

## **Policy mixes, policy processes and policy rationales: an analysis of the work by OECD TIP working group 1994-2014**

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### **A report analysing CORTEXT semantic treatment of the OECD TIP corpus**

This report is combined with a methodological note that exposes the different steps and intermediary results arrived at. The objective of this short report is to provide an overview of the results arrived at.

#### **1- Why are clusters interesting?**

Cortext analyses the links between the multi-terms selected from the corpus of texts. This links drive to propose a set of clusters that provide a representation of the whole set. As mentioned in the methodological annex, our focus is about the policies that are proposed by TIP, their objectives, the processes to conduct them and the rationales that explain them. All aspects dealing with the context in which TIP as a group evolves and the working of TIP are left aside in this analysis.

Why are clusters interesting? Because they provide a view of **de facto policy mixes**.

A cluster is first and foremost a specific articulation of different policy areas that are strongly inter-connected. It also provides a view of the important vocabulary that is mobilised (meaning that any of the identified policy areas can be present in more than one cluster but with a different set of multi-terms).

This policy mix is articulated to different justifications for the action and different policy setting problems (in the organisation, framing and implementation of policies and in the tools associated to measuring their performance (evaluation or impact assessment)).

So one cluster provides a privileged sub-ensemble of policies, and the clusters together give us an overall view of how overall policies are 'segmented'.

The approach adopted is thus the following: we start from an overall image of the period (21 years, with what remains a small dataset of 329 documents). We analyse in turn the 6 clusters that are identified, their composition and we look at what explains their strong presence and how things have evolved afterwards or evolved before depending upon the cluster.

#### **2- What are the policy areas identified through an analysis of the vocabulary?**

We have identified 13 policy areas that participate to the fabric of policies (see methodological note).

They represent 51% of total occurrences in the vocabulary selected (3850 out of 7530).

Occurrences are balanced between the 3 periods selected 1994-2000, 2001-2008 and 2009-2014 (respectively 36, 34 and 30%). The table below lists these areas and clearly shows (figures in bold) that only 4 policy areas witness an equivalent presence during the 3 periods, while all others see either a strong peak in one period (7) or a clear hole in one period (2).

The objective of the analysis of clusters is thus to understand how these areas combine together either at the global level or between parts of them, and how this evolves over time. Doing so they build 'de facto' policy mixes, or to better qualify them, de facto second-order policy mixes.

| POLICY AREAS                           | terms | P1         | P2         | P3         | total      |
|--|-------|------------|------------|------------|------------|
| Public research                        | 33    | 25%        | 25%        | 18%        | <b>23%</b> |
| Knowledge transfer & commercialisation | 23    | 12%        | 9%         | 9%         | <b>10%</b> |
| Open science                           | 4     | 0%         | 0%         | <b>10%</b> | 3%         |
| Human resources                        | 11    | <b>10%</b> | 3%         | 2%         | 5%         |
| New and/or specific technologies       | 12    | <b>18%</b> | 6%         | 3%         | 9%         |
| Services                               | 9     | 3%         | <b>8%</b>  | 1%         | 4%         |
| Intellectual property                  | 11    | 8%         | <b>16%</b> | 5%         | 10%        |
| Tax incentives                         | 9     | 5%         | 7%         | <b>1%</b>  | 4%         |
| Smart specialisation                   | 4     | 0%         | 0%         | <b>10%</b> | 3%         |
| Public private partnerships            | 7     | <b>2%</b>  | 11%        | 17%        | 9%         |
| Environment and green development      | 18    | 11%        | 5%         | 9%         | <b>9%</b>  |
| Global challenges                      | 6     | 0%         | 3%         | <b>10%</b> | 4%         |
| Other policy areas                     | 13    | 4%         | 7%         | 5%         | <b>5%</b>  |
|  | 160   | 100%       | 100%       | 100%       | 100%       |

