

IE Applied

Innovations in Industrial Ecology
TEL AVIV UNIVERSITY



חדשנות מחקרית בכלכלה מעגלית

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הפקולטה לניהול על שם קולר, אוניברסיטת תל אביב

כנס תעשיית המיחזור ה-3 של התאחדות התעשיינים 17.10.2018

ניהול התפעול

New Opportunities for Operations Management Research in Sustainability

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Operations Management research has made several important contributions to environmental sustainability over the last two decades. In this article, we point to a **new opportunity on the horizon – the circular economy movement**, which is gaining significant traction in practice. We introduce the concept, and highlight the building blocks behind it. We also explain why this trend in practice can provide an opportunity for the Operations Management (OM) community. To do so, **we describe four companies that have been positioned as prime examples of implementing the circular economy concept and discuss the operational challenges faced by them**. We draw upon them to identify several promising and open questions for OM research, and explain why an operations perspective is critical in this context.

Key words: sustainable operations, circular economy, business models, product design.

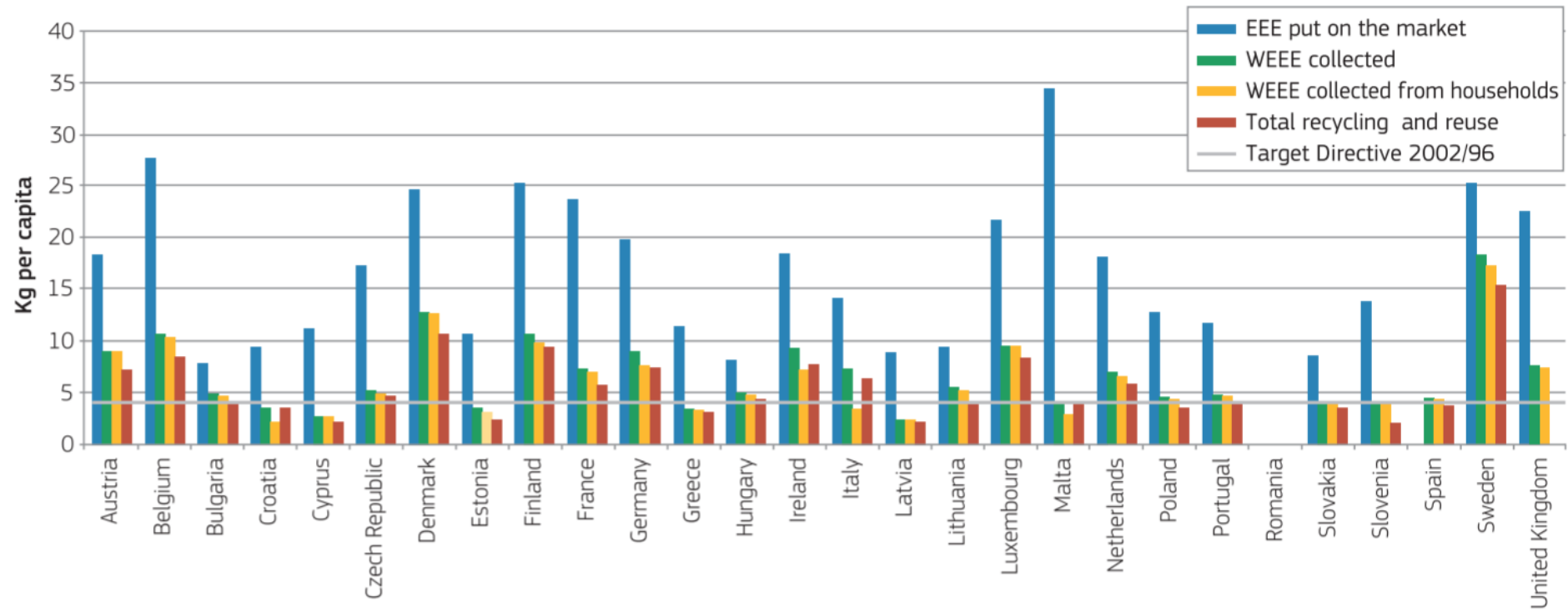
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איך למדוד הצלחה?

