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# SMART MAZOVIA STARTING PUSHING A GREEN WAVE WITHIN CENTRAL EUROPE

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## ABSTRACT

The article addresses issues of regional development in the situation of global economic crisis and under conditions of necessity to use innovative approach to generate development incentives. These incentives shall mirror new ideas, values, and goals of the social and economic development. Mazowsze, as many other regions, faces development challenges of economic, social and environmental nature. These challenges are described in the article from the broad, European perspective. A set of values was identified as the most important and instrumental for success of development efforts. In the article the social and economic characteristic of the Mazowsze Region is presented from the perspective of comparative advantages and structural weaknesses. In the article the Development Strategy for the region is discussed in the context of other strategic documents addressing issues of competitiveness and cohesion like Lisbon Strategy and programs implemented by the European Union. Referring to experience of other countries, including US, it was presented how innovations in the economy and development undertakings that respect rules of sustainable development impact development potential of a region and changes its attractiveness for inhabitants and entrepreneurs.

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The European Commission forecasts the destruction of 5.5 million jobs and a decrease in GDP by 4% within this year. In fact, since last year, the EU State members are facing unprecedented economic difficulties due to the global crisis, even though the European Union has brought them many advantages over decades. Unfolding Europe's future leads to consider how, to a certain extent, all the European regions, including the Mazowieckie Voivodship, namely Mazovia in Poland, should ease the way to the recovery by building on new values and achievements. Actually, similarly to many other European regions, policy makers in Mazovia face three types of challenges, not only in terms of economy, but also with social consequences and environmental issues:

- economically, essentially by getting out of the crisis, while continuing structural reforms and improving competitiveness,
- socially, due to the need of creating new activities and jobs rather than trying to safeguard activities from the past, and,
- environmentally, by using technology to protect the environment and ensuring access to energy.

That also means that this region should put social and environmental goals at the heart of its agenda. The success of the strategy will be measured by the ability to address all these aspects of the crisis, while taking into account a growing responsibility in protecting the environment for future generations.

In addition to the conclusions of the kick-off event on 28<sup>th</sup> May 2009 in Warsaw<sup>1</sup>, Gilbert Fayl<sup>2</sup> recommended the adoption of main measures aiming at overriding ambitious objective of Mazovia, including the ambitious project of Europe's first "*carbon neutral region*" by mobilising the energy, transportation, and waste re-circulation sectors, inspiring the agricultural, building and tourist sectors to promote economically viable ecological products, and then helping to promote an ecologically conscious civil society.

According to such a relevant proposal, it is worthy to consider mobilising the regional actors for the implementation of a sustainable business hub which might help local companies to successfully market products and ideas, both at national and international levels. This threshold paper hence advocates an adapted strategy aiming to cope with the usual constraints of the world competitiveness and find the way back to the recovery, in order to:

- firstly, analysing the advantages and shortcomings of the region,
- secondly, exploring the ways of shaping services more smartly around Polish and European needs, and
- consequently, boosting innovation and championing environmental sustainability in Mazovia.

### **Mazovia: Advantages and Shortcomings**

Located in the Central Eastern part of Poland, Mazovia, which includes the Capital Warsaw, is inhabited by 5.1 million people. While enjoying the highest level of population's wealth and the lowest rate of unemployment, Mazovia generates over one-fifth of the national GDP. Featured by the highest indices of entrepreneurship with an upward trend, particularly in the SME sector, this region is a leader in the area of innovation, focusing a third of the national R&D investments

While around 30% of the Polish R&D centres as well as 45% of R&D funds and expenditures, would be located within this region, most of its activities concentrate around SMEs (17% conduct R&D projects). Its economy is very diverse, including IT, telecoms, financial services, insurance, automotive and chemical industries (pharmaceutical, cosmetics, plastics). Creating a resilient region will require a new commitment to social innovation – changing mind-sets, practices, and institutions fundamentally in both the workplace and the community.

