



משמעות תהליכי שינויי אקלים והידלדלות משאבים לכיווני ההתנהלות של התעשייה

ורד בלאס
החוג ללימודי סביבה
בית הספר לסביבה ולמדעי כדור הארץ ע"ש פורטר

ביחיד ללימודי הסביבה
 ע"ש פורטר
 הפקולטה למדעים מדויקים ע"ש
 ריימונד ובברלי סאקלר
 אוניברסיטת תל אביב



ורד בלאס - נעים להכיר

Education

- ❖ Bachelor of Science in Industrial Engineering and Management, Technion
- ❖ Master of Environmental Science and Management, UCSB
- ❖ Ph.D. in Environmental Science and Management, UCSB



המעבדה לחדשנות באקולוגיה תעשייתית

- ❖ כלכלה מעגלית
- ❖ ראיית מחזר חיים וניתוח זרמי חומרים
- ❖ מודלים ותרחישים
- ❖ אנרגיה ותחבורה

שיתופי פעולה נרחבים עם התעשייה וממשל

השפעת משבר האקלים על שרשרות אספקה שונות

The probability of a hurricane of sufficient intensity to disrupt semiconductor supply chains may grow two to four times by 2040

By 2040, a company using leading-edge chips (for example, with applications in memory, logic, communication, or optoelectronics) such as an automotive OEM, sourcing from geographies in Korea, Japan, Taiwan, or other hubs in the western Pacific, can expect that hurricanes sufficient to disrupt their suppliers will become two to four times more likely. Some of these disruptions may last for several months. This has implications for many industries as chips are increasingly critical to the modern economy. For example, electrical content in cars increased from 2 percent in 1960 to 35 percent in 2010.

There are three drivers of near-term losses for suppliers that are hit by such events, potentially leading to losses of up to 200 percent of annual profit and 35 percent of revenues: physical damages to assets, including facilities, production equipment, and inventories; reduced sales, either because production is disrupted or because goods cannot be shipped to the market; and higher costs in the reconstruction phase and after the plant is back in production, as market prices of labor, energy, and logistics may spike following a disaster. The combination of these impacts may also limit suppliers' ability to quickly and efficiently restore production, by reducing their ability to raise capital for repairs or by choking short-term cash flow and presenting unusual operational obstacles.

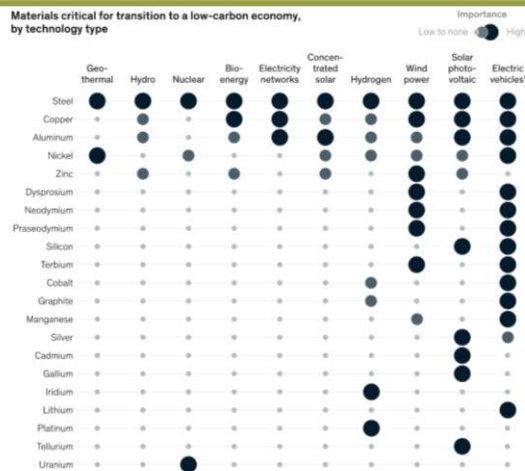
MOST POPULAR INSIGHTS

1. HR's new operating model
2. 2022: The year in charts
3. The road to affordable autonomous mobility
4. What matters most? Six priorities for CEOs in turbulent times
5. 2022: The year in images

<https://www.mckinsey.com/capabilities/sustainability/our-insights/could-climate-become-the-weak-link-in-your-supply-chain>

השפעת זמינות חומרי גלם על טכנולוגיות העתיד "דלות פחמן"

