



PROJECT CB007.1.32.318

**«Protection and improvement of the environment in the cross-border region through composting of biodegradable waste»,
co-financed by the EU through INTERREG-IPA cross-border
cooperation programme Bulgaria - Serbia**

Contract: CB007.1.32.318.03

”Providing consultancies for studies, assessments, plans”

**FINAL CROSS-BORDER ASSESSMENT OF THE EFFECT
OF COMPOSTING ON POLLUTION LEVEL
IN VIDIN DISTRICT, REPUBLIC OF BULGARIA AND
BORSKI DISTRICT, REPUBLIC OF SERBIA**

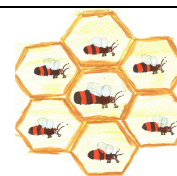
Contracting Authority: „Bulgaria in Europe” Association, Vidin

January, 2018



Prime Consulting

“Preservation and improvement of the environment in the cross-border region through composting of biodegradable waste” – The project is co-funded by EU through the Interreg-IPA CBC Bulgaria–Serbia Programme. Implemented by ‘Bulgaria in Europe’ Association, Bulgaria and Kladovo Municipality, Serbia





INTRODUCTION

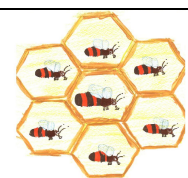
The adoption in September 2015 of the Global 2030 Agenda for Sustainable Development with its 17 Sustainable Development Goals (SDGs) was a major milestone on the path to international recognition of the need for a more sustainable way of living. The SDGs are universally applicable, reflecting both the fact that developed countries need to change their model of development in order for humanity's environmental footprint to remain within planetary boundaries, and to address the alarming inequalities that the current economic model has created.

The 17 SDGs and targets are based in no small part on the recognition of and respect for planetary boundaries, the redistribution of wealth, opportunities and labour and a reduced use of natural resources. European over-consumption at current levels is no longer an option and transitioning towards a comprehensive sustainable economic system is essential. That means taking seriously the discussions about limiting the use of natural resources for “over-consumers” in absolute amounts.

In the modern world of industrialization, the amount of waste has become a serious danger and threat to the ecosystem's balance. The use of chemical fertilizers and pesticides is constantly increasing; fertile soil becomes infertile land full of waste and dangerous substances. Disposal of waste to landfills or incinerators is a prerequisite for greenhouse effect and global climate changes. Across the European Union, somewhere between 118 and 138 million tonnes of biowaste arise annually, of which currently only about 25% (equivalent to 30 million tonnes annually) is effectively recycled into high-quality compost and digestate. For the most part, organic waste is still landfilled within Europe, leading to the release of uncontrolled greenhouse gases. As up to 50% of municipal solid waste is organic, the bio-waste fraction therefore plays an important role in recycling and the nascent circular economy.

„Bulgaria in Europe” Association, Vidin, Republic of Bulgaria in its capacity of Lead Partner, in cooperation with Serbian partner Municipality of Kladovo, Borski district, Republic of Serbia implemented the project “Preservation and improvement of the environment in the cross-border region through composting of biodegradable waste”. The project is financed by the EC through INTERREG-IPA cross-border programme Bulgaria – Serbia and co-financed by the national budgets.

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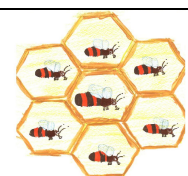
The project "Preservation and improvement of the environment in the cross-border region through the composting of biodegradable waste" proposes measures aimed at meeting the needs of target groups by providing them with an efficient, low-cost and high quality product - compost, which can increase soil fertility and improve the quality of their production. On the other hand, composting of biowaste leads in long-term to sustainable reduction of waste and preservation of natural resources.

This document presents the final results and effect of the project, based on the previously conducted assessments in the two target regions and initial analysis of the effect of the composting on local pollution level, developed in Vidin and Borski districts. Both assessments were developed on the basis of conducted parallel studies and analysis of the composting process within the project.

The report aims to develop a final cross-border assessment of the impact of the composting process, the benefits of composting to the extent of pollution in the target regions, the expected long-term impact on nature and the environment. The document will provide a general assessment of the impact and success of project "Preservation and improvement of the environment in the cross-border region through composting of biodegradable waste".

