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## **TOWARDS A SUSTAINABLE DEVELOPMENT OF THE GDAŃSK CONURBATION – opportunities and threats**

**Abstract:** The Gdańsk metropolitan area, made up of a closely interrelated group of cities: Gdańsk, Sopot and Gdynia, is undergoing a process of rapid transformation. The role and importance of the Gdańsk conurbation in the network of European cities depends on its following the sustainable development principles.

The strategy of sustainable development (derived from a diagnosis and existing conditions) embraces three spheres of spatial development policy:

- sustainable and polycentric urban system of the Gdańsk metropolitan area;
- spatial and functionally balanced access to technical infrastructure;
- active protection of the resources and assets of the natural and cultural environment.

This strategy calls for the use of such instruments that will ensure permanent sustainability of development. Among these instruments *Agenda 21* has the central role.

**Key words:** sustainable development, conurbation, Gdańsk

### **1. INTRODUCTION**

Two groups of determinants define the development potential of the Gdańsk metropolitan area:

– geographical and natural factors, that is seaside location and natural resources;

– historical factors, that is independent development of three large urban centres of the agglomeration: Gdańsk (historical centre of Pomerania), which is the nucleus, Gdynia – a new city founded in 1926 as a base for a port which was

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to be a challenge to Germans-dominated Gdańsk, and Sopot – a popular seaside health resort established at the turn of 19th century, when water-healing and Art Nouveaux were in fashion. This settlement structure consisting of three core elements forms a functionally interdependent urban agglomeration called Trójmiasto (Triple City) (figure 1).



Fig. 1. Settlement structure of the Gdańsk metropolitan area (by M. Dutkowski)

Trójmiasto is a polarised structure, which on the one hand has integrated natural environment, but on the other hand is characterised by both spatial integration and disintegration. The existing determinants of the development of the Gdańsk metropolis, as well as the natural limitations (location between a bay and morainal hills) make further integration of this group of cities inevitable. The question is: will it be a spontaneous, uncontrolled process or will it meet the requirements of sustainable development.

After the Second World War the links between three cities situated along the Gdańsk Bay (Gdańsk, Gdynia, Sopot) became very close, which led to the formation of a three-centre metropolis, whose sphere of influence, as its growth was progressing, gradually embraced the neighbouring towns. Currently this integrated urban system comprises 7 cities: Gdańsk, Gdynia, Sopot, Rumia, Reda, Wejherowo and Pruszcz Gdański.

Principal characteristics of the functional and spatial structure of this urban area are the following:

- seaside location directly along about 50 km of the coast;
- belt and in part belt-nodal urban continuum, its axis being a transport route spanning the distance of about 70 km between two extreme locations (Wejherowo and Pruszcz Gdański);
- dominant role of the Gdańsk–Gdynia harbour-industrial complex;
- functionally and spatially developed core with a concentration of services (area along the transport axis between the centres of Gdańsk and Gdynia);
- Landscape Park – woodland complex along the edge of the Gdańsk Upland (between Gdańsk and Wejherowo), situated mostly within administrative boundaries of the cities;
- specific settlement structure (comprising seven cities) with a high degree of functional interdependence and spatial interaction.

The Gdańsk metropolis (Triple City) is comprised of two large functional subsystems (cf. figure 2). One of them is the Gdańsk subsystem made up of Gdańsk and Pruszcz Gdański and neighbouring communes – it has a high degree of internal coalescence and high job supply in Gdańsk. The other one is the Gdynia subsystem, comprising Gdynia, Rumia, Reda and Wejherowo as functionally complementary centres. It is a closed, compact, functionally interdependent urban complex. Higher daily commuting rates in the Gdynia subsystem point to greater spatial interaction in this urban complex.

Sopot, the third component of the Triple City, is characterised by mixed functions: a health resort atmosphere is intermingled with its function as academic (University of Gdańsk) and cultural centre.





Fig. 2. Regional settlement subsystems linked with the Gdansk metropolis (by G. Włodarczyk)

## 2. SUSTAINABLE DEVELOPMENT AS A CIVILISATIONAL CHALLENGE FOR POLISH SPACE

Poland's principal planning document *Conception of the policy of spatial development of the country* formulates requirements and guidelines binding for autonomous regional and local policies (*Koncepcja...*, 1997). The basis for the Conception is a dynamic growth strategy derived from polarisation of development as a general direction for the country's spatial policy.

