Economic potential of organic farming in Israel

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The aim of this paper is to provide a brief outline of the main economic impacts of organic farming and food to inform policymaking on organic farming in Israel. This covers issues relating to farm financial performance, markets, trade, consumption and environmental externalities, as well as policy support payments. In summary, organic farming can deliver financial benefits to farmers and food businesses supplying a global premium market, while maintaining affordable diets for consumers and generating significant environmental, health and other public goods for society, all justifying investment in policy support for this sector.

Organic farming is an approach to agriculture which seeks to enhance the resilience and sustainability of farming systems by reducing reliance on external inputs and emphasising the use of the farm's own resources, ecological processes and farmer skills and knowledge. The principles of organic farming have evolved since the early 1900s. It is legally defined in many countries, including in Israel, most of Europe and north America, which has made it possible for a substantial global market for organic products to develop, worth €135 billion in 2022, up from €15 billion in 2000[2]. Globally, more than 96 million ha were managed organically in 2022.

Investment in Israeli organic farming is of strategic relevance, with the potential to:

- help farmers reduce input costs and improve profitability;
- enable food businesses to engage with growing global export markets in tune with international trade trends;
- conserve soils and reduce energy consumption, contributing to food security by enhancing self-reliance and system resilience;
- increase environmental resilience and reduce costs of insuring against and remediating environmental problems;
- reduce costs of public healthcare.

1 FINANCIAL PERFORMANCE OF ORGANIC FARMS

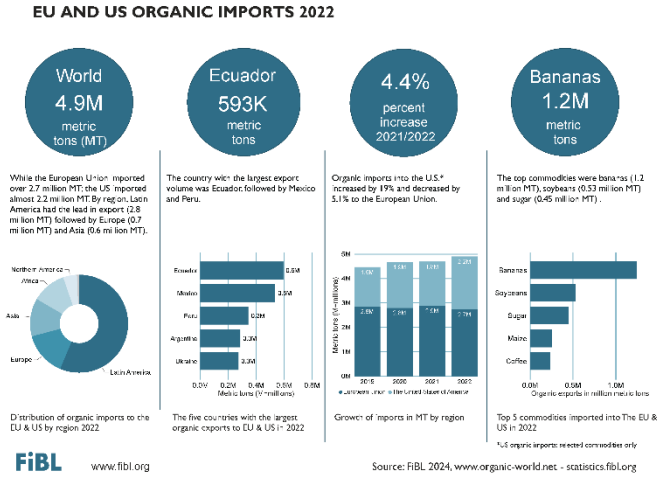
In many countries, organic farms are as profitable or more profitable than conventional farms[3], despite, lower yields, thanks to cost savings from not using fertiliser and pesticide inputs and higher prices[4] for organic products. Policy support for organic farming may also be relevant in some countries, particularly in Europe.

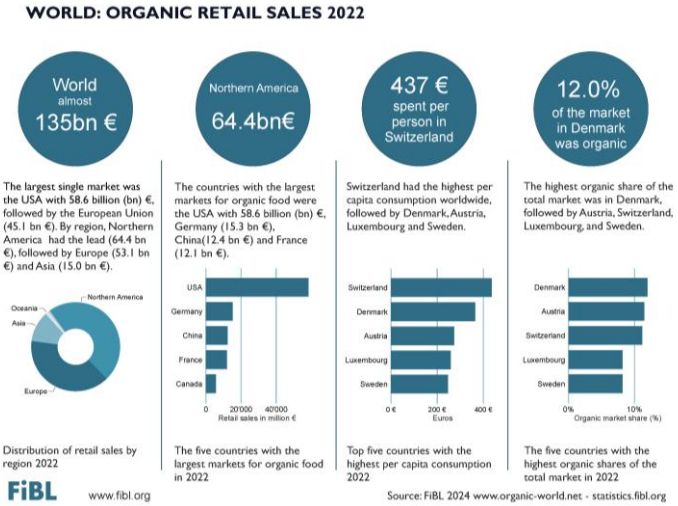
[1] https://lampkinpadel.eu
[2] https://www.fibl.org/fileadmin/documents/shop/1747-organic-world-2024_light.pdf
[3] https://agriculture.ec.europa.eu/system/files/2023-04/agri-market-brief-20-organic-farming-eu_en.pdf
[4] https://agridata.ec.europa.eu/extensions/DashboardPrice/OrganicPricesTrends.html

2 MARKET AND TRADE POTENTIAL

The development of the market for organic food and fibre products is a key part of the potential of the organic sector to deliver economic benefits. Since the 1970s, markets for organic products have developed globally, especially in Europe and North America, but with other countries like China now also growing rapidly. Within Europe, Germany and France have the largest organic markets, which together with Spain and Italy account for more than half of the EU organic market. However, smaller countries like Switzerland, Denmark, Austria and Sweden have larger per capita organic sales and organic market shares (see Figure). In terms of trade, the European Union and the United States are the largest importers of organic products, with Latin America accounting for most of the exports to these countries.