The final cross-border assessment is developed by the consultancy team of „Prime Consulting“ Ltd., hired by the project Lead partner.

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METHODOLOGY

The consultancy team of “Prime Consulting” Ltd. was engaged for development of this cross-border assessment. It proposed a methodology for implementation of the activity, analyzed the results, conclusions and recommendations of the assessments from the two target regions and developed final cross-border analysis demonstrating the impact of the composting on the local pollution level as well as general assessment of the project implementation.

The aim of the cross-border assessment is to be finally assessed the effectiveness of composting process on local pollution level and expected long-term environmental impact in the target cross-border region – Vidin district, Bulgaria and Bor district, Serbia.

Territorial scope of the study: the settlements in Vidin district, Republic of Bulgaria and Bor district, Republic of Serbia.

Target groups: households, agriculture producers, users and recipients of the project equipment, local public administration, central public administration on local level, NGOs, other interested parties, etc.

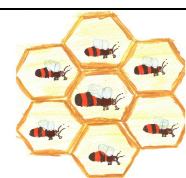
Period of implementation: December 2017 - January 2018.

Methodology:

- Analyse of the final assessment for Bor district;
- Summarized analysis and summarized assessment of the general effect of the project, analysis of the expected long-term effect;
- Development of final Cross-border report on the environmental impact of the composting with common conclusions, common results and common recommendations;
- Final conclusion and reporting.

Involvement of experts in preparation of analysis, assessment, report: 2 experts.

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BULGARIAN ASSESSMENT – EFFECT OF THE COMPOSTING IN VIDIN DISTRICT, REPUBLIC OF BULGARIA

The National Waste Management Plan 2014 - 2020 is the main strategy implementing separate collection in Bulgaria. There is also the National Strategic Plan for the gradual reduction of the amount of biodegradable waste going to landfill, which is the main document analysing biowaste management since more than 50% of municipal solid waste is biodegradable waste. In Bulgaria, separate collection targets and systems have been established for widespread waste in accordance with the EU Waste Framework Directive.

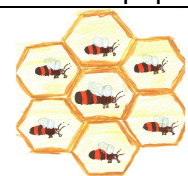
In 2010 Bulgaria reported to Eurostat 0% recycling of MSW. However, the next four years the country has taken big steps in its effort to meet the set targets. Currently, the targets are successfully met mostly through the introduced schemes for extended producer responsibility. Apart from these widespread waste streams, there is a requirement that biowaste from all areas for public use, parks and gardens must be collected separately and composted. The targets set for separate collection of biowastes are:

- by 31/12/2016, at least 25% of the generated biowastes during 2014;
- by 31/12/2020, at least 50% of the generated biowaste during 2014;
- by 31/12/2025, at least 70% of the generated biowaste during 2014.

Currently, the waste fee in Bulgaria is based on the property value of the waste holders and varies in different regions and municipalities. An act for local taxes currently is under development to oblige all municipalities to implement “pay as you throw” principle and to change the structure of municipal waste fee in accordance with the waste amount generated by each households. In general separate collection of biowaste in Bulgaria is in its very infant stage and only few pilot projects like "Preservation and improvement of the environment in the cross-border region through the composting of biodegradable waste" are in place.

Within the implementation of the project "Preservation and improvement of the environment in the cross-border region through the composting of biodegradable waste" many specific actions were taken in order to promote the composting of biowaste as environmentally-friendly option for waste treatment. In the initial case study held at the beginning of the project 75 % of respondents in Vidin district shared that the main part of waste they generate is biodegradable, which demonstrates huge potential for composting in the target region. Composting of biodegradable waste is contemporary and responsible solution for waste management, but still information about its benefits is insufficient, which makes it unpopular

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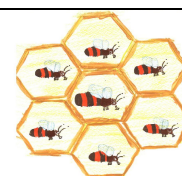
among the society. Within the project was held a series of measures aiming to raise awareness, to enhance the environmental approach to the waste, and to strengthen the capacity of institutions responsible for waste management policy.

The final assessment of the effect of composting on local pollution level in Vidin district identified some main conclusions and proposed relevant recommendations.

