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SUSTAINABLE USE OF LAND IN DANGER OF WIND EROSION IN UKRAINE: STAKEHOLDER ENGAGEMENT

In the modern world overcoming the problems of soil erosion and the transition to the sustainable use of land, especially land involved in agricultural production, is impossible without the broad involvement of all interested and stakeholding parties in solving these problems. Dialogue with stakeholders is a key element of effective management at individual farm and state levels. Currently in Ukraine, there is considerable scope and need for significant improvements in this area as only a small number of companies (industrial, commercial) involved in the agricultural sector have developed stakeholder engagement tools, and only one is actively involved in dialogue with stakeholders.

This paper presents research focusing on the village of Pishcha in Volyn region, Ukraine. It examines the theoretical and methodological aspects of: identifying key stakeholders, determining their interests (explicit and implicit) and the possible impact of these on the project; project preparation and implementation; the identification of apparent or potential conflicts between the interests of different stakeholders, and the possibility of reconciling these interests and establishing constructive relationships between them; the forms of participation appropriate to each of the stakeholders at each stage of the project cycle; and, the possibilities for the monitoring and evaluation processes, especially participatory methods that look to involve interested parties.

The paper also sets out a provisional budget (facilitation needed, personnel and staffing required) for and discusses the feasibility of the implementation of the engagement process of stakeholders for the promotion and roll out of promising options for the sustainable use of land in danger of wind erosion in Ukraine.

Key words: *wind erosion, sustainable use of land, stakeholders analysis, stakeholder engagement.*

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СТАЛЕ ВИКОРИСТАННЯ ДЕФЛЯЦІЙНО НЕБЕЗПЕЧНИХ ЗЕМЕЛЬ В УКРАЇНІ: ВЗАЄМОДІЯ СТЕЙКХОЛДЕРІВ

Досліджено теоретичні й методичні аспекти ідентифікації, систематизації стейкхолдерів, визначення їх цілей і можливостей їх залучення для розробки перспективних варіантів сталого використання дефляційно небезпечних земель. Розглянуто різні методи аналізу стейхолдерів (мапи, матриці). Розроблено план дій, механізми взаємодії та індикатори вимірювання якості залучення стейкхолдерів.

Ключові слова: *вітрова ерозія, стале використання земель, аналіз скейкхолдерів, взаємодія стейкхолдерів.*

Introduction and review of literature. Currently, the overlapping and interacting issues of understanding of the economic value of productive land, preventing the loss of natural capital, preserving ecosystem services, combatting and adapting to climate change, and addressing food, energy, and water security are being investigated by The Economics of Land Degradation (ELD) Initiative. Based on state of the art research provided by a world-wide network of researchers and practitioners, and with the aim of establishing a global approach for the analysis of the economics of land degradation, the ELD has produced a number of reports and practitioners manuals [1–3]. The analysis presented in this paper was produced as part of an ELD initiative.

Soil degradation has been identified as one of the major threats to European soils. In the previous paper [4] the conditions under which wind erosion of soils and the potential soil loss caused by this problem in the Ukraine were described. The best options for the project area, from both an economic and an environmental point of view, to conserve and restore soil productivity on the land suffering from and at risk of wind erosion were identified. Three options to mitigate and compensate for the losses of organic matter and nutrients on the affected lands are assessed for the comparative effectiveness of the measures in the Pishcha village, Shatsky district, Volyn region during 2008–2012. The research identified that the best measure against soil deflation was changing the economic use of lands at risk of soil erosion by wind by the halting cattle grazing and the creating overseeding grass meadows. This option

has a number of advantages, including: the cultivation of perennial grasses generates income from the sale of seed clover in the first year and hay in the following four years; through nitrogen fixing bacteria associated with the annual grasses improving the nitrogen levels in the soil; and, the cessation of the deflationary processes in the different soil types extant in the investigated areas and allowing for the steady build up of a fertile humus layer.

The options and recommendations put forward in that paper for effective management for the sustainable use of soil resources that are exposed to wind erosion potentially involve a wide range of actors and stakeholders. Research on the identification and engagement of these stakeholders was performed and is presented in this paper.

The purpose of the article is to identify and classify stakeholders, and determine the possibilities for engagement with and between stakeholders within the context of implementing measures that can help tackle or allow adaptation to the challenges of land degradation in Ukraine using the example of the use of land in danger of wind erosion in the Pishcha village.

Results and discussion. This paper examines techniques to involve different stakeholders in the identification of appropriate methods for the sustainable use of land in danger of wind erosion that have the capacity to reverse land degradation trends in Pishcha village. It covers the setting of project goals, the planning of the stakeholder engagement process, the identification of relevant stakeholders, the implementation of the stakeholder engagement plan, using tried and tested tools and facilitation techniques, and the monitoring the engagement process in order to evaluate whether or not the desired goals of engagement have been achieved, including identifying the most appropriate indicators for the particular project.

The first step in any stakeholder engagement process is to clearly define the goals that the process seeks to address. Only when these are clear is it possible to identify who has a stake in the achievement of these goals and who, as a result, needs to be involved [5].

The key goal of this project was to investigate the ecological, social and economic feasibility of measures to compensate for the losses of organic matter and nutrients resulting from soil deflation on, and to maintain and enhance the ecosystem services provided by, the affected lands in the Pishcha village, Shatsky district, Volyn region. Several options were identified and investigated:

1) Organic fertilizers in the form of mixed manure and straw;

2) Fertilization using ammophos to raise phosphorus levels and kalimag-30 for restoring potassium;

3) Changing the economic use of land – replacing the grazing of grasslands with overseeding creation of perennial grass meadows [4].

Land degradation, as a highly complex process that interacts with other biophysical and social processes, affects different stakeholders at different scales. Successfully tackling land degradation therefore requires engagement with diverse stakeholders, who often have conflicting priorities. For example, many approaches to

tackling land degradation lead to trade-offs between different ecosystem services and those with a stake or interest in those services [5]. This trade-off could be between short-term provisioning services (e.g. crop and animal production or extractive uses of forests), upon which the resource-dependent poor often depend for their livelihoods, and the protection and enhancement of regulating and supporting services (such as nutrient cycling and soil formation), which have the potential to reverse land degradation, contribute to Land Degradation Neutrality [1], and enhance resilience to climate change [6]. Given the challenges associated with stakeholder engagement, it is essential to be clear about the reasons for engaging in the first place in order to clearly understand the context in which these trade-offs need to be made.

