Enhancing Global And Local Impact In Israeli Innovation Policy

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Abstract:

Israel's innovation policy—guided by the Law for the Encouragement of Industrial Research and Development (1984)—prioritizes high-tech projects improving exports, and local production. Today, most production inputs are sourced from abroad—primarily from China for cost efficiency and from the United States for access to advanced technologies.

This research is based on the most successful Israeli radical innovations supported by the Israeli Ministry of Education in universities and disruptive and discontinuous innovations supported by the Israel Innovation Authority in industry.

This study examines 249 high-impact innovations supported by the Israeli Ministry of Education (academia) and the Israel Innovation Authority (industry), including:

* *21 Radical Innovations (e.g., in Mathematics, Healthcare, Chemistry) – 7 have local impact.*
* *94Discontinuous Innovations (in Agriculture, Energy, Healthcare, Telecommunications) – 6 have local impact.*
* *134 Disruptive Innovations (in Agriculture, Healthcare, Energy, Platforms, Digital Imaging, Education, Defense) – 3 have local impact.*

Our objective is to increase the local economic impact of Israeli innovations.

To achieve this, we propose that the Israel Innovation Authority (IIA)organize itssupported firms intovirtual open incubators and clusters, grouped by specialization. These incubators would receive continued financial and professional supportto drive both technological advancement and business development.

The model is designed to promote collaboration with local companies, suppliers, and organizations, ensuring that innovation leads to tangible local outcomes—increased sales, job creation, and added economic value within Israel.

To strengthen the local economic impact of Israeli innovations, we recommend that the Israel Innovation Authority (IIA):

* *Organize supported firms into virtual open incubators and clusters based on their domain specialization.*
* *Facilitate collaboration between supported innovations and local companies, suppliers, and service providers.*
* *Provide financial and strategic support for joint technological and business initiatives, involving also radical innovations.*

This model connects cutting-edge R&D with local markets and production—driving employment, domestic value creation, and sustainable economic growth.

Keywords:Radical Innovation, Disruptive Innovation, Discontinuous Innovation, virtual open incubator, virtual cluster.

I. Research Objective

The Israeli innovation policy, as outlined in the *Law for the Encouragement of Industrial Research and Development—1984* (the R&D Law), primarily supports high-tech firms that both export and maintain local production. In Israel's high-tech sector, local manufacturing often depends on imported and processed raw materials, as well as external hardware and software components. As a result, the sector's main contribution to the local economy stems from the advancement of human capital—through the cultivation of knowledge and skilled labor—rather than from extensive manufacturing activity or widespread domestic application of innovations.

However, the implementation and integration of these innovations into the local market remain limited. This is largely attributable to the limited absorptive capacity of domestic customers and the substantial financial resources required for effective integration. To bridge this gap, we propose targeted modifications to the existing R&D policy, aimed at enhancing the local economic impact of innovations supported under the R&D Law. For each innovation evaluated in this report, we assess both its global market potential and its underutilized local impact within the Israeli economy.

In our research, we have also included radical innovations developed in universities and research centers with support from the Ministry of Education. For each innovation assessed in this report, we examine both its global market potential and its unrealized local impact within the Israeli economy.

Requested support for the local market

The cost of implementing these innovations for local customers—whether public institutions (such as hospitals and schools), businesses, or private individuals—could be partially supported by local bodies such as the Ministry of Health and the Israel Innovation Authority (IIA), in the case of hospitals or municipalities for public services. Implementation proposals may also include components such as training programs, subcontractors, and service providers. A limited number of systems, products, or installations will be defined based on the available budget and the anticipated added value.

Israeli innovations sample

The study includes: 21 radical innovations, 84 discontinuous innovations, 121 disruptive innovations, a total of 226 innovations.
The radical innovations are in Mathematics, Healthcare, and Chemistry.

The discontinuous innovations are in Agriculture, Energy, Healthcare, Telecommunication and Security, and Digital imaging.

The disruptive innovations are in Agriculture and Water treatment, Healthcare, Telecommunication and Security, Micro-electronics, Hardware Software platforms and products, Digital imaging, and Defence.

Innovation types

Frugal innovation, also known as "Bottleaad innovation", emphasizes simplicity, affordability, and accessibility (Manoj, 2021). Inclusive innovation involves finding innovative solutions to problems, in the low-end market, by utilizing limited resources and constraints as opportunities for creativity.

Radical innovation represents the highest level of innovation, characterized by groundbreaking advances (Chandy & Tellis, 1998; Ettlie, Bridges, & O'Keefe, 1984). It is followed by discontinuous innovation, which opens entirely new markets (Danneels, Kleinschmidt, & Cooper, 2001), and disruptive innovation, which introduces novel technologies that create solutions for emerging or underserved markets (Christensen, Verlinden, & Westerman, 2002; Markides, 2006).

Frugal innovation

The term "frugal" originates from the Hindi word *"jugaad"*—a colloquial expression meaning an inventive, improvised solution born out of necessity and resourcefulness (Khan, 2016). Frugal innovation addresses customer needs through creative, cost-effective approacheswhen resources are limited.

Despite its potential to serve underserved populations and stimulate local economic activity,frugal innovation aimed at the domestic market is currently not supportedby theIsrael Innovation Authority (IIA).

Inclusive Innovation

Inclusive innovation targets broad, low-income market segments by creating livelihood opportunities and offering affordable solutions without compromising on quality or effectiveness. It is designed for consumers whose purchasing decisions are driven by cash availability and economic constraints (World Bank, 2013).

Despite its potential to reduce inequality and stimulate grassroots economic development, inclusive innovation focused on the local market is not currently supported by the Israel Innovation Authority (IIA).

Radical Innovation

Radical innovation is defined as the introduction of products that incorporate fundamentally different technologies and address core customer needs more effectively than existing solutions (Chandy & Tellis, 1998). These innovations often create entirely new platforms, targeting emerging needs in new markets through transformative solutions.