Materials critical for transition to a low-carbon economy, by technology type

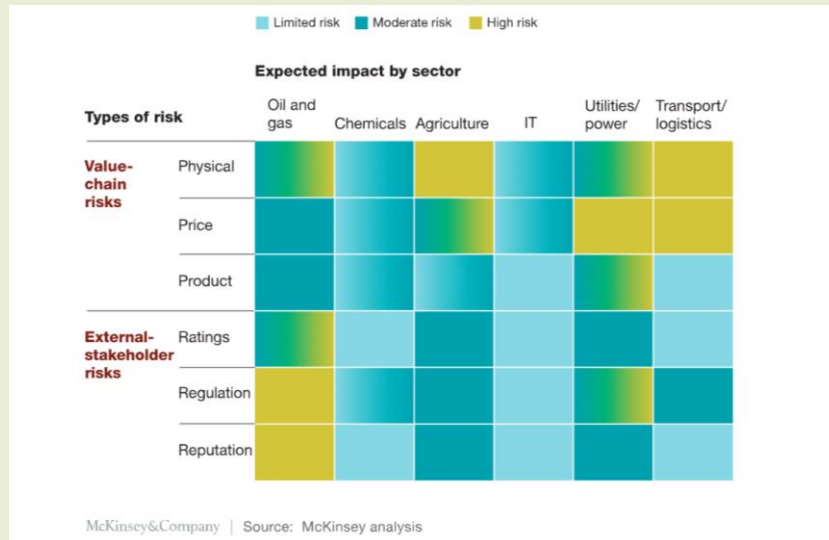


¹Excludes energy storage.
Source: Critical raw materials for strategic technologies and sectors in the EU. A foresight study, European Commission, Mar 9, 2020. The role of critical minerals in clean energy transitions, IEA, May 2021. McKinsey analysis.

McKinsey
& Company

<https://www.mckinsey.com/industries/metals-and-mining/our-insights/the-raw-materials-challenge-how-the-metals-and-mining-sector-will-be-at-the-core-of-enabling-the-energy-transition>

לא כולם יושפעו באותה צורה



<https://www.mckinsey.com/capabilities/sustainability/our-insights/how-companies-can-adapt-to-climate-change>

TIME

Subscribe

Climate Change Is Likely to Devastate the Global Food Supply. But There's Still Reason to Be Hopeful



— Getty Images



BY AMANDA LITTLE AUGUST 28, 2019 2:51 PM EDT
Amanda Little is a professor of journalism and science writing at Vanderbilt University and the author of *The Fate of Food: What We'll Eat in A Bigger, Hotter, Smarter World*.

The most troubling paradox of the 21st century may be that **human population is expected to climb to 9.7 billion** by midcentury — yet the global food supply is predicted to plummet. The **Special Report on Climate Change and Land** released earlier this month by the United Nations' International Panel on Climate Change, penned by experts in more than 50 countries, details in stark terms "the risk to millions of people from climate extremes, desertification, land degradation and food and livelihood insecurity." Another recent IPCC report predicted a 2 to 6 percent decline in global crop yields every decade going forward — that's potentially millions of acres phasing out annually — due to **drought**, heat, **flood**ing, superstorms, weather volatility, shifting seasons, insect infestations and other symptoms of a warming planet.

According to Jerry Hatfield, the director of the U.S. Department of Agriculture's National Laboratory for Agriculture and the Environment, the single biggest threat of **climate change** is the collapse of food systems: "Other threats — flooding, storms, forest fires — may be more sudden and severe in certain regions, but disruptions in food supply will affect virtually everyone."

<https://time.com/5663621/climate-change-food-supply/>

במה חברות בשרשרת המזון מתרכזות?



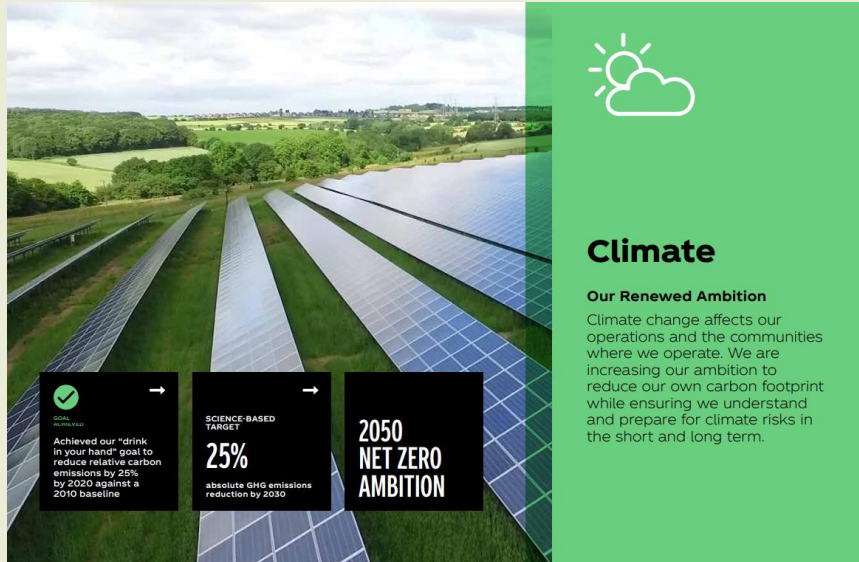
מידה, הפחתה ודיווח - IN



NetZero 2050...