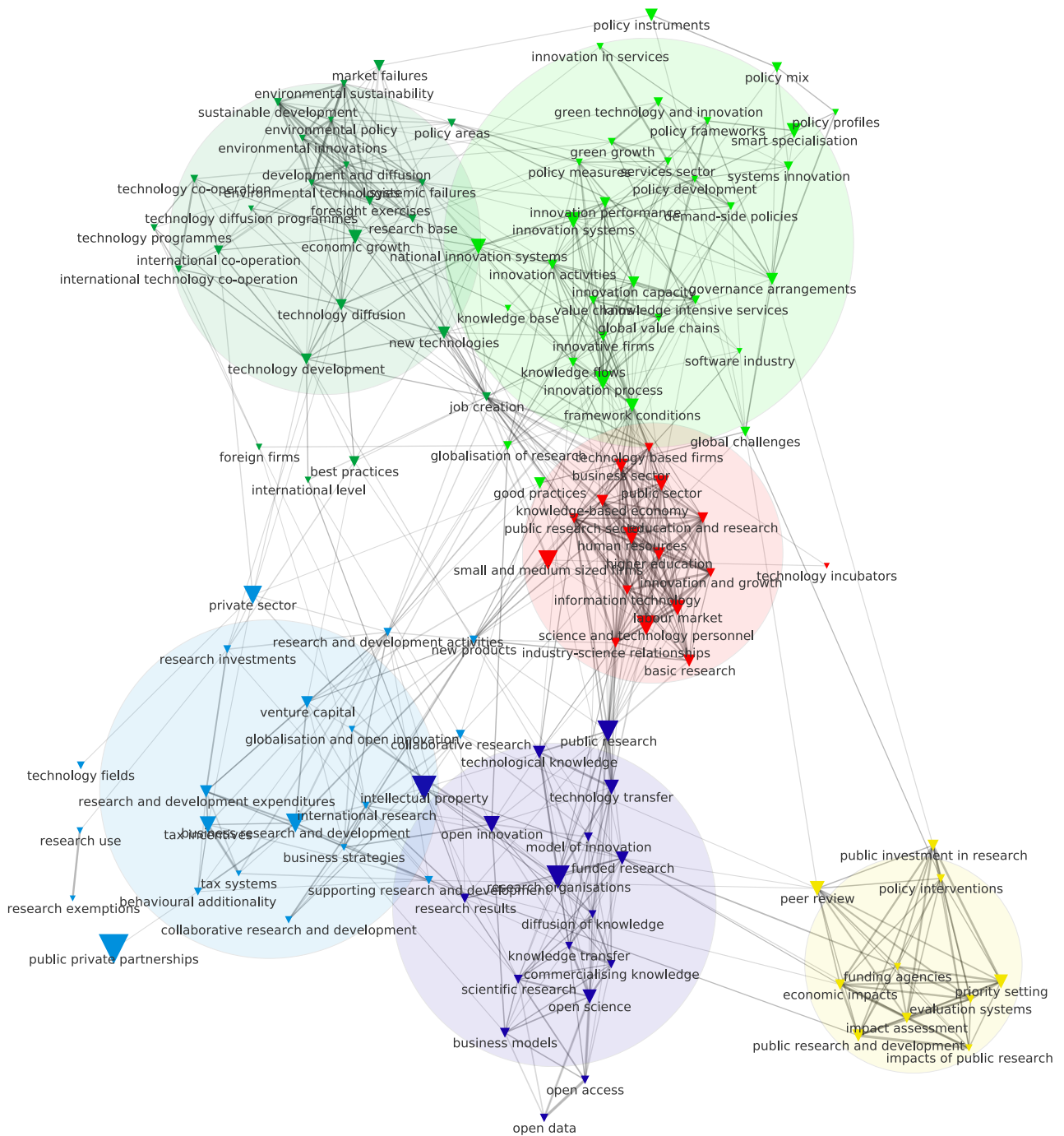
Once we identify a combination, we link it to the two other dimensions of our analysis: policy rationales and objectives (including the conceptual frames and the factors of change mobilised) on the one hand, policy processes on the other, distinguishing between policy settings and processes and policy evaluation / impact assessment.

