

# Policy Scenarios for Development of Rural Areas in Bulgaria

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## **Abstract**

Bulgarian rural areas' attributes are: high unemployment, lower incomes, bad functioning public utilities and infrastructure. Their economic development is mostly dependent on the agriculture. Despite the significant natural resources potential, the environmental programs and regulations are rather accepted as rules and restrictions than practices for sustainable development.

The EU accession is expected to contribute in terms of decreasing inter- and intraregional disparities. Therefore it is of a great interest to assess the quantitative impacts of the relevant rural development policies for the period 2007-2013. For this purpose two scenarios are created, rural development and environmental, and tested on regional input-output model for South-east region in Bulgaria (Golemanova, 2008a).

The applied methodology for the regionalization is GRIT; for the input-output analysis are used backward linkages and Mattas & Shrestha elasticity.

Both scenarios proved that the importance of the agricultural sector is going to be blurred and industry is becoming the driving force for the development of rural regions in the country.

**Key words:** rural areas in Bulgaria, EU-accession, regional I-O model, policy evaluation, scenarios

## **1. Introduction**

Bulgarian rural areas cover 81% of the territory and give residence of 42% of the population of the country. Their economic development from one side is highly dependent on the urban counterparts, where are present most of the employment opportunities, and from the other, on the agricultural sector, which could be considered as a significant threat when the sector's growth slows its path. Despite the significant natural resources potential, the environmental programs and regulations are rather accepted as rules and restrictions than practices for sustainable development and starting points for diversification of the rural economy. Apart from this, the problem with inter- and intraregional disparities in the country is still present, even though there was available a considerable amount of public aid from pre-accession EU instruments for the development of the agricultural sector and rural areas.

The accession to the EU is considered as a milestone for Bulgaria. According to the experiences from the previous enlargements, the accession of the country to the EU is expected to change the economic environment of its rural regions to a significant extent. Additionally, the reform of CAP with a highlight on its second pillar is raising

an interest to assess the quantitative impacts of the relevant rural development policies on the Bulgarian rural areas for the period 2007-2013.

Since the rural areas in the country are strongly heterogeneous, their potential for absorption of the respective EU funds is expected to be dissimilar, as well. Therefore a regional approach is chosen and regional input-output model for South-east region in Bulgaria (Golemanova, 2008b) is created and further used for testing two scenarios: rural development and environmental.

## **2. South-East Region (SER) of Bulgaria**

The region occupies 13.2% of Bulgarian territory and provides residence for 10.0 % of its population. Population, living in rural areas in the South-east region of Bulgaria is 36.7% that is higher than the national one (31.8%). As a general observation, in terms of economic development the South-east region of Bulgaria is advancing over the last decade. And despite the fact that it contributes only 8.1% to the national GDP, in year 2006 the GDP per capita is less than 1/5 than the national one, which rank the region as a third developed NUTS II region in the country. The biggest shares for this contribute the services sectors and mainly those connected to tourism activities. The registered annual unemployment rate (9.7%) is gradually reducing and reaches the lowest level of unemployment since year 1991. Most of the people of the region are engaged with tourism and other services activities, agriculture, food manufacturing and construction. Despite the regional relatively successful economic performance, there are still present inter-regional disparities between the three administrative units among SER. On the other hand, the rapidly growing services sectors can not meet the proper infrastructure and needed qualified working force. A

problem that is also rising is the environmental balance due to the “hashed” development of industries and over-populated area where the tourist resorts are located.

### **3. Methodology**

Following the “territorial approach” of considering and estimating the possibilities for rural development in the South-east region of Bulgaria and further testing different scenarios for rural development, regional IO model was build and backward linkages and input-output elasticity derived. The later are being included in the so called “shock vectors” when scenarios are being played.