MAIN CONCLUSIONS

1. Interviewed 102 respondents from the settlements of Vidin district.
2. The aim of the research is assessment of the effect of the composting process, impact of the composting on the pollution level in the target region, expected long-term effect on the nature and the environment and assessment of the effect of implementation of the project “Preservation and improvement of the environment in the cross-border region through composting of biodegradable waste”.
3. Implementation of the project “Preservation and improvement of the environment in the cross-border region through composting of biodegradable waste” has strong positive impact on waste generation and disposal in the target region.
4. There is a need of implementation of large scale motivating measures among the society and stimulating the citizens to apply home composting.
5. Composting as a method for environmental waste treatment and reuse has many supporters, who believe in its undeniable benefit for the nature and nature resources and needs to be additionally popularized and promoted.
6. The citizens are conscious of the benefits of composting and the necessity of its applying in home conditions.
7. Identified readiness among the society for environmental treatment of the generated municipal biowaste.
8. Responsible institutions need to undertake specific measures for introduction of separate biowaste collection in Vidin district.
9. Responsible institutions need to undertake specific measures for introduction of home composting system in Vidin district.
10. A significant prerequisite for increase the waste recycling and reuse rates and in the same time decrease the level of disposed waste in Vidin district.

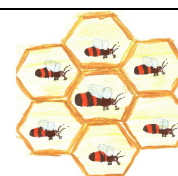
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11. Necessity of applying of mechanisms for increase the share of separated collected waste through stimulating the citizens, extension of the containers for separate waste collection and increase the frequency of waste collection and transporting of the separated waste.
12. There is a comprehensive information about the composting and its benefits, as well as motivation for environmental-friendly behavior to the waste.
13. Even respondents not participating in the project activities are positively influenced through the filling of the questionnaire – the attitude to the waste has been changed, increased are the care to the environment and willingness to reduce the human footprint on the nature.
14. The society prefers to trust close people and ones with proven reputation and choose the use information form the “first hand”.
15. Development and dissemination of information materials has significant effect and needs to be used in communication and popularization campaigns. It is appropriate to consider the possibilities for increase the circulation, as well as diversification of the types of the information materials.
16. Traditional and online media are effective communication tool, where should be invested.
17. Majority of the respondents has changed positively their attitude and behavior to the waste.
18. Increased is the number of the citizens, realized the need of separate collection of the recycling waste.
19. High share of the respondents who realized he benefits of the composting and starting composting even without material motivations.
20. Very high percentage of the respondents trying to reduce the quantity of the generated waste in line with the hierarchy of the waste management.
21. Increase the number of motivated to compost their biowaste.
22. 1/3 of participants in the research declare that the obstacle for composting is lack of suitable conditions.

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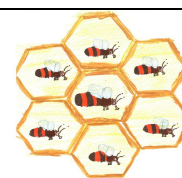


23. Lack of pessimists and respondents with negative attitude to the benefits of composting.
24. All respondents have assessed the benefits and positive effect of the biowaste composting.
25. All respondents have positively assessed the project and its effect, having strong stimulating impact on the society and supporting the development of the home composting system and increase the percentage of the households, composting the generated biowaste.
26. Project implementation has its positive impact and thanks to the held information campaign the home composting supporters increase.
27. Need of detailed presentation of different composting systems – with their advantages and shortcomings.
28. Necessity of broader presentation among the society in Vidin district of the project „Establishment of regional system for waste management in region Vidin“, implemented investment measures, linked with solid municipal waste management and biodegradable waste on the territory of the district and presentation of the possibilities of the established biowaste composting facility.
29. Women are much more interested in biowaste composting.
30. Middle age people are much more interested in composting.
31. Profile of people interested in and motivated to compost biowaste generally has the following characteristics: woman with secondary education at the age between 45 and 55.

MAIN RECOMMENDATIONS

1. Composting provides all prerequisites in order to have key role in the waste management, therefore it has to be encouraged in the target region.
2. To be found different opportunities for motivating people to separate their waste including biodegradable fraction and participate in the process.
3. Responsible authorities should present specific measures to initiate separate biowaste collection in Vidin district.

