

RESOURCE EFFICIENCY

3Rs

CIRCULAR ECONOMY

G7 ENVIRONMENT MINISTERS' MEETING

Bologna, June, 11/12th 2017

JANEZ POTOČNIK

Co-chair UNEP International Resource Panel (IRP)



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*Trade-offs among various SDGs are unavoidable. **Sustainable Consumption and Production** is the most efficient strategy to avoid trade-offs and create synergies to resolve the development and environmental challenges articulated in the SDGs.*



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SDGs DIRECTLY DEPENDENT ON NATURAL RESOURCES

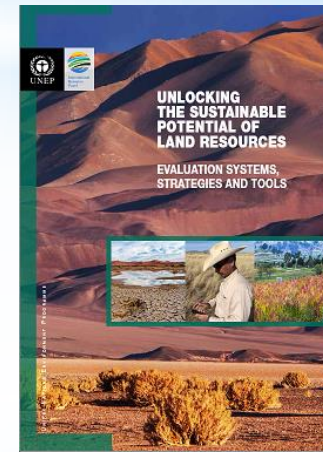
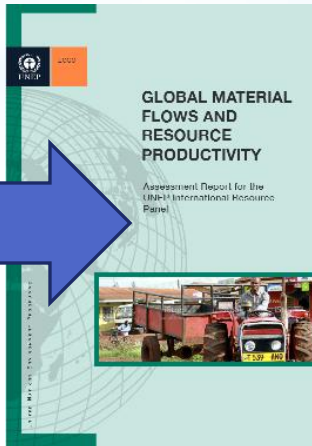
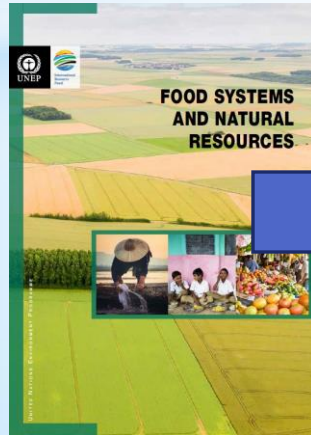
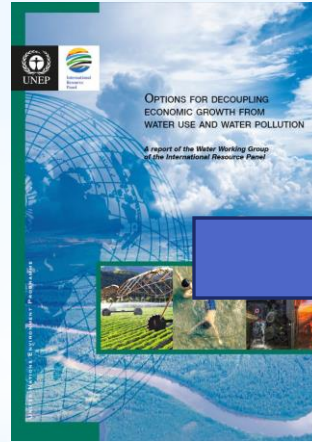
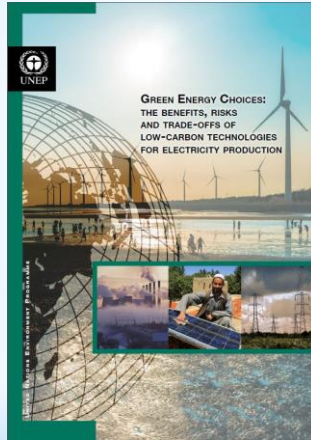


**RESOURCE EFFICIENCY, CIRCULAR
ECONOMY, 3Rs, SUSTAINABLE
MATERIALS MANAGEMENT**

**RECENT AND UPCOMING
IRP REPORTS**



IN THE RECENT MONTHS ...

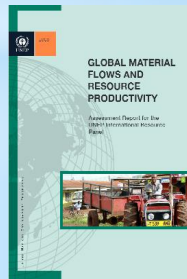


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GLOBAL MATERIAL FLOWS AND RESOURCE PRODUCTIVITY (1970-2010)

- **Consumption** has been stronger driver of growth in material use than population growth
- The **richest countries** consume on average **10 times more** materials as the poorest
- **Since 2000 material efficiency has declined** - global economy needs more materials per unit of GDP. Production has shifted from material efficient countries to countries that have lower material efficiency
- The level of well-being achieved in wealthy industrial countries **cannot be generalised globally based on the same system of production and consumption**





*In the mid-term, except in specific cases,
resource shortage will not be the core
limiting factor of our (economic)
development ...*

*... but the environmental consequences
caused by this excessive and irresponsible use
of resources will be!*

