# Managerial and Economic Approaches to Structuring Sustainable Development

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## Abstract

*Despite a significant pool of sustainable development literature that appeared during the last decade, the term remains unclear. This study involved a theoretical analysis of definitions of sustainable development to identify the weights of different components, to assess what meanings are included in the term by different authors and communities, and to understand the role of managerial issues in sustainable development. A principle managerial model of sustainable development is presented in which common purposes and joint management serve to unify economic, environmental, and social components. Using a basic management approach, field investigation of sustainable development processes were conducted in Athens, Georgia, USA and Uzhhorod, Ukraine. Survey results were utilized to develop managerial sustainable development models for each city, to conduct an internal analysis of the components and connections between components in each model, and to compare the respective components for each city. The comparative results of the study are both theoretically and practically useful in the development of relevant policy approaches. The second part of research is devoted to the regional industrial analysis of Zakarpatska oblast with using the matrix approach for defining the priorities of the different economic sectors. A model for strategic structuring of industrial and regional economy is developed as a result of research and presented in the paper.*

**Key words:** sustainable development, strategic structuring, territorial economy.

**JEL Classification**: R11; R58

## Introduction

There is considerable debate over how best to define and achieve sustainability. A modern scientific revival of the concept of sustainable development was effected through the work of ecologists and environmentalists regarding the use of natural resources. In particular, Meadow's (1972) research on rational utilization of natural resources and preservation of the environment accents the limitations of economic development and sustainability issues [1].

Torrie (1986) defined sustainable development as the ability to meet the needs of people without decreasing the ability to satisfy the needs of other people and future generations [2]. A very well-known definition of sustainable development given in "Our Common Future"(1987) a report by the Bruntland Commission, echoes Torrie in asserting that sustainable development is: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [3].

Approaches to sustainable development over the past decade, generalized by Munsinghe and McNeely, 1995 have centered on two dominant theoretical models: the biogeophysical foundation model and the competing objective model [4]. The biogeophysical model focuses on inputs and outputs affecting the environmental system. The competing objective model of sustainability is oriented around the triangle of economic, social, and environmental bases of stable and self-reliant development. Other theoretical models of sustainable development are slight variations on these two, modified to make them more theoretically sound or practically applicable for the purposes of a specific community.

The diversity of sustainable development theory has given rise to a wide variety of definitions and synonyms for sustainable development, such as sustainability, sustainable growth, sustainable economic growth, ecologically sustainable development. In Ukraine, there is much discussion concerning interpretations of sustainability, especially closely translated words from English such as "sustainable" and "steady," but also the concepts of "gradual" and "stable" development in association with sustainable development. Generally, it could be argued that the conceptualization of sustainable development in Ukraine is based on its definition by the United Nations, with additions and amendments by local researchers.

Below are examples of contents of different fundamental components:

Economic: economic development, growth, prosperity, wealth, living standards, empowerment, meeting basic needs;

Social: equity, social equity, intergenerational equity, society development, diversity, pluralism;

Environmental: environmental awareness, eco-quality and support, resource replacement, smart use of natural resources, minimizing waste, earth capacity, conservation.

Interestingly, researchers who use some elements of the managerial tool of balance as a base of sustainable development have suggested a new concept - sustainomics. Munasinghe (2001) proposed the term "sustainomics" to describe "a transdisciplinary, integrative, balanced, heuristic and practical meta-framework for making development more sustainable. …Sustainomics projects a more neutral image which focuses attention explicitly on sustainable development, and avoids the implication of any disciplinary bias or hegemony. … The approach should lead to the balanced and consistent treatment of the economic, social and environmental dimensions of sustainable development (as well as other relevant disciplines and paradigms)" [5]. The work of Daly [6], [7], Newman [8], Dale [9], Paehlke, R. [10], Hart[11], Hoff [12], Toman [13], and Rees [14], also reflects this interdisciplinary approach.

As a continuation of sustainomics, some scholars have given attention in recent research to educational issues. United Nations publications, such as their Decade of Education for Sustainable Development (DESD), 2005–2014, highlight the goal of "emphasizing that education is an indispensable element in achieving sustainable development" [15]. Among the main tasks outlined by the DESD is to: "Give an enhanced profile to the central role of education and learning in the common pursuit of sustainable development."

Currently, notions of sustainability gravitate to more holistic and system approaches. In some sense, the evolution of sustainability is similar to the conceptualization of the management as a science at the beginning of the 20th century. When different functional managerial zones were united under a general management frame, it was possible to see the total effectiveness and necessity of the system developed. Similarly, the effectiveness of the sustainability movement will be more clearly seen and better recognized when people realize the necessity of a joint system characterized by the cooperation and balance between previously separately existing components. Meadows (1992) expressed the criticality of this sort of cooperation to successful sustainable development: "The scarcest resource is not oil, metals, clean air, capital, labor, or technology. It is our willingness to listen to each other and learn from each other and to seek the truth rather than seek to be right" [16].

Along with this, it is important to understand the differences of the perceptions of sustainability in the different countries. In developed countries, the economic and social components and general managerial approaches are at higher level than in lesser developed countries, and there is also more focus on the environmental component. The question here is whether the other countries will be able to incorporate the sustainable development as an integrated managerial system. The United Nations promotes combining and overlapping traditional and sustainable development principles in its reports, "What is Sustainable Development?" [17]. Munasinghe stresses the necessity of balancing the relative emphasis placed on traditional development versus sustainability, noting that sustainability is not purely environmental, especially for less-developed states: "much of the mainstream literature on sustainable development which originates in the North tends to focus on environmental sustainability, whereas the need for continuing development, growth, equity and poverty alleviation are a priority for the South" [18]. This serves as a reminder that existing efforts towards balance and proper management in traditional development also represent the movement towards sustainable development. Traditional development that incorporates high qualities of balance should also be considered sustainable development. Even in very poor countries, all elements should be considered simultaneously, despite economic realities that often result in different degrees of attention. The United Nations promotes the idea that traditional development is a starting point: "Sustainable development is incremental and builds on what already exists1, and its achievement is as much a process as a fixed goal. Sustainable development is not an activity that has to be left to the long term. Rather, it constitutes a set of short, medium and long term actions, activities and practices that aim to deal with immediate concerns while at the same time address long-term issues" [17].