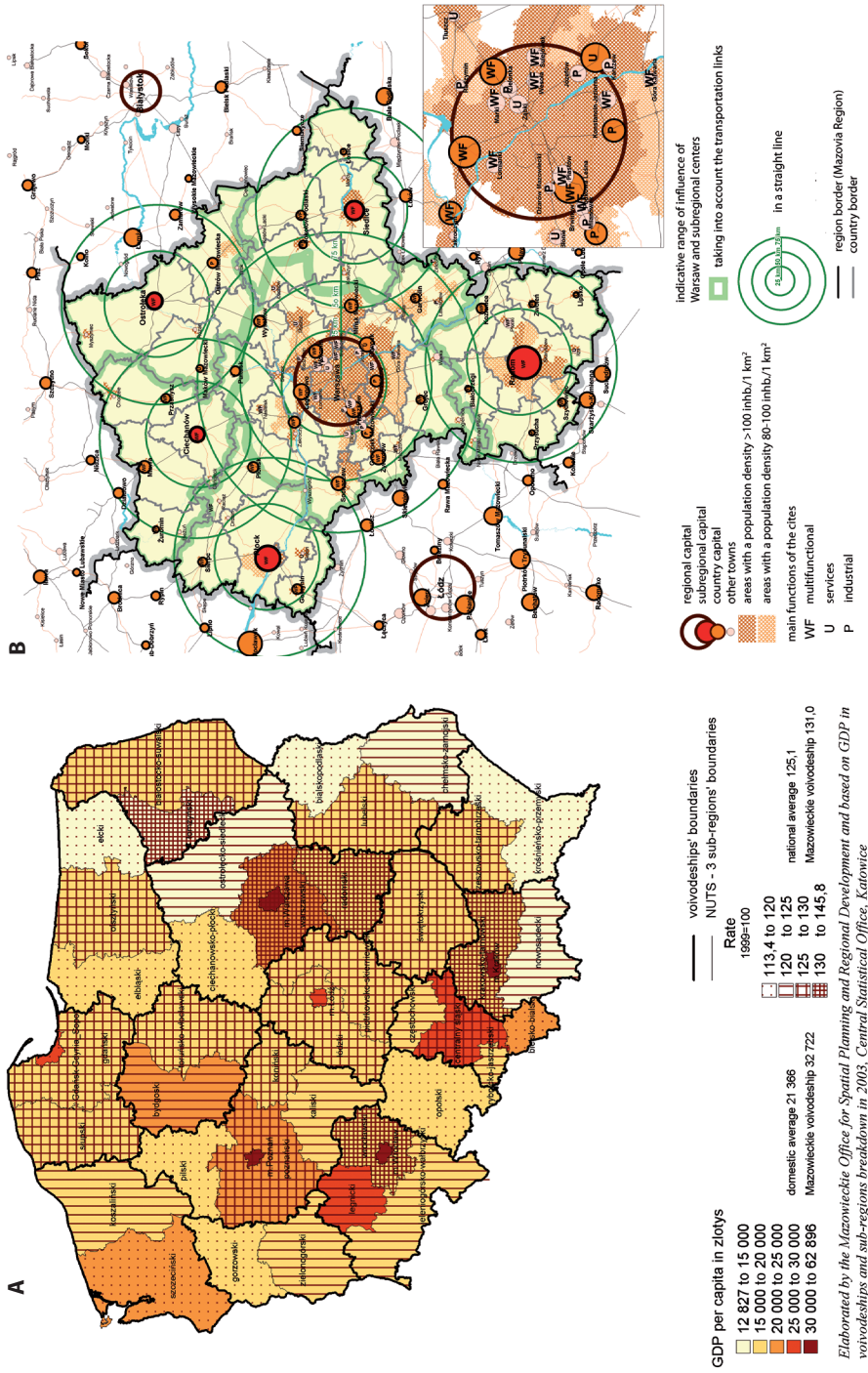
By contrast, one of the most difficult problems is an accumulation of anthropogenic threats on the territory of the Warsaw agglomeration and in its surrounding territories, in terms of economic, social, and environmental performances for a balanced development.

