**Economic** **Review**

**Introduction**

Israel’s open spaces combine precious natural and panoramic resources and are an important ecological, social, touristic, historical, and spiritual asset. In light of this, preserving and restoring these spaces and making them publicly accessible should be seen as a national project that will result in a wide range of diverse benefits, whereas harming and neglecting them may lead to serious consequences.

Formulating a work program for restoring Israel’s open spaces includes developing a set of tools that will enable us to implement and evaluate a variety of projects aimed at developing and preserving these spaces.

This stage of the program includes reviewing and evaluating the economic implications of land restoration projects as well as the various tools available for assessing their economic potential in terms of budget planning, financing, and income generation. A clear economic plan will facilitate the implementation of sustainable restoration projects, using economic tools as the “engine” that can help successfully drive them forward.

This review includes chapters discussing the various economic implications of the restoration of Israel’s open spaces:

1. A review of some of the economic models and approaches that are currently being used in land restoration.
2. An analysis of the costs involved in undertaking land restoration projects.
3. An analysis of the ongoing maintenance costs of open spaces after restoration.
4. An economic analysis and evaluation of externalities[[1]](#footnote-1)— the economic benefits to the public resulting from a restored natural space.
5. An economic analysis and evaluation of alternative costs[[2]](#footnote-2)— the costs that would be incurred if the open space is not restored.
6. An analysis and details of possible income sources arising as a result of the land restoration.

**Chapter 1: Overview of models and approaches for evaluating and prioritizing open space restoration projects.**

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

**1. Payments for ecosystem services**

Payments for ecosystem services (PES) is a market-based approach in which landowners or farmers receive direct payments or incentives in exchange for implementing practices that improve ecosystem services, such as biodiversity conservation, water quality maintenance, or carbon sequestration. The basic idea of PES is that ecosystem service providers are entitled to payment just like any other service provider.[[3]](#footnote-3) PES programs can be funded by government agencies, private companies, NGOs, or international organizations.

A good example of a PES project is the CompensACTION Initiative for Food Security and a Healthy Planet[[4]](#footnote-4) run by the G7 Food Security Working Group. This program is designed for 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 ways to reward farmers through PES programs, using public and private capital to create infrastructures that can help implement these programs quickly.

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

1. **Support for promoting a 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 is determining fair prices and setting a minimum price for carbon trading transactions and other ecosystem services, and recognizing the legal rights that enable the provision of compensation and mediation for ecosystem services.

2. **Increasing public and private investments to support PES**, such as channelling public funds to subsidize farmers for enriching ecosystem services. In Colombia, corporations have the option to redirect their tax payments for the benefit of farmers for ecosystem services.

3. **Adopting disruptive innovation to implement 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 absorbed and evaluating additional environmental system services.

Various countries have adopted different PES programs that have provided economic incentives for ecosystem services, such as:

* The [Watershed Industrial Council](https://www.nycwatershed.org/)[[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](https://initiative20x20.org/restoration-projects/ecuadors-socio-bosque-program)[[7]](#footnote-7) program generates economic incentives to preserve forests and prevent soil erosion in Ecuador.

**2. Carbon credits**

As the leading method currently used in PES programs, carbon credit trading merits a more detailed discussion. The carbon credit market was created as a result of international decisions and treaties and is growing rapidly as the result of regulatory requirements that oblige manufacturers and entire industries to purchase carbon credits. For this reason, the carbon credit market is now the most developed PES tool, and several carbon credit initiatives have been launched in Israel in recent years.

Carbon sequestration and capture is an ecosystem service that developed in line with the requirements of the United National Framework Convention on Climate Change (UNFCCC). The Kyoto Protocol was adopted in 11 December 1997 and entered into force on 16 February 2005. By 2020, there were 192 parties to the Protocol. Within this framework, the developed nations committed to reducing their greenhouse gas emissions. To meet emissions targets, a mechanism for emissions trading was developed, which enables emissions reductions and carbon sequestration to be evaluated, and MRV to be used to earn tradable carbon credits. Carbon credits are tradable securities whose value is increasing as a result of global regulations that require companies to purchase credits to offset their carbon emissions (one credit represents one ton of CO2).