Despite the prolific amount of recent literature on the topic, managerial issues related to moving towards sustainable development are often removed from a systematic and complex reflection of emerging needs, and economic component is often shown as only a damaging environment. This research study aimed to better understand the managerial and economic components of sustainable development.

First, the authors examined the structure of and possible interdependencies among elements of the sustainable development process. The results and conclusions of the analysis were based on 58 general and community-focused definitions of sustainable development plus seven definitions drawn from a business and production perspective. Secondly, public management and community functions, indicators, and managerial methods associated with successful local sustainability in each city were identified and documented. The research tasks for achieving this goal included the following:

- Analyze perceptions and activities of sustainability held by government and community actors, thus identifying the component local structure of sustainability.
- Structure sustainability by the stakeholders.
- Identify barriers to sustainable development.
- Develop and compare empirical managerial sustainability models for each analyzed city.

The study included both theoretical and field work. Field work was comprised of the comparative case studies of approaches to sustainability. Case studies were based on initial and follow-up interviews as well as on information from primary sources such as strategic planning documents, newspaper files, and relevant statistical information. Thirty-four initial face-to-face interviews were conducted in 2002, including twenty-five interviews in Athens (twelve with governmental and thirteen with non-governmental representatives) and nine interviews in Uzhhorod (six with governmental and three with non-governmental representatives; the latter three were not taken into account because of the insignificance of

[1] *Italics* added for emphasis by the authors.

the non-governmental sector in sustainable development issues at that time). Fewer respondents were interviewed in Uzhhorod in 2002 because at that time, the city's Mayor had only a small number of staff with job responsibilities related to sustainable development and very few community organizations were involved in cooperative efforts with the city government to address sustainable development issues. Four years later, in 2006, twenty-eight face-to-face follow-up interviews were conducted. In Athens, seven governmental stakeholders and six non-governmental stakeholders were interviewed, for a total of thirteen interviews. Fifteen stakeholders in Uzhhorod participated in the second interviews, including eight governmental and seven non-governmental representatives.

As a separate part of the research, the strategic model of sustainable territorial economic structure by the defined criteria is suggested.

# 1 Field investigations: A Comparative Analysis of Uzhhorod, Ukraine, and Athens, Georgia, United States

## 1.1 Stakeholders of sustainable development

The general rosters of the main actors in each city were compiled by working with survey respondents to revise the lists and tasks of local government departments and community organizations involved in sustainable development. As seen in Table 1 in the Appendix, governmental and community representatives in Athens and Uzhhorod are very different in 2006 than in 2002. Each city has a very distinctive set of local government departments; it is notable that the only major similarities are the roles of the mayor and commissioners. Secondly, the purposes of governmental departments are fairly different.

Athens-Clarke County's only change in the structure related to sustainable development activities between 2002 and 2006 was transitioning the Economic Development Department over to the Economic Development Foundation, a quasigovernmental organization. The Economic Development Foundation is a partnership between Athens-Clarke County Government, the University of Georgia, the Athens Area Chamber of Commerce and the Economic Development Authority.

The 2006 survey in Uzhhorod showed critical changes in the local government's approach to sustainable development. The newly elected mayor and council members implemented beneficial local government restructuring. In late spring 2006, the city established two new departments directly dealing with sustainable development, the Department on Sustainable Development and Use of Natural Resources and the Department of Municipal Innovations and Energy Use, and restructured the existing Department of Investment, External Economic Policy and Tourism.

Organizational distinctions in Athens and Uzhhorod were also noted in regard to non-governmental organizations involved in sustainable development. In Athens, there are a very wide range of different organizations, with the University of Georgia playing a leading role. In Uzhhorod none of the governmental respondents in Uzhhorod mentioned even one university-based department or group involved in sustainable development, although many university-based employees work on the discussed issues. However, some groups in the city do not connect to local government, work more independently or, even more notably, are in opposition to government, and could have been intentionally excluded from a list by the public officials who were interviewed.

The picture of involvement by different stakeholders in sustainable development in Athens and Uzhhorod is as follows. In 2002 in Athens, the main actors in sustainable development were perceived by public officials as including the following: local government (83.3%), University of Georgia (50.0%), Athens Area Chamber of Commerce (50.0%), real

estate agents and board, property owners, homebuilders, developers (33.3%) and citizens (activists), community residents, and youth (33.3%). The community respondents in the 2006 survey mostly kept the same distribution of the roles, but paid more attention to local government (84.6%), real estate agents and board, property owners, homebuilders, developers (53.9%) and citizens (activists), community residents, youth (53.9%) and business groups, associations, and owners (38.5%). The dynamics of the processes did not result in many changes to the stakeholders' distribution (with the exception of the University). The changes were indicated, but pretty dispersed, so they did not influence the 2002 picture. The University of Georgia was named by many people (both university and non-university employees) as one of most important stakeholders in sustainable development activities in Athens. Some non-university respondents answering a question about the University indicated that they believed it should be ranked number one for the role it plays in sustainable development.

Uzhhorod respondents to the 2002 survey held a narrow view of sustainable development stakeholders. As in Athens, the most important actor was deemed to be local government, with government departments listed 8 times selectively by 6 respondents, followed by business groups, associations, and owners, which were listed 6 times. With the exception of the Tax Administration (1 of 6 respondent's voices) and Oblast Government and Agencies (1 of 6 respondent's voices), none of the other stakeholders were mentioned. The situation had changed by 2006 in terms of distribution; local government received the same amount of attention, the role of the Oblast Administration increased slightly, and there was a significant increase for the Tax Administration. The private sector was divided between businesses and banking establishments. The community respondents were not very focused in terms of defining sustainable development stakeholders, failing to provide a significant response of more than 30% to any stakeholder groups.

### 1.2 Sustainable development activities and necessary preconditions for their performance

Continuing the developed chain of sustainable development processes, it is useful to analyze and understand the relations to and opinions of respondents regarding the necessary preconditions for performing sustainable development activities. Survey questions were crafted by using internal and external motives and conditions for successful sustainable activities and discussing the initial list with survey respondents.

