

POTENTIAL OF THE RESEARCH ENERGY CENTRE TO ENHANCE ENERGY SPECIALISATIONS IN THE SAVINJA-ŠALEK REGION

POTENCIAL RAZVOJNEGA CENTRA ENERGIJA PRI SPODBUDITVI ENERGETSKE SPECIALIZACIJE V SAVINJSKO-ŠALEŠKI REGIJI

Marta Svetina Veder[✉]

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Abstract

This article tackles the significance and potential of the company RCE (Research Energy Centre) to implement a regional development programme and national development goals. RCE was founded in 2011 by the largest energy companies (and companies in other fields) in the Savinja-Šalek sub-region in order to establish a unified development centre for energy activities. This was done to accelerate regional economic growth, emphasising the unifying role of RCE to unite the research & development projects of its founders. The priority of RCE is research & development activity based on the exploitation of a wide range of traditional local knowledge, experience and specialisation in the energy sector. Therefore, it enables the creation of quality workplaces and, in the future, it offers employment possibilities for promising young experts to be involved in new innovative projects. This is also the way RCE will enhance and enable a prudent regional specialisation, which is one of priority goals of the national development strategies for the year 2020.

[✉] Corresponding author: Marta Svetina Veder, PhD., Tel.: +386 3 897 1353, Mailing address: Kardeljev trg 2, SI-3320 Velenje, E-mail address: marta.veder@gmail.com

Povzetek

Prispevek obravnava pomen in potencial družbe RCE – Razvojni center energija pri izvedbi regionalnega razvojnega programa in nacionalnih razvojnih usmeritev. Družbo RCE so v letu 2011 ustanovila največja energetska in druga podjetja v Savinjsko-šaleški subregiji z namenom vzpostavitve združevalnega razvojnega centra na področju energetske dejavnosti. Namen ustanovitve RCE je pospešitev rasti regionalnega gospodarstva na način, da RCE poveže razvojno-raziskovalne projekte svojih ustanoviteljev. Prednostna dejavnost RCE je raziskovalno-razvojna aktivnost, ki je zasnovana na izkoriščanju bogatega tradicionalnega lokalnega znanja, izkušenj in specializacije na področju energetike. S tem omogoča ustvarjanje bolj kakovostnih delovnih mest in tudi v bodoče možnost zaposlovanja obetavnih mladih strokovnjakov na novih inovativnih projektih. Na ta način bo RCE spodbujal in omogočal pametno regionalno specializacijo, ki je ena od prioritarnih ciljev nacionalne razvojne strategije do leta 2020.

1 INTRODUCTION

The world is currently facing a global financial and economic crisis, which has also affected the Slovenian economy in recent years. Slovenian companies are now suffering a lack of competitiveness globally and locally, since they are not able to compete with more the favourable offers of competitive companies arising from developing countries (e.g. China). Those countries are enjoying the substantial financial support of the developed world and, with their cheap workforce, they have developed cutting-edge technology that allows them to enhance their global competitive advantage.

The crowding out of domestic producers in the market consequently leads to deterioration of economic and social position of local people and thus reduces demand. Slovenia has responded to the economic crisis by developing satisfactory national programmes and other similar documents, including the development strategy and industrial policy. The basic guideline of these documents, which will create a further drive for the Slovenian economy and companies, is to recognise development potentials and investments in the fields that drive economic growth. In this sense, the government will prioritise measures to support some projects related to regional specialisation and economic growth of companies. One such project is certainly the operation and establishment of the Research Centre of Energy (RCE).

RCE was founded in 2011 by the largest energy companies (and companies in other fields) in the Savinja-Šalek sub-region in order to establish a unified development centre for energy activities and supporting activities. The establishment of RCE should accelerate the growth of the regional economy by uniting the R&D projects of all RCE's founders. The primary activity of RCE is research & development based on the exploitation of rich traditional local knowledge, experience and specialisations in the field of energy. It enables the creation of quality workplaces and, in the future, it offers employment possibilities for promising young experts to be involved in new innovative projects. This is also the way RCE will enhance and enable a prudent regional specialisation, which is one of priority goals of the national development strategies for the year 2020.

2 STARTING POINTS

2.1 National guidelines

This chapter is summarised from the draft document 'Strategy of Slovenia from 2014 to 2020' and the document 'Slovenian Industrial Policy by 2020' developed by the Ministry of Economic Development and Technology of the Republic of Slovenia in 2012.

