciplinary, ‘chain-of-knowledge’ approach
- Main polymer producing and processing industries: AKZO Nobel, Basell, Dow Chemical, DSM, General Electric Plastics, Océ, Philips, Shell, Teijin
- Universities of Amsterdam, Delft, Eindhoven, Groningen, Nijmegen, Twente, Utrecht and Wageningen and TNO. Universities of Hamburg, Naples and Stellenbosch
- Initially 4 years, after international evaluation + 6 years.
- Annual budget € 11 million, JPY 1,5 billion
- 25% industry, 25% knowledge infrastructure, 50% MoEA
- All members joint owner of research results
- Further info at www.polymers.nl
Challenge: Innovation driven growth!

Investment-driven growth: average investment intensity (1990-2000)

Factor-driven growth: growth rates of labour supply (1990-2000)

Innovation-driven growth: private R&D expenditures % of GDP (1990-1999)
The Netherlands is losing momentum

Average Change in Trend Indicators in Percentages 1995 - 2000

Source: EU, Innovation Scoreboard 2001
Innovation Strengths and weaknesses in the Netherlands

- Public R&D-expenditure
  - ICT-climate
  - Public acceptance new technologies

- Co-operation with universities / research institutes
  - New technology based firms and fast growing enterprises
  - Patent position
  - Share innovative products
  - Costs of patents
  - Availability seed capital

- Private R&D expenditure
  - Availability R&D personnel
  - Financing system universities
  - Use of patents for science
"One should not start a business if there is a risk it might fail"(1)

(1)

Source: Gallup Euro-barometer 2000

www.technieuws.org
Theoretic framework of innovation (1)

Innovation: from linear to cyclical

Linear innovation model:
• from basic research through different phases to innovation in the market

Cyclical innovation model:
• Innovation is influenced by developments in technology, science, society and market
• Innovations on interfaces of different disciplines
Innovation policy at a glance

To improve the functioning of Innovation System through an appropriate mix of:

**Generic policies**
No choice for specific technologies or clusters

**Specific policies**
Aimed at specific technologies or clusters with high potential revenues for the Dutch economy
New challenges for Dutch innovation policy

Growing significance of innovation
- to realise long term economic growth while facing an economic downturn

Inter-ministerial policy review (IBO)
- increase effectiveness of instruments
- less instruments
- more co-ordination between ministries

Decreasing budgets

International developments
- EU Lisbon / Barcelona strategy 3% GDP for R&D
- NL 2%, Private R&D investments low
1. Knowledge transfer for innovators: via intermediates like Syntens, TNO, technology institutes

2. Tax credits: 12-16,000 companies doing R&D

3. Collaborative R&D projects: several generic instruments: technology, sustainability, etc.

4. Strategic Programs: ICT, Life Sciences, Catalysis and Nanotechnology

5. Start your own high tech business: Twinning, Biopartner, etc.

6. Human Capital: Life long learning, training programmes, labor market analysis

Innovation policy instruments from the perspective of an innovating company
Dynamic Innovation System:

**Demand**
- Consumer and intermediate

**Business**
- Knowledge creation
  - (big companies & new technology based companies)
- Knowledge diffusion
  - (SMEs)

**Education and research system**

**Interaction**

**Infrastructure**
- Capital, IPR, information systems, standards

Framework conditions: financial, environmental, taxation, incentives, innovation willingness, entrepreneurial spirit and mobility

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Interaction
Business
Knowledge creation (big companies & new technology-based companies)
Knowledge diffusion (SMEs)

Programmes
Projects

Tax credits
Starters

Human capital

Framework conditions: financial, environmental, taxation, incentives, innovation willingness, entrepreneurial spirit and mobility
Concluding remarks

• From experimenting with clusters to a strategic framework guiding cluster policy
• LTIs as a successful derivative of cluster policy
• Reduced performance of the Netherlands in innovation indicators
• The policies based on the Dynamic Innovation System replacing cluster policy as the main framework for innovation policy in the Netherlands