Mazovia is a region of active development and a rapidly progressing urbanisation process, despite the vital importance for the region's economy. Fast economic growth entails a large number of unfavourable tendencies such as increasing land prices, negative

<sup>1</sup> *World – Europe – Poland. The Future of Mazovia Region – Mazovia Quo Vadis?*, Warsaw, May 27, 2009

<sup>2</sup> Conclusions and recommendations from the panel of international experts, Gilbert Fayl, Director general of CEIA (Central and Southeast European Innovation Area) and RIBIN (Central and Southeast European Research, and Business Network).

Fig. 1. A. Gross Domestic Product in NUTS 3 (sub-regions) breakdown in 2003 and changes in relation to 1999; B. Urban settlement network



demographic trends of rural areas, landscape degradation and urban pressure. These deep internal differentiations constitute a weakness, while risking to cause a marginalisation of areas and to lead to disturbances of development processes. Taking this into account accordingly to the Mazovia's *Spatial Development Plan*, three distinctive areas are regarded as follows:

1. The Warsaw agglomeration processes a very high impact on its surrounding areas, due to its national role and its steadily growing economic; a weak communication network, and a pervasive urbanisation constitute crucial obstacles to a fully idealistic cohesive and smart area,
2. A positive Warsaw's influence through accessibility to a receptive labour market and highly advanced services affects the higher level of social and economic development; a big and stable demographic potential creates labour resources of differentiated qualifications,
3. Other peripheral, such as Radom, Ostrołęka, Nadbuże, Mława, Ostrołęka and Płock, by poorly using endogenous development factors prove to be problematic.

Mitigating the negative effects of city sprawl requires seizing the development opportunities of Mazovia's rural areas concentrated around the conurbation. In the Voivodeship, an agricultural landscape nevertheless predominates, consisting mainly of arable land and orchards, while 20 % of the region's area is covered with forests and a remnant of the backwoods is the Kampinos Forest.