THE *Coca-Cola* COMPANY

GHG
emissions
Net-Zero by
2050



Climate

Our Renewed Ambition

Climate change affects our operations and the communities where we operate. We are increasing our ambition to reduce our own carbon footprint while ensuring we understand and prepare for climate risks in the short and long term.



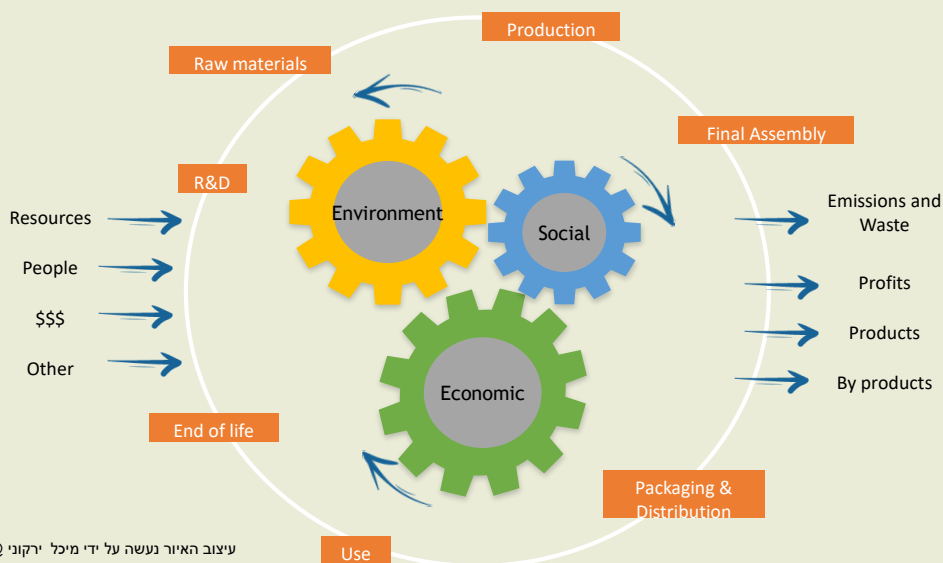
Achieved our "drink in your hand" goal to reduce relative carbon emissions by 25% by 2020 against a 2010 baseline



SCIENCE-BASED TARGET
25%
absolute GHG emissions reduction by 2030

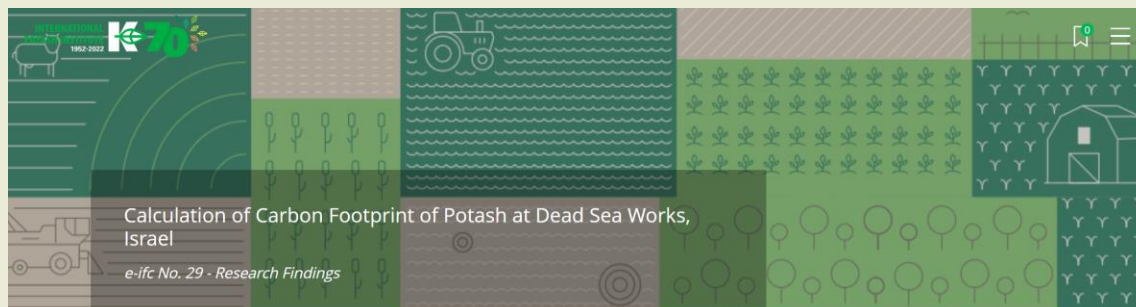
**2050
NET ZERO
AMBITION**

אימוץ גישת מחזור חיים – למדידה



עיצוב האזור נעשה על ידי מיכל ירקוני @ TAU

טביעת רגל פחמנית



Calculation of Carbon Footprint of Potash at Dead Sea Works, Israel

e-ipc No. 29 - Research Findings

Introduction Dead Sea Works Ltd. (DSW), a potash manufacturer in Israel, together with international consulting firms⁽¹⁾, have conducted an in-depth analyses of Carbon Footprint (CFP) calculations throughout its products, production facilities and supply chain, focusing on the competitive advantages that low-carbon performance brings to the company. Based on these analyses, we outline the CFP of two types of potash (fine and compacted grades) and compare these results to available industry benchmarks. The calculations made cover all of the direct components related to the production of potash (extraction, production, delivery etc.) in the production of "fine" and "compact" potash grades, which are used for direct application and granulation, and direct application and blending, respectively.

