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Evaluation of Clusters, Networks and Cluster Policies – Challenges and Implementation

A practice-oriented approach for impact assessment through evaluation contributing to a further development of clusters and cluster policies

The evaluation of clusters and cluster policies raises certain challenges – effects cannot easily be determined.

Cluster policy has been enjoying high popularity for many years now as it has become an increasingly important instrument of modern business and trade promotion. In order to make sure that the EU will henceforward allocate resources from the Structural Funds, the member states, and the regions, respectively have to present innovation strategies for an intelligent specialisation. Thus, the role of clusters in Europe will become ever more important in the future as they are considered as the central element of Smart Specialisation.

Expectations regarding clusters are high. They are supposed to enhance the competitiveness of regions or locations as well as that of the companies and research institutes operating in these areas, what usually leads to job creation and prosperity in the medium term.

The evidence, whether cluster policy actions could effectively contribute to the realisation of these objectives, is moving further into the focus of political decision-makers and programme initiators of cluster policy. Relevant aspects hereby include on the one hand, the legitimacy of fiscal expenditure and on the other hand, the possibility to intervene in relevant processes in a proactive way.

Given the complexity of clusters, a systematic impact assessment seems to be utterly impossible. In theory, the evaluation of a political intervention aims however at the assessment of the additional effects directly caused by a policy initiative.

The fact that there are practically no reference situations with an absence of policy action effects leads to particular difficulties – a real "untreated" control group in this respect will not be available when it comes to cluster evaluation.

Each cluster is unique due to its own history, industry and geographic location. There is also a variety of incontrollable factors of influence, for instance further political interventions, such as other incentive programmes or the general (macro-)economic development. Moreover, impacts often become visible only after a considerable delay.

In order to record the effects at company, cluster and regional level, and thus to meet the high demands of a valid evaluation, in theory, clusters would actually have to be analysed by using an extensive mix of quantitative and qualitative methods. The methods available are numerous and range from case studies to network and econometric analyses. In practise, such an approach is failing not only due to the related costs and time spent, but first and foremost also due to the lack of available of data and their insufficient quality.

A query of sensitive company data, for instance, will mostly lead to very low response rates and would thus make an analysis impossible.

When evaluating clusters, impacts at company level as well as the effects related to the cluster itself and the respective region as a whole are of particular interest.

The instruments that can possibly be used for an impact assessment include, for example, surveys or the above mentioned econometric approaches.

In the context of several evaluation projects, the Institute for Innovation and Technology (iit) has developed and applied a practice-oriented strategy for the evaluation of clusters and cluster policy. The approach takes all levels into account that are relevant for the clusters: the cluster policy in place, the cluster management organisation as well as the cluster actors. Furthermore, the medium- to long-term effects are measured by using a methodological mixture based on surveys, interviews, workshops and benchmarking.

Presentation of an Approach for the Evaluation of Clusters and Cluster Policy

The evaluation aims to improve the performance, effectiveness and sustainability of clusters.

In general, the evaluation contributes to a process of mutual learning and knowledge exchange at the relevant actor levels, namely cluster policy, cluster initiative and cluster management organisation. On the basis of the evaluation results, the **performance**, **effectiveness** and **sustainability** of ongoing projects could be improved.

▶ Performance – with regard to the cluster management organisation

▶ Effectiveness – referring to the cluster policy and the cluster management process

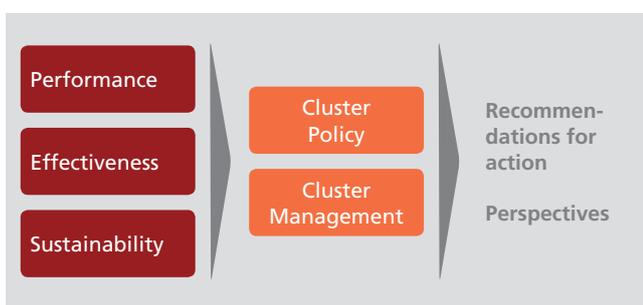▶ Sustainability – with regard to the cluster management process

Figure 1: Levels of analysis of the evaluation

The evaluation approach includes four major process phases:

At the beginning, it will be determined the objectives, the subject and criteria of evaluation. Hereby, different cluster stakeholders are involved. This way, transparency is guaranteed which helps to achieve a result that will later be accepted by all parties involved.

