



משמעות תהליכי שינויי אקלים והידלדלות משאבים לכיווני ההתנהלות של התעשייה

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

בית הספר ללימודי הסביבה
ע"ש פורטר
הפקולטה למדעים מדויקים ע"ש
רימונד ובגדלי סאקלר




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.

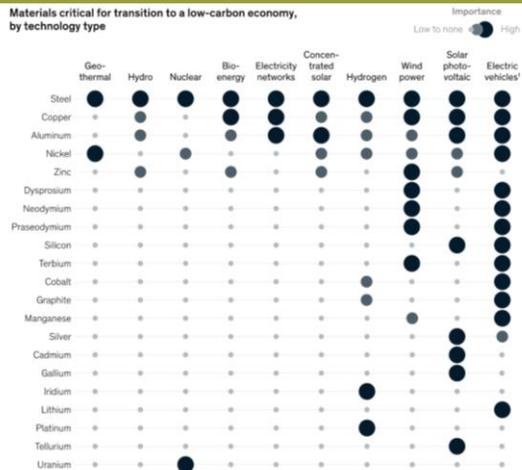
MOST POPULAR INSIGHTS

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

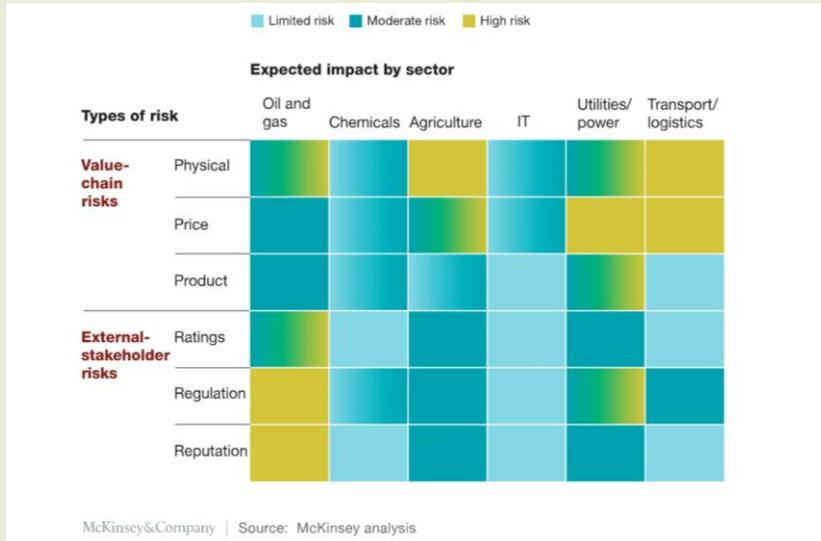


Excludes energy storage. Source: Critical raw materials for strategic technologies and sectors in the EU: A foresight study, European Commission, Mar 9, 2020. The role of critical minerals in clean energy transitions, IEA, May 2021; McKinsey analysis

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>

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



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



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*.

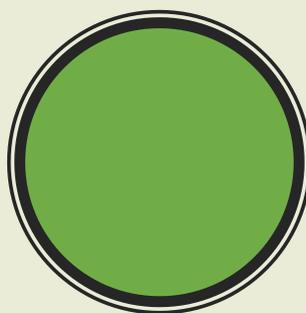
The most troubling paradox of the 21st century may be that human population is expected to climb to 9.7 billion by midcentury — yet the global food supply is predicted to plummet. The *Special Report on Climate Change and Land* released earlier this month by the United Nations' International Panel on 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, flooding, 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."

במה חברות בשרשרת המזון מתרכזות?



מידעה, הפחתה ודיווח - IN



NetZero 2050...