The responses of government officials in Athens share some commonalities with responses from the community; almost the same high significance was given to the climate of trust, sufficient funding for the projects, an awareness that your work makes your city a better place to live, and sufficient power delegated from higher levels. Responses from governmental officials showed low significance for preconditions such as salary, enjoyable work, and a climate of tolerance. Community responses were very similar, except that a climate of tolerance was indicated as an important precondition for sustainable development. 2006 interviewees mostly agreed with the 2002 survey results with slightly more significance given to administrative help and enjoyable work.

Governmental interviewee responses to the 2002 survey in Uzhhorod ranked salary as the most important precondition for sustainable development, followed by the awareness that your work makes your city a better place to live, sufficient funding for the projects, enjoyable work, and respect from colleagues and citizens. Less significance was given to proper administrative climate, a climate of trust, sufficient power delegated from higher levels, and a climate of tolerance. Contacts with colleagues on interesting and useful issues and administrative help were not ranked as significant preconditions. The 2006 survey

demonstrated a lot of changes had occurred in Uzhhorod perceptions of important preconditions. Awareness that your work makes your city a better place to live, sufficient funding for the projects, and providing a real implementation of the Law of Ukraine "Local Governance" became priorities as necessary preconditions for sustainable development. Sufficient power delegated from higher levels was also mentioned, but with less significance. Community respondents in Uzhhorod agreed with governmental officials in their perception of the four most significant preconditions for sustainable development.

To analyze the kinds of sustainable development activities within each city, the study used two groups of questions. One set addressed the involvement of local government departments and NGOs in sustainable developments activities, and the second group of questions concerned the projects related to sustainable development undertaken by these stakeholders. The eight of twelve Athens local government departments in 2002 worked to provide an attractive climate for economic development and to make Athens-Clarke County more attractive; seven departments played a role in developing distressed parts of the community and coordinating economic development with environmental preservation; six departments participated in writing a sustainable development plan, improving social development, and fostering a safe climate in community; and five were involved with developing sustainable indicators for the community.

The involvement of community organizations in Athens addresses most of the same issues, but community respondents interviewed also added the following activities to describe their sustainable developments efforts:

- Organizational efforts: developing relationships and partnerships within the community,

facilitating a participatory decision-making process, and lobbying for proper zoning;

- Educational efforts: providing education on balanced growth, helping community leaders to improve economic competitiveness and public education;
- Implementation and assistance: assisting with matching resources in the community, assisting with county/ local business development and retention, contributing to the quality of life in Athens, writing and administering grants, and parking management.

In 2006, both governmental and community interviewees in Athens made special mention of efforts to help develop distressed parts of the community by means of poverty initiatives within the community and participating in writing a sustainable development plan. Survey respondents also highlighted redevelopment and training for the labor pool. One of the key stakeholders mentioned that more attention is now paid to explaining the local government's role in sustainable development to citizens.

The Uzhhorod, the 2002 survey data demonstrated a similar distribution of attention to the kinds of sustainable development activities to those in Athens. Of six local government departments, four worked on helping in developing distressed parts of the community and making the community more attractive; three city departments participated in writing a sustainable development plan and providing an attractive climate for economic development; and activities such as coordinating economic development with environmental preservation, improving social development in the community, and providing a safe climate in Uzhhorod, each involved only one department. Governmental respondents in 2002 didn't indicate that any of the city departments were officially responsible for working on special sustainable development indicators. As noted previously, two new city departments were established after 2002 that now play a crucial role in sustainable development activities, the Department on Sustainable Development and Use of Natural Resources and the Department of Municipal Innovations and Energy Use. These departments are responsible for the efficient use of natural resources and energy, a very tangible issue of sustainability, given the current complexities of Ukrainian-Russian political relations.

Another method of analyzing sustainable development activities is to look at the projects conducted by respondents, represented in Models 2 and 3. In Uzhhorod, the conservation of energy resources is a central focus, with projects including resource conservation, separating garbage collection from solid waste recycling, water use and delivery, and providing social housing. Respondents also prioritized projects related to planning, patriotism, and health education. In Athens, interviewees mentioned water quality projects, poverty initiatives, sidewalk improvement, and restricting sprawl. In both cities, projects tend to reflect an incremental approach to problem solving. Although some projects in both cities may initially seem to have similar goals, the tasks involved in the projects are often very different. These results don't address the full scope of all the projects conducted in each city, but they do suggest some of the activities which are perceived to be priorities by the stakeholders interviewed.

### 1.3 Barriers to sustainable development

Sustainable development activities can reach the level of achievement and sophistication as a result of knowledge, open possibilities, and the absence of serious barriers. In this regard, it is important to investigate the respondents' perceptions of the barriers to sustainable development in their community.

In the 2002 survey, Athens local government respondents were not in uniform agreement as to sustainable development barriers. Only three answers were significant, including availability of labor (41.7%), lack of financial capital (41.7%), and skill level of labor (33.3%). In contrast, Athens community respondents were very active in discussing barriers to sustainable development during interviews. The most frequently cited barriers were the perceived lack of knowledge about sustainable development (69.2%) and the lack of local government experience in promoting sustainable development (61.5%). Other barriers included the skill level of labor, the lack of coordination with local organizations and businesses, the lack of networking in community, and the lack of citizen/neighborhood support, which were all noted by 38.5% of interviewees. Other significant perceived barriers discussed by 30.8% of respondents were the availability of labor, competition from nearby communities, lack of support from higher levels of government, and the low educational level of the community.

These results indicate that both community and governmental stakeholders agree in their perception that the availability and skill level of labor is a significant barrier to sustainable development in Athens. Community stakeholders seem to perceive a wider variety of significant barriers. However, the 2006 survey data indicates that government respondents now perceive more of the barriers mentioned by community respondents in 2002, such as the lack of knowledge about sustainable development and the lack of local government experience in promoting sustainable development as well as the cost of land, skill level of labor, the lack of networking, and the low educational level of community. Interestingly, governmental respondents cited the lack of financial capital as a significant barrier to sustainable development in both 2002 and in 2006, while it did not register as a significant barrier to community respondents in either survey. Leadership emerged in the 2006 survey data as a new barrier perceived as significant by respondents in Athens.