Figure 2: Evaluation process

In a second step, the required data will be collected and analysed. Thirdly, the results will be discussed and reflected and the prospects for a further development of the cluster policy and the cluster itself will be developed in cooperation with the involved stakeholders. As a final point, the recommendations for action will be recorded together with the other results by means of a final report.

Evaluation of the effects and performance

For the evaluation of the effectiveness, the focus is set on the following questions:

▶ How have the competitiveness and innovative capability of the cluster actors developed in recent years?

▶ Which contributions can be attributed to the cluster policy and the cluster management?

When assessing the impact, it is normally assumed that the input (e.g. provided resources) correlates with the performances shown under the implemented measure (output) as well as with the results intended to be achieved by the target group of the policy measure (outcome). The results of an intervention that are not occurring in the target group, but in its environment are termed an 'impact'. What is to be understood by the terms input, output, outcome and impact in connection with a cluster and network evaluation will be explained in the box below:

Input, Output, Outcome, Impact – in Connection with the Evaluation of Clusters and Networks

▶ The term 'input' primarily refers to financial, human or other resources being invested. In most cases, these include influencing factors, such as types of costs (budgets for personnel or material resources) or personnel qualification schemes (influencable by training programmes). The main input factors are the competences of the personnel being active in the cluster initiatives and cluster management organisations as well as the available budgets.

▶ The term 'output' describes all performances, such as activities, publications and particularly services being directly produced by the cluster initiative, including brochures, workshops, coaching, counselling interviews, events etc.

▶ The term 'outcome' includes the results intended to be achieved by means of interventions/activities of a cluster programme, such as changes in attitudes or behaviour of the target group members or benefits for the target groups. Unintended results described by the target group members do not fall within that definition of an 'outcome'. The target group of the activities of cluster management organisations primarily consists of companies and research institutes organised in the respective cluster initiatives.

▶ 'Impacts' are defined as the results achieved by a cluster programme being effective beyond the target group itself and may not be influenced by the cluster management, such as positive macroeconomic effects in a specific region due to a revenue growth or headcount increase. Normally, a description of direct causal efficacies regarding the performances of the subject of evaluation and the impact is not possible (also due to the often occurring timing differences between input, output and impact).

Figure 3: Input, output, outcome, impact – overview

Indicators and Methods for the Cluster and Network Evaluation

The output, outcome and impact, i. e. both, short-term and also medium- and long-term results are measured by using a methodological mixture of surveys, interviews, workshops and benchmarking.

