Transformation of Tampere and its innovation policy

Mika.Kautonen@tuni.fi

Content

1. Introduction: background, motivation and goals
2. Industrial heritage
3. Formative years of the regional innovation system
4. Crisis to growth with explicit innovation policy
5. Latest developments in innovation policy
6. Some conclusions

Transformation of Tampere and its innovation policy

1. Introduction: background, motivation and goals

- Where are we actually? What kind of a city is Tampere? How did it become as it is nowadays?
- Spatial perspective on innovation (& policy), specifically local/regional
- Goal I: to increase understanding through a case of Tampere on possibilities, limits, instruments etc. of regional innovation policy
- Goal II: to briefly scrutinize, as group works, what lessons might be adopted to different contexts, and what might be difficult and why.
- Group work will be based on my presentation and Mika Raunio's presentation.

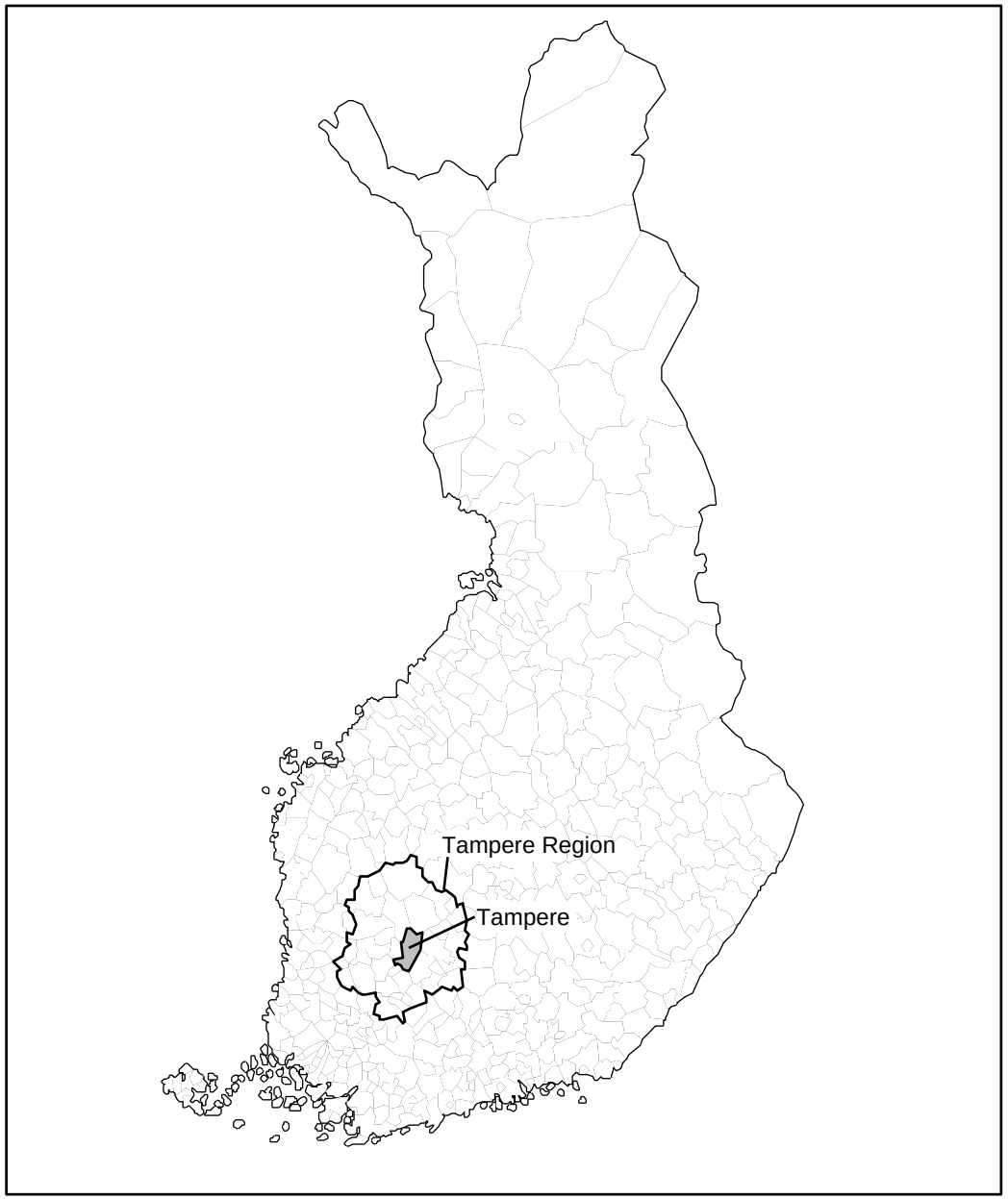
Transformation of Tampere and its innovation policy

