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REGIONAL POLICY IN POLAND AND ITS IMPORTANCE FOR DEVELOPMENT POLICY

Summary

The subject of the article is regional policy in Poland conducted according to the principles governing the European Union cohesion policy. The author addresses especially the key issues of regional policy, defines its objectives and instruments as well as the main models. The discussion provides the background for the subsequent analysis of the current and future shape of regional policy implemented in Poland. The aim of the article is cognitive and pointing to the changes of directions and character of activities aiming at working out the proper development strategy for Poland, in compliance with the European Union directives but also meeting the needs of regions on different levels.

Regional policy currently pursued in Poland and based on the idea of the European Union cohesion policy aims at creating the system of planning and management of spatial management integrated with the main tendency of socio-economic planning. The condition enabling conscious space development is possessing and using appropriate legislative, administrative, organizational, promotional, information and other instruments. Poland's regional policy conducted within the frame of common cohesion policy and targeting common objectives is financially supported by the EU funds and financial means from the Cohesion Fund.

The shape of regional policy in Poland is determined by the striving to identify strong regions which would be able to push the economic development of the country strengthening at the same time less innovative regions. Polish regional policy included in the EU development programmes is using the instruments adjusted to the individual properties of regions, where the leading player is a region characterized by a considerable autonomy in this respect affecting the way in which the existing pro-development possibilities are used.

Such solution of the planning and implementation of development policy draws Poland closer to contemporary concepts of regional development theory, showing the region as an autonomous, socio-economic system, creating a vision of development and evaluated for its effectiveness. The future shape of Polish regional policy will depend on such concepts which emphasize the role of regions, ascribing them a growing importance in the national development policy.

Key words: regional policy, cohesion policy, development strategies, operational programmes

INTRODUCTION

Since the beginning of its existence the space of the European Union has revealed some traces of diversified development. In view of this fact, the European Union gradually increases the role of a territory as a crucial subject of the conducted regional policy, employing measures aimed at the use of the mechanisms coordinating various elements of development policy. While joining the European Union structures Poland was included in the process of the common cohesion policy implementation aiming at harmonious development of the whole area of the European Union. In this situation Poland should undertake activities to alleviate the disproportions in the development of her regions aiming at strengthening economic, social and territorial cohesion of the whole country.

Currently implemented regional policy in Poland, based on the idea of the European Union cohesion policy aims at creating the system of spatial planning and management integrated with the main stream of socio-economic planning. There are three paradigms for thinking about the future of the regions: nihilistic (the region development may be based on its strengths, which however does not mean that it can determine its future because a region is only one of the elements of a constantly changing global economy, where political, economic and other forces make impossible efficient development planning), voluntaristic paradigm (global factors only to a small extent affect the regional development, because it may shape its development autonomously) and realistic paradigm (the region autonomously shapes its future, which is significantly conditioned by the external factors) [Kukliński 2008, p.70-71].

The condition which enables conscious space management is possessing and using the appropriate legislative, administrative, economic, organizational, promotional and information instruments, etc. Regional policy in Poland conducted within the frame of common cohesion policy and aiming at the realization of common goals is financially supported by the European Union structural funds and financial means from the Cohesion Fund.

The paper deals with regional policy in Poland pursued in compliance with the rules governing cohesion policy of the European Union. Special attention was paid in the article to the key issues of the regional policy, its objectives and instruments were defined together with its main models. These considerations provide a background for the subsequently conducted analysis of the current and future shape of the regional policy implemented in Poland. The aim of the paper is cognitive and involves the identification of the directions of changes and key measures aiming at the appropriate strategy of the country development, in compliance with the guidelines provided by the European Union, according to the needs of various NUTS regions.

THE KEY ISSUES OF REGIONAL POLICY

Regional policy is a part of the national policy of development referring to the spatial structure and dynamics of social and economic processes [Gospodarka ... 2000, p.17]. According to the act on the rules of conducting development policy [Ustawa ... 2006, par. 2], by a development policy one understands a set of interrelated activities undertaken and realized in order to ensure the permanent and sustainable development of the country and socio-economic and territorial cohesion on the national, regional or local scale. Regional policy, as a component of the State economic policy, constitutes the largest and most specialized system of public intervention [Potoczek 2000].

