



PBL Netherlands Environmental  
Assessment Agency

# Space for Circular Economy

*SURE Eurodelta Webinar  
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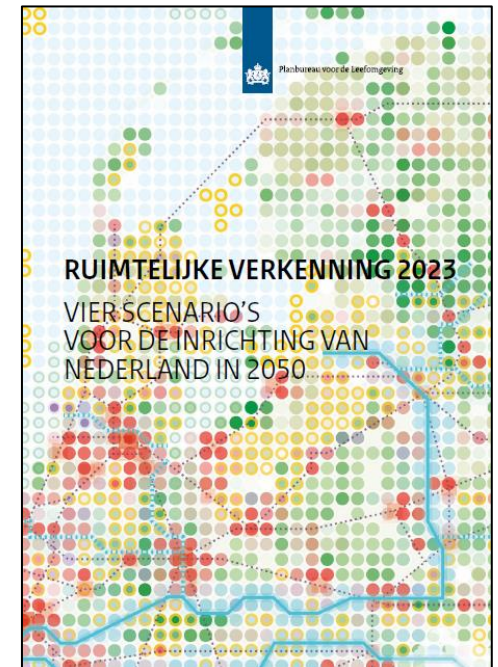
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# Planbureau voor de Leefomgeving Netherlands Environmental Assessment Institute

- › National institute in the Netherlands for strategic policy analysis in the fields of the environment, nature and spatial policy / spatial planning
- › Mission is to contribute to improving the quality of political and administrative decision-making by conducting outlook studies, analyses and evaluations
- › Part of the central government (more specifically, the Ministry of Infrastructure and Water Management), but wholly independent
- › Size: about 270 staff
- › One of the strategic themes is circular economy
- › Coordinating role in developing national knowledge base on circular economy (Monitoring and Steering Circular Economy)
- › Publishes Integral Circular Economy Assessment Reports for the Netherlands every two years

# 'Space for Circular Economy'

- > 'Ruimte voor circulaire economie' ('Space for the Circular Economy') (September 2023)
- > Elaboration of larger study 'Ruimtelijke Verkenning 2023' ('Spatial Outlook 2023') (March 2023)
- > Feeds into various policy programmes:
  - New national spatial planning framework ('Nieuwe Nota Ruimte'), in particular part on economic development
  - Programme on work locations / business sites
  - Vision of spatial-economic development
  - Provincial and municipal planning frameworks



# Questions

- › ***What are the potential spatial consequences of the transition to a circular economy?***
- › ***What are key conditions with respect to space to enable the transition to a circular economy?***
- › ***What are implications for policy?***

## **Context:**

Dutch government has as stated ambitions to be fully circular and climate neutral by 2050.

But varying views of what circular economy could/should look like.

Not much research looking at the spatial aspects of the circular economy *comprehensively*.

In spatial planning, key choices have to be made already now.

- >Market-based solutions
- >Large corporations
- >Individualistic

## Global corporations

- >Digitalisation
- >Physical world loses importance
- >Fragmentation

## Highspeed world

- >Sustainability first
- >Forceful government
- >Green lifestyle

## Green State

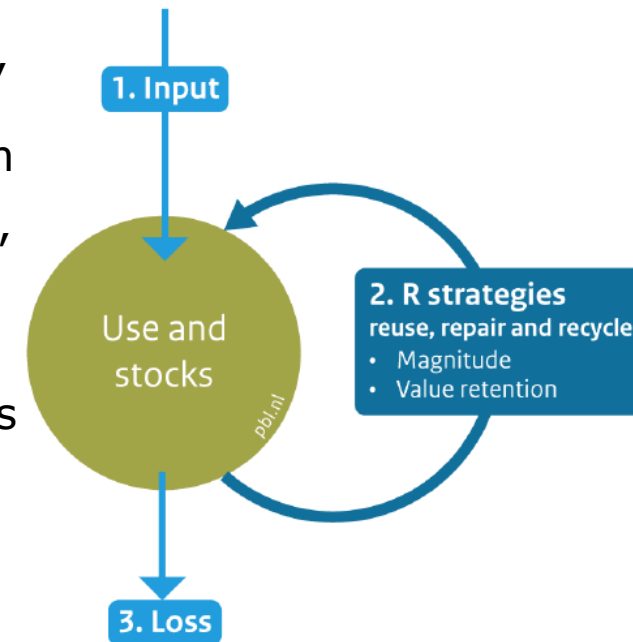
- >Local communities
- >Security
- >Small scale solutions