An overview of the development in Slovenia in recent years indicates a deviation from the realisation of the strategic goals in the economic and social fields during the current economic crisis, which is related to insufficient implementation of the guidelines of Slovenia's Development Strategy from 2005 (Development Strategy of Slovenia, 2012).

Within European Community (hereinafter EU), with numerous documents and processes of economic governance, above all with the 'EU 2020' strategy, Slovenia has committed itself to pursuing the goal of growth. Unfortunately, in recent years, Slovenia has encountered difficulties with negative growth. Thus, the Development Strategy of Slovenia 2014–2020 defines only one key guideline: achieving a greater competitiveness and a momentum of growth. The development of Slovenia has to be based on the productivity increase, green growth and a higher rate of employment (Development Strategy of Slovenia, 2012).

A transition to the so-called low-carbon society enables various development opportunities for companies. Such opportunities have not thus far been exploited enough in Slovenia. It is essential to achieve green growth via economic restructuring in terms of modernising outdated technologies and services. Slovenia will provide the opportunity for a rapid and high quality development of companies that are active in the field of environmentally less harmful technologies and services. It will also accelerate its successful market placement and penetration. Reducing green-house gas emissions, particularly reducing energy use and increasing material productivity should become significant activities in all economic sectors. A significant part of attention will be put on adapting to climate change; consequently, employment possibilities will increase in the fields of energy efficiency, use of non-renewable energy sources, and use of wood and wood construction (Development Strategy of Slovenia, 2012).

The purpose of the 'Slovenian Industrial Policy 2020' (SIP) is to establish the priorities of industrial and economic growth for the period of the next financial perspective, i.e. 2014–2020. In the times of financial and economic crisis, which has affected Slovenia more strongly than most of the other EU member states, it is important to enhance a strong healthy core of Slovenian industry if the competitiveness of the Slovenian economy to be maintained and increased. Such an industrial core can create innovations, growth and employment possibilities. However, such restructuring measures will not be sufficient to revive the economy and achieve development goals. Therefore, it will be necessary to look for new sources for growth and development of national economy, particularly those based on a sound specialisation that takes the existing investments and competences into account. New sources of growth particularly include responses to social changes arising from the concepts of green growth, the green economy and a material-efficient low-carbon society, all of which are based on improving efficiency.

Based on challenges, opportunities and the achieved competences, SIP determines priority areas within which technological development and its use in industry will be encouraged. One of the priority sectors is energy activity (SIP, 2012).

2.2 Regional guidelines

Within Slovenia, the Savinja region is in the fifth place by GDP per capita. This region was economically relatively stable in the 2000–2009 period, in comparison to the rest of Slovenia. Despite this, the economic growth is not very good; in 2009 and 2010, its difference to the European average of economic growth was increasing. In 2008–2012, the level of unemployment increased from 8.0 to 12.7 % unemployed residents. The rate of unemployment of residents with higher education rise from 8.7 to 13.0 % in the same period (UMAR – Office for Macroeconomic Analyses and Development, 2012, 2013).

In 2013, this region was developing its 'Regional Development Programme 2020' (hereinafter 'RDP') for the 2014–2020 programming period. The RDP for the Savinja development region will constitute an agreement between thirty-one municipalities of the Savinja development region and the government of the Republic of Slovenia on the Savinja development region. The RDP will be a substantive document designed on the basis of an assessment of the situation in the region and an identified development potential. It shall identify investment areas for the following programming period with the purpose of achieving goals that are set at a national level. This will assure that regional development programmes will be one of the pillars for achieving national goals. Beside the goals that will be set at the national level, the region must set some special goals that shall arise from the region's specific development potential. It is important for the region to specialise its development in the 2014–2020 period.

Upon developing the RDP in the 2014–2020, the Savinja-Šalek sub-region highlighted four main development priorities: knowledge, entrepreneurship, quality of life and green-sustainable development. There were two development specialisations highlighted in the programme: manufacturing and energy industry.

2.3 Research energy centre

The RCE was founded in 2011 with its core business of research & development. It was established as a consequence of acquiring grants to encourage R&D activity in the field of energy technology. The establishment of the RCE is a result of the cooperation of seventeen regional partners who shared and contributed their project ideas to its operations (Kemperle et al., 2011).

