

# The Cross-Border Zeolitic Tuff Cluster Development Strategy

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## Abstract

*The development strategy is a kind of plan — a composite document specifying basic development trends of entity or group of entities, which at the same time takes into account the potential of the entities for which the strategy is implemented and the possibility of development as well, which gives economic and social environment. Necessary activity, which organization needs to realize, organization which has already worked out and accepted vision of development, is a skilfully translate into concrete actions from an operational character, namely the creation of the operational plan. It is build based on methods like: Management by Objectives or Balance Scorecard. In this paper, it was presented development strategy of the Cross Border Cluster of Zeolitic Tuffs. In first part, were presented general and partial goals of cluster developed during the strategic diagnosis, then there was prepared Balance Scorecard for a cluster, as a tool for creating a cluster strategy. In the next part of the article, were included strategic matrices for individual areas. The article concludes developed plan of action for the cluster for the coming period.*

**Keywords:** the cluster initiative, cluster development strategy, regional development, regional policy

## Introduction

An indispensable element of the process of operational management is planning, including mainly current and short-term activities. An essential element of the process is formulating goals, that is specifying some sort of the future state of an entity. These goals should refer the current spheres of an entity's activities, because they represent the entity's sense of existence. The strategy should include an analysis of the present situation and some suggestions regarding its improvement. In this study the implementation of the strategy is shown by means of a path of conduct, starting from some problems the initiative might experience, leading through some ways of dealing with them, and finally arriving at a suggestion of indicators by means of which it will be possible to see if the problems have been solved and the strategic goals reached. The main problems the cluster could encounter have constituted a starting point in the process of creating of a map. The process of the strategy implementation has been presented by means of a Balanced Scorecard (BSC), which helps to organize the management processes better and translate the strategy into concrete goals for different fields of activity. Working out and implementing the development strategy is an important step on the road to reaching by a cluster a high organizational level and success in the implementation of undertakings. The strategy of the cluster should be transferred onto the operational field of activity by defining tasks, resources and actions leading to the implementation of the strategic and partial goals of the cluster. The implementation of the strategy still constitutes a problem.

The basic objective of this article is to identify the main problems of the cluster initiative and to define the directions of the development of the cluster in different time perspectives (short-term, medium-term and long-term) in most important areas. The Balanced Scorecard (BSC), a tool which has been used for this expert opinion, is an instrument which contributes to a greater effectiveness of the strategy implementation. That is why this method has been chosen for working out this cluster strategy. The BSC is a strategy performance management tool which helps to direct an

organization's activities towards the implementation and current updating of particular strategic goals and in consequence to create an organization oriented towards a strategy. In this way it can effectively assist the process of the strategy implementation.

## 1 General and specific goals of the cluster

Setting general and partial goals of a cluster is a process which goes through the following phases/stages:

- the strategic diagnosis, which is realized through the identification of the most important problems of the cluster initiative
- defining partial and general goals which will answer the problems of the strategic diagnosis
- providing possible solutions (ways of conduct which will enable the implementation of the strategic goals)

General and specific goals put forward by the entities of the Cross-border Zeolitic Tuff Cluster were set as a result of the conclusions from the diagnosis of the cluster's condition and its environment, the SWOT analysis, the description of particular trouble spots in the cluster functioning and problems identified in this way.

The strategic diagnosis and experience from the analysis of the literature relating to the subject (reports, development strategy, etc.) as well as from the interviews with persons involved in the development of various cluster initiatives showed that the Cross-border Zeolitic Tuff Cluster faced problems which were divided into five areas. For these areas Balanced Scorecards will be worked out. These areas were the following:

- the marketing area
- the innovation, research and development area
- the personnel area
- the financial area
- the general area

Therefore, there are four named areas, and one general one, which was created because some problems could not be assigned to the remaining four, defined, areas, and the problems do not have many common features, so they are called general problems. The problems divided into particular functioning areas of the cluster and its members are the following:

- the marketing area
  - lack of a specific product offered by the members of the cluster and no clear and consistent product offer of the cluster
  - incomplete information regarding the offer of the cluster members given to the customers
  - a limited product offer
  - a dispersed product offer
  - lack of sufficient information about the present customers
  - lack of monitoring of the changing needs of the customers
  - poor awareness of the society/recipients of the possibilities of using zeolite tuffs
  - poor effectiveness of the actions promoting the cluster products so far
  - lack of synchrony and unity in promotional actions
  - lack of joint promotion of the products on the market
  - lack of a uniform image
  - advanced and strong competition
  - strong competition of traditional products
  - insufficient use of the Internet for the sale of products offered by cluster members
  - the existence of substitutes which have properties similar to the properties of the products offered by cluster members
  - weak awareness of the buyers of the positive properties of the products
  - lack of reliable and commonly available information about the advantages of the products offered by the cluster members