The Uzhhorod survey data indicated that 66.7% of respondents identified the lack of financial capital and lack of high-tech equipment as significant barriers to sustainable development. Other significant barriers included the lack of knowledge about sustainable development, high taxes, lack of networking in community, and the declining market due to the decrease in income, all noted by 33.3% of respondents. The data showed some shift in barriers perceived by governmental respondents, who noted the lack of available land, skill

level of labor, and lack of high-tech equipment as significant. They also cited the lack of local government experience in promoting sustainable development, lack of financial capital, and lack of networking in the community. Barriers of lower significance included lack of coordination with local organizations and businesses, lack of knowledge about sustainable development, the low level of organizational culture in the community, and lack of support from higher levels of government. Community respondents agreed with many of the barriers mentioned by governmental representatives, emphasizing the skill level of labor, lack of financial capital, lack of high-tech equipment, and lack of local government experience in promoting sustainable development as major barriers.

In comparing Athens and Uzhhorod, it is interesting to look at the commonalities in perceptions of barriers. In the 2002 survey, common barriers included the lack of financial capital, lack of knowledge about sustainable development, and lack of networking in community. The similarities shifted in 2006, with common perceived barriers being the skill level of labor, lack of financial capital, lack of local government experience in promoting sustainable development, lack of knowledge about sustainable development in general, and lack of networking in the community. Thus, common challenges for both communities are linked to education, organizational capability such as organizing networks and partnerships, and the availability of financial support.

## 2 Structural tendencies of regional economic development in Zakarpattia

Economy of Zakarpattia traditionally is percept as the agrarian one, even in the best periods of the Soviet era the agricultural production and the contiguous industries prevailed in its structure. The last decade changed the character of the regional economy. The new kinds of activities appeared, some of them have the innovative focus. In general, the regional economic structure became more diversified, that, at the certain conditions, should mean – more sustainable.

For the purpose of this analysis the distribution of the economic activities based on two criteria (indices of growth and the share of the industry in total industrial production during the period 2001-2007) was done (table 2.1 - 2.3).

In the table 2.1 we can clearly see the absolute leaders of regional economy, which are located in the quadrant „2-2**”** and have the highest indices of growth, as well as the shares in the total production. Basing on the analysis of the period 2001-2007 the following industries are included in there: transport equipment, electric and electronic equipment, food industry, chemical manufacturing. In 2007 this quadrant included food industry, chemical manufacturing, electric and electronic equipment and transport equipment. The results received very clearly show on the champion stability of the listed kinds of activity. But more detailed analysis showed the changes which happened with chemical manufacturing. Its calculated index decreased from 1.41 (average indicator for 2001-2007) to 1.08, as well as the share in the total industrial production – respectively from 3.8 до 2.5.

**Table 2.1 Matrix of the industrial structure of Zakarpattia by the criteria of indices of growth and the share of the industry in total industrial production (2001-2007)**

| | | |
|---|---|---|
| *High* ↑ **(I)** Indices of the industrial growth, | **2-2**<br><br>Transport equipment **(I= 1.64, S=22.16 )**<br>Electric and electronic equipment **(I= 1.47, S=7.27)**<br>Food industry **(I= 1.15, S=17.1)**<br>Chemical manufacturing **(I= 1.41, S=3.8)** | **2-1**<br><br>Machine and equipment **(I=1.21, S=1.83)**<br>Metallurgy and metal processing **(I=1.17, S=0.94)**<br>Rubber and plastic goods production **(I=1.14, S=0.56)** |

| | | |
|---|---|---|
| **2001 – 2007** | **1-2**<br><br>Wood and wooden goods **(I= 1.12, S=9. 9)**<br>Textile and garment **(I= 1.06, S=6.21)**<br>Electricity, gas and water production and distribution **(I= 1. 06, S=14. 8)** | **1-1**<br><br>Leather and leather shoes **(I= 1.08, S=0.93)**<br>Cellulose and paper manufacturing, publishing production **(I=1.00, S=1.04)**<br>Other non-metal mineral production **(I=1.13, S=1.83)**<br>Extractive industry **(I=1.04, S=1.49)** |
| *Low* | *High* ⟶ *Low*<br>**(S)** Share of the industry in total industrial production**, %, 2001-2007** | |

To analyze its level of sustainability it is necessary to carry out the deeper analysis by such criteria as, for example, dependency on tolling resources, type of ownership, general competitiveness, and export. The changes matter also for wood industry, although its index of growth remains almost at the average level of the period 2001-2007, but the share in the total production essentially decreased from 9.9 to 4.6 in 2007. Still this industry was included in the leading quadrant on the proportional base of the indices.

Quadrant **„1-2"** covers the kinds of activities, which have the relatively high share in the structure of total production, but low indices of growth. In average during the period 2001-2007 wood industry, textile and garment, and electricity, gas and water production and distribution are included in this group.

Quadrant **„2-1"** involves the growing industries, but with low shares in total industrial production. But as we can see in 2007 for the analyzed industries it was not possible to keep the high level of growth, they even demonstrate a decline, with exception to rubber and plastic goods manufacturing, which had a little growth each analyzed year.

The group of industries in quadrant **„1-1"** has, in general, low rates by both parameters, although production of leather and leather shoes, and other non-metal mineral production showed some growth during last time, and during some years – even significant growth. For example, other non-metal mineral production increased in average 116-117% each year, and leather and leather shoes manufacturing – respectively 123-111%, but their volumes and, as a result, shares in total production remain comparatively very small. Strategic value of such kinds of activity could be considered only in a case of possibility their quick growth.

The summarized changes are shown in the table 2.3. The research revealed, that during the period 2001-2007 in average and in 2007 the leaders of the regional industrial production by the criteria of indices of growth and the share of the industry in total industrial production were transport equipment manufacturing (respectively I= 1.64; 1.41; S=22.16; 41.9), electric and electronic equipment (I= 1.47;1.32, S=7.27;9.3), and food industry (I= 1.15;1.1, S=17.1;14.0).

As it is seen from the comparative results, the indices of these kinds of activities decreased a little bit, but the shares of the first two industries permanently grew. Along with this, it is worth to indicate that both kinds of activity are represented by monopolistic or oligopolistic structures, that is, to the certain extent, dangerous in the crisis situations. The food industry is quite diversified, more over; it is percept as an activity with focus on many basic needs, that's why in the crisis conditions this industry could look more sustainable at other equal preconditions.

