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JEL: H760
DOI: 10.5937/industrija41-4335
UDK: 336.132.11(497.11) ; 336.581:502.13
Original Scientific Paper

Local Governments' Policies of Investments in Environmental Protection[3]

Article history
Received: 19. August 2013
Sent for revision: 09. September 2013
Received in revised form: 01. November 2013
Accepted: 01. November 2013
Available online: 06. November 2013

Abstract: *The present paper tries to investigate the impact of the decrease of local governments' budgets on the local government environmental investment policies. The significant adverse variances between budgeted and actual amounts point to the fact that environmental protection is not yet a high priority issue in the local government management policies. The analysis of the structure of planned and actual investments by purpose, and their realization index show that local governments allocate the largest amount of expenditures in waste management. Moreover, a high index of realization of these expenditures additionally indicates that waste management has the highest priority within the environmental function in both years, what could be explained by regulated and stable financing of this function by earmarked funds. The results are instructive for local governments and may encourage them to increase the share of earmarked funds for financing environmental protection. The analysis of environmental protection investment policies of local governments in this paper is based on comparison of the series of indices calculated as the relation between actual and budgeted amounts of total, environmental and components of environmental expenditures, as well as of total and environmental income of local governments.*

Keywords**:** *Local government, Environmental expenditure, Environmental protection, Earmarked funds, Serbia.*

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[3] The paper presents the results of a study conducted as part of the project 179001, funded by the Ministry of Education, Science and Tehnological Development of the Republic of Serbia.

Politike ulaganja u zaštitu životne sredine na nivou jedinica lokalne samouprave

Apstrakt: *Cilj ovog rada je da identifikuje uticaj smanjenja budžeta na lokalne politike ulaganja u zaštitu životne sredine. Značajne negativne razlike između planiranih i ostvarenih iznosa ukazuju na činjenicu da zaštita životne sredine ima manje važno mesto u politikama upravljanja jedinica lokalne samouprave. Analiza strukture planiranih i realizovanih rashoda i izdataka po namenama, kao i indeks realizacija planiranih ulaganja pokazuje da jedinice lokalne samouprave usmeravaju najveći iznos sredstava u upravljanju otpadom. Štaviše, visok indeks realizacije ovih izdataka dodatno ukazuje da upravljanje otpadom ima najviši prioritet u okviru funkcije zaštite životne sredine u obe godine, što bi moglo da se objasni i regulasanim i stabilnim finansiranjem ove funkcije iz namenskih sredstava. Rezultati analize izloženi u ovom radu korisni su u smislu što podržavaju jedinice lokalne samouprave da ulaganja u zaštitu životne sredine finansiraju iz namenskih sredstava. Analiza politika ulaganja jedinica lokalne samouprave u zaštitu životne sredine u ovom radu zasnovana je na poređenju serije indeksa izračunatih kao odnos između ostvarenih i planiranih iznosa kako na nivou ukupnih ulaganja i ukupnih prihoda, tako i na nivou njihovih komponenti koje se odnose na zaštitu životne sredine.*

Ključne reči*: Jedinica lokalne samouprave,Investicije, Izdaci za zaštitu životne sredine, Namenska sredstva za zaštitu životne sredine, Srbija*

1. Introduction

Local government (LG) is generally considered for the level of government closest to the people. United Nations Environment Programme recognizes LG as organization with significant power in environmental matters, with mandates to deal with issues such as energy, water and sanitation, which can even help to implement global agreements, shape policy, and ultimately contribute to safeguarding global common goods (United Nations Environment Programme, 2012). According to the Charter of European Cities & Towns Towards Sustainability, the local governments are "the smallest scale at which problems can be meaningfully resolved in an integrated, holistic and sustainable fashion" (Part I.3). In the field of environmental protection in Serbia, the most significant direct responsibility lies with local governments, which include towns and municipalities. According to the Law of local self-governance (2007), local government takes care of environmental protection and adopts programmes of utilization and protection of natural resources and environmental protection, as well as local action and rehabilitation plans in

compliance with strategic documents and their own interests and specificities. It is also responsible for treatment and transport of atmospheric and wastewater, maintenance of utilities in towns and villages, and maintenance of landfills.