- the innovation, research and development area
  - obsolete and inadequate research infrastructure and machine park
  - a restricted scope of the R&D activity conducted by some members
  - no quality certificates issued by the cluster
  - poor cooperation between the research and development sector institutions
  - lack of efficient information channels between all the members of the cluster
  - a lot of time is necessary for the research into the possible applications of zeolitic tuffs and
    - a lot of time is necessary for trials connected with the business use of zeolite tuffs
    - a necessity to buy expensive specialist measuring equipment
- the personnel area
  - insufficiently qualified staff of some cluster members
  - poor flexibility of employment in the cluster entities
  - weak formal and informal ties between the managerial staff of the members
  - an insufficient number of training courses for workers of cluster members
  - a small budget for improving the workers' qualifications
  - lack of persons delegated from the members whose sole responsibility is cooperation
- the financial area
  - lack of financial resources for the functioning of the cluster
  - a limited access to external financial resources
  - possessing financial assets which are not used
  - high cost of research into the use of zeolitic tuffs
  - lack of sufficient actions to acquire EU funding in the future
- the general area
  - problems with acquiring new members
  - problems with settling the financial resources for Ukraine
  - lack of a common information and communication tool which could be used by the members of the cluster
  - insufficient use of the possibility of mutual advisory assistance of the cluster members
  - poorly developed structures supporting the manufacture, processing and marketing of the products
  - weak ties between the potential members of the cluster
  - lack of the cluster structures (office)

General goals of the cluster are enumerated in table 1.

**Tab. 1.** General goals of the Cross-border Zeolitic Tuff Cluster

| Area                                 | General goal  |
|--------------------------------------|---|
| Marketing                            | Creating a product offer with a description of zeolite tuffs applications and starting joint marketing actions;   |
| Innovation, research and development | Completing the research into the basic applications of zeolitic tuffs and introducing standards defining the quality of the products;   |
| Personnel                            | A high level of personnel capital in the cluster enterprises.   |
| Finance                              | Guaranteeing long-term cluster financing both for the organisational and in the research and development areas;   |
| Complex                              | A stable development of the cluster initiative by strengthening the ties between the members of the cluster and comprehensive assistance in the development of the cluster members. |

The action strategy of the Cross-border Zeolitic Tuff Cluster is divided into parts which correspond to the problem areas. The strategy has been worked out in accordance with a modified Balanced Scorecard, which is one of the most modern methods of management, and which is a tool measuring the success of an organization and identifying areas requiring improvement. The Balanced Scorecard, as a central element of the company management system, helps to organize the

management processes better and translate the strategy into concrete goals for different areas of its activity. It is a system which measures the effectiveness of the enterprise in many perspectives and helps to translate the vision and strategy into measurable goals. It helps to connect everyday operational actions of all the entity departments and workers with the strategic goals of the enterprise. The used methodology is universal enough and can successfully be used for various members, so its application for the Cross-border Zeolitic Tuff Cluster seems to be justified.

## 2 The Balanced Scorecard as a tool for creating the cluster's strategy

According to R. Kaplan and D. Norton the Balanced Scorecard is a “tool for translating the vision and strategy of an organization into a set of individual goals and indicators which are understood by workers of all levels of the organization and for monitoring the implementation of such as strategy.” In practice it helps to create a set of logically connected goals to be implemented and key performance indicators. It is important that the Balanced Scorecard estimates the stage of implementation of the strategy in very diverse aspects.

The Balanced Scorecard in its traditional form includes goals grouped in four basic perspectives (Gawroński 2010, 156):

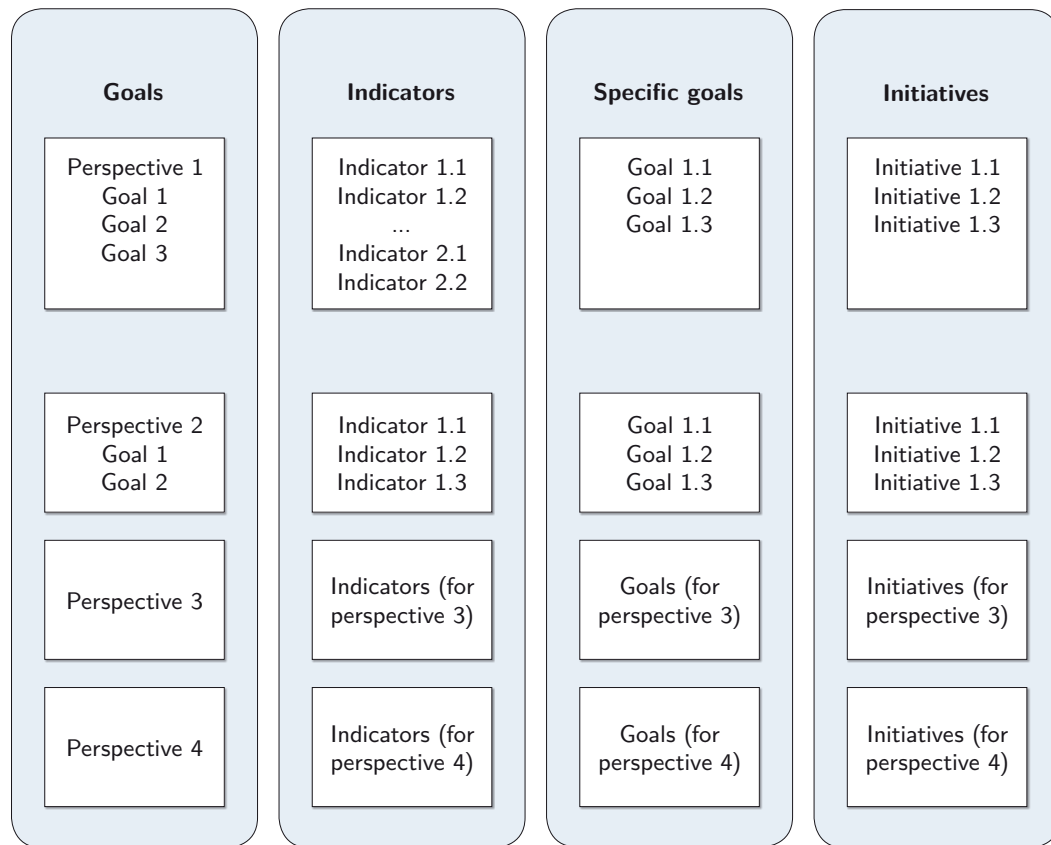
- the financial perspective—rationality in using local resources and increase in the local resources value
- the customer perspective—rendering services which answer the needs of the inhabitants and investors, assessing the level of satisfaction from the quality of services
- the internal business process perspective—a possibility to improve internal business processes of the implementation of rendered public services
- the learning and growth perspective—an ability to learn and personnel training