Attainment of sustainability as the leading principle of Poland's spatial development should involve:

- polycentrism and a moderate degree of concentration as a historically shaped and permanent feature of the economic and spatial structure of Poland; this characteristic should however be sustained to the extent that realistically assessed potentialities of the country permit;

- polarisation of the country's spatial-economic structure as an objectively conditioned trend, consistent with the attempt to quickly and efficiently take advantage of broadly understood resources and development potential;

- ecodevelopment (development ensuring protection of the natural environment values) as a determinant of the 21st century civilisation; its implementation however must be carried out within the limits of economic, social and psychosocial realities; ecodevelopment thus cannot be the only guideline for the state's spatial policy.

State spatial policy should create conditions stimulating formation of spatial structures accelerating the growth rate of the country through active initiation and support of socio-economic undertakings involving private capital and local authorities pursuing this strategic goal. It cannot however exclude areas and towns civilisationally backward due to historical reasons. Active state policy should spur their development through creating conditions favourable to location of economically effective undertakings.

State policy should provide inducements to the development of these structures of polarised development, at the same time leading to the diffusion of their stimulating effect on the whole spatial structure of the country and to gradual development on this basis of equilibrium links in accordance with spatial, social and economic conditions, but with regard for existing economic potential (*Koncepcja...*, 1997).

Adoption of such a development strategy entails the overcoming of many barriers. The chief barrier seems to be low public awareness of what constitutes sustainability of economic and social development, also in its spatial aspect.

All countries and all humanity are threatened with civilisationally induced ecological self-destruction. The degree of public consciousness is varied, also in Poland. Currently we are witnessing a growing awareness of this fact due to personal hazards (increased incidence of health problems) and mass media explaining with increasing effectiveness both global processes (the greenhouse effect, climatic change, thinning ozone layer) and local threats (contamination of soil, water pollution, etc.). Great advances have been made in information



technology.<sup>1</sup> The educational process is progressing and thus has been initiated the process of creating a new civilisation, referred to as a sustainable society, where ecological issues take on a new significance.

Sustainable development goals are increasingly accepted by general public, but ways of achieving them are highly controversial or even conflicting. In considering the need for (or rather inevitability of) sustainable development, the interrelationship between the present and the future tends to be ignored. Emphasis is usually on the reasons why sustainable development is necessary or goals (full sustainability, renewability of resources, ecodevelopment). Poland's situation in respect of sustainable development goals attainment is rather unfavourable. The already poor and deteriorating state of the natural environment is doubtless conducive to growth of ecological consciousness. On the other hand, the relatively low standard of living, lack of social security and pauperisation of part of Polish society do not create an environment favourable to promoting the sustainable development concept.

This pessimistic conclusion aims to help realise the difficulties<sup>2</sup> but at the same time provides a challenge for spatial and municipal policy. This new policy is being formulated in particularly difficult conditions, namely:

- during systemic transformation which in itself is unprecedented in history, so there are no models to be followed;
- as part of a process which is objectively rational, but generates new rules for implementing proecological behaviour, which often induces resistance.<sup>3</sup>

The question at issue here is what each individual, family, commune, region, country and continent stands to gain or lose. Both the scale of the affected parties (individual, local community, region, etc.) and the stage of development must be taken into consideration.

Polish transformation has been going-on for a very short period. Shock therapy in the economic sphere has outpaced social processes, which take place much more slowly. In the geographical space (natural and anthropogenic) the resistance is even stronger. Several years may be enough to curb inflation, but

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<sup>1</sup> Space exploration and consequent satellite television have broken the previous information monopoly, providing every individual with opportunity for objectivisation of information, also about the environment, due to availability of many different sources of information.

<sup>2</sup> It is also a condition for Poland's membership in the European Union. The European agreement providing for the association of the Republic of Poland with European communities states that: "Policy aimed at realisation of economic and social development of Poland ... should be guided by the principle of sustainable development" (Art. 71, item 2).

<sup>3</sup> In accordance with the 'polluter-pays' principle, the Municipal Council of Gdańsk (against widespread dissent) introduced into sewage charge 'rent', which serves to cover the costs of exploitation and modernisation of sewage treatment plants.

too short to change the structure of spatial development or employment where it is unsatisfactory.