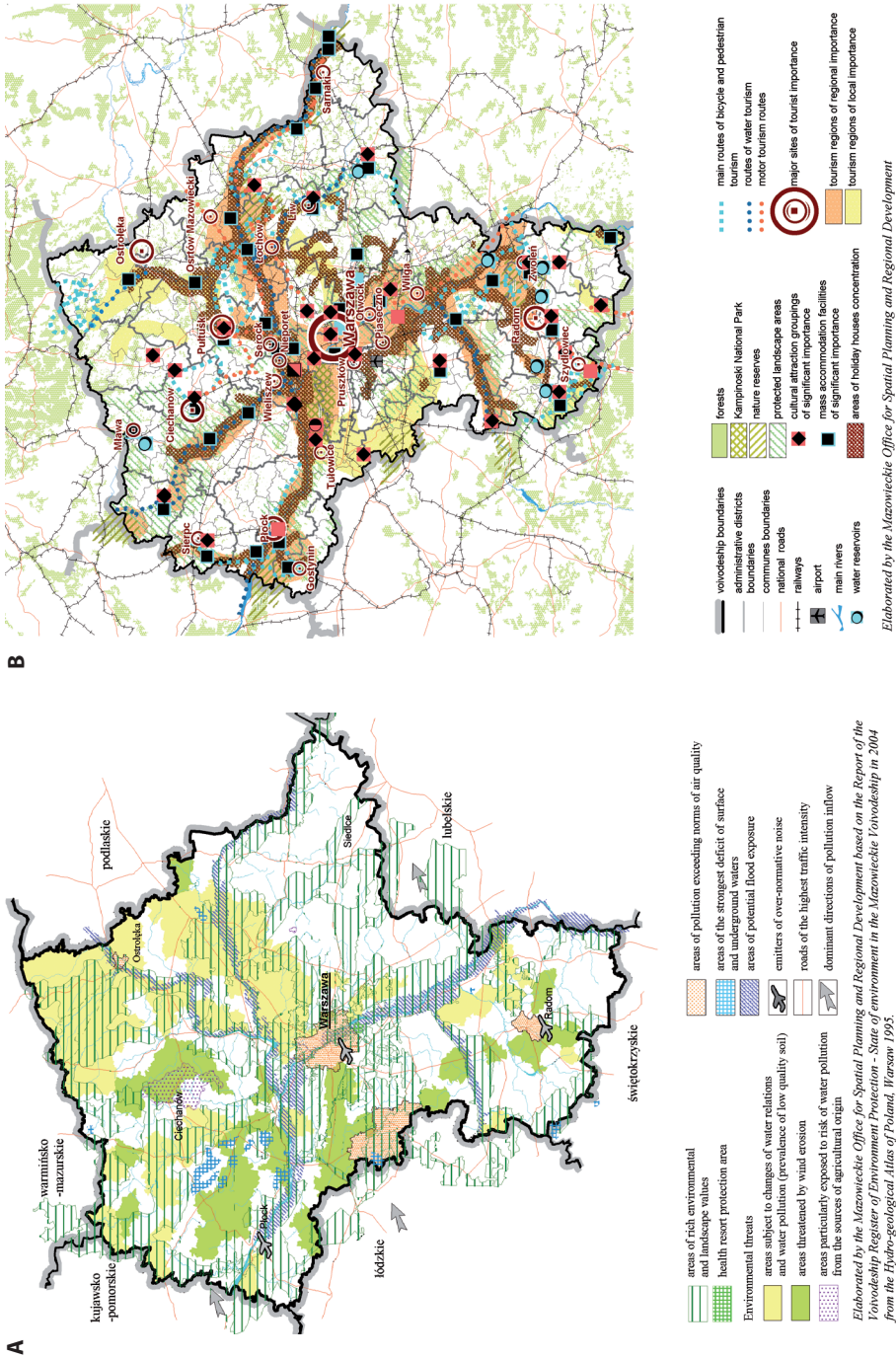
In the last 12 years, the population in rural areas surrounding towns and cities has increased by 18% and reached a 17% share in the population of the whole region. The intensity of this process is particularly outstanding when compared to the net migration in the whole region. Peri-urban areas in the vicinity of Warsaw are also characterised by high economic growth and increased urbanisation, especially since 2002, the number of municipalities, in which the share of urbanised land has reached 15%. Meanwhile, it sounds useful and necessary to make good use of the peri-urban areas' potential, i.e. the proximity of the market for food products, the possibility to serve recreational and tourist needs or the provision of all kinds of services to the city dwellers.

*In line with the European goal to promote more-environmentally sustainable economic development, we might imagine that Mazovia could present itself as a European experimental platform in building new eco-cities, which emphasise the use of advanced technologies, such as multifunctional building materials, renewable-energy systems, green manufacturing processes, and recycling of water and waste, to build new environment-friendly urban centres.*

The challenges that Mazovia faces include prevention of problems of peri-urban areas, such as an ageing society, a lack of young farmers, and the necessity of improving the standard of life of the whole population. The creation of job opportunities outside agricultural sector however proves to be a major and crucial concern for the region.



Fig. 2. A. Threats to natural environment in the Mazowieckie Voivodeship in 2004; B. Tourism infrastructure against natural and cultural values protection in the Mazowieckie Voivodeship in 2004



Amazingly, tourism infrastructures (see the right map above) which consists of urban and valleys converging toward Warsaw are also exposed to environmental risk areas (see the left map above) and then demonstrate the confusing troubles for territory management.