Traditional top-down approaches to tackling land degradation have often failed to deliver the intended results [6, 7]. Frequently, these problems can be attributed to the lack of ownership over, or buy in to, the process by those who have the power to implement decisions, such as state actors or land owners. This lack of engagement with and ownership of the process may then lead to these groups delaying or preventing the implementation of decisions in order to preserve their perceived and limited interests, or just to be obstructive of something they have been excluded from. However, care should be taken in applying the widespread implicit expectation that more participation is generally better [8, 9], especially where resources for engagement are limited and/or the total number of individual stakeholders is too large to successfully manage the constructive engagement of. Some research has highlighted that the adoption of participatory methods should be optimized rather than maximized [10].

In this case, stakeholders can be seen as having an interest, either directly or indirectly, in the provision of ecosystem services and products generated by the project area. The, mainly pasture, land in Pishcha village provides several ecosystem goods and services, which can be classified as follows: supporting (e.g. nutrient cycle; soil formation; primary production); provisioning (e.g. food through grazing of cattle); and regulating (e.g., conserving and protecting soil, water, and air resources through natural processes, such as filtration, detoxification, etc.). The goods and services provided by the pasture ecosystem are shown in table 1.

Another key goal of the project is the improved co-production of knowledge of land degradation and measures for the protection of soils among scientists, local community members, technical advisors, administrators and policy makers to facilitate better joined up thinking and action. These different groups are «stakeholders» [6], as they do, literally, have something at stake currently, or in the future as current circumstances evolve or if changes are introduced. As stakeholders they can influence processes or be influenced by them [11, 12, 13] and should be included in the engagement planning.

In instances where a number of competing goals are identified for a stakeholder engagement process, it is usually necessary to prioritize them. There are a number of transparent and participatory ways of doing this with stakeholders, ranging from simple voting and ranking exercises to more complex prioritization exercises [6].

Table 1

Ecosystem goods and services of pasture ecosystems

Ecosystem Good or Service	Benefits		
	Economic	Environmental	Social/Cultural
Forage production for livestock	Sale of feed Hay, forage production	Biodiversity (species and habitat) Clean air and water Carbon sequestration Soil enrichment from certain plants	Landscape value Open space Rural communities dependent on forage-livestock systems
Livestock production for humans	Sale of meat and fiber products Farming operations Economic base for rural communities	Recycling of nutrients Biodiversity (species and habitat) Clean air and water Carbon sequestration Soil enrichment from certain plants	Landscape value Open space Satisfaction derived from farming as a way of life Serenity of pastoral scenery
Fishing, hunting, bird watching	Sales of licenses, gear, guide services Access rights on private or public lands	Promotion of healthy wildlife populations Maintenance of biodiversity Control of hunted populations	Landscape value Pleasure derived from outdoor activities Opportunity to observe wildlife
Clean water	Meet needs of domestic, agricultural, and industrial uses Sale of bottled water Income from recreation Human health	Aquatic habitat Drinking water for wildlife Rejuvenation of riparian areas Watershed function	Landscape value Aesthetics of unpolluted water Pleasure derived from recreation
Biofuel feedstocks	Sale of feedstocks and resultant biofuel products	(depending on feedstock): Biodiversity maintenance Soil enrichment Carbon sequestration Greenhouse gas mitigation	Reduced dependence on fossil fuels

Source: adapted from Sustainable Rangelands Roundtable, 2008.

The analysis begins with the identification of stakeholders and their relationship to the project goals (Annex A).

Methods for identifying stakeholders include: self-selection (e.g. in response to advertisements or announcements); written records or census data, which can also be used to categorize stakeholders by age, gender, religion or place of residence; oral or written accounts of major events that can help identify those stakeholders who were involved or affected; and, using a checklist of likely stakeholder categories [6]. As an example, the types of stakeholders identified by the ELD Initiative in relation to land management are: Governments, i.e. political decision makers and administrators, including national and sub-national government authorities and agencies; private businesses, including multinationals and other big corporations, small and medium enterprises, farmers and smallholders; civil society represented by local, national and

international development and environmental non-governmental organizations, professional bodies; and, local communities. Academic researchers and research institutes are sometimes considered as stakeholders through their role in collecting and analyzing relevant data, and providing knowledge and understanding to feed into evidence-based discussions for decision-making by stakeholders [11].

Stakeholder analysis, looking at the differences and similarities between the various stakeholders in relation to the project goals, is an indispensable tool in the planning phase of a project. It can help involve relevant stakeholders by providing an understanding of who has a stake in the social and/or natural system affected by the decision or action, and the nature of their claims and inter-relationships between each other [6].

As there are many different stakeholders, acting at a range of levels involved in this case of soil erosion, it is crucial to identify their varying degrees of power they exert on the situation and the level of interest in the particular situation. In this case it was felt that the best tool for this was an Interest-Influence Matrix (fig.1) for assessing and categorizing each stakeholder, and starting to develop a strategy for how to involve the actors. In the Interest-Influence Matrix, Influence (= power) captures the capacity of a stakeholder to have an effect on the situation, either directly on the ground or through and with other stakeholders. Interest shows the level of priority that a stakeholder gives specifically to the situation in hand. Figure 1 shows how these criteria help to identify four types of stakeholders:

Stakeholders with high levels of interest and influence (in the cloud) are termed **key players**, and priority should be given to engaging actively with this group as they have both the will and the capacity to affect the situation.

Context setters are highly influential, but have little interest in the specific situation. Because of this, they may have significant influence over the success of the project goals, but may be difficult to constructively engage with. However, particular effort to engage this group in the process can be rewarding and may be necessary to produce the facilitating environment required to achieve the project goals or to roll positive results out more widely.

Subjects have high levels of interest in the project, but predominantly have low levels of influence, and, although by definition they are supportive, they are unlikely to be able to play a significant role in the broad implementation of the project goals. From the perspective of stakeholder engagement, these are often marginal and can be considered «hard to reach». The low level of influence held by this group is often used as a justification for excluding them from the research process. However, as they are often the most affected by localized changes they warrant special attention to secure their engagement and to empower them to engage as equals with more influential participants in the project and the achievement of its goals. This will improve overall buy-in to the project goals and potentially increase the chances of long term success, as well as offsetting their potential to become more influential by forming alliances with other more influential stakeholders, who may be looking to obstruct the project goals, through frustration with not having their voices heard in

processes that affect their lives and livelihoods.

