

# Systems analysis to identify circular economy strategies in Belarus

Jelmer Hoogzaad

Circular Economy Seminar, Ministry of Economy, Minsk, 30 Oct 2019

# **Programme**

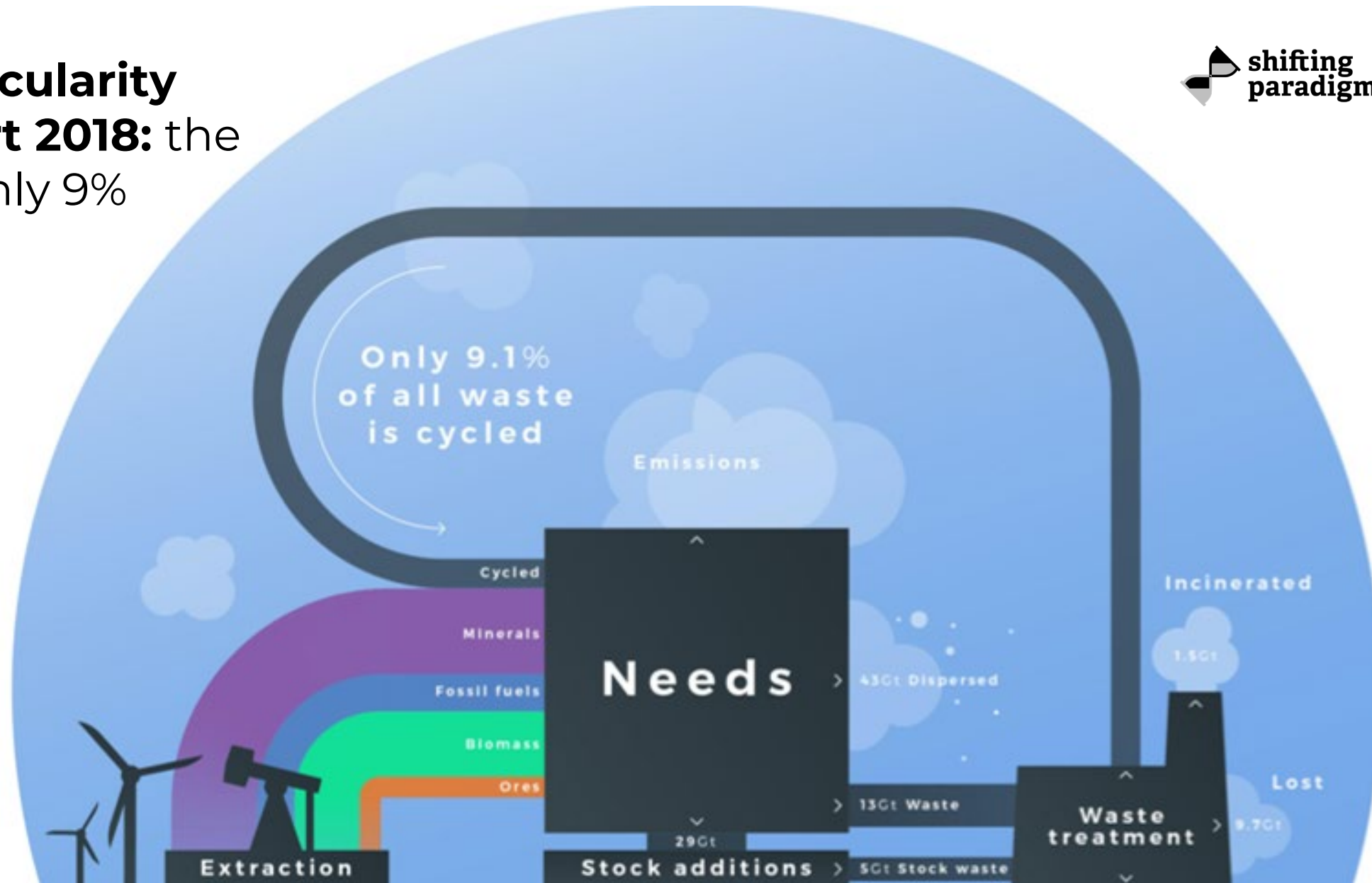
**Session 1: Circular economy strategies and analysis**

**Session 2: Working groups: Identifying circular economy opportunities**

A landscape photograph featuring a traditional windmill situated on a small island in a pond. To the left, there is a small wooden house. In the foreground, there is a field of tall green grass. The sky is filled with large, dramatic clouds, with the sun breaking through in the upper right, creating a lens flare effect. The overall mood is serene and picturesque.