For the derivation of the regional Input-Output table for the South-east region in Bulgaria the GRIT (Generation of Regional Input-Output Tables) technique initially developed by R. C. Jensen and others in the Department of Economics at the University of Queensland in Australia (Jensen *et.al.*, 1979) and modified by Mattas *et.al.* (2006) and Golemanova (2008c) was selected. To estimate the regional technical coefficients, the Flegg & Webber (2000) location quotient applying employment, based on CILQ – as modified from the original of Flegg *et al.* (1995) - denoted by FLQ, is used. The parameter  $\delta$ , without which FLQ cannot be applied, is estimated on the basis of the relative importance of the economic activity in the region. Practically, since the parameter is fixed at a value that makes final demand positive, the weighting parameter was empirically found to be 0.08.

The computed regional IOT is for year 2003 and consisted of 21 sectors of economic activities, with domestic flows and valued at basic values in current prices.

The strength of the relationship between the sectors within the regional economy was measured by calculating the backward linkages. However, these results have to be

taken with certain caution due to restrictive assumptions underlying to the I-O technique.

Rasmussen & Hirschman backward linkages and Mattas & Shrestha input-output elasticity for total output, income and employment for each sector, present in the regional economic structure (21 sectors) were calculated. Mattas & Shrestha input-output elasticity are being used for better understanding the real value of the derived backward linkages. By applying the corresponding ranks to derived multipliers we can see the differences in the relative importance of sectors within the regional economy.

(Table 1)

Looking at the Rasmussen and Hirschman output backward linkage coefficients (OBL) the sector with the highest potential to generate output impacts (both direct and indirect) in the South-east region of Bulgaria is “Maintenance and car repair services; fuel retail” (1.444). This value means that an increase by one unit in the final demand for the products of “Maintenance and car repair services; fuel retail” (i.e., exports, private consumption, public investments) will cause an increase in the total regional production by 1.444 units due to the indirect effects generated by that particular sector. The second highest output backward linkage coefficient is for “Construction” (1.383), followed by “Hotels & restaurants” (1.148). The lowest output backward linkage coefficients values are for “Real estate & renting services” (1.000), “Vehicles” (1.001) and, “Financial intermediation” (1.002).

Concerning the income backward linkage coefficients (IBL), these reveal that services and manufacturing sectors are having the greater impact in the regional economy of South-east Bulgaria. Specifically, “Public administration, education and health services” exhibits the highest income backward linkage coefficient (0.415)

followed by “Mining and quarrying” (0.363), “Financial intermediation” (0.328). Contrary, the sectors with the lowest income backward linkages are “Real estate & renting services” (0.016), “Products of agriculture, hunting, fishing, forestry” (0.045), “Textile & leather products” (0.061).

Regarding employment generation, the first place is taken from “Other services” (0.146), followed by “Products of agriculture, hunting, fishing, forestry” (0.106) and “Public administration, education and health services” (0.104). Again “Real estate & renting services” (0.003) is having the lowest potential to increase employment in the South-east region of Bulgaria.

On contrary, “Real estate & renting services” (0.913) is the sector having the biggest potential for the increase of its value added and the value added of the regional economy.

#### **4. Scenarios**

##### **4.1. Policy instruments**

The accessions to EU open lots of perspectives for Bulgaria and its rural regions in terms of absorption of financial instruments of Structural and Cohesion funds, European Agricultural Fund for Rural Development and European Fund for Fishing. These interventions are included in seven operative programs and two national strategic plans and attached programs to them. Having in mind the new financial perspective for the period 2007-2013, the estimated value of the funds that are expected to come from the European Community to Bulgaria is 9.8 billion euro.

At regional level, however, there is lack of exact information about the quantity of the funds that each NUTS 2 region in Bulgaria will be entitled. Such a need is of a

special interest when in focus are the funds from the Common Agricultural Policy (CAP) and European Fishing Fund, which are directly assigned to the rural development. Therefore, a complex system of criteria is being used for the “regionalization” of the national financial funds which are expected from the European Community.

The first pillar of CAP (direct payments) is being estimated for the SER following the proposal of Hočevvar *et.al.* (2007) and applying the share of the Standard Gross Margin of the farms in the case study region to the country. For the second pillar (rural development) the content and objectives of each chosen measure that belongs to the four axes are taken into account. In this respect are being used criteria as: employment share in agriculture and forestry sector; number of young farmers; number of farms; share of the forest fund; share of the GVA in food manufacturing sector; number of micro enterprises; etc.

