



CULTURAL ECOSYSTEM SERVICES IN AGROECOSYSTEMS - PERCEPTION OF STAKEHOLDERS – CASE OF BULGARIA

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INTRODUCTION

Based on the Millennium Ecosystem Assessment (MA, 2003, 2005) cultural ecosystem services (CES) related to aesthetic and recreational value of ecosystems, their spiritual characteristics, cultural identity and educational value.

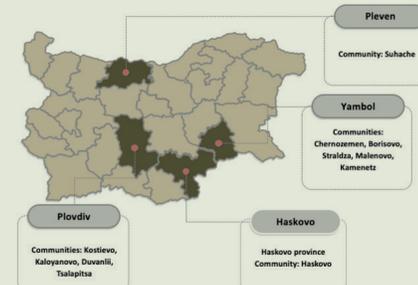
Relationship between culture and nature is very important for sustainable agricultural practices and rural landscapes maintenance (Gullino and Larcher, 2013).

The aim was to obtain data on CES perceived by farmers and local residents and land-use management changes (LUMC) in selected regions in Bulgaria.

MATERIALS AND METHODS

A Questionnaire was developed for the evaluation of stakeholders' acceptance of cultural ecosystem services, and for the documentation of land management system as well as social and economic structures of land use. The survey was conducted from April to December 2016 in 11 different villages, in two different regions based on direct face-to-face interaction: South-Central and South-East Bulgaria (fig. 1).

On the base of methodological scheme by STACCATO protocols of stakeholders mapping the lists of stakeholders at the regional level was made (Fres Osmán, 2016).



RESULTS AND DISCUSSIONS

The representative from stakeholders' group was selected for Plovdiv Region (Group B) – based on their willingness to participate in the activity. The types of stakeholders selected, and their main interests and motivations are shown in Table 1.

The workshop held by the Agricultural University of Plovdiv brought together 16 participants representing three main groups: the first group included members of the local NGOs and ecologists, the second one comprised agricultural technicians and scientists, and the third group was formed by local farmers and residents.

Table 1. Participant stakeholders in the online consultation in Plovdiv (after Fres Osman, 2016).

STAKEHOLDER TYPE	MAIN ACTIVITIES	PLOVDIV
Agriculture authority department	Formulation of agricultural policy, ensuring that natural resources are used sustainably, ensuring food supplies to the region, promoting the exchange of knowledge and training, promoting regional products.	B1
Development NGO	Protection of biodiversity and reduction of pollution through partnerships with several stakeholders and society.	B2
Environmental organization	Promotion and conservation of flora and fauna, promotion and encouragement of sustainable management approaches by campaigns and projects.	B3
Farmer's union	Representation of farmers interests in relation to the preservation of family farm, fair income, legal framework, and rational land use, production of quality products, protection of cultivated land and the protection of nature.	B4
Farming association	Representation of groups that produce the same type of product, to assure their economic, politic, legal interests, as well as provision of common services.	-
Organic agriculture certification body	Certification, inspection, pre-auditing, standard and regulation services to enhance organic agriculture.	B6
Organic agriculture engineer	Individuals, developing and conserving local varieties, with function of snow-how transference, technical consultation and training, partnerships with other stakeholders for organic agriculture.	B7
Organic farming association	Representation of organic farmers to develop common guidelines and standards for agriculture and processing, as well as knowledge exchange among its members.	-
Private research institution	Generate, support and exchange scientific knowledge regarding agriculture through private funds.	-
Publi research institution	Generate, support and exchange scientific knowledge regarding agriculture through public funds.	B10

ECOSYSTEM SERVICES PERCEIVED BY STAKEHOLDERS

The different types of benefits perceived by consulted stakeholders in Bulgaria are based on both workshops with regional experts and direct interviews to farmers. The results show that all the stakeholder groups identified benefits across the four categories traditionally used to classify ES. In this research work the notion of service-generating structures (SGS) (Fischer and Eastwood, 2016) refer to the physical elements that, through human intervention and often involving the transformation of ecosystems, promote ES co-production.

In agro-ecosystems, CES depend on humans, and in that way, are sustained and maintained. Features in the landscape can be also abstract notions linked to its aesthetic and sensorial characteristics.

Table 2. Identified links between types of service generating structures and CES in Bulgaria, per stakeholder type.