Transformation of spatial structures is thus an evolutionary process and brings desired effects on condition that it does not turn destructive. The character of economic transformations taking place in a given natural environment, which itself too, is undergoing transformation, is a very important factor. The need to consider the natural and economic environment as a whole is being increasingly recognised.

Each society has a definite demographic structure, income level, style and quality of life and generates demand for goods and services accordingly, which results in specific technological requirements (quality, standard).

Technological progress involves change in the demand for raw materials (a basic and exhaustible element of the natural environment). At the same time economic relations determine the scale and structure of the supply of goods and services, which affects the demographic structure, incomes, styles and quality of life. The challenge is to ensure that the development is ecologically friendly, self-sustaining and permitting the renewal of resources.

There are then at least two dimensions of developmental sustainability (cf. Parteka, 1993). The first dimension concerns transformational relations between the economic sphere and the natural environment. The second is the environment of that nucleus, where take place social processes on the one hand, and on the other – technological changes which occur also in another causative sphere.

Such an approach seems to be particularly important for creating conditions favourable to the attainment of sustainable development goals. In relation to such areas and structures as the Gdańsk metropolitan area this means:

- aiming at a society consciously willing to economically use seaside environment resources, fully aware of the consequence of disturbing the natural balance;

- adoption of environmentally friendly technological innovations;
- monitoring the effects of the economy on the environment;
- monitoring changes in the state of the environment (e.g. through developing Spatial Information System).

It is also essential to translate into practical recommendations the principles of sustainable development, of which three seem to be of greatest significance (Parteka, 1997).

The first principle is **unity in diversity**. The essence of balancing the development consists in recognising the possibility of undertaking various activities with one common aim – attainment of sustainable development. This means participation, on equal basis, of different actors (experts, local groups, institution, etc.) in devising and implementing restructuring initiatives.



Realisation of this principle calls for rejection of 'the only valid reason' approach. It is the goal that is important. If different social groups have common objectives (and, what is important, define them in the same way), the principle is fulfilled. However, one common goal (ecodevelopment) does not exclude heterogeneity of particular specific objectives. The more of them there will be, the better the chances for attaining the principal goal. The principle unity in diversity means respect for other ways of thinking. There is not any sole right model – confrontation between different options is essential, especially as it allows broad societal involvement in the solution of environmental problems. Disputes between various groups representing different, frequently opposing ideas or policies are conducive to a participatory model of self-governance and is helpful in better orientation in local conditions. This involves lack of consent to conceptions imposed from the outside, which often leads to confrontation with sectoral and supra-local administration.

The sustainable development concept is fairly easily accepted at strategic level. In view of catastrophic visions of global effects, society readily embraces sustainable development ideas as long as this does not concern their immediate environment and does not affect individual patterns of the use of natural resources. This is a major barrier which results from poor ecological awareness of the society. Another important barrier is resistance from various interest groups when compliance with sustainable development principles is not compatible with maintaining the existing profit levels.

The other principle is **development integrated with the environment**. Environment has many dimensions and comprises natural structures of both small and large ecosystems (e.g. the Baltic Sea). Ecosystems are in continuous interaction with the social and economic environment.

Development integrated with the environment means:

- enhancement of the quality of life of individuals combined with regard for environmental values (as opposed to the utilitarian, environmentally detrimental paradigm of economic development);
- social stability and security (elimination of threats such as loss of employment, displacement, loss of health or natural resources);
- fostering local social ties;
- adoption of integrated planning as a basis for development towards sustainability.

The third principle is **the long-term perspective**. This means readiness to adopt a long development cycle and realise long-term development goals. This principle involves adoption of long-term policy while at the same time forbearing from continual critique of the existing state. The principle of long-term perspective means recognition of the importance of projecting, especially in a not too formalised and easily accessible form. This principle requires



a sequence of actions (in compliance with the 'unity in diversity' principle and the 'development integrated with the environment' principle) comprising:

- analysis of long-term external socio-economic and ecological determinants (e.g. global climate change);
- establishment of the structure and hierarchy of future social needs resulting from both systemic changes and adoption of the sustainable development policy;
- analysis of functional prospects for satisfaction of new and existing (so far unsatisfied) needs;
- identification of goals and related strategies;
- designing new socio-economic structures conducive to the realisation of sustainable development strategy;
- continuous monitoring of development processes, based on objective development indicators.