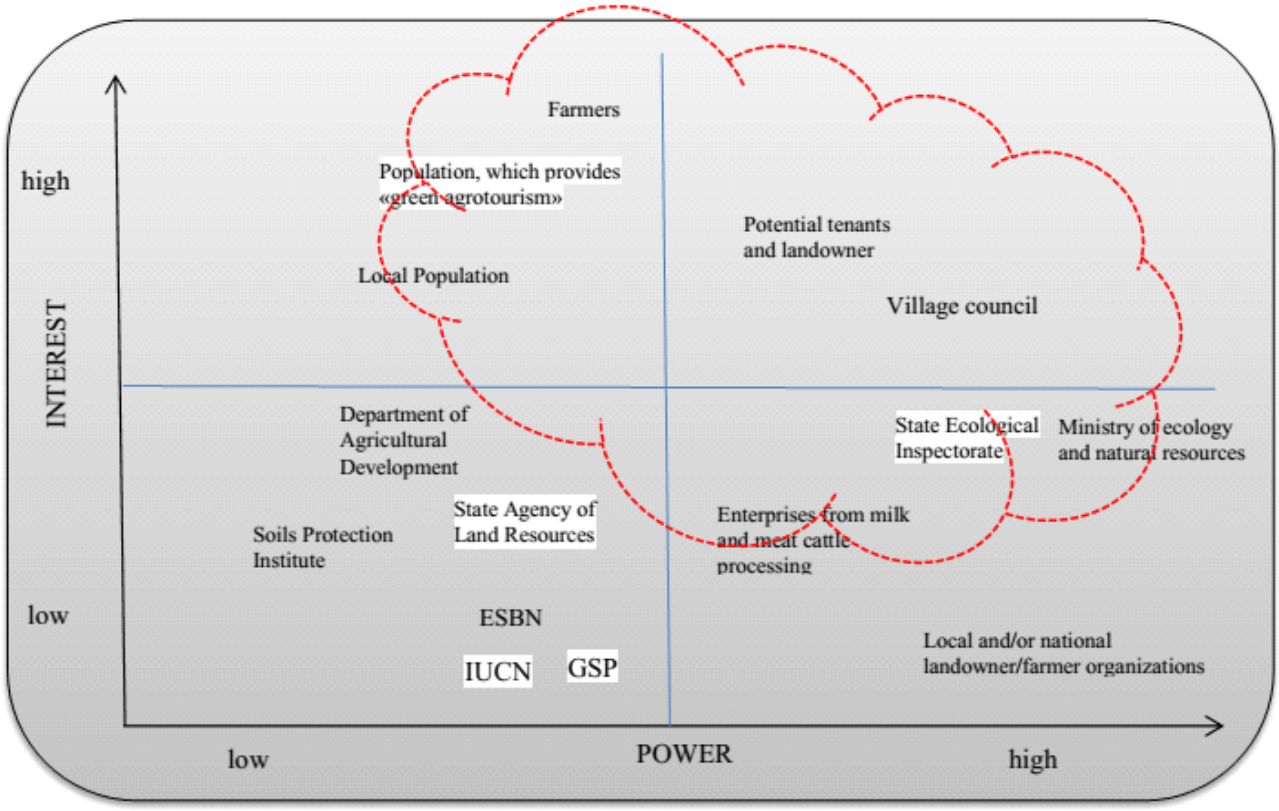

Fig.1. Interest-Influence Matrix of Pishcha land's Stakeholders

Source: authors' research.

The crowd are stakeholders who have little interest in or influence over the project goals and there is little need to consider them in much detail or to engage with them [6].

In Pishcha village, it was identified that the most important groups are the Village Council (who allocate tenancies), the potential tenants (who may, in the future, become tenants of the land) and farmers. However, while all these stakeholder groups have a strong interest in delivering sustainable land use change to combat the adverse impacts of wind erosion in many ways their power is only theoretic, as the notional power that they possess to make the necessary decisions is not matched by having access to the resources to do so. Those stakeholder groups who do have the resources have little or no awareness of the situation and lack the power to specifically influence the situation at the study site. Stakeholder engagement needs to address these gaps.

One way of extending the analysis provided by the matrix is via the 4Rs categorization. Using the 4Rs tool enables the mapping of the identified stakeholders according to their roles, which consist of rights, responsibilities, relationships and revenues. In combination with knowledge about power dynamics, provided by the interest-influence matrix, categorization using the 4Rs tool allows for a deeper

appreciation of the relationships between stakeholders relations and their particular roles in regard to the issue at hand. This, in turn, allows for the development of stakeholder engagement strategies more likely to foster the successful and sustainable solutions.

Applying this tool to the Pishcha village (Annex B), the 4Rs are:

Rights:

- Access to and use of land and/or pasture – these may be customary or purchased rights;
- Access to the ecosystem services and/or goods of the land and/or pasture; and,
- Social, economic and environmental functions related to the land held by groups.

Responsibilities:

- Land management tasks, including monitoring and control, coordination, decision making, and measurement;
- Implementing decisions on rules and procedures; and,
- Abiding by sustainable land management legislation and guidance.

Revenues (benefits):

- Direct benefits arising from proceeds derived from the land resources accessed (from grazing, haymaking and/or other activities such as agrotourism); and,
- Indirect benefits arising from land restoration and preservation, and the development of rural areas, including health preservation, preservation of the soil ecosystems and the realisation their functions, potential increases in customers, and the formation of raw materials base.

Relationships, which are informed by:

- Analysis of Interest-influence matrix; and,
- Roles in project implementation.

There are a range of methods available when trying to understand relationships between stakeholders. These include:

- Venn diagrams that can be used to visualize the relative influence and interest of different stakeholders. The size of circles refers to the relative influence of the stakeholder, and overlaps between circles express the overlapping interests of the different groups.
- Actor-linkage matrices, which consists of a table (i.e. matrix) listing all of the stakeholders and providing descriptions of the type of interrelation between each of them.
- Social Network Analysis, which is a method that seeks to provide insights into the patterns of communication, trust and influence that exists between actors in social networks at work in the situation being looked at. It utilizes techniques that analyze the structure of social networks and map stakeholder perceptions and values, as well as approaches that assess and analyze

conflicts between stakeholders. The results of social network analysis is often represented as a social network map [6].

For the study at hand, the method of an Actor-Linkage Matrix was found to be most appropriate. Using this approach (Table 2) allowed for the interactions between the different actors and organisations, which are central to effective innovation systems, to be explored and analyzed. In order to appreciate the patterns of interaction at play in the case study and incorporate these into the development of the stakeholder engagement plan, it is important to map stakeholder linkages and to understand and describe the nature and purpose of those linkages. In this matrix, all relevant actors in the sector are marked on both the first row and first column of the matrix. Each box in the matrix then represents whether the linkage between two actors or organisations is cooperative, complimentary, or conflictual.

