



***THINK FOREST CONFERENCE***  
***CITIES AND REGIONS ROLE IN THE***  
***CIRCULAR BIOECONOMY***

***Brussels, 7th November 2017***

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# THE TASTE OF 21<sup>ST</sup> CENTURY GLOBALISATION

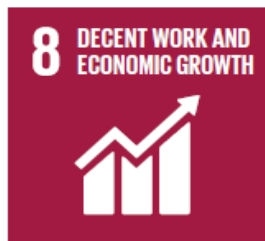
- For the first time in a human history we face the emergence of a single, tightly coupled *human social-ecological system of planetary scope*. We are more *interconnected* and *interdependent* than ever.
- Our individual and collective *responsibility* has enormously increased.



***SUSTAINABLE  
DEVELOPMENT GOALS  
AND  
THE ROLE OF SCP***

# THE GLOBAL GOALS

For Sustainable Development





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

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



International  
Resource  
Panel



*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.*





International  
Resource  
Panel

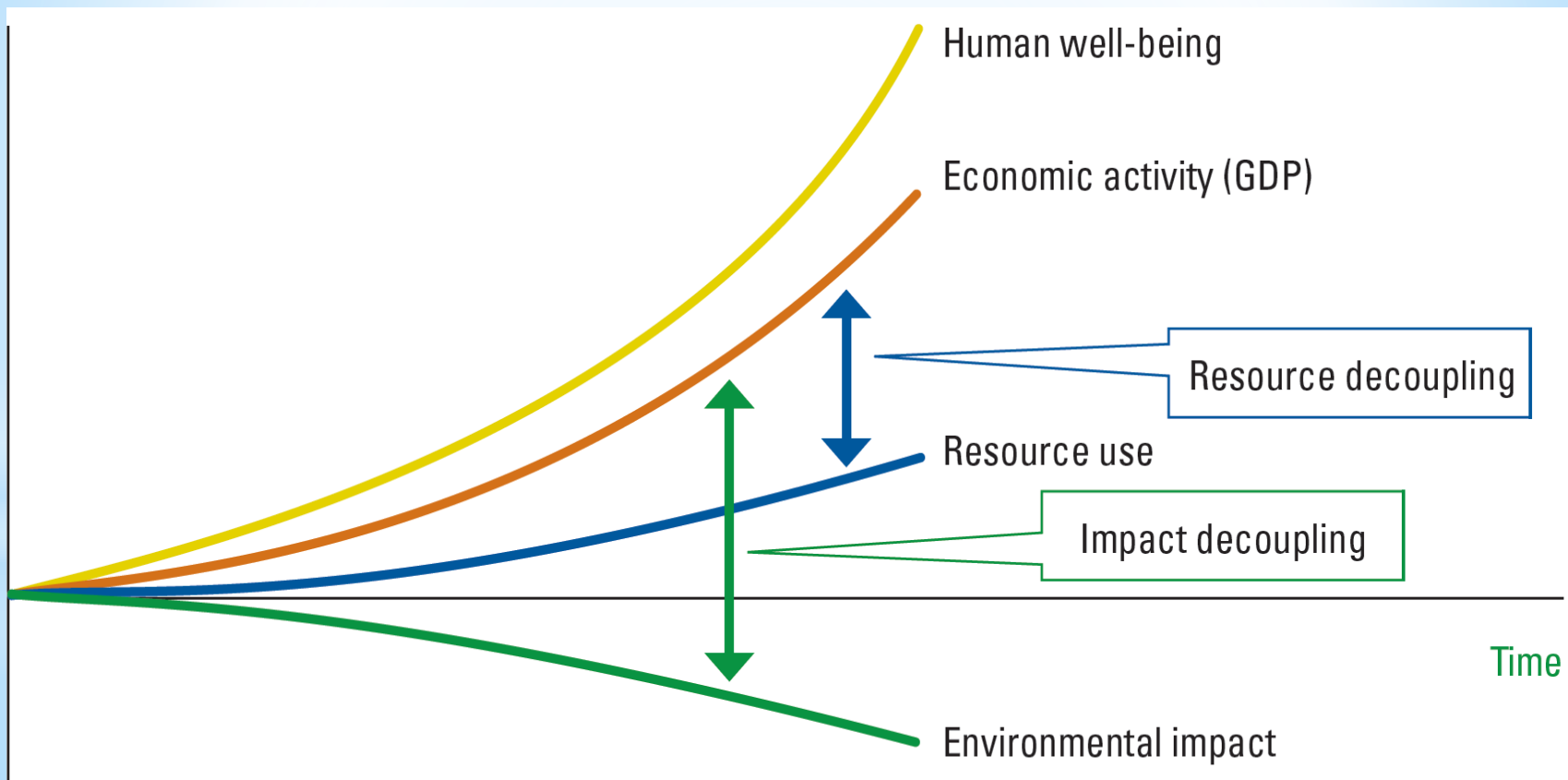
# SDGs DIRECTLY DEPENDENT ON NATURAL RESOURCES