There are various definitions of regional policy in the subject literature. According to B. Winiarski [Winiarski 1976, p.13], regional policy should be understood as the overall activities of the State and central and regional authorities acting on its behalf in the sphere of shaping the process of social and economic development of the country regions in the frame of general socio-economic policy. On the other hand, K. Secomski [Secomski 1982, p.24] states that it is a planned activity of the State and its organs aiming at optimal use of socio-economic and spatial factors for harmonious and dynamic regional development, according to the national plan and regional plans. R. Domański [Domański 1986, p.22] points out that regional policy is an activity which affects the development of individual regions and interregional relationships, in compliance with the objectives of the society as a whole, but also with the goals of regional communities.

OBJECTIVES, INSTRUMENTS AND MODELS OF REGIONAL POLICY

The objective of regional policy is supporting individual areas of the country and raising the level of their competitiveness and also improving local communities living standards and the level of satisfying common needs of both local and regional communities. Supporting of regional development [Ustawa... 2000, par. 2, item 1]¹ - following the objectives of the European Union regional policy – should favour creating socio-economic cohesion, including three basic aspects [Potoczek 2003, p.16]:

– Social aspect – refers to the issues of regional community life characterized by the education level, social and political activity, unemployment level, etc.;

¹ In compliance with the act on the terms of regional development support, supporting regional development means a territorially oriented set of activities undertaken by the Council of Ministers and State administration for permanent socio-economic development and environmental protection, conducted in cooperation with local self-government units and social and economic partners.

– economic aspect – connected mainly with GDP level per inhabitant, the state and character of economy;

– spatial aspect – connected with the character of settlement system, access to communication and the use of spatial amenities.

Regional policy makes available for its subjects the instruments which may be presented in four groups [Mączka, Kudelko 2005, p.44]:

1. legislative instruments – common obligatory norms, established by the State authorities and organs of the local self-government referring to the region economy, also the regulations concerning all aspects of economic activity (e.g. legal regulation providing a basis for issuance and registration of permits for economic activity);

2. administrative instruments – administrative decisions issued on the basis of general standards, targeting individual objects;

3. economic instruments, where the following may be pointed out:

a) influence by financial means allocated through money and budgetary policy to support development initiatives undertaken by economic units (e.g. subsidies, grants, tax relieves, credits and guarantees);

b) influence by means of economic endeavours organized and realized directly by public organs or at their considerable participation (e.g. investment enterprises in the area of technical and social infrastructure);

c) non-material instruments, facilitating economic activity (e.g. programmes supporting investors, promoting exports, modern technologies, programmes of upgrading staff qualifications, organization of advisory services and research);

d) promotional-informational instruments – creating a positive image of the region and climate attractive for new dwellers who would also start economic activities (e.g. disseminating information about the region and its promotion), supported by information flow and cooperation between the subjects in the region, mutual notification about the directions of activities and developing common plans and development strategies.

It has been indicated that regional policy may be also regarded among others using the following approaches [Markowski 1991, p.180, and Polityka... 1999, p.217]:

– as a regional State policy – interregional policy understood as systematized influence on the areas which are separate, over territorial units of the country administrative division;

– as a policy of regional and local authorities – intraregional policy, which denotes systematized influence on the socio-economic development processes occurring in the region. This autonomous policy, basing on the local resources

and potential, it may be also the State regional policy realized through the subjects on the regional and local level on the basis of possessed and allocated means (such solution allows self-government authorities to shape socio-economic development processes in the region);

– as so called indirect policy, i.e. pursued towards economic subjects (and not towards the areas) – this policy stimulates the development through the subjects which due to their location in the space, maintain certain connections with the environment.

The model of regional policy realized by the central authorities strongly affects the level of region competitiveness. Two contradictory model approaches to regional policy may be pointed out [Hausner 2001, p.5-6]:

- centralist-balancing approach
- decentralist-competitive approach.

The centralist-balancing model assumes a proportional development of individual regions owing to financial support for the regions with a lower level of development and having weaker competitive position. On the other hand, the decentralist-competitive model bases on the decentralization of public finance sector and assumes directing the regional policy activities towards strong regions, revealing a high level of competitiveness, which are the stimulus for economically less efficient regions. In the first discussed model the supported regions tend to assume a passive attitude focused on present consumption of capital which does not guarantee their future development.