Economies of scale as the organic sector grows is expected to reduce costs for transport and distribution, processing and retailing, moderating the impact of higher farmgate prices on consumers. The pricing policies of retailers is also relevant, who may be maintaining or increasing percentage margins, which is possible when demand is high relative to supply.





3 CONSUMER CHARACTERISTICS

The demand for organic products by consumers is driven primarily by personal and health related factors[5]. Reductions in pesticide residues, taste and quality are often cited. Animal welfare and environmental issues are less often identified but are important for some. Committed organic consumers (20% of buyers) typically account for 80% of sales, while the majority of consumers buy organic products occasionally. Committed organic consumers typically eat less meat and dairy products, as well as less processed products. Together with reduced food waste, this helps to reduce the impact of higher prices for organic products on overall food expenditure, keeping an organic diet affordable[6].

The French Bio-Nutrinet study, the largest of its kind with 29,000 participants consuming at least some organic food[7], found that higher organic food consumption was associated with reduced meat consumption and dietary exposure to pesticides, improved overall nutritional quality and lower obesity and incidence of key health conditions. Diet-related greenhouse-gas emissions, energy demand, and land required per person were reduced. A financial analysis of these impacts has not yet been published.

Many countries are also emphasising increased public procurement of organic food for catering in schools, hospitals and other institutions. The organic share of public catering in Denmark is particularly high, with more than 60% of food served now organic. Costs are kept constant by reviewing preparation procedures and reducing meat and processed food content in line with the Danish Dietary Guidelines for Health and Climate[8,9,10]. A University of Copenhagen study found that the benefits of this approach included reducing expenses of the health care system due to illnesses, additional days in the labor market, and the value of improved quality of life, **amounted to 5.5-6.5 billion euros per year** in Denmark[11].

4 EXTERNALITIES AND PUBLIC GOOD IMPACTS

The environmental impacts of organic farming are highly relevant both to consumers and to policy-makers. There is an increasing body of evidence[12] that shows organic farming is good for:

- Soils: In Israel, fertile soil is being lost at a rate 100 times faster than its rate of regeneration, when the area of land intended for agricultural cultivation is already limited[13]. Organic

[5] https://core.ac.uk/download/pdf/77086582.pdf
[6] https://www.sciencedirect.com/science/article/abs/pii/S0195666317305950?via%3Dihub
[7] https://ajcn.nutrition.org/article/S0002-9165(22)03157-4/fulltext
[8] https://www.sciencedirect.com/science/article/pii/S1462901122003823
[9] https://journals.sagepub.com/doi/abs/10.1177/1757913913517976?journalCode=rshi
[10] https://www.mdpi.com/2304-8158/12/10/1975
[11] https://curis.ku.dk/ws/portalfiles/portal/255885151/IFRO_Udredning_2021_01.pdf
[12] E.g. https://www.thuenen.de/media/publikationen/thuenen-report/Thuenen_Report_65.pdf
[13] אבדן קרקע חקלאית - עידוד לשימור המשאב הציבורי באמצעות תמריצים

practices, including green manures, legume leys and the use of organic manures, build soil organic matter (carbon), increase soil aggregate stability and improve water infiltration, reducing soil erosion incidence and risks[14,15].

- Water: The avoidance of synthetic nitrogen fertiliser contributes to reduced nitrate leaching from organic farms and the protection of water quality. The reduction in phosphorus fertiliser use and in soil erosion on organic farms, where soil particles carry phosphates into water courses, also helps protect water quality and aquatic life. Reductions in pesticide use are also important for maintaining water quality. The benefits for water quality are such that water companies/agencies in France [16] and Germany [17] **actively support organic management in catchment areas**, with steady decreases in nitrate contents in water recorded, at a cost for one company of 1 eurocent /litre, less than would be needed for measures to clean up contaminated water.