For the regionalization of the funds expected to enter the fishing and fish processing sector are applied criteria as: number of ships; share of employees and fishing areas.

Other funds that are estimated to influence directly the development of rural areas in the case study region are those, entitled in the Operative program “Environment”. Since these projects are considered as large scale ones, their value is present in the Regional Development Plan of SER in Bulgaria 2007-2013.

In conclusion, the rural areas in the South-east region of Bulgaria are entitled to around 417 million euro for the period 2007-2013, which represents more that 47% of the total Community funds for the region.

## **4.2. Scenarios for rural development of South-east region in Bulgaria**

The initial aim of the paper is to measure the impact of the policy instruments for rural development in the South-east region in Bulgaria. Rural development is considered as a general socio-economic development of the region as a whole. However, in order to measure the initial, direct, impact of the European Community's programs and their respective instruments to the rural economy, were selected three policies: CAP, Fishing and Environmental. Their instruments are included in two scenarios and further used for creation of two shock vectors that are being applied for input-output analysis.

The experience from the previous EU enlargement and several studies on the capacities of Bulgarian regions, based on the results of the application of the pre-accession programs, led us to the conclusion that a hundred percent absorption of the instruments from EU policies is too optimistic to be considered. That is why a more realistic approach was followed. The partial utilization of the funds from the three policies mean:

- 85% utilization of the direct payments (first pillar of CAP), due to the lack of information for the farmers and their inadequate capability for on time submission of the applications.

- 65% utilization of the funds coming from the Rural Development Program for 2007-2013 and Operative program "Fishing". In order to determine this percentage, two points are taken into account: first, the absorption of SAPARD instruments for the



region and second, the survey made by UNDP for the capacity of Bulgarian NUTS II region to co-finance EU projects.

- 100% utilization of the funds entitled in the Operative program “Environment”, because of the large scale infrastructural projects that are already included in the Regional development plan.

Two scenarios are created: rural development and environmental. The policy instruments included in the first one are entitled from CAP (axes 2 from the second pillar is excluded) and Fishing policy. In the second one are incorporated the funds from the Environmental policy and second axes of CAP’s second pillar (supporting land management and improving the environment).

In order to create the two shock vectors for each of the scenario, is estimated that the annual average of the funds from the European Community and national (regional) co-financing for the period 2007-2013 for the scenario “Rural Development” is 43.8 million euro and for scenario “Environment” these funds are 19.9 million euro.

Testing the two policy scenarios for the development of rural areas in SER in Bulgaria supposes from one side the design of sectoral distribution of the shock vectors following the structure of the regional input-output model, and from the other, their relation to the linkages for output, value added, incomes and employment for the case study region.

Before proceeding to the sectoral distribution of the policy instruments for each of the shock vectors, the following hypothesis are considered: the share of the funds for intermediate consumption are excluded; direct payments and the additional payments to

them are separated as 50% changing of consumption, 40% investment and 10% intermediate consumption; all other policy instruments are taken as investment shocks to the final demand of the regional IO model and export is considered as constant. The sectoral distribution of the shock vectors for the two scenarios is shown on table 2.

(Table 2)

For both scenarios the highest share in the shock vector takes the Construction sector, which is to be expected having in mind the infrastructural nature of the investments. Other sectors that are most affected from the investments in rural economy are: “Products of agriculture, hunting, fishing, forestry”; “Other manufacturing”; “Trade and car repair services; fuel retail”.

### **4.3. Results**

The results of the testing of the two scenarios in terms of newly created output, value added, incomes and demand for employees are presented in table 3. As a general observation, the highest impact is created in scenario “Rural development”. In addition to this, the policy instruments that are affecting at most the development of rural regions in SER of Bulgaria is CAP, followed by Environmental policy and Fishing policy at the end.