CHARACTERISTICS OF REGIONAL POLICY REALIZED IN POLAND

Regional policy is undergoing constant changes. In the mid-eighties of the 20th century a new approach to the territory emerged and more attention was paid to diversification of the instruments for shaping regional development, adjusted to specific needs of various regions. Therefore, regions assumed a subjective character. The approach emphasizes growing importance of territorial structures affecting socio-economic processes [Gašior-Niemiec 2008, p.360].

A transformation of the basic assumption found in the subject literature, that a region is a *quasi* state, particularly within the structure of federal countries, may be noticed simultaneously with the approach mentioned above. Currently it has been suggested that a region should be perceived as a *quasi* corporation [Kukliński 2008, p.72]. A region as a *quasi* corporation means strategically managed socio-economic system possessing considerable autonomy, crucial for the drawing up and implementing the strategic vision of development. Considerable level of autonomy favours increased responsibility of governing elites for the decisions they make but also more efficient adjustment of political-administrative model to economic and socio-cultural conditionings in the indi-

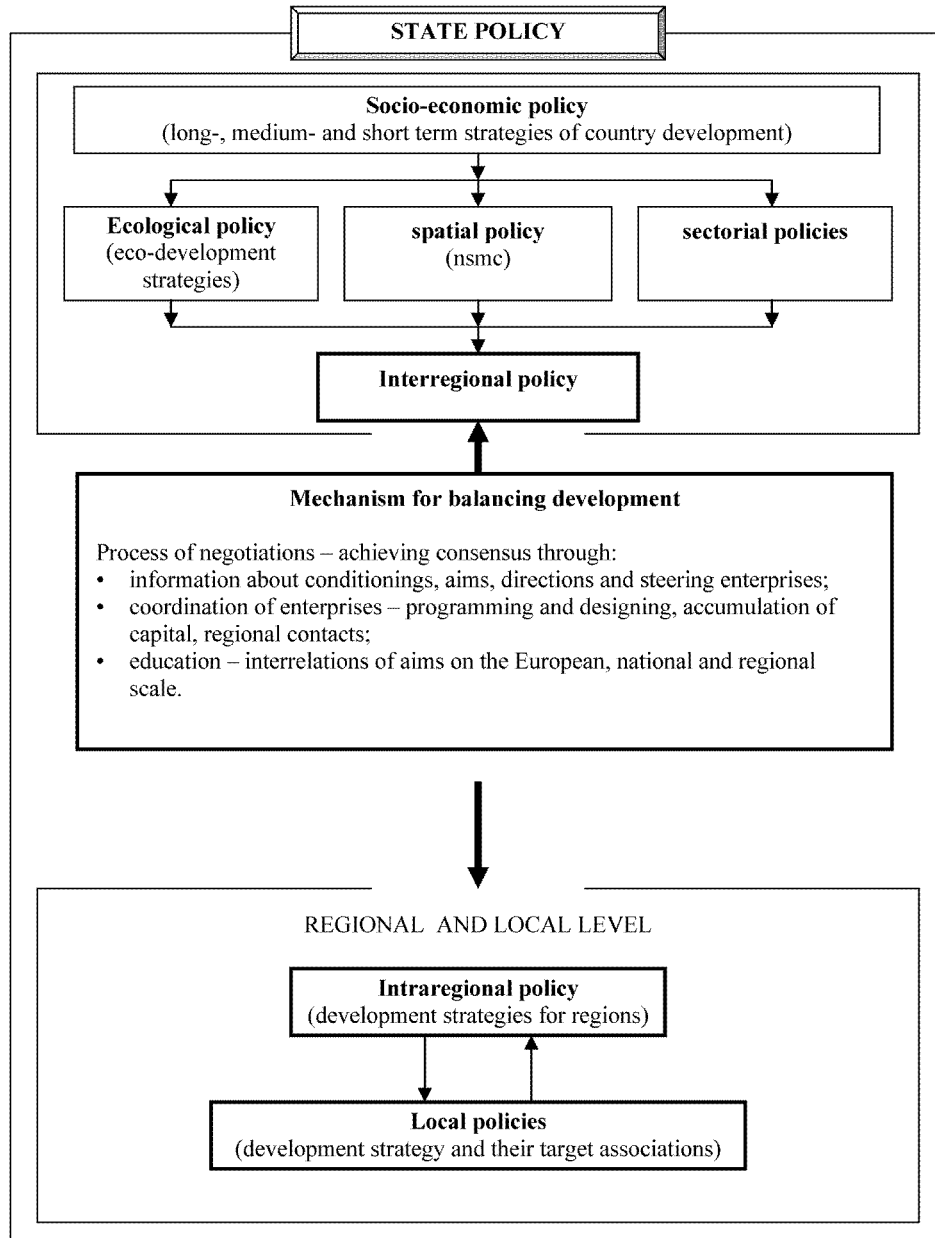
vidual region [Gašior-Niemiec 2008, p. 364-365]. Such attitude treats the region as an autonomous subject, which using the specific resources it possesses, shapes the directions of its own development in changing reality, determining the currently existing and future possibilities and limitations of development.