The RCE's mission is to intensively encourage and promote the long-term technological development of regional companies in the energy sector, by integrating and creating a critical mass of knowledge to allow the region to achieve technological breakthrough in the field of energy research and consequently to enhance economic growth of the region.

The strategic development goals of the company are as follows:

- to establish an internationally recognised research centre in the field of energy technology that will, with its research & development activities, enhance regional energy companies and raise their competitiveness in the Slovenian and global markets;
- to assure personnel, technological and spatial capacities in order to successfully exploit and develop the already existing well-developed and concentrated local energy expertise into a unique research centre. This centre shall provide concentration and attract the most knowledgeable experts in the field of energy technology and, consequently, increase the number of professional jobs with high added value;

- to establish conditions for intensive networking and cooperation of various economic entities with the research sphere. Cooperation will be intensively encouraged and facilitated by implementing concrete innovative technological projects in the production, distribution, transfer and use of energy, and environmental technologies; and
- to facilitate the commercialisation of results arising from research & development activities by means of establishing new economic entities and jobs, which will increase competitiveness of the energy sector and allow stronger economic development of the region.

2.4 SHOK reference project

The Finnish national vision and strategy regarding scientific-technological development and social progress is reflected in the establishment of strategic centres for science, technology and innovativeness (hereinafter SHOK),[3]. For further competitiveness of the country, Finland has discovered that it is necessary to establish centres that allocate the limited financial resources designed for research and development for the most competitive sectors in industry and science,[4].

The SHOK strategic centre is a new form of public-private partnership that combines various Finnish partners in the field of R&D, with the goal of more accurately target research activity. The main purpose of SHOK is to accelerate Finnish innovative process. This will be achieved by creating sufficient critical knowledge inside priority sectors, which have developed solely on the basis of the demand from the market. Such demand is also the basis for the need for new strategic national decisions in terms of developing or creating national scientific-technological policy. The first SHOK was established in 2007. Today there are six similar centres in Finland,[6].

3 ANALYSIS OF THE RCE'S POTENTIAL

3.1 Analysis of business opportunities of the RCE

Some key opportunities are recognised in the following areas of RCE operations:

- improved utilisation of the existing technologies in the field of thermal energy and electro-energy technology;
- renewable and non-renewable energy sources: solar power, biomass, biogas, geothermal power, wind power, hydro power, fuel cells, hydrogen technology, increased share of renewable and alternative energy sources in final energy consumption;
- efficient energy use: heating techniques and systems, energy-efficient insulation and building protection, district heating, electrical and mechanical installations for low-energy and passive houses;
- efficient reduction of GHG emissions and other pollutants: improvement of electricity generation and transfer of electrical energy and heat;

- design of modern energy systems, solving technological problems in the field of energetics, information-communication technology and automation in the energy sector;
- solving environmental issues related to energetics; innovative solutions in energetics;

The RCE implementation projects are demanding, complex and their results are expected in 2014. Their interim results will not provide commercialisation of products; that is forecast only after 2014. Target markets and market segments are planned in detail within individual projects; generally, the aim of the RCE is domestic and global markets.

Before establishing businesses for the production and marketing of the results (products, services and technologies), adequate market research will be done to improve awareness and to define target market segments and markets and to obtain a more accurate estimate of our market potential. On this basis, some concrete market and production strategies of the RCE will be developed.

Key target markets are:

- domestic markets
- the South-East European market
- the EU market, and
- other global markets.

Table 1: The RCE's business vision, source: RCE archive

MISSION	CONCEPTS	ABILITY TO PROVIDE SOURCES
With R&D activities in the field of energy technology, we will significantly contribute to sustainably reliable, qualitative, economic and ecologically acceptable care for energy use, and we will take principles of low-carbon society in consideration.	<p>Non-profit nature of the organisation (profit shall be fully invested in development).</p> <p>Integrating entrepreneurial and technological-research institutions in the energy sector.</p> <p>Project work in the form of project centres.</p> <p>Commercialisation of the results arising from R&D.</p> <p>Integration of experts in a wider area (Slovenia, neighbouring countries and Balkan countries).</p> <p>Providing results for the benefit of the national economy and the society as a whole.</p> <p>An integral approach to encouraging competitiveness of companies in the energy sector.</p>	<p>Many bigger economic entities and some other companies in the local area are interested.</p> <p>Extensive knowledge in the field of energetics – tradition in that area.</p> <p>Acquisition of non-refundable funds.</p>