The environmental expenditures represent expenses incurred for pollution prevention, reduction, abatement, and monitoring activities, for the repair of environmental damage, and for sustainable land management. The environmental policies which shape final form of these expenditure, combine traditional idea of restoring the equilibrium or the protection of the environment from human activities and the idea of sustainable development of the local community (Zacher, 2011).

Local governments can shape environmental protection in several ways. The major one is the amount of expenditure on the protection of the environment from the municipal budget (Švantnerová & Makanová, 2008). Namely, most of environmental goals are incorporated in specific urban service like energy, transport, waste and water where clear policy synergies between service delivery and environmental protection exist (Holman, 2009). In 2010, the average proportion of planned investments in environmental protection in all local governments in Serbia was 3.3%, whereas in 2011 it was 3.1% of the total expenditure from their budgets. The planned investments into environmental protection by local governments varied from zero to 34% of the total expenditures from their budgets in 2010 and 2011.

Analysis of the allocation structure of the investment into environmental protection in local governments in 2010 reveals that they invested into all kinds of environmental protection (Beke-Trivunac, 2012). The highest investments were allocated to waste management (30%) and to waste water management (16%), as well as to the protection of plant and animal worlds and landscape protection (20%). The least amounts were invested into research and development, as well as into reduction of pollution (9%). In the almost all local governments, the levels of budget execution in 2010 and 2011 were considerably lower than planned, which means that many items in the budget were carried out on a reduced scale, or were not implemented at all.

The main objective of this paper is to examine the results of the reduced scale of realization of budget expenditure on the level of execution, scale and structure of the planned investments into environmental protection in local governments' budgets in Serbia in 2010 and 2011. The common budget management policy is to reduce all the expenditures proportionally, in line with the reduction of the budget, thus keeping the final structure consistent with the planned one. However, if certain investments are considered a priority, or they relate to capital investments, such as building and operating (new) sewers, waste water treatment plants and waste collection and processing services, such budget management policy might not make sense.

The local government is located in the heart of the problems that threaten the environment. However, solving these problems is costly, and environmental projects are sometimes discarded, in terms of their economic costs. The analysis of local governments' actions towards environmental issues in such circumstances can contribute to finding new solutions or encourage them to stick more firmly to already proven one.

2. Research methodology and data collection

The relative amount and structure of financial expenditures devoted to the environmental protection purposes from the local government's budget provide a simple metrics for the assessment of local government environmental policies. It is reasonable to assume that the bigger share of expenditure devoted to certain issue indicate the higher significance of that issue. On the other hand, local governments plan their expenditure and prepare the budget, but the actual amounts at the year-end may be different from the budgeted one. It is reasonable to assume that the higher index of realization of budgeted amounts may indicate a higher priority of that issue. The analysis of environmental protection investment policies of local governments in this paper is based on comparison of the series of indices calculated as the relation between actual and budgeted amounts of total, environmental and components of environmental expenditures, as well as of total and environmental income of local governments.

Pursuant to the Law on the budget system (2009), the decision on the local government budget is to be made by the end of the year preceding the budget year. The annual statement of accounts is subject to external audit, after which a decision on its adoption is made. Both documents are to be published in the relevant official publication, and in most cases, on the local government’s official website. The local government's budgets are the source of information about planned actions. Annual statements of accounts are the source of information about actual cash flow used for environmental actions (Beke-Trivunac, 2013).

For the purpose of this paper, the data are obtained from the publicly available decisions on budgets and decisions on the annual statements of accounts for 2010 and 2011, as well as from other reports published on internet pages of local governments in Serbia. The compiled data are systematized to follow the plans and execution of the budgets according to the purposes, i.e. functions.