### **3. SPATIAL TRANSFORMATION CHARACTERISTICS**

Systemic transformation in Poland, including the transformation of Polish space, is the subject of extensive studies. Poland and other post-communist countries are confronted with a historic challenge of adopting and pursuing a new systemic paradigm involving restoration of a market economy. We are witnessing an integration of the Polish economy and society with the European socio-economic system, which, too, is undergoing significant transformation (European Union reform, uniform monetary system, consequences of the unification of Germany).

Transformation of the Polish political, social and economic system is evident in practically all places and forms of activity. But a short time horizon makes it difficult to give a definite answer to the question: where are we going? Or, equally important: where do we come from?

Characteristic features of spatial development of the Gdańsk metropolitan area during the period of social realism are as follows:

- reconstruction of Gdańsk, 80% destroyed during Second World War, and degradation of the Old Town and historical suburbs;
- moving away from the practice of shaping the harbour and urban space in Gdynia by market mechanisms;
- spatial segregation of functions as a consequence of the doctrine of a centrally planned economy (the Gdańsk and Gdynia industrial-harbour district, residential districts: Zaspá, Przymorze, Chełm, Witomino, Obłuże);

- obliteration of local cultural specificity and uniformisation of space (e.g. great similarity of the Zaspá district in Gdańsk and Stegny in Warsaw);
- construction of huge, centralised systems of technical infrastructure (power, sewage treatment plants, surface intakes of drinking water for Gdańsk and Gdynia);
- underdeveloped service infrastructure and collective transport in large residential districts (abandoning the project of extension of tramway lines in Gdańsk and trolley bus connection in Gdynia);
- too slow construction of a sewage-treatment plant ('Wschód' – Gdańsk and 'Dębogórze' – Gdynia), spanning a period of several dozen years, which given the natural growth of population and increase in the housing stock, had catastrophic effect on the Gdańsk Bay environment;
- realisation of large industrial and harbour investments (Gdańsk Refinery, Northern Harbour, 'Fosfory', 'Siarkopol') without any installations reducing pollution of air, water and earth;
- inadequate construction of an international airport in Rębiechowo reduced to technical possibility of take-off and landing with primitive air traffic service (safety) and very low standard of passenger service;
- starting and then giving up construction of new premises for the University of Gdańsk, with a large area of land tied up and teaching-research facilities scattered over Gdańsk, Gdynia and Sopot;
- generation of the mechanism of 'sucking' labour force to large industrial and transport enterprises (shipyards, ports, refinery, chemical plants), which caused strong concentration of jobs;
- designation of two protected landscape areas (Trójmiejski and Nadmorski Landscape Parks) surrounding the Gdańsk metropolitan area and restricting spontaneous, uncontrolled spread of residential construction into areas having natural and recreational value;
- rapid development of holiday housing construction as a result of increased wealth of part of the society, limited access to the beaches (bad state of watering-places) and lack of recreation opportunities in large residential districts.

Characteristic features of spatial development of the Gdańsk metropolitan area in the period of transition from socialist realism to a market economy include:

- ownership changes in economic sectors, progressing with greatest difficulty in large industrial enterprises, and resulting in decreased concentration of jobs (the Gdynia shipyard reduced employment from over 10,000 to 3,000 in 1998);
- communalisation and decentralisation, which resulted in undertaking initiatives aimed at completion of investments begun years before (among others



a road connecting a circular route with the city and port, reconstruction of the road to the airport in Gdańsk, a sewage-treatment plant);

- partial privatisation of public utilities (e.g. privatisation of the water supply system in Gdańsk);

- slowing of housing construction, also in large, uncompleted residential districts (Chełm, Zaspą, Witomino, Obluże, Karwiny);

- slow formation of a housing market and construction by developers of high standard, attractively located flats at relatively high prices;

- rationalisation of local government activities focusing on certain environmental problems (improvement of the state of water in bathing places and creation of better conditions for the development of the recreational function);

- consistently applied legal and financial sanctions for principal polluters, which forced proecological investments and technological changes in major manufacturing enterprises;