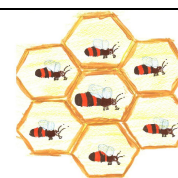
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4. Applying of mechanisms for increase the share of separately collected waste through encouragement of the population, rise the number of the containers for separate waste collection and the frequency of collection and transportation.
5. Application of specific measures at local level to reduce the quantity of disposed waste and to increase the quantity of reused one. Enhancing the control from the responsible authorities on the morphological type of waste thrown into the separate collection containers.
6. Enhancement the control executed by the responsible authorities on the actions of waste collecting companies during the transportation and disposal of separately collected packages waste.
7. Detailed presentation of different composting systems – with their advantages and disadvantages.
8. Providing of free services is a form for encouragement to the citizens. Those services could include free composters or free shredding of big green waste aiming composting “on site”.
9. Organisation of purposeful information campaigns including dissemination of information materials and instructions, written on a popular style, with good practices, as well as meetings with local society in the form of informal discussions, which could be used for presentation of more detailed information.
10. For the successful motivation special attention should be paid on the content of the information campaigns, by focusing on the economic benefits of the process, available composting opportunities and clearly defining of the supporting measures.
11. Awareness campaigns should present detailed information about the positives and effects of the composting on the environment and human health.
12. Implementation of large-scale information campaigns should support the efforts of the local public administration for applying of the composting systems.
13. Implementation of detailed campaign presenting the need for strict waste management policy aiming to achieve sustainable solutions and closing the loop in the resource management and reuse cycle.

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SERBIAN ASSESSMENT – EFFECT OF THE COMPOSTING IN BORSKI DISTRICT, REPUBLIC OF SERBIA

Current situation in Serbian local self-government units is characterized by unreliable and incomplete data on the quantity of municipal waste generation. Annual quantities of municipal waste were calculated based on measurement of waste in referent local selfgovernment units. Based on the results of such measurements, it can be adopted that urban population on average generates 1 kg of municipal waste per capita per day, whereas rural population generates an average of 0.7 kg of waste per capita per day. Based on the census, urban population accounts for 57% whereas rural population accounts for 43%. On average, in the Republic of Serbia 0.87 kg of municipal waste is generated per capita/day (318 kg p.a.).

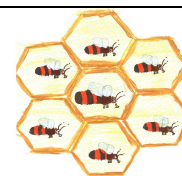
It has been estimated that collection rate of organised municipal waste collection amounts to 60% in the Republic of Serbia. Collection is organized primarily in urban areas, whereas rural areas are significantly less covered. Most of local self-government units have the machinery and vehicles for waste collection, however there is a lack of appropriate equipment since different types of vehicles are used for collection.

There is no systematically organised separate collection, sorting and recycling of waste in the Republic of Serbia. The current degree of recycling i.e. waste utilization is not sufficient. Although, the primary recycling in Serbia has been set forth under the law and envisages separation of paper, glass and metal in specially labelled containers, recycling is not functioning in practice.

According to the morphological composition of waste, organic waste (gardening waste and other biodegradable waste) takes up to almost 50% in the mass of municipal waste, whereas the proportion of other biodegradable waste, with 37.62% , is approximately three times more than the gardening waste. Green garden waste has the possibility of simple composting and application for a wide range of activities: as a natural fertilizer for flower cultures, lawns, etc. While the compost produced by composting and waste from food and green waste due to much lower quality can be used as cover material at landfills, as well as for the processes of rehabilitation of landfills and other waste dumps.

The Regional Waste Management Plan for the city of Zaječar and the municipalities of Boljevac, Bor, Kladovo, Majdanapek, Negotin and Knjaževac envisages the construction of a composting plant within the regional landfill in Zaječar, at the location of Halovo II, where

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the biological stabilization of waste vessels for other mixed waste. This will contribute to reducing the organic share of waste that is deposited in the landfill and to meeting the objectives of the EU Landfill Directive.