Local governments that made research sample are towns that differ in the number of population, the amount of budget expenditures per inhabitant and the share of town's budget spent on environmental protection. These social, economic and environmental indicators, presented in Table 1, above all show a clear unevenness in all observed towns (Gutowska, 2012).

Table 1. Towns that made research sample and selected indicators

Town	The number of population	The span of budget expenditures per inhabitant (the lowest amount equals 1.0)		Percentage of town's budget spent on environmental protection	
		2010	2011	2010	2011
Beograd	1,639,121	4.3	3.6	0.7	0.9
Novi Sad	335,701	2.6	2.7	7.5	7.1
Jagodina	71,195	1.9	2.4	4.4	n.a.
Pančevo	122,252	1.9	1.9	14.8	14.6
Subotica	140,358	1.9	1.7	8.6	2.9
Požarevac	74,070	1.8	1.9	n.a.	27.6
Kragujevac	177,468	1.7	1.5	n.a.	0.6
Zrenjanin	122,714	1.6	1.6	4.5	3.9
Niš	257,857	1.6	1.7	0.9	0.6
Čačak	114,809	1.4	1.2	3.8	2.2
Zaječar	58,547	1.4	1.4	1.3	1.8
Valjevo	90,301	1.4	1.2	0.2	2.8
Sombor	85,569	1.3	1.3	3.2	1.7
Sremska Mitrovica	79,773	1.3	1.3	2.6	2.3
Kruševac	127,429	1.2	1.1	1.1	n.a.
Vranje	82,782	1.2	1.2	1.3	2.4
Loznica	78,788	1.0	1.0	8.6	9.4
Novi Pazar	92,776	1.0	1.0	0.2	0.2
Total / Average	3,751,510	-	-	3.5	4.5
Note: n.a. – not available.					

Source: Authors

The selected data are obtained from 16 out of 23 towns with the status of local government in Serbia. Although the total number of towns is the same in both in 2010 and 2011, only 14 of them appear in both groups. The level of representativeness of the research sample is presented in Table 2.

Table 2. Representativeness of the research sample (In %)

Share of the selected towns in the total number of towns by:	2010	2011
- Expenditures from the budget	87.5	89.3
- Environmental protection expenditures as per cent of total LGOs expenditure	97.0	83.5
- Earmarked revenue	98.6	98.9
- Local population – census 2011 (Statistical office, 2011)	81	81

Source: Authors

The outflows of towns' expenditures are classified according to their purposes, as defined by General government expenditure by function (COFOG) classification, which is part of the European system for the collection of economic data on the environment, published by Eurostat, the statistical office of the European Union. The classification includes expenditures in distinctly identified as well as general functions. The identified purposes include the following: function 500 – Environmental protection, function 510 - Waste management, function 520 – Waste water management, function 530 – Pollution abatement, function 540 – Protection of biodiversity and landscape, function 550 – R&D Environmental protection. Function 560- Environmental protection n.e.c., relates to general purposes, such as administration, management, regulation, supervision of overall policies, plans, programmes and budgets for the promotion of environmental protection, etc.

The available information, compiled by the environmental accounting system at the local community level, determines the scope and type of analyses to be used in order to reach the objective of this paper, i.e. to identify the impact of the decrease of the local governments' budgets on local environmental investment policies in 2010 and 2011.

Having in mind that specific urban services like energy, transport, waste and water are already goal-driven and target oriented and that a clear policy synergies between service delivery and sustainability exist, the results of these analysis may be also viewed as an indicator of towns' sustainable development suitable for use in public debates as evidence of progress towards a given goals (Keirstead, 2007). Moreover, entering into such discussion can help in embedding the notions on sustainable development into the towns' governing culture (Holman, 2009).

3. Results and discussion

The data for the years 2010 and 2011 show that the average index of budget execution of the planned budgets in the given towns was 86% in 2010 and 80% in 2011, while the average index of execution of the planned expenditures on environmental protection from the said budgets was 74% in 2010 and 73% in 2011, as presented in Table 3.
The indices of execution of the planned budgets in individual towns, as well as the indices of execution of the planned expenditures on environmental protection within these budgets for 2010 and 2011 are shown in Fig. 1 and Fig. 2. The indices of execution in the towns are arranged in descending order. The indices of executed expenditures on environmental protection are arranged irregularly, in relation to the said values.