While discussing regional policy currently implemented in Poland one should point to cooperation between the State and self-government organs on individual levels in its realization achieved through the integration of interregional and intraregional policy. In the frame of interregional policy, the central government and its agents influence territorial units, whereas the local self-government authorities and their agents affect the processes occurring on their own territory by means of intraregional policy. In the situation when regions have their own authorities, they are able to affect the processes of development which occur on their territory [Gilowska et al. 1998, p.16-17]. It has been indicated that the region subjectivity is the basic condition for an efficient regional policy [Założenia... 1991, p.16].

Position of regional policy in the State policy, considering the interregional and intraregional policy realization, was presented in Figure 1. The national spatial management concept provides a basis for such pattern of regional policy [Obwieszczenie ... 2001] (KPPZK), which is currently valid planning document prepared in the years 1995-99 on the basis of former act on spatial management of 1994. The national spatial management concept, which was prepared prior to Poland's accession to the European Union, did not consider many conditions, which proved a reality once the document came into force, including the fact of Poland's membership in the European Union [<http://www.mrr.gov.pl>]. In 2005 an attempt was made at updating the document and therefore the updated national spatial management plan was adopted [Zaktualizowana ...2005]², which although filled in the gaps in the former concept, particularly considering the conditionings resulting from globalisation processes and Poland's accession to the European Union, did not improved apparently the bases for regional policy.

The national spatial management concept specified the fundamental assumptions of the regional policy conducted in Poland, whereas the Updated national spatial management concept sustained them. Both documents indicated that the key problem for devising of national development strategy is satisfying the requirements of competitiveness and efficiency demanded by the world economy and a necessity for fast restructuring (modernization) of the national economy as the only way to meet them, together with fulfilling social aspirations

² The document was produced by the Government Centre for Strategic Studies in 2005 by the team led by Prof. Dr. Grzegorz Gorzelak. The document was accepted by the Council of Ministers on 6 September 2005 and passed to the Polish Parliament (Sejm) and then withdrawn according to the decision of the CM dated 2 October 2006.



Sources: *Założenia do strategii rozwoju regionalnego*, Rządowe Centrum Studiów Strategicznych, Warszawa 1998, s. 42, [za:] Z. Szymła: *Determinanty rozwoju regionalnego*, Zakład Narodowy im. Ossolińskich – Wydawnictwo, Wrocław 2000, s. 55.

Figure 1. The place of regional policy in the economic policy system in Poland

for justice and equality, and creating chances for improvement of living conditions “here and now”. The priority of efficiency before equality has been currently a necessity in Polish reality and a chance to alleviate civilizational delays. There is a necessity to adopt the tendencies, natural to market economy, for spatial polarization as the shortest way to achieve effectiveness through the concentration of socio-economic activity in places most advantageous for the capital. The acceptance of effectiveness priority does not mean unconditional consent to a permanent polarization of Polish space. The suggested policy of sustainable development is the most efficient direction of spatial structure development in Poland forming knots, niches, strands and zones of activities, entrepreneurship and innovation in places selected by the mechanisms of market economy. The State policy would stimulate development of these structures of polarized development at the same time striving to diffuse their activating effect on the whole spatial structure of the country and at progressive formation on this basis of “balance links” in compliance with spatial, social and economic conditionings as the State supported economic possibilities and synergies created by the market emerge [Zaktualizowana... 2005, p.6].

The Ministry of Regional Development started work on a new concept of national spatial management, where the first stage involved formulating Theses and assumptions [Koncepcja...2007]. The newly prepared Concept of national spatial management should be a strategic planning instrument of long-term spatial policy of Poland. Its framework comprise the conditions, aims and directions of the country sustainable development and the activities crucial for their achievement [Ustawa...2003, par.47, item 2].