SGS CLASS	ECOLOGISTS AND NGOS:	AUTHORITIES, EXPERTS, TECHNICIANS:	FARMERS
Agricultural landscapes 	1. Aesthetic, 2. Artistic creation, 3. Traditional local varieties and breeds (Biocultural Diversity), 5. Co-creation of Ecological values, 6. Connectedness to nature, 7. Sense of place –belonging, 8. Cultural transmission, 9. Education, 12. History and historical memory, 13. Inspiration, 14. Outdoor Recreation and Cultural hunting, 15. Physical, intellectual, emotional sustenance, 16. Place shaping and attachment, 17. Social interaction, 18. Spiritual enrichment, 20. Traditional agricultural practices & Small-scale farming	1. Aesthetic, 2. Artistic creation, 3. Traditional local varieties and breeds (Biocultural Diversity), 4. Celebrations, 6. Connectedness to nature, 7. Sense of place – belonging, 8. Cultural transmission, 9. Education, 11. Heritage-intangible, 16. Place shaping and attachment, 17. Social interaction, 18. Spiritual enrichment, 20. Traditional agricultural practices & Small-scale farming	1. Aesthetic, 2. Artistic creation, 3. Traditional local varieties and breeds (Biocultural Diversity), 5. Co-creation of Ecological values, 6. Connectedness to nature, 7. Sense of place –belonging, 9. Education, 10. Heritage-tangible, 16. Place shaping and attachment, 17. Social interaction, 20. Traditional agricultural practices & Small-scale farming, 21. Traditional knowledge
Heritage systems 	1. Aesthetic, 2. Artistic creation, 3. Traditional local varieties and breeds (Biocultural Diversity), 4. Celebrations, 5. Co-creation of Ecological values, 6. Connectedness to nature, 7. Sense of place –belonging, 8. Cultural transmission, 9. Education, 11. Heritage-intangible, 12. History and historical memory, 13. Inspiration, 15. Physical, intellectual, emotional sustenance, 16. Place shaping and attachment, 17. Social interaction, 18. Spiritual enrichment, 19. Tourism, 20. Traditional agricultural practices & Small-scale farming, 21. Traditional knowledge	1. Aesthetic, 2. Artistic creation, 3. Traditional local varieties and breeds (Biocultural Diversity), 4. Celebrations, 5. Co-creation of Ecological values, 6. Connectedness to nature, 7. Sense of place –belonging, 8. Cultural transmission, 11. Heritage-intangible, 12. History and historical memory, 15. Physical, intellectual, emotional sustenance, 16. Place shaping and attachment, 17. Social interaction, 18. Spiritual enrichment, 19. Tourism, 20. Traditional agricultural practices & Small-scale farming, 21. Traditional knowledge	2. Artistic creation, 3. Traditional local varieties and breeds (Biocultural Diversity), 4. Celebrations, 6. Connectedness to nature, 7. Sense of place –belonging, 8. Cultural transmission, 10. Heritage-tangible, 11. Heritage-intangible, 12. History and historical memory, 13. Inspiration, 16. Place shaping and attachment, 17. Social interaction, 18. Spiritual enrichment, 19. Tourism, 20. Traditional agricultural practices & Small-scale farming, 21. Traditional knowledge
Semi-natural landscapes 	1. Aesthetic, 2. Artistic creation, 3. Traditional local varieties and breeds (Biocultural Diversity), 5. Co-creation of Ecological values, 6. Connectedness to nature, 7. Sense of place –belonging, 8. Cultural transmission, 9. Education, 10. Heritage-tangible, 13. Inspiration, 14. Outdoor Recreation and Cultural hunting, 15. Physical, intellectual, emotional sustenance, 16. Place shaping and attachment, 17. Social interaction, 20. Traditional agricultural practices & Small-scale farming	1. Aesthetic, 2. Artistic creation, 5. Co-creation of Ecological values, 6. Connectedness to nature, 9. Education, 10. Heritage-tangible, 11. Heritage-intangible, 12. History and historical memory, 13. Inspiration, 14. Outdoor Recreation and Cultural hunting, 15. Physical, intellectual, emotional sustenance, 18. Spiritual enrichment, 20. Traditional agricultural practices & Small-scale farming	1. Aesthetic, 3. Traditional local varieties and breeds (Biocultural Diversity), 6. Connectedness to nature, 8. Cultural transmission, 10. Heritage-tangible, 14. Outdoor Recreation and Cultural hunting, 15. Physical, intellectual, emotional sustenance, 17. Social interaction
Mosaic elements 	1. Aesthetic, 2. Artistic creation, 5. Co-creation of Ecological values, Connectedness to nature, 7. Sense of place –belonging, 8. Cultural transmission, 9. Education, 12. History and historical memory, 13. Inspiration, 14. Outdoor Recreation and Cultural hunting, 15. Physical, intellectual, emotional sustenance, 16. Place shaping and attachment, 17. Social interaction, 20. Traditional agricultural practices & Small-scale farming	1. Aesthetic, 4. Celebrations, 5. Co-creation of Ecological values, 6. Connectedness to nature, 7. Sense of place –belonging, 9. Education, 11. Heritage-intangible, 17. Social interaction, 20. Traditional agricultural practices & Small-scale farming	3. Traditional local varieties and breeds (Biocultural Diversity), 5. Co-creation of Ecological values, 13. Inspiration, 14. Outdoor Recreation and Cultural hunting, 16. Place shaping and attachment, 18. Spiritual enrichment, 19. Tourism

All four categories of ES provided by agroecosystems were found to be perceived by all three stakeholders' groups at the regional level. Cultural services are dominantly perceived by authorities, technicians and agricultural experts with 56% and farmers with 51%. Ecologist and NGO's perceived CES with 31%, in lower degree when compared to other user groups. Regulating services follow in importance ranking in similar percentage for all three groups: 22% for authorities, technicians and agricultural experts; 23% for farmers, and 27% for ecologists and NGOs. Provisioning services were mainly perceived by ecologists and NGOs (31%), while only from 11-12% for authorities, technicians, agricultural experts and farmers. All three groups perceived supporting services from 11-14%.

CONCLUSIONS

The results show that birthplace, sense of belonging, connection with nature, aesthetic and transmission of knowledge from generation to generation are the most important cultural ecosystem services on investigated villages in Bulgaria.

Frequent land-use changes found in the studied communities are agricultural intensification, expansion and monocultures.

CES have huge importance for human and society well-being.

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