Calculations of CFP

In order to accurately calculate the amount of carbon dioxide equivalent (CO₂e) used per tonne (or kg) of potash, DSW divided the production process of potash into four stages, and mapped all the greenhouse gas (GHG) emissions involved (Table 1). The process followed the standard method for assessing CFP as provided by the "Guide

Weidberg, R.⁽¹⁾

The work reported in this paper was undertaken by the GHG Center of Excellence at Israel Chemicals Ltd. (ICL), Tel Aviv, Israel.

⁽¹⁾Corresponding author: Roy-W@DSW.CO.IL

⁽²⁾SKM Enviros (UK) has supported ICL through this process, and potash was among a group of products that have undergone a certification process by the Carbon Trust.

EDITORIAL

RESEARCH FINDINGS
INTRODUCTION: NITROGEN-POTASSIUM INTERACTION IN
SOIL-PLANT SYSTEMS: A SPECIAL SESSION OF THE IP-IN-ING

<https://www.ipipotash.org/publications/eipc-217>

לבד אף אחד לא יכול לפעול – גם לא הענקיות

THE *Coca-Cola* COMPANY

Supply chain
management
for Carbon
targets

KEY INITIATIVES WILL BE NEEDED ACROSS THE SUPPLY CHAIN

INGREDIENTS	PACKAGING	MANUFACTURING	DISTRIBUTION	COOLING & DISPENSING
Supplier engagement	World Without Waste goals	Renewable energy	Fuel efficiency	Equipment innovation
Sustainable agriculture	Supplier engagement	Increased energy efficiency	Fuel innovations - biofuels	Energy efficiency
Product reformulation	Supplier renewable energy use	Less heavy fuel & coal use	Vehicle innovation	Customer partnerships
	Bio-based packaging	Improvement in CO ₂ yields	Optimized route design	Hydrofluorocarbon (HFC) free
	Additional light-weighting			
	Refillables			

ESTIMATED SHARE OF CARBON EMISSIONS

20-25%

25-30%

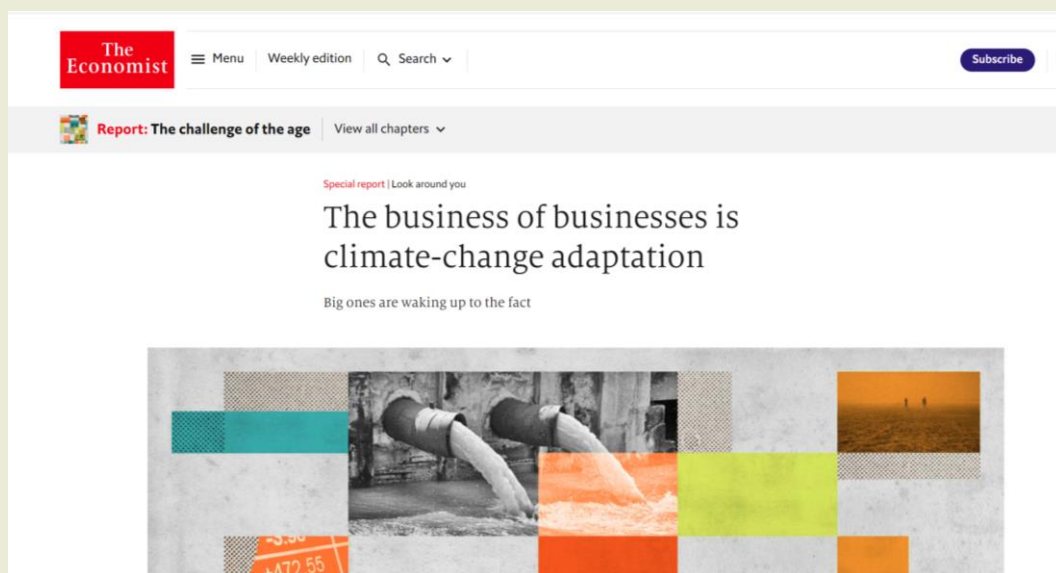
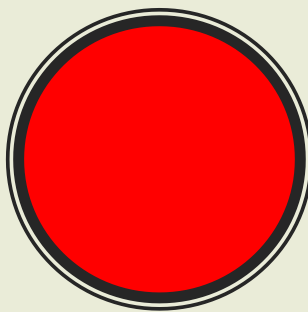
10-15%