The objectives of Regional Waste Management Plan which should be contributed to are:

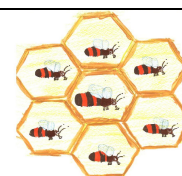
- Waste reduction: Reduce the amount of waste per inhabitant which should be disposed of at the landfill, promotion of recycling, separation and reuse.
- Collection, separation, reuse / recycling: Developing and commencing the application of the waste separation system at the formation site, including appropriate technical solutions and economic mechanisms for the participation of households in a new waste collection and sorting system. Introduction of separation of specific materials from waste (used PET packaging, plastic, paper, glass, metals). Development of non-hazardous and hazardous waste collection program from households, industrial waste management program, municipal waste recycling and reuse program, biodegradable waste management and packaging waste management program, etc.
- Impact on the environment and the social environment: Significantly improve the quality of life of the inhabitants of the region indirectly through the rehabilitation of the dumpsites and reducing the risk to human health. Prevent pollution of the environment, surface and underground waters and soil.
- Developing public awareness: Establishing and developing programs and systems of informing, educating and increasing the impact of public opinion.

The final assessment of the effect of composting on local pollution level in Vidin district identified some main conclusions and proposed relevant recommendations.

MAIN CONCLUSIONS

1. Out of 101 respondents, almost 60% of them did not participate in project activities, and only 8 respondents were using the equipment purchased through the Project, so we consider the results to be representative.
2. The largest number of respondents, over 90% believe that waste is a big or very big problem in their municipality which represents an increase of approximately 10% compared to the survey conducted at the beginning of the Project implementation. This shows us that the Project has managed to improve the awareness of the population on waste issues.

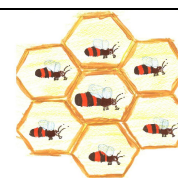
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3. Compared to the initial survey, a significant increase (by almost 30%) of those who know what compost is has been noted. Also, the increase (by approximately 25%) of those who now know that composting can be conducted in the household is also significant.
4. Of the total amount of waste generated in surveyed households / business facilities, according to respondents' opinion, approximately 54% of waste is made up of compostable waste (an increase of approximately 12% compared to the initial survey). This data points to the great potential of composting and reuse of biodegradable waste.
5. A significant level of awareness is also shown in the data that almost 80% of the respondents consider that due to composting, the amount of generated and deposited waste decreases. The largest number of respondents (83%) thinks that composting helps protect the environment and natural resources. The majority of respondents (92%) think that compost from households helps to protect the environment and natural resources.
6. Almost 4/5 of the respondents are familiar with the fact that the project has been implemented in their municipality, which indicates that the focus of the Project is on promoting and informing the local population. The fact that the information sources are diverse is also very positive.
7. It is a very positive fact that approximately ¾ of respondents have changed something in their approach to waste management in the last 12 months, almost 30% of respondents say that they started composting. However, there is still room for improvement, as approximately 30% of the respondents do not know or cannot assess whether the project resulted in waste reduction, and 11% of respondents think that composting does not help to reduce the amount of waste.
8. It is encouraging to note that most of the respondents who started composting, a good result was achieved and they are satisfied.
9. Respondents are now more aware of the seriousness of the waste composting and that it is a time- and efforts-consuming issue if we want to obtain a quality final product.
10. Regarding key reasons for not composting biodegradable waste, compared to research conducted at the beginning of the project, there is a reduction in those who do not know how to compost (by approximately 20%), the number of those who do

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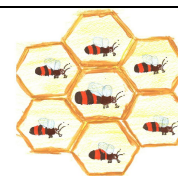
not have the appropriate place or do not have the appropriate vessels, or consider that they would not have any benefits or that compost has an unpleasant smell is approximate, while the number of those who say they do not have time is increased by approximately 12%.

11. Respondents are now more familiar with the cost of composting equipment. Compared to the research conducted at the beginning of the project, there is a reduction in those who think that equipment costs more, and the increase in those who consider equipment costs less.
12. It is encouraging to note that more respondents would probably or certainly start composting if they got composting equipment compared to the results from the “entering” survey.
13. Respondents are now more aware of the fact that biodegradable waste makes a significant share in municipal waste that is being taken over by the local utility company and deposited further on, so now the main reason for starting composting is “Pay As You Throw (PAYT)” principle - the situation in which the waste disposal service fee would be charged on the base of the waste quantity generated.
14. Almost half of the respondents would like a specialized company to collect biodegradable waste and then compost it. 1/3 of the interviewed consider the best solution is the central plant in which the inhabitants would transport biodegradable waste themselves. And finally, approximately 25% support home composting in each household.