Table 2

Stakeholder Relationships within the Actor-Linkage Matrix

Stakeholder Group	Farmers	Village council	Potential tenants	Local Population	Green Agrotourism	farmer organizations	Agricultural enterprises	Department of AgriDevelopment	SPInstitute	Ecological Inspectorate	Ministries	GSP	IUCN	ESBN
Farmers	-	coop	conf	compl	coop	coop	coop	-/coop	conf	conf	-/coop	-	-	-
Village council		-	coop	coop	coop	compl	coop	compl	-	-	comp	-	-	-
Potential tenants			-	conf	conf	coop	conf	coop	conf	conf	-	-	-	-
Local Population				-	coop	-	-	-	-	-	-	-	-	-
Population that provide Green Agrotourism					-	coop	coop	coop	-	-	coop	-	-	-
Farmer organizations						-	coop	coop	coop	-	coop	-	-	-
Agricultural enterprises							-	coop	-	-	coop	-	-	-
Department of AgriDevelopment*								-	coop	coop	compl	coop	coop	coop
SPInstitute									-	compl	compl/ coop	coop	coop	coop
Ecological Inspectorate										-	compl/ coop	coop	coop	coop
Ministries											-	coop	coop	coop
GSP												-	coop	coop
IUCN														coop
ESBN														-

Remarks. *Department of Agricultural Development of Shatsky District State Administration & Department of Agricultural Development of Volyn Regional State Administration

Source: authors' research.

Analysis of the Actor-Linkage Matrix provided a number of conclusions:

- As farmers have a high interest but a low state of power it is crucial that there is cooperation and complementation with the main powerful stakeholders such as the Department of Agricultural Development and the Farmer Organizations.
- Since potential tenants and land owners have higher power there is the need to address the potentially conflicting linkage between these stakeholders and the farmers, as only together are they able to effectively change the current agricultural practices (transfer of rights and best agricultural practice).

- The Matrix indicates that potential conflicts are mainly associated with the potential tenants/land owners.

When used conjunction with Actor-Linkage Matrix, using Knowledge Mapping allows for a clear picture of what stakeholder groups are present, and how they influence each other and the potential attainment of the desired sustainable land management goals through their communication, provision of information and decisions. The outcome of this analysis is presented in Figure 2.

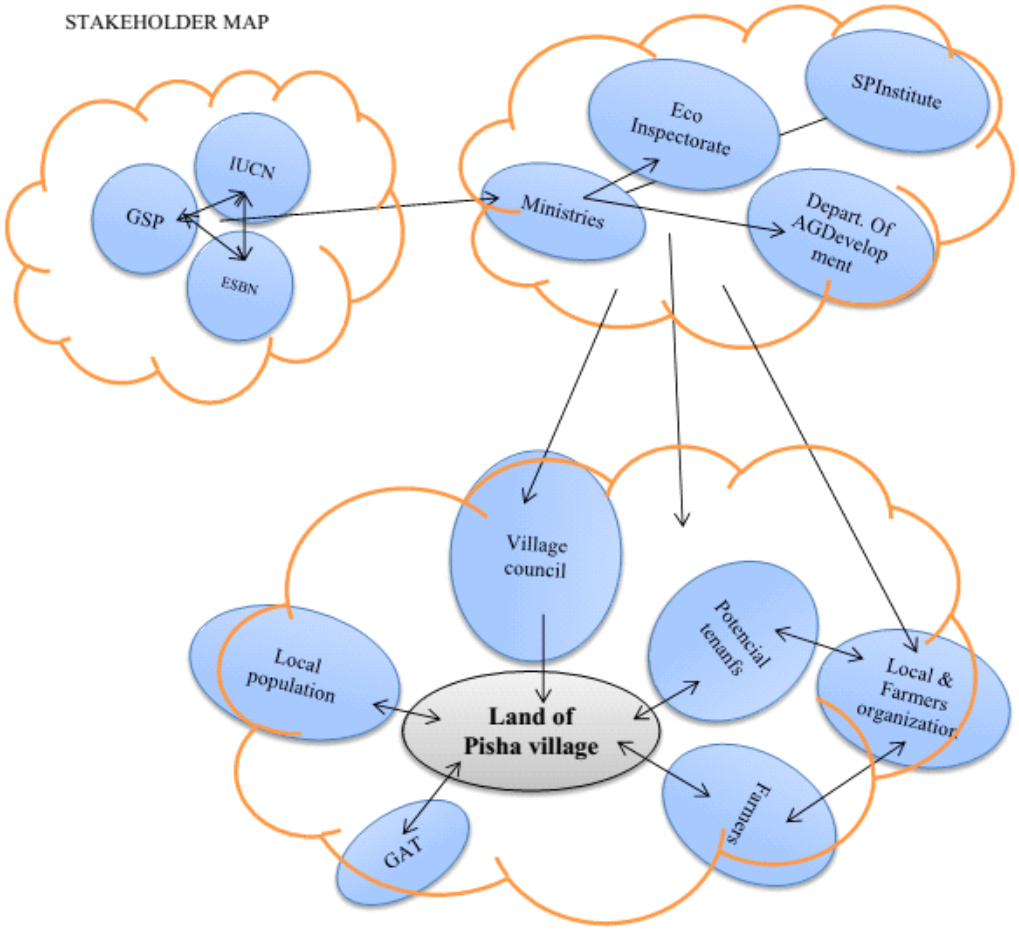

Fig. 2. Stakeholder Map and grouping of stakeholders according to their relationships

Source: authors' research based on [13].

In order to prioritize stakeholders for involvement in the stakeholder engagement process, Table 3 maps out the interest of the various stakeholders in the ecosystem services that the land is providing and that the proposed land use change and adoption of sustainable land management practices intends to conserve and enhance. They are Beneficiaries (B) of the ecosystem services, who may reap the benefits of the ecosystem services but may also suffer the costs of unsustainable land management and the resultant impacts of soil erosion, and those with an Interest (I) in ensuring the sustainable management of the land and the reduction of soil erosion. The stakeholders' types of benefits/costs and interest are denoted by: income (Inc);

governance (Gov); regulation (Reg); representation (Rep); development (Dev); health and wellbeing (H&W); and information (Inf).