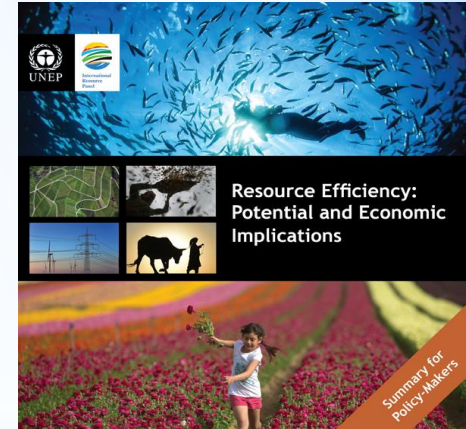


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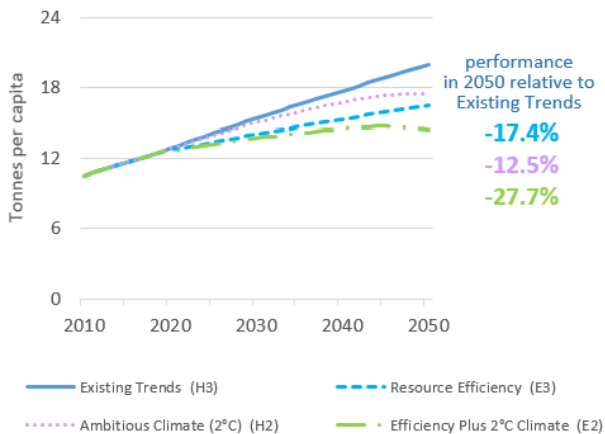
CONCLUSIONS FROM THE RE REPORT: **RATIONALE** FOR INCREASING RESOURCE EFFICIENCY

- 1. Assure availability of resources in future*
- 2. Volatility of resource and commodity prices*
- 3. National resource security*
- 4. Negative environmental impacts of resource extraction and use*
- 5. Considerable opportunities for resource efficiency to be increased with negative net costs, i.e. with overall economic benefits.*

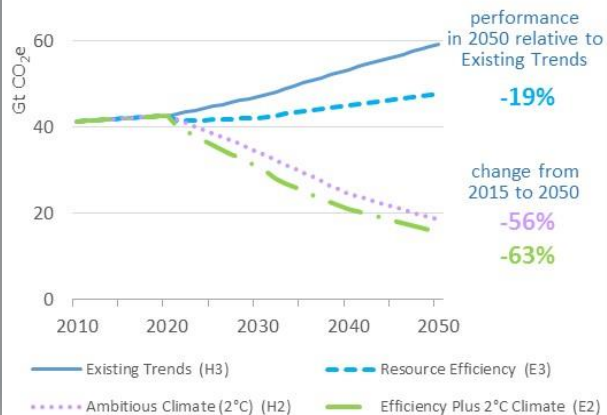


CONCLUSIONS FROM THE RE REPORT: RESOURCE EFFICIENCY, CARBON MANAGEMENT, ECONOMIC GROWTH

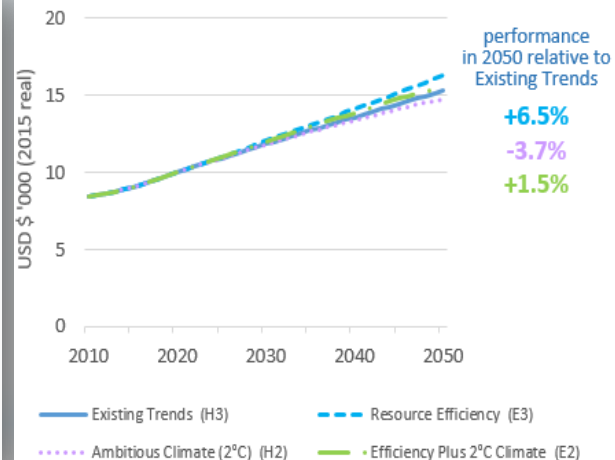
Global Resource Use (DMC) per capita



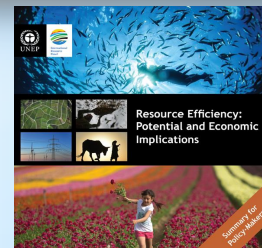
Global Greenhouse Gas Emissions (GHG CO₂e, billion tonnes)