The following table gathers the 9 themes under which we have classified this positioning vocabulary.

| POLICY RATIONALES, OBJECTIVES & PROCESSES          | P1         | P2         | P3        | total      |
|--|------------|------------|-----------|------------|
| Systems approach                                   | 10%        | 7%         | <b>4%</b> | 7%         |
| Factors underlying observed changes                | <b>8%</b>  | 3%         | 3%        | 5%         |
| Internationalisation / globalisation               | 12%        | 7%         | 10%       | <b>10%</b> |
| Overall situation of the business sectors          | 10%        | <b>16%</b> | 10%       | 13%        |
| Transformation in innovation processes             | <b>6%</b>  | 15%        | 18%       | 13%        |
| Objectives of policies                             | 17%        | 13%        | 14%       | <b>15%</b> |
| Firms considered                                   | <b>18%</b> | 5%         | 5%        | 9%         |
| Policy settings, composition and processes         | 13%        | 21%        | 27%       | <b>20%</b> |
| Policy processes: evaluation and impact assessment | 6%         | 12%        | 9%        | <b>9%</b>  |
|  | 100%       | 100%       | 100%      | 100%       |

In the following section, we go through the 6 clusters (section 2) before reflecting upon their articulation (section 3). In section 4 we shall focus on the post crisis articulation of policy areas and their supporting policy rationales and policy settings.

## 2- The tour of clusters representing the whole period (1994-2014)



The global analysis by CORTEXT over the whole period identifies 6 different clusters that we analyse in turn.

### **Cluster 1** (dark blue, middle bottom )

This cluster articulates a rich vocabulary on **public research** and public research organisations with

- **technology transfer and Knowledge commercialisation** and with **IPR** on the one hand **open science** on the other

These 3 themes are specific to this cluster

This cluster is clearly a post crisis cluster (2011-12) but starts developing in a major way in the second period (with 2006 as a peak year). The rationale behind it focuses on transformations in the innovation process (open innovation, business models & innovation models are the central terms associated to this analysis).

It is interesting to see that

- in period 1, IPR was completely disconnected from both issues of public research and technology commercialisation. It was linked to the very rich debate on internationalisation and globalisation, and at a lower level to collaborative research.

- the link with technology diffusion, technology markets & knowledge diffusion was established in period 2 (key expressions then of that theme).

- while the cluster becomes strongly articulated in period 3 with the connection of the 2 previous themes with open science. The cluster in period 3 has a very similar shape as the cluster for the overall period, telling how important these topics and their articulation have become.

### **Cluster 2** (red, middle right)

Public sector (with a focus on higher education, the 3 terms present are however not very frequent) is also present in a second cluster that is clearly focused on **human resources** (with multiple terms: labour markets, S&T personnel, only cluster with HR).

Human resources are strongly linked with **SME** (including technology-based firms and technology incubators) and with **Information Technology** (the sole cluster where a given technology is present).

It is a cluster driven by the end of the 1990s (1996-1998-1999-2000). The rationale behind it is economic growth and job creation, and the driving change is the knowledge-based economy.

- Human resources (with a very rich vocabulary) build the core of one cluster in the first period. This cluster has the overall shape presented, being strongly articulated with public research and Information technology.

- HR quasi completely disappears from the radar after period 1 (being at best a minor element in one cluster for each period). The same happens with information technology, no longer mentioned: both are characteristics of the first period.

- SME becomes strongly articulated with mostly policy instruments & with public-private partnerships, a situation that is found again in the third period after the crisis.

- Finally interest in public research will grow over time being more and more connected to issues of science policy, science funding, selection and peer review, evaluation and impact assessment. (see cluster 5).

### Cluster 3 (dark green, top left)

Cluster 3 focuses on two policy areas

- **environmental issues** phrased in the dual vocabulary of environmental policies, technologies and innovation, and of sustainable development
- and **new technologies** (but not specified, see cluster 2 with information technology) associated with their diffusion, and the programmes that support them.
- It is associated with **technology foresight** as a tool to anticipate.

