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**The Economic Implications of Restoring Open Spaces**

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Writing and Analysis: Shiri Heffer, Expert in Environmental Economics

Writing Assistance: Amit Friedman Mizrahi

Linguistic Editing: Eyal Telman

Management and Professional Editing: Yael Hamerman Solar

Contributed Comments to the Document: Assaf Zanzuri, Dror Denneboom

**Economic Review**

**Introduction**

Israel’s open spaces embody natural and scenic values, and serve as an important ecological, social, touristic, historical, and spiritual asset. As such, preserving and restoring these spaces, and making them accessible to the public should be seen as a national mission. In contrast, harming or neglecting them could have severe consequences.

When developing a workplan for developing and restoring Israel’s open spaces, it is vital to establish a set of tools for evaluating and implementing projects that are aimed at this purpose. This section of the plan reviews and presents the economic implications for land restoration projects, and provides tools that can be used to assess their economic impacts in terms of budget planning, financing, and income generation. This is based on the understanding that a clear economic plan will support the implementation of sustainable restoration projects, and that economic tools as the “engine” that can help successfully drive them forward.

This review includes chapters addressing the various economic implications of open space restoration:

1. A review of economic models and approaches currently used in land restoration.
2. An analysis of the costs involved in implementing land restoration projects.
3. An analysis of the ongoing maintenance costs for open spaces after their restoration.
4. An economic analysis and evaluation of external benefits[[1]](#footnote-1) – that is, the economic benefits to the public resulting from a restored natural space.
5. Economic analysis and evaluation of opportunity costs[[2]](#footnote-2) – the costs that would arise if a space is not restored.

**Chapter 1: Review of economic models and approaches currently used in open space restoration**

The purpose of this chapter is to review economic models from Israel and elsewhere that provide or generate economic value from open space restoration projects, in particular those that help mitigate the effects of climate change. The aim is to learn about practices that have already proven successful in supporting the realization of open space restoration projects by using economic tools (as opposed to relying solely on government funding).

1. **Payments for ecosystem services (PES)**

Payments for ecosystem service (PES) is a market-based approach, according to which landowners or farmers receive direct payments or incentives for implementing practices that enhance ecosystem services, such as biodiversity conservation, water quality maintenance, or carbon sequestration. The basic idea behind PES is that those who provide an ecosystem service should be entitled to payments just like any other service provider.[[3]](#footnote-3) PES programs can be funded by government agencies, private companies, non-governmental organizations, or international organizations.

A good example of a PES project is the CompensACTION[[4]](#footnote-4) Initiative for Food Security and a Healthy Planet, which is run by the G7 Food Security Working Group (GFSW). The program is tailored towards low- and middle-income countries, and while Israel does not fit this category, we can nevertheless adopt some of its principles and operating methods. The initiative is based on developing methods to reward farmers through PES programs, using public and private capital, to create an infrastructure that can help implement these programs quickly.

According to CompensACTION, the main systemic actions needed to achieve its goals are:

* Support for public policy to establish national frameworks for PES programs.Experience shows that there is a strong correlation between policy development and the realization of **PES** transactions. An example of a relevant economic policy includes setting fair and minimum prices for carbon trading transactions and other ecosystem services, and recognizing the legal rights that enable compensation and mediation for ecosystem services.
* Increasing public and private investments to support **PES**, such as channeling public funds into subsidies for farmers in exchange for enhancing ecosystem services. In Colombia, for example, there is an option to redirect corporation tax payments as support payments to farmers for ecosystem services.
* Adopting disruptive innovations to implement numerous low-cost **PES** transactions**,** such as technologies that enable carbon trading on private agricultural land (mainly measurement reporting verification (MRV) technologies[[5]](#footnote-5) for monitoring and verifying the amount of carbon sequestered and assessing additional environmental system services).

Various countries have adopted different PES programs that have provided economic incentives for various services, e.g.:

* The Watershed Industrial Council[[6]](#footnote-6) program in New York State works in cooperation with farmers and landowners of forested areas to protect state water sources, preserve open spaces, and strengthen local agriculture and forestry.
* Ecuador’s Socio Bosque program[[7]](#footnote-7) generates economic incentives to preserve forests and prevent soil erosion in Ecuador.

In Israel, a pilot project has been launched to develop agricultural interface tools in the Tzipori river basin. This program is based on the PES principle,[[8]](#footnote-8) and offers effective tools to improve the interface of agriculture with the natural environment, in particular rivers. As part of the project, funding will be offered to farmers who adopt environmentally-supportive agricultural practices. The project is being implemented in collaboration with the Ministry of Agriculture’s Department of Soil Conservation and Drainage. Its documentation sets out a series of 13 activities that farmers can undertake to preserve and restore open spaces, with funding from the Drainage Authority.

It should be noted that payments are provided solely for the improvement of ecosystem services (environmental and social benefits), and not for compliance with regulations. The starting point for the program is that the cost of restoring one kilometer of river is around one million NIS. The program aims to offer alternative tools for restoring significant areas of land that interface with agricultural land.

The proposed payments were calculated to create a “win-win” outcome for both the farmers and the river. Farmers would benefit, and open spaces along the river would be restored at a lower cost when compared to government-run projects, and to the cost of work carried out retroactively to repair the damage that would be caused if the project was not implemented. This is based on the assumption that it will be possible to make accurate calculations after the completion of the pilot.