Gross World Product per capita



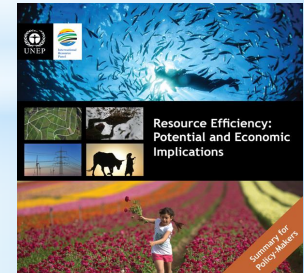
Source: CSIRO and IIASA, 2016/17





CONCLUSIONS FROM THE RE REPORT: REALISING THE POTENTIAL

- With concerted action, there is **significant potential for increasing resource efficiency**.
- **Markets will not achieve** higher rates of resource efficiency **by themselves**. **Public policy and political will** be needed.
- There are **significant barriers** to the increases in resource efficiency required, **but they can be removed**.
- Improving resource efficiency is **indispensable for meeting climate change targets** cost effectively.



CLIMATE

CARBON MANAGEMENT

LAND

WATER

GHG

MATERIALS

DECOUPLING

RESOURCES

LOW CARBON RESOURCE EFFICIENT ECONOMY

SYSTEMS-BASED ACCOUNTING HIGHLIGHTS THE GHG IMPACT OF MATERIALS

Based on a 2012 OECD study for 4 countries

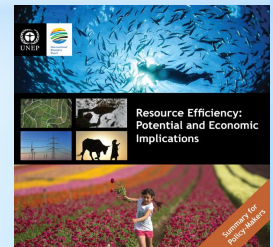
(Australia, Germany, Mexico, Slovenia)

- *Sector-based perspective: focus on GHG emissions from disposal of food and waste*
 - *1-12% of total GHG emissions* (→ methane emissions from degrading waste in landfills)
- *Systems-based perspective: focus on GHG emissions from the entire lifecycle of materials*
 - *54-64% of total GHG emissions*
- *An integrated view thus can help in targeting climate change and resource efficiency with joint policy action.*



DISCONNECT BETWEEN RESOURCE EFFICIENCY AND ECONOMIC EFFICIENCY

*There is a need to rebalance the cost of labour, and the costs of resources and pollution by **pricing externalities**, using **taxation** and **other incentives** for actors to favour paying for labour to save materials, rather than for materials to save labour*