## Regional Roots

# Parameters within scenarios for circularity

- 1. Decrease in consumption** of material goods per person (*'narrowing the loop'*)
- 2. More reuse, repair and refurbishment** (*'slowing the loop'*)
- 3. More recycling** and increased use of recycle (*'closing the loop'*)
- 4. Substitution** by renewable, bio-based resources (*'substitute the loop'*)
- 5. Greening / cleaner** production
- 6. Scale** of loops and activities at local / regional levels

- Less consumption
- Sharing of goods / spaces
- Reuse / repair of clothing, electronics, furniture, etc.
- Modular construction
- Recycling of plastics, concrete, etc.
- Plastics → bioplastics
- Concrete → wood
- Greening / cleaner production of steel, concrete, chemicals, etc.
- Loops and activities preferably at local and regional levels



## 4. Impacts:

### Environment

- Climate
- Biodiversity
- Emissions to air, soil and water
- Toxicity
- Land use
- Water use

### Socio-economic

- Supply risks
- Jobs
- Human health
- ...

- **Market-based solutions**
- **Large corporations**
- **Individualistic**

**Global Corporations**



# Circular economy: outlines

## *"Materialism and green growth"*

- > **Decrease** in consumption of material goods per person --
- > More **reuse, repair and refurbishment** -
- > More **recycling** and increased use of recyclete ++
- > **Substitution** by renewable, bio-based resources ++
- > **Greening / cleaner** production ++
- > **Scale** of loops and activities at local / regional levels --



# Key spatial implications

## Urban areas

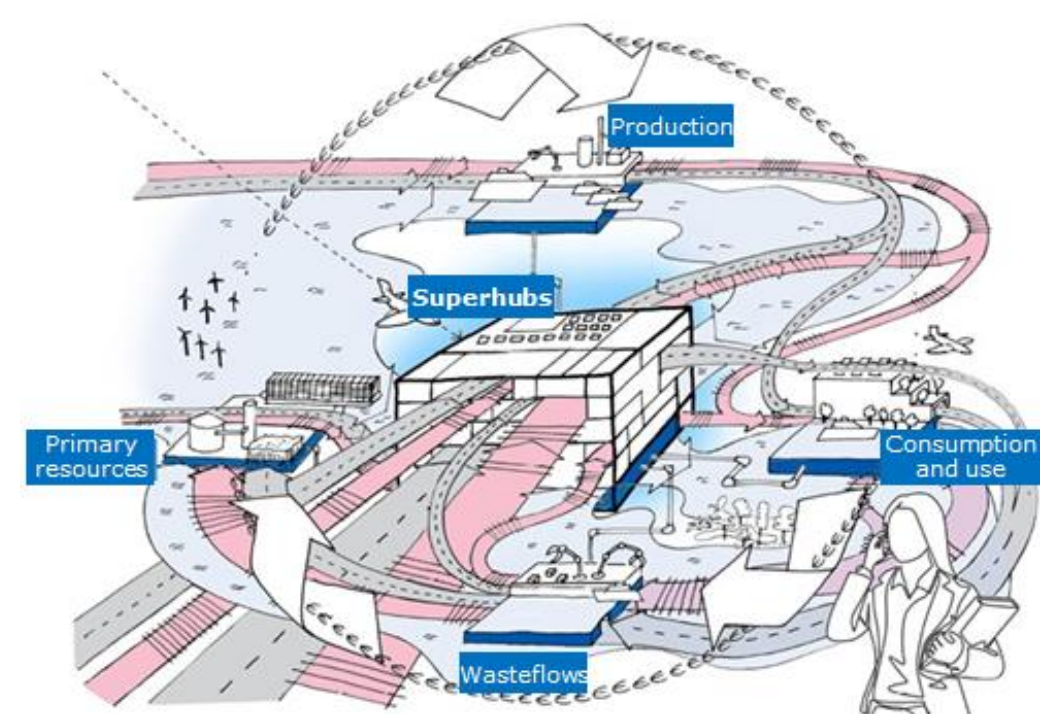
- › Growth in shopping
- › Brick&mortar shops about the same
- › More e-commerce

