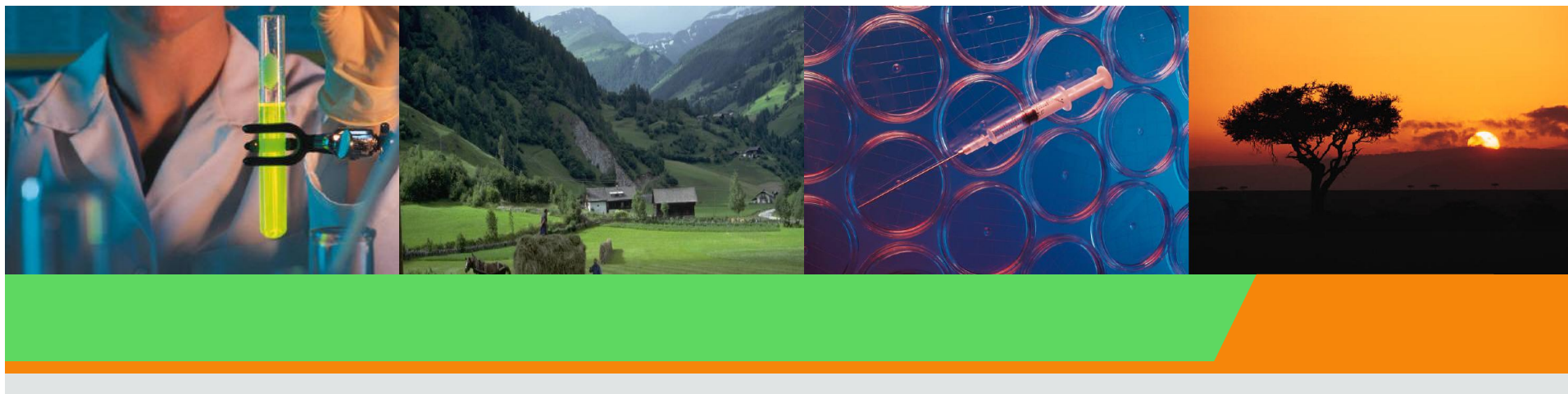

聲明

本檔案之內容僅供下載者自我學習或推廣化學教育之非營利目的使用。並請於使用時註明出處。
如「本頁取材自○○○教授演講內容」

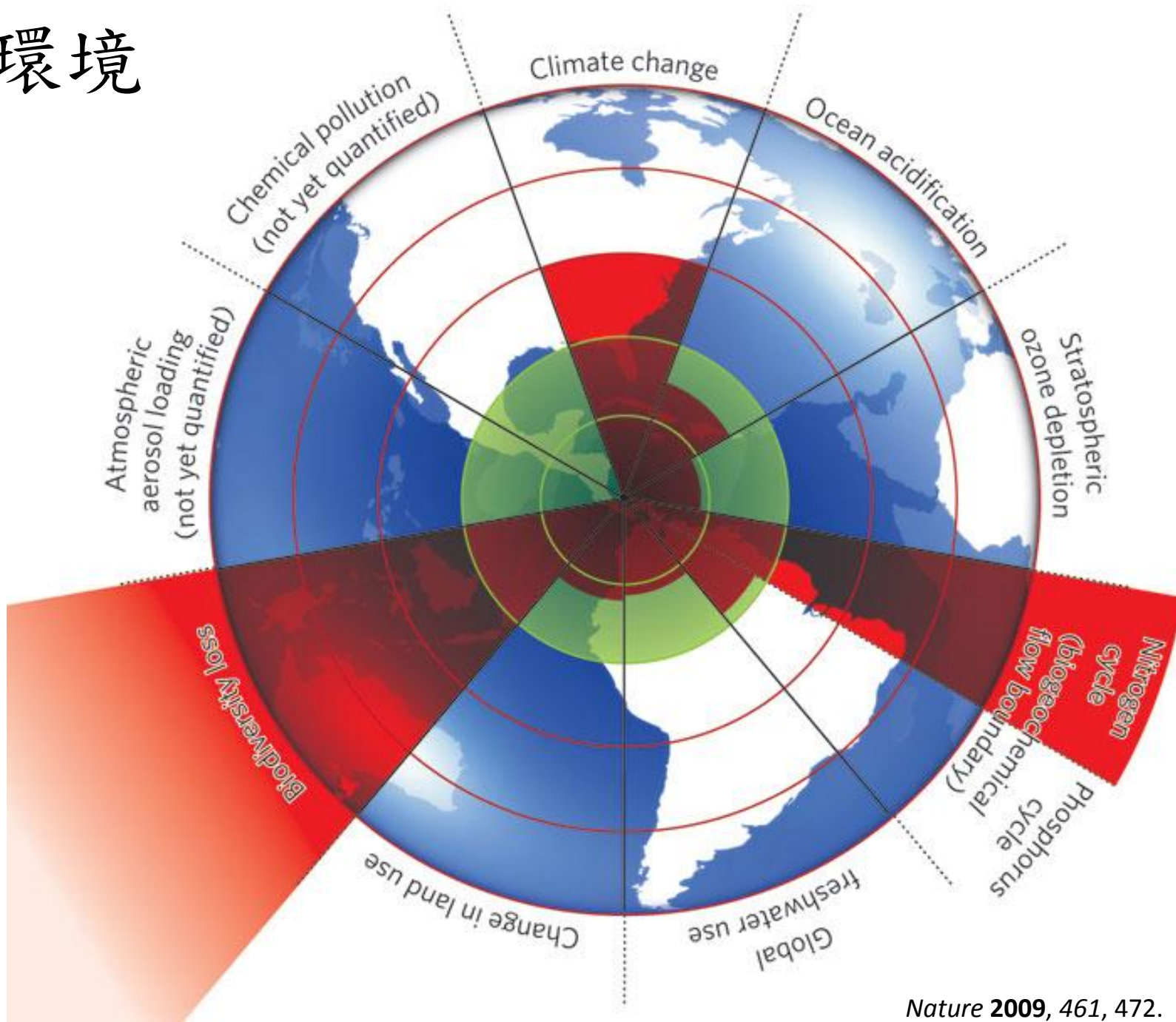


綠色永續化學論壇 引言

中央研究院化學所
趙奕妤

2015/12/5 東華化學年會 “綠色永續化學論壇”

大環境



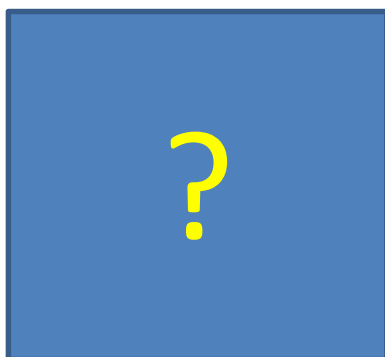
Nature 2009, 461, 472.

個人認知與真實世界之間的差距？

Question 1

How many pounds of stuff does it take to make a 5 laptop computer? (Hint: think about mining, transport, manufacturing, packaging, etc.)

- a) 50
- b) 500
- c) 20,000
- d) 12,500



Ref: "Confessions of a Radical Industrialist," page 9 (adjusted for 5 lb)

Question 6

For every kg of product produced, on average about how much waste is produced?

- a) <1 kg
- b) 5-10 kg
- c) 25 kg
- d) 25-100 kg
- e) >100 kg



?