THE *Coca-Cola* COMPANY



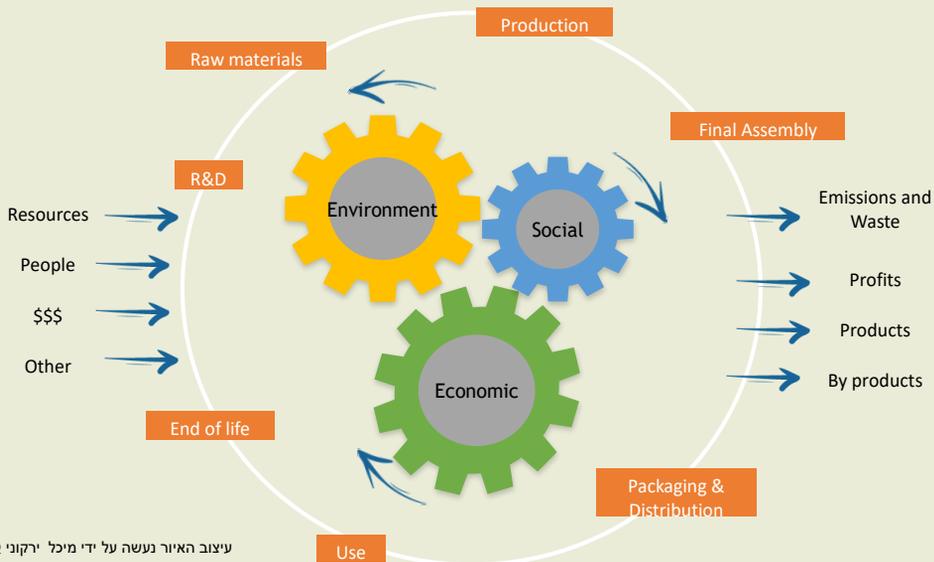
Climate

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.



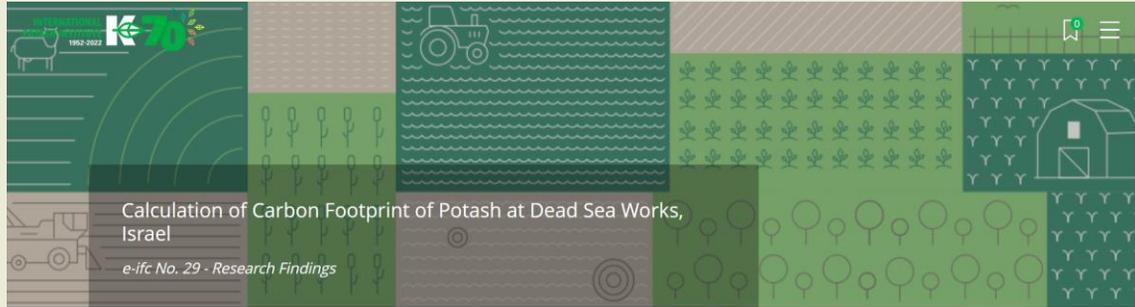
אימוץ גישת מחזור חיים – למדידה



עיצוב האיור 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

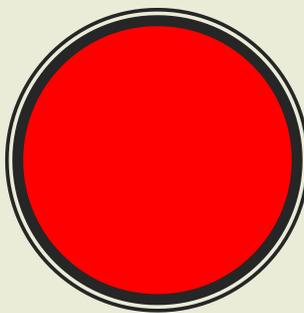
INGREDIENTS	PACKAGING	MANUFACTURING	DISTRIBUTION	COOLING & DISPENSING
Supplier engagement	World Without Waste goals	Renewable energy	Fuel efficiency	Equipment innovation
Sustainable agriculture	Supplier engagement	Increased energy efficiency	Fuel innovations - biofuels	Energy efficiency
Product reformulation	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 ?



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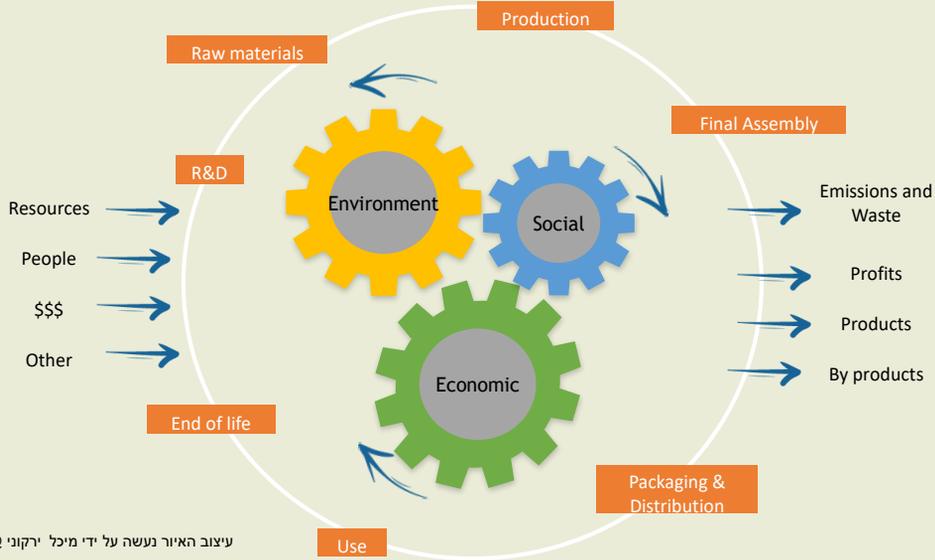
The business of businesses is climate-change adaptation

Big ones are waking up to the fact



<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.