MAIN RECOMMENDATIONS

1. Composting and re-utilizing biodegradable waste would significantly reduce the amount of waste that is permanently disposed of at landfills, which would significantly extend their service life, but reduce the costs of waste collection and transportation.
2. Regional waste management plan is a proposed waste management system that includes a waste collection system in two vessels (a recyclable waste vessel and a vessel for other mixed waste) and that recyclable materials are collected in a recyclable waste vessel, and the waste vessel for other mixed waste will collect other waste that will be treated by biological stabilization. This will directly affect the reduction of the amount of biodegradable waste that will be disposed of at the landfill. In the biological stabilization plant, the waste collected in the vessel for other mixed

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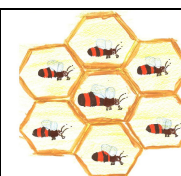




waste will be stabilized in order to reduce the organic content of waste in order to meet the requirements of the EU Landfill Directive. The fraction formed by this treatment represents a stabilized waste that will be disposed of at the landfill.

3. In addition to this proposed system, it is also important to reduce the amount of other mixed waste at the place of formation, in order to reduce the costs of collecting and transporting waste. In addition, this way the compost that households could use for their own needs would also be produced.
4. Additionally strengthen the awareness of the population about the need to protect, preserve and improve the state of the environment, as well as about certain terms in the field of waste management (what is recycling, separation, composting and how each of these procedures is implemented in practice).
5. Have an impact on the change in the behavior of the population within the waste management system, primarily in reducing the amount of waste generated in the household itself, the primary separation of recyclable waste, and on the separation and composting of biodegradable waste.
6. Get the inhabitants thoroughly acquainted in with composting technology, conditions regarding the location, equipment, procedure, compostable waste, application of compost, etc. Given that this is a treatment that is neither complicated nor expensive, we consider that significant effects can be achieved with an acceptable financial cost (extension of the life span of the landfill, reduction of the costs of collecting and transporting waste, improvement of the characteristics of the land, etc.).
7. Provide composting equipment that will be given to households for use in order to start with this type of treatment of biodegradable waste.
8. Improve the system for composting and treating biodegradable waste that occurs on public areas and in public enterprises through capacity building within municipal public utility companies dealing with waste.
9. Pay special attention to improving knowledge and technical capacities for composting in rural communities and agricultural holdings.
10. Encourage public utility companies to introduce models to stimulate citizens and businesses to reduce the amount of waste within their households and firms and to do the waste selection.

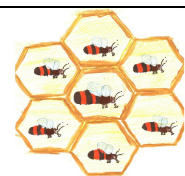
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11. Improve the technical and organizational capacities of public utility companies to adequately improve the biodegradable waste management system, primarily through its collection by specialized firms, household processing or through some of the models that would respond to the conditions at the territory of the municipality or region in the best way.
12. Improve educational programs in primary and secondary schools that contribute to improving knowledge about the role of citizens in waste management, models for reducing the amount of waste and environmental protection.
13. Improve the technical equipment of public institutions and waste selection and composting companies, with special emphasis on educational institutions, pre-school institutions, institutions with biodegradable waste at their disposal (e.g. nursing homes, hospitals, etc.).
14. Through extracurricular activities in elementary and secondary schools, develop workshops for making composters from available materials (wood, wire, etc.).

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FINAL CROSS-BORDER ASSESSMENT

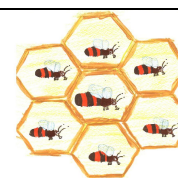
Doubtless composting is a very appropriate solution for public parks, agriculture farms, gardens and households, where a big amount of biodegradable waste is generated. Composting not only allows organic waste to be recycled and returns to the soil but also provides an environmental solution for dealing with much of the waste, which is currently a huge problem. In the light of the new more ambitious waste targets introduction of the separate biowaste collection and home composting have a huge potential and can have significant long-term environmental effect.

