Governing Variety
Knowledge Triangles in Regional Entrepreneurial Ecosystems

Research for OECD-MinOCW-MinEZ
16 November 2016 – Entrepreneurial Research Day
Jan Peter van den Toren
From industrial policy to smart specialisation

EE in KT

R&D Top 60
Eemsdelta mikt met vergroening van chemie op grote investeringen

Hans Verbraeken
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Als het meezit, is het chemiecluster Eemsdelta bij Delfzijl over vijf jaar twee forse fabrieken rijker. Het zijn Investeringen van samen enkele honderden miljoenen euro's. De ene fabriek moet er in 2019 staan en zet afval om in syngas, een grondstof voor onder meer methanol. De andere, een bioraffinaderij die suikerbieten en biomassa omzet in onder andere azijnzuur, moet in 2020 actief zijn.

Ommezwaal

De komst van beide fabrieken is te danken aan een ommezwaal in 2014, toen de chemische industrie in de regio Delfzijl besloot zich te richten op vergroening. Aanstichter hiervan is Rein Willems, voormalig president-directeur van Shell Nederland.
Boards, valleys and clusters

In Nederland (2015)
- 6 landelijke boards/clusters gericht op één sector
  • Click NL
  • Gastvrij Nederland
- 48 regionale clusters met een sectorale focus
  • Energy Valley
  • Seed Valley
- 6 boards met een brede focus
  • Amsterdam Economic Board
  • Economic Board Utrecht
  • Economic Board Groningen
Entrepreneurial Ecosystem & Knowledge Triangle

Outcomes

Aggregate Value Creation

Entrepreneurial Activity

Outputs

Systemic conditions

Finance, Talent, Knowledge

Regional Governance

Leadership, Networks

Framework conditions

Formal institutions, Culture, Physical infrastructure

Interaction & direction of actors

EE in KT
Five triangles: variety in mass and R&D

Netherlands
Number of businesses (2015): 1.418.005
R&D expenditure/GDP (2008): 1,33%

MRA
% of businesses: 18,2%
R&D exp: 1,14%

Utrecht
% of businesses: 8,1%
R&D exp: 1,22%

South-Holland
% of businesses: 20,2%
R&D exp: 1,15%

Twente
% of businesses: 3,3%
R&D exp: 1,05%

Brainport
% of businesses: 4,6%
R&D exp: 7,86%
Visible leaders

mln Euros R&D expenditures

1775,10
392,50
128,90
120,90
67,80
919,70

Brainport (8 firms)  South-Holland (20 firms)  Twente (5 firms)  MRA (12 firms)  Utrecht (7 firms)  Remaining
Twente: high project intensity, concise innovation network, relying on HEIs and just a few scale-ups

Amsterdam region: low project intensity, dispersed innovation networks, low HEI-involvement and many startups and scale-ups
Networks: projects & partners

Brainport - Project Partner Distribution

- Fontys Hogescholen
- Koninklijke Philips N.V.
- Technische Universiteit Eindhoven
- NXP Semiconductors Netherlands B.V.
Networks: projects & partners

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Projects

Partners
### Regional modes of governance: origin

<table>
<thead>
<tr>
<th>Region</th>
<th>Start</th>
<th>Composition</th>
<th>Agenda</th>
<th>Campus</th>
</tr>
</thead>
</table>
| Brainport (Eindhoven region) | 2005  | Triple helix                     | 1. Facilitating conditions  
2. Building projects  
3. Human Capital                                                                 | 1. High Tech Campus (old Philips site)  
2. Science Park TU/e  
3. Automotive Campus Helmond |
| Kennispark Twente           | 2005  | Government & Universities (UT and Saxion UAS) | 1. Supporting Start-ups on a campus  
2. Building innovation projects  
3. Acquisition of (foreign) firms | 1. Kennispark Twente |
| Amsterdam Economic Board (MRA) | 2011  | Triple helix                     | 1. Directing University research towards clusters  
2. Supporting innovation projects  
3. Human Capital  
4. Addressing governance bottlenecks for clusters | 1. Amsterdam Science Park  
2. Amsterdam Medical Business Park |
Regional modes of governance: evolution

<table>
<thead>
<tr>
<th>Agenda</th>
<th>Instruments/governance</th>
</tr>
</thead>
</table>
| **Brainport (Eindhoven region)** | • Three societal challenges:  
  • renewable energy  
  • safe mobility  
  • smart remote care  
  • Top3 Investment Climate | • Project development  
  • Widening funding base  
  • Platforms on human capital |
| **Kennispark Twente** | • Extending responsibility to business sector  
  • Focus on HTSM | • Foundation of tripartite Twente Board (2014)  
  • Attraction of VC  
  • Student investment fund |
| **MRA (Amsterdam region)** | • Societal challenges (to be selected)  
  • Human Capital Agenda | • Shift from sectors to challenges in governance  
  • Start up facilities  
  • PPP in VET  
  • Contest for smart societal solutions |
Performance I: productivity