Radical innovation is typically driven by scientific breakthroughs and can significantly enhance the value delivered to both local and global economies. In Israel, such innovations are primarily supported at the academic level by the Ministry of Education and by domain-specific ministries such as Agriculture and Energy.

The Israel Innovation Authority (IIA) generally does not support radical innovations unless they are linked to export-oriented firms. However, fostering collaboration between scientific innovators and export-capable companies could open a path for IIA involvement—bridging fundamental research with commercial application and market scaling.

Discontinuous innovation

Discontinuous innovation creates a new technological or market trajectory, often requiring firms to move beyond their existing capabilities and prior experiences—essentially thinking "outside the box" (Tripsas & Gavetti, 2000; Hodgkinson & Sparrow, 2002). This type of innovation is marked by market newness, where potential customer segments exist, but actual demand has not yet emerged, and where firms must operate within a new competitive landscape (Picaud, 2013; Bijaoui, 2024, 2025).

The Israel Innovation Authority (IIA) currently supports discontinuous innovations primarily when they target international markets, rather than leveraging their potential for local market development.

Disruptive Innovation

Disruptive innovation refers to the introduction of new technologies that address unmet or underserved needs within segments of the mainstream market (Corsi & Di Minin, 2011). These innovations typically offer a distinct set of features, performance levels, and price points, targeting two key market segments (Bijaoui, 2024, 2025):

1. Customers willing to pay a premium for new value, and
2. Cost-sensitive users seeking "good enough" solutions at lower prices (Govindarajan et al., 2011).

The Israel Innovation Authority (IIA) supports disruptive innovations, which are primarily aimed at international markets due to their focus on emerging or newly defined market segments. These innovations often require a combination of intensive R&D and strategic marketing efforts to reach commercial viability.

Radical Innovations analysis

These 21 radical innovations typically originate from scientific research and require close collaboration with professionals from the technology, industry, and business sectors—particularly those with practical experience in both local and global markets. While the application potential of these innovations spans multiple sectors, only five have so far been implemented locally within Israel (see *).

Dr Bruria Kaufman, Mössbauer emission of gamma rays from solid material, spectroscopy.

Steel & Alloys: Determine phases (austenite, martensite, etc.), oxidation states, and magnetic properties.

Prof. Robert Aumann, Acceptable Points in General Cooperative n-Person Games

Acceptable point ensures fair cost savings. Core allocation: stable—no subgroup has incentive to leave.

Dr Elon Lindenstrauss,Jean Bourgain, Benjamin Weiss, Mikhail Gromov, number theory

Cryptographic algorithms that guarantee data privacy, integrity, and authenticity fundamentally rely on number theory—the study of integers and their properties.

Prof. Yoav Benjamini, Prof. Daniel Yekutieli, and Prof. Ruth Heller, screening of a large number of experimental results to identify significant discoveries

The concept of False Discovery Rate (FDR) was born from a need in medical research, specifically, studies examining large numbers of success parameters to evaluate new treatments

Prof. Dan Shechtman, Quasicrystalline materials

The practical applications of Shechtman's findings are for reinforced metal.

Prof. Michael Levitt, Arieh Warshel, and Martin Karplus, development of multiscale models for complex chemicals

Quantum Mechanics/Molecular Mechanics (QM/MM) models used to study enzyme catalysis. MD simulations for protein–ligand binding. Coarse-grained models for DNA/RNA folding or membrane behavior.

Ernest David Bergmann, aromatic compounds and reactive aliphatics from petroleum, nuclear bomb.

Aromatics dissolve oils, resins, polymers, and greases. Used in: Paints, coatings; Inks; Cleaning agents; Adhesives

Prof. Chaim Weizmann, acetone butanol- ethanol (ABE)

Typically refers to n-butanol produced biologically (as opposed to petrochemical production). Common microbial producers: Clostridium species (e.g., *C. acetobutylicum*)

Prof. Aaron Ciechanover, Prof. Avram Hershko, discovery of ubiquitin-mediated protein degradation
Ubiquitin: a small protein (76 amino acids) that is covalently attached to target proteins via ubiquitin ligases (E3). Polyubiquitin chains mark the substrate for degradation by the 26S proteasome. It regulates: Protein turnover; Cell cycle; Signal transduction; Immune responses; DNA repair

Prof. Ada E. Yonath, the structure of ribosomes, new antibiotics
The bacterial ribosome is a structure of significant therapeutic value, being the target of half of all known antibiotics.

Prof. Carmit Levy, Prof. Yaron Carmi, and PhD student Avishai Maliah, modified protein to stimulate the immune system to fight cancer cells.
Key Classes of Modified Proteins in Cancer Immunotherapy

Prof. Ephraim Katchalsky–Katzir, deciphering the genetic code, the production of synthetic antigens, and the clarification of the various steps of immune responses.
The deciphering of the genetic code—understanding how sequences of DNA and RNA correspond to specific amino acids—was a foundational achievement in molecular biology. It enabled the rational design and production of synthetic antigens, which are now central to vaccines, cancer immunotherapy, and infectious disease diagnostics.

* Prof. Michel Revel, Interferon
Interferon beta (IFN-β) is a type of Type I interferon, a group of naturally occurring cytokines that play crucial roles in the body's antiviral defense, immune regulation, and anti-inflammatory pathways. It is widely used as a therapeutic protein, especially in the treatment of multiple sclerosis (MS) and is being explored in other diseases such as cancers and viral infections.

*Professor Raphael Mechoulam, Medical Cannabis, Weizman Institute and HebrewDiscovery of THC (1964)
Mechoulam and his team at the Hebrew University of Jerusalem successfully isolated and identified: Δ^9-tetrahydrocannabinol (THC) – the main psychoactive compound in cannabis.

*Prof. Ora Kedem, biomembrane processes for the treatment of water and wastewater
Professor Ora Kedem (1924–2015) was a pioneering Israeli physical chemist whose research laid the foundations of membrane science—especially in the context of separations and water purification.