The rationales behind it are market and systemic failures as one central characteristic of the situation and an objective for policies. And “national innovation systems” is the central conceptual framework to assess situations.

The vocabulary quite clearly dates the period with key years being 1994-95-96 & 98. Where it is even associated with an interest toward ‘economic instruments’.

- Again this cluster is only visible in period 1 (where it appears as such). As such the 3 themes will no longer be present (technology foresight) or shape as such given clusters.
- in period 2, environmental issues are only marginally present and through energy issues (and a specific focus on fuel cells). While it strongly reemerges in period 3 under green growth, green technology and innovation (see cluster 4)

### Cluster 4 (light green, top right)

Cluster 4 is centred on the new forms of handling environmental policies: **green growth** and green technology and innovation. It combines this with the new approach to **global challenges** articulated to systems innovation.

It raises questions about how to address this challenges, combining **policy framing issues** (governance arrangements, policy frameworks, policy measures and instruments) with questions at the geographical level and **smart specialisation**. One approach – **demand-side policies** – and one sector (**services**, and particularly knowledge intensive services, and their innovation capacities) are pinpointed in these analyses.

The overall argumentation combines now classical views on national innovation systems (and innovation systems) with new developments on value chains (and global value chains). It raises questions on innovative firms and the innovative performance of spaces.

It is mostly articulated with post-crisis years (2009 – 2010 – 2013 & 2014). The presence of year 2004 is warranted by the articulation with governance issues and brings services that are completely absent from the third period.

All the key themes mentioned are completely absent from the first period, except when combining environmental issues and green growth framing (see cluster 3).

- services activities appear with demand-side policies and a first emergence of global challenges (with healthcare) in the second period.
- in the third period, these topics become so important that they build clusters of their own:  
\* global challenges & systems innovation is articulated to smart specialisation and strong questioning on policy settings (policy frameworks, processes, areas, profiles, mix or measures)

\* Green technology and innovation is associated with demand side policies (and public procurement) but also with new forms and modes of innovation and new actors.

### **Cluster 5** (yellow, bottom right)

Cluster 5 is a cluster only structured around **policy settings** (the core being priority setting) and **evaluation** (evaluation systems, impact assessment, impact of public research, economic impacts and peer review).

This construct is specific of the overall structuration of OECD activities for two reasons

- Evaluation and impact assessment are absent from the first period (only foresight)
- This articulation appears as such during the second period with priority setting and evaluation interests. During the second period it is articulated to public research (the interests being focused on funding agencies and funded research). The third period maintains the same connection between priority setting and evaluation/impact assessment and it also maintains the articulation with the funding of research activities; but other interests around public research appear linked to systems innovation & smart specialisation (see cluster 4).

### **Cluster 6** (light blue, bottom left)

It is a cluster focused on **tax incentives, public-private partnerships** and to a lesser extent, behavioural additionality.

The policy focus is on business R&D (R&D activities, R&D expenditures), associated with two major transformations: globalisation and open innovation.

Tax incentives on OECD activities have witnessed peaks in 1995, 2005 and 2008. Similarly behavioural additionality is focused on years 2004-06 and public-private partnerships had a first peak in 2000, another 2005 and more recently has become very important since 2012, peaking in 2014. This explains why this is the only cluster that covers the whole period with the top 5 years being 1995, 2002, 2006-7 and 2013.

- Tax incentives are very important in period 1 and 2 and disappear in period 3. In the first two periods it is linked with public-private partnerships. And it is associated with other themes: new technologies and service industries for the first period; with behavioural additionality in period 2.
- In period 3 public-private partnerships play a pivotal role, and is associated with a focus on SME and collaborative research.

## **3- An overall synthesis**

The overall policy mix is articulated by 5 major sub-policy mixes that act as attractors for other thematic areas. The 13 policy areas identified cluster around 4 major dimensions: public research, environmental issues, business R&D and Human resources. They are complemented by a strong focus on policymaking and in particular on evaluation and impact assessment.