The chart above illustrates the productivity trends across different regions in the Netherlands, including The Netherlands, Randstad zone, Intermediate zone, Brainport, MRA, Twente, Utrecht, and South Holland. The productivity is measured in terms of added value per FTE (€1,000) over the years from 2004 to 2014.
Performance II: Employment

Comparison of Employment Rate Across Various Regions:

- Amsterdam: 1.05%
- Eindhoven: 0.59%
- Netherlands: 0.57%
- Intermediate Zone: 0.49%
- Zuid-Holland: 0.47%
- Twente: 0.41%
- Randstad Zone: 0.75%
- Zuid: 0.92%

Legend:
- EE in KT

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### Performance III: Knowledge circulation

<table>
<thead>
<tr>
<th>Education and job level</th>
<th>Brainport</th>
<th>MRA</th>
<th>Twente</th>
<th>Utrecht</th>
<th>S-Holland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion higher educated people (2014) %</td>
<td>35</td>
<td>42</td>
<td>30</td>
<td>45</td>
<td>36</td>
</tr>
<tr>
<td>Jobs requiring higher (medium) education (2014) %</td>
<td>43</td>
<td>48</td>
<td>37</td>
<td>51</td>
<td>45</td>
</tr>
<tr>
<td>Increase in higher educated persons (2004-2014) %</td>
<td>+5</td>
<td>+8</td>
<td>+6</td>
<td>+7</td>
<td>+7</td>
</tr>
<tr>
<td>Increase in jobs requiring higher (medium) education (4-14) %</td>
<td>+1</td>
<td>+5</td>
<td>+5</td>
<td>+5</td>
<td>+3</td>
</tr>
<tr>
<td>Average occupation level (1-5)</td>
<td>2.7</td>
<td>2.9</td>
<td>2.6</td>
<td>2.9</td>
<td>2.7</td>
</tr>
</tbody>
</table>

| Specificity                                                                  |           |     |        |         |           |
| Specificity: proportion 100 most specific occupations (%)                    | 8         | 21  | 16     | 20      | 16        |
| Specificity: LC-level that includes top 100 LC                               | 1.31      | 1.33| 1.26   | 1.34    | 1.19      |

| Mobility                                                                     |           |     |        |         |           |
| No changes in occupation or employer (2004-2014)                            | 13%       | 15% | 14%    | 11%     | 12%       |
| Same occupation, other employer (2004-2014)                                 | 30%       | 38% | 30%    | 29%     | 29%       |
| Mobility: another occupation (2004-2014)                                    | 43%       | 28% | 42%    | 43%     | 43%       |
| Level specific occupations (100 of approximately 430)                       | 3,1       | 3,7 | 2,6    | 3,9     | 2,8       |
| Change in occupation level at top 100 LC                                     | 0.19      | 0.22| 0.08   | 0.27    | 0.07      |

- The proportion of higher educated people varies, from 30% in Twente to 45% in Utrecht.
- The proportion of jobs requiring a higher medium or higher education follows this variety.
- Human capital grows, especially in higher educated people (+5 to +8%).
- But in some regions the rise in higher (medium) educated jobs is lower than the rise in education level:
  - In Brainport, it seems that growth in education level (+5%) cannot be absorbed by firms and jobs (+1%).
  - In Twente, the increase in job level is similar to the increase in education level.
- Amsterdam and Utrecht: high level and rise of higher educated people, high absorption in jobs
- Brainport and Twente: a similar rise in higher educated people but still on lower level, thus constraining the growth in higher level jobs.
Knowledge absorption

Stijging onderwijsniveau en beroepsniveau 2004-2014

De ligging van de bol op de verticale as volgt de groei van beroepen op niveau 3 en 4. De dikte van de bol is gerelateerd aan de groei van niveau 4 beroepen.
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Conclusions

1. The Knowledge Triangle is organised in top sectors and regions. In nearly all regions with a university, a triple helix board is founded. This model started in 2005 in Eindhoven region and is followed widely.

2. After a period of experimentation, nowadays regional governance models converge - although their starting configurations differ.

3. Outputs show a lot of variety. Better developed EE tend to have more diverse innovation networks, not necessarily more dense.

4. Least well developed *Entrepreneurial Ecosystems* (EE) have no fully developed KT (Universities missing).

5. Involvement of regional business leaders in regional governance is upcoming, alignment of business organisations members is rare.

6. Translation of knowledge production into productive jobs doesn't happen automatically: VET and UAS can function as a platform for a broader range of firms.
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