International  
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Panel

# DECOUPLING IS THE IMPERATIVE OF MODERN ENVIRONMENTAL AND ECONOMIC POLICY





***CITIES***

***SDGs AND CIRCULAR  
ECONOMY***

# THE GLOBAL GOALS

For Sustainable Development

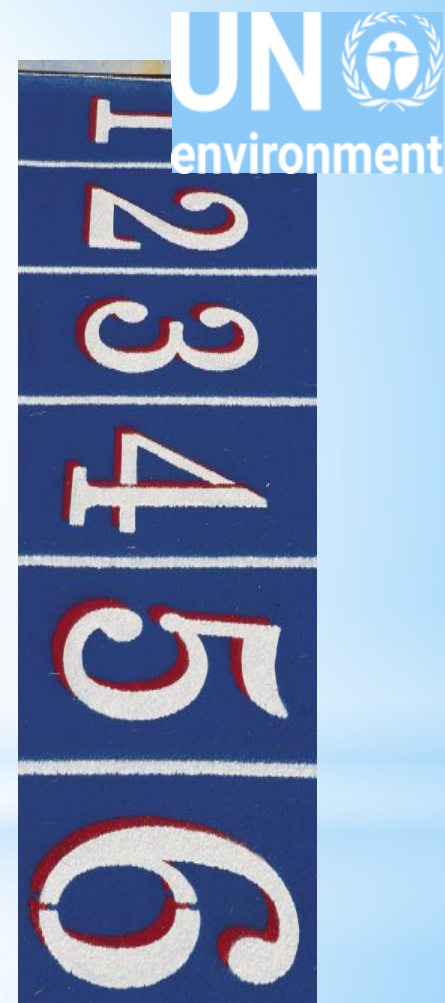




International  
Resource  
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# THE TASTE OF 21<sup>ST</sup> CENTURY URBANISATION

- Globally, an area of the size of the UK has been **converted to buildings** since 1990 (OECD GG Indicators 2017)
- **More than 50% of urban fabric** expected to exist by 2050 still needs to be constructed
- In the three years period (2011-2013), **China** has used more **cement** than the **USA** during the entire 20th century