大自然 vs 工業社會

Nature
a cycle

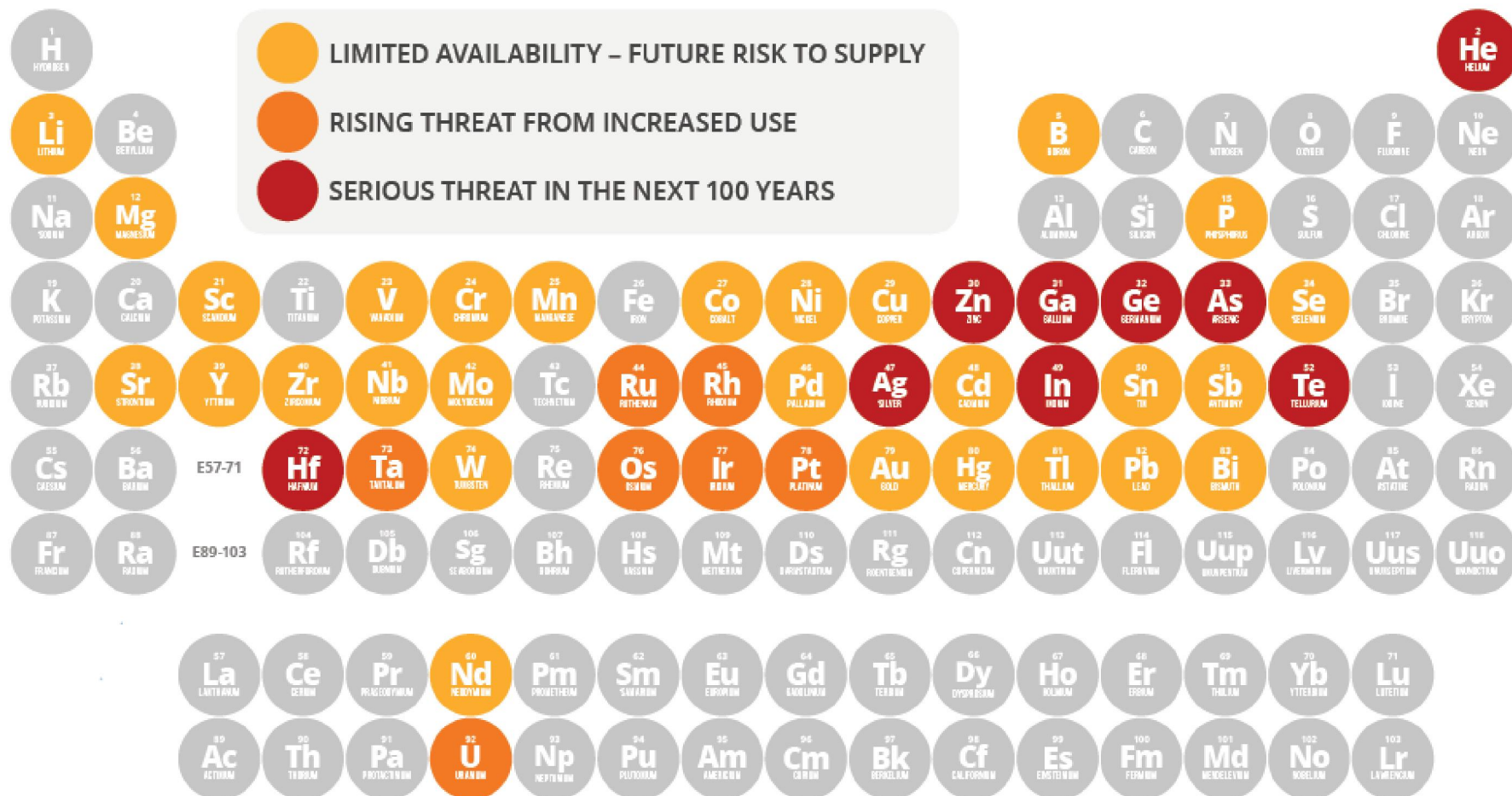


Industrial Society
the natural cycle disrupted



人類消耗資源、累積廢物的速度大過大自然可以承受的速度。

THE PERIODIC TABLE'S ENDANGERED ELEMENTS



SOURCE: CHEMISTRY INNOVATION KNOWLEDGE TRANSFER NETWORK