It is important to work out a wide set of strategic goals for each organization within the four suggested perspectives. If in a particular organization many different goals may be distinguished, it is suggested that a hierarchy of goals be made, defining which goals are the key ones for the implementation of the whole strategy and which are supplementary goals which contribute to the strategy implementation. This hierarchy of the importance of particular goals may in practice mean assigning different weight to the particular goals. It will help to monitor the stage of the strategy implementation. Within particular perspectives the goals should be defined in a way which will enable to measure the level of their implementation. Therefore, a careful selection of the key performance indicators is very important. At the time of a periodical analysis of the stage of implementation, the indicators are used to check in which areas of the organization's activity the assumed results have been achieved, and in which areas the results diverge from the planned results. Thanks to appropriately selected indicators and broadly defined goals in the Balanced Scorecard, an organization may well ahead get information about the problems in the strategy implementation process. Some signals about problems in reaching the planned goals in particular perspectives should encourage the managers to undertake additional actions in a particular area.

An often practice is dividing the general goals in particular perspectives into specific goals. Specific goals should constitute an impulse for working out initiatives for their implementation. A scheme of such an approach is shown in figure 1.

Among the numerous benefits related to the implementation of the Balanced Scorecard and using it in practice, the following profits are usually enumerated (Hojszyk and Masztalerz 2007):

- The Balanced Scorecard is a helpful tool in the effective and successful implementation of the strategy thanks to early identification of any deviations from the assumed strategy implementation parameters. Thanks to the identification of the deviations corrective actions may be undertaken. The organization may concentrate its actions and resources on strengthening the efforts in these areas which are the most troublesome in which the strategy implementation process. The corrective actions may only be successful if they are undertaken early enough.
- Thanks to the Balanced Scorecard the strategy may be specified more precisely. Thanks to a comprehensive and complex approach to the problem of working out the goals and indicators, the strategy is formulated in more concise way. All the partial goals and goals in individual



**Fig. 1.** Goals, indicators, specific goals and initiatives according to the Balanced Scorecard

perspectives must be connected with each other and they should together ensure reaching the planned strategic goals.

- Thanks to the Balanced Scorecard the goals of an organization are viewed more comprehensively and from different perspectives. Thanks to it we tend to consider goals which are often very different and may contradict each other. The management of an organization should find an appropriate balance between long-term and short-term goals and should specify the priorities of their actions in different perspectives.
- The Balanced Scorecard is an attitude which assumes that management of these areas in which the effects cannot be measured is very difficult. Therefore, in the Balanced Scorecard all the goals should be translated into indicators. Thanks to goal indicators, the Balanced Scorecard estimates the degree of the goals implementation and as a result we have an objective way of measuring the quality of our management actions and the degree of the implementation of the strategic assumptions.
- Defining clear and definite goal implementation indicators helps to assign them to different departments of the organization and to different workers, who get clearly and precisely defined goals to be implemented and for which they become responsible. The Balanced Scorecard contributes to the creation of a motivation system based on the goals.
- The Balanced Scorecard may contribute to better effectiveness of the workers, showing them how their individual goals may contribute to reaching the strategic goals and motivate the implementation of the goals they are responsible for. A clear specification of the goals helps to understand the expectations of the organization managerial staff in relation to individual departments and workers. Having such clear information, workers can concentrate their actions on reaching the goals required by the organization.

It is proven that after the implementation of the Balanced Scorecard, its use in organizations develops. Initially, it is treated as a good tool for measuring the effectiveness of the organization and the degree of the implementation of goals of individual departments and workers. With time, the managerial staff notice other benefits from functioning of the Card.

### 3 Strategy maps

A specified and approved strategy is only a halfway to the success of an enterprise. The strategic document may include solutions which will not allow their implementation. Even having a good and real strategy, many economic entities may have problems with its implementation because the strategy authors' vision may diverge from the vision of persons who implement it in practice in an enterprise. There are many reasons for it. First of all there may be no effective tools for monitoring and analyzing the progress of its implementation. One effective method for improving the chances of the effective implementation of the strategy in organizations is the Balanced Scorecard, which puts emphasis on managing the organization, directed at implementing the strategy by translating it into a concise set of strategic goals, indicators and actions.