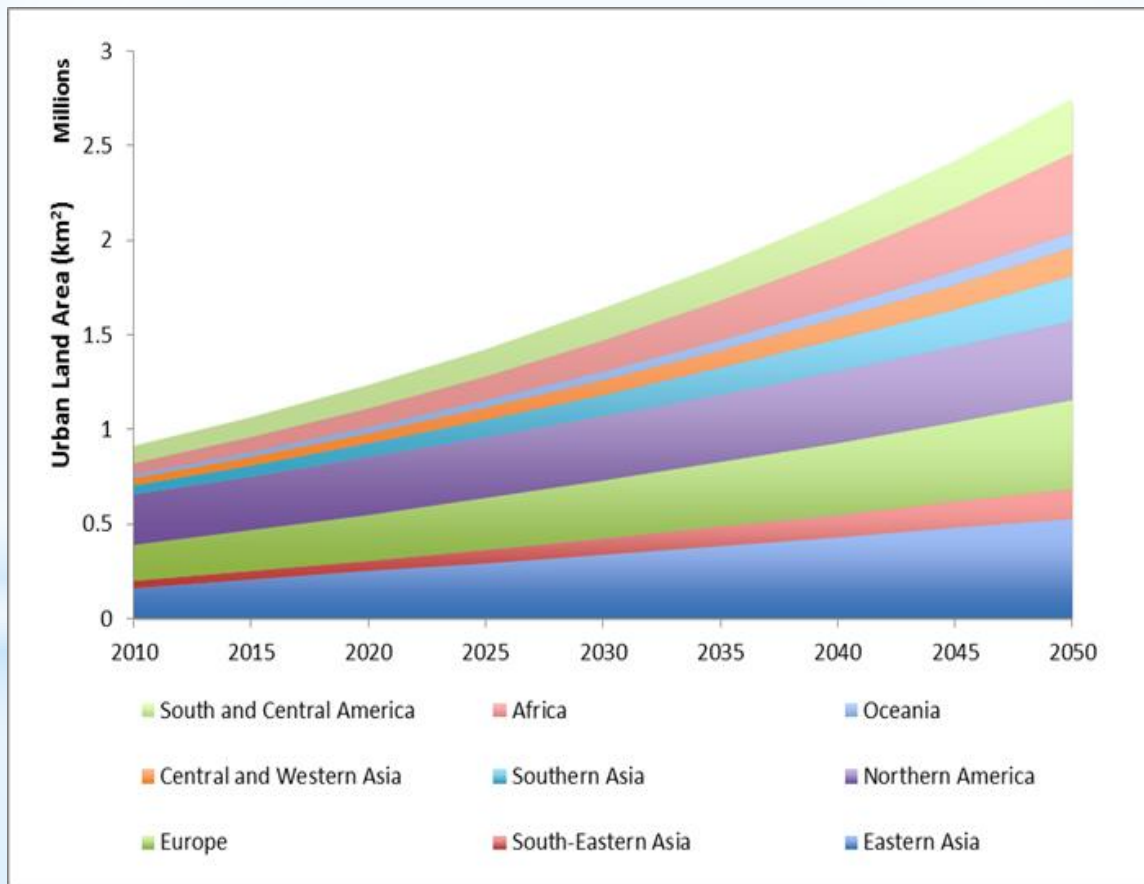


# WORLD URBANIZATION PROSPECTS 2014 REPORT

- 3.8 billion people **lived in urban areas** in 2015 (**54%** of the global population). By 2050 this is expected to rise to 6.3 billion (**66%** of the global population)
- If inequalities remain unchanged, **one third** will be living in **slums** by 2050
- 37% of the growth is expected to come from **China, India and Nigeria**
- There has been a historic de-densification trend of 2 per cent per year. This threatens to increase **global urban land use** from just below 1 million km<sup>2</sup> to over 2.5 million km<sup>2</sup> in 2050, putting agricultural land and food supplies at risk



# URBAN LAND AREA



# **“NEW URBAN AGENDA”**

## **QUITO 2016**

*Roadmap for sustainable urbanization with its three transformative commitments*

- *leave no one behind*
- *sustainable and inclusive economies*
- *environmental sustainability*
- *and references to resource efficiency, alongside low-emission and resilience, of housing, infrastructure and basic services.*



# *“THE WEIGHT OF THE CITIES” - RESOURCE REQUIREMENTS OF FUTURE URBANISATION 2050*

## *Preliminary results*

*Urbanization is expected to be more or less  
completed in 50 years.*

*We have a once-in-a-lifetime opportunity to  
shift the expected urbanization onto a more  
environmentally sustainable and socially just  
path.*

# “THE WEIGHT OF THE CITIES”

## Some basic facts

- Cities use billions of tons of **raw materials**, from sand, gravel, and iron ore to **biotic resources** such as wood and food.
- Without new strategy, **global urban material consumption** will grow from 40 billion tons in 2010 to about 90 billion tons by 2050. This would exceed by far what the planet can provide in a sustainable manner.
- For sustainable use of global resources by 2050, the **average material intensity of consumption per capita** needs to be reduced from the forecasted 8-17 to 6-8 tons/capita/year.

# “THE WEIGHT OF THE CITIES”

## Four systemically inter-related interventions

- **spatial restructuring** of the urban morphology to achieve **strategic intensification** (well-articulated network of high density nodes and within nodes the fostering of a richer mix of housing, jobs and amenities at neighbourhood level)
- **human-scale sustainable design** (conditions for liveable, functionally and socially-mixed neighbourhoods, ‘soft’ mobility (pedestrianizing, cycling) at the city/neighbourhood scales, and ‘passive’ heating, cooling and lighting at building level)
- **resource efficiency** (of all urban components, such as vehicles, infrastructures, buildings, factories etc.)
- **sustainable behaviours** (the separation of waste at source for recycling, the use of public transport, walking or cycling, the use of public spaces, etc.)