It has been assumed that the basic functions of the Concept of national spatial management will comprise the following [Koncepcja... 2007, p.7]:

- determining, in the time horizon included in the concept, a vision of Poland with respect to the European Union and world space, based on the analysis of challenges, conditionings and development trends;
- formulating the State spatial policy understood as presented challenges, aims and rules of the State influence on the spatial development using various instruments of development policy (legal, financial and institutional).

The adopted objectives of the State regional policy include the following [Koncepcja... 2007, p.12-13]:

1. Construction of hierarchical system of space management policy in Poland

- assumes the development of a coherent spatial policy system and addresses both the issues of institutional and subject coordination (inside and outside the system), and construction of legal and financial mechanisms on all levels, where the policy is realized and implemented, i.e. on European, national, regional and local level.

2. Increasing competitiveness of Poland and regions by using the chances connected with proper pro-development and pro-employment formation of spatial structure in the country:

- a) supporting metropolization of the country space, developing cooperation between cities in Poland, in Europe and in the world;
- b) supporting the utilization of growth and innovation centres situated beyond the metropolis areas;
- c) extension and modernization of communication and transport infrastructure integrating Polish space, regions and the most important centres of innovation growth with the European and world space;
- d) cleaning and reservation of the space for the needs of the most important investments.

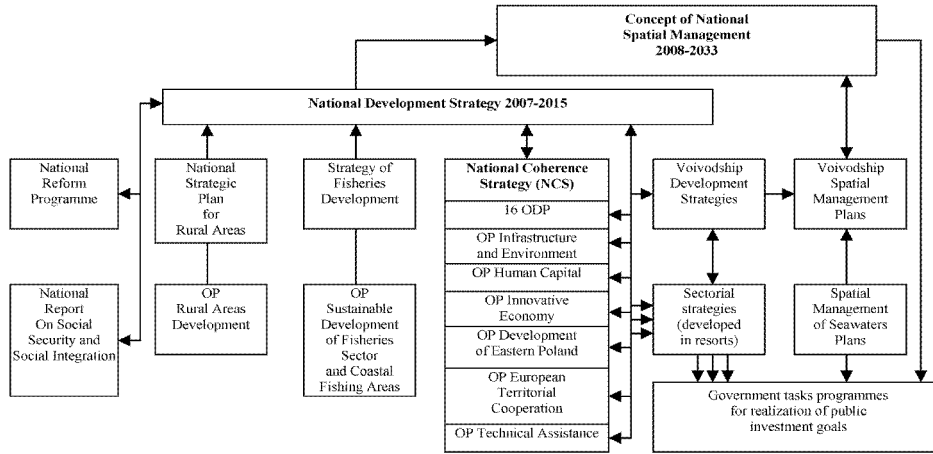
3. Ensuring an equal access to the services of basic social importance for all inhabitants of Poland.

4. Protection of space values (natural, cultural and other) of the country, revitalization of degraded areas and safeguarding the country territory against the outcomes of natural disasters.

Realization of the objectives of regional policy in the frame of other development policies (e.g. tourist policy) will be achieved among others by vertical and horizontal coordination concerning not only the stages of planning and realization but also monitoring and evaluation of the obtained results. The relations between the documents of strategic importance for regional policy, whose harmonization was assumed in *Koncepcja*, were presented in Figure 2.

The concept of national spatial management was outlined in the act on spatial planning and spatial management [Ustawa...2003] and in the quoted *Theses and assumptions*. The role of the *Concept* in determining the shape of realized interregional and intraregional policy has been presented concisely in Figure 3.

While formulating the concept of regional policy, *Theses and assumptions* for the national strategy of regional development (NSRD) were also drawn to suggest a philosophy which would underlay formulation of the National regional development strategy. The document preceding elaboration of NSRD did not aim at presenting its summary, therefore the *Theses and assumptions* for the National regional development strategy do not attempt at providing any complex answer to all challenges which regional policy will face in the nearest future. In compliance with paragraph 6, item 12 of the act dated 7 November 2008 on a change of some acts due to implementation of structural funds and Coherence Fund, NSRD will define the conditionings, aims and directions of regional development, the State policy towards voivodships and also rules and mechanisms of cooperation and coordination of activities undertaken on the national level with endeavours initiated by the local self-government on the voivodship level and by the other participants of regional policy. National strategy of regional development will concern programming the sustainable development on the regional level [Koncepcja nowej...2008, p.5].