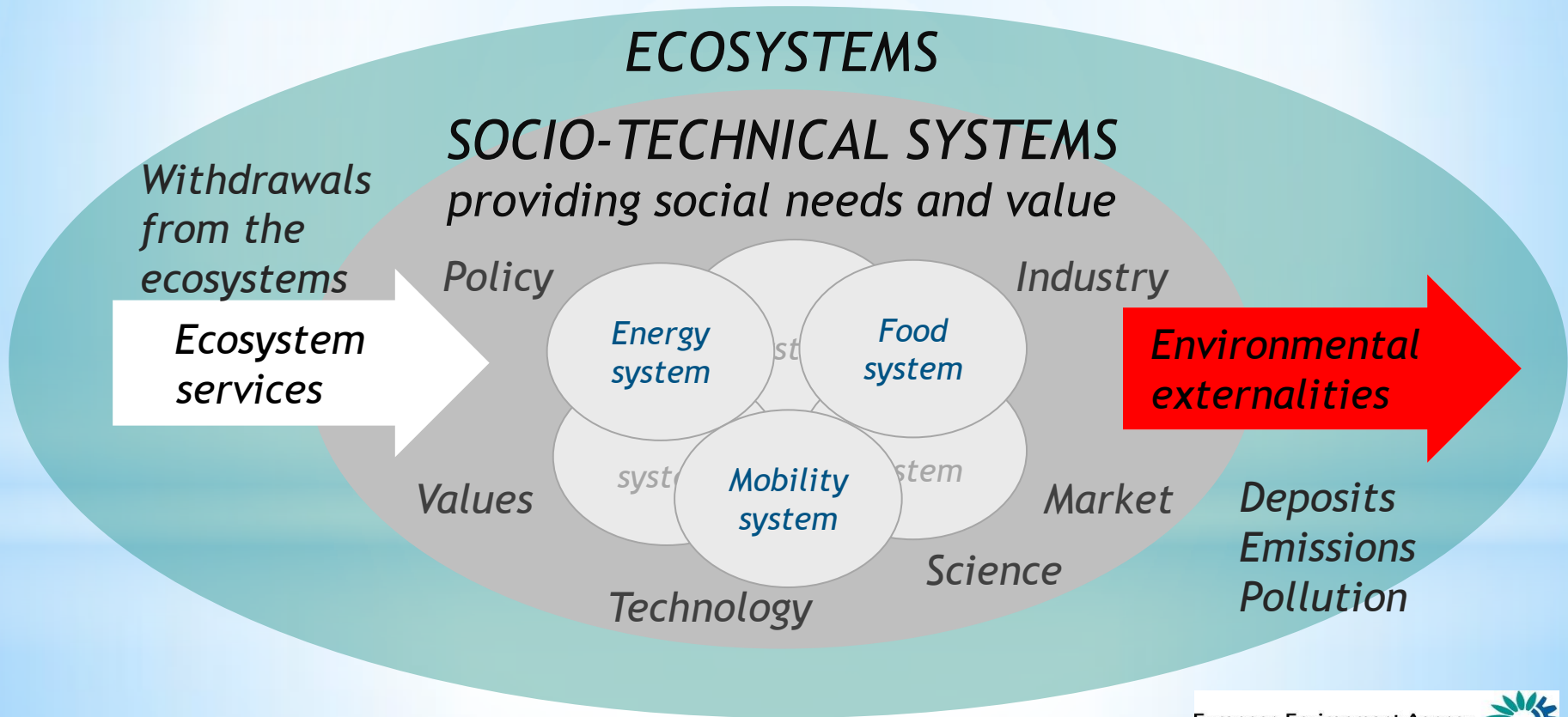
ECOSYSTEMS

ECONOMY

SOCIO-TECHNICAL SYSTEMS
providing social needs and value

LIVING WELL WITHIN ECOLOGICAL LIMITS

ECONOMIC SYSTEM FUNCTION OF ECOSYSTEM





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UPCOMING IRP REPORT

Assessment of Resource Efficiency and Innovation in Circular Economy through Remanufacturing, Reuse, Repair, and Refurbishment

Prof. Nabil Nasr, Associate Provost and Director

Jennifer D. Russell, Ph.D. Candidate

Golisano Institute for Sustainability

Rochester Institute of Technology (RIT) - Rochester, NY USA



Circular Economy

- Concepts for the circular economy seek to retain value in the system, by **maximizing system efficiency through both resource utilization and recovery.**

Circular Processes (CP)

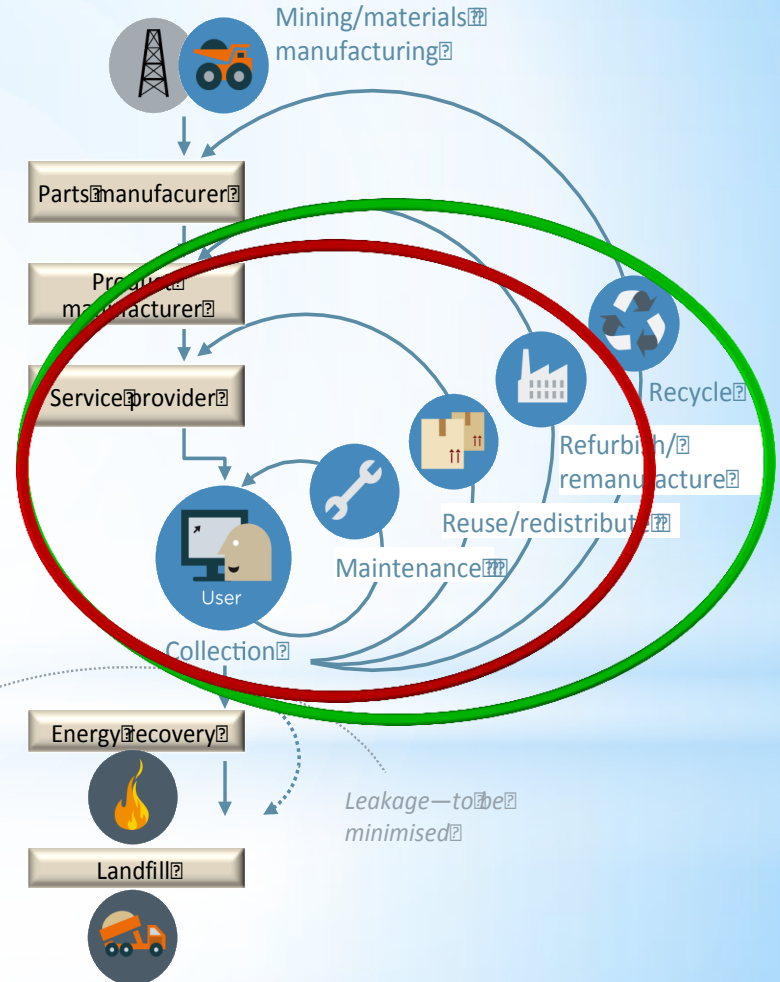
- Production processes that retain value within the circular system through: **direct reuse, repair, refurbishment, and remanufacturing.**