*Dr. Eli Putievsky, plant geneticist, Agricultural Research Organization (ARO), NeweYa'ar Experiment Station
Dr. Eli Putievsky is a renowned Israeli agronomist and plant scientist known for his extensive work on the domestication, cultivation, and breeding of medicinal and aromatic plants, particularly those native to Israel and the Mediterranean region. His pioneering contributions laid the foundation for Israel's medicinal plant industry, including work on oregano, basil (*Ocimum*), rosemary, sage, and other essential oil–producing species.

*Dr Elisabeth and Dr Hugo Boyko, use of salt water for irrigation
Dr. Hugo Boyko (1892–1978) and Dr. Elisabeth Boyko were German-born scientists who emigrated to Israel and became pioneers in desert agriculture, particularly in using saline water (including seawater) for irrigation.

*Haim D. Rabinowitch and Nahum Kedar, RIN (Ripening Inhibitor)
Haim D. Rabinowitch and Nahum Kedar were two of Israel's most influential agricultural scientists, globally recognized for their groundbreaking work on tomato genetics, physiology, and breeding. Their most famous discovery—the RIN (Ripening Inhibitor) gene—has had lasting global impact on how tomatoes are cultivated, stored, and shipped.

Discontinuous Innovationsanalysis 94/6
Only six of these innovations are currently implemented in the local market; the rest are in pilot projects.

Agriculture 16
<u>*miRNA, genome regulator in plants*</u>

Useful in medicinal plants (e.g., Ocimum, Salvia) for enhancing antioxidants, pigments, or therapeutic compounds.
*Tomato resistant to tomato brown rugose fruit virus (TBRFV). ARO Volcani
Desert Agriculture at BGU: Leveraging miRNAs for crops grown in the Negev Desert.
VolcaniCenter: Research on miRNA regulation in crops facing climate stress.

Kenaf plant (Hibiscus cannabinus)
     Kenaf Green Industries (KGI) – Full-Chain Valorization. Kfar Warburg. Customized seed varieties suited for Mediterranean and arid climates. On-site processing technologies to separate bast and core fibers. Product lines include paper pulp, non-woven fabrics, insulation mats, bioplastics, concrete composites, animal bedding, and bioenergy crops.

Monitor pollinator
     *Israeli seed firm *Hazera* collaborates with *BeeHero* to pilot the Pollination Insight Platform (PIP), using IoT sensors in seed-production fields across Israel and France.
Beewise: Israeli startup building fully automated "Beehomes"—robotic beehives controlled via AI and sensors—enabling 24/7 remote hive management, reducing hive mortality, and easing beekeeper labor.
BloomX: Developed an electrostatic pollination device pulled through orchards (e.g. avocado), complementing bees and boosting yields by up to 40%.
Edete: Working on mechanized/artificial pollination to offset insect declines.

Platform monitors crop development in real-time
Agritask. A SaaS platform aggregating data from satellites, field sensors, and weather services.
Prospera. Combines computer-vision sensors and smart cameras in greenhouses and open fields. AI continually monitors plant health and irrigation needs for timely decision-making.
Netagrow. Offers a unified farm-management suite: the NetaSense IoT sensor network, FarmAssist mobile app, and NetaBusiness farm-analytics dashboard—covering soil, weather, pest alerts, financials, e-commerce and expert chat support.

NOF Cooling
     NOF Cooling (aka Natural Offset Farming). Portable, electricity-free cooling and post-harvest treatment platform that uses liquid CO_2 to chill produce, extend shelf life, and create controlled atmospheres in the field.

Croptune, monitoring of crops development
     Croptune is a mobile-first precision-agriculture solution developed by AgrIOT in partnership with Haifa Group. It enables real-time, in-field detection of nutrient deficiencies (N, P, K) using just a smartphone camera, combined with AI and big data analytics.

Hydroponic systems
     GrowPonics. World's leader in automated hydroponic greenhouses (AHGHs). Built modular, controlled-environment systems managing nutrients, CO_2, oxygen, and water year-round. Achieves up to 80% water savings and pesticide-free produce.
     *TAP / TAPKIT Hydroponics. Specializes in large-scale hydroponic greenhouses for herbs, microgreens, and vegetables. A turnkey 500 m² modular kit with app-guided support, AI cameras for real-time crop monitoring, lettuce, herb bunches.

Customized robotics, Robotic Perception
MetoMotion – GRoW (Greenhouse Robotics Worker). High-tech greenhouse tomato harvesting. Dual robotic arms, 3D vision, AI-driven ripeness detection, conveyor crate loading (~16 sec per cluster)
Robotic Perception. Robotic sprayer: reduces pesticide usage by ≥25%.
Bluewhite Robotics. One operator can manage fleets remotely seeding, spraying, cutting, harvesting

Sambucol, against the avian flu virus, H5N1.
     *Sambucol®, a standardized black elderberry (Sambucus nigra) extract developed by Dr. Madeleine Mumcuoglu at the Hebrew University–Hadassah Medical Center and produced by Razei Bar Industries in Jerusalem, exhibits significant antiviral activity against avian influenza (H5N1) in vitro.

Energy 8

Solar converter's technology

      SolarEdge Technologies, solar inverters with a distributed PowerBox optimizer + central inverter solution. Each PV panel has its own optimizer ("PowerBox") enabling module-level MPPT control, minimizing shading losses, increasing efficiency (>97%) and allowing detailed remote monitoring.

Lightweight flexible solar panels

Apollo Power: Israel's Flexible Solar Pioneer. Produce solar films/panels (~3 kg/m²) that are light, bendable (~12 m² per roll), and conform to rooftops, vehicles, water surfaces, and even aircraft. Global Deployments & Partnerships Amazon, Volkswagen, Audi, Hyundai, Renault, and Geely for solar vehicle roofs

Organic photovoltaic cells (OPC)

      Prof. Nir Tessler Technion, invented structural modifications that raised organic cell efficiency from ~10% to ~15% by adjusting electrode spacing and layer configuration

      Israel's *MIGAL Galilee Research* Institute is pioneering national agrivoltaics, integrating OPVs into farming systems.