Analyzing the research results, it appeared obvious to pay more attention to wood and wood processing industry (2007: I= 1.11, S=4.6, 2001-2007 (I= 1.12, S=9. 9)), which by the results of 2001-2007 was in the quadrant 1-2, and in 2007 was shifted to quadrant 2-2.

**Table 2.2 Matrix of the industrial structure of Zakarpattia by the criteria of indices of growth and the share of the industry in total industrial production (2007)**

| | | |
|---|---|---|
| *High* ↑<br><br>**(I)** Indices of the industrial growth, **2007** | **2-2**<br><br>Transport equipment **(I= 1.41, S=41. 9 )**<br>Electric and electronic equipment **(I= 1.32, S=9.3)**<br>Food industry **(I= 1.1, S=14.0)**<br>Wood and wooden goods **(I= 1.11, S=4.6)** | **2-1**<br><br>Leather and leather shoes **(I= 1.11, S=0.60)**<br>Rubber and plastic goods production **(I=1.20, S=0.50)**<br>Other non-metal mineral production **(I=1.17, S=1.40)** |
| | **1-2**<br><br>Chemical manufacturing **(I= 1.08, S=2.5)**<br>Electricity, gas and water production and distribution **(I= 1. 04, S=11.0)**<br>Textile and garment **(I= 0.94, S=4.10)** | **1-1**<br><br>Machine and equipment **(I=1.06, S=1.60)**<br>Cellulose and paper manufacturing, publishing production **(I=0.96, S=0.60)**<br>Extractive industry **(I=0.87, S=0.90)**<br>Metallurgy and metal processing **(I=0.98, S=0.60)** |
| *Low* | *High* → *Low*<br>**(S)** Share of the industry in total industrial production**, %, 2007** | |

It could be easily found, that its index of growth remain on the same level as during the period 2001-2007, and its share of regional industrial production declined almost twice. That happened because of appearing in the structure new significant shares, in this case - transport equipment. The new institutional perfections and additions, as well as diversification of the ownership property should be done in this industry for improving its factors of independence and economic safety.

**Table 2.3. Comparative results of analysis of the industrial sustainability of Zakarpattia in 2007 and 2001-2007**

| Groups | Industries | |
|---|---|---|
| | **2007** | **2007-2001** |
| **1-1** | Machine and equipment (I=1.06, S=1.60)<br>**Cellulose and paper manufacturing, publishing production (I=0.96, S=0.60)**<br>Metallurgy and metal processing (I=0.98, S=0.60)<br>**Extractive industry (I=0.87, S=0.90)** | Leather and leather shoes (I= 1.08, S=0.93)<br>**Cellulose and paper manufacturing, publishing production (I=1.00, S=1.04)**<br>Other non-metal mineral production (I=1.13, S=1.83)<br>**Extractive industry (I=1.04, S=1.49)** |
| **1-2** | Chemical manufacturing (I= 1.08, S=2.5)<br>**Electricity, gas and water production and distribution (I= 1. 04, S=11.0)**<br>**Textile and garment (I= 0.94, S=4.10)** | Wood and wooden goods (I= 1.12, S=9. 9)<br>**Electricity, gas and water production and distribution (I= 1. 06, S=14. 8)**<br>**Textile and garment (I= 1.06, S=6.21)** |
| **2-1** | Leather and leather shoes (I= 1.11, S=0.60)<br>**Rubber and plastic goods (I=1.20, S=0.50)**<br>Other non-metal mineral production (I=1.17, S=1.40) | Machine and equipment (I=1.21, S=1.83)<br>Metallurgy and metal processing (I=1.17, S=0.94)<br>**Rubber and plastic goods (I=1.14, S=0.56)** |
| **2-2** | **Transport equipment (I= 1.41, S=41. 9 )**<br>**Electric and electronic equipment (I= 1.32, S=9.3)**<br>**Food industry (I= 1.1, S=14.0)**<br>Wood and wooden goods (I= 1.11, S=4.6) | **Transport equipment (I= 1.64, S=22.16 )**<br>**Electric and electronic equipment (I= 1.47, S=7.27)**<br>**Food industry (I= 1.15, S=17.1)**<br>Chemical manufacturing (I= 1.41, S=3.8) |

Quadrant 1-2 in comparison to quadrant 2-2 is also characterized by the large shares in the regional industrial production, but much lower indices of growth. As it was revealed by the research results, the stable "residents" in this group are the electricity, gas and water production and

distribution(2007: I= 1. 04, S=11.0, 2001-2007: I= 1. 06, S=14. 8) and textile and garment manufacturing (2007: I= 0.94, S=4.10, 2001-2007: I= 1.06, S=6.21). It should be noted here, that along with indices of growth during 2001-2004 the textile and garment manufacturing showed the decrease in volumes in 2005, 2006 та 2007. In 2007 in this sector the chemical manufacturing appeared (I= 1.08, S=2.5), despite the fact that during 2001-2007 it was located in the quadrant 2-2. Its indicators grew, but with much lower paces in comparison to the leading kinds of activities, that's why it was shifted to the quadrant 1-2.

Quadrant 2-1 reflects the kinds of activities, which at the certain investments could generate more value added, as during the analyzed period they showed growth, although still have very little shares in the total industrial structure. The stable location in this sector was featured for rubber and plastic goods (2007: I=1.20, S=0.50, 2001-2007: I=1.14, S=0.56). Little, but more or less stable growth during last years was demonstrated by machine and equipment (2001-2007: I=1.21, S=1.83), other non-metal mineral production (2007: I=1.17, S=1.40), leather and leather shoes (2007: I= 1.11, S=0.60). It should be remarked here, that in 2007 the machine and equipment manufacturing was shifted to the quadrant 1-1, because of the structural changes in the regional industrial production in general.

Quadrant 1-1 shows on so called the outsiders in the regional economy: during the last years they had significant decrease of their volumes of production, and so – a reduce of share in the total industrial production. The typical representative of these group were cellulose and paper manufacturing, publishing production and extractive industry, which during the last years of 2001-2007 period, and also in 2007 demonstrated the declining tendencies in their production.

Using the same principles it was done an analysis for a regional economy in a whole (table 2 of Appendix).