- reduction in employment in large industrial plants resulting in decreased commuting;

- increased employment and creation of new jobs in the service sector (mainly in trading);

- radical change in the conditions of functioning and activity of metropolitan city centres, caused by, among others, location of nine hypermarkets (of which seven are on the Triple City circular route);

- development of single-family high standard housing in attractive landscapes (the belt Żukowo–Kartuzy–Gdynia–Chwaszczyno–Wejherowo);

- rapid growth in motorisation (exceeding the ratio of 400 cars per 1,000 inhabitants), which gives rise to acute transport problems;

- disintegration of the cities in the metropolitan area and lack of co-ordination in spatial development, which has an adverse effect on the efficient functioning of the whole system and its inhabitants' quality of life (among others, lack of an integrated system of collective transport);

- competition between the cities that make up the metropolitan area with regard to generating new growth factors (fairs and exhibitions, education, commerce);

- lack of major strategic investors, especially in the branches requiring significant restructuring (shipyards, harbours) and simultaneous withdrawal of the state from subsidising these branches;

- growing international importance of the metropolitan cities, especially in the network of Baltic cities (the seat of the Baltic Cities Union, Secretariat of VASAB 2010, Europartenariat, Baltenpartenariat, World Trade Centre);

- slow installation in the cities (mainly in Gdańsk) of major European banks (Credit Anstalt, Dresdner Bank, GE Capital Bank);

– setting up of private higher education establishments.

The principal characteristics, outlined above, of spatial development of the Gdańsk metropolitan area, help to realise the specific character of the development phase of this coastal settlement system. Under the socialist economic system this unique, integrated urban complex was degraded in the post-war period to the category of 'ecologically threatened area'. At the same time was formed a metropolitan complex which has an important place in the Polish settlement network. Today, the Gdańsk metropolis has a chance to meet the civilisational challenge of development towards sustainability.

#### 4. THE GDAŃSK METROPOLIS IN THE PROCESS OF POLARISATION OF POLISH SPACE

Polarisation processes in Polish space are taking place under strong European pressure. In this context it is essential for the Gdańsk metropolis to achieve competitiveness in view of changes occurring in European space after 1990.

There are several elements to be considered in trying to reach this goal.

**Transborder location** offers great opportunities. The Gdańsk region should be among leading Polish regions having strong and direct contacts with European structures.

The Gdańsk metropolis has an important role to play with respect to European safety and equilibrium. It lies on the border of two large European regions: the Baltic region and Central Europe. It also plays a major role in the 'problem' region of Gdańsk – Elbląg – Kaliningrad, which is one of strategic areas in Europe, especially in the context of securing the outer border of the European Union. Poland's membership in the EU will require the arrangement of such relations with the neighbours (Russia) which will guarantee peaceful co-operation.

The strategy of the development of the Gdańsk metropolis should also recognise **the importance of the north-south axis, apart from the west-east axis favoured by the European Union**. Along this transport route, coinciding with the A1 motorway, should be developed zones of environmentally friendly economic activity.

It is essential to **promote development towards sustainability, both in ecological and economic terms**. This is a prevailing European option, which should be adopted by the Gdańsk metropolis and be reflected in the strategy and policy of spatial development of this area.

The Gdańsk metropolis has a good chance **to become a Europolis in the settlement structure of Europe**, providing that, within the existing framework



of ecological determinants, it will take full advantage of the new growth factors and will create conditions facilitating investment. It is vital to ensure compatibility with requirements imposed by the economic globalisation process.

European co-operation includes also **planning**. European integration is not possible without integrated planning. Therefore it is essential to create institutional arrangements facilitating information processing and ensuring continuity of planning processes.

**Sustainable development** should become a primary goal and policy recommendation for cities situated on the Baltic coast. This denotes such development that will not impair (on the contrary, will enhance) the ability of the natural environment for renewal of its resources and qualities. Spatial structures should be formed which:

- generate an energy-efficient settlement structure;
- compete constructively, so as to intensify growth factors instead of eliminating them;
- promote proecological sources of energy, forms of transport and economical use of resources.

**Seeking integration** in all dimensions: planning, economic, social, ecological and cultural, which implies openness of strategies being developed to all initiatives linking the metropolis with its environment. Such integration has a multifaceted character, promoting diversity consisting in recognition of democratic rights of individuals, local and supra-local communities, and conservation of local identity and natural biodiversity.