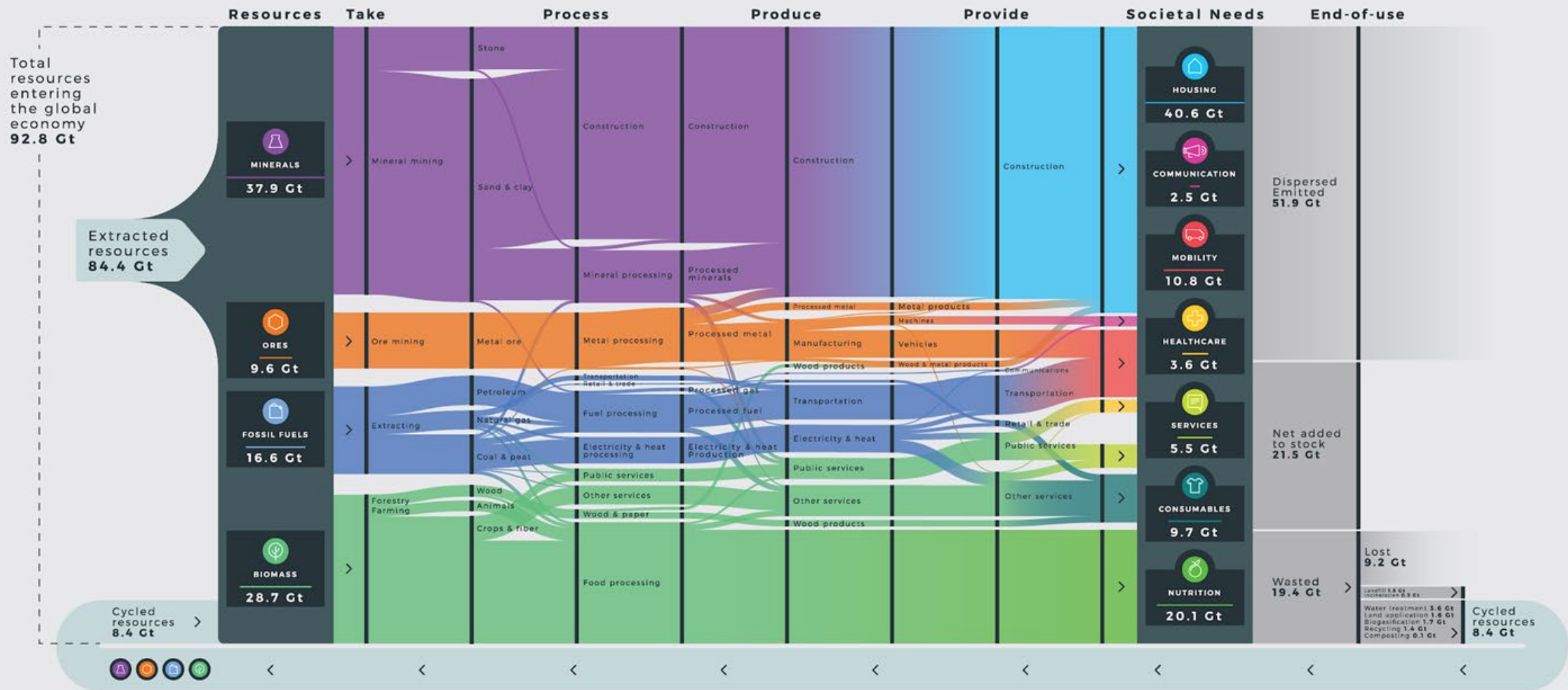
# 1. Introducing the circular economy

# Global Circularity Gap report 2018: the world is only 9% circular



Source: [Circle Economy \(2019\)](#), the circularity gap report.