As we can see from the table, the processing industry is located in the leading quadrant 2-2 by two criteria – the pace of growth and the share in the regional value added. Its weak feature is efficiency, in the analyzed case that is supported by the results of analysis of return on the resources used. That means that further investments are needed in technologies, organization of manufacturing and labour, and using a benchmarking for the industrial best practices implementations, especially this is true in regard to the energy use efficiency. For this type of activity very important factor is a level of international integration. The processing industry has the high level of export-import operations. Many types of activities use the tolling resources and are very dependent on the partners in terms of penetration of the international markets. That shows on the vulnerability of this type of economic activity. Good strategy for its support and development could be well done balance between internal and external markets, enhancing the competitiveness of the industrial production.

The second sector located in the leading quadrant 2-2 is commerce, trade of transport vehicles, repair, because of its high rates of growth and the shares in the regional value added. Such criteria as FDI and efficiency although are not as high to be in the leading quadrant, but are placed in the sector 1-2, which demonstrates the certain stability in regard to the regional indicators. For this activity the level of sustainability is so far sufficient. The further strategy should be on keeping the position obtained using more market and customer oriented tools, for example, introducing more requirements on quality and satisfaction of consumers. In addition, this sector is more locally focused, with higher share of local properties, that means is more reliable in the conditions of economic cycles instability.

Agriculture is also a type of activity which has a high share in the regional value added. During the previous period this parcel was even higher – about 35%. In principles, its pace decrease demonstrates the general world tendencies. The strategy recommended for this sector could be the efforts on significant increase of efficiency, including the involvement of investments for enhancing its technological level.

Transport and communications is the fourth kind of activity that forms the prioritized activities in the regional economic strategies. Its position clearly shows on high shares in the regional value

added keeping the stable efficiency indicators. Also it demonstrates the good indicators of investment process. The rest of regional economic activities have the rest of 20% of the regional value added.

## Conclusions and policy recommendations

The theoretical research completed for this study clearly illustrates the componential diversity of notions of sustainability. In addition to this, our analysis also points to commonalities leading to a better appreciation of the managerial component of sustainable development.

In this study, our initial hypothesis regarding the necessity of a managerial component to serve as a unifying tool for all other components within the model of sustainability was theoretically generalized and supported by our findings. The initial structured questions, followed by open-ended questions, during the interviews allowed us to develop empirical organizational models for two cities used as a research comparative sample (Models 2 and 3, Appendix).

In examining the Athens and Uzhhorod models, strategic thinking is common ground in terms of values for both sustainable governance and development and is a unifying concept for local government and community respondents. This suggests the importance of increasing the understanding and applicability of strategic thinking into the education process at all levels and enhancing the quality of strategic processes for sustainable development in local government using participatory methods aimed at cohesiveness.

Our analysis of the perceptions of stakeholders in both cities reflects both community and local economic development, equity through responsiveness to citizen needs plus preserving diversity, and preserving the environment. Unifying concerns for Athens local government and community respondents were preserving the environment, providing balance between development and the environment, and developing new leadership. Stakeholders in Uzhhorod perceived efficiency and local self-reliance as highly significant. The differences in the concerns of stakeholders in each city will likely lead to the differences in the direction and development of future sustainable development activities.

In Athens, we can predict increased attention to environmental issues as well as to developing organizational and leadership support programs. Efforts in Uzhhorod will likely focus on projects such as changing equipment to increase energy efficiency.

Supporting a sustainomics approach to sustainable development, our results may suggest that strong university involvement in the community's sustainable activities paired with a diverse variety of stakeholders may lead to better results, a higher quality of decision-making process, and a more sophisticated community movement towards sustainable development.

Preconditions and activities are both affected by barriers for promoting sustainable development. Both cities noted skill level of labor, lack of knowledge and experience of sustainable development, lack of networking in community as significant barriers. These barriers are rooted in education and suggest the importance of working to incorporate principles of sustainable development into public education and college and university curriculums, especially into public administration courses.

The models reflect that many more changes took place in Uzhhorod than in Athens, although Athens had a higher pre-existing starting point and level of development at the beginning of the study. With the rapid pace of changes in Uzhhorod, the challenge will be maintaining and possibly increasing the pace in the future, and the cohesiveness that citizens and institutions will be able to achieve in enhancing and utilizing the city's/ region's organizational capabilities.

Summarizing the results on industrial and regional economy structure shown above, it could be seen that research done is effective in developing the frame for making the strategic decision on

defining the structure of regional and industrial production to be responsive to the economic long-term sustainability and reduce of vulnerability. Among necessary criteria to be taken into account in analysis of long-term economic sustainability are growth pace, share in regional economy, FDI, efficiency. The analysis defined the leading sectors in the regional economic structure by the listed criteria. They are processing industry, whole trade and sales, transport vehicles trade, repair, transport and communications, agriculture (which altogether produce about 80% of the regional value added), production and distribution of electricity, gas and water, and among the public sector - public administration, public health and social security, and education.

The processing industry, although doesn't possess the most significant share in the regional economy, has the leading position among the priorities by the analyzed criteria. The good strategy for its support and development could be well done balance between internal and external markets, enhancing the competitiveness of the industrial production through the further investments in technologies, organization of manufacturing and labour.

The second sector located in the leading quadrant 2-2 is whole trade and sales, trade of transport vehicles, repair. For this activity the level of sustainability is so far sufficient. The further strategy should be on keeping the position obtained using more market and customer oriented tools, for example, introducing more requirements on quality and satisfaction of consumers. In addition, this sector is more locally focused, with higher share of local properties, that means is more reliable in the conditions of economic cycles instability.

Agriculture is a type of activity which has a high share in the regional value added. The strategy recommended for this sector could be the efforts on significant increase of efficiency, including the involvement of investments for enhancing its technological level.

Transport and communications is the fourth kind of activity that forms the prioritized activities in the regional economic strategies. Its position clearly shows on high shares in the regional value added keeping the stable efficiency indicators. Also it demonstrates the good indicators of investment process. The other regional economic activities have the rest of 20% of the regional value added.