As indicated in the figure below, the evaluation system comprises a set of indicators for each of the relevant levels, namely cluster policy, cluster management and cluster actors.
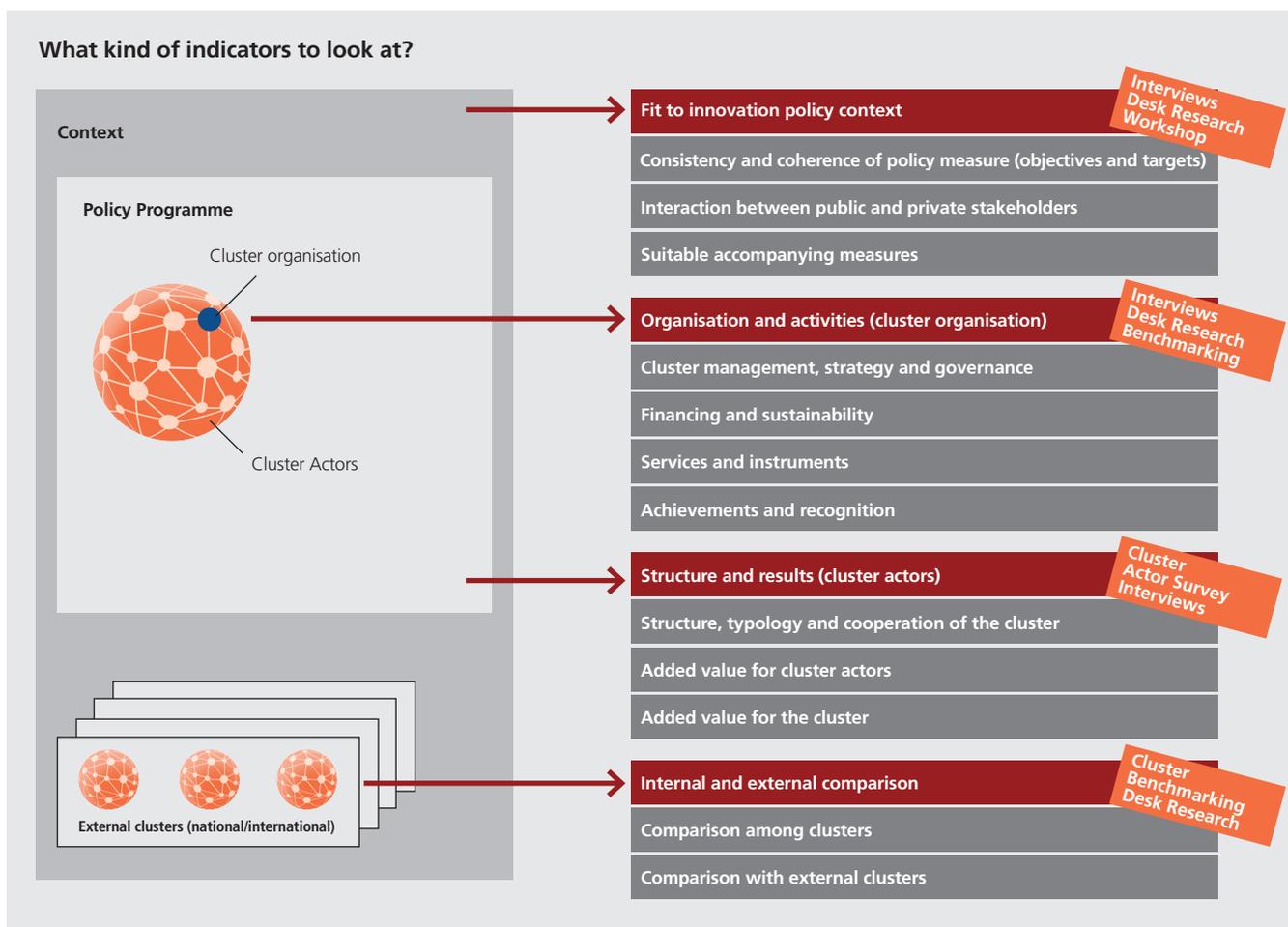
What kind of indicators to look at?

Context

Policy Programme

Cluster organisation

Cluster Actors

External clusters (national/international)

Fit to innovation policy context — *Interviews, Desk Research, Workshop*

Consistency and coherence of policy measure (objectives and targets)

Interaction between public and private stakeholders

Suitable accompanying measures

Organisation and activities (cluster organisation) — *Interviews, Desk Research, Benchmarking*

Cluster management, strategy and governance

Financing and sustainability

Services and instruments

Achievements and recognition

Structure and results (cluster actors) — *Cluster Actor Survey, Interviews*

Structure, typology and cooperation of the cluster

Added value for cluster actors

Added value for the cluster

Internal and external comparison — *Cluster Benchmarking, Desk Research*

Comparison among clusters

Comparison with external clusters

Figure 4: Which thematic levels of indicators should be considered when evaluating clusters and networks?

Cluster Policy Level

With the instrument of cluster funding, cluster policy forms the overarching, constitutive element, whereas its practical implementation is carried out by the cluster management organisations and the actors in the cluster initiatives, respectively. Cluster policy is analysed with reference to its economic and innovation political context and is evaluated in view of numerous and often not influencable interactions.