Source: *Koncepcja Przestrzennego Zagospodarowania Kraju 2008-2033. Tezy i założenia*, Document accepted by the Council of Minister on 26 June 2007 r., Ministry of Regional Development, Warszawa 2007, Annex 2.

Figure 2. Interrelations between strategic documents important for regional policy

CONCEPT OF NATIONAL SPATIAL MANAGEMENT AND FORECAST OF ENVIRONMENTAL IMPACT

Basic conditions, trends, recommendations and strategic goals of national management for ensuring growth of social, economic and spatial coherence

Functions	Ensures the preconditions for the preparation of government tasks programmes	Contains diagnoses of external and internal conditions which are the basis for defining crucial objectives of national spatial management policy	Determines main directions of NSMC and appoints specific tasks to the basic and central administrative units in the nearest future	Comprises the scope of issues mentioned above and the degree to which the conditions and goals of area management policy are developed in order to meet the requirements of the spatial planning and spatial management act	Provides a basis for developing regional spatial management plans for voivodships, seawaters and sectorial development polities of individual sectors (ministers)	Ensures conditions for increased competitiveness of Polish regions and preventing of their social, economic and spatial marginalization
	NATIONAL LEVEL			REGIONAL LEVEL		LOCAL LEVEL

Relationships	Rotterdam Process (European Policy of Territorial Coherence)	Transregional, transnational and cross-border cooperation (INTERREG)	Voivodship development strategies	Plans of Spatial Management of seawater and OOS	Government tasks programmes, sectorial strategies, public investment goals	Plans of local spatial management and OOS
	NATIONAL LEVEL			REGIONAL LEVEL		LOCAL LEVEL

Source: *Koncepcja Przestrzennego Zagospodarowania Kraju 2008-2033. Tezy i założenia*, Document accepted by the Council of Minister on 26 June 2007 r., Ministry of Regional Development, Warszawa 2007, Annex 2.

Figure 3. The role of the Concept of national spatial management

In result of endeavours and efforts undertaken by the Ministry of Regional Development in the area of improving the efficiency of programming and implementation of the development policy and improving the quality of public institutions functioning, another document entitled “Assumptions for the management of Poland’s development” was drawn to present a suggested model of development management, which should lead to better efficiency of programming and implementation of development policy and raise the quality of public institutions operations. The model is supposed to provide a basis for further discussion on the future shape of development policy management system in Poland [Koncepcja nowej...]³.

CONCLUSION

Development policy pursued in Poland undergoes permanent transformations resulting from changing environment and constantly evolving conditions affected by the environment. Polish socio-economic reality changed significantly after joining the European Union structures and has been changing to date due to progressing globalization of contemporary world economy. The importance of region in affecting growth of economic development was and has been increasing still – the country development is possible owing to regional development.

The shape of Polish regional policy has been determined through striving at identification of strong regions which would be able to push economic development of the country at the same time strengthening the other less innovative regions. Polish regional policy, which is an inherent part of the European union programmes uses the instruments adjusted to specific properties of individual regions, whereas the region characterized by a considerable autonomy in this respect, plays a decisive role in shaping the way to use the existing pro-development possibilities.

This solution of planning and implementation of development policy draws Poland closer to contemporary concepts in regional development theory, which present a region as a certain socio-economic system, enjoying autonomy, creating the vision of development and responsible for the obtained results. The future shape of Polish regional policy will be subjected to exactly such concepts, which emphasize the role of regions attaching growing importance to their share in the national development policy.

³ Development management system is meant as a set of activities aiming at efficient utilization of human resources and material means, undertaken in a coordinated way by public administration units on various levels in cooperation with the representatives of socio-economic partners and non-governmental organizations on the basis of the rule of partnership in order to achieve the previously fixed goals.