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聯合國永續發展會議 Rio+20討論之七大議題



RIO+20
United Nations Conference
on Sustainable Development

■ 工作



■ 能源



■ 城市



■ 食物



■ 水



■ 海洋

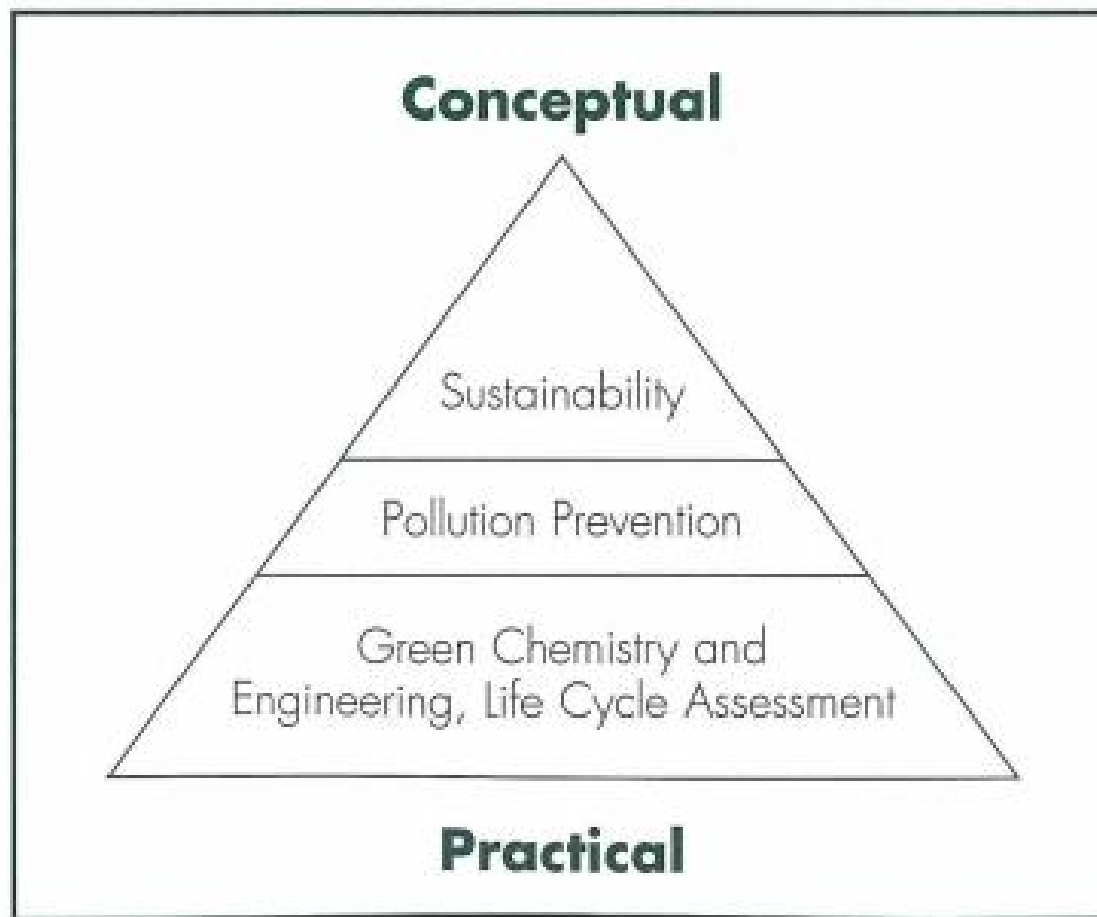


■ 災難



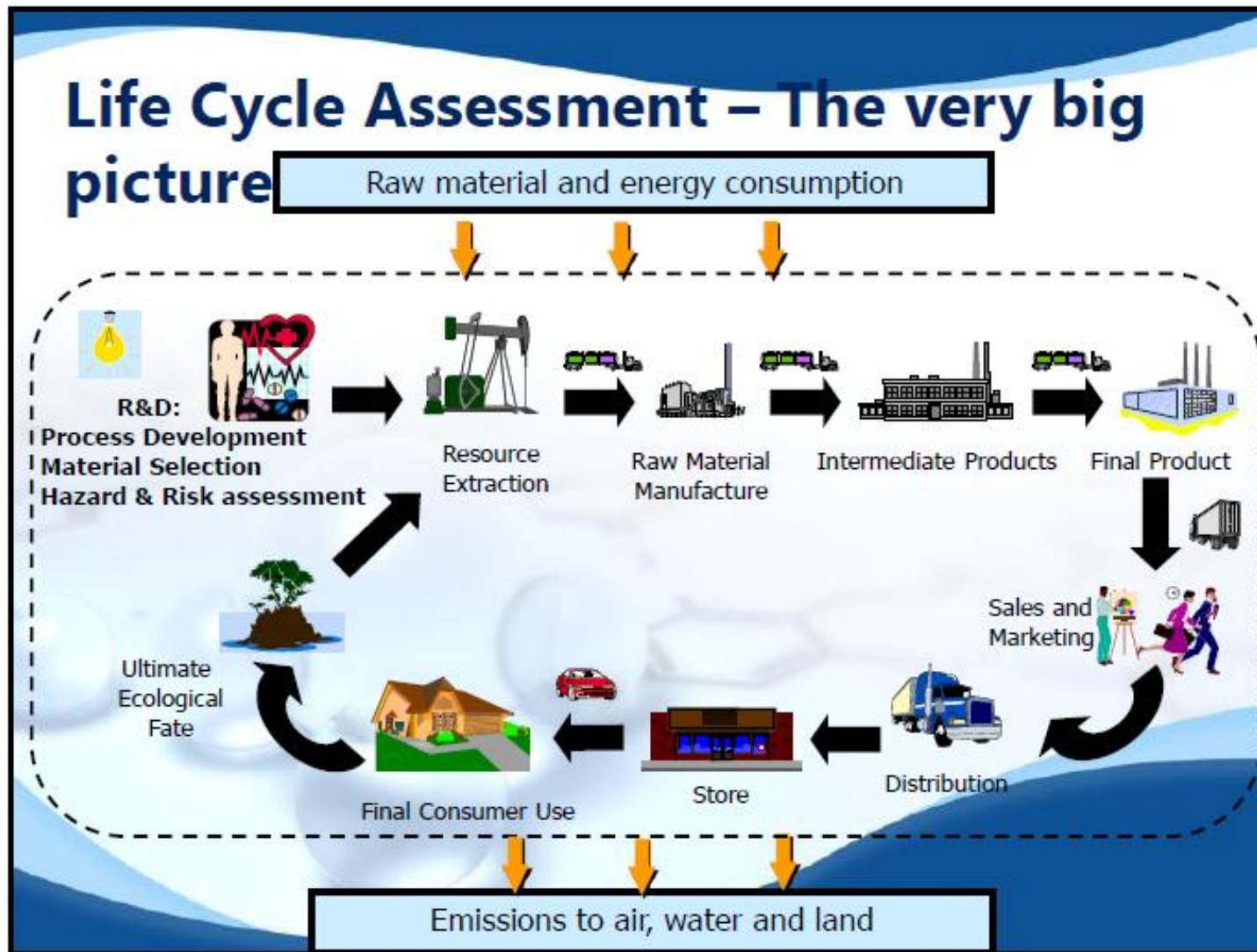
➤ 皆需化學一起使力

綠色化學與永續



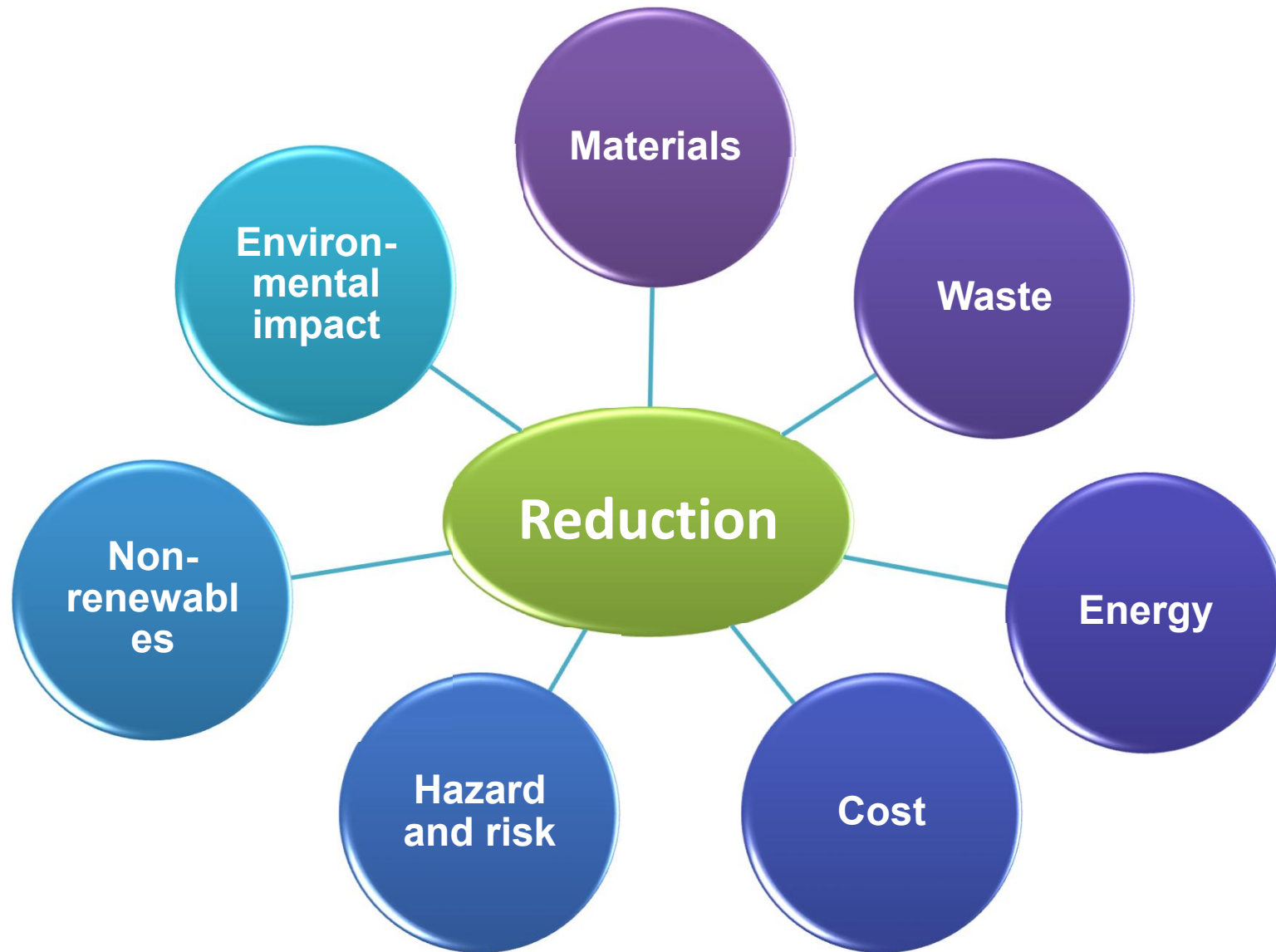
Green chemistry provides a practical foundation
for the concept of sustainability.