(Table 3)

In terms of output generation, services sector create the biggest share of the output in the “Rural development” scenario. This is mainly due to sector “Trade and vehicle repair services; fuel retail”. The reason behind could be found in the strong interrelations of the sector into the regional economy from one side and from the other,

in the expected rise of the demand of motor vehicles from the population and needed specialized agricultural vehicles. Having in mind the “Environment” scenario, however, the first place in terms of output generation is attributed to the “Construction” sector. Generally, the sector as well is very well linked to the other sectors in the regional economy and its backward linkages are highly ranked. Moreover, both scenarios consider large scale projects in terms of improvement of the physical infrastructure in the rural areas as a pioneer task. The third place in the output generation for both scenarios belongs to the industry sector; even though it’s relative importance is higher for the scenario “Environment”. The most affected industrial sectors are “Other manufacturing” and “Machinery and equipment”, which is very positive for the regions since a significant objective for the period 2007-2013 is increasing of the micro-enterprises in the rural areas with different kind of activities. Having in mind the considerable amount of funds, expected from the instruments of CAP, agricultural sector creates around 11% of the total output for the “Rural development” scenario and around 7% for the “Environmental” one. Despite the relatively high importance of the sector for the study region and its high linkages with the other sectors, for the period 2007-2013 the direct productive oriented investments to it are going to be replaced by those aiming at multifunctional rural development and advancing of the physical infrastructure. Step forward was made by acceptance of the single area payment from the first pillar of CAP, which are now considered as an additional income for farmers, who usually don’t reinvest big share of it to the agricultural activities. In addition to this, SER in Bulgaria is famous for its small and semi-subsistence farms, from which cannot be expected relatively high investment behavior.

Shifting to the impacts of the two scenarios on the created value added and respective incomes of the population the relative importance of the sectors is similar to the one, present in the output results. However, the agricultural sector is ranked higher than the industry sector considering the “Rural development” scenario. This could be explained with the fact that subsidies that are being received by the agricultural producers are present in this category and are to be considered as an important additional income for the farmers.

Results from the scenario simulation in terms of generated employment could be found in the last column of table 3. However, these results should be taken into account with very high consideration, mainly due to the premises on which the input-output model is based. In most cases, these outcomes are overestimated and should be analyzed not as a raise of the number of employees, but as an increase in the demand of working force due to the external for the economic system reasons. Though, these changes in the demand do not correspond to the supply on the labor market. The later might be a reason for inter- and intraregional migration, as well as shifting from one sector to the other.

## **5. Conclusions**

In the present paper exogenous shocks (scenarios) from the Common Agricultural Policy, Environmental Policy and Fishing Policy for the period 2007-2013 to the rural economy of the Bulgarian South-east region were simulated. Two realistic scenarios, with lower utilization of the EU funds were tested: “Rural development” and “Environment”.

Both scenarios proved that the role of the agriculture and services sector is going to be blurred, despite of the big amount of funds entitled from the instruments of the policies for rural development included in the two scenarios. In mid term, industrial sector, as well as “Construction” sector, is expected to raise their importance. This is to be considered as a shift from the agricultural to industrial development model of the rural areas in the case study region.

However, the effects of the policy scenarios for rural development in Bulgaria could be significantly decreased in case of lower utilization of EU funds and unbalanced development of their urban counterparts.