Finally, the following policy recommendations could be made based on the research results:

- Enhance the quality of SD strategic processes (knowledge, planning, developing indicators);
- Promote new leadership for SD programs using participatory and other practices that promote cohesiveness;
- Increase understanding and applicability of SD concepts into the educational process at all levels; introduce system understanding of SD, especially in public administration programs;
- Enhance the role of universities in SD processes,
- Percept the new format for planning sustainable strategic priorities for economic development.

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# Appendix

**Table 1: Local Government Departments and NGOs involved in sustainable development activities**

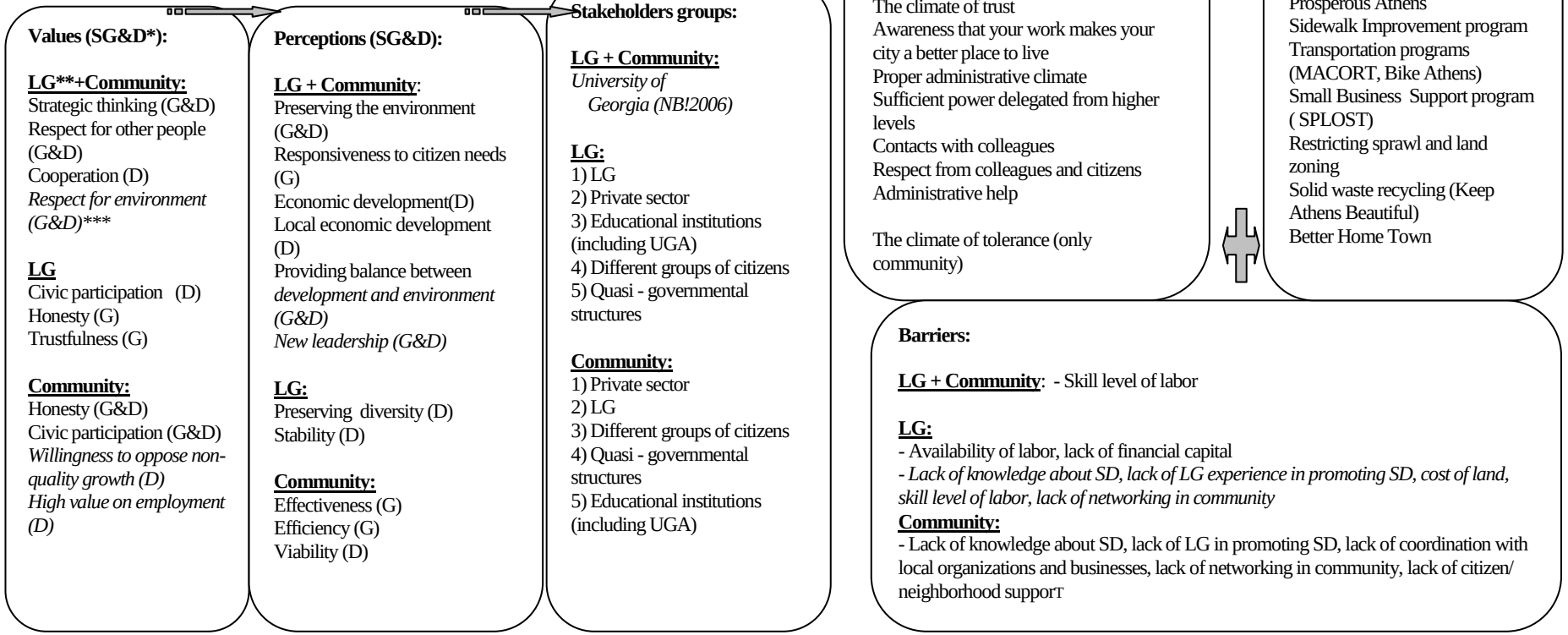
| Athens: | | Uzhhorod: | |
|---|---|---|---|
| 2002 | 2006: (only changes) | 2002 | 2006: (only changes) |
| Local Government Departments | | Local Government Departments | |
| - Mayors and Commissioners<br>- Office of City Manager<br>- Department of Economic Development<br>- Leisure Services Department<br>- Central Services<br>- Human and Economic Development<br>- Planning Department<br>- Public Utilities<br>- Athens Transit<br>- Transportation and Public Works | - Economic Development Foundation instead of Department of Economic Development (quasi-governmental)<br><br>- Police Department<br>- Fire Department<br>- Solid Waste Department<br><br>- Auditor's Office and Personnel Department were not considered related enough | - Mayors and Commissioners<br>- Department of Internal Policy<br>- Department of Economic and Entrepreneurial Development<br>- Department of Industries, Transport and Communications<br>- Department of Housing and Public Works<br>- Department of Architecture and City Planning | - Department on Sustainable Development and Use of Natural Resources<br>- Department of Municipal Innovations and Energy Use<br>- Department of Investment, External Economic Policy and Tourism |

| | | | |
|---|---|---|---|
| | to SD | | - Labor Administration and Social Insurance<br>- Department of Education<br>- Department of Cultural Activities |
| Non-Governmental Organizations | | Non-Governmental Organizations | |
| - UGA: Public Service and Outreach<br>- UGA: Office for Economic Development Assistance<br>- UGA: Community and Area Development, Institute of Government<br>- UGA: Small Business Development Center<br>- Economic Development Authority<br>- Athens (Georgia ) Convention and Visitors Bureau<br>- East Athens Development Corporation<br>- Northeast Georgia Regional Development Center<br>- Athens Downtown Development Authority<br>- Athens Area Chamber of Commerce<br>- Athens GrowGreen Coalition<br>- Friends of Five Points<br>- Classic Center Authority | - Alliance for Quality Growth<br>- Bike Athens<br>- Keep Athens Green<br>- Geographic Group*<br>- River Basin Center<br>- City Creeks<br>- Upper Oconee Watershed Network<br>- Athens Land Trust<br>- Oconee River Land Trust<br>- Federation of Neighborhood Associations<br>- Hancock Corridor Development Corporation<br>- Boulevard Association<br>- Housing Authority<br>- Public Facility Authority<br>- Fanning Institute, UGA**<br>Georgia Bioscience Development Authority | - Ecosphere<br>- Uzhhorod-21 century<br>- Zakarpattia Regional Branch of Association of Cities of Ukraine | - Agency for Regional Development<br>- Association for Small and Medium Business Development<br>- Laboratory for Ecological Issues and Radiation Safety in Carpathian Region<br>- Center for Ukrainian – Hungarian Regional Development |