Life Cycle Assessment (LCA)



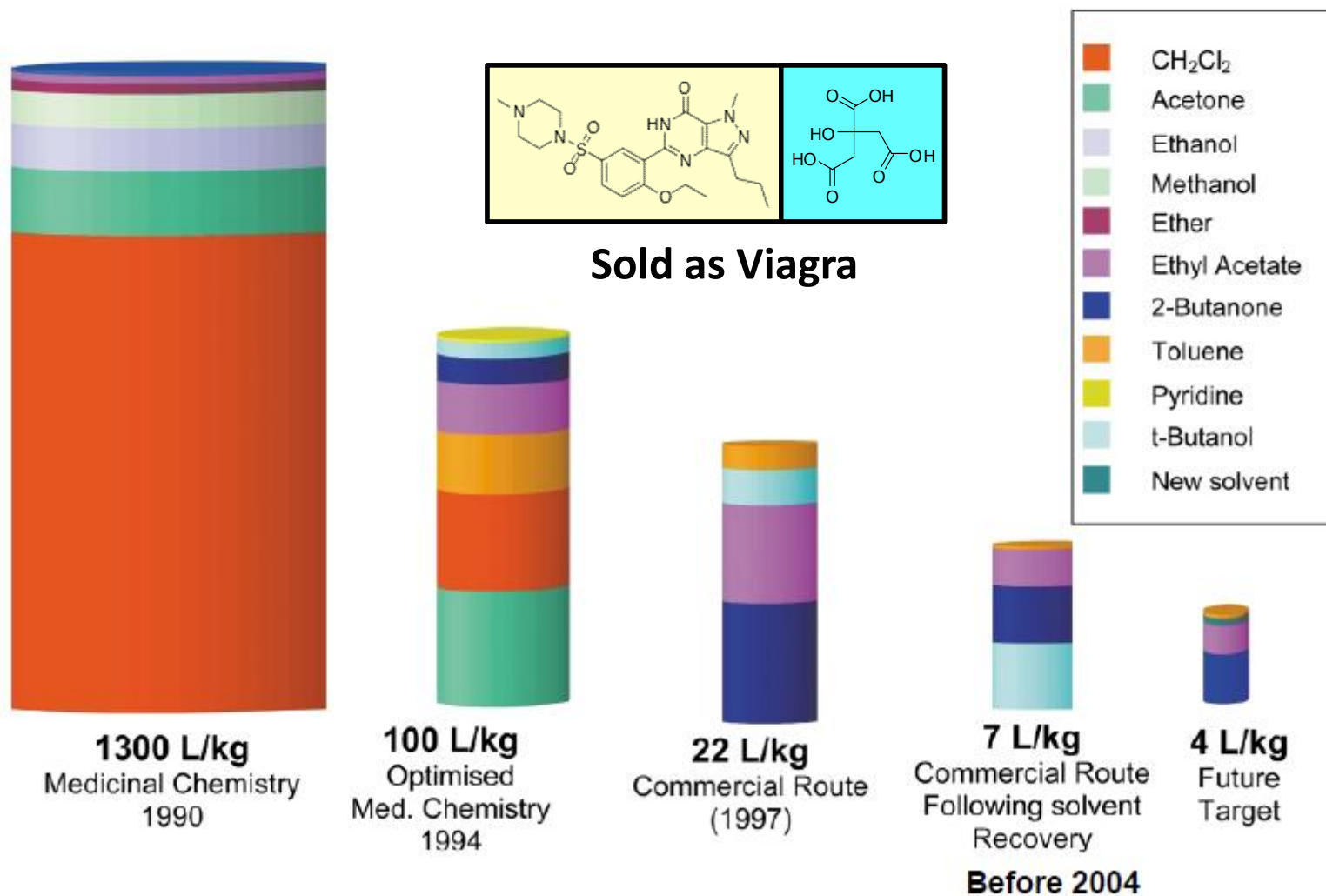
Slide Courtesy of Dr. David J. C. Constable