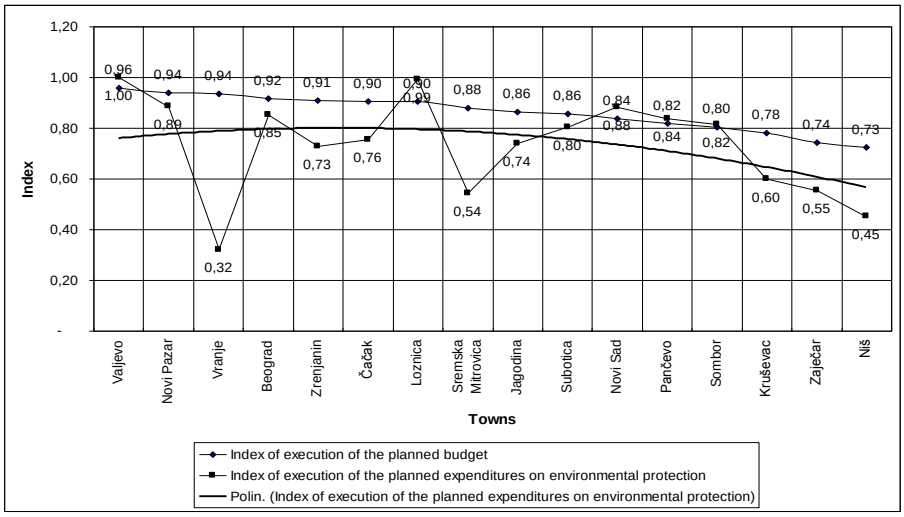
Table 3. The share and dynamics of environmental protection expenditures

(In %)	2010		2011	
	Budgeted	Actual	Budgeted	Actual
The average share of investments in environmental protection in towns' budgets	4.0	3.5	5.7	4.5
The average index of towns' budgets execution (actual/budgeted)	-	86	-	80
The average index of investments in environmental protection execution (actual/budgeted)		74		73

Source: Authors

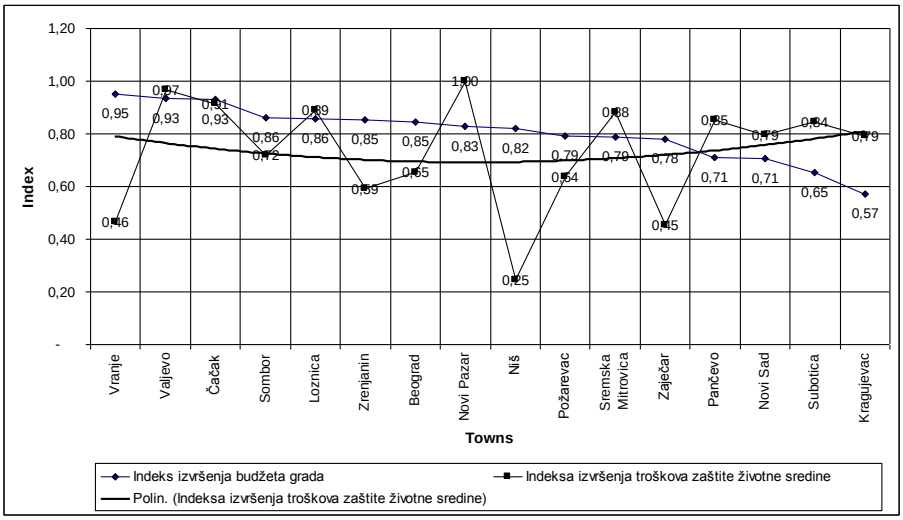
Comparative analysis of the said indices shows that a decline in the available budget resources significantly affected the decrease in expenditure on environmental protection in both years, and that this effect is more pronounced in 2010. In terms of the number of towns, a negative result was seen in 11 (out of 16) towns in 2010, whereas in 2011 it was seen in 8 (out of 16) of them. The data presented in Fig. 1 and Fig. 2 shows that the decrease of expenditure on environmental protection was significantly higher than the decline of the execution of the budgets.