- ▶ the European Raw Materials Scoreboard (2016 report)

Figure 36: Electrical and electronic equipment put on the market, WEEE collected, reused and recycled (2013)¹⁵⁹



Fossil fuels Biomass Metals Waste rock Industrial minerals Construction minerals

איך למדוד הצלחה?

► Rebound effect of Circular Economy

		Change in production impacts	
		$e_r < e_p$	$e_r > e_p$
Change in production quantities	$\Delta Prod > 0$	Q1: Circular Economy Rebound Video on demand, recycling, service-based floor covering, recoverable rocketry, refurbished phones	Q2: Higher net impact
	$\Delta Prod \leq 0$	Q4: Lower net impact Smartphone parking meter Product lifetime extension (<i>ceteris paribus</i>)	Q3: Potential shortfall Reusable bottle Reusable grocery bag

Zink and Geyer, 2017



Dear Vered Blass,

Circular Economy and Life Cycle Assessment are both important topics for product sustainability. Are you, like many companies, seeking a solution that can address both circularity and LCA metrics?

Take your LCA to the next level - calculate your circularity!

Register for our joint webinar "Circular Economy meets LCA" with the Ellen MacArthur Foundation, the leading organization promoting the development of a Circular Economy, and find out how to:

- measure the circularity of companies and products
- calculate circularity and LCA together in the same tool

 [Register now!](#)

Date:

October 25, 12pm - 1pm, EST*

Speakers:

Sven Herrmann, Programme Lead, Ellen MacArthur Foundation
Peter Shonfield, Technical Director, thinkstep UK

***Unable to join?**

Register for the webinar and receive the presentation slides and a recording of the webinar via email after the webinar!

Content:

In the first part of the webinar our guest speaker Sven Herrmann, from the Ellen Mac Arthur Foundation, will provide insights into the "Circularity Indicators" project that resulted in the development of the Material Circularity Indicator (MCI).

In part two, thinkstep's Technical Director, Pete Shonfield, will demonstrate how to model the life cycle of a product and calculate its LCA and MCI at the same time, using the new [GaBi Circularity Toolkit](#) — the only software providing both LCA and MCI calculations.

We look forward to your questions and participation during the webinar!

 Peter

thinkstep AG

 SvenHerrman

Assessing Global Resource Use: UN Resource Panel Report, 2017

TABLE 3.2 Examples of circular economy strategies and initiatives reported by countries in Europe

STAGE OF MATERIAL LIFE CYCLE	STRATEGIES AND INITIATIVE REPORTED BY DIFFERENT COUNTRIES
Extraction of raw materials	<ul style="list-style-type: none"> Reduce the use of primary raw materials (Iceland) Reduce the impact of material extraction (United Kingdom)
Design of products	<ul style="list-style-type: none"> Integrate environmental aspects into product design (France) Extend the lifespan of products (Ireland)
Production and distribution	<ul style="list-style-type: none"> Extended producer responsibility, for example for waste electrical and electronic equipment, packaging and end-of-life vehicles (Portugal) Industrial symbiosis and new business models (Sweden)
Consumption and use	<ul style="list-style-type: none"> Pay-as-you-throw schemes (Belgium) Changing consumption patterns (Italy)
Reuse, repair, redistribute, refurbish and remanufacture	<ul style="list-style-type: none"> REPANET and REVITAL initiatives (Austria) The Scottish Institute for Remanufacture (Scotland, the United Kingdom)
Waste prevention	<ul style="list-style-type: none"> Secondary Raw Materials Policy (Czech Republic) Strategies for prevention of waste (Denmark)
Waste management (including recycling)	<ul style="list-style-type: none"> Separate collection of metal and biowaste to improve recycling rates (Croatia) Seven goals for the National Waste Management Plan and Waste Prevention Programme (Finland) Tailor norms or certifications to the circular economy (Netherlands) Transform waste into resources (Poland)

Source: EEA, 2016.

Note: This list is not exhaustive, but rather outlines the range of activities across the economy and throughout Europe.

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Take-home Message

- ▶ כלכלה מעגלית זה לא רק מחזור
- ▶ יש צורך בחשיבה מערכתית
- ▶ זה לא תמיד מועיל לכולם באותה מידה - מחייב מחקר לוקלי וספציפי
- ▶ אין בישראל מספיק מחקרים וחוקרים בתחום!

The logo for IE Applied, featuring a blue circle on the left side of the text.

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תודה על ההקשבה!