* The Mayor mentioned about 14 environmental organizations in Athens

** The Fanning Institute was created from the former Office for Economic Development Assistance and Community and Area Development (both at UGA)

**Model 1: Athens-Clarke County: Dynamics of sustainable development managerial model (selective components of 2002/2006 empirical data)**

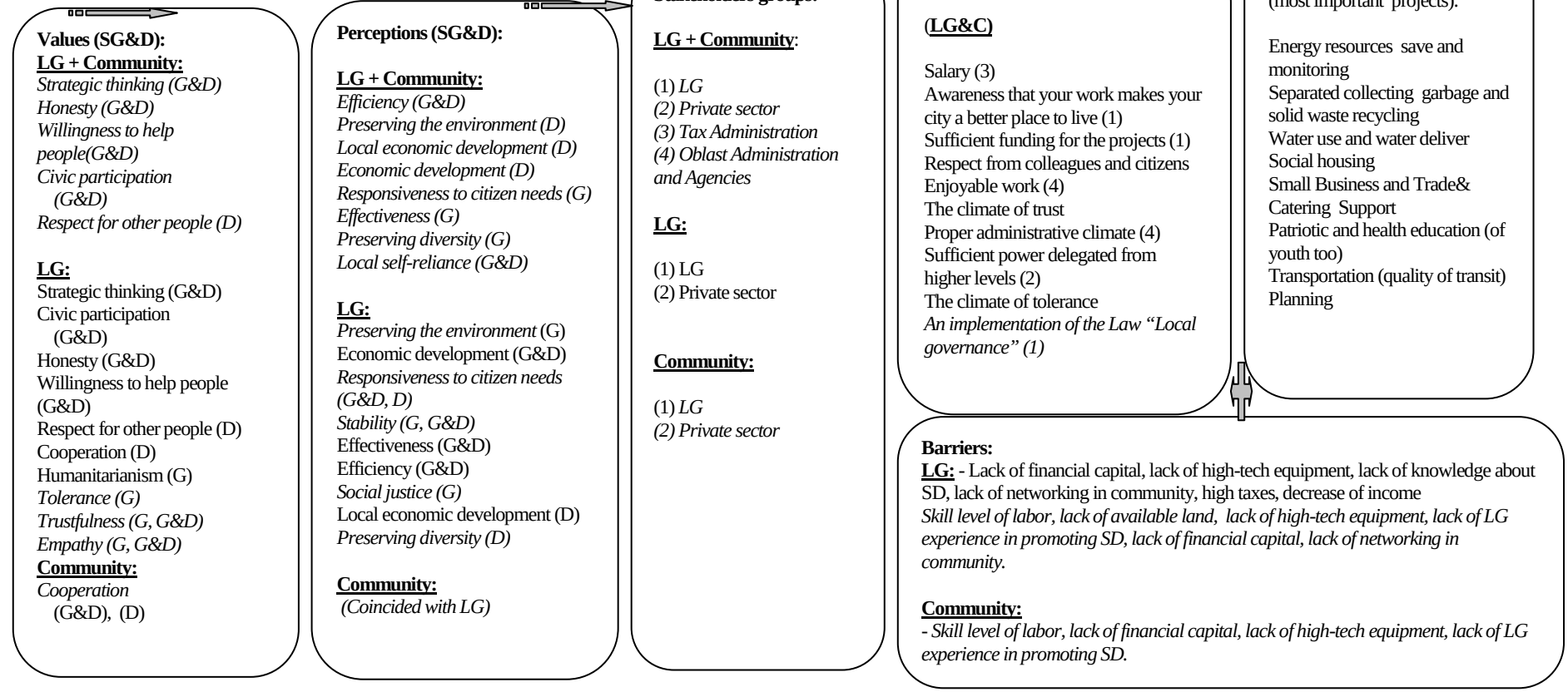



* - G&D: sustainable governance and development

**- LG: local government

***-Information in italics represents a change from the 2002 to 2006 survey.

**Model 2: Uzhhorod: Dynamics of sustainable development managerial model (selective components of 2002/2006 empirical data)**




* - G&D: sustainable governance and development

**- LG: local government ***-Information in italics represents a change from the 2002 to 2006 survey.

**Table 2. Matrix of the economy structure of Zakrpattia formed by the criteria of growth pace and share in regional activity (2001-2007)**

| *Highi* ↑ | **2-2** | | | | **2-1** | | |
|---|---|---|---|---|---|---|---|
| | **RVA** | **FDI** | **Efficiency** | | **RVA** | **FDI** | **Efficiency** |
| | **Processing industry** | **Processing industry** | Extractive industry | | Extractive industry | Extractive industry | **Processing industry** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **(I) Indices of growth of the economic activities, 2001–2007** | **Whole trade and sales....*** <br> **Public administration** | ***Transport and communications*** <br> Real estate operations....** <br> **Public health and social security** | Finance <br> **Public administration** <br> **Public health and social security** <br> Collective, community and individual services | | Hotels and restaurants <br> Finance <br> Real estate operations....** <br> Collective, community and individual services | Collective, community and individual services | Production and distribution of electricity ...***** <br> Hotels and restaurants |
| | **Agriculture...***** <br> ***Transport and communications*** <br> **Construction** <br> **Education** <br> **Public health and social security** | **Agriculture...***** <br> Production and distribution of electricity ...***** <br> **Whole trade and sales....*** <br> Hotels and restaurants | **Whole trade and sales....*** <br> ***Transport and communications*** <br> Real estate operations....** <br> **Education** | | Production and distribution of electricity ...***** <br> Fishery | Finance <br> **Public administration** <br> **Construction** <br> Fishery <br> **Education** | **Agriculture...***** <br> Fishery <br> **Construction** |
| *Low* | **1-2** | | | | **1-1** | | |
| | *High* ⟶ Low <br> **(S) Share in the total regional indicators, %, 2001-2007** | | | | | | |

* - Whole trade and sales**, transport vehicles trade**, repair,
** - Real estate operations, services for legal entities,
*** - Agriculture, hunting and forestry, ***** - Production and distribution of electricity, gas and water