Presentation partly based on e.g. following publications:

- Kautonen, M. (2012). Balancing Competitiveness and Cohesion in Regional Innovation Policy – The Case of Finland, European Planning Studies, Vol. 20, 12, pp. 1925-43.
- Sotarauta, M. & Kautonen, M. (2007). Co-evolution of the Finnish National and Local Innovation and Science Arenas: Towards a Dynamic Understanding of Multi-Level Governance. Regional Studies, Special Issue on Regional Governance and Science Policy, Vol. 41.8, pp. 1–14.
- Kautonen, M. (2006). Regional Innovation System Bottom-up: A Finnish Perspective. A Firm-Level Study with Theoretical and Methodological Reflections. Acta Universitatis Tamperensis 1167, Tampere University Press, Tampere. [A Doctoral Thesis]
- O'Gorman, C. & Kautonen, M. (2004). Policies Promoting New Knowledge Intensive Ag-glomerations. Entrepreneurship & Regional Development. Vol. 16, No. 6, pp.459–479.
- Kautonen, M., Koski, P. & Schienstock, G. (2004). From the National Industrial Heartland Towards a Node in the Global Knowledge Economy: The Case of Tampere Region. In Schienstock, G. (Ed.) Embracing the Knowledge Economy. The Dynamic Transformation of the Finnish Innovation System. Edward Elgar, London.

Transformation of Tampere and its innovation policy

1. Introduction



TAMPERE REGION

Population 512 081 (2017)

TAMPERE CITY-REGION

Population 399 496 (2017)

Nationally 2nd largest city-region

TAMPERE CITY

population 235 487 (2018)

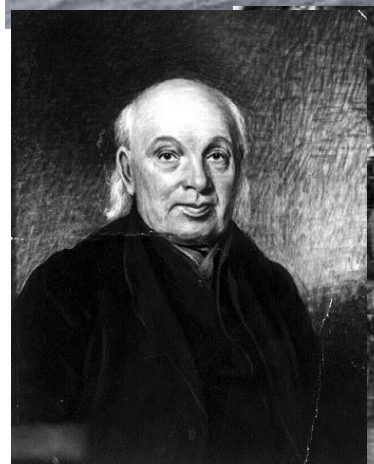
HEI degree 35,4% (2015)

Transformation of Tampere and its innovation policy

2. Industrial heritage

19th century to the recession of the 1990s

- *Swedish king Gustav III* visited the banks of Tammerkoski rapids and established the town in 1779
- In 1819, *Tsar Alexander I of Russia* visited the still modest town and was so impressed by the potential created by the rapids that he set up systems of considerable customs and tax relief for entrepreneurs and industrialists that would locate to the town. This marked a phase of rapid development
- The first important industrialist to come to Tampere was the *Scottish engineer James Finlayson*, who founded a cotton mill in the 1820s. In the hands of the *Nottbeck Family*, who came from Russia, this cotton mill came to represent one of the cornerstones of the Finnish industrialization process.
- In 1840, every second industrial worker in Tampere
- Nokia was born here 1865 as a small workshop of mechanical wood processing.