Table 3

Stakeholder engagement prioritization

Stakeholder / Beneficiary Groups	Ecosystem Service									
	Supporting			Provisioning			Regulating			Cultural
	Nutrient Cycling	Soil Formation	Primary Production	Food	Fuel	Fresh Water (sediment)	Climate Regulation (Carbon)	Water Regulation & Purification	Disease Regulation (Dust control)	Recreational, Spiritual and Educational
Farmers	B Inc	B Inc	B Inc	B Inc	B Inc	B Inc			B Inc H&W	B Inc
Village council	I Gov	I Gov	I Gov	I, Dev Gov		I Gov		I Gov	I Gov	I, Dev Gov
Potential tenants	B Inc	B Inc	B Inc	B Inc	B Inc	B Inc			B Inc	B Inc
Local Population				B H&W		B H&W		B H&W	B, Inc H&W	B H&W
Population that provides Green Agrotourism				B Inc					B H&W	B Inc H&W
Farmer organizations	I Rep	I Rep		I Rep						
Agricultural enterprises				B Inc	B Inc					
Department of AgriDevelopment	I Dev Reg	I Dev Reg	I Dev Reg	I Dev Reg	I Dev Reg					I Dev Reg
SPInstitute	I Reg Inf	I Reg Inf	I Reg Inf			I Reg Inf	I Reg Inf	I Reg Inf	I Reg Inf	
Ecological Inspectorate	I Reg Inf	I Reg Inf	I Reg Inf			I Reg Inf	I Reg Inf	I Reg Inf	I Reg Inf	
Ministries	I Gov Reg	I Gov Reg	I Gov Reg	I Gov Reg	I Dev Reg	I Gov Reg	I Gov Reg	I Gov Reg	I Gov Reg	I Gov Reg
GSP	I, Inf	I, Inf								
IUCN	I, Inf	I, Inf								
ESBN	I, Inf	I, Inf								

Remarks. *Department of Agricultural Development of Shatsky District State Administration & Department of Agricultural Development of Volyn Regional State Administration.

Source: authors' research.

The major stakeholders of the land of Pishcha village, Volynska Region, North-West Ukraine were identified and divided into three levels with the assistance of expert assessment. The first level (micro/local), containing stakeholders representing private interests, local government and civil society, is key to the success of the

project and the adoption of proposed new approaches. These groups are characterized by their high interest in soil conservation and the restoration of the land. Almost all members of these groups can influence the land use change process. Farmers, the Local Population and Local Organisations can exercise moral pressure, but they haven't the money to invest in making and adapting to change. The Village Council can receive state monies, but they are often slow to act and do not possess the requisite technical expertise. Potential tenants are mainly agricultural investors. They can be very difficult to engage as their identities are often not known until they make the investment.

The next step is to design a stakeholder engagement process.

There are a number of key components that are usually included in a well-designed stakeholder engagement plan [14]: a description of the context; systematic identification and analysis of the interests and influence of stakeholders; the setting of engagement objectives and/or expected outcomes; the identification of appropriate engagement techniques or activities to meet the objectives; and, consideration and identification of risks and indicators to monitor the progress, ensuring that engagement activities are appropriately resourced and integrated with project management.

The engagement process can be defined as the process through which the identified stakeholders have an opportunity to discuss and provide their perspective on possible options and pathways for action before decisions are made in order to inform which are best in the circumstances. In this case (table C.1 in Annexes), the process enables identified stakeholders to address current land use issues affecting them through (i) identifying more sustainable alternative land management practices from a pre-established list of options, and (ii) identifying suitable pathways to establish such sustainable alternative land management practices.

The next step is defining roles and responsibilities for implementation, milestones, and identifying a realistic timeline for completion (table C.2) and identifying what types and levels of engagement require planning for with the different stakeholder groups (table C.3).

An important part of the engagement plan is the development budget (table C.4), especially where finances are restricted or external funding is being sought to implement the work. The budget for engagement should be proportional to the overall budget for the work and, if necessary, engagement activities should be reviewed and tailored to available resources.

Finally, it is essential to answer the question «How will we know that the intervention has succeeded»?

A well-conceived and simple results framework, clearly outlining the ultimate objectives of the intervention rather than simply listing implementation activities, processes, and inputs, allows for this question to be addressed. For stakeholder engagement, a results framework can be a useful management tool, with program implementation assessed in direct relationship to progress in achieving results, at the outputs, outcomes, and impact levels, with the strategic objective being the ultimate

driver.

The emphasis on particular outcomes, rather than on the completion of activities, requires that program implementers monitor key outcome variables and make midstream corrections as necessary. Through facilitating a focus on specific expected outcomes, the results framework provides a strong tool for engaging stakeholders in thinking through the theory of change underpinning the intervention. Discussion centered on a results framework provides program staff and other stakeholders with the opportunity to clarify and adjust the development hypothesis, allowing partners to harmonize their efforts or to identify areas where additional program activities will be needed. Through adopting a participatory approach to discussions, using the results framework serves a critical role in building understanding, consensus and ownership around shared objectives and clarifying the different stakeholders' interpretations of the elements of the development hypothesis [15].

The first step to knowing whether engagement is working is to decide on the approach to take to monitoring and evaluation, including whether the intervention is primarily looking at the outcomes or process of engagement (or both). The goals of the intervention should be incorporated into the engagement plan for monitoring and evaluation.

Developing appropriate indicators of progress and success is a key step when producing the framework, as they provide powerful tools for monitoring progress and evaluating the intervention processes and outcomes. A good indicator should, wherever possible, provide cost-effective, timely and accurate information with minimum effort [6].

In some cases, it may be possible to work with stakeholders to collect and analyze indicator data, which can reduce costs and improve the effectiveness of monitoring and evaluation. The potential benefits from this can be enhanced if the indicators are developed using participatory approaches and/or to have social appeal to and resonance with the stakeholders, which can build interest and buy in to the work [6].

The preferred format and level of detail for results frameworks vary according to the organizations involved in, and by the scope and scale of the intervention, but all include the same basic components to guide implementers in achieving, and evaluators in assessing, results. The example developed for this project-level intervention results frameworks is shown in Table C.5.

Conclusions. There is a clear and demonstrable need for concerted action to be taken to address the ongoing issue of soil erosion resulting from wind in Ukraine. The effective engagement of a range of stakeholders, with varying types and levels of interest, is vital in order to facilitate the joined up action and ensure the buy in necessary to identify and make the land use changes required on the scale that dealing with wind erosion necessitates. Work is needed to explore and stimulate effective mechanisms of interaction around the issues affecting soil erosion between the range of stakeholders in Ukraine, which, for various reasons, is currently extremely weak.

This paper has examined some of the underlying theory, the potential methodologies and how they could be methodically applied, and the feasibility of the stakeholder engagement necessary to support land use changes to improve resilience against wind erosion in Pishcha village, Shatsky district, Volyn region. While, in theory, the proposed work is possible there are a number of practical issues that require addressing before it is genuinely feasible. Practical scoping, through pilot projects, is required to fully assess the feasibility and efficacy of stakeholder engagement on the ground, and to adapt general methods to local conditions.