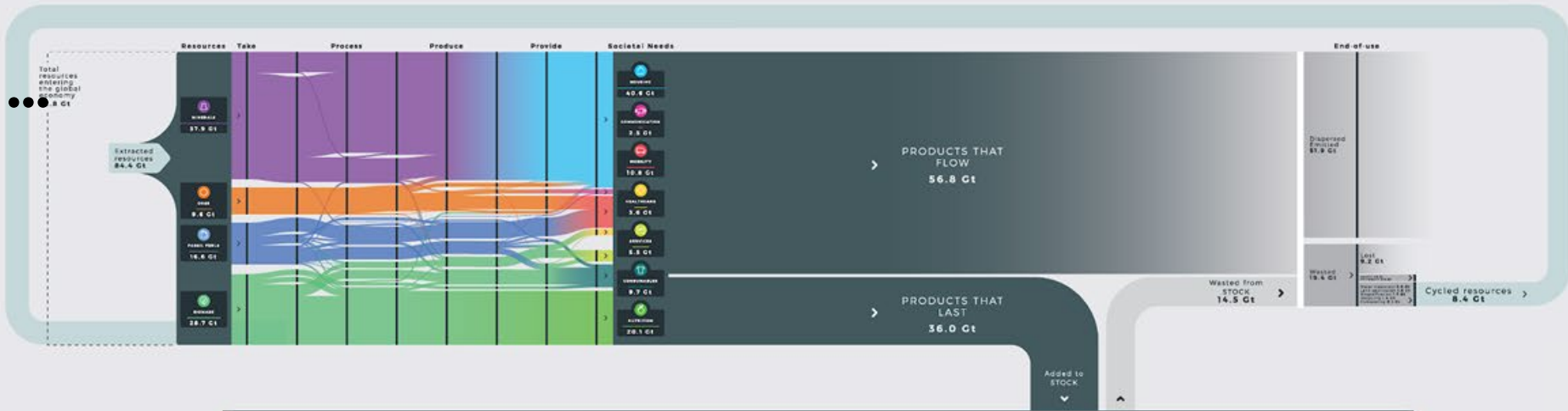
# Estimating the **circularity gap** by mapping the global metabolism



Source: [Circle Economy \(2019\)](#), the circularity gap report.



Looking at **flows** ...



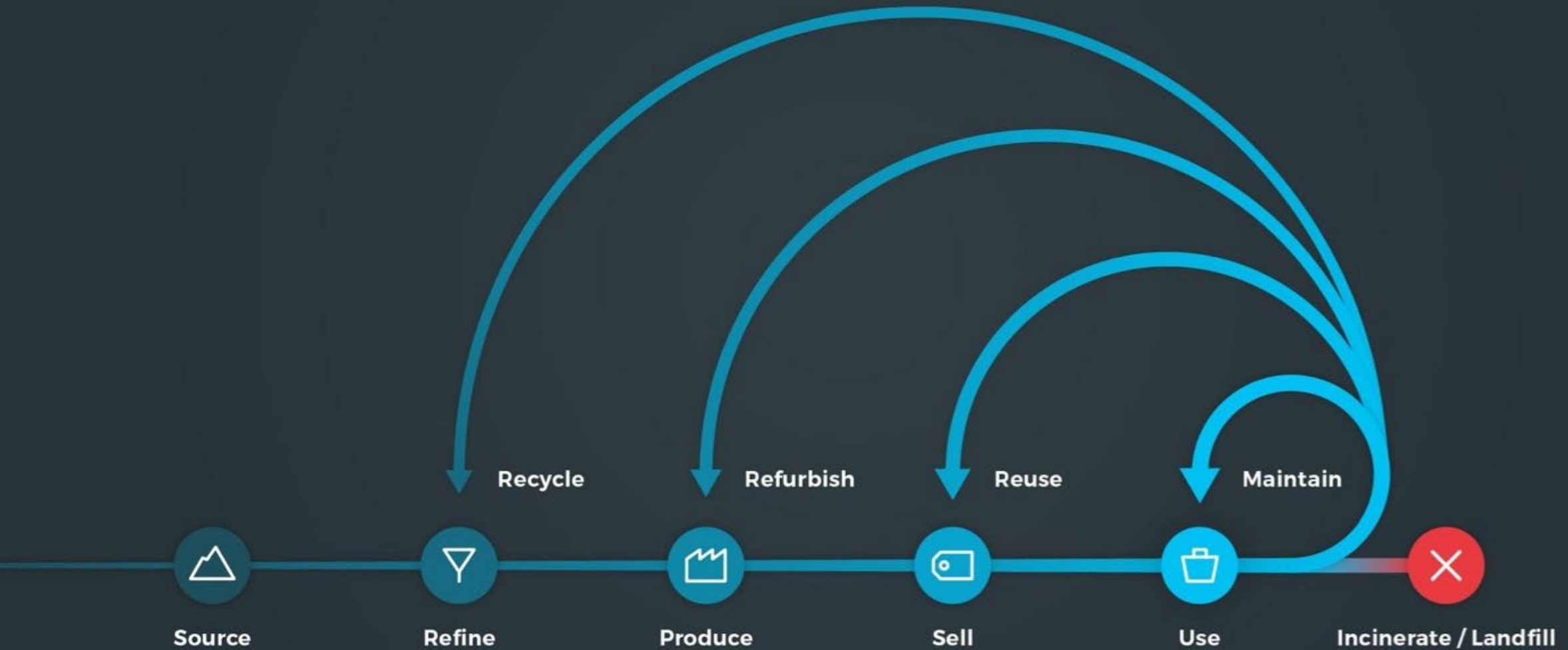
... and stocks



Source: [Circle Economy \(2019\)](#), the circularity gap report.