The strategy implementation, using the above presented method, is based on preparing strategy maps for each strategy area, which illustrate the method of the strategic goals implementation. In the strategy maps the starting point are the problems in the environment of the cluster members and in the entities themselves, as well as the strategic goals resulting from the problems. In the next phase, individual goals are assigned indicators, by means of which the degree of the goals implementation may be measured. These indicators have been quantified adequately, and the persons who implement partial strategies or the complex one have a possibility to verify the degree of the strategy implementation.

Below there are strategy maps for five strategic areas identified in the strategic diagnosis:

- marketing
- finance
- research and development
- the personnel area
- general

The first column of each table on pages 62–68 includes the problems of the cluster structure that have been identified. The second column comprises the strategic goals that have to be reached to solve the problems. The next column comprises some suggestions of solutions, that is specific actions that must be undertaken to implement the strategic goal. The next column comprises indicators by means of which the evaluation of the degree of implementation of individual strategic goals is possible. Apart from the name of the indicator, in the next column the indicator quantifier has been put. Thanks to that, persons responsible for the strategy implementation and managers of the cluster can see to what extent an individual strategic goal has been reached. In the last column, the time limit for reaching particular strategic goals has been put. There are three time limits by which individual strategic goals should be implemented. It has been assumed that the goals will be implemented within three time limits, that is:

- short-term — up to one year (by 31 December 2015),
- medium-term — up to three years (from 2015 to 2017),
- long-term — up to six years, within the new EU financial perspective for years 2014–2020.

### 4 The cluster's action plan

The Cross-border Zeolitic Tuff Cluster is now in its initial stage of development. An initiative group already exists, several declarations for participation in the cluster have already been signed, but the cluster does not have any formal or informal structure. The activities so far have been concentrated on the implementation of the project co-financed from the funds from the Poland-Belarus-Ukraine programme. For the cluster's structure to develop, several important factors have to be taken into account at this stage of development (Koszarek 2011, 38):

- improving the awareness of the participants of the potential benefits from cluster membership
- improving trust between the members to facilitate further cooperation
- getting green light for further work and agreements on conditions approved by the participants
- appointing an Initiative Group composed of highly-motivated and trusted persons, whose aim will be conducting further work



The cluster will start to operate after the declaration on participation has been signed by at least several dozen entities. It will take place when the potential cluster members are informed about the benefits they could get from operating within the cluster. Therefore, the promotion of the cluster itself, and of the concept of clustering, should be intensified and its scope should be extended.

Clustering is an idea based on the cooperation of potential or real competitors. If entities are geared towards market competition and they see each other as opponents, starting cooperation will be very difficult. First, mutual aversion should be overcome and trust between entities should be developed. Such initiating activities should be undertaken at the very beginning of the cluster's operation by an entity/a person who is well respected and widely known in the area, who will be able to "break the ice" and encourage entities to enter a cluster. Usually, the first cluster participants form the initiative group. This group should be responsible for the future both quantitative and qualitative development of the cluster. In the case of the Cross-border Zeolitic Tuff Cluster it seems that the University of Management and Administration in Zamość should become a natural coordinator of the cluster and all the partners realising the project: "Working out an innovative model of the cross-border use of zeolitic tuffs" should become members of the initiative group. Setting up the initiative group and appointing a coordinator will make further actions possible such as: the formal signing of the cooperation agreement and creating the cluster. Without that the cluster has no chances of future functioning. Only after the form of the cluster's operation has been chosen and after its activity has been formally initiated, the directions of the cluster development can be defined. The initiators and cluster members are responsible for that. Representatives of the enterprises, higher education institutions, local government units and business support institutions should define the priorities of the cluster's operation and the general directions of its development.

Definitely, the most important task for the cluster representatives is to guarantee the financing of its future activity. At this stage, some small actions are financed by the entities implementing the project: „Working out an innovative model of the cross-border use of zeolitic tuffs”, but in the long run the cluster cannot function like that.

An important direction of the cluster's development and action should be the development of innovations and new technologies, supporting the financial potential of the enterprises and the promotion and building a good image of the companies operating in the cluster. Some of the most important tasks realized in the future by the members of the Cross-border Zeolitic Tuff Cluster also include:

- conducting research into the use of zeolitic tuffs
- creating a system of information and communication, building the cluster's portal and website, acquiring an e-mail address, etc.
- even more intensive cooperation between higher education institutions and research and development centers
- creating local economic networks ("sub-clusters") in other provinces (Poland) and regions (Ukraine)
- creating conditions for the development of agricultural, construction and other companies based on zeolite tuffs
- optimizing the delivery and value chain
- cooperation within the sector and industry regarding marketing and the sale of products
- implementing innovative technologies and the quality policy
- supra-regional, cross-border and international cooperation
- seeking for new markets
- conducting or ordering research into the trends on the local and regional market
- introducing new products on the local and regional markets
- developing the human capital and social capital
- organizing financial, legal and specialist, sector-oriented counselling for the cluster members
- conducting activities to obtain grants for the cluster development
- cooperating with local governments regarding local and regional development