In respect to the scale of the intervention examined in this and the previous paper [4], where the project area of 5 hectares is very small, the costs for materials and human resources identified for stakeholder engagement are impractical and running this project is not cost effective. There could, however, be considerable benefits of scaling up the intervention as there would be little or no additional costs at the regional and national levels, and many opportunties for savings (per local area/community engaged) on the stakeholder engagement at the local level. It is also likely that scaling up the work would increase the robustness of any lessons learnt or best practise identified by the work. There are currently considerable barriers to accessing the funding necessary to run this project, in the form presented here or scaled up, from the State. and it is also unlikely that private funding can be obtained. Other potential sources of funding may be accessible and their criteria would inform the final project design.

There are a number of ways to develop the work in order to improve the feasibility of the work and chances of securing funding:

1. There are other areas in the Volyn region that face similar wind erosion issues to the project area. Involving these other local communities in the research will increase cost effectiveness, and the strength and applicability of the analysis. It would allow for a more comprehensive assessment of the issues that require addressing, through a greater understanding of the commonalities and differences between a range of locations and contexts, and for the development of approaches with the potential for wider application.

2. The project could provide a greater emphasis on the development of green agritourism enterprises with the local populations. There is considerable untapped tourism potential in Western Ukraine, helped by the absence of large industrial enterprises in the region and the retention of traditional extensive agricultural systems. Incorporating the potential scope to develop this business sector in the region could greatly alter the dynamics of the intervention and provide alternatives for change that stakeholders are interested in and that can deliver wider economic and environmental benefits. This could result in a widening of the potential funding streams available to deliver the work.

3. Collaboration with international partners facing similar and related issues (e.g. Spain and Greece in the E.U.) may allow for the development of a larger trans-national project that can attract funding from different sources to those currently available at the national level.

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Annexes

Table A

Stakeholder Identification

Stakeholder Name	Type of Stakeholder	Description	Relationship to the land (Level/Role/Policy context)
The 1st level (local)			
1. Farmers / (households)	Private	Land user groups, concerned with: land	Land user. May include key influencers. Uses land for household livelihoods and income generation. Villagers use land to graze cattle (without paying/commons)
2. Village council	Local Government	Land owner, concerned with: land, economically profitable exploitation, conservation, preservation.	Land owner. Include key influencers. This land is reserve land, so the village council may transfer the land lease if a new tenant appears.
3. Potential tenants and landowner	Private	Concerned with: land economically profitable exploitation.	May include key influencers. Uses land for income generation. They may begin to take rent pay for grazing cattle from population (farmers) or change the direction of its economic use.
4. Local Population	Private	Concerned with: conservation	May include key influencers. Potential health problems from dust (air and water pollution)
5. Population that provides «green agrotourism»	Private	Concerned with: land, economically profitable exploitation, conservation.	Land user/ Land owner. May include key influencers. Lack of grazing threatens the provision of services for tourists and the use of fresh organic milk
6. Local and/or national landowner/farmer organizations	Civil Society	Concerned with: land, economically profitable exploitation, conservation, preservation.	Representation of landowners/farmers
The 2nd level (regional, national)			
1. Agricultural produce processors, enterprises from milk and meat cattle processing	Private	Concerned with conservation	Lack of grazing causes a reduction in the supply of milk and meat for processing, which, in turn, could cause damage to the economy and food security
2. Department of Agricultural Development of Shatsky District State Administration & Department of	Government	Concerned with: land, economically profitable exploitation, conservation, preservation.	Participate in the formulation and implementation of social and rural development policy in the countryside.

Agricultural Development of Volyn Regional State Administration			
3. Volyn branch of state institution «Soils Protection Institute of Ukraine»	Government/ research institute	Concerned with: conservation, preservation	The Institute carries out the development of proposals and implementation of united scientific-technical policy in the field of soil fertility, and the rational use and environmental safety of agricultural land. Its recommendations are desirable but not mandatory for implementation.
4. State Ecological Inspectorate of Ukraine (and its regional offices) and The State Agency of Land Resources of Ukraine	Government	Concerned with conservation	SEI – supports the rational use, restoration and protection of natural resources, including land; SALR – ensures the implementation of measures aimed at the rational use and protection from harmful human impacts of land.
5. Ministry of ecology and natural resources of Ukraine & Ministry of Agrarian Policy and Food of Ukraine	Government	Concerned with conservation	Formulating state policy in the areas of protection of the environment, including restoration and protection of land
The 3rd level (global)			
1. Global Soil Partnership (GSP)	International environmental organizations	Concerned with conservation	Concerned with the environmental well-being of soils, including prevention of erosion and land degradation.
2. International Union for Conservation of Nature (IUCN)	International environmental organizations	Concerned with conservation	Is committed to the conservation of nature and natural resources, preservation of ecosystem integrity, ensuring the use of natural resources in a sustainable and reasonable manner.
3. European Soil Bureau Network (ESBN)	International research organizations	Concerned with conservation	The main tasks are to collect, harmonize, organize and distribute soil information for Europe.

Source: authors' research.

Table B

The «4 R's» stakeholder analysis methods

Stakeholder	Rights	Responsibilities	Revenues (benefits)	Relationship	
The 1st level local)					
1. Farmers / (households)	User rights. Part access to pasture	Abiding by rational land management guidance	Direct benefits arising from proceeds from land resources accessed	Defender	Employees/ performers
2. Village council	Owner rights. Access to land Decision making	Abiding by sustainable land management legislation and guidance Implementing decisions on rules and procedures Monitoring and control	Indirect benefits from preservation and development of rural areas	Promoter	Employees/ performers

		Coordination Decision making			
3. Potential tenants and landowner	User rights Potential access to pasture, land	Abiding by sustainable land management guidance	Potential direct benefits from land resources accessed	Promoter	Partners/ employees/ performers
4. Local Population	None Part access to pasture Negotiate on behalf of the community	Abiding by sustainable land management guidance	Indirect benefits arising from preservation of the soil ecosystem and realization of ecosystem functions/services and health preservation)	Defender	Community
5. Population that provides «green agrotourism»	None Part access to pasture, land	Abiding by sustainable land management guidance	Potential indirect benefits from an increase in customers and income	Defender	Partners
6. Local and/or national landowner/farmer organizations	Negotiate on behalf of the community	Implementing decisions on rules and procedures Coordination	-	Latent	Community
The 2nd level (regional, national)					
1. Agricultural produce processors, enterprises from milk and meat cattle processing (business)	Negotiate on behalf of the business	-	Indirect benefits from formation of raw materials base	Latent	Partners
2. Department of Agricultural Development of Shatsky District State Administration & Department of Agricultural Development of Volyn Regional State Administration	None Negotiate on behalf of the community and/or government	Implementing decisions on rules and procedures Monitoring and control Coordination Decision making	Indirect benefits arising from preservation of the soil ecosystem and realization of ecosystem functions/services	Apathetic	Government
3. Volyn branch of state institution «Soils Protection Institute of Ukraine»	None Access to land Negotiate on behalf of the government Supervision management	Monitoring and control Implementing decisions on rules and procedures Decision making Measurement	-	Apathetic	Partners
4. State Ecological Inspectorate of Ukraine (and its regional offices) and The State Agency of Land Resources of Ukraine	None Access to land Negotiate on behalf of the government Supervision management Sanction	Monitoring and control Measurement Decision making Implementing decisions on rules and procedures	-	Latent	Partners
5. Ministry of ecology and natural resources of Ukraine & Ministry of Agrarian Policy and Food of Ukraine	None Negotiate on behalf of the government Supervision management	Implementing decisions on rules and procedures monitoring and control Coordination Decision making	Indirect benefits arising from preservation of the soil ecosystem and realization of ecosystem functions/services	Latent	Government
The 3rd level (global)					
1. Global Soil Partnership (GSP)	None Negotiate on	-	Indirect benefits arising from preservation of the	Apathetic	Community