Figure 1. Indices of the budget realization and of expenditure on environmental protection in 2010



Source: Authors

Figure 2. Indices of the budget realization and of expenditure on environmental protection in 2011



Source: Authors

The study of the policies of investment into environmental protection has been carried out by analysis of the purpose structure of the planned and executed expenditures, as well as of the index of realization of the planned execution by purpose for each of the given towns.

Table 4. Average structure of environmental protection expenditures

(In %)	2010		2011	
	Budgeted	Actual	Budgeted	Actual
Defined purpose	53	60	57	55
General purposes (560)	47	40	43	45
Total	100	100	100	100
Index of realization (actual/budgeted)				
Said/defined purposes		80		72
General purpose (560)		64		78
Total		74		73

Source: Authors

The compiled data for the examined sample of towns, presented in Table 4, show that there are differences in the functional structure between the planned and the realized expenditures on environmental protection. In 2010,

the average planned expenditures for defined, or said, purposes were 53% of the total outflow, while in the realized budget these expenditures reach 60%. In 2011, the average planned expenditures for the said purposes were 57% of the total, whereas they reached 55% of the realized budget expenditures. Nonetheless, indices of realization of expenditures for defined purposes were 80% in 2010, and 72% in 2011. On the other hand, indices of realization of expenditures for general purposes were 64% in 2010, and 78% in 2011.

The analysis of the structure of the said expenditure shows that the highest amounts were planned for waste management (17%-25%) and environmental protection in general (16%-21%), and the least amount was planned for research and development purposes (0%-4%). It is worth to note that the structure of these expenditures is similar to the one presented for municipalities in Czech Republic for the period from 1997 to 2008, where the biggest parts of environmental municipal expenditures are wastewater, waste and protection of biodiversity landscapes expenditures (Soukopova and Bakoš, 2010). Uneven dynamics of the level of realization of expenditures on various purposes resulted in a different amounts and structure of realized total expenditures, which were significantly lower than planned in both years, as presented in Table 5.

Table 5. The average structure of investments by purposes

	2010			2011		
	Budgeted	Actual	Index of realization	Budgeted	Actual	Index of realization
500 - Environmental protection	0.22	0.21	69%	0.17	0.16	62%
510 - Waste management	0.18	0.25	89%	0.16	0.17	80%
520 - Waste water management	0.08	0.07	76%	0.06	0.06	72%
530 - Pollution abatement	0.00	0.01	91%	0.09	0.09	76%
540 - Protection of biodiversity and landscape	0.05	0.06	100%	0.04	0.04	79%
550 - R&D Environmental protection	-	-	-	0.04	0.04	65%
560 - Environmental protection n.e.c.	0.47	0.40	64%	0.43	0.45	78%
Total	1.00	1.00	74%	1.00	1.00	73%