綠色化學 *Smart Chemistry*



至今Green Chemistry是否有貢獻？

The Sildenafil Citrate Process: Reduction of Solvent Usage



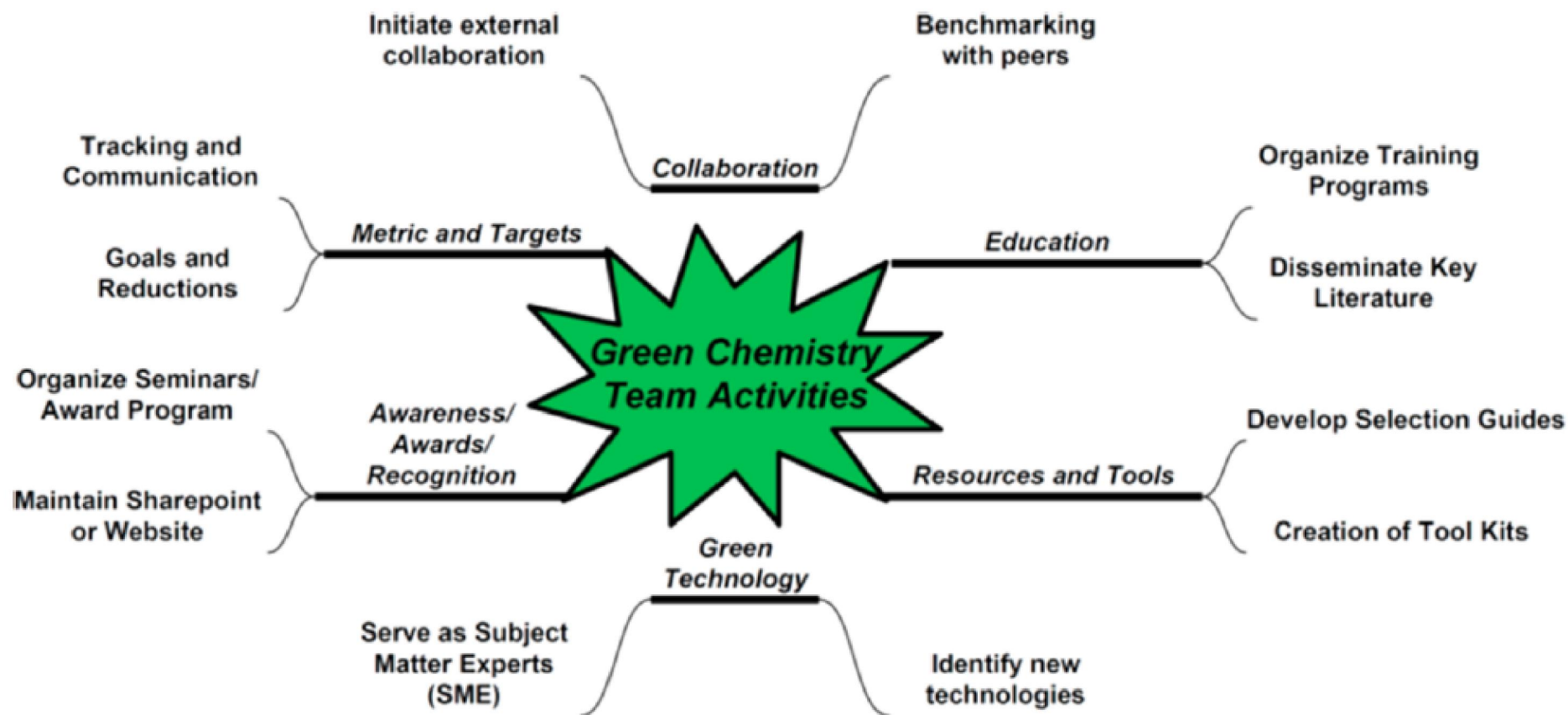
美國總統綠色化學挑戰獎

Presidential Green Chemistry Challenge Award

歷來的88項得獎技術

- 減少使用8億磅的有害物質與溶劑
- 節省200億加侖的水
- 預防78億磅的二氧化碳排放至空氣中

Green Chemistry Team Activities Defined by 6 Companies



Org. Process Res. Rev. **2013**, 17, 1099.