Besides general economic and cyclical economic factors of influence, a political measure is always in interaction with other political interventions. Hereby, a differentiation must be made between measures which directly support the own policy, and

which have partly been initiated by the respective policy-maker him-/herself, such as specifically introduced supporting strategies for the qualification of the regional personnel or those interventions that are directly influencing local companies, institutions and research institutes.

The Evaluation of Cluster Policy is Focused on Three Levels of Analysis

1) Interaction and organisation of cluster policy at policy level

At this level, it is analysed in which way cluster policy is organised in terms of organisational and institutional aspects, and whether these structures appear suitable for a practical policy implementation. It is then determined whether it is necessary to intensify the actors'/institutions' involvement as well as the coordination between them.

2) Consistency of the objectives of cluster policy and thus their embedding in the context of economic aspects and innovation policy

This analytical unit examines the question of whether the objectives of cluster policy are congruent with the objectives pursued by the cluster initiatives. After a review of the individual objectives, it needs to be verified whether the objectives of the cluster initiative are inconsistent with the overall objective. In a further step, it will be analysed whether the followed cluster policy is compatible with other political interventions regarding economic and innovation policy at regional, national and international level.

3) Strategy and prospective orientation of cluster policy

This analytical unit primarily aims to provide a general understanding of the "history" and the initial situation of the cluster initiative compared to its current situation. An important aspect of this issue presents the review of the currently ongoing monitoring and evaluation activities in the individual cluster initiatives as well as the way in which the exchange of information, and thus the process of mutual learning between the cluster managers and personnel in charge, is organised and carried out. The results of the overall evaluation are finally merged and if necessary, adjustment requirements are derived.

Cluster Management Level

In the past years, it has been confirmed that the success of clusters does not only depend on the provision of an infrastructure, positive framework conditions and the actors' potentials, but also and specifically on the availability of an efficient cluster management organisation. The cluster management initiates and coordinates the common activities of the cluster initiative, and thus considerably adds to a positive development of the cluster.

At the cluster management level, the analysis is based on the following priorities: In a first step, similarly to the approach at cluster policy level, it will be examined the topics for interaction as well as the rolls of the cluster management and the respective members. Furthermore, questions are raised regarding the objectives of the specific cluster strategy and about the realistic capabilities for their achievement. This does also include the question of strategies and whether the achievement of the pursued objectives is regularly measured by means of evaluations or a monitoring process:

▶ Interactions between the cluster management organisation, cluster members and representatives of cluster policy;
▶ Consistency of the objectives of the cluster initiative;
▶ Strategy, monitoring and prospective orientation of the cluster.

One option for analysing the efficiency of the cluster management is to perform a benchmarking. The benchmarking is used to examine the potentials of cluster organisations in five different dimensions related to a reference portfolio of more than 250 cluster management organisations that have already been benchmarked. In order to avoid a comparison of "apples and oranges", each cluster management organisation is attributed to a suitable reference portfolio (e. g. comparison of a cluster management organisation of an IT cluster with other cluster initiatives operating in the same technology field).

Consequently, cluster management organisations may not only be evaluated on the basis of a national comparison, but also compared to international standards. The analysis focuses specifically on 33 indicators in total, which are attributed to the following five dimensions:

▶ Structure of the cluster organisation and their integration within the cluster initiatives;
▶ Management;
▶ Financing;
▶ Activities and services offered by the cluster organisation;
▶ Effects of cluster management on the development of the cluster.

The results of the benchmarking analysis are presented for each cluster organisation in a comprehensive report. They do not only provide information to the management of the respective cluster organisation about potential areas for improvement. The benchmarking with other cluster organisations does also imply the possibility to learn from the reference clusters and to integrate best practice strategies into the own work. This

approach for measuring the efficiency of cluster organisations does also constitute the basis for the quality label for cluster organisations developed by the European Cluster Excellence Initiative (ECEI) on the basis of significant input provided by VDI/VDE Innovation + Technik GmbH and the iit. Since 2012 already, cluster organisations that had performed particularly efficiently in the sense of an excellent management have received a quality label (gold label) after a thorough examination by certified experts.