VISION			
<p>To become a leading R&D institution in the field of energy in South-East Europe, to be globally recognised and an important coordinator of professional potential for development and implementation of more advanced energy solutions.</p>			
BUSINESS AREA	MARKET SEGMENTS	VALUES	BENCHMARKS
<p>Research, studies, development, prototypes, new products and technologies:</p> <ul style="list-style-type: none"> • more efficient energy use, renewable energy sources; • development of modern energy systems, technologies to reduce environmental pollution; • processing and use of waste; • better use of the existing technologies; • automation and control over processes of advanced energy technologies. 	<p>Production, distribution and energy transfer.</p> <p>Producers of equipment and systems to produce, transfer and use energy.</p> <p>Polluters.</p> <p>Large energy consumers.</p> <p>Government bodies.</p> <p>Non-governmental organisations.</p> <p>Other domestic customers.</p> <p>International markets.</p>	<p>Knowledge and innovativeness.</p> <p>Applicability of the results in practice.</p> <p>Professional independence.</p> <p>Sustainable development.</p> <p>Integration and cooperation.</p> <p>Development of enterprises.</p> <p>Competitiveness of enterprises.</p>	<p>Value of implemented research and studies.</p> <p>The scope of commercialisation of the results.</p> <p>Participation in professional events.</p> <p>Extent of acquired non-refundable funds.</p> <p>Patents and innovations.</p> <p>New workplaces.</p> <p>Products or new technological processes.</p> <p>Added value.</p>

3.2 RCE potentials

The fact that the RCE was established during an economic crisis reflects a need of the regional industry to accelerate development. The RCE represents an opportunity for many regional and local enterprises to realise development projects that they otherwise would not be able to carry out without EU support. Upon establishing their clear and rigid criteria to support operations of development centres, the EU and Slovenia have anticipated their contribution to improve the economic condition in the regions. For this reason, the RCE acquired a strong development potential upon its establishment.

In the next chapter, the following RCE potentials are discussed: employment, development and innovative, entrepreneurial and connective potentials. All these potentials will positively influence the economic activity of the Savinja-Šalek sub-region.

3.2.1 Employment potential

The priority activity of the RCE is research and development, which is based on the exploitation of rich traditional local knowledge, experience and specialisation in the field of energy technology and its supportive activities. Through its operations, the RCE is creating high-quality workplaces and enables the participation of young professionals in specific research-technological projects in the field of energy technology and the environment.

In the future, the RCE will provide possibilities for the recruitment of young promising professionals to work on new innovative projects, in particular in the fields of the efficient use of energy, the use of renewable energy sources and green technologies. The region provides a range of sufficiently qualified, skilled and educated workers. This represents an opportunity for employment growth in the society in the near future. This centre will increase the mobility and integration of experienced professionals from the regional energy sector and thus contribute to a greater concentration of knowledge in one place.

The centre is designed as a high-quality multi-discipline research team coming from the industry and research spheres, which will enable a greater critical mass and concentration of applicable knowledge in the field of energy technology. For an efficient implementation of new innovative projects in the future, the RCE is aiming at international integration and cooperation; it will thus provide new knowledge from abroad. Which will facilitate that creation of the critical mass of knowledge in the energy field. The accumulation of highly specialised staff in the field of energy technology and the integration with development cores of enterprises from various industries shall enable the RCE to develop a smart regional specialisation, which is one of the priority goals of the national development strategy for 2020.

3.2.2 Development and innovation potential

The transition to a low-carbon society offers numerous development opportunities that have not yet been fully exploited in Slovenia. By means of implementing its R&D projects in the field of energy technology and innovative solutions in the field of renewable energy sources, the RCE shall create and develop new technological solutions, products, prototypes and pilot appliances, and intellectual property. In this way, it will satisfy the priority strategy in Slovenia to use such knowledge for development, and through its contents it will implement a national 'green technology' policy.

The national policy to adapt the economy to climate change is of key importance for the development projects and results of the RCE in the future. The reduction of green-house gas emissions, in particular with the reduced use of energy and with an increase of material productivity, must become an important guide when creating new development projects. The development opportunities of the RCE are seen in developing innovations and methods that will support development of new energy technologies through making their costs of acquiring and care for energy competitive at the European level, and in using technologies to generate power with minimal quantities of GHG emissions.