## Business sites and parks

- › Expansion by 40%
- › Recycling 'hubs'
- › 'Hubs' for reuse of construction materials
- › Growth in distribution centres, datacentres and digital infrastructure
- › Higher demand for office space

## Ports and industrial zones

- › Growth by about 15%
- › Phase out of processing of fossil fuel / fossil materials
- › Expansion of processing of bio-based resources
- › Expansion of chemical recycling
- › Growth of energy-related activities, and CCS/U
- › Continued growth of handling and warehousing of goods



- > **Local communities**
- > **Security**
- > **Small scale solutions**



# Regional Roots

# Circular economy: outlines

## *"Subordination of economy to community, and ecolocalism"*

- > **Decrease** in consumption of material goods per person +
- > More **reuse, repair and refurbishment** +
- > More **recycling** and increased use of recyclete +
- > **Substitution** by renewable, bio-based resources 0/-
- > **Greening / cleaner** production 0
- > **Scale** of loops and activities at local / regional levels ++

# Key spatial implications

## Urban areas

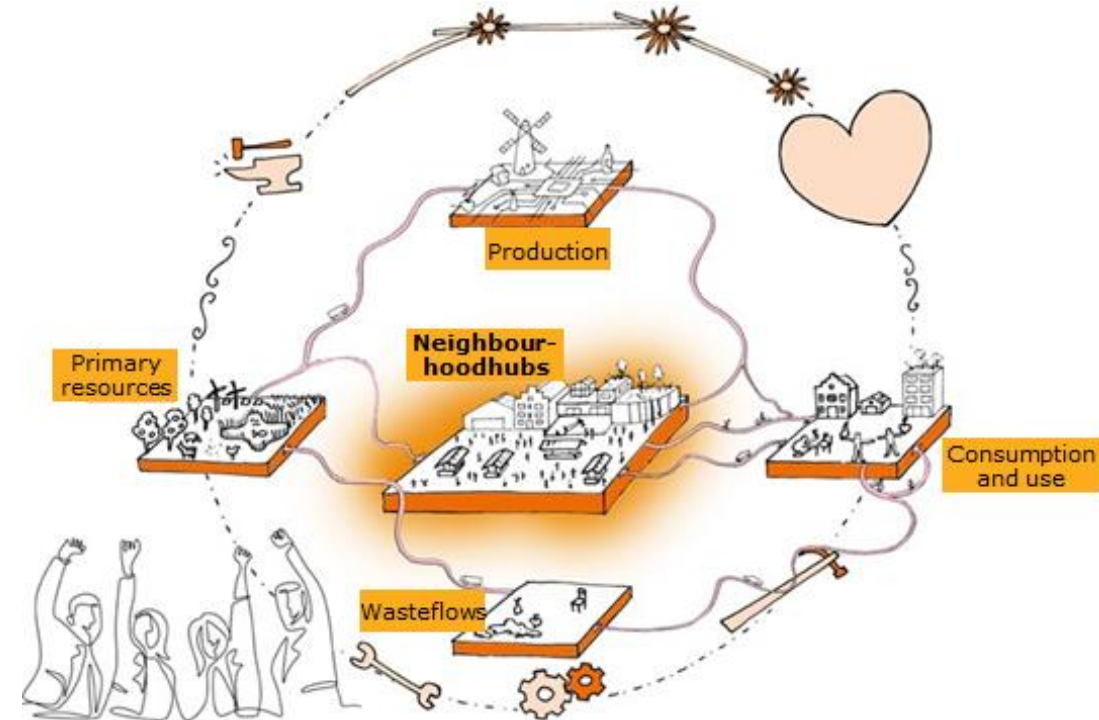
- › More small scale shopping at local level
- › Local sharing of goods and mobility
- › Combinations with craft production, and repair