The EU Circular Economy Package recognises bio-waste recycling as an important element of integrated waste management. In a circular economy, biowaste is not landfilled. Instead, it forms a resource for organic soil improvers, fertilisers, growing media component and bio-based products. The carbon and nutrient contents of biowaste are mainly concentrated in organic fertilisers, soil improvers and growing media, or can be extracted, modified or transformed into a range of different bio-based products, too. All these secondary products can replace fossil-based products such as mineral fertilisers, peat and fossil fuels. After use, the residues of these products can flow back safely into the biosphere, thereby closing carbon and nutrient cycles.

Recycling of bio-waste contributes significantly to circular economy objectives:

1. It closes biological material cycles, and reduces the linear economy of landfilling and incineration of biowaste.
2. It contributes to long term soil fertility and C-sequestration by production of quality soil improvers and organic fertilisers.
3. It produces bio-based products which can replace fossil based products such as mineral fertilisers, peat and fossil fuels.
4. It creates a local economy with sustained jobs. Based on experience in countries with established biowaste recycling infrastructure, additional recycling of 100 Mio tonnes would lead to approx. 20 000 jobs. In addition, it contributes to improving farmers' incomes and to distributed jobs in rural regions.
5. It contributes to climate change mitigation, by replacing of fossil energy and fuel, peat and mineral fertilisers, sequestration of carbon in soil and by avoided landfill gas emissions.

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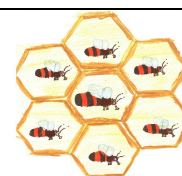
6. Separating of biowaste from the residual waste also enables increased recycling rates of other waste materials (glass, plastics, paper and metals).

Implemented actions within the project “Preservation and improvement of the environment in the cross-border region through composting of biodegradable waste” raised awareness of the communities in the two target regions and put efforts to popularize composting of biowaste as the only environmental method for waste treatment and reuse. Conducted at the end of the project assessments of the effect of composting demonstrated that the population from both territories is changing its approach to waste realizing that it is a valuable resource which has many benefits. After careful analysis of the assessments carried out in Vidin district and Borski district a set of joint conclusions and recommendations was developed and hereby presented.

FINAL JOINT CONCLUSIONS

1. Implementation of the project “Preservation and improvement of the environment in the cross-border region through composting of biodegradable waste” has strong positive impact on waste generation and disposal in the target region: Vidin district, Republic of Bulgaria – Borski district, Republic of Serbia.
2. All respondents from the target cross-border area have positively assessed the project and its effect, having strong stimulating impact on the society and supporting the development of the home composting system and increase the percentage of the households, composting the generated biowaste.
3. The results from both final studies demonstrate significant change of the public approach to the reduction of the quantities of generated biowaste and its effective management.
4. The morphological composition of municipal solid waste in the cross-border region determines the high percentage of biodegradable waste - a major resource for composting and other secondary derivatives in both target regions.
5. Population of both target regions is convinced in the positive effect of composting, the need of “greener” approach in the waste management and wise use of natural resources. Composting as a method for environmental waste treatment and reuse has many supporters, who believe in its undeniable benefit for the nature and nature resources and needs to be additionally popularized and promoted.

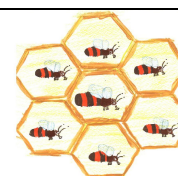
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6. There is a significant prerequisite in the cross-border area for increase the waste recycling and reuse rates and in the same time decrease the level of disposed waste.
7. It is very encouraging that a big part of the respondents from both target regions has started composting and achieved very good results. Respondents are now more aware of the seriousness of the waste composting and that it is a time- and efforts-consuming issue.
8. The project has positively influenced even the respondents not participating in the project activities - through the filling of the questionnaire. Their attitude to the waste has been changed, increased are the care to the environment and willingness to reduce the human footprint on the nature.
9. Respondents are now more aware of the fact that biodegradable waste makes a significant share in municipal waste that is being taken over by the local utility company and deposited further on, so the main reason for starting composting is “Pay As You Throw (PAYT)” principle – when the waste disposal service fee is charged on the base of the waste quantity generated and disposed.
10. Established and functioning system for waste collection and disposal system on the territory of Vidin and Bor district, which is a prerequisite for diversion of biodegradable waste from landfills
11. There is an active civil position on the issues of solid waste and biodegradable waste management.
12. Experience has been gained in implementing policies by investing EU Structural Funds for Waste Management.
13. Regional and municipal planning and strategic documents, part of efficient and sustainable waste management, have been developed.
14. Lack of system for separate collection of biowaste.
15. Lack of standards for the use and quality of the compost produced, no compost market has been created.
16. A cross-border network of experts and stakeholders has been set up to exchange experience and know-how in the field of biodegradable waste management.