**Tab. 2.** The Cross-border Zeolitic Tuff strategy map—the marketing area

| Problem   | Specific strategic goal   | Possible solutions   | Indicators   | Indicator quantifier                             | Period of implementation |
|---|---|--|--|--|--------------------------|
| Unclear and inconsistent product offer of the cluster, no specific product offered by the cluster members                   | Preparing a product offer of the cluster and of the cluster members for the customers                                   | Preparing materials promoting the offer of the cluster and of the cluster members                | Number of prepared materials describing specific properties of products offered by the cluster members | Number of materials—number of items              | Medium-term period       |
| Dispersed product offer of the cluster members  | Gathering in one place information about all the products offered by the cluster members                                | Preparing a catalogue of products offered by all the cluster members                             | Number of catalogues of products offered by the cluster members  | Number of catalogues—number of items             | Short-term period        |
| Incomplete information regarding the offer of the cluster members given to the customers,                                   | Creating reliable and clear information materials about the cluster's offer   | Preparing leaflets about the cluster's offer   | Number of leaflets about the cluster's offer   | Number of leaflets—number of items               | Medium-term period       |
|   | Creating a website promoting the cluster's offer  | A well-working, currently updated website promoting the cluster's offer                          | A well-working, currently updated website promoting the cluster's offer                                | A well-working website                           | Medium-term period       |
|   | Preparing leaflets about the offer of the cluster members   | Number of leaflets about the offer of the cluster members  | Number of leaflets about the offer of the cluster members  | Number of leaflets—number of items               | Medium-term period       |
| Lack of sufficient information about the present customers  | Defining the profile of the buyer of the products offered by the cluster  | Conducting a survey among the customers of the cluster members                                   | Survey report  | Number of conducted surveys                      | Medium-term period       |
| Lack of monitoring of the changing needs of the customers,  | Constant monitoring of the changing needs of the customers,   | A regular, periodical analysis of the needs of the customers                                     | Survey report  | Number of conducted surveys                      | Second period            |
| A limited product offer of the cluster members  | Developing the product offer of the cluster members   | Developing and launching new products by the cluster members                                     | Number of new products launched by the cluster members   | Number of new products—number of items           | Long-term period         |
|   | Developing and launching new, integrated products   | Number of new, integrated products launched by the cluster                                       | Number of new products—number of items   | Number of new products—number of items           | Long-term period         |
| The existence of substitutes which have properties similar to the properties of the products offered by the cluster members | Raising the awareness of the society/recipients about the possibilities of application of zeolitic tuffs                | Conducting an information campaign concerning the possibilities of application of zeolitic tuffs | Number of actions  | Number of campaigns—number of items              | Long-term period         |
|   | Working out written materials (reports, analysis results) concerning the possibilities of application of zeolitic tuffs | Number of materials  | Number of materials—number of items  | Number of materials—number of items              |                          |
| Poor awareness of the society/recipients about the possibilities of application of zeolitic tuffs                           | Organizing conferences/seminars concerning the possibilities of application of zeolitic tuffs                           | Number of organized conferences/seminars   | Number of conferences/seminars - number of items   | Number of conferences/seminars - number of items |                          |



Tab 2. (continued)

| Problem   | Specific strategic goal  | Possible solutions   | Indicators  | Indicator quantifier   | Period of implementation |
|---|--|--|---|--|--------------------------|
| Poor effectiveness of the actions promoting the cluster products so far                   | Joint promotional actions undertaken by the cluster members  | Participation in promotional events (fairs, exhibitions)   | Number of promotional events in which the cluster members took part                           | Number of events — number of items   | Long-term period         |
| Lack of synchrony and unity in promotional actions  | Creating a system of informing the media about the cluster, cluster products and cluster products      | Advertisements in the media  | Number of advertisements promoting the cluster, its products and the cluster members          | Number of advertisements — number of items                                 | Medium-term period       |
| Lack of joint promotion of the products on the market                                     | Creating a strategy of informing the media about the cluster, the cluster members and cluster products | Creating a strategy of informing the media about the cluster, the cluster members and cluster products | Number of advertisement emissions promoting the cluster, its products and the cluster members | Number of advertisement emissions — number of items                        |                          |
|   |  |  | Creating a promotional strategy   | A prepared promotional strategy  |                          |
| Lack of a uniform image   | Shaping a required image of the cluster  | Undertaking actions regarding a joint visual identification  | Number of undertaken actions  | Number of undertaken actions — number of items                             | Second period            |
| Advanced and strong competition   | Improving the competitive strength of the cluster members  | Being present on the market as one cluster entity  | Number of the cluster members under one cluster brand   | Number of the cluster members — number of items                            | Second period            |
| Strong competition of traditional products,   |  |  |   |  |                          |
| Insufficient use of the Internet for the sale of products offered by the cluster members, | Development of a system of distribution of the cluster's products on the Internet                      | Creating a possibility of selling the cluster's products on the Internet                               | Number of the cluster's products offered on the Internet                                      | Number of the cluster's products offered on the Internet — number of items | Medium-term period       |