In this way, economic value can be created from open spaces by establishing ecosystems that capture and sequester carbon in the soil. Carbon credits can be received for carbon sequestration and then traded. There are several ways in which open spaces could be used to generate carbon credits for carbon sequestration in open spaces, which could help the economy and boost the development and restoration of open spaces:

1. In agricultural areas, trading in carbon encourages farmers to use cultivation methods and treat the soil in ways that can sequester carbon in the soil, thereby offering a source of income in addition to earnings from the sale of agricultural produce. In Israel, carbon trading is a developing field, and several companies already provide solutions to help farmers earn carbon credits.[[8]](#footnote-8) Carbon credit certification from agriculture is still in its infancy in Israel and elsewhere. Currently, only around one percent of the world’s carbon credits originate from agriculture.
2. Another method gaining in use is the restoration of ecosystems through rewilding. These new habitats contribute to biodiversity and carbon sequestration in the soil, especially in wetlands. Carbon credit trading gives open spaces economic value, which helps with their rehabilitation and future preservation. One of the first wetland rewilding projects in Israel is currently underway in an abandoned fishpond area in Kfar Ruppin. The project seeks to restore the habitat to support biodiversity by turning it into a stopover and food collection station for migrating birds, and by supporting the creation of a wide variety of ecosystem services alongside education, leisure, and recreation facilities. Preliminary data suggest that the rate of carbon sequestration for this project will be over three tons of carbon (equal to three carbon credits) per dunam on a five-year average.[[9]](#footnote-9)

It is difficult to determine the price of a carbon credit, both because prices are affected by many parameters and therefore vary greatly from project to project, and because the system of generating carbon credits from agriculture is still in its infancy and the market is continuing to develop. We can estimate that a carbon credit from agriculture could be sold for around $30, while a credit in a rewilding project could have a sale price of about $100.[[10]](#footnote-10)

**3. Green bonds**

Green bonds are financial instruments used to finance projects that have an environmental value. These can include ecosystem restoration projects, conservation or sustainable agriculture, or developing environmentally-friendly infrastructure. Green bonds make it possible to raise funds at a relatively low cost compared to regular bonds. This is based on the assumption that investors will agree to a lower yield for green bonds, since they can include the investment in their Environmental, Social, and Governance (ESG) investment goals. In Israel, green bonds were first issued in 2023, when the government raised $2 billion in an issuance aimed at the international market.[[11]](#footnote-11)

Municipal bonds, which are issued by a local authority, are a tool for financing investment in urban development. These can also take the form of municipal green bonds, which finance green projects in cities, such as environmentally-friendly urban infrastructure, low-carbon buildings, metro and mass transit systems, and energy efficiency.

Although green bonds (whether state or municipal) are widely used in many places around the world, Israel issued them for the first time only in 2023, and of its 257 local authorities, only four have raised funds through municipal bond issuances. At the time of writing, no Israeli municipality has issued green municipal bonds.[[12]](#footnote-12) It is clear that green bonds are a financial instrument that may be relevant to open space restoration and preservation projects, and that their use in Israel for these needs is still in its infancy, and could be developed.

**4. Green initiatives and green tourism**

According to the International Ecotourism Society (2015), ecotourism is “responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education.”[[13]](#footnote-13) Financing models for restoring and developing open spaces can include business ventures or public ecotourism projects. Ecotourism ventures can respond to the need to restore and preserve precious environmental resources in a particular area, contribute to the surrounding community by creating an open space that is available and adapted for vacation experiences, reduce the tourism burden in other natural areas, and contribute to the local economy. Tourist ventures can be run as businesses and generate income that contributes to community well-being and provide a return on the investment made to rehabilitate or development of the open space.

Sources of income from ecological tourist ventures are diverse, and could include entrance fees, parking, accommodation, granting franchises licenses to operate in the area, and renewable energy production. Examples of restoration projects that include ecotourism in Israel include the [Ariel Sharon Park](http://www.parksharon.co.il/html5/?_id=10365&did=10116&G=10365), the [Hod Hasharon Ecological Park](https://calcalit-hod.com/%D7%A4%D7%90%D7%A8%D7%A7-%D7%90%D7%A7%D7%95%D7%9C%D7%95%D7%92%D7%99-%D7%94%D7%95%D7%93-%D7%94%D7%A9%D7%A8%D7%95%D7%9F/), and the [Agamon Hula-JNF Nature and Ornithology Park](https://agamon-hula.co.il/home-en/).[[14]](#footnote-14) In addition, there are many other ecotourism sites in Israel that, although not formerly unusable areas that have been restored, still fall within the category of conserving and preserving precious natural and ecological resources. Two examples are [Kibbutz Lotan](https://kibbutzlotan.com/en/home-en/)[[15]](#footnote-15) in the Arava desert, which offers accommodation, food, and educational activities, and [Derech HaTanakh](https://www.michmanim.co.il/en),[[16]](#footnote-16) an ecological biblical garden in Mikhmanim in the Galilee that offers rustic accommodation and an organic farm.