2. International Union for Conservation of Nature (IUCN)	behalf of the global community	-	soil ecosystem and realization of ecosystem functions/services		
3. European Soil Bureau Network (ESBN)		-			

Source: authors' research.

Table C.1

Description of the project, with objectives and expected outputs and outcomes

Stake-holders	Description of perceived area of interest	Engagement outcomes	Format (Mode of Channel/Communication	Material to be prepared ahead
Farmers	Economic Exploitation Health & Wellbeing	• We want them to change their use and management of pasture • We want them to understand what it means to them financially in lay man's terms • We want them to be aware of the wider issues • We want them to explain how they can influence and cooperation with the government • We want them to inform us of opportunities for and barriers against land use change • We want them to let us know what actions they take and how these work	Letters to farmers with information and invitation to open meeting (outside farming hours and locally) to explain work and informing them that researchers will be visiting pasture in future Meeting to explain work, identify more interested farmers and, where possible make arrangements for meeting Interview with farmers at farms	Letters and information Materials for meeting Semi-structured interview/questionnaire for interview with farmers
Village council	Economic Exploitation	• We want them to change land use • We want them to understand what it means to them financially in lay man's terms • We want them to be aware of the wider issues • We want them to inform us of opportunities for and barriers against land use change • We want them to let us know what actions they take and how these work	Meeting to explain work, present results of previous research, request permission for researchers to visit pasture in future Phone contact, e-mail Regular Meeting	Materials for meeting
Potential tenants and landowner	Economic Exploitation	• We want to find a new responsible owners • We want them to understand what it means to them financially • We want them to be aware of the wider issues • We want them to let us know what plans they have and actions they want to take • We want make contact, agree	Stakeholder conference that will include key stakeholders (representatives of farmers, council, scientist, farmer organizations) that will inform them of the work and allow for them to inform its development	Materials for conference Semi-structured

		on possible cooperate, and conduct observations and research	Interviews with potential tenants and landowners	interview/questionnaire for interview with representatives
Local Population	Health & Wellbeing	• We want them to be aware of the wider issues • We want explain how they can influence and cooperate with the government	Letters to Population with information and invitation to open meeting to explain the project, informing them that researchers will be visiting, their role in the maintenance and preservation of the local environment, and the earning possibilities of land use change. Stakeholder conference for key stakeholders (representatives of farmers, council, scientist, farmer organizations) to inform them of the work and allow for them to inform its development Consultative meetings	Letters and information Materials for conference Materials for meeting
Population that provides «green agro-tourism»	Economic Exploitation Health & Wellbeing	• We want them to begin a new business on the base on sustainable land use • We want them to understand what it means to them financially in lay man's terms • We want explain how they can influence by and cooperation with government		
Local and/or national landowner/ farmer organiza-tions	Information Representation	We want them to let us know what actions they take and how these work Stakeholder conference that will include key stakeholders (representatives of farmers, council, scientist, farmer organizations)	Materials for conference	
Agricultural produce processors, enterprises from milk and meat cattle processing (business)	Economic	• We want them to be aware of the wider issues • We want them to become sponsors of and investors in change land use • We want them to understand what it means to them financially, maybe in lay businessman's terms	Letters to Enterprises with information and invitation to open meeting to explain work Individual meetings to agree on cooperation and conducting observations and research with enterprises and farmers, council or farmer organizations Phone contact, e-mail	Letters and information
Volyn branch «Soils Protection Institute of Ukraine»	Information Representation	• We want them to monitors land use in village control • We want them provide information to local residents and local authorities about the state	Consultative meetings	Invitation letters and information Materials for meetings

State Ecological Inspectorate of Ukraine (regional offices) and Agency of Land Resources		lands, their possible improvement alternatives use • We want them conducted an environmental audit		
Ministry of ecology and natural resources & Ministry of Agrarian Policy and Food of Ukraine Departments of Agricultural Develop-ment	Information Representation	• We want them to perform their legislative functions and improve land legislation • We want them monitored the execution of orders, resolutions, etc. • We want them developed mechanism ecological insurance • We want them to initiate an environmental audit at local level	Stakeholder conference for key stakeholders (representatives of farmers, council, scientist, farmer organizations) to inform them of the work and allow for them to inform its development	Invitations and information Materials for conference Legislative briefings and proposals
1. GSP 2. IUCN 3. ESBN		• We want them to participate in securing funding. • We want them provide international assistance in specific projects (including «green agrotourism»). • We want them to carry out independent monitoring and provide general reports.	e-mail	Letters and information

Source: authors' research.

Table C.2

Timeline and Engagement Process Matrix

Timeline	**Research Process** (Objectives, Expected Output, Deadlines, etc.) The Why and The Facilitation Needed	**Engagement Process** (Discussion and Activities) Managing the Stakeholders Participatory Process
Beginning of the engagement process	The initial phase should take no more than 6 months. During 1st and 2nd months initial engagement and explanatory work will be conducted with farmers and the village council, because they have to change plans of land use and prepare for spring sowing. We will engage all of the population and wider interests as we will need to find investors and cooperation opportunities in parallel to identifying farmers willing to change.	At this stage it is necessary to establish contacts with all groups of stakeholders. to hold meetings, perform outreach, and complete questionnaires. It is necessary to identify potential investors and negotiate cooperation.
During the engagement process Phase 1	The village council will be engaged in order to secure support for the change of land use. Environmental organizations will perform research on the soils and provision of ecosystem services. The team of scientists should develop and submit initial proposals for legislative change.	In the second period the main interaction will occur between us, the village council and the government. Regular contact will be maintained with all participants. State environmental organizations will implement regular monitoring of changes in the quality of land and the agreements for its operation.