## Business sites and parks

- › Substantial growth
- › Reshoring of manufacturing
- › Processing of locally produced bio-based resources
- › 'Hubs' for repair and refurbishment
- › 'Hubs' for reuse and recycling
- › Scaling down of logistics and distribution
- › Decrease in demand for office space

## Ports and industrial zones

- › Shrinkage
- › Phase out of processing of fossil fuels / fossil materials
- › Still processing of mineral resources and metals
- › Growth in bio-based fuels,
- › Not much growth in processing bio-based resources
- › CCS/U; but limited investments in energy infrastructure
- › Reduction in handling and warehousing of goods






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# Implications for spatial policy






# 1. Likely extra space needed for CE

- Likely extra demand for space for CE-related activities
    - Land use from CE > Land use from fossil and take-make-waste
  - Transitory phase in which also extra space may be needed
  - Spatial policy: weighing and puzzling between competing claims
- 



## 2. Ensure that sites of strategic importance for CE are available in due time

- › Multimodal accessible locations with zoning for high environmental impact
  - › Locations accessible by inland water transport
  - › Large industrial zones
  - › Business sites in vicinity of urban areas
  - › Central and accessible locations in urban areas
- 



## 3. Design space to facilitate circular behaviour


- › Design urban areas to encourage circular behaviour
- › Facilities at accessible locations for:
  - Repair and refurbishment
  - Sharing and rental of goods
  - Second-hand / reused goods







## 4. Put infrastructure on the agenda for CE

- › Transition to CE will require adjustments in infrastructure
  - › Choice between clustering activities at certain locations, or connecting activities through infrastructure
  - › Choice between accommodating demand, or regulating use
- 

## 5. Provide clear direction in spatial planning

- › Clear interdependencies:
  - Spatial planning needed to create right conditions for CE
  - Policies with regard to CE will shape spatial developments
- › Potential synergies with other transitions and ambitions:
  - Energy, heating, climate adaptation, extra housing, make over of public space, etc.
- › Coordination between departments:
  - Housing and Spatial Planning, Infrastructure, Economic Affairs, Agriculture
- › Coordination between multiple layers of government:
  - Central government, provinces and municipalities

# Conclusions

- › Scenarios useful way to get a grasp of what transition to a circular economy entails
- › Quantitative challenge: enough space
- › Also qualitative challenge: meet new demands
- › Policy implications on 5 points



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**[www.pbl.nl/publicaties/  
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Planbureau voor de Leefomgeving

## RUIMTE VOOR CIRCULAIRE ECONOMIE

Verkenning van de ruimtelijke voorwaarden voor  
een circulaire economie





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# Spare slides

- > **Sustainability first**
- > **Forceful government**
- > **Green lifestyle**

**Green State**





# Circular economy: outlines

## *"Clear limits and postgrowth"*

- > **Decrease** in consumption of material goods per person ++
- > More **reuse, repair and refurbishment** ++
- > More **recycling** and increased use of recyclate +
- > **Substitution** by renewable, bio-based resources ++
- > **Greening / cleaner** production +
- > **Scale** of loops and activities at local / regional levels 0
- >