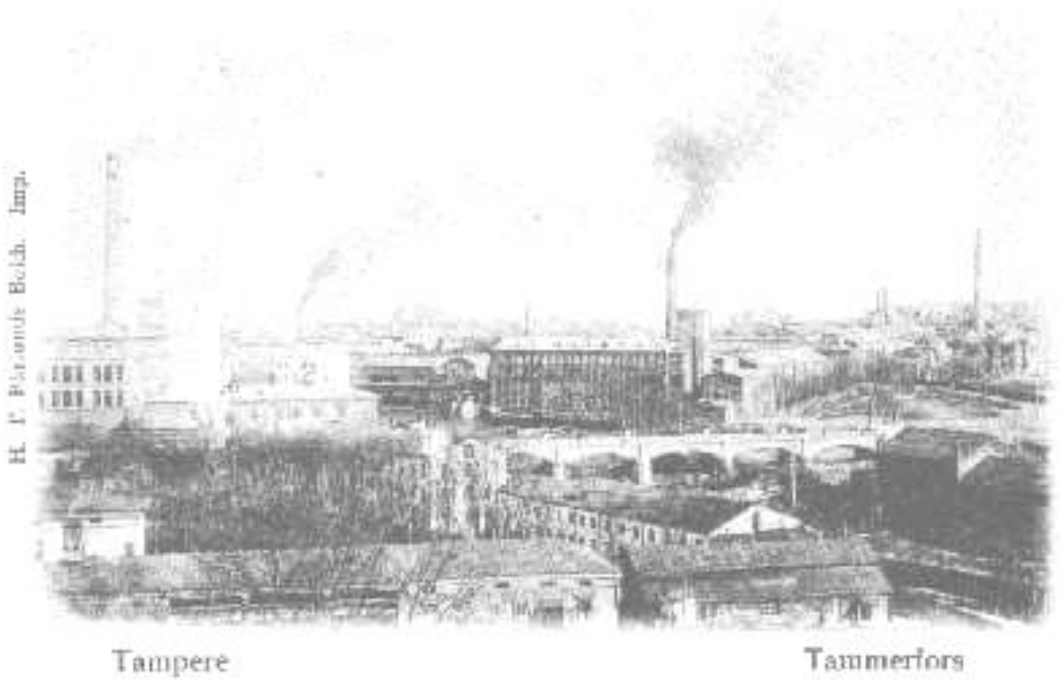


Transformation of Tampere and its innovation policy

2. Industrial heritage

19th century to the recession of the 1990s

- Industry to develop in the 19th century: manufacturing of textile and clothing
- At the end of the 19th century, 69% of industrial employees in textile industry, 13% in pulp and paper industry and 8% in metal industry
- Reparations after World War II contributed to the growth of metal industry
- In the 1960s, textile, clothing, leather and shoe industries employed 38%, metal industry 31% and pulp and paper industry 14%
- In the early 1980s reorganizations, spin-offs and specialization
- Collapse of the Soviet trade affected traditional industries