Batteries 3D Current Collector manufacturing

      Addionics has developed porous 3D copper and aluminum current collectors ("Smart 3D Electrodes™"). Boost energy density and power delivery

Nano-technological coating that cools

      SolCold's nanotech coating offers a world-first: turning sunlight into passive cooling through quantum anti-Stokes emission.

IceBrick energy storage system

      Nostromo Energy, the pioneer behind IceBrick®, a modular, ice-based thermal energy storage system that powers building cooling driven by sustainability and scalability.

      Each IceBrick® cell is a capsule-filled module (~50×50×400 cm, ~780 kg) housing ~200 water pods with glycol mixtures, freezing into ice during off-peak or surplus renewable energy periods.

E-TAC (Electrochemical–Thermally Activated Chemical) method for producing green hydrogen

E-TAC is new technique for testing the efficiency of hematite and other semiconductor materials

Healthcare 30

Computed tomography magnetic resonance breast imaging

Vayyar Imaging. Developed radar-on-chip technology for 4D imaging, initially aimed at early-stage breast cancer screening.

Detect and classify cancer early

Nucleai. Uses AI and deep learning to analyze pathology images for precise tumor classification, grading, and predicting patient outcomes.

PathAI .AI for pathology slide interpretation, supporting early cancer diagnosis.

Ibex Medical Analytics. Applies AI to digital pathology, enabling early breast and prostate cancer detection with improved accuracy.

Robotic brain surgery

Tamar Robotics. Developed a pen-sized (10 mm diameter) robotic endoscope equipped with two micro-arms and camera, enabling keyhole surgery for accessing deep brain tumors/cysts through a single small incision—significantly reducing tissue damage and recovery time.

Mazor Robotics (now Medtronic). Creator of Renaissance/Spi neAssist, a bone-mounted guidance robot used in spine and now approved for brain surgeries

Connected home Avoset™ infusion pump

Avoset™ infusion pump. A compact, patient-centric ambulatory infusion pump designed for home and post-acute care. Fully connected via Bluetooth and cellular, enabling real-time monitoring and data transfer through the Eitan Insights cloud.

Portable hyperbaric oxygen therapy (HBOT)
Development of *Bariks,* a foldable, suitcase-sized, soft-chamber capable of delivering therapeutic oxygen pressures up to 3 ATA. 60 sessions of 2 ATA HBOT significantly improved resistant Post-traumatic stress disorder (PTSD) symptoms in veterans.

Drug therapy for acute bleeding conditions
Magen David Adom (MDA). In Israel, tranexamic acid (TXA)stands as the primary pharmacological therapy for acute bleeding, with extensive use in both prehospital and hospital settings (military and civilian).

Technology for Endometriosis
*EndoCure*integrates robotic-assisted ultrasound scanning with AI detection to identify tiny (<1 mm) endometriosis lesions—often missed in manual. The robotic arm methodically collects 10-micron spaced image frames over 3 minutes, creating detailed volumetric data. AI then maps and locates lesions .

Wheeled motorized device
ReWalk Robotics – Exoskeleton for Paralyzed Individuals
UPnRIDE Robotics– Standing-Wheelchair Hybrid for Paralyzed Individuals

Cell membrane of mesenchymal stem cells (MSCs)
        MSC. Israel has made notable strides in engineering cell membrane-based platforms using mesenchymal stem cells (MSCs) for regenerative medicine, tissue engineering, and targeted therapy. MSCs maintained classic spindle morphology and could proliferate directly on these membranes—demonstrating scaffold potential for tissue grafts and cell delivery systems. Technion, Tel Aviv University); Weizmann Institute and Hadassah Medical Center; Bar-Ilan University and Sheba Medical Center

Platform for cancer treatment
OncoDecipher. An AI-driven computational platform developed at Tel Aviv University.
Imagene & Sheba Accelerator. Sheba Medical Center partners with Imagene to power a rapid, AI-enhanced digital pathology pipeline.
OncoHost (PROphet®). A Binyamina and U.S.-based precision medicine company using machine learning to analyze a single blood test (~7,000 proteins).
Nucleai – Spatial Biology Platform leverages spatial biology—assessing the spatial arrangement and interaction of cells in tissue biopsies—with AI to predict therapy response, especially for immunotherapies.
C2i Genomics – MRD Monitoring. This startup enables whole-genome minimal residual disease (MRD) testing via cloud-based AI.
Hadassah + Roche – Genomic Profiling. AVENIO and Foundation Medicine genomic panels for comprehensive mutation profiling in solid tumors—offering advanced precision oncology diagnostics within Israel's public healthcare system .

Regenerative medicine platform for spinal cord injuries
Matricelf – 3D Engineered Neural Implants. Autologous (patient's own) stem-cell derived 3D neural tissue printed within patient-specific hydrogel.In preclinical rodent models: 100% recovery in acute and ~80% in chronic paralysis; gait restoration achieved.

Local fat reduction
Raziel Therapeutics. RZL-012 is an innovative injected lipolytic drug—a small-molecule therapy formulated without animal or human-derived components—designed for localized fat reduction in areas like the submental region ("double chin") and other body sites like flanks, lipomas, Dercum's disease, and lipedema.

Glucoma drug
Designed by *Prof. Fisher's lab,* A1-46 targets the $P2Y_6$ receptor to both reduce internal eye pressure and potentially protect the optic nerve.
Developed by *ViSci/Bipolight*, VS-101 is a non-biodegradable implant that steadily delivers latanoprost for ~3 months—shown effective in Phase I/IIa trials in the US.novel antibiotic agents

Medical plants, cannabis
CanBreed(Givat Chen): Uses CRISPR gene-editing to create mildew-resistant cannabis—boosting yield and plant health
Plantis (Medical Group, Tikun Olam & BOL Pharma): Cultivate hundreds of strains under IMC-G.A.P. and EU-GMP. Tikun Olam developed the high-CBD/low-THC Avidekel strain, ideal for therapeutic uses without psychoactive effects.