## References

- Golemanova, A. (2008). South-East Region in Bulgaria: Economic Performance and Key Sectors Analysis. **The Annals of "Dunarea de Jos" University of Galati**. Fascicle 1 - 2008. Economics and Applied Informatics. Year XIV, pp. 25-30.
- Jensen R. C., Mandeville T.D. & Karunarante N.D. (1979) **Regional Economic Planning: Generation of Regional Input-Output Analysis** (Croom Helm, London).
- Rasmussen, P. N. (1956). **Studies in Intersectoral Relations** (Amsterdam: North-Holland).
- Hirschman, A. O. (1958) **The Strategy of Economic Development** (New Haven, Yale University Press).
- Hočevar V., Golemanova A. & Juvančič L. (2007). Ocena učinkov različnih politik na ekonomsko podobo regije – primer Gorenjske in: Kavčič Stane (ed.). **Slovensko kmetijsvo in podeželje v Evropi, ki se širi in spreminja/4**. konferenca DAES, 8-9 November 2007, Moravske Toplice, pp. 245-257.
- Flegg T. A. & Webber C.D. (2000) Regional size, regional specialization and the FLQ formula, **Regional Studies**, 34 (6) pp. 563-569.
- Flegg, T. A., C.D. Webber & M. V. Elliot (1995) On the appropriate use of location quotients in generating regional input-output tables, **Regional Studies**, 29, pp. 547-561.
- Mattas, K. & Shrestha C. (1991). A New Approach to Determining Sectoral Priorities in an Economy: Input-Output Elasticities, **Applied Economics**, 23, pp. 247-254.
- Mattas K., Loizou S., Tzouvelekas V., Meropi T. & Bonfiglio A. (2006). Deriving regional I-O tables and multipliers. In Bonfiglio A., Esposti R. & Sotte F. (eds.), **Rural Balkans and EU Integration**, FrancoAngeli s.r.l., Milano, Italy, pp. 75-121.
- National Statistical Institute of Bulgaria, Statistical Yearbooks 2000-2006.

**Table 1: I-O Backward Linkages & Elasticity for South-east Region of Bulgaria**

Sectors		Rasmussen & Hirschman Backward linkages				Mattas & Shrestha Input-output elasticity			
		OBL	IBL	EBL	VABL	OE	IE	EE	VAE
1	Products of agriculture, hunting, fishing, forestry	1.043 (4)	0.045 (20)	0.106 (2)	0.501 (7)	0.137 (1)	0.041 (1)	0.288 (1)	0.157 (1)
2	Mining and quarrying	1.003 (18)	0.363 (2)	0.044 (11)	0.709 (2)	0.007 (20)	0.017 (10)	0.016 (20)	0.009 (20)
3	Foods, beverages, and tobacco	1.020 (7)	0.130 (14)	0.037 (13)	0.268 (19)	0.057 (9)	0.017 (9)	0.119 (9)	0.065 (9)
4	Textile & leather products	1.016 (8)	0.061 (19)	0.041 (12)	0.442 (9)	0.050 (10)	0.015 (11)	0.105 (10)	0.057 (10)
5	Other manufacturing	1.010 (11)	0.088 (18)	0.018 (20)	0.134 (21)	0.123 (2)	0.037 (2)	0.258 (2)	0.140 (2)
6	Metal Products	1.005 (15)	0.176 (9)	0.054 (10)	0.211 (20)	0.008 (19)	0.002 (20)	0.016 (19)	0.009 (19)
7	Machinery and equipment	1.009 (12)	0.092 (17)	0.036 (14)	0.330 (18)	0.021 (14)	0.006 (15)	0.045 (14)	0.024 (14)
8	Vehicles	1.001 (20)	0.149 (13)	0.028 (17)	0.353 (16)	0.008 (18)	0.003 (19)	0.018 (18)	0.010 (18)
9	Furniture & secondary raw materials	1.004 (16)	0.102 (16)	0.062 (8)	0.358 (15)	0.006 (21)	0.002 (21)	0.012 (21)	0.006 (21)
10	Electrical energy, gas, water	1.006 (14)	0.153 (11)	0.018 (19)	0.423 (11)	0.045 (12)	0.013 (13)	0.094 (12)	0.051 (12)
11	Construction	1.383 (2)	0.202 (4)	0.055 (9)	0.446 (8)	0.088 (4)	0.027 (4)	0.185 (4)	0.101 (4)
12	Trade and vehicle repair services; fuel retail	1.444 (1)	0.189 (6)	0.069 (7)	0.598 (5)	0.045 (11)	0.013 (12)	0.094 (11)	0.051 (11)
13	Wholesale & retail trade; Repair of apparatus	1.023 (6)	0.150 (12)	0.090 (6)	0.421 (12)	0.065 (8)	0.020 (8)	0.136 (8)	0.074 (8)
14	Hotels & restaurants	1.148 (3)	0.178 (8)	0.095 (5)	0.604 (4)	0.033 (13)	0.010 (14)	0.069 (13)	0.037 (13)
15	Transport services	1.036 (5)	0.165 (10)	0.034 (15)	0.397 (13)	0.075 (5)	0.023 (5)	0.158 (5)	0.086 (5)
16	Travel agencies; post & telecommunication	1.008 (13)	0.114 (15)	0.019 (18)	0.510 (6)	0.094 (3)	0.028 (3)	0.197 (3)	0.107 (3)
17	Financial intermediation	1.002 (19)	0.328 (3)	0.033 (16)	0.387 (14)	0.015 (15)	0.004 (16)	0.031 (15)	0.017 (15)
18	Real estate & renting services	1.000 (21)	0.016 (21)	0.003 (21)	0.913 (1)	0.070 (6)	0.021 (6)	0.146 (6)	0.079 (6)
19	RD & other business services	1.003 (17)	0.200 (5)	0.095 (4)	0.426 (10)	0.010 (17)	0.003 (18)	0.022 (17)	0.012 (17)
20	Public administration, education and health services	1.015 (9)	0.415 (1)	0.104 (3)	0.627 (3)	0.068 (7)	0.020 (7)	0.141 (7)	0.077 (7)
21	Other services	1.013 (10)	0.179 (7)	0.146 (1)	0.332 (17)	0.012 (16)	0.004 (17)	0.025 (16)	0.014 (16)