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JOURNAL OF 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

THIS IS THE FULL ARTICLE

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 שנייה האקלים הבינלאומית –
עניין של ביטחון לאומי

גדעון בכר

משבר האקלים הגלובלי מציב בפני מדינת ישראל שורה של אתגרים, סיכונים וסיכויים ביניהם הביטחון, ומכאן עניין ראשון במסגרת של ביטחון לאומי. עניין זה נובע מכיוון שישל ישראל שחקית שלילת בריח שנייה האקלים העולמית, אך מצב עניינים מסוגיל לראשונה. ישראל יכולה להיות גרסה חופה בזהירות של "חופה" אקלימית" דור שישי משתמש בעולם בטכנולוגיות חכמות היום, החקלאות, אגרונומיה מתחדשת, חולמי וחובן טו רוח, פיתוחי מחשב ואפליקציות, ובכך חתוק את חסותה הלאום, תדמיתה ובלקלחת. ישראל גם צריכה להטמיע את הטכניקה והסיכונים הרבים של משבר האקלים ברימה האזרחית ולפעול למען שינוף פעולה לבניית חסון אזרחי למשבר האקלים ולהיערכות לסיכונים הרבים שאנו שיסו בו למעטם סיכונים ולמודע סיכונים הוגענים ממשבר האקלים. מדבר בעניין של ביטחון לאומי עבור ישראל.

מבוא

משבר האקלים הגלובלי מציב בפני מדינת ישראל שורה של אתגרים, סיכונים וסיכויים ביניהם הביטחון. ערה היותה ישראל שחקית שלילת שנייה האקלים העולמית, מכי שצרכה לכלכל על עצמה אחריות ביטלאומית מעבר למה שגדרש ממנה על מן ההסכמים הבינלאומיים. עם זאת, ישנם צעדים ראשוניים המעידים כי מצב זה משתנה, וישראל פנימה את הנוךך להיות מעורבת יותר. נשואים שיעל כיר היום העולמי, ומכריזים "אג'נדה גלובלית", שאחד הבעלים החשובים שבהם הוא משבר האקלים. במאסף זה נסקרות העשייה הישראלית בתחום האקלים ביורה הביטלאומית, מוצגת התרומה הישראלית ליל ישראל לצרכה ולעולם, דוך בחינת הסיכויים שלא

מקור: אתר שוקף

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 מתמהמהים בהכנת תוכנית היערכות, ובמערכת הביטחון ספנו בשנים האחרונות נזקים רבים שקשורים לשנייה האקלים • גורם המכיר את הנושא: יש חוסר קשב לנושא במשרד • משרד הביטחון: התחלנו בעבודת מטה



מקור: אתר שוקף

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

The infographic is divided into several sections, each representing a different industry or sector where Israeli companies are providing climate solutions:

- Agri & Food:** Includes sub-sections for Alternative Foods (e.g., Ynami, Future Meat), Climate Smart Agriculture (e.g., CropX, Beehero), and Food Loss & Waste (e.g., Soos, Clarifruit).
- Industry:** Divided into Circularity & Materials (e.g., TripleW, Daiko), Eco-Efficient Manufacturing (e.g., Auggwind, Castor), and Supply Chain Transparency & Efficiency (e.g., Hoopo, Roundark).
- Energy:** Divided into Cleaner Energy Generation & Storage (e.g., Energy, Phenergy) and Grid Management & Energy Efficiency (e.g., Brightmerge, GridON).
- Nature & Carbon Tech:** Divided into CO2 (e.g., Aibo, Windward), Earth Data Analytics (e.g., Scl, Tomorrow), Decision Support and Management (e.g., Planet Watchers, Ayyeka), and Nature Protection (e.g., Cairion, Kairo).
- Construction:** Divided into Green Construction (e.g., SolOr, TreeTube) and Low Carbon Buildings (e.g., Gold, Stigi).
- Water:** Divided into Eco-Efficient Systems (e.g., Asterra, Win) and Irrigation (e.g., Netafim, N drip).
- Mobility:** Divided into Electric Transportation & Alternative Transportation (e.g., Cens, ETVNERO) and Transport Optimization (e.g., Trucme, Trimo).

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

תודה על ההקשבה

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



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