Potential Benefit

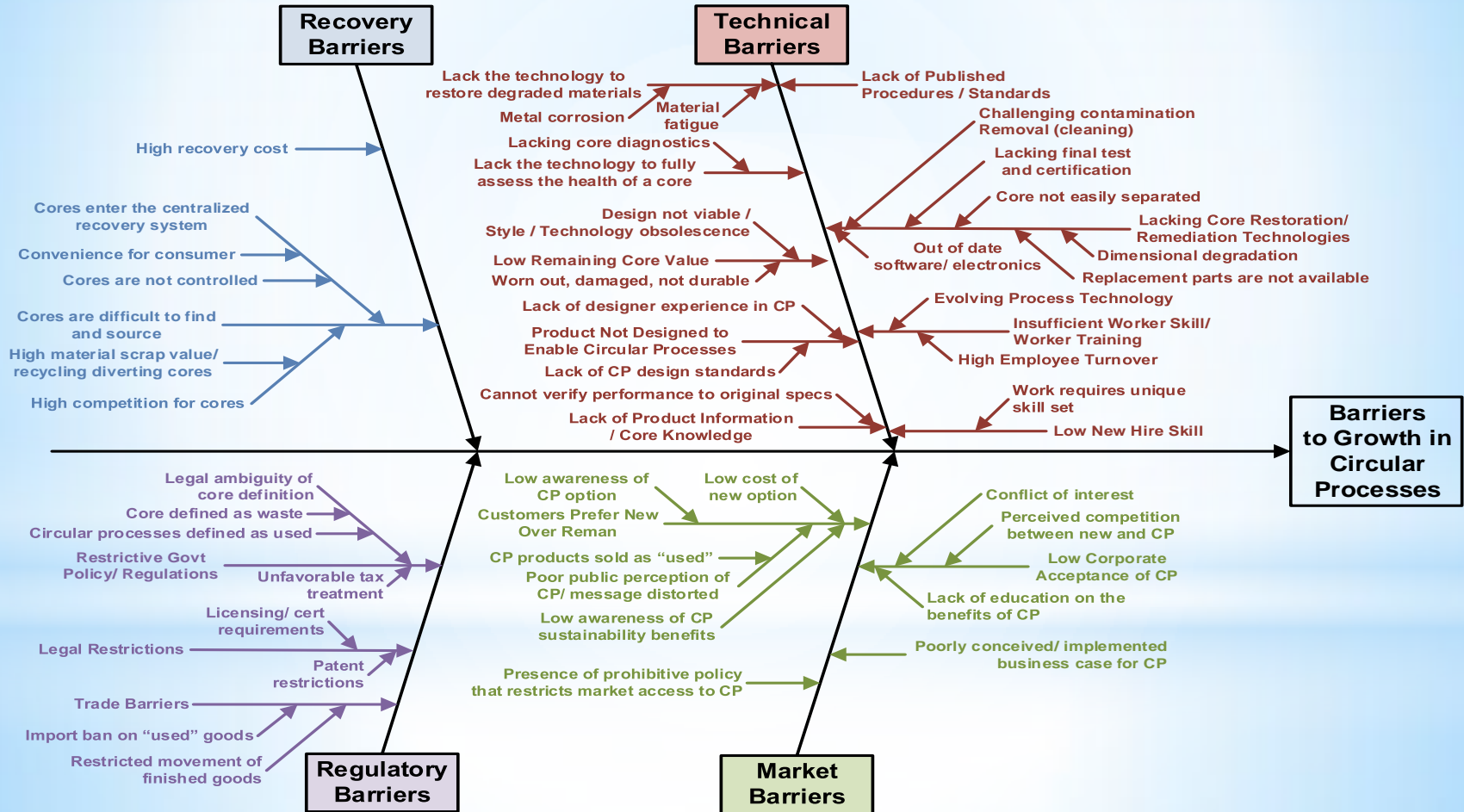
- Offer substantial and verifiable benefits in terms of resource efficiency, circular economy, and protection of the global environment.