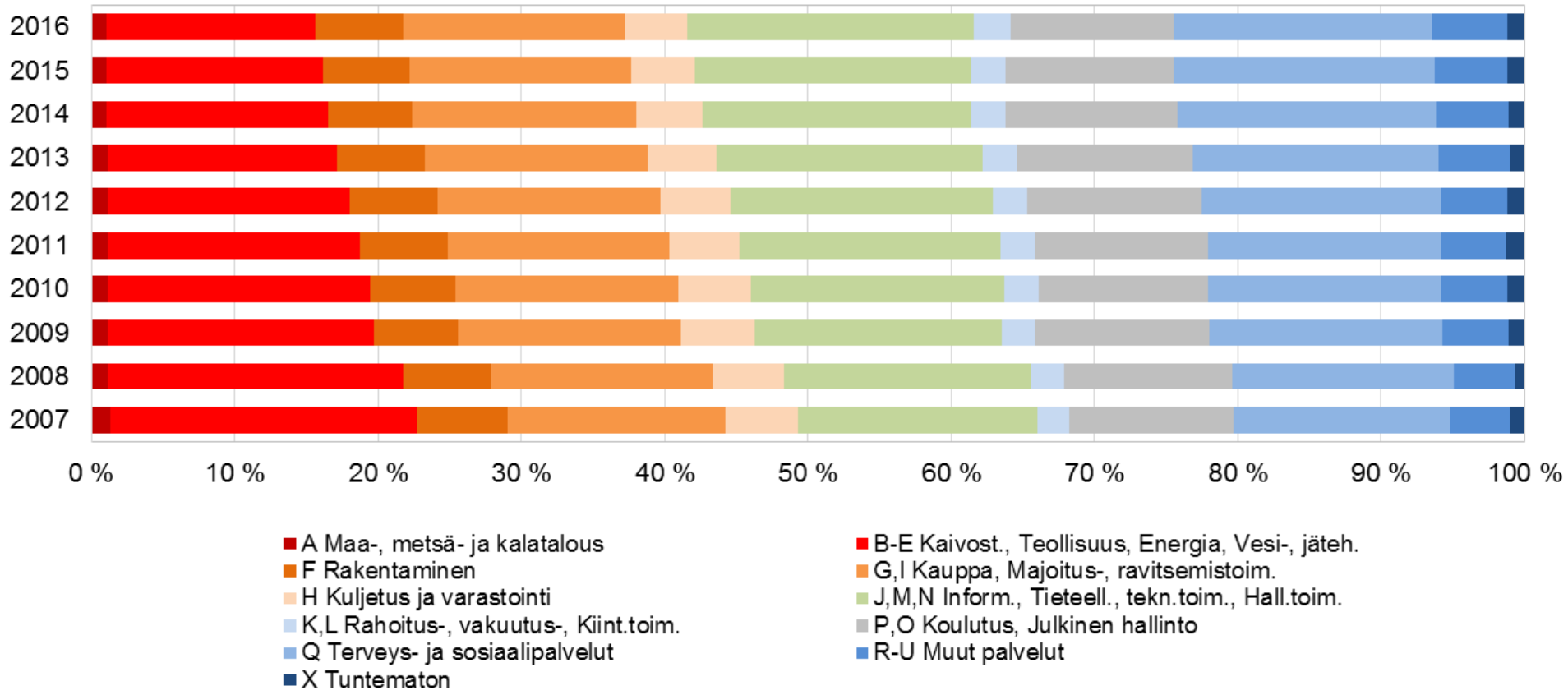


2. Industrial heritage

Recession to growth

- recession from the early 1990s due to bank crisis, industrial restructuring and problems in exports (appr. 25% unemployment in 1993)
- growth of information and telecommunication technology and KIBS sectors (at its heyday, Nokia Group alone 4.000 in R&D)
- in 2000, textile, clothing, leather and shoe industries employed 4%, metal products and machine building together 26% (9.800 employees), pulp and paper industry 11%, and electronics 9% of industrial employees
- total manufacturing employment 32.000
- in comparison, so-called KIBS sector alone 19.000 employees (software and computer services, technical services, consultancy, R&D services, private training etc.)
- Continued to transform from the traditional industries and jobs to knowledge-intensive industries and jobs (see the next slide)

Employed by sectors in Tampere urban region 2007-2016



SeutuNet
Vuoden 2018 aluerajat
Lähde: Tilastokeskus/Työssäkäynti

(Employed in Tampere urban region, total appr. 180.000 people)

TAMPEREEN KAUPUNKISEUTU

Transformation of Tampere and its innovation policy

3. Formative years of the regional innovation system

Finnish context

- Until 1980s dependence on raw material-driven production and exports
- Until 1990s absorbing policies and models created elsewhere in catching up (Georghiou et al. 2003).Finland's R&D expenditure / GDP one of the lowest in the industrialized countries until 1980s (Hermans et al. 2005).