The so-called EU-funded *Operational Programme 'Innovative Economy' of the Science Park*, namely *Warsaw Technoport*, whose the city of Warsaw<sup>3</sup> is the only shareholder, sounds very promising. This *Warsaw Technoport* benefits from suitable environment and conditions for developing intensive technological issues, establishing new SME enterprises applying advanced, cutting-edge technologies, and then implementing and commercialising applied research results. Located in the southern part of Warsaw along the Vistula River, the *Warsaw Technoport* is close (20 minutes) to major universities and research centres and (30 minutes) to the airport. Effective cooperation is yet enhanced through the participation the city of Warsaw, the Marshall Office of Mazovia and intermediary, national and local, institutions such as the *RIS Mazovia*, *SOOIPP* (*Polish Business and Innovation Centres Association*), as well as different projects such as *Foresight Project for Mazovia Region* and other ones initiated by the *PARP* (*Polish Agency for Enterprise Development*), the *KIGEiT* (*Polish Chamber of Commerce for Electronics and Telecommunications*), the *SIRMA* (*Network for Innovative Development of Technology Commercialisation*) and the external experiences of *BaltMet*<sup>4</sup>.

According to *Samorząd Województwa Mazowieckiego* [Strategy 2006], “*basic problems with the waste management in the Voivodeship are the aftermath of insufficient development of the collection and utilisation of waste compared with the growth of the volume of trash. Neutralization of some specific types of dangerous waste is also a major problem.*”

Social changes mean that a new type of rural has emerged, giving the Mazovian countryside three distinct incubators:

- the countryside close to the city and suburbs, as well as large residential zones; agricultural activities may still have a large role, but faces stiff competition for land,
- new countryside, featuring residential areas, tourist and “natural” functions (watershed, biodiversity reserves, etc.) have the highest net inflows of migrants and enjoy very strong job growth,
- a very vulnerable countryside with low and shrinking population density whereby farming or declining manufacturing industries are dominant, while their handicaps are low incomes.

<sup>3</sup> While the ministry of Science and Higher Education is represented by the Warsaw Scientific Consortium including the Polish Academy of Science, the Technical University of Warsaw, the Warsaw University, the Medical Academy of Warsaw, the Information Processing Centre, the Warsaw School of Economics, the Warsaw Agricultural University, the Leon Koźminski Academy of Entrepreneurship and Management, the Polish-Japanese Institute of Information Technology and the Military Technical Academy.

<sup>4</sup> *BaltMet INNO* (Baltic Metropolises) is a joint innovation project of the major cities in the Baltic Sea Regions which aims at strengthening the role of cities as developers of innovation environments at local, regional, national and international levels. It thus produce a common innovation policy framework and to to create transnational metropolis-driven innovation networks.

## Shaping services more smartly around European needs

When the *Development Strategy* started in 2001, within the perspective of 10-15 years, the Mazovia's development actually referred to the European context of regional policy, including the updated goals of the *Lisbon Strategy* and *2007-2013 Community Programme*. Nowadays, this strategy has been extended in a perspective of a performing European region up to 2020. It nevertheless covers the actions which will be co-financed by the *National and European Structural Funds*. This long-term approach however aims at increasing the region's competitiveness in the international dimension, as well as strengthening social, economic and spatial cohesion of the region. Consequently, promotion of modern technologies and services, within a smart regional strategy, could aim at including solid and insight inputs such as:

1. counteracting degradation of landscape and protecting natural environment aimed at providing sustainable development for revalorisation,
2. developing an international cleantech sector with SMEs, while promoting eco-construction and eco-development,
3. promoting investments in touristic, recreational events and cultural values and improving the attractiveness of the region.

Global investment in renewable power generation, bio-fuels and low-carbon technologies dramatically raised since the early 2000 the stock prices of clean-energy companies have been rocketing up.