Broader Impact

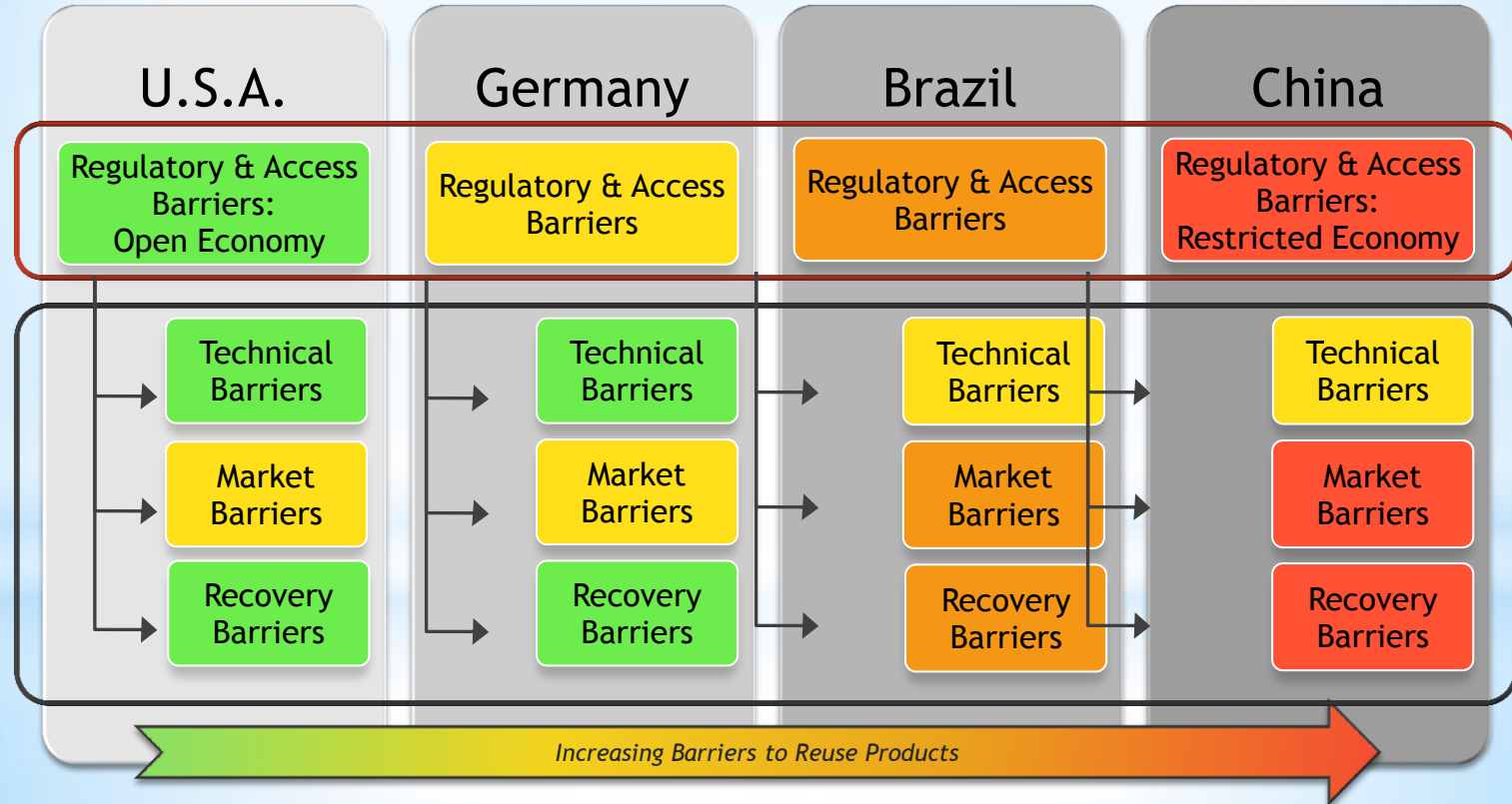
- Inform policy and guide private sector as applications and opportunities are explored to optimize resource usage and recovery within industrial systems.