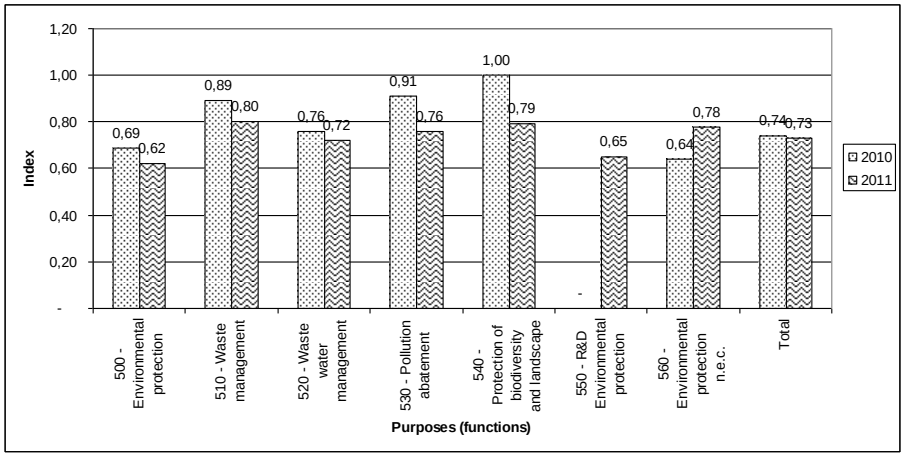
Source: Authors

The analysis of the indices of realization of the planned expenditures by purpose, presented on Fig. 3, indicate the areas of priority for town's budgets. It can be assumed that those functions whose realization index is approximately equal to or higher than the average index of the budget execution have a higher priority than those functions whose realization index is lower than the average. As the average realization of the budget index in 2010 was 86% and in 2011 it was 80%, it can be considered that the priority expenditures in 2010 included expenditure on waste management, pollution abatement and protection of biodiversity and landscape, while in 2011 the priority lay in the expenditure on waste management and protection of biodiversity and landscape. Moreover, regardless of the obvious disparities in different economic potential of selected towns, presented in Table 1, the most frequent specific investment relate to the waste management function, as presented in Table 6.

Table 6*. The detailed structure of investments by purposes and by towns (In %)*

Town	500 - Environmental protection		510 - Waste management		520 - Waste water management		530 - Pollution abatement		540 - Protection of biodiversity and landscape		550 - R&D Environmental protection		560 - Environmental protection n.e.c.	
	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010
Beograd	-	-	-	-	-	-	10	6	35	-	26	-	29	94
Čačak	-	-	45	80	-	-	-	-	-	-	-	-	55	20
Kragujevac	-	n.a.	-	n.a.	-	n.a.	31	n.a.	10	n.a.	35	n.a.	24	n.a.
Jagodina	n.a.	-	n.a.	-	n.a.	-	n.a.	-	n.a.	-	n.a.	-	n.a.	28
Kruševac	n.a.	55	n.a.	-	n.a.	-	n.a.	11	n.a.	61	n.a.	-	n.a.	45
Loznica	-	-	15	19	22	19	-	-	-	-	-	-	63	61
Niš	-	100	-	-	-	-	-	-	-	-	-	-	100	-
Novi Pazar	-	-	-	-	-	-	-	-	-	-	-	-	100	100
Novi Sad	-	-	22	29	24	18	-	-	22	31	-	-	32	22
Pančevo	-	-	13	-	-	-	2	1	-	-	-	-	85	99
Požarevac	-	n.a.	3	n.a.	-	n.a.	97	n.a.	-	n.a.	-	n.a.	-	n.a.
Sombor	100	100	-	-	-	-	-	-	-	-	-	-	-	-
Sremska Mitrovica	16	15	84	76	-	-	-	-	-	-	-	-	-	9
Subotica	-	-	4	1	-	64	-	-	-	-	-	-	96	34
Valjevo	-	-	-	-	-	-	-	-	-	-	-	-	100	100
Vranje	-	-	22	54	43	13	-	-	-	-	-	-	35	33
Zaječar	100	100	-	-	-	-	-	-	-	-	-	-	-	-
Zrenjanin	34	22	66	78	-	-	-	-	-	-	-	-	-	-

Figure 3. Indices of realization of environmental expenditures by purposes



Source: Authors

The high index of realization of planned investments in waste management can be explained by the completed new system of national regulation, which enabled the stable financing of activities related to the waste management (Todić, 2012). On the other side, the high index of realization of the investments in biodiversity and landscape protection can be explained by the approach of assigning a significant scientific and economic value to it (Krajewski, 2012) and small amounts of the budgets allocated for this purpose.