**Ensuring a strong position of the Gdańsk metropolitan area in the Polish space** will require taking into account strategic aims of Poland's spatial development. It is important, among other things:

- to harmonise the settlement system of the country, in which the Gdańsk metropolis, along with Poznań and Cracow, are regarded as major metropolitan cities;
- to develop a multifunctional structure within a zonal arrangement (including agriculture and recreation);
- to ensure comprehensive development of technical infrastructure, especially the land transport network linking seaports with their hinterland;
- to form a functional nodal region round the Gdańsk metropolis and in the neighbourhood of the cities (Pruszcz Gdański, Starogard Gdański, Kościerzyna, Kartuzy, Wejherowo, Puck).

Competitive pressure and currently occurring polarisation processes may have both positive and negative effects. This is best illustrated by the case of Gdańsk and Gdynia – competition between these two port cities began before the Second World War. After the First World War Gdańsk was interested in maximum trans-shipment of Polish goods, while German government pursued

a policy of stifling Polish foreign trade, which led to a tariff war resulting in losses for both sides. Polish State Railways, too, waged a tariff war with German railways (in 1929 special port tariffs were introduced). A key factor was a half-year long strike of English miners, which opened absorptive Scandinavian markets for Polish coal. This provided a stimulus and rationale for accelerating the construction of the Gdynia port. A strategy of competing at all costs with Gdańsk has become a continuing tradition of Gdynia despite the obvious change in political and economic conditions. Such competition is destructive for the whole metropolitan complex.

Arguably, if the competition is carried on according to this scenario, both cities will soon have wasted their chances of becoming a European metropolis, because neither Gdańsk nor Gdynia alone have enough potential for playing a significant role in Europe or for attracting foreign capital.

The traditional competition between Gdańsk and Gdynia is grounded in the social sphere. The generations which built the port and city of Gdynia grew accustomed to their role as creators of something great and unique in the scale of Poland and Europe. Gdynia's ethos of 'building from scratch' was not counterbalanced by the ethos of 'reconstruction' of Gdańsk by an immigrant population. Essential is the fact that Gdańsk and Gdynia were inhabited by different types of population: the Gdynia community comprises immigrants mainly from Pomerania and Kashubia, while Gdańsk continues to be a 'melting pot' for settlers from the eastern regions and people drawn from all parts of the country to work in the shipyards; the Kashubian population is the least numerous. The inferiority complex about Gdańsk prevailing among Gdynia's population was aggravated by the location in Gdańsk of the Voivodship Committee of Polish United Workers' Party, where in the period of Communist rule were taken all major decisions concerning Gdynia. For Gdynia's community, with deep-rooted traditions of private enterprise, these were difficult years. Third Republic of Poland saw a rapid re-creation of trade and services, which can be regarded as a reaction to prolonged repression.

Today there is a polycentric distribution of major functions between Gdynia and Gdańsk: international institutions (seats of organisations, banks, businesses, state and regional agencies), supra-local spatial infrastructure (an opera-house, theatres and a philharmonic), higher education establishments and research institutes, and, finally, transport infrastructure, which is part of the European transport system. Production standards are at the European level, and the development of the tourist industry is evidenced by great numbers of Polish and foreign tourists.

The two ports, however, compete with each other, which benefits foreign investors, who skilfully take advantage of this animosity. Two competing international fairs fight for ideas and exhibitors, which ultimately benefits



Poznań. The two rival cities can not bring themselves to work out common transport policy, from parking tariffs to railway or bus ticket prices. These obvious inconveniences represent disadvantages for the inhabitants of both Gdańsk and Gdynia and, predictably, all the cities of the conurbation will share a common fate in the form of individual transport crisis.

Both competition and co-operation are attributes of democracy and the free market. What is important, though, is awareness of their advantages and disadvantages.

Competition between Gdańsk and Gdynia manifests itself mainly in the spheres of trade, tourist services, fairs, exhibitions and congresses, SME sector, higher education and research institutions, and mass media.