3.2.3 Entrepreneurial potential

Through its implementation of new R&D projects, the RCE will establish new enterprises and will provide them with counselling and adequate infrastructure. In this way, it will satisfy the priority strategy of Slovenia to encourage entrepreneurship.

Through its content, the RCE will implement development projects that can be described as sustainable in the meaning of following the requirements of the national policy related to low-carbon society and sustainable development. The most important goal of RCE's further operations is the implementation of innovative ideas enriched with accumulated knowledge and experiences, the development of new products and services, and energy technologies that will facilitate a breakthrough of enterprises on the domestic market and, above all, on global markets.

Slovenia is planning to encourage the development of new enterprises that will be active in the field of eco-friendly technologies and services, and to accelerate their breakthrough to the market. This represents quite a challenge for the RCE to act as a supportive environment for entrepreneurship. References from economically successful countries reflect the need for sectoral specialisation when establishing new companies. For this reason, the RCE is planning to develop an energy business incubator and a technology centre.

3.2.4 Connective potential

With its integration with business entities and R&D institutions operating in the Savinja-Šalek sub-region, Slovenia or abroad, the RCE has encouraged professional potential to develop and implement concrete projects in the field of energy technology. The RCE will provide powerful links between academic knowledge and entrepreneurial ideas and experiences and for participation in European R&D nets in the industrial sector. The RCE shall cover the areas of the production and efficient use of energy and energy sources. With its networking, it will complement the existing research institutions and business entities in Slovenia.

The centre will operate by means of integrating production, educational and research institutions with the purpose of providing comprehensive, proven and compelling results in the field of energy technology, with which no institution in Slovenia is dealing at the moment (the existing institutions are specialised in several specific areas). The centre will be expanded through the partner networks of its founders outside Slovenia, and will cooperate with foreign institutions and other professional and educational institutions.

4 FINAL CONCLUSIONS

The establishment of RCE coincides with a growing economic crisis, and reflects the interest and the need of founders to promote development. The main purpose of the establishment and operations of RCE is the implementation of technological projects in energy-related activities. At the same time, numerous other economic potentials for partners, investors, local and regional economy have been revealed. The R&D activity of RCE is a key factor that provides employment, developmental-innovative, entrepreneurial and connective potential of the centre.

The employment potential is reflected in the intensity of the recruitment of technical experts to support energy projects. Employment involves also the first jobs of young staff coming from the local educational system. A further goal of RCE is to acquire new innovative projects with international participation, which will additionally enhance staff potential and the competitiveness of the results. Slovenia will also support the recruitment process in the areas of energy efficiency, the use of renewable energy sources, and green technologies.

The development potential arises from the main activities of the centre and the interest of its founders and investors to sustainably develop the centre. Considering the orientation of the European and national policy of economic and industrial development in terms of the low-carbon society and sustainable development, projects in the field of energy activities will enjoy further support in the future.

The entrepreneurial potential of the centre is represented by emergence of the new businesses that will be established by the centre in order to commercialise project results. Moreover, with the acquired infrastructure. The RCE provides development opportunities for further business activities. Orientations and policy of national incentives will additionally encourage new enterprises to operate in the field of new technologies and sustainable development.

The role of linking and the potential of the centre are reflected in the fact that 17 regional companies and institutions joined in the field of energy technology and related activities upon the establishment of the RCE. Although it was established by several organisations in the field of energy technology, the centre now is working and connecting with various other organisations. The role of the RCE is to join experts professionally and to participate in professional circles and networks at the regional, national and international levels.

All potentials are directed in activities of the energy sector and its supportive activities; consequently, the RCE's operations clearly reflect the intensive encouragement of local and regional specialisation, which is one of important goals for the development of industrial policy of Slovenia by 2020.

Although national and industrial documents of the Republic of Slovenia for the 2014–2020 period clearly support the activity, project orientation and RCE potentials, this fact alone is not sufficient for the further successful operation of the organisation. The results will depend on the interest of the RCE's partners, investors and their effect on the RCE's management. The RCE provides for an efficient way to adjust to changes brought by globalisation and competitiveness of rapidly growing countries. Slovenia is here a mere promoter of structural changes in the industry; the main actors or drivers are enterprises. Knowledge must be expressed in new market products, processes and technologies.

The SHOK Finnish centres are a classic example of good practice of the technological forecasting and staff concentration in priority development areas. Their operation is directed to the greater competitiveness of Finnish industry and is an excellent example for the future operations of the RCE.

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