**Tab. 3.** The Cross-border Zeolitic Tuff strategic map—the innovation, science and research area

| Problem  | Specific strategic goal  | Possible solutions   | Indicators   | Indicator quantifier  | Period of implementation |
|--|--|--|--|---|--------------------------|
| <p>Obsolete and inadequate research infrastructure and machine park</p> <p>Necessity to buy expensive specialist measuring equipment</p> <p>A lot of time is necessary for the studies of the possible applications of zeolitic tuffs</p> <p>A lot of time is necessary for trials connected with the business use of zeolitic tuffs</p> | <p>Modernization of the research infrastructure and research park of the cluster</p> <p>Increasing the scope of R&amp;D activity</p> | <p>Purchase of modern machines and equipment</p> <p>Construction of new buildings</p> <p>Repair/modernization of existing elements of the research infrastructure and machine park</p> | Value of newly purchased equipment   | Value of newly purchased equipment in PLN                                       | Second period            |
|  |  |  | Number of new machines for carrying out research   | Number of items per enterprise  |                          |
|  |  |  | Number of new products manufactured by new machines and equipment                                      | Number of items per enterprise  |                          |
| <p>A restricted scope of R&amp;D activity conducted by some members</p>  | <p>Increasing investment in R&amp;D activity by the cluster members</p>  | <p>Entering into cooperation with R&amp;D units</p>  | Value of newly constructed buildings   | Value in PLN  | Second period            |
|  |  |  | Value of the repair/modernization of existing elements of the research infrastructure and machine park | Value in PLN  |                          |
|  |  |  | Number of R&D units with which the cluster cooperates  | Number of R&D units   |                          |
|  |  |  | Number of R&D units within the cluster   | Number of R&D units   |                          |
|  |  |  | Number of the cluster members cooperating with R&D institutions  | Increase in the number of the cluster members cooperating with R&D institutions |                          |
|  |  |  | Value of investment in R&D activity realized within the cluster members                                | Value of investment, value in PLN   |                          |
|  |  |  | Value of investment in R&D activity conducted in cooperation with external members                     | Increase in the number of members cooperating with R&D institutions             |                          |

Tab 3. (continued)

| Problem  | Specific strategic goal  | Possible solutions  | Indicators                                     | Indicator quantifier                          | Period of implementation |
|--|--|---|--|---|--------------------------|
| Lack of quality certificates issued by the cluster     | Introducing a quality certificate issued by the cluster                      | Defining standards  | Working out standards                          | Standards for every product                   | Medium-term period       |
| Insufficient communication between the cluster members | Creating a dynamic tool for better communication between the cluster members | Creating a forum for the exchange of opinions and good practices                    | Creating a forum                               | Number of available forums—number of items    | Short-term period        |
|  |  | Building an effective browser of the cluster's resources                            | Equipping the cluster's website with a browser | Number of browsers—number of items            |                          |
|  |  | Ensuring a possibility of archiving documents essential for the cluster development | Creating the cluster's archive                 | Number of available archives—number of items  |                          |
|  |  | Creating a database for the cluster members and their activity                      | Creating a database                            | Number of available databases—number of items |                          |

Tab. 4. The Cross-border Zeolitic Tuff strategy map—the personnel area

| Problem   | Specific strategic goal   | Possible solutions   | Indicators   | Indicator quantifier  | Period of implementation |
|---|---|--|--|---|--------------------------|
| Insufficiently qualified staff of some of the cluster enterprises | Raising the professional qualifications of workers              | Entering into cooperation with secondary schools and higher education institutions of required fields of study                         | Number of schools and higher education institutions with which the cluster started co-operation      | Number of secondary schools and higher education institutions | Medium-term period       |
|   |   | Acquiring new workers who have completed education in secondary schools and higher education institutions cooperating with the cluster | Number of acquired workers as a result of cooperation with schools and higher education institutions | 100 % of newly acquired workers                               |                          |
|   |   | Evaluating the training requirements of workers  | Conducting regular, periodical evaluations of the training requirements of workers                   | At least once a year  | Medium-term period       |
| Raising the professional qualifications of the managerial staff   | Raising the professional qualifications of the managerial staff | Evaluating the training requirements of the managerial staff   | Conducting regular, periodical evaluations of the training requirements of the managerial staff      | At least once a year  | Medium-term period       |

(continues on next page)

Tab 4. (continued)