Blood pressure monitoring, biobeat
The *Biobeat Wrist Monitor*is an Israeli-engineered, hospital-grade wearable device that offers continuous, cuffless blood pressure monitoring along with a suite of vital signs. Here's what you should know.

Nano drugs
Nano-Ghost platform for tumor-targeted drug delivery, including hard-to-reach brain cancers.
LipoCure develops liposomal versions of existing drugs to boost efficacy and minimize side effects in cancer and inflammatory diseases
Revium Rx (via LipoVation). Developing lipid-nanoparticle (Nano-Mupirocin) to treat resistant bacterial infections like MRSA systemically—potentially reviving old antibiotics
New Phase (SaNP + EIS). Uses Sarah nanoparticles and electromagnetic induction to induce hyperthermic cancer-cell destruction—currently in early clinical feasibility trials in Israel.
Nanocarry targets the blood-brain barrier; NurExone uses exosomes for targeted delivery.

Cosmetics 4
Natural ingredient for skin protection
Alguard; cellular agriculture technology; lycopene,
Lycored black seed oil (Nigella sativa) protection against oxidative damage and sun exposure
*Jojoba oil.*Restore the ordinary health of hair and skin.

Healthy food 15
Cellular agriculture technology
Reduced content of sugar. *Incredo Sugar* (DouxMatok). Optimizes sugar's delivery to taste buds using a mineral carrier (silica), enhancing sweetness perception with less sugar.
Amai Proteins. Uses precision fermentation to produce sweet-tasting proteins, much sweeter than sugar, with minimal calories and high stability.
Better Juice. Natural enzymes convert sugars into non-digestible fibers or beneficial compounds in juice production lines.
BlueTree. Patented technology selectively reduces sugars directly in juice, preserving natural nutrients and flavor.
Protevin™. Vegan protein -
Packaging Analytical Monitoring for Heat Sealed Packages
Remilk Animal-free dairy;
Alphafarm, Animal free meat

Natural flavor solutions
Gavan Technologies. Uses precision enzymatic processes to produce natural flavor and color compounds from plants.
NutriTech / NextFerm. Develops fermentation-based ingredients, including natural umami enhancers and yeast-derived flavor bases.
NutriTech / NextFerm Tivall (Nestlé Israel). Develops natural flavors and texturizers for meat alternatives using natural hydrolysates, spices, and plant extracts.
Plantish / Redefine Meat / Aleph Farms. Maillard precursors; Mushroom and yeast extracts; Natural fat-based flavor carriers

Plant-based food products
SavorEat's automated robot chefsprepare plant-based burgers with customizable fat/protein ratios.
InnovoPro's chickpea proteinfeatured in dairy-free yogurts across Europe and Asia**.** Zero Eggproducts available in foodservice chains globally**.**
Sustainable protein purification; Protein from microalgae; Proteins from plants; plant-based fish fillets; meal pods.

Telecommunication and Security 8
<u>Cloud servers</u>
Nebius Israel (by Aman). Offers localized cloud services (compute, storage, virtual private cloud) from three Israeli data centers, with pay-as-you-go Hebrew/English support and compliance with national regulations..
Vultr. Entered the market in April 2023 with a Tel Aviv data center through Bezeq, delivering affordable cloud compute, block storage, Kubernetes, and bare-metal services.
Acronis. Opened a Tel Aviv-based cloud data center in 2021 targeting managed service providers and MSPs, offering cyber protection and backup services.
Anan Data Centers. Operates underground, high-security facilities in Afula and Tzora with 96 MVA power, tailored for HPC and AI workloads.
ASOCS. Provides on-prem and virtual private cloud solutions for industries including telecom, hospitality, and sports, using vRAN technologies.
Infinida. Specializes in enterprise data storage solutions, recently acquired by Lenovo for global expansion.
CTERA Networks. Offers cloud storage gateways, distributed file services, and hybrid-cloud tools, partnering with AWS, HPE, IBM and enterprises like Deutsche Telekom.
K2view. Provides real-time data integration and synthetic data generation, ideal for Geneva enterprises using hybrid/multi-cloud environments.

Digital imaging 13
<u>3D Printing. Industrial & Construction Printing</u>
Largix: Developed a cold 3D-printing platform capable of printing large industrial storage tanks (~4 m high) from recycled polypropylene/polyethylene, reducing production costs by ~50 %
Massivit 3D: A Tel-Aviv–based public company producing large-format printers (e.g., Massivit 10000) for marine, aerospace, and commercial composites.
3DM (DM3): Rosh HaAyin startup using semiconductor laser printheads to speed up thermoplastic printing via polymer melting and rapid layering
Ackerstein/Impact Labs + Thyssenkrupp: Jointly launched a metal AM center in 2023 enabling local production in aerospace and defense sectors
Technion's Solar AM Center: Houses electron-beam metal printers certified for Scalmalloy®—perfect for lightweight structural parts in aerospace imt.technion.ac.il.
CMI 3D Printing: Offers metal AM services for medical, aerospace, and automotive industries—ISO 9001 and IAI-approved

<u>3D Printing. Bioprinting & Food-tech</u>
MeaTech / Steakholder Foods: Pioneered 3D bioprinting of cultured meat (beef, chicken, foie gras) using stem cells; planning pilot plant in 2022
Tiny 3D-printed human heart model: Demonstrated by Israeli scientists in 2019, a milestone in bioprinting using human tissue.

<u>3D Printing. Medical & Surgical Applications</u>
Synergy 3DMed: Develops AI-driven, patient-specific anatomical models, surgical instruments, and implants—used extensively in trauma cases post-October 2023.
Hebrew University Functional Printing Center: Established Israel's first functional/3D bioprinting research center in 2015, exploring biomedical, microfluidic, and wearable applications.