BOTTOM - UP: BARRIERS TO CIRCULAR PROCESSES OCCURRING THROUGHOUT THE SYSTEM



TOP-DOWN: ECONOMIC PRODUCTION ACTIVITY & BARRIERS



(Source: N. Nasr and J. Russell, 2016)

PRODUCT-LEVEL RESULTS: **DIGITAL INDUSTRIAL PRINTER, USA**

Employment opportunity

Group 1/ Full Service Life CPs have relatively greater skilled labor requirements;

Cost advantage

All CPs offer a cost advantage;

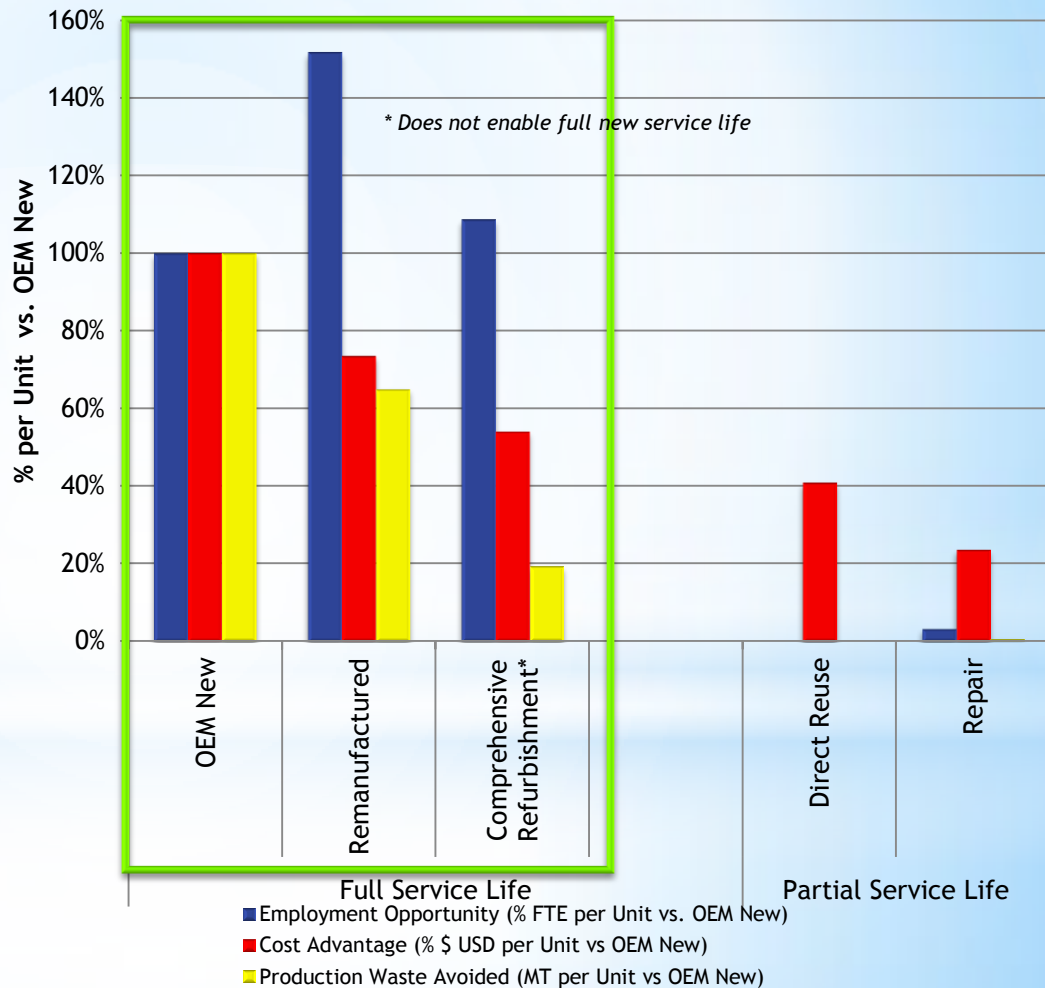
Advantage stems from offset inputs and requirements;