5-10%

30-35%

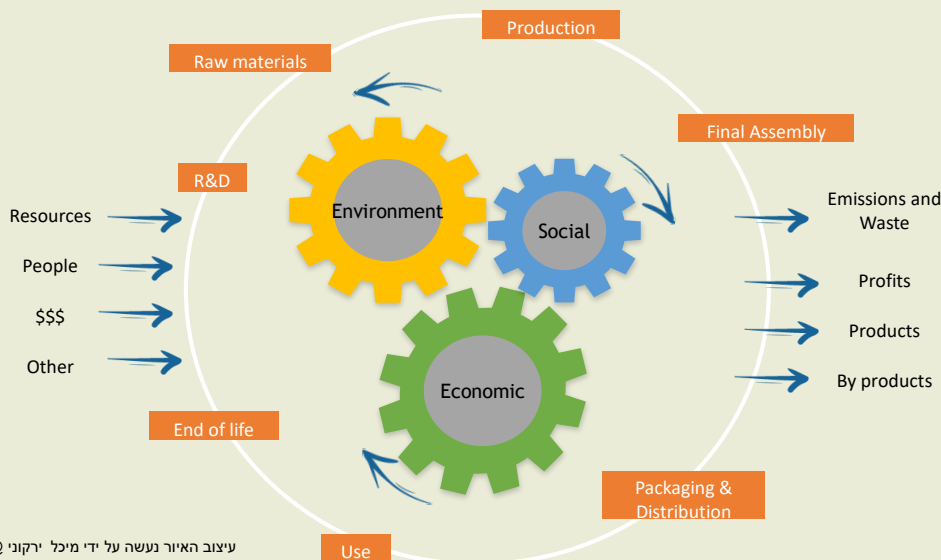
www.coca-colacompany.com/reports/business-environmental-social-governance-report-2020

אבל מה לגבי מוכנות למשמעויות המשבר ?



<https://www.economist.com/special-report/2022/11/01/the-business-of-businesses-is-climate-change-adaptation>

אימוץ גישת מחזור חיים – לאדפטציה



LIFE CYCLE MANAGEMENT | Published: 10 March 2015

Life-cycle assessment framework for adaptation planning to climate change: linking regional climate impact with product design

Katsuyuki Nakano

The International Journal of Life Cycle Assessment 20, 819–828 (2015) | [Cite this article](#)

1128 Accesses | 8 Citations | [Metrics](#)

Abstract

Purpose

An organization has to consider the influence from an environmental change, such as climate change, to its business activities. Life-cycle assessment (LCA) evaluates an impact *to* the environment; however, there is no LCA method to evaluate an impact *from* the environment. This study aims to develop a method for evaluating a relative potential impact from climate change to a product system using an LCA framework and to support adaptation planning.

Wiley Online Library



Search

JOURNAL OF
INDUSTRIAL ECOLOGY

International Society
for Industrial Ecology

RESEARCH AND ANALYSIS | [Full Access](#)

Incorporating the impacts of climate change into infrastructure life cycle assessments: A case study of pavement service life performance

Geoffrey Guest | Jieying Zhang, Omran Maadani, Hamidreza Shirkhani

First published: 24 April 2019 | <https://doi.org/10.1111/jiec.12915> | Citations: 15

[Full Text](#)

Funding information:

This project was funded by Infrastructure Canada under the Climate Resilient Buildings and Core Public Infrastructure Project managed by the National Research Council of Canada.

Editor Managing Review: Mikhail Chester

SECTIONS

[PDF](#) [TOOLS](#) [SHARE](#)

Abstract

Climate change is expected to impact both the operational and structural performance of infrastructures such as roads, bridges, and buildings. However, most past life cycle assessment (LCA) studies do not consider how the operational/structural performance of infrastructure will be affected by a changing climate. The goal of this research was to develop a framework for integrating climate change impacts into LCA of infrastructure systems. To illustrate this framework, a flexible pavement case study was considered where life-cycle environmental impacts were compared across a climate change scenario and several time horizons. The Mechanistic-Empirical Pavement Design Guide (MEPDG) was utilized to capture the structural performance of each pavement performance scenario and performance distresses were used as inputs into a pavement LCA model that considered construction and maintenance/rehabilitation materials and activities.

ומה אנחנו עושים בישראל?