ACS GCI Pharmaceutical Roundtable



Slide Courtesy Dr. Rich Williams

ACS GCI 陸續成立的Roundtable

Formulators' Roundtable

Current Members

- [Amway](#)
- [Arm & Hammer](#)
- [Bissell Homecare, Inc.](#)
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- [The Lubrizol Corporation](#)
- [Marathon Oil Company](#)
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單打獨鬥成過去 群策群力謀永續

GCC3

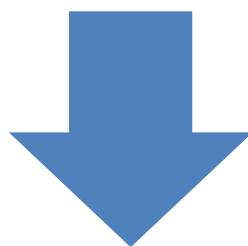
**GREEN CHEMISTRY &
COMMERCE COUNCIL**

Business Mainstreaming Green Chemistry

+

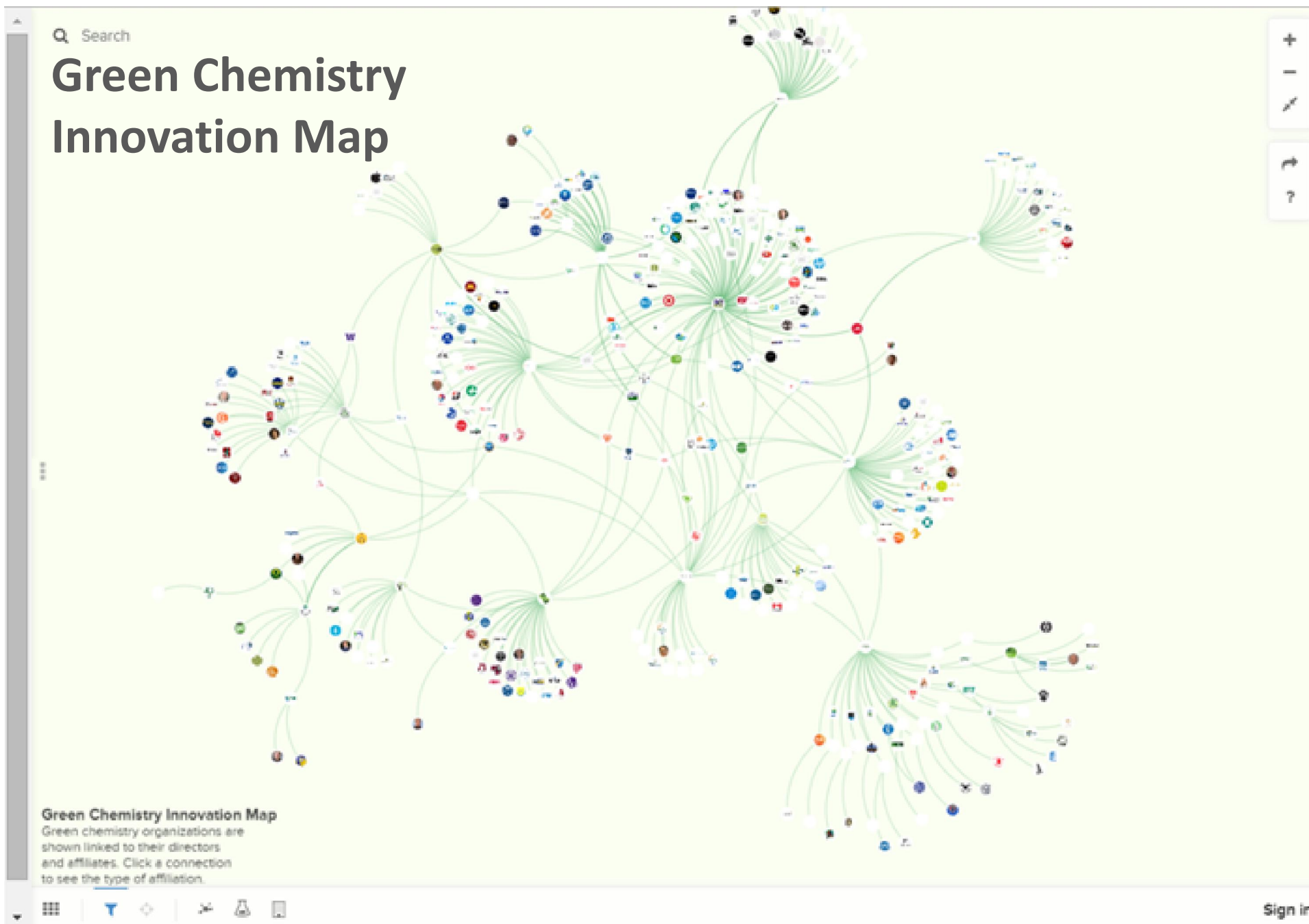


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WELCOME TO THE
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INNOVATION PORTAL