<u>3D Printing. Consumer & Fashion 3D Printing</u>
Danit Peleg: Designer known for 3D-printed clothing and accessories, including a Paralympic-dancer dress (2016) and customizable bomber jackets.

<u>AI automagical transformation of any picture or video</u>
D-ID – Creative Reality™ Studio.Combines AI image-to-video with text-to-speech, lip-sync, full body gestures, and support for 119 languages using GPT-3 and Stable Diffusion.
Lightricks – LTX Studio & Videoleap. Lightricks offers powerful AI-driven image and video editing tools. LTX Studio: A platform for AI video generation and post-production, including an open-source image-to-video model launched in 2024.
Bazaart – Social-AI Visual Tools. Established in 2012, Bazaart uses AI to automate complex image and video editing (e.g., background removal, filters).
Cortica – AI Vision for Image/Video Analysis. Cortica specializes in unsupervised visual analysis—detecting objects, scenes, and ad placements in videos.

FreeD technologyVideo
Replay Technologies. Captures sports action and other live scenes using arrays of high-resolution cameras.

Digital thread-dyeing system.
Twine Solutions. Dye white polyester thread on-demand, to any color, any length, instantly.

Disruptive innovations 135
Only three of these innovations are currently implemented in the local market; the rest are in pilot projects.

Agriculture and water treatment 19
N-Drip Connect. An intelligent digital platform
Supree – Self-Drying Cherry Tomatoes. Semi-dried cherry
Golda Hen – Gene-Edited Female-Only Eggs.
Soos Technology – Acoustic Sex Reversal
Gene-editing tool. Cas-CLOVER (Demeetra Biotech); CRISPR-IL Consortium Led by Evogene; CanBreed: CRISPR-Edited Livestock; Cannabis PlantArcBio & ToolGen ; Soybean Project.
Reverse osmosis (RO). IDE Technologies; Mekorot; Aqwise WFI group
Vacuum Freezing Vapor Compression (VFVC). IDE Technologies
Water from air. Watergen and H2OLL
Closed-Circuit Desalination (CCD) technology. IDE Technologies; ROTec (Reverse Osmosis Technologies); Negev Eco Desal

Energy 2
Pressure Retarded Osmosis (PRO) producing power by a reverse electrodialysis heat engine (RED) from the osmotic pressure difference between freshwater and seawater or brine. Prof. Sidney Loeb BenGurion
Robot cleaning solar panels. Ecoppia. Uses microfiber and airflow (no water). Powered by solar energy and controlled via cloud platform.

Healthcare 17
Hematology Oncology Paediatric Excellence (HOPE) generic drugs for Sub Saharan Africa
Medinol is the standout Israeli stent manufacturer
Corindus (robotic PCI)
Tryton bifurcation stents.
*PillCam SB capsule. Diagnosing obscure GI bleeding, Crohn's disease, small-bowel tumors, iron-deficiency anemia, NSAID-related injury, and malabsorption syndromes
Nano-artificial nose. Detected lung and head + neck cancers with high accuracy. Capable of detecting breast, colorectal, prostate cancers and Alzheimer's or Parkinson's
Home pregnancy monitor. HeraMED – HeraBEAT. Smartphone-based Doppler fetal heartbeat monitor for home use.
Intense Pulsed Light (IPL). Lumenis. Photorejuvenation (pigment, vascular lesions), acne. Applications now span cosmetic, dermatologic, ophthalmic, and emerging AI-enhanced treatments.
Non-invasive glucose monitoring devices.*OrSense.* Developed the NBM-200G and earlier NBM-100G, this wearable ring gently occludes blood flow and uses optical spectroscopy to measure glucose, hemoglobin, and SpO_2
GlucoTrack. .A handheld ear-clip sensor combining ultrasonic, electromagnetic & thermal measurement techniques
HAGAR GWave.Uses radio-frequency waves to measure blood glucose in real time
Gili Medical Hypoglycemia Monitor – Non-invasive Hypoglycemia Alert. Designed for nocturnal hypoglycemia detection in adolescents with T1D.
SensPD. Early Detection of Autism, SensPD uses modified oto-acoustic emission (OAE) technology built into standard newborn hearing tests.
Matricelf. Print 3D heart using human tissue. a TAU spin-off, licensed the technology and is also working on personalized spinal cord implants.
Like a Fish. Oxygen from water..“Like a Fish”. Invented by Alon Bodner, this wearable vest uses a high-speed centrifuge to mimic gill-like extraction of dissolved oxygen from water.
*Prof. Mahmoud Huleihel.*Creating sperm in a laboratory through a microfluidic system using a silicon chip (Polydimethylsiloxane PDMS)

Deep Brain Stimulation (DBS) procedure for Parkinson's, dystonia, essential tremor, Tourette's, and clinical trials for depression
Virtual Retinal Display (VRD) & Eye-Tracking, EyeJets.Combining laser-based retinal display with ultra-fast gaze correction, paving the way.
Miniature 3D replicas of human brains. With living tumor models, perfusable organoids, and vascular systems using advanced PDMS/microfluidics, 3D bioprinting, and stem-cell technologies.