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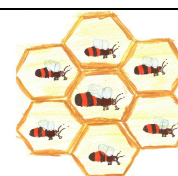




FINAL JOINT RECOMMENDATIONS

1. Composting and re-utilizing biodegradable waste would significantly reduce the amount of waste that is permanently disposed of at landfills, which would significantly extend their service life, but reduce the costs of waste collection and transportation, therefore it has to be encouraged in the cross-border region.
2. For the efficient use of resources, it is necessary in the cross-border region to create systems for the separate collection of biodegradable waste in order to divert it from a landfill and to form new models of society for the utilization of bio-waste.
3. To raise awareness of the population about the need to protect, preserve and improve the state of the environment, as well as about certain terms in the field of waste management (recycling, separation, compostin, etc.) and to motivate people to separate their waste including biodegradable fraction and participate in the process.
4. Responsible authorities should consider specific measures to initiate separate biowaste collection and applying of mechanisms for increase the share of separately collected waste through encouragement of the population, rise the number of the containers for separate waste collection and the frequency of collection and transportation.
5. Strictly to observe the hierarchy in waste management with strong priority to waste prevention and reduction of waste generation on site, in order to reduce the costs of waste collecting and transporting.
6. Application of specific measures at local level to reduce the quantity of disposed waste and to increase the quantity of reused one. Enhancing the control from the responsible authorities on the morphological type of waste thrown into the separate collection containers. Significant and long-term effect can be achieved with an acceptable financial cost for introduction of home composting and separate biowaste collection - extension of the life of the landfills, reduction of the waste collecting and transporting costs, improvement of the characteristics of the land, etc.

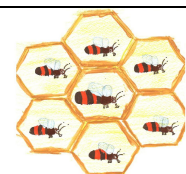
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7. Enhancement the control executed by the responsible authorities on the actions of waste collecting companies during the transportation and disposal of separately collected waste.
8. Improve the technical and organizational capacities of local public authorities and the respective waste utility companies in the cross-border region.
9. Improve educational programs in primary and secondary schools in the cross-border area that contribute to improving knowledge about the role of citizens in waste management, models for reducing the amount of waste and environmental protection.
10. Organisation of purposeful information campaigns including dissemination of information materials and instructions, written on a popular style, with good practices, as well as meetings with local society in the form of informal discussions, which could be used for presentation of more detailed information.
11. Implementation of large-scale information campaigns should support the efforts of the local public administration for applying of the composting systems.
12. Implementation of detailed campaign presenting the need for strict waste management policy aiming to achieve sustainable solutions and closing the loop in the resource management and reuse cycle.

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CONCLUSION

This paper tries to describe the main problems, obstacles and opportunities for successful treatment and utilization of generated biodegradable waste in the cross-border area Vidin district, Republic of Bulgaria – Borski district, Republic of Serbia. It is obviously that the implementation of the project “Preservation and improvement of the environment in the cross-border region through composting of biodegradable waste” has strong positive impact on waste generation and disposal in the target region. All respondents from the target cross-border area have positively assessed the project and its effect, stating that it has strong stimulating impact on the society and supports the development of the home composting system and increase the percentage of the households, composting the generated biowaste.

Promoting waste prevention, waste recycling and reuse and in particular biowaste composting is the best way to reduce our environmental footprint. Resource saving lifestyles, products and services need to be encouraged on larger scales to bring down the overall consumption of natural resources. Waste prevention is priority, with recycling the answer, when prevention is not possible. Rather than being sent to landfill, the organic waste must be composted, returning nutrients to the soil and thereby helping to naturally improve food production. Prevention and recycling could together save public money and contribute to fighting climate change, reducing our impacts on land and biodiversity and providing job opportunities.

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