Cluster Actors' Level

The cluster actors should essentially benefit from the cluster policy measures. The measurement of effects at this level is particularly interesting, but at the same time, it is also particularly difficult due to the above described challenges.

When analysing the impact, it must be taken into consideration that the efficiency of clusters and their actors does not only depend on the capability of interaction and innovation of individual actors or on the given framework conditions. It is rather influenced by the commitment of the respective cluster management organisation.

That is why at the cluster actors' level, the analysis is not only focused on the effects and additional values achieved by the cluster actors, but rather on the question whether the service portfolio offered by the cluster management organisation is considered adequate and effective from the point of view of the involved actors.

Hereby, two investigative approaches can be recommended:

1) **Satisfaction with and adequacy of the service portfolio offered by the cluster organisation as well as the effects and benefits arising for all members (member satisfaction survey)**

The cluster actors are asked to answer questions regarding their satisfaction with the services offered by the cluster management organisation as well as about noticeable additional values. The focus hereby is set on the following questions:

▶ Questions about the members' characterization;
▶ Questions regarding the members' activities and structure;
▶ Questions regarding the services offered by the cluster management organisation;
▶ Questions about the major areas of cooperation;
▶ Questions regarding the effects of an active involvement in the cluster initiative.

2) **Effects and benefits for companies (Cluster Impact Analysis)**

The effects achieved by the companies that are actively involved in a cluster – in particular by SMEs – are of special interest. It is assumed that companies, especially SMEs, that are organised in a cluster initiative do benefit from an enhancement of their efficiency and competitiveness. Compared to larger firms, SMEs are usually lacking in resources of various categories (e. g. capital and human resources, qualification schemes amongst others). In clusters, however, SMEs should be able to compensate for their individual deficiencies through the conclusion of strategic partnerships and to generate shared or individual benefits.

Companies along the value chain are expected to enter into cooperation with other stakeholders which will finally lead to the development of potential synergies, such as the establishment of new customer relationships or a facilitated access to distribution channels. The special opportunity for enterprises involved in cluster activities is the possibility on the one hand, to focus on their core competencies (specialisation) and on the other hand the potential increase of their limited resources thanks to an integration into a complete system.

The Cluster Impact Analysis examines the following questions:

▶ To what extent do companies benefit from an active involvement in networks and clusters?
▶ Which fields can be identified, where the positive effects for the networking companies are most apparent?
▶ Can the objectives that are pursued in line with the entrepreneurial commitment for cluster activities finally be achieved?

For further information about the Cluster Impact Analysis, please use the following link:
http://www.iit-berlin.de/veroeffentlichungen/cluster-impact-analysis-the-real-cluster-case
(a German version is available on request).

Conclusion

Clusters are individual organisations and should always be evaluated under consideration of their specific business contexts. Our experience with the evaluation approach described in this article shows that this model provides a sufficiently flexible framework. Thus, it allows for an individually tailored proceeding which is able to meet the specific requirements of different contracting parties and clusters. The evaluation model comprises various methodical approaches, and consequently includes a comprehensive set of indicators from which the adequate ones can be selected.

In brief and above all, the particularity of this approach is characterized by the following facts:

▶ Specific characteristics of the clusters and networks (age, intensity of commitment within the cluster) are taken into account.

▶ Due to comprehensive practicability tests and a consultation process, the applied indicators enjoy broad acceptance among political decision-makers and cluster actors.

▶ The impact analysis is not based on the collection of sensitive business data, but on an entrepreneurial assessment of potentially achieved results attributed to predefined success categories.

▶ This type of analysis ensures an independency from the availability of statistical data and predefined sectors and regions, respectively. Technologies and activity fields do often not correspond to the sectors that are displayed according to the industrial classification. Moreover, clusters and networks are normally difficult to reconcile with statistically covered territorial units.

▶ The analysis focuses on data that are comparably easy to collect and to evaluate.

▶ This investigation method does not require complex calculations that would be perceived as 'black box' – leading to easily comprehensible results.