Nearly half of total occurrences linked to policy areas are gathered in one cluster that builds a first central brick to the OECD policy mix. It focuses on **public research** (23%) as such (its

overall structuration, its organisations/institutions, the role of funding agencies and funded research, but also the types of research undertaken).

This is associated with two opposite dimensions: **open science** (3% of occurrences but 10% in the post crisis period) on the one hand, **technology transfer and commercialisation** on the other. The latter dimension gathers 10% of occurrences and is present over the whole period with a very rich vocabulary. Interestingly it is very strongly articulated to the debates on **intellectual property**, as if the central issue in IPR (10% also) was linked to the IP of public research.

**Environmental issues** build a second attractor for policies, and is the core of two clusters that are clearly dated:

- in the first period environmental policies, technologies, innovation or sustainability form a rich ensemble, which is highly connected with the development of **new technology and with technology diffusion**.

- In the third period (the post-crisis period), it is phrased as green growth and green technology and innovation. Green growth is articulated with **global challenges** (and in particular systems innovation). And the cluster highlights two directions for addressing them: **smart specialisation** (does it mean that local solutions might be a critical lever for achieving transformations and transitions?) and **services** (does it suggest that non technological innovations might play an important role?). It emphasizes a rebalancing of policies towards **demand-side policies** (and public procurement giving to collective needs a key role in 'directing' change).

**Supporting Business R&D** is the focus of a specific cluster focused on **tax incentives** and **public-private partnerships** (linking thus to policy efforts for public research). This is complemented by a specific focus on behavioural additionality (which is dated, the mid 2000s).

**Human resources** constitute the fourth policy focus. As a cluster it stands on its own and is relatively poorly connected to others. This is explained by the fact it is 'dated': it only corresponds to the first period (the 1990s) and disappears afterwards. This is further confirmed by its link to information technology (also a theme of the first period only). As if Human resources were no longer a central issue of STI policies or at least not an issue addressed by the TIP (in charge of other OECD groups? Linked to the classical separation between education and STI policies?).

Finally we face one cluster that does not deal with policy areas, but that only considers **policy making**, with a focus on evaluation and impact assessment. Other dimensions of policy processes are split between diverse clusters, in particular governance issues (linked to green growth and societal challenges) or best practices (linked to environmental policies).