ישראל וזירת שינויי האקלים הבינלאומית – עניין של ביטחון לאומי

גדעון בכר

משבר האקלים העולמי מציב בפני מדינת ישראל שורה של אתגרים, סכונים וסיכויים בידה הבינלאומית, ומכאן שהוא עניין ראשון במסגרת של ביטחון לאומי. עד היום הייתה ישראל שחקנית שולית בזירה הבינלאומית העולמית, אך מלבד עניינים מסורתיים לזרועות, ישראל יכולה להיות גורם חשוב בהתמודדות עם "הדחפור" אקלימי "הדור" שיבוא. משתתפת בעולם טכנולוגיות מתחום הים, החקלאות, אנרגיה מתחדשת, תחילי ותוכן קו רוח, פיתוחי מחשבים ואפליקציות, ובכך תחזק את חשיבת האקלים, תדחיקה וכלכלתה. ישראל גם צריכה להטמיע את הטכניקה והסיכונים הרבים של משבר האקלים ברמה האזורית ולפעול למען שיתוף פעולה לבניית חסות אזורי למשבר האקלים ולהערכת הסיכונים הרבים שחא יבוא, בדומה ללי מילטון וחשבו "צבנת אזורי משמעות. על ישראל לפעול באופן שיסתייבזי למתקדם סכונים ולמודע סכונים הוגברים ממשבר האקלים. מדבר בעניין של ביטחון לאומי עבור ישראל.

במובא

משבר האקלים העולמי מציב בפני מדינת ישראל שורה של אתגרים, סכונים וסיכויים. בידיה הבינלאומית. עד היום הייתה ישראל שחקנית שולית. בזירה הבינלאומית העולמית, מכלי שביחיה לכלכל על עצמא אחריות בינלאומית מעבר למח שדורש מסגרת על פו ההסכמים הבינלאומיים. עם זאת, ישנם צעדים ראשוניים המעידים כי מצב זה משתנה, וישראל מפגישה את העורך להיות מעורבת יותר בנושאים שעל סדר היום העולמי, ומתבססת "ראצדנה עולבילית", שאחד הכוללים והחשובים שבחם הוא משבר האקלים. במאמר זה נסקרות הנשיות הישראליות במרחב האקלים בידיה הבינלאומית, מוצגת התרומה הסטטיסטית של ישראל לפיתוח העולם, תוך בחינת הסיכויים שלא

מקור: אתר שקוף

נזקים של עשרות מיליונים בשנה: במשרד הביטחון עדיין לא מוכנים למשבר האקלים

דוחות של מבקר המדינה התריעו כי משרדי הממשלה לא מוכנים למשבר האקלים, וגם מתמודדים בהכנת תוכנית היערכות, ובמערכת הביטחון ספגו בשנים האחרונות נזקים רבים שקשורים לשינויי האקלים. גורם המכיר את הנושא: יש חוסר קשב לנושא במשרד • משרד הביטחון: התחלנו בעבודת מטה



מקור: אתר שקוף

OVER 700 INNOVATIVE COMPANIES IN ISRAEL WITH SOLUTIONS TO ADDRESS CLIMATE CHALLENGES

The infographic displays a grid of logos for over 700 innovative companies in Israel, categorized by sector:

- Agri & Food:** Includes logos for Yum!, VAXA, Future Meat, InnovoPro, Bee, and others.
- Industry:** Includes logos for Plastic Black, EcoTech, Sebeo, Walteco, and others.
- Energy:** Includes logos for Energy, Phenergy, Emmesh, and others.
- Construction:** Includes logos for SolOr, Eco, and others.
- Water:** Includes logos for Asterra, Idriaz, Fluence, and others.
- Mobility:** Includes logos for Ecton, ETV, RBE, and others.
- Nature & Carbon Tech:** Includes logos for Atbo, Windward, and others.

Central to the infographic is a circular diagram labeled "CLIMATE TECH" with icons representing various climate-related technologies and challenges.

About Start-Up Nation Central
Start-Up Nation Central is a nonprofit organization that helps address diverse global challenges by connecting Israel's technologies with relevant corporations, governments, investors, entrepreneurs and NGOs from around the world. Start-Up Nation Finder is a comprehensive knowledge hub on Israel startups, investors, acceleration hubs, multinational corporations, and technology-based innovation associated with academic research. For more information, please visit: start-upnationcentral.org or info@start-upnationcentral.org

START-UP
NATION
CENTRAL

תודה על ההקשבה

**הזמנה לשיתופי פעולה במסגרת מרכז מחקר לאומי
חדש לניתוח מערכות יישומי בתחומי הקיימות**



vblass@tauex.tau.ac.il