| Problem  | Specific strategic goal   | Possible solutions  | Indicators  | Indicator quantifier  | Period of implementation |
|--|---|---|---|---|--------------------------|
| Poor flexibility of employment in the cluster members                                | Improving the flexibility of employment in the cluster members                | Exchange of workers between particular members of the cluster<br>Conducting an electronic database of job candidates<br>Creating a noticeboard for staff requirements | Number of the cluster members interested in worker exchange<br>Number of electronic databases of job candidates<br>A noticeboard for staff requirements | Target number — 100 %<br>1 base in each cluster member<br>1 notice board            | Medium-term period       |
| Weak formal and informal ties between the managerial staff of the enterprises,       | Improvement of the relations between the managerial staff of the enterprises, | Organizing training sessions/meetings for the managerial staff of the enterprises   | Number of organized training sessions/meetings  | Number of organized training sessions/meetings—number of items                      | Medium-term period       |
| An insufficient number of training courses for the workers of the cluster members    | Increasing the expertise of the cluster members                               | Creating a list of possible training topics suggested by the staff<br>Creating a list of workers who will undergo training in individual the cluster members          | Creating a list of possible training sessions suggested by the staff<br>Creating a list<br>Number of workers taking part in training                    | Number per member<br>Number per member<br>Increase in the number of trained workers | Medium-term period       |
| A small budget for staff training  | Increase in the resources for training the staff of the cluster members       | Increasing the budget for training of the cluster members<br>Filing applications for external co-financing of training projects                                       | Amount of the resources for staff training<br>Number of applications for co-financing of training projects  | Increase in the amount<br>Number of applications—number of items                    | Long-term period         |
| Lack of persons delegated from the members whose sole responsibility is co-operation | Constant cooperation between all the cluster members                          | Delegating one worker from each entity, responsible for cluster cooperation   | Number of workers delegated for cluster cooperation   | Number of delegated workers is the same as the number of the cluster members        | Medium-term period       |

Tab. 5. The Cross-border Zeolitic Tuff strategic map—the finance area

| Problem  | Specific strategic goal                        | Possible solutions                                      | Indicators  | Indicator quantifier                                 | Period of implementation |
|--|--|---|---|--|--------------------------|
| A limited access to external financial resources | Gaining access to external financial resources | Including financial institutions (banks) in the cluster | Number of financial institutions (banks) within the cluster | Number of institutions which have joined the cluster | Medium-term period       |

Tab 5. (continued)

| Problem  | Specific strategic goal   | Possible solutions  | Indicators   | Indicator quantifier                | Period of implementation |
|--|---|---|--|-------------------------------------|--------------------------|
| Insufficient use of EU funds                               | Increase in the use of EU funds   | Applying of the cluster, as a leader, for project co-financing from EU funds                                | Number of new applications   | Number of applications as a partner | Medium-term period       |
|  |   | Applying of the cluster, as a partner, for project co-financing from EU funds                               | Number of obtained grants  | Number of obtained grants           |                          |
|  |   | Appointing a special unit within the cluster, responsible for writing applications for project co-financing | Number of obtained grants  | Number of applications as a partner |                          |
|  |   | Analysis of the possessed assets to use them more effectively   | Number of organizational units responsible for writing applications for project co-financing | Number of obtained grants           |                          |
| Possessing financial assets which are not used             | More effective use of the possessed assets  | Analysis of the possessed assets to use them more effectively   | Increase in profit from use of the possessed assets  | Increase in profit in PLN           | Medium-term period       |
| Lack of financial resources for functioning of the cluster | Ensuring financial resources for functioning of the cluster and for research activity | Obtaining external funding, for example from EU funds   | Amount for resources for financing the cluster   | Amount in PLN                       | Short-term period        |
| High cost of research into the use of zeolitic tuffs       | Introducing the cluster members' contributions  |   |  |                                     |                          |

Tab. 6. The general strategy map of the Cross-border Zeolitic Tuff Cluster

| Problem   | Specific strategic goal  | Possible solutions   | Indicators                     | Indicator quantifier                          | Period of implementation |
|---|--|--|--------------------------------|---|--------------------------|
| An insufficient number of the cluster members   | Membership of several dozen entities in the cluster (approx. 40)             | Acquiring new members,   | Number of the cluster members  | Number of the cluster members                 | Short-term period        |
| Lack of common information and communication tool which could be used by the members of the cluster | Creating a dynamic tool for better communication between the cluster members | Creating a forum for the exchange of opinions and good practices   | Creating a forum               | Number of available forums—number of items    | Short-term period        |
|   |  | Building an effective browser of the cluster's resources   | Building a browser             | Number of available browsers—number of items  |                          |
|   |  | Ensuring a possibility of archiving documents essential for the cluster development and development of its members | Creating the cluster's archive | Number of available archives—number of items  |                          |
|   |  | Creating a database for the cluster members and their activity   | Creating a database            | Number of available databases—number of items |                          |

(continues on next page)

Tab 6. (continued)

| Problem   | Specific strategic goal   | Possible solutions   | Indicators   | Indicator quantifier   | Period of implementation                                    |
|---|---|--|--|--|---|
| Insufficient use of the possibility of mutual advisory assistance of the cluster members,                   | Insufficient use of the possibility of mutual advisory assistance of the cluster members,                           | Organizing of an expertise exchange between the cluster members - internal and external training   | Number of organized staff exchanges  | Number of organized staff exchanges—number of items  | Medium-term period  |
| Weak ties between the potential members of the cluster  | Strengthening the business and social ties between the representatives of the cluster members                       | Organizing periodical meetings between the cluster representatives   | Number of organized meetings between the cluster representatives   | Number of meetings—number of items   | Medium-term period  |
| Lack of developed structures supporting the manufacture, processing and marketing of the cluster's products | Building structures supporting the manufacture, processing and marketing of the cluster's products in a complex way | Creating within the cluster a unit responsible for supporting the manufacture, processing and marketing of the cluster's products  | Number of created units  | Number of created units—number of items  | Medium-term period  |
| Problems with settling the financial resources for Ukraine  | Working out legally-binding procedures for settling the financial resources for Ukraine                             | Hiring a law office<br>Asking tax offices for an interpretation of certain regulations<br>Consultations with entities who have found themselves in a similar situation   | Obtaining legal advice<br>Obtaining an interpretation of certain regulations<br>Obtaining advice   | Legal advice<br>Interpretation of certain regulations<br>Advice  | Short-term period<br>Short-term period<br>Short-term period |
| Lack of the cluster's structures (office)   | Formation of the cluster and organizing the cluster's office  | Specifying an organizational and legal form of the cluster's activity<br>Employing staff for the cluster's office<br>Setting up the cluster's headquarters (lease/purchase of premises)<br>Setting up the cluster's office | Starting the cluster's activity<br>Staff of the cluster's office<br>The cluster's headquarters<br>The cluster's office starts to operate | The cluster's activity<br>Number of employed workers<br>Number of available rooms<br>An operating office | Short-term period   |