# Key spatial implications

## Urban areas

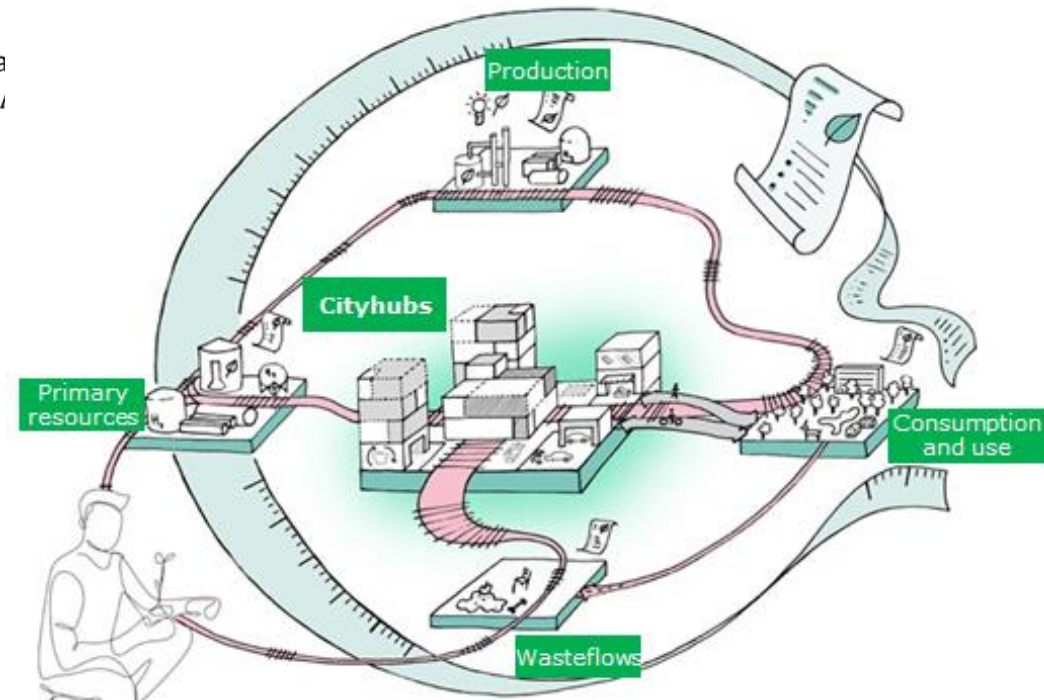
- › Reduction of shops for new items
- › Sharing of spaces and goods
- › Much more reuse, repair and refurbishment
- › Alignment of accessibility, energy use and transport flows

## Business sites and parks

- › Smaller sites near urban areas and towns
- › 'Hubs' for repair and refurbishment
- › 'Hubs' for reuse of products/parts and also recycling
- › Shifts in value chains for manufacturing
- › Scaling down of distribution/logistics
- › Increase in datacentres and digital infrastructure
- › Increase in shared office spaces

## Ports and industrial zones

- › Shrink by 20% or more
- › Phase out of processing of fossil fuel / fossil materials
- › Some growth of processing of bio-based resources
- › Shrinkage of basic industry and reduction in energy use
- › Reduction in handling and warehousing of goods





- > **Digitalisation**
- > **Physical world loses importance**
- > **Fragmentation**

**Highspeed World**



# Circular economy: outlines

## *"Shift to virtual experience economy, and ecomodernism"*

- > **Decrease** in consumption of material goods per person +
- > More **reuse, repair and refurbishment** 0/+
- > More **recycling** and increased use of recyclete +
- > **Substitution** by renewable, bio-based resources ++
- > **Greening / cleaner** production ++
- > **Scale** of loops and activities at local / regional levels -

# Key spatial implications

## Urban areas

- › Experience and use rather than possession of material goods
- › Further growth in online shopping and darkstores
- › At expense of brick&mortar stores
- › Growth in sharing economy

## Business sites and parks

- › Slight growth in land use
- › More diverse range of functions
- › 'Hubs' for repair and refurbishment
- › Recycling 'hubs'; and mechanical recycling
- › Custom manufacturing and makerspaces
- › Increase in datacentres and digital infrastructure
- › Less demand for dedicated office space

## Ports and industrial zones

- › Slight growth, but less efficient land use
- › Phase out of processing of fossil fuels / fossil materials
- › Expansion of processing of bio-based resources
- › Growth of energy-related activities and CCS/U
- › Limited growth of handling and warehousing of goods