Telecommunication 33
End-to-end communication solutions
AudioCodes provides complete VoIP systems—session border controllers, IP phones, media gateways.
DriveNets delivers a cloud-native network OS for telcos, enabling disaggregated routing on white-box hardware.
Gilat Satellite Networks offers end-to-end VSAT satellite communication systems,
Networks
Comverse. Enterprise-grade PBX/cloud VoIP: Voicenter, Bynet, myTnet, Voipe — all integrate voicemail-to-email, IVR, call routing.
Consumer apps: TextVoice leads in voice transcription and missed-call intelligence.
Backend powerhouses: AudioCodes, VocalTec, Tdsoft, Mind CTI & CALLUP build and support core telecom technologies.
Cross-platform instant messaging (IM) and VoIP client
Viber. Founded in 2010 in Tel Aviv by Talmon Marco and Igor Magazinnik, Viber offers free voice calls, video calls, text messaging, group chats, stickers, and end-to-end encryption across iOS, Android, Windows, macOS, Linux. In February 2014, Viber was acquired by Japanese e-commerce giant Rakuten for $900 million.
Automotive safety
Mobileye leads globally in camera-based ADAS chips and software—EyeQ processors, REM mapping, SuperVision, Drive and Robotaxi systems embedded in hundreds of millions of vehicles.
Arbe Robotics delivers ultra-high-resolution 4D imaging radar (down to 1° resolution at +300 m), enabling advanced object detection and classification
Opsys Tech integrates windshield-based optical sensors across vehicles for full-field-of-view scanning at high resolution.
Art Sys360 and RFISee focus on miniature solid-state 3D radar sensors generating real-time peripheral mapping even under poor visibility en.globes.co.il.
V2X and Connectivity
Autotalks is the global leader in V2X semiconductors, enabling seamless vehicle-to-vehicle, vehicle-to-infrastructure, and V2M communication. Their chips are already being standardized in new models as of 2024
Spyware cyber-arms
NSO Group – Pegasus enables zero-click surveillance of smartphones, allowing remote access to calls, messages, cameras, and location.
Candiru (a.k.a. Saito Tech). Their spyware ("DevilsTongue"/"Sherlock") exploits zero-days to infect Windows, iOS, Android
Paragon Solutions – Graphite
*Cytrox / Intellexa / Predator.*Offers zero-click tools similar to Pegasus; tied to "Predator" spyware used in Greece, Saudi Arabia, Bangladesh via Cyprus
Quadream focused on iPhone-targeted zero-click spyware
Allegedly sold to Saudi Arabia and others before reportedly folding around April 2023

Cloud security
Wiz. Recently acquired by Google/Alphabet in a record-setting $32 billion deal—the largest ever in cybersecurity—Wiz specializes in agentless cloud security posture management (CSPM) across AWS, Azure, GCP, Kubernetes, and IaC environments
Cato Networks. Coined the SASE pioneer, merging SD-WAN, managed network security, CASB, firewalling, and zero-trust into a global cloud-native platform.
Check Point Software Technologies. Long-time leader offering cloud security tools alongside firewalls and mobile defence. Revenue in 2023 reached ~~NIS 7.83 billion (~~$2 billion) with strong net margins.
CyberArk. The veteran identity-security expert in Privileged Access Management (PAM).

Specialties in Cloud & Data Security
Ermetic: Cloud-native infrastructure security platform (CSPM/IAM)
Akeyless: Secrets & machine identity management in the cloud,

Laminar: DSPM specialist offering agentless discovery and classification of cloud data stores.
Cyera: Data security and compliance platform with agentless scanning and posture management
Perimeter 81: Zero-Trust Network Access and SASE provider
Lightspin. Contextual, code-to-cloud cloud security platform—another notable player
Web application Firewall
<u>Micro electronics 9</u>
*Intel EPROM;M-Systems*Disc On Key; *Mellanox*RDMA; *SanDisk* EEPROM*; Saifun Semiconductors*, NROM; *DSP group*DSP-DSPC; *L2X Labs* , EUV lithography; *Applied Materials* Precision 5000 device; *Dr. Mokari'*Novel nano structure.

<u>Hardware Software platforms 21</u>
Microservices Management Platform
*Kong.*Provides an API gateway and microservices management platform that handles authentication, rate limiting, analytics, and service mesh integration.
Solo.io. Provides advanced API gateways and service mesh management for microservices.
Tufin. Helps manage complex microservices communication by automating security policy enforcement across hybrid cloud and microservices setups.
SpectralOps. Offers security and governance tools for microservices code and configuration, scanning infrastructure-as-code (IaC).
StackPulse. Provides a continuous operations platform with automated remediation, ideal for microservices ecosystems that require real-time monitoring and incident management.

Software testing
Mercury Interactive was a pioneering company in the field of software testing and quality assurance tools. It was acquired by Hewlett-Packard (HP) in 2006.
Testim. providing an AI-based test automation platform.Leverages machine learning to create, execute, and maintain automated UI tests with less flakiness.
Applitools. Specializes in visual AI testing and visual validation tools to catch UI regressions. Offers AI-powered visual checkpoints integrated into Selenium, Cypress, and other test frameworks.
Qyrus. Provides automated testing services and platforms for functional and performance testing. Focuses on DevOps integration and supports web, mobile, and API testing.

Spyware cyber-arms
*NSO Group – Pegasus; Candiru (a.k.a. Saito Tech); *Paragon Solutions – Graphite; Cytrox / Intellexa / Predator; Quadream*

Logging and recording software
*Globit*el – SpeechLog Call Recorder.A widely used, TDM/VoIP-based solution for call centers
Avdor CIS – Crystal Quality Suite
This platform records voice, screen, chat, text, and email interactions. It includes advanced reporting, analytics, compliance logging (e.g., CDRs), and agent performance dashboards.
Lanonyx – Telestat.Provides phone call logging and recording (SIP, ISDN, analog). Itemised billing, detailed call reports, leaderboards, remote recording access—all with a one-time license
Acmatel / Deepijatel – Voice Loggers. These systems offer multi-channel analog, digital, and VoIP voice logging; real-time monitoring; secure browser interfaces; CRM integration; and hardware-based recording modules.
Glassbox, platform offering session-replay analytics. It captures user behavior on web and mobile apps to help diagnose UX issues, optimize flows, and reduce friction.
Cellebrite. a global leader in digital forensics tools (e.g., UFED) for law enforcement and enterprises.
The CuBox series by *SolidRun* is a pioneering family of cube-sized, low-power mini-PCs powering a range of applications from home streaming to embedded IoT solutions. They're developer-friendly, Linux/Android-capable, and appreciated for their power efficiency and compact form factor.
Discovery platform. *AION Labs* – AI-Powered Venture Studio is a consortium-driven venture studio backed by Pfizer, AstraZeneca, Merck KGaA, Teva, AWS, and Israel Biotech Fund, powered by BioMed X and supported by the Israel Innovation Authority.
Personalization of video assets. *Treepodia;.Promo.com ; Lightricks. ; Alison.AI.; Persovi; VidZai,; Idomoo, VidMe, Gan.ai, Salemaker*
Converting off-the-shelf drones into super drones. *High Lander* – Full Autonomy via Software; *Xtend – AI&VR-Controlled Tactical Drones*

3D creation and learning. Technion Additive Manufacturing Center (TAMC); Tel Aviv University 3D Printing Center.