Phase 2	At this time the main work in Volyn will be monitored by local government. Results will be shared twice a year. We will maintain contact (mail, phone) with the local population as technical consultants (and arrange site visits if necessary)	Engagement with the legislative process will be initiated and carried forward.
End and follow up of engagement process	Final analysis of the land use change, soils, and ecosystem services. Final interviews with selected stakeholders to understand social and economic framework for land use change decisions. Identify the benefits and costs generated by the project. Final presentation of project analysis and results to stakeholders through meetings, discussions and public conference.	Engagement with Government groups will focus on ensuring they have the capacity to organize environmental monitoring, to control the implementation of its orders, and, most importantly, to learn to pay attention to the needs of lower level stakeholders. The development and maintenance of international contacts is of key importance to creating plans for the future. The final Joint Report should be example for other communities faced with similar issues and the development and of implementation for projects to protect soils.

Source: authors' research.

Table C.3

Matrix for planning activities for different level of engagement (Evaluation scenarios)

Timing **Stakeholders**	**Beginning of the engagement process**	**During the engagement process**		**End and follow up of engagement**
		Phase 1	**Phase 2**	
Farmers	*Collaborate*	*Inform / Involve*	*Inform / Involve*	*Inform*
Village council	*Collaborate*	*Collaborate*	*Collaborate*	*Collaborate*
Potential tenants and landowner	*Involve / Collaborate*	*Involve / Collaborate*	*Involve / Collaborate*	*Involve / Collaborate*
Local Population	*Involve*	*Involve*	*Inform*	*Inform*
Population that provides «green agrotourism»	*Involve*	*Involve*	*Involve*	*Collaborate*
Local and/or national landowner/farmer organizations	*Inform/Involve*	*Consult*	*Consult*	
Agricultural produce processors, enterprises from milk and meat cattle processing (business	*Inform/Involve*	*Consult*	*Consult*	*Involve*
Soils Protection Institute of Ukraine, State Ecological Inspectorate of Ukraine and The State Agency of Land Resources	*Involve*	*Collaborate*	*Collaborate*	*Collaborate*
Ministry of ecology and natural resources of Ukraine & Ministry of Agrarian Policy and Food of Ukraine	*Inform*	*Consult*	*Collaborate*	*Collaborate*
Departments of Agricultural Development	*Consult*	*Consult*	*Consult*	
International organization			*Inform*	*Inform*

Notes: Inform – most basic level of engagement; Consult – specific questions are asked but not full discussion or interaction; Involve – more opportunity for discussion; Collaborate – involved to some extent in full decision making (Durham, 2014).

Source: authors' research.

Table C.4

Example of personnel and other requirements to achieve the engagement process

Major Activity	Personnel needs (scientist appointments)	Facilitation and Coordination Needs	Other Needs	Total Calculated costs, USD
Beginning of the engagement process				
Design and sending letters to farmers with information and invitation to open meeting to explain work	1	Coordination	print material, post, transport, meeting	
Analysis	3			
Total				***3903.6***
During the engagement process				
Production costs for the change of economic use of land 1 year	3	Coordination		
Consultative meetings with Government and Private groups	1	Facilitation	print material, ransport, conferences	
Total				***56717.8***
End and follow up of engagement				
Final conference and meeting	3	Coordination Facilitation	material, transport, conferences	
Total				***1928.6***
Total Calculated costs, USD				**62550.0**

Source: authors' research.

Table C.5

Setting Success Criteria and according Measures of Success

Stakeholder Involvement Plan Objective	Success Criteria and Measure of Success
Changing use of pasture (for farmers and council)	60 % of the inhabitants participate at our meetings; 90 % are reached by our teams at home or other places. *Field observations and data obtained from farmers/reports from council*
Formation of real interest and motivation for soil protection activities and implementation of sustainable land use	All the participants actively engage with soil protection activities, or they interact and respond to other proposals *Interviews with stakeholders on motives and perceptions*
Improving knowledge on wind erosion, land degradation and ways to resisting these processes (for farmers, population and others)	The brochure, covering the issues in clear language targeting farmers and the local population, reaches every household and 5 classes are held at local schools to raise awareness of the issues. *Questionnaire on knowledge* *Assessment of innovations to reduce erosion* *Observation of behavior and knowledge transfer*
Raising the level of financial and political awareness (for farmers, population and others)	All the relevant government stakeholders get engaged in the workshops. 5 media talk shows engaging politicians and donors are carried out. *Amount of subsidies (support by local government population and farmers in new business)*
Improvement of living standards of the villagers (health, financial situation)	Engagement of 3 big industry representatives who communicate with local farms on new product lines and markets. Engagement with local healthcare providers regarding health and well-being impacts. *Quantitative data: income per household, other socio-economic factors, number of respiratory or other related diseases*
The growth of business activity of the villagers, opening of new businesses	Stakeholders engage in creating local tourism initiative. Delivery of two educational field visits, one with tourism agencies and journalists, and one with industry representatives focused on local ecological/organic products *Number of businesses engaged* *Wages* *Employment*

Increasing the level of interaction and communication between stakeholders at the local level	Establishment of local village forums gathering once a month where all residents and others are invited (and at least 50 % participate); setting up a weekly radio program in the local radio *Number of interaction opportunities, e.g. at meetings, workshops etc.*
Increase of effectiveness of village control land use	Establishment of local village forums gathering once a month where land use practices are discussed by all participants *Hours spent by those responsible on controlling land use* *Participation at local village forums*
Rising effectiveness of perform legislative functions	A conference where the local and central government representatives, local farmers' and other relevant associations, scientists, and other relevant actors participate *Production of a joint proposal document to be presented to the legislative bodies* *Production and adoption of a collection of policy, awareness raising and guidance documents aimed at strengthening the soil protection*
Rising effectiveness of monitoring and the execution of orders, resolutions, etc.	Establishment of local village forums gathering once a month, with participation of local government, and production of one document once a year on the effectiveness of the actions undertaken. *Number of reported violations of legislation* *Number of fines* *Participation in preparation of documents*
Establishing the mechanism of ecological insurance	Delivery of a workshop with the participation of ecological insurance specialists, government, scientists, and local farmers.
Establishing the environmental audit at local and national level	One workshop every six months for external experts to engage local government, central government representatives and local association representatives in order to discuss and facilitate the coordination of the audit *Participation in workshops*
Establishing links with international organizations	During the workshops, a database of interested international organizations is compiled. A conference with at least 60% of the organizations operational in Ukraine in the field of land management participating. All these organizations will receive a monthly, trimestral, or other periodic newsletters/updates. *Number of international cooperations*

Source: authors' research.

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