Three major phases in the evolution of STI policies:

- Building the basic structures and institutions (from WWII to 1970s)
- Technology orientation (1980s)
- Building the knowledge-based society and the national innovation system (from 1990s)

(Slightly modified from Lemola 2002 and Georghiou et al. 2003)

3. Formative years of the regional innovation system

Building the basic structures and institutions (from WWII to 1970s)

In higher education ‘academic–traditionalist’ doctrine (Kivinen et al. 1993); no expectations towards the economic utility (Nieminen 2005)

Major changes in 1960s and 1970s :

- policy doctrines created
- ministerial committee on science in 1963 (from 1987 STPC)
- new mechanisms for university research, and AoF + new universities

At the local level: e.g. active city government behind the transfer of two universities from Helsinki to Tampere; also strong financial aid to these; creation of e.g. chair of computer sciences in 1965 in UTA

-> increasing institutional thickness nationally and locally
-> top-down, no real co-evolution
-> basis for later developments

Transformation of Tampere and its innovation policy

3. Formative years of the regional innovation system

Technology orientation (1980s)

- New S&T priorities, from institution building towards technology policy
- Attention to basic natural science, and to new strategic technological fields
- From narrowly conceived science policy towards broader STI policies (Nieminen & Kaukonen 2001)

- Technology policy increasingly target-orientated and systematic; Tekes
- Intensified co-operation by technology programmes (Lemola 2002)
- Utilization of research and new technologies

At the local level: in Tampere (1986) science park; Nokia's research laboratory to Tampere.

-> Local initiatives platforms to study and learn
-> Small active local community in STI policy
-> Capabilities, operational models and interaction patterns tested and learned

3. Formative years of the regional innovation system

Building knowledge-based society and NIS (1990s) 1/2

- Recession a watershed: investment/resource- vs. innovation-driven phases
- Competitive advantage to be based on world-class innovation, efficiency and value-adding capacity
- Towards technological innovation (Schienstock & Hämäläinen 2001)

Early 1990s NIS and cluster-based policies:

- Creation and utilization of knowledge and know-how
- R&D system at the core with education
- General environment for new technologies
- Ability to co-operate nationally and internationally (Georghiou et al. 2003)

-> Mixture of state, market and academic regulation

-> Considerable increase of expenditures for R&D and education

-> Increasingly competitive funding; presupposed co-operation

3. Formative years of the regional innovation system

Building knowledge-based society and NIS (1990s to 2000) 2/2

- In regional policies, a turn from redistribution to competitiveness
- Centre of Expertise Programme launched in 1994.

At the local level earlier investments began to pay off…

- In Tampere: 12,000 new jobs in ICT industries 1994-2000 (O'Gorman & Kautonen 2004); due to e.g. local supply of university graduates and 'future package' for unversities' regional missions

  -> co-evolution between national and local became more organized, systematic and visible.

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4. Crisis to growth with explicit innovation policy

In the 2000s, Tampere has specific strengths e.g. in

- strong clusters (with diversity)
- specialized intermediary institutions
- local innovation policies

Examples

- Finnish government nominated 13 most significant clusters (Centres of Expertise) in 2007, Tampere in 7 of these (2nd, Helsinki in 9)
  - Intelligent Machines (national coordination); Ubiquitous Computing (national coordination); Digital Contents; Energy Technology; Nanotechnology; Healthcare technology; Biotechnology
  - Nomination based on competitive bidding with criteria on critical mass, international competitiveness & technological excellence
  - Nomination means e.g. that funding is allocated to cluster management and coordination activities and for strategic initiatives
  - Considered in Europe as a best practice policy measure.
- tradition of large-scale and inclusive local innovation programmes that have attracted lots of international attention (see e.g. Castells & Himanen 2002); eTampere, Creative Tampere, BioNext.

4. Crisis to growth with explicit innovation policy

Ten world market leaders operating in Tampere, these include

- *AGCO Power* (global leader in diesel engine technology)
- *Bronto Skylift* (global market leader in truck-mounted hydraulic platforms)
- *Fastems* (globally leading supplier of automation to the mechanical engineering industry)
- *John Deere* (global market leader in design, manufacture and distribution of forest machines)
- *Cargotec* (global market leader in cargo and load handling solutions)
- *Metso Automation* (market leader in process automation solutions for the pulp and paper industry)
- *Sandvik* (globally offers the widest range of equipment for rock drilling, rock excavation, processing, demolition and bulk-materials handling).