Table 7. The share of earmarked funds in the revenue designated for environmental purposes in the towns that make research sample

(In %)	2010		2011	
The share	Budgeted	Actual	Budgeted	Actual
Earmarked funds	41	50	39	55
Common budget funds	59	50	61	45
Total	100	100	100	100
Index of execution of budgeted income (actual/budgeted)				
Earmarked funds	/	101	/	93
Common budget funds	/	71	/	49
Total	/	83	/	66

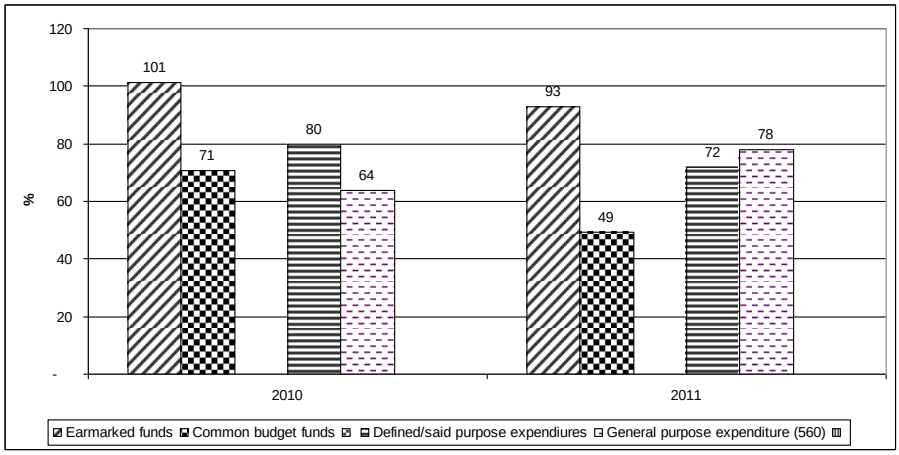
Source: Authors.

The financial system of local government is divided into income and expenses, and the investment opportunities depend on the local government budget revenues obtained. Local governments use two types of funds for financing environmental investments, the earmarked funds raised according to the Envi-

ronmental law and common budget funds. The achieved share of earmarked funds to total funds is higher than budgeted one in both 2010 and 2011, because of high decrease of available common budget funds. The overview of share, movements and the degree of realization of the budgeted revenue designated for environmental purposes is presented in Table 7.

Overview of the structure of environmental revenue, presented in Table 7, indicate high index of realization of earmarked funds in total revenue, 101% in 2010 and 93% in 2011. In 2010, this trend is followed by the high index of realization of said purposes expenditures of 80%, while in 2011 the same index was slightly lower, amounting 72%. Based on such trend, it is reasonable to suppose that the earmarked funds were stable source of financing of said purposes expenditures from the local governments' budgets.

Figure 4. Indices of realisation of ear



Source: Authors

4. Conclusion

The question that opened this article was – How far has the decrease of local governments' budgets had an impact on their environmental investment policies in 2010 and 2011? General conclusion is that the degree of reduction of the total expenditures from the budget was followed by a much larger reduction of expenditures that were intended to protect the environment. Results by years show that in 2010, the average index of budget realization was 86%, while the index of realization of the planned expenditure on environmental protection was 74%. In 2011, the average index of budget realization was

80% while the index of realization of the planned expenditure on environmental protection was 73%.

The initial assumption is that the differences in the dynamics of realization of various budget segments may indicate the priorities in policies of investment into environmental protection. Recognized significant differences between the said indices point to the fact that the investments in environmental protection is not considered the local governments' policy of high priority.

The analyses of the planned and realized investments for various purposes, as well as of the index of their realization, show that the highest expenditures allocated by local governments were used for waste management function. Moreover, the high index of realization of these expenditures additionally indicates that waste management was the most significant priority within the local governments' environmental functions in both years.

Comparative analysis of the structure and indices of realization of environmental revenue and the indices of realization of planned expenditures, indicate high index of realization of both earmarked funds in the revenue and said purposes expenditures in total expenditures. Based on such trend, it is reasonable to suppose that the earmarked funds were stable source of financing of these functions from the local governments' budgets.

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