*Silicon Valley's* venture capitalists are pilling into the business, convinced that they can design revolutionary technologies, bring down prices and turf out incumbents in the energy business just as they did in the software business. Oil firms, carmakers, power generators, nervous of being outmanoeuvred, are jacking up their investments in bio-fuels, renewable energies and management of wastes as well. In the *Silicon Valley*, according to "*The Economist*" (June 2<sup>nd</sup>-8<sup>th</sup> 2007), Vinod Khosla, venture capital firm that launched many of the big names of the internet boom, is now the most visible venture capitalist of *clean-tech* business. He also has invested with Larry Page and Sergey Brin, the founders of *Google*, in companies using solar thin-film technology. *Microsoft's* Bill Gates has invested in a company building bio-refineries in *California* and this American state as a whole is buzzing with *clean-tech* projects: breakthrough energy storage systems; devices for electricity grids more intelligent; enzymes that chomp their way through lignin to make ethanol, algae than can be turned into fuel. Gaining balanced development and cohesive society thanks to clean-techs is a major challenge that sounds crucial for a globally high-tech and sustainable development. The private and the public spheres could thus thrive continuously to improve their performance and commit to finding the best waste management solutions, taking into account local needs and eventually a wealthy knowledge industrial production of *clean-techs* as well as an *eco-development* within a balanced regional policy.

In the US, the notion of man-made climate has been accepted for years in most universities. *Stanford* and the *University of California at Berkeley* both have big clean-energy programmes.

California's tough energy-efficiency and emission regulations have given its businesses an interest in investing in clean energy. Cleantechs are a relatively new industry encompassing economically compelling and environmentally friendly technologies, products and services. This cleantech industry can be a major driver for new investments and job growth in some regions all over the world such as California, Bayern, Southern Sweden and Southern Finland... It entails an integrated approach in the fields of the environment and energy: environment impact of industrial activities, pollution treatments of air and water, industrial ecology and eco-design, sustainable strategies for industry, rationale use of energy, global change...;

*The activities committed with the cooperation of businesses, universities and institutes, utilities, and municipalities could mainly focus in many friendly environmental fields such as **energy and CO<sup>2</sup>-reduction, waste management, sustainable building and urban development, water treatment, air quality control, energy efficient transportation and communication for sustainability**. By offering contacts with companies in the cleantech industry and arranging qualified technical visits to selected world class reference installations.*

Within such a sustainable business hub and related networks, relevant Mazovian companies could make the local public authorities ease a detailed knowledge of the cleantech-market as well as arranging technical seminars and match-making activities in Poland as well as abroad. Thus, Mazovia could emphasise the integration of clean production technologies in industrial and economic activities. Cutting-edge technology and innovations that will increase energy efficiency, remove effluents and toxins in air and water emissions, and reduce resource input will be especially important. Starting from these evidences, Mazovia even should advocate a strategy of regional development, specifically focused on four main issues, as exclusive or coupled and associated alternatives to be opted as following:

1. an energy system management within a regionally concept of development: organisation of the energy sector, use and share of water supply (industry, agriculture, populations and cities), new and renewable energy for a sustainable future,
2. a clean-techs' programme with use of new energies and substitutes to gas oil (biomass, bio-fuel...), since *Mazovia* is the first ranking Polish region in terms of agricultural supply,
3. a participation to the industrial and technological autonomy of Poland in terms of energy equipments' supply, as *Mazovia* is strongly experimented in the fields of mechanical industry; technology transfer,
4. within a transversal approach and a bottom-up process, enhanced by new innovation processes such as *BoP*<sup>5</sup> innovation, '*Triple Helix*' with universities, academy of sciences, policy makers, etc.

<sup>5</sup> "Bottom of the Pyramid Innovation" which implies that the innovation process itself is to be reversed, taking into account the local behavioural responses, as explained in the paper untitled "Quo Vadis Europe? Competitiveness among stumbling blocks" and written by Jean-Marie Rousseau for the "Triple Mezzogiorno" conference held in Warsaw, by September 24-25, 2009.



Cleaning up the environment and the reclamation of derelict land are important for economic recovery, particularly if this is to be sustained. A coherent development strategy and close cooperation between public authorities, local businesses, high level universities and relevant and performing research centres seems to be crucial in both shifting economic activity away from declining sectors and stimulating the growth of more dynamic, higher-value added ones.