# “THE WEIGHT OF THE CITIES”

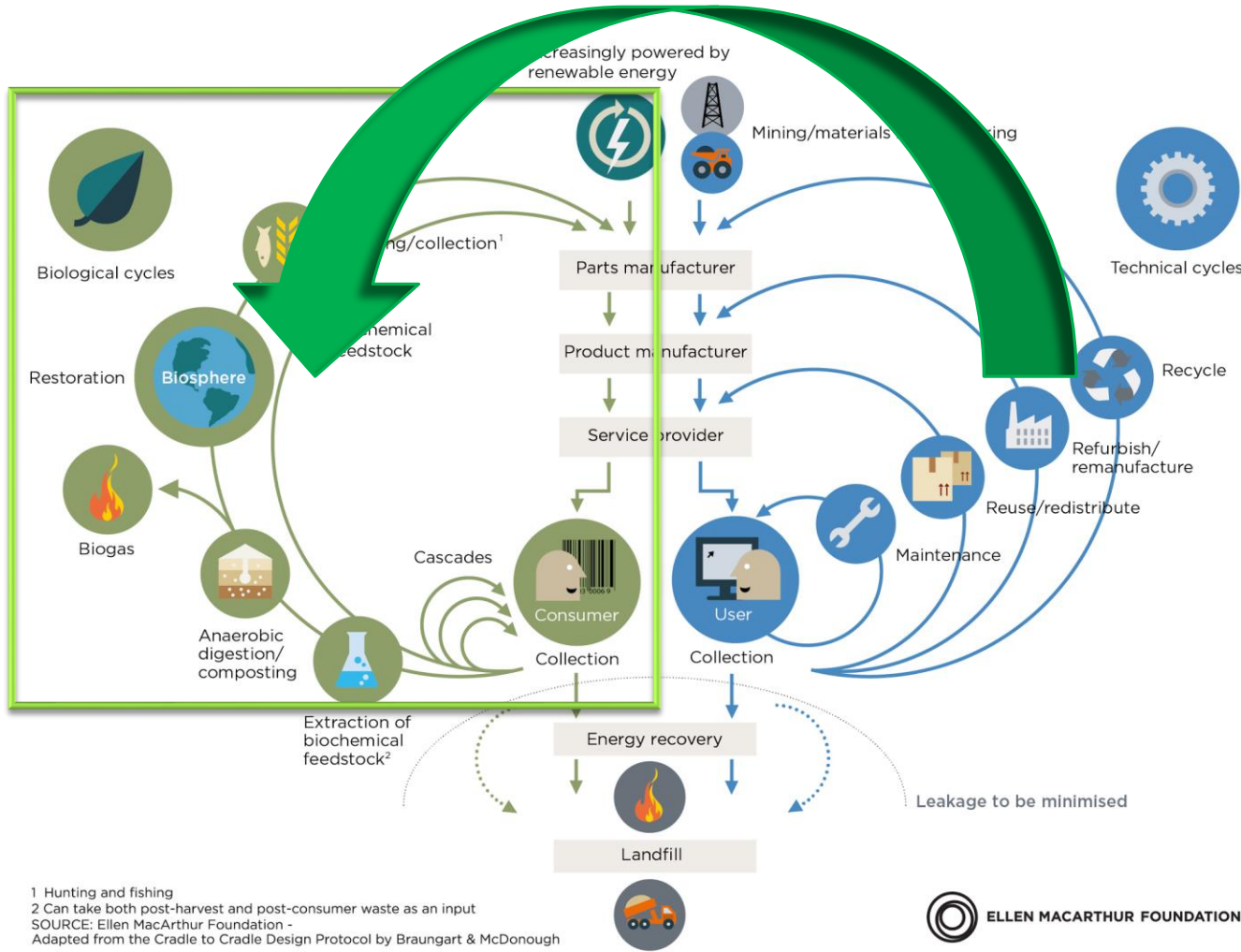
*Actual improvements in energy (and resource productivity)*

1. *Higher densities and compact urban forms* can reduce GHG (greenhouse gas) emissions by a factor of 2 or more
2. *Human-scale functionally mixed neighborhoods* could reduce energy consumption by a factor of 2 or more
3. *Energy-efficient buildings* could reduce energy demand by a factor of 2 or more
4. *Efficient systems* could achieve a further 20 per cent energy saving
5. *Behavioural changes* could reduce energy demand by a factor of 2

**THE CASCADING MULTIPLICATIVE IMPACT OF THESE MEASURES CAN IMPROVE ENERGY USE (AND RESOURCE EFFICIENCY) BY A FACTOR OF 10**



CIRCULAR ECONOMY - an industrial system that is restorative by design



1 Hunting and fishing  
 2 Can take both post-harvest and post-consumer waste as an input  
 SOURCE: Ellen MacArthur Foundation -  
 Adapted from the Cradle to Cradle Design Protocol by Braungart & McDonough





***TO CONCLUDE ...***



**WE HAVE TO FIX A BROKEN  
COMPASS  
(PAVAN SUKHDEV)**

**NEW ECONOMIC MODEL BASED ON SCP  
INTEGRATING ALL PILLARS OF  
SUSTAINABILITY IS**

**NECESSARY  
AND UNAVOIDABLE**



*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!*



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# *THANK YOU*

[www.unep.org/resourcepanel](http://www.unep.org/resourcepanel)