Co-operation between Gdynia and Gdańsk should focus primarily on: development of a common land and sea transport system (harbours and their hinterland), creation of an integrated, proecological system of urban transport, protection of the quality of water in the Gdańsk Bay, development of the recreation function along the coast (passenger shipping, bicycle routes), co-ordination of efforts aimed at the development of the exhibition and trade sector, re-cycling and composting of municipal waste, efficient management of ground water and development of a common strategy for locating large commercial-service complexes along the Triple City circular line.

## **5. DEVELOPMENT OF THE GDAŃSK CONURBATION TOWARDS SUSTAINABILITY**

The strategy of sustainable development concerns three spheres of spatial development policy: a well-balanced and polycentric system of cities in the Gdańsk metropolitan area (nodal and belt-nodal); spatially and functionally balanced access to technical infrastructure (belts); active conservation of natural and cultural resources and qualities (zones).

Sustainable development strategy (derived from a natural in a market economy tendency to polarisation of space) should identify the most efficient zones, niches and links in the spatial structure of the metropolis. They should be capable of generating such natural, social, economic and infrastructural quality which would support the development of the whole region. The diffusion of polarised activity affecting entire spatial structure of the region should be the key element of the strategy, later translated into specific policy goals for individual sectors and smaller areas.

A sustainable development strategy for the Gdańsk metropolis should embrace its historic mission of establishing a new European order by:

- participation in European efforts aimed at realisation of ecologically sustainable development strategies (e.g. *Agenda 21*, 1993);
- taking full advantage of the geopolitical situation on the co-operation axis north-south and east-west becoming a co-operation centre of a vast Polish – Swedish – Russian region;
- creation of a three-node belt of co-operation between Poland and Russia (Gdańsk – Elbląg – Kaliningrad), using future free flow of goods, capital, people and ideas for ensuring a lasting security in the central Baltic region, and neutralising potential national-military conflicts;
- promoting the Gdańsk conurbation as a European metropolis: economically, civilisationally and culturally open, technologically advanced, with good living and recreation conditions, good quality of the natural environment, safe and attractive for investors.

The strategy outlined above depends to a great extent on the awareness and education level of politicians, administration, local government and general public, that is on widespread acceptance of the goals and principles of ecologically sustainable development, including:

- ensuring continuous functioning of ecological systems, especially natural and cultural landscapes;
- improvement of the present quality of life and management;
- ensuring good living conditions in terms of the natural environment for resident and seasonal populations (clean air and water, no noise pollution, environmentally friendly availability of its attractions);
- development of environmentally friendly and economically effective forms of management through ecologisation of economic processes strongly dependent upon the quality of the environment;
- development of settlement structures and housing, based on healthy living conditions and regard for cultural and aesthetic traditions enhancing the order of seaside areas;
- development of proecological forms, technology and technical infrastructure, ‘clean’ transport, renewable sources of energy, biotechnological sewage treatment, and careful use of water and energy;
- segregation of municipal waste and its re-cycling.

## **6. AGENDA 21 AS AN INSTRUMENT IN THE DEVELOPMENT OF THE GDAŃSK CONURBATION TOWARDS SUSTAINABILITY**

Poland, being an active participant of the United Nations Organisation Conference *Environment and development* (Rio de Janeiro, July 1992) and



a signatory to its resolutions, is obliged to implement a number of related commitments. These obligations relate mainly to the improvement of the quality of the environment in the country as Poland's contribution to global environment conservation. The principal documents at this conference were *Agenda 21*, convention on climate and convention on biodiversity protection.

*Agenda 21*, apart from formulating a global action programme, provides a basis for formulating local plans of action and explicitly sets out the tasks (*Agenda 21*, 1993).

Chief growth determinants, in the light of *Agenda 21*, are the following:

- the quality of the Gdańsk Bay water, determining the ecological conditions and opportunities for the development of tourism, recreation and fishing;
- anthropogenic influence (supraregional) of the Gdańsk metropolitan area, in particular Gdańsk and Gdynia.

The main source of pollution of the Polish coastal area are small rivers collecting wastes from urbanised regions, discharged into the Gdańsk Bay. Compared with the Vistula, the volume of water they supply is insignificant, but they are mainly responsible for strong pollution of local beaches and the seaside zone. Greatest concentrations of pollution are found at the mouths of the rivers Vistula, Reda and Płutnica, in places where sewage from Gdańsk, Władysławowo and Hel is discharged, round the mouths of Triple City small rivers, and in harbour foreland. The effects of the Gdańsk Bay pollution include: very bad state of some beaches and bathing spots, excessive fertilisation of water and intoxication of sea-living organisms.