*The private and the public spheres should thrive continuously to improve their performance and commit to finding the best waste management solutions throughout its regions, taking into account local needs and eventually a wealthy knowledge industrial production of clean-techs as well as an eco-development within a balanced regional policy. Taking into account these local needs in terms of protection of the environment and sustainable development, the whole Poland not only could catch-up the main economies of the planet but also might be in position of technology-edge and economic leadership in these broad and promising fields of new technologies.*

Because cleantech encompasses such a disparate group of industries and because there is substantial overlap with non environmental applications, it is difficult to accurately estimate the size of the cleantech industry today, and then the potential capacity of Mazovia for such a programme in a near future. But an examination of even a partial listing of industries reveals that cleantech is already a substantial driver of economic activity in Europe... and thus could be so in Mazovia.

Cleantech incubators, which could be centres of shared resources and facilities for start-ups, would assist many start-ups in their development and slow the rate at which they burn precious capital.

### **Boosting innovation and championing environmental sustainability**

Poland's fuel and energy profile is still dominated by coal, the only fuel in abundant domestic supply. Because of lopsided and uneconomical dependence on this single fuel, the fuels and energy sector of the economy has been a primary target for reorganisation and streamlining in the early 1990s. However, these statistics were downward biased by the very low, heavily subsidised prices of those industries' products, in view to induce more economical fuel consumption. Compared with coal mines in Western Europe, Polish mining was quite inefficient because of isolation from technical advances made in the 1980s and lack of investment funds for modernisation. At that point, the disparity between low domestic demand and continuing supply threatened to raise unemployment by forcing more mines to close.

Meanwhile, main groups of waste produced in the Voivodeship were firstly waste from processing installations and plants, sewage treatment plants and water treatment, secondly waste from thermal processes, thirdly waste from agriculture, orchards, forestry and

food processing, and fourthly waste from construction, repairs and disassembly of objects and road infrastructure. By contrast, cleantech might be a sector deserving increased attention from policy makers, public companies, and private investors due to relevant awareness of environmental issues and an appreciation that business and environmental goals can coexist.

In the years 2007-2013, Poland will receive more than 60 billion € from the European Union. The major part from this amount, about 27 billion €, should be allocated to the *Operational Programme for Infrastructure and Environment*. Within the framework of this *Operational Programme for Infrastructure and Environment* there would be implemented interventions with a view of developing technologies using the renewable and alternative energy sources, increasing the use of the primary energy, decreasing the energy consumption of the economy and limiting the negative impact of the electrical power engineering and coal-mining on the environment. The support will aim at improving the energy safety by developing the market infrastructure and the safety as regards the fuel and electric energy supplies, reducing the energy consumption of housing and thermo-modernisation.

*The METTTES Programme (More Efficient Transitional Technology Transfer in the Environmental Sector) initiated projects the "Operational Programme Infrastructure and Environment" has special relevance. An objective of the Operational Programme Infrastructure and Environment will be a development and modernisation of the technical infrastructure, including transport, environment, energy, culture and health infrastructure of a fundamental significance for the competitiveness growth of Poland and its regions.*

Lacking a strong social infrastructure and regional capacity to cope with rapid change, Mazovia has experienced a decline in its attractiveness as a place to live – the ultimate threat to its future innovation capacity. At its core, the innovation asset of Mazovia is its talented people at all levels. The loss of talents – researchers, technicians, entrepreneurs, etc., both private and public, because of out-migration or burnout – might turn directly into a loss of productive and creative capacity. But while Mazovia could now be ideally positioned to be a cleantech leader, focused public policy efforts are needed to create new markets and to attract additional private investment to the region. Venture capital, or any other funding provided to start-ups in return for company equity, should be regarded as a major fuel for economic growth. This important financial catalyst also serves as a useful proxy for the promise and progress of a new industry.