5. Conservation easements

Conservation easements are legal agreements between landowners and conservation or government agencies. Landowners voluntarily limit certain land uses to protect natural resources or maintain ecosystem services. In return, they may receive financial compensation or tax incentives. In Israel, farmers are supported by the Ministry of Agriculture to undertake work to preserve agricultural land from depletion and erosion.[[17]](#footnote-17)

1. Externalities are costs or benefits produced by an economic transaction and imposed on people or companies that are not directly involved in the transaction. Here, we use the term externalities to refer to the economic values and benefits arising from an open space and that cannot be directly measured or enjoyed by those involved in its rehabilitation and development, but must be taken into account in terms of the overall benefits provided by the space. [↑](#footnote-ref-1)
2. Alternative costs are a basic concept in economics that express the price of a product in terms of the costs that would apply if alternative options had been implemented. In the context of open spaces, if a particular open space is not developed, thereby saving money, unplanned costs may nevertheless arise as a result of the decision not to develop or restore it, such as heat islands and flooding. This chapter will review these costs. [↑](#footnote-ref-2)
3. Smith, S., Rowcroft, P., Everard, M., Couldrick, L., Reed, M., Rogers, H., Quick, T.,

Eves, C. and White, C. (2013). *Payments for Ecosystem Services: A Best Practice Guide*. Defra, London. Available at: https://www.cbd.int/financial/pes/unitedkingdom-bestpractice.pdf [↑](#footnote-ref-3)
4. [CompensACTION Policy Brief](https://cgspace.cgiar.org/bitstream/handle/10568/125381/brief.pdf) November 2022 https://cgspace.cgiar.org/bitstream/handle/10568/125381/brief.pdf [↑](#footnote-ref-4)
5. MRV is a multistage process for measuring the scope of reducing greenhouse gas emissions following a specific activity (such as reducing emissions through technological means or fixing atmospheric carbon). Following the MRV process, it is possible to verify emissions reduction and earn tradable carbon credits. [↑](#footnote-ref-5)
6. [↑](#footnote-ref-6)
7. See https://initiative20x20.org/restoration-projects/ecuadors-socio-bosque-program [↑](#footnote-ref-7)
8. See, for example, [EcoTraders](https://www.ecotraders-global.com/), an environmental and energy management advisory, see: EcoTraders ( | Climate Change, Energy and Environment Consulting |Israel (ecotraders-global.com), which creates sustainable agriculture solutions; and We-Agri (<http://www.we-agri.co/>), a carbon credit network. [↑](#footnote-ref-8)
9. Raviv, T., Rotam, D., Zanzuri, A., and Lotner Lev, T. 2022. Sequestration and capture of atmospheric carbon through ecosystems. [*Ecology and the Environment*](https://magazine.isees.org.il/?page_id=177) 15 November (Hebrew). Available at: https://magazine.isees.org.il/?p=52346 [↑](#footnote-ref-9)
10. The source of this information is a conversation with Yuval Lavi, CEO of Israeli company [terrrera](https://terrra.one/one-pager?utm_source=news&utm_medium=zmanisrael&utm_campaign=drain-the-swamp) (see: https://terrra.one/) which works with landowners to rewild areas and trade carbon credits and Nitzan Bauer, CEO of [We-Agri](https://weagri.com/). (see: we agri - Simple, organized agriculture) These are very rough estimates intended to give orders of magnitude. It is important to clarify that the price of each credit is determined according to the quality of the project and also due to it being a tradable security whose price changes over time. [↑](#footnote-ref-10)
11. Dori, Oren. 2023. [*Government issues green bonds for the first time: $2 billion raised*](https://www.globes.co.il/news/article.aspx?did=1001435155). 11 January. Globes. (Hebrew). Available at: https://www.globes.co.il/news/article.aspx?did=1001435155 [↑](#footnote-ref-11)
12. Greeneye. DATE. *A Green Look at Urban Capital*. Review undertaken for the Tel Aviv Municipality. [↑](#footnote-ref-12)
13. [International Ecotourism Society](https://ecotourism.org/what-is-ecotourism/) (2015). Available at: https://ecotourism.org/what-is-ecotourism/ [↑](#footnote-ref-13)
14. See: <https://calcalit-hod.com/%D7%A4%D7%90%D7%A8%D7%A7-%D7%90%D7%A7%D7%95%D7%9C%D7%95%D7%92%D7%99-%D7%94%D7%95%D7%93-%D7%94%D7%A9%D7%A8%D7%95%D7%9F/>; פארק אקולוגי הוד השרון (calcalit-hod.com); and

https://agamon-hula.co.il/home-en/ [↑](#footnote-ref-14)
15. https://kibbutzlotan.com/en/home-en/ [↑](#footnote-ref-15)
16. michmanim.co.il [↑](#footnote-ref-16)
17. Gutman, J., Yaakovi, B., Lasca D., Zeidenberg, R., and Eshel, G. 2016. [Loss of agricultural land: Encouragement to preserve public resources through incentives.](https://magazine.isees.org.il/?p=16141) (Heb.) 17 May. *Ecology and Environment.* [↑](#footnote-ref-17)