AI platforms 23
Developer-Centric & MLOps Platforms
Qodo (formerly CodiumAI) – AI-powered code integrity and testing platform.
Aporia – ML observability platform enabling anomaly detection and model monitoring.
Run:AI – Virtualizes deep-learning infrastructure, optimizing GPU utilization for large-scale model training.
Pinecone – Leader in vector databases tailored for similarity search, recommendation systems, and LLM use cases.
Navina – Healthcare AI copilot that integrates with EHRs to detect clinical insights, medication conflicts, and now working on ambient scribing.
Reco – AI-first security platform focused on SaaS environments, with a $55 M Series A extension
Finout – Cloud cost management & optimization AI platform; amassed $85 M in funding
Exodigo – Uses AI + sensor fusion for underground mapping (infrastructure, utilities)
D-ID – Specializes in photorealistic AI-generated digital humans and video—$48 M funding; strong in marketing and video avatars
Bria AI – Visual generative AI for enterprise-scale image/video creation and editing, prioritizing copyright-safe content
Visionary.ai – Low-light video & image enhancement via AI; partnered with Qualcomm, NVIDIA, and CEVA.
aiOla – Conversational AI platform enabling legacy industries to go digital via speech recognition across 120+ languages.
Beyond Verbal – Emotion analytics via voice, capable of inferring sentiment and even health markers.
Chorus.ai – Real-time transcription/analysis of sales calls, with actionable insights to improve performance.
Cortica – Computer vision platform translating neural concepts into real-time recognition for smart cities and autonomous systems.
Logz.io – Cloud-based AI log-analysis platform for DevOps and system monitoring.
MedyMatch – Medical imaging assistant focusing on stroke and trauma detection in partnership with Samsung & IBM.
Nexar – AI-powered dashcam app for accident analysis and situational awareness.
Robust Intelligence – AI firewall that validates and sanitizes data inputs to protect AI models.
Fund*Guard* – AI-driven cloud-native platform for investment management and operations.
EverC – Fraud detection AI tool for banking led by Israeli entrepreneurs.
Optibus – AI-based software for public transport planning and scheduling
Insilico Generative AI Software for Drug Discovery
Croptimus™ AI Pest and Disease Detection for Agriculture

Digital imaging 2
Landa Nanographic Printing & NanoInk
Nanography process uses Landa NanoInk®—water-based nano-pigment inks (tens of nanometers) that create ultra-sharp, abrasion-resistant dots, print on any substrate without pre-treatment, and match or exceed offset quality at digital speeds.

HP Indigo & ElectroInk
HP Indigo Division produces digital presses and proprietary ElectroInk, based on liquid electrophotography (LEP)
PV Nano Cell – Conductive Nano-inks. specializes in inkjet conductive inks: silver, carbon, dielectric, gold— used for printed resistors, capacitors, and sensors
Nano Dimension & XTPL – Printed Electronics Ink. partners with Poland's XTPL to develop high-performance conductive nanoinks for additive manufacturing electronics (AME), enhancing 3D-printed circuits and devices.

Defense 9
Abe Karem, Albatros UAV
Gadi Kuperman, Military and HLS Drones Spear UAV
Matteo Shapira, Aviv Shapira, Rubi Liani, Adir Tubi, UAVrealverse technology, XTEND, Reply Technologies
Dov Raviv, Arrow Antimissile System
Chanoch Levin, Iron Dome
Joel M. Avidor, Tactical high-energy laser – Iron Beam
Yossi Wolf, Elad Levi, robotic systems, Roboteam

Prof. Jacob Bortman, Mori Arkin, monitor components miniature camera, Odysight
Yiftach Richter, deep-tech signal processing, R2 Wireless

II. Conclusion

Israel's innovation policy has succeeded in driving high-tech exports but provides little support for bringing those innovations to domestic markets. Of the 21 radical innovations emerging from Israeli academia in mathematics, healthcare and chemistry, only seven have developed a local market. Similarly, just 6 of 94 discontinuous innovations—those that create entirely new market trajectories in agriculture, energy, healthcare and telecommunications—have taken root at home. And among 134 disruptive innovations in sectors such as agriculture, healthcare, hardware-software platforms, digital imaging and education (including defense and water treatment), only three have found domestic customers.

By contrast, inclusive and frugal innovations tailored specifically to local needs remain largely unsupported. Yet these approaches—whether low-cost solutions in food processing, hospitality, leisure and learning platforms, or AI and cultural-heritage services—offer enormous potential to evolve into discontinuous or disruptive breakthroughs. If the Israel Innovation Authority were to extend its case-by-case funding model to nurture these home-grown, locally oriented projects, the country could unlock new markets both in underserved regions of advanced economies and in developing countries, amplifying its global economic and technological impact.

Recommendation: Introduce a dedicated stream of domestic-market grants to:
1. Accelerate local adoption of radical, discontinuous and disruptive innovations.
2. Catalyze frugal and inclusive innovations across a wider range of domains—food, tourism, leisure, education and beyond.
3. Leverage these home-grown successes to generate exportable models and global partnerships.

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