- Energy: The avoidance of nitrogen fertiliser and pesticide use substantially reduces energy consumption on organic farms. Nitrogen fertiliser manufacture accounts for **50% of energy use** in European agriculture[18]. The reductions achieved are greater than any additional diesel required for mechanical cultivations to replace pesticides.

- Climate: Organic farming can substantially reduce the level of greenhouse gas emissions per hectare and enhance soil carbon sequestration[12,19]. The principal contributors to this are the non-use of synthetic nitrogen fertiliser reducing nitrogen oxide emissions and energy use for manufacturing, the use of multi-year legume crops fixing soil carbon, and the reduction in livestock numbers reducing methane emissions. In a German comparison of 40 organic and 40 non-organic farms, nitrogen fertiliser inputs were 100kg/ha lower, energy use and GHG-emissions were 50% lower and soil carbon retention was increased by 270kg/ha. Overall, this represented a reduction of **€750-800 per hectare per year in environmental damage costs** annually, or **€4 billion if the German target of 30% land under organic management** could be achieved[20]. Modelling of the impacts of 25% conversion of EU agriculture found that GHG emissions per hectare converted could be reduced by 60%, with a total reduction in N-fertiliser of 2.7 million tonnes and GHG-emissions of 68 million tonnes CO_2e annually. Lower crop yields were mitigated by reduced livestock numbers and feed requirements[21]. In systems where livestock are less relevant, reduced yields may still be

[14] https://iopscience.iop.org/article/10.1088/1748-9326/aba2fd
[15] https://link.springer.com/article/10.1007/s10311-021-01302-y
[16] https://www.sciencedirect.com/science/article/abs/pii/S0264837714002373
[17] https://www.dvgw.de/medien/dvgw/wasser/ressourcen/verbaende-beirat-nitrat_information_oekolandbau.pdf
[18] https://www.sciencedirect.com/science/article/pii/S1364032122000284
[19] Organic agriculture and climate change | Renewable Agriculture and Food Systems | Cambridge Core
[20] https://literatur.thuenen.de/digbib_extern/dn065968.pdf
[21] https://www.organicseurope.bio/content/uploads/2023/02/ifoameu_policy_FarmToFork_25EnviBenefits_202212.pdf?dd

acceptable in the context of increased resilience through reduced reliance on external inputs.

- Biodiversity: The non-use of almost all pesticides, and the adoption of more diverse crop rotations and smaller field sizes, are major reasons for organic management leading to **30% or more increases in biodiversity** in a European context. These impacts are across a wide range of species and taxa, from soil micro-organisms and fauna through to plants, insects, mammals and birds[12,22,23]. Biodiversity impacts in arid climates are likely to be different, but can be enhanced through incorporation of landscape elements such as trees, and by the use of biodiverse understoreys under fruit crops or between rows, including as support for beneficial insects and pollinators.
- Air quality: can be affected by ammonia emissions, pesticide spray drift and the burning of crop residues, with potential impacts on public health. All of these are substantially reduced under organic management. Ammonia emissions, primarily from livestock production, can also combine with sulphur to create fine particles in the air, so that the health impacts may be both direct and indirect.

There is an ongoing debate about whether the externalities attributable to agriculture should be better reflected in the pricing of food products (True Cost Accounting). One German study[24] found that, on average (unweighted), plant-based products from conventional systems cause externalities of about €0.79 per kg, and those from organic production of about €0.42 per kg.

In recognition of these benefits, many countries provide support for conversion to and maintenance of organic farming systems, as well as support for market development and investments in production, storage, processing and distribution facilities. The EU Member States have **allocated €16 billion for the five-year period 2023-2027**, or **5% of the CAP budget**, for organic conversion and maintenance support alone, to directly support organic management on 10% of EU agricultural land area by 2027[25,26]. This is part of the process of reaching the EU's goal of 25% organic area by 2030.

[22] https://read.organicseurope.bio/?publication=organic-farming-and-biodiversity
[23] https://www.fibl.org/fileadmin/documents/shop/1548-biodiversity.pdf
[24] https://www.th-nuernberg.de/fileadmin/abteilungen/zwtt/zwtt_bilder/foodcost-wahre-kosten/Michalke_et_al._2023.pdf
[25] https://organictargets.eu/wp-content/uploads/2024/09/OT4EU-Deliverable-1.2-Version-2.0-Final-140624.pdf
[26] Like non-organic farmers, organic farmers in the EU also receive the basic direct income payments and can qualify for other environmental and rural development support payments – however, data on these additional payment sources does not normally distinguish organic and non-organic recipients