Reduction of waste discharge into the Gdańsk Bay water is a strategic problem as regards the improvement of the natural environment in this region. This requires co-ordinated technical and preventive measures at local, national and international levels.<sup>4</sup>

The Gdańsk metropolitan area is characterised by high concentrations of pollution sources (in particular pollution of air and surface water and unacceptable noise level), above-acceptable pollution levels and existence of ecological barriers to growth, which results in worsening living conditions for its inhabitants. Elimination of ecological hazards and improvement of the quality of life are strategic goals of environmental policy.

The region being studied, in particular Gdańsk and Gdynia, is a major source of supraregional ecological conflict. Adverse environmental impact of Gdańsk lack of a sewage farm in the 'Wschód' purification plant extends beyond the Gdańsk's Bay, not only to beaches east of the Vistula estuary, but also to the seaside communes of the Elbląg region (Mierzeja Wiślana), where it

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<sup>4</sup> E.g. the state of the Vistula Bay water, receiving pollution from Kaliningrad.

impairs their tourist, recreation and economic (fishing) functions. This spatial conflict has been growing over many years. Insufficient investment in environment protection in one region (towns situated on the lower Vistula) has negative effects on a neighbouring region (communes and towns on Mierzeja Wiślana). Also other neighbouring communes suffer adverse environmental impacts of Gdańsk and Gdynia, especially with respect to inflow of polluted air, the effect of the phosphoric gypsum repository, sewage-treatment plant for Gdynia, ash tip, fuel supply base and military airport. Resolution of ecological conflicts (both at regional and supraregional scale) should become one of the principal goals of spatial policy.

Local *Agenda 21*, serving as a basis for the formulation of spatial and environmental policy of the Gdańsk conurbation, should determine such parameters as: acceptable pollution levels for air, water and land; charges for the use of the environment and penalties for exceeding acceptable emission levels, tax reliefs, loans and subsidies, administration fees, prices (e.g. water) (Kozłowski, 1995).

In order to formulate ecologically sound principles of spatial development, the following elements should be taken into account (Kozłowski, 1995):

- nature's mechanisms and resources;
- principal elements of the spatial structure of the natural environment;
- environmental hazards caused by human activity;
- conception of economical utilisation of natural resources;
- appropriate legal, organisational and economic solutions.

## 7. CONCLUSION

Sustainable development should be a long term process, and, being one of the main guidelines for future human activity, should be compatible with other essential principles.

**Principle of environmental cohesion** is a condition rationalising a systemic approach to space, where each element, spatial object, is in interaction with its environment. Recognition and regard for spatial interactions and functional interdependence is a prerequisite for spatial order. This refers to both the material sphere (co-ordination of actions) and the regulatory sphere (spatial planning and policies, and legal regulations).<sup>5</sup>

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<sup>5</sup> E.g. in the Triple City Landscape Park should be pursued one consistent spatial policy, despite the fact that the Park is within the boundaries and jurisdiction of several municipalities.



**Principle of openness** denotes readiness to transform changing internal and external determinants. SWOT analysis (strengths – weaknesses – opportunities – threats) is a planning technique used here.

**Principle of variation**, supported by scenario methods, means discarding routine and easy neglect of particularly difficult strategic aspects. Scenarios freed from this pattern by the formula 'what is not impossible is possible' delimit the scope for the strategy of variation.

**Principle of continuity**, supported by spatial monitoring, supplies decision-makers with knowledge of the pace and means of strategy realisation. It also provides a basis for iteration in planning the development in the changing context of external and internal factors.

Finally, **the principle of sustainable development** – a prevailing option for European economic and social order, also applicable to the organisation of space. Development towards sustainability is an evolutionary process, which takes into account ecological determinants of economic and social progress (and, in consequence, growth of wealth). In this view, sustainable development is something to be aimed at, a target situation, particularly desirable in view of civilisational threats. It is essential however – in a democratic society – to maintain equitable and universal access to natural resources, compatible with a democratic legal system and permanence of values associated with private property and generation of goods.

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