where: OBL - output backward linkages; IBL - income backward linkages; EBL - employment backward linkages; VABL – value added backward linkages; etc.

Source: Golemanova (2008)

**Table 2. Shock vectors, million euro, annually**

<b>Sectors</b>		<b>Scenario: Rural development</b>	<b>Scenario: Environment</b>
1	Products of agriculture, hunting, fishing, forestry	5,40	1,53
2	Mining and quarrying	0,03	0,00
3	Foods, beverages. and tobacco	1,61	0,49
4	Textile & leather products	0,08	0,02
5	Other manufacturing	2,85	3,22
6	Metal Products	0,09	0,20
7	Machinery and equipment	1,82	0,03
8	Vehicles	0,04	0,02
9	Furniture & secondary raw materials	0,23	0,01
10	Electrical energy, gas, water	0,71	0,77
11	Construction	12,27	7,27
12	Trade and vehicle repair services; fuel retail	4,70	1,76
13	Wholesale & retail trade; Repair of apparatus	1,97	0,31
14	Hotels & restaurants	0,59	0,13
15	Transport services	1,19	0,84
16	Travel agencies; post & telecommunication	0,57	0,20
17	Financial intermediation	0,04	0,01
18	Real estate & renting services	2,36	0,90
19	RD & other business services	1,89	0,41
20	Public administration, education and health services	3,48	0,40
21	Other services	0,94	0,75
<b>Total</b>		<b>42,86</b>	<b>19,29</b>

Source: own computation



**Table 3. Newly generated impacts, thousands euro, annually**

<b>Scenarios</b>	<b>Output</b>	<b>Value added</b>	<b>Incomes</b>	<b>Employment<sup>1</sup></b>
<b>Rural development</b>	<b>50.210</b>	<b>20.296</b>	<b>7.110</b>	<b>5.395</b>
of which:				
CAP	45.834	18.413	6.450	4.936
Fishing	4.376	1.883	660	459
of which:				
Agriculture	5.633	2.707	242	1.121
Industry	7.546	1.886	798	417
Construction	16.972	5.475	2.477	1.318
Services	20.059	10.228	3.593	2.539
<b>Environment</b>	<b>23.045</b>	<b>8.174</b>	<b>3.012</b>	<b>2.059</b>
of which:				
CAP – 2 axes, II pillar	5.808	2.557	661	666
Environment	17.237	5.617	2.351	1.393
of which:				
Agriculture	1.597	768	69	318
Industry	4.822	966	510	199
Construction	10.054	3.243	1.467	781
Services	6.572	3.197	966	761

<sup>1</sup> number

Source: own computation