Transformation of Tampere and its innovation policy

4. Crisis to growth with explicit innovation policy

1837, the first modern factory building in Finland (Finlayson)
1843, the first paper machine in Finland (Frenckell)
1882, the first electric light in the Nordic countries (Finlayson)
1900, the first locomotive manufactured in Finland (Tampella)
1909, the first automobile manufactured in Finland
1923, the first radio broadcasting in Finland
1965, the first ice hockey hall in Finland
1974, the first NMT mobile call in the world (Nokia)
1978, the first ATM machine in Finland
1984, the first biodegradable implant in the world (Bionx Implants)
1991, the first GSM mobile call in the world (Nokia)
1993, the first analogue cellular data card in the world (Nokia)
1994, the first GSM data card in the world (Nokia)
1995, the first walking forest harvester in the world (Plustech/Timberjack)
1995, the first Internet call in the world (Nokia)
1996, the first personal digital assistant in the world (Nokia)
1998, the first digital x-ray image in the world (Imix)
1999, the first WAP server in the world (Nokia)
2001, the first mobile camera phone in the world (Nokia)
2001, the first automated mine loading in the world (Tamrock)
2003, the first walk-through display in the world (Fogscreen)
2004, the first automated container terminal in the world (Kalmar)
2005, the first rapid test for coeliac disease in the world (University of Tampere/Biohit)
2008, the first preservative-free prostaglandine eye-drop for glaucoma treatment in the world (Santen)
2008, the world's first operation in which a jaw bone was grown from the patient's fat cells using stem cell technology (Regea)
2009, the first antibiotic-releasing biodegradable implant in the world (Bioretec)
2012, the first 41-megapixel camera phone in the world (Nokia)
2013, the first hybrid straddle carriers in the world (Cargotec Kalmar).

4. Crisis to growth with explicit innovation policy

Transformation in a nutshell:

1960

- **no universities**
- **40.000 employees in manufacturing industries**

2010

- **two universities**
- **35.000 employees in manufacturing industries**
- **36.000 HEI students**
- **More than 10.000 R&D jobs (6.000 in private firms)**

(c.f. Kostiainen & Sotarauta 2006)

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5. Latest developments in innovation policy

During the new millennium, a shift in local innovation policy to

- Put less focus on regional/local clusters due to their key companies' intensified internationalization and outward investments
- Put more focus on efforts to attract FDI on especially hightech industries (e.g. R&D functions of companies such as *Erickson, Huawei, Intel, Microsoft and Sony)*
- Integrate new sectors, from KIBS to other services (incl.public sector)
- Integrate new societal groups; city as an innovation laboratory
- Open up innovation processes deploying open innovation platforms (->Raunio)
- Merger of the two universities and new opportunities (->Pilvi)

Transformation of Tampere and its innovation policy

6. Some conclusions

- Long path of development:

“Many of those competences on which the success of Tampere has been built can be initially found from businesses and competences revolved around innovations developed decades ago, and their diffusion and evolution among a larger community of new firms.” (Valovirta et al. 2009, 68–69)

- Investments and trust on human capital and R&D; strong social capital
- Yet, crises along the way; as a heritage, structural unemployment
- Working class manufacturing town to knowledge-intensive hub (there is still something in the air… ease of collaboration, trust)
- National-local co-evolution of innovation policies, with local-global interaction of industries.

Many thanks!

Group work

- 20 minutes for the group work
- 5 minutes per group for presenting the outcome of the group work (5 groups)
- Reflection and discussion

a) What could be a lesson/lessons that might be adoptable in your research contexts as a policy?
b) What could be a lesson/lessons that you consider hard to adopt in your research contexts as a policy?