Below is a detailed list of the main activities and their costs included in the pilot project to develop agricultural interface tools in the Tzipori river basin:

**Table 1: Activities funded as part of the pilot project to develop agricultural interface tools in the Tzipori river basin**

|  |  |  |
| --- | --- | --- |
| **Activity** | **Explanation:** **Type of relevant area** | **Cost (per year)** |
| Creating a buffer strip along the side of the stream  | On the margins of cultivated fields, between productive areas of the field and a natural habitat or conservation site. These can also be used alongside access roads that direct runoff directly into a body of water, or along fencing lines that create connectivity between natural habitats. | 450 NIS per dunam |
| Riverbank management | Intended for use in plots adjacent to streams and drainage channels. | 250 NIS per applied dunam |
| Invasive species management | Intended for use in plots adjacent to streams and drainage channels. | 400 NIS per managed dunam |
| Service crops in field crops | In cultivated fields that drain directly into a body of water (or that are marked on a map by the Ministry of Agriculture as an area prone to erosion). | 200 NIS per dunam |
| Service crops in orchards and vineyards | Young orchards or vineyards that drain directly into a body of water (or that are marked on a map by the Ministry of Agriculture as an area prone to erosion), or are located on slopes where runoff occurs and is accompanied by soil erosion. | 100 NIS per dunam |
| Enhancing food sources for seed-eating birds | * Plots/patches with low yield and profitability.
* Corners of an agricultural plot that are difficult to reach with agricultural machinery
* Small and remote plots.
* Selected field remnants.
 | 100 NIS per cumulative dunam |
| Nectar and pollen field remnants (for the benefit of pollinators and beneficial insects) | * Plots/patches with low yield and profitability.
* Corners of an agricultural plot that are difficult to reach with agricultural machinery.
* Small and remote plots.
 | 350 NIS per dunam |
| Vegetative cover for fencing (nectar and landscape) | Adjacent to sections of fencing along the edges of cultivated agricultural plots, close to a habitat or a conservation element. | 30 NIS per 10m section of vegetative fence cover |
| Ecological connectivity through perennial vegetation strips | In areas where national ecological corridors are disrupted, or where agricultural land separates significant habitats (between different nature reserves). It is advised that these are placed near a stream, a row of trees, or in wet areas that may indicate a spring or unique habitat. | 350 NIS per dunam |
| Creating a living fence | * Near dairy farms, pens, or open poultry houses.
* Sites where both sides of the living fence can be managed.
* Sites prone to surface runoff and erosion.
* Sites where a living fence can block winds affecting wind-sensitive crops.
* In relevant sites where there is already a living fence, maintenance fees can be considered.
 | 25 NIS per 10m section |
| Management in the vicinity of sensitive habitats | * At the boundaries between productive fields and sensitive sites – wetland habitats, unique natural sites (endangered species), historical sites, settlements, and areas of human congregation.
* At the boundaries with water sources that are of environmental value.
 | 250 NIS per dunam |
| Management in the vicinity of wet habitats (winter ponds, wet meadows, springs) | * Only on cultivated land near winter ponds, springs, or near water/drainage channels with environmental value.
* Not near historical or archeological sites.
* Not near ponds used for industrial purposes or that are polluted.
 | 250 NIS per dunam |
| Service crops to control erosion in erosion-prone areas | * On cultivated sites where there is a risk of erosion and surface runoff.
* In areas adjacent to ditches, streams, and rivers.
 | 250 NIS per dunam |

\*These activities are intended to generate a broad public benefit that requires future interagency cooperation in order to ensure continuous funding.

1. Externalities are costs or benefits arising from an economic transaction that affects individuals or firms not directly involved in the transaction. When evaluating open spaces, we use the term “external benefits” to refer to the benefits and economic values derived from the existence of those spaces, and that cannot be directly measured or that do not provide any direct benefit to the entity restoring or developing the space, and yet should be considered in the overall benefit assessment. [↑](#footnote-ref-1)
2. Opportunity costs are a basic concept in economics that express the price of a product in terms of the value of the alternatives that were excluded in favor of its production. When evaluating open spaces, if the alternative that was excluded was to avoid development in order to save costs, there could be unforeseen costs from the lack of development, such as heat islands, flooding, and other issues. This chapter will review these costs. [↑](#footnote-ref-2)
3. [Payments for Ecosystem Services: A Best Practice Guide](https://www.cbd.int/financial/pes/unitedkingdom-bestpractice.pdf). Birmingham City University. May 2013 [↑](#footnote-ref-3)
4. [CompensACTION POLICY BRIEF](https://cgspace.cgiar.org/bitstream/handle/10568/125381/brief.pdf) . November 2022 [↑](#footnote-ref-4)
5. MRV – Measurement Reporting Verification is a multistage process for measuring the extent of greenhouse gas emissions reduction following a specific activity (such as reducing emissions through technological means or atmospheric carbon sequestration). The MRV process allows emissions reductions to be verified and for tradable carbon credits to be earned. [↑](#footnote-ref-5)
6. See https://www.nycwatershed.org/ [↑](#footnote-ref-6)
7. See https://initiative20x20.org/restoration-projects/ecuadors-socio-bosque-program [↑](#footnote-ref-7)
8. Environmental Management Protocols for Israeli Agriculture, October 2023. The document sets out an initiative as part of the national project to restore the Tzipori river, managed by the Kishon Drainage and Rivers Authority. [↑](#footnote-ref-8)