- representing the enterprises from the industry in contacts with government and local government institutions
- providing opinions about documents including national and regional policies concerning the industry
- building a mutual trust between the cluster members
- organizing economic missions and national and international study visits
- cooperating with other clusters
- promoting clustering
- participating in fairs and industrial and industry-related exhibitions
- administrative and organizational management of the activity of the cluster
- organizing common training sessions for the cluster's workers
- monitoring the operation of the cluster and of the cluster entities

The above enumerated actions are the ones which are most commonly enumerated in literature and in practice regarding the spheres of interest of cluster initiatives. The Cross-border Zeolitic Tuff Cluster may use some of them but does not have to use all of them. At the same time the list does not exhaust all the possible areas which are within the scope of interest of cluster. The cluster may well undertake some other actions leading to its development.

## Summary

The objective of the Cross-border Zeolitic Tuff Cluster is to develop cooperation between entities interested in a wider use of zeolitic tuffs. At this point the initiative is just in its beginning phase. The Cross-border Zeolitic Tuff Cluster has great chances of success. Within its structure several prestigious higher education institutions from Poland and Ukraine will be functioning. The idea and functioning of the cluster will be based on the use of zeolitic tuffs, a raw material which is widely used in many industries and whose biggest deposits in the world are in the region in which the cluster is going to function. Zeolitic tuffs are used in construction, agriculture, cosmetology and in many other industries. At present, people have discovered only a small degree of many possible applications of tuffs and have only been using them on a small scale. Higher education institutions and research institutions conduct extensive research into alternative applications of tuffs. The perspectives regarding new possible applications are very promising. Such a situation guarantees a possibility of setting up new innovative companies benefiting from new applications of tuffs. Higher education institutions and companies which would like to join the cluster already have an infrastructure which enables the research into zeolitic tuffs and their use. Moreover, the project „Working out an innovative model of the cross-border use of zeolitic tuffs” has acknowledged funds for the purchase of additional research equipment. The project for some time will be the source of capital necessary for conducting research into the use of zeolitic tuffs. Moreover, the Lubelskie Voivodship receives relatively high, for a Polish reality, funds for research. In the region of the cluster, relatively attractive living conditions can be observed and well-developed entrepreneurship. The mobility of the personnel also does not raise any doubts, especially between higher education institutions from Ukraine and Poland. Many scientists from behind the eastern border work for Polish institutions or cooperate with them.

Bearing the above in mind, we may assume that the Cross-border Zeolitic Tuff Cluster has features which will enable its success and, what is more, it is going to operate in the outside environment both in Poland and in Ukraine. The strategic goals enumerated in this study should be implemented by the managers of the Cross-border Zeolitic Tuffs Cluster, because the future development of the initiative depends on them, including the danger of stagnation or even closing down the cluster. The main objective of the study—to enumerate the necessary directions of development of the cluster for the 2014–2020 perspective, has been met. The persons responsible for implementing the strategy have received copies of the study, and thanks to that planning the development activities of the Cross-border Zeolitic Tuffs Cluster will be possible. Apart from indicating a practical direction of the development, the study also included diagnostic and theoretical information.

The Cross-border Zeolitic Tuff Cluster is in an initial stage of its development. The study has presented the most probable directions of its development, together with information about those situations/problems which are particularly important. However, the reality may turn out to be completely different, so the managers of the cluster should be prepared to change the strategy and adjust it to the current needs and requirements of both the entities acting within the cluster and those from its environment. The procedure of implementing strategic goals put forward in the study: “problem → strategic goal → suggested solution → indicators → indicator quantifiers” will allow for an independent modification of the strategy and undertaking further, quantifiable, actions.

This study is for the cluster managers a starting point. Some possible problems have been pointed out to, which the cluster will most probably come across during its development. However, the repertoire of problems and strategic goals enumerated in the study does not exhaust the list of all possible situations which the cluster management will have to cope with. However, the suggested methodology allows for a day-to-day modification and further action. The Cross-border Zeolitic Tuff Cluster is an interesting initiative, which according to the authors has big chances of success on the market. The initiative is based on research institutions, the biggest business entities in the industry, and at the same time on an innovative niche in the market. All this bodes well for the undertaking. Taking into account the resources that the cluster has and will have in the future, a conclusion may be drawn that the initiative will be a successful one.

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