*The net effect of such a so-called Green Wave - by reference to the Californian institution - on cleantech venture capital investment is difficult to quantify. But there is consensus among VCs that such a scheme would encourage additional cleantech investment and could be "a key lubricant" for the Mazovian cleantech industry.*

Make Mazovian region a bigger, better customer, while steering more of this funding toward cleantech products would help create crucial demand for struggling start-ups,

improve Mazovian environment, and “mainstream” many of these products in the public eye. Increasing production volumes of these products would also improve their cost positions and make them more competitive in national and global markets. While the region already has a number of innovative programmes in place, many respondents felt Mazovia could do more.

Potential high-tech clusters have yet been considered with transnational cooperation in diversified high-tech fields such as advanced materials (micro- and nano-technology), *Spatial Information Systems* (GIS in *Spatial Planning Policies and Converged telecommunications*) and ITC... Technology research and development could be at the heart of the region’s efforts to establish a cleantech cluster. Private early-stage funding often is hard to come by for cleantech companies, while a key step will be to encourage the University system to focus more of its research on cleantech. The region could also consider expanding funding for existing programmes and creating new programmes to support underfunded sectors in the research industry.

Ideally, such a dissemination programme will cause a ripple effect and encourage other Polish regions to follow suit. Mazovia region might be sending a strong signal to entrepreneurs, investors, and other constituencies that it plans to continue its role as leader in environmental policy and innovation. Several respondents noted the important role that the local public authorities could play in promoting the Mazovia region as cleantech centre. By sponsoring public/private seminars, conventions, workshops, and organisation, they can foster business collaboration and innovation at minimal cost. Perhaps more important, Mazovia’s leaders can leverage their enormous influence and visibility to promote itself as a breeding ground for the cleantech industry.

High-trust relationships among entrepreneurs, investors and researchers would lie at the heart of an innovation economy that could aim to ride new technology waves. Such a wave of social innovation needs to be a strengthening of trust relationships among people, companies and civic institutions for a sustainable Mazovia.

## BIBLIOGRAPHY:

Strategy, 2006, *Development Strategy for the Mazowieckie Voivodeship*, Warszawa.

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**STRESZCZENIE**

Artykuł poświęcony jest problemom rozwoju regionalnego w sytuacji globalnego kryzysu gospodarczego i konieczności innowacyjnego podejścia do generowania impulsów rozwojowych, które będą odbiciem nowych wartości i celów rozwoju społeczno-ekonomicznego. Przed Mazowszem, podobnie jak przed innymi regionami, stoją wyzwania rozwojowe o charakterze ekonomicznym, społecznym i środowiskowym. Wyzwania te zostały scharakteryzowane z szerokiej, europejskiej perspektywy. Wskazano jednocześnie, jakie wartości i cele w rozwoju powinny być najważniejsze, by sprostać tym wyzwaniom. Artykuł zawiera charakterystykę społeczno-gospodarczą Mazowsza, ujętą z perspektywy przewag konkurencyjnych i słabości strukturalnych. Odnosi się do *Strategii Rozwoju Województwa Mazowieckiego* z perspektywy jej spójności z dokumentami takimi jak *Strategia Lizbońska* czy też programami realizowanymi w ramach finansowania przez Unię Europejską. Odwołując się do doświadczeń innych krajów, w tym Stanów Zjednoczonych, przedstawiono, jak innowacje w działalności gospodarczej i zorientowanie działań prorozwojowych na respektowanie zasad zrównoważonego rozwoju wpływa na potencjał rozwojowy regionu i jego atrakcyjność dla mieszkańców i przedsiębiorców.

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**prof. Jean-Marie Rousseau**, współtwórca raportów Komisji Europejskiej. Obecnie uczestniczy w badaniach dotyczących innowacyjnego programu wsparcia między regionami Europy a chińskimi prowincjami. Przez ostatnie 10 lat zajmował się regionalnym rozwojem gospodarczym, specjalizując się w innowacjach technologicznych i kapitale ludzkim oraz gospodarce opartej na wiedzy.