#### 4- Where do we stand today? And what characterises the post-crisis years.

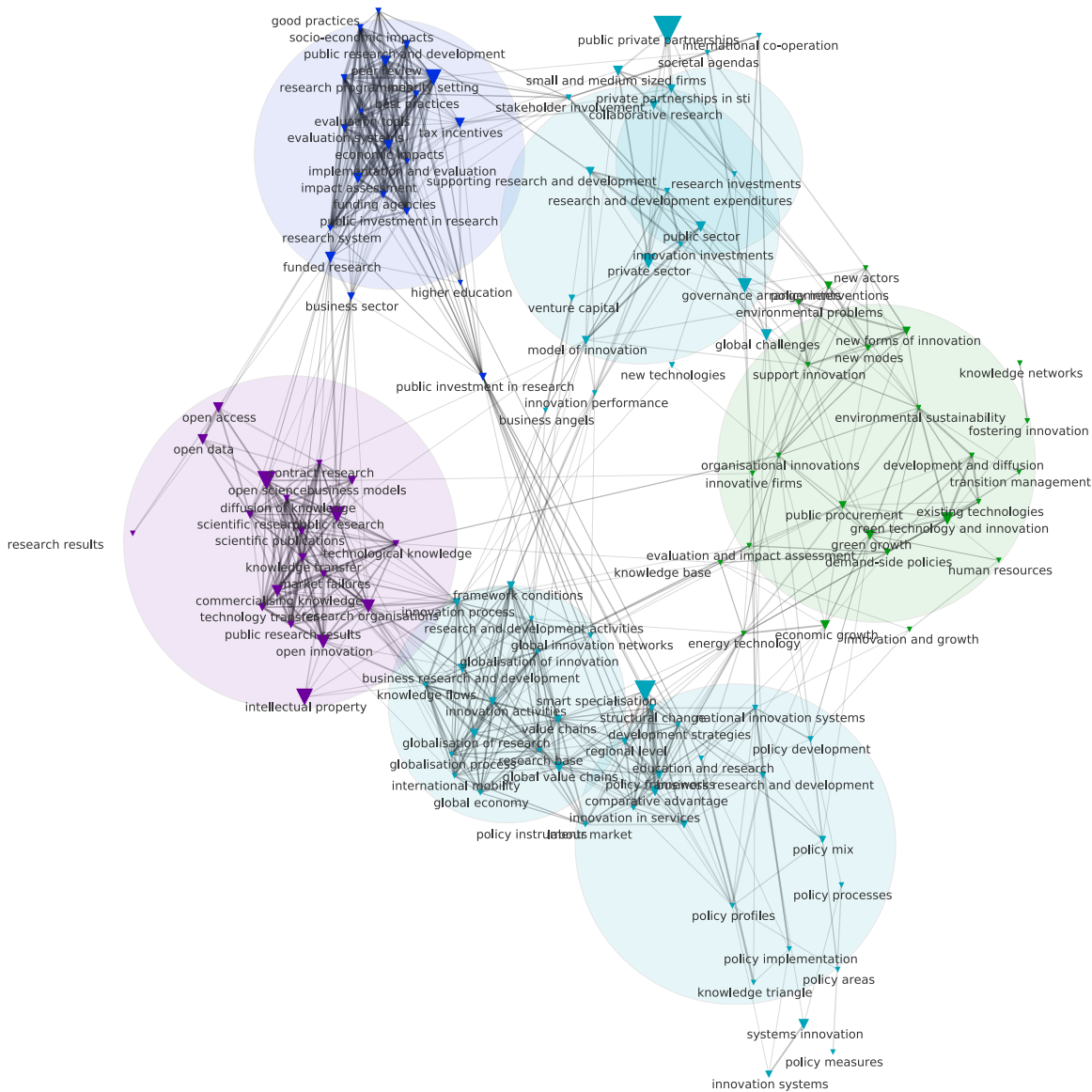


Image: Clusters covering the third period 2009-2014

One could start by what does not appear at all during this period. The crisis has driven no longer to consider certain dimensions. The overall approach to supporting business R&D loses traction, in particular, there seems to be no longer any interest in tax incentives and fiscal policies. The only focus that remains is on **SME** and on **public-private partnerships**. The latter appears as the most important topic of the period (17% of occurrences) (cluster 1). This first cluster is connected with public sector research and cooperative research.

The period is characterised by two strong foci.

- PPP might as well be connected to the first focus of this third period: **green growth**, and to a lesser extend, **societal/global challenges** (cluster 2). This cluster is articulated to a shift in public policies towards **demand-side policies**. It is linked via 'systems innovation' to a third



cluster that focuses on **smart specialisation**, as if, as said before, global/societal challenges might find relevant solutions at the local level.

- **Public research** builds the second strong focus for this third period, being the core of two complementary clusters:

\* one focused on research, funding agencies and higher education (cluster 4). **Evaluation, socio-economic impacts and impact assessment** are very important components of this fourth cluster;

\* and one dealing with research organisations and the circulation of knowledge (cluster 5).

This fifth cluster puts in tension **open science** on the one hand, and **technology transfer and commercialisation of knowledge** on the other (around 10% each of total occurrences). This latter dimension is strongly articulated with **intellectual property** issues.

Finally, even if supporting business R&D is no longer central, understanding on-going changes is an important effort of the period. It articulates **globalisation** (of the economy, of research, of innovation) and evolving **innovation processes** (new business models, global value chains, global innovation networks) (cluster 6). Why does not it drive to policy actions supporting business R&D? May be because new business models tell that R&D is no longer the driving force but just one component; or because globalisation drives to “de-spatialise” firm R&D and thus, apart from SME, makes it difficult for policies (that are by definition localised) to support them?