Magnitude of advantage inversely relates to value and utility-retained:

Production waste avoided

Production waste avoidance suggests efficiency;

Production waste avoidance leads to operating cost avoidance.





FUTURE IRP FOCUS

- IRP is in the middle of the *Strategic Planning Exercise 2018-2021*
- Inaugural Report on resource management for UNEA 3 (2017), with an aim to develop *Regular Report*(ing) for UNEA 4 (2019)
- Resource *Scenarios and Modelling*
 - SDG 12.2.* - By 2030 achieve sustainable management and efficient use of natural resources
 - SDG 8.4.* - Improve progressively through 2030 global resource efficiency and endeavor to decouple economic growth from environmental degradation
- *In the Strategic Planning exercise Resource management and climate policies* link and *Security aspects* of resource management were also identified as important areas to focus work in the future



TO CONCLUDE ...

MAIN POINTS TO REMEMBER

- For the first time in a human history we face emergence of a single, tightly coupled **human social-ecological system of planetary scope**.
- It is about **system change**. Without **leadership** and improved **global governance** SDGs are only a wishful thinking.
- We should refocus our efforts from addressing the **consequences** (migration, security ...) to the **reasons** leading to them (economic, social, environmental ... imbalances).
- Transition to a **new economic model** integrating all pillars of sustainability should be in the centre of our attention. Trade-offs among various SDGs are unavoidable. **SCP** is the most efficient strategy to avoid them and create synergies. **RE/CE/3Rs/SMM** are important concepts to operationalise it in practice. **Targets and indicators** like TMC, DMC, material flows ... are very useful and efficient policy tools supporting resource efficiency transformation and **“5 year Bologna Roadmap”** is a promising way ahead.

MAIN POINTS TO REMEMBER

- *Decoupling* should be the imperative of any modern environmental and economic policy. Addressing *externalities* through valuing natural capital is essential to make it possible.
- In the future *more responsible resource use* will be central if we are sincere about delivering SDGs. In the mid-term, except in specific cases, resource shortage will not be the main limiting factor of our (economic) development ... but *the environmental consequences caused by excessive and irresponsible use of resources will certainly be!*
- If we are to *avoid globally extensive and inter-systemic crisis and frequent conflicts* let's get serious about using natural resources in more efficient and responsible way. Changes are *unavoidable* and humans are supposed to be intelligent. It is high time to prove it.

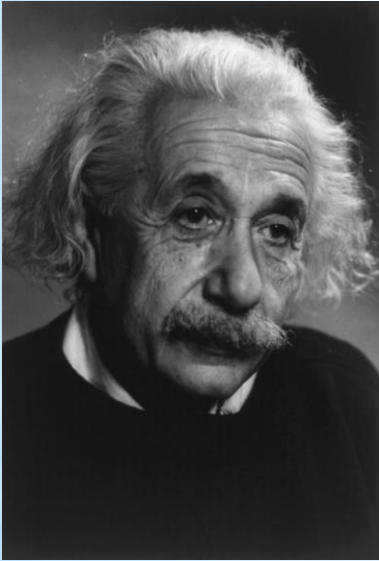
Any global transition is a major new opportunity for the innovation, new development opportunities, new jobs

And alternative ...

I would rather not think and talk about it!

WILL IT BE EASY?

ALBERT EINSTEIN



When asked why it is that mankind has stretched so far as to discover the structure of the atom, but we have not been able to devise the political means to keep the atom from destroying us he replied:

“That is simple, my friend. It is because politics is more difficult than physics”



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THANK YOU

www.unep.org/resourcepanel