REFERENCES

- Domański R.: *Regionalne zróżnicowanie zagospodarowania i poziomu życia ludności*, „Zeszyty Naukowe Akademii Ekonomicznej w Poznaniu” 1986, z. 121.
- Gąsior-Niemiec A.: *Nowy regionalizm w Europie – zarys problematyki*, [w:] *Problematyka przyszłości regionów. W poszukiwaniu nowego paradygmatu*, tom I, red. P. Jakubowska, A. Kukliński, P. Żuber, Ministerstwo Rozwoju Regionalnego, Warszawa 2008.
- Gilowska Z., Gorzelak G., Jałowiecki B., Sobczak K.: *Kierunki polityki regionalnej Polski*, Uniwersytet Warszawski, Europejski Instytut Rozwoju Regionalnego i Lokalnego, „Studia Regionalne i Lokalne” 1998, nr 24(57), s. 16-17.
- Gospodarka przestrzenna*, t. IV, *Polityka regionalna*, red. L. Kupiec, Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2000.
- Hausner J.: *Modele polityki regionalnej w Polsce*, Uniwersytet Warszawski, Europejski Instytut Rozwoju Regionalnego i Lokalnego, „Studia Regionalne i Lokalne” 2001, nr 1(5), s. 5-6.
- <http://www.mrr.gov.pl/Rozwoj+przestrzenny/Polska+polityka+przestrzenna/KPZK> – dokument dostępny on-line (2007.08.10).
- Koncepcja nowej polityki regionalnej. Tezy i założenia do Krajowej strategii rozwoju regionalnego*, Rada Ministrów, Warszawa 2008, s. 5.
- Koncepcja Przestrzennego Zagospodarowania Kraju 2008-2033. Tezy i założenia*, Dokument przyjęty przez Radę Ministrów dnia 26 czerwca 2007 r., Ministerstwo Rozwoju Regionalnego, Warszawa 2007.
- Kukliński A.: *Program Przyszłość Regionów – Studium Osiągalności (SO)*, [w:] *Problematyka przyszłości regionów. W poszukiwaniu nowego paradygmatu*, tom I, red. P. Jakubowska, A. Kukliński, P. Żuber, Ministerstwo Rozwoju Regionalnego, Warszawa 2008.
- Markowski T.: *Rozwój regionalny Polski w sytuacji umiędzynarodowienia i restrukturyzacji*, [w:] *Restrukturyzacja regionów jako problem współpracy europejskiej*, Europejski Instytut Rozwoju Regionalnego i Lokalnego, Warszawa 1991.
- Mączka L., Kudełko J.: *Polityka regionalna Polski w aspekcie integracji z Unią Europejską*, Wydawnictwo Akademii Ekonomicznej w Krakowie, Kraków 2005.
- Obwieszczenie Prezesa Rady Ministrów z dnia 26 lipca 2001 r. o ogłoszeniu Koncepcji polityki przestrzennego zagospodarowania kraju*, M.P. nr 26, poz. 432.
- Polityka ekonomiczna*, red. A. Fajferek, Wydawnictwo Akademii Ekonomicznej w Krakowie, Kraków 1999.
- Potoczek A.: *Polityka regionalna i gospodarka przestrzenna*, Agencja Towarzystwo Naukowe Organizacji i Kierowania i Centrum Kształcenia i Doskonalenia Kujawscy, Toruń 2003.
- Potoczek A.: *Współczesne problemy rozwoju lokalnego i regionalnego*, Wyższa Szkoła Humanistyczno-Ekonomiczna we Włocławku, Włocławek 2000.
- Secomski K.: *Ekonomika regionalna*, Państwowe Wydawnictwo Ekonomiczne, Warszawa 1982.
- Szymła Z.: *Determinanty rozwoju regionalnego*, Zakład Narodowy im. Ossolińskich – Wydawnictwo, Wrocław 2000.
- Ustawa z dnia 12 maja 2000 r. o zasadach wspierania rozwoju regionalnego*, Dz. U. nr 48, poz. 550.
- Ustawa z dnia 27 marca 2003 r. o planowaniu i zagospodarowaniu przestrzennym*, Dz. U. nr 80, poz. 717.

- Ustawa z dnia 6 grudnia 2006 r. o zasadach prowadzenia polityki rozwoju*, Dz. U. nr 8 z 2007 r., poz. 18.
- Winiarski B.: *Polityka regionalna*, Państwowe Wydawnictwo Ekonomiczne, Warszawa 1976.
- Zaktualizowana koncepcja przestrzennego zagospodarowania kraju*, Rządowe Centrum Studiów Strategicznych, Warszawa 2005.
- Założenia do strategii rozwoju regionalnego*, Rządowe Centrum Studiów Strategicznych, Warszawa 1998.
- Założenia polityki regionalnej obszaru funkcjonalnego „Zielone Płuca Polski”*, Rada Programowo-Naukowa Porozumienia Zielone Płuca Polski, Białystok – Łomża – Olsztyn – Ostrołęka – Suwałki 1991.

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