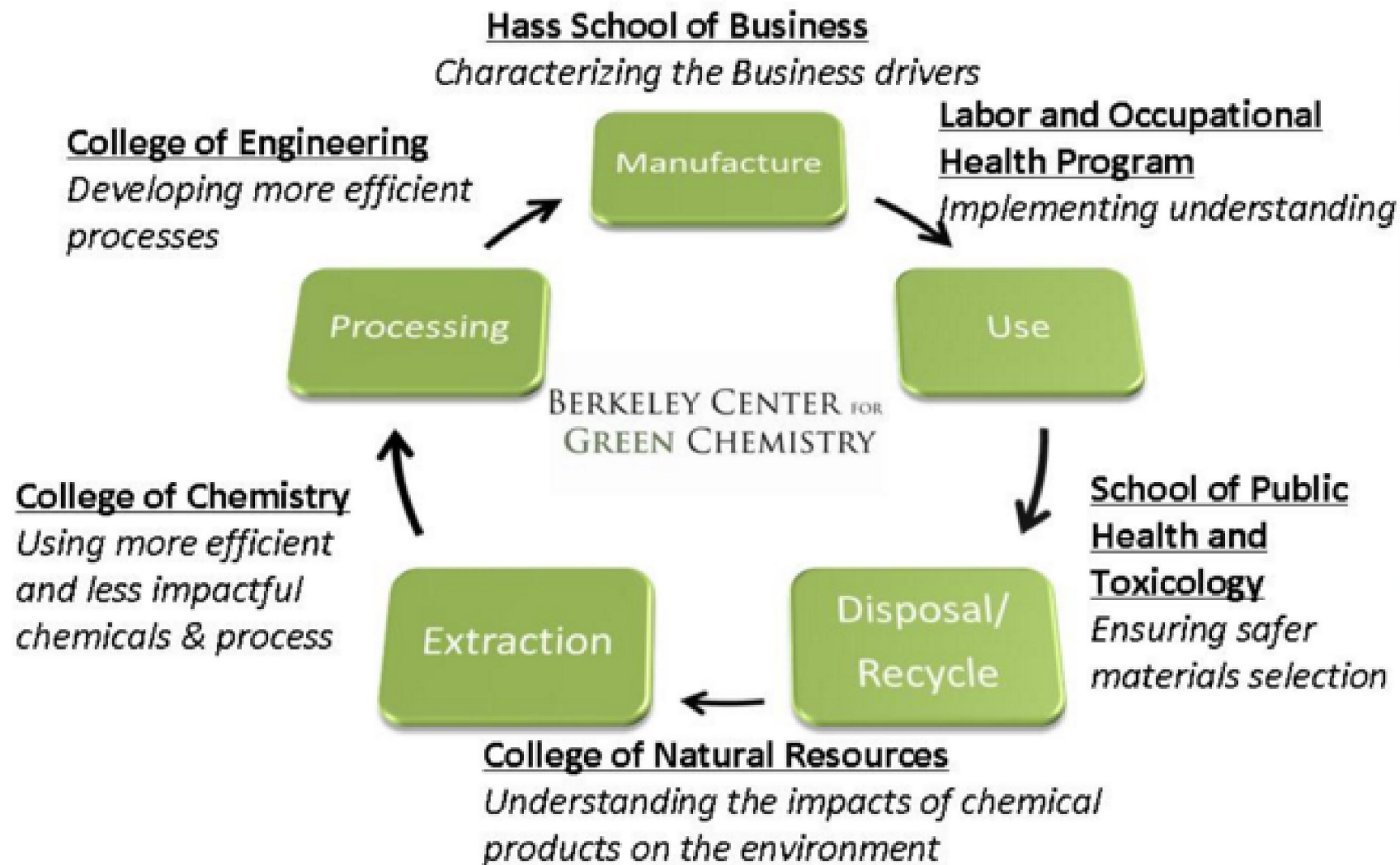
**A PLACE FOR GREEN CHEMISTRY PROFESSIONALS AND INNOVATORS TO
CONNECT AND COLLABORATE**



<https://kumu.io/gc3/green-chemistry-innovation-map>



The Berkeley Center for Green Chemistry



未來的道路？

人的連結與跨科際的連結

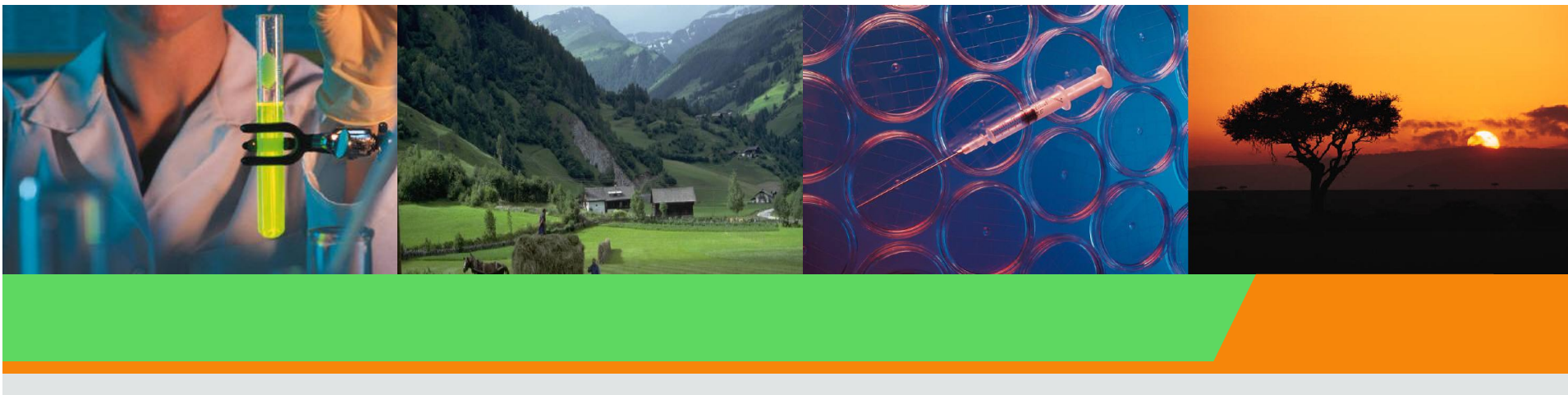
聯合國 2015-2030 Agenda

17 Global Goals for Sustainable Development



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<http://www.un.org/apps/news/story.asp?NewsID=51968#.Vhxyfmqqko>
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化學改變世界