The **circular economy** provides a solution



## 2. Systems analysis and data use: The case of Almaty



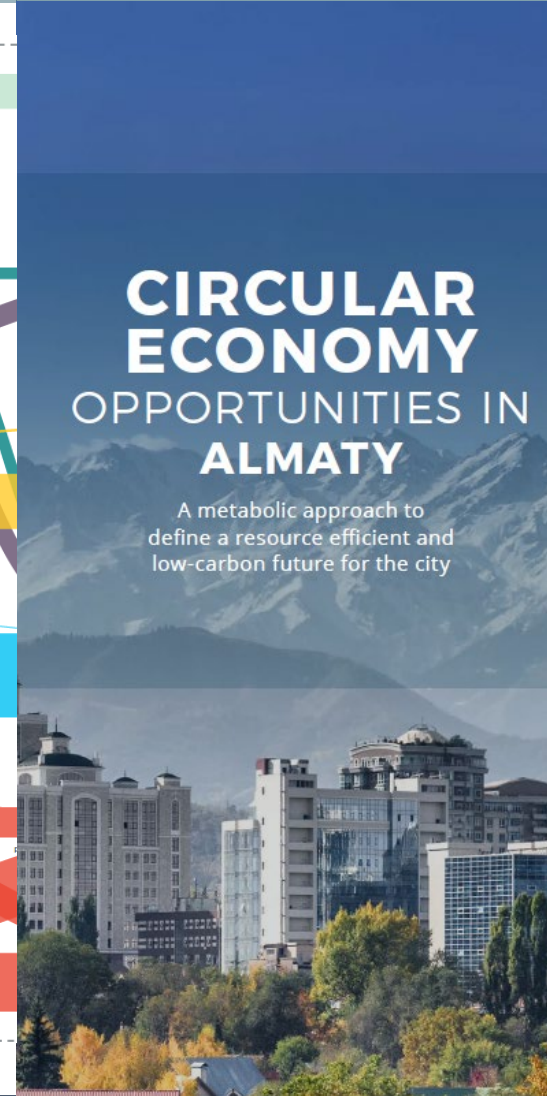
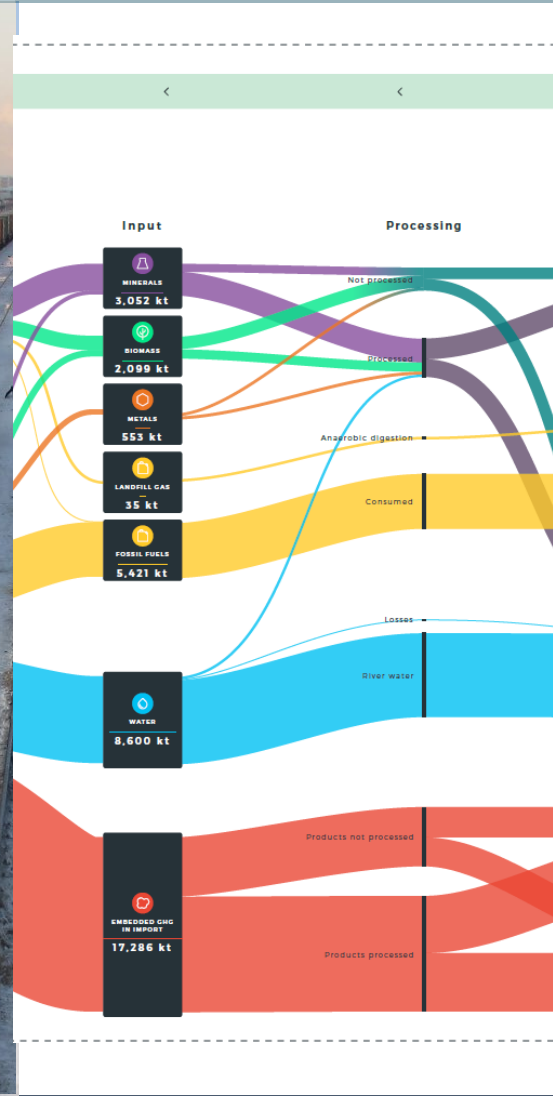
## Project steps

1. Identify development priorities

2. Implement the metabolic analysis and workshops

3. Define circular opportunities and report them

4. Develop pilots



1. In the transition to a circular economy, nobody starts from scratch: Build on **existing momentum** of change



1. In the transition to a circular economy, nobody starts from scratch: **Promising new ventures** in Almaty are circular

meno



бы сопебаеме

KazHemp

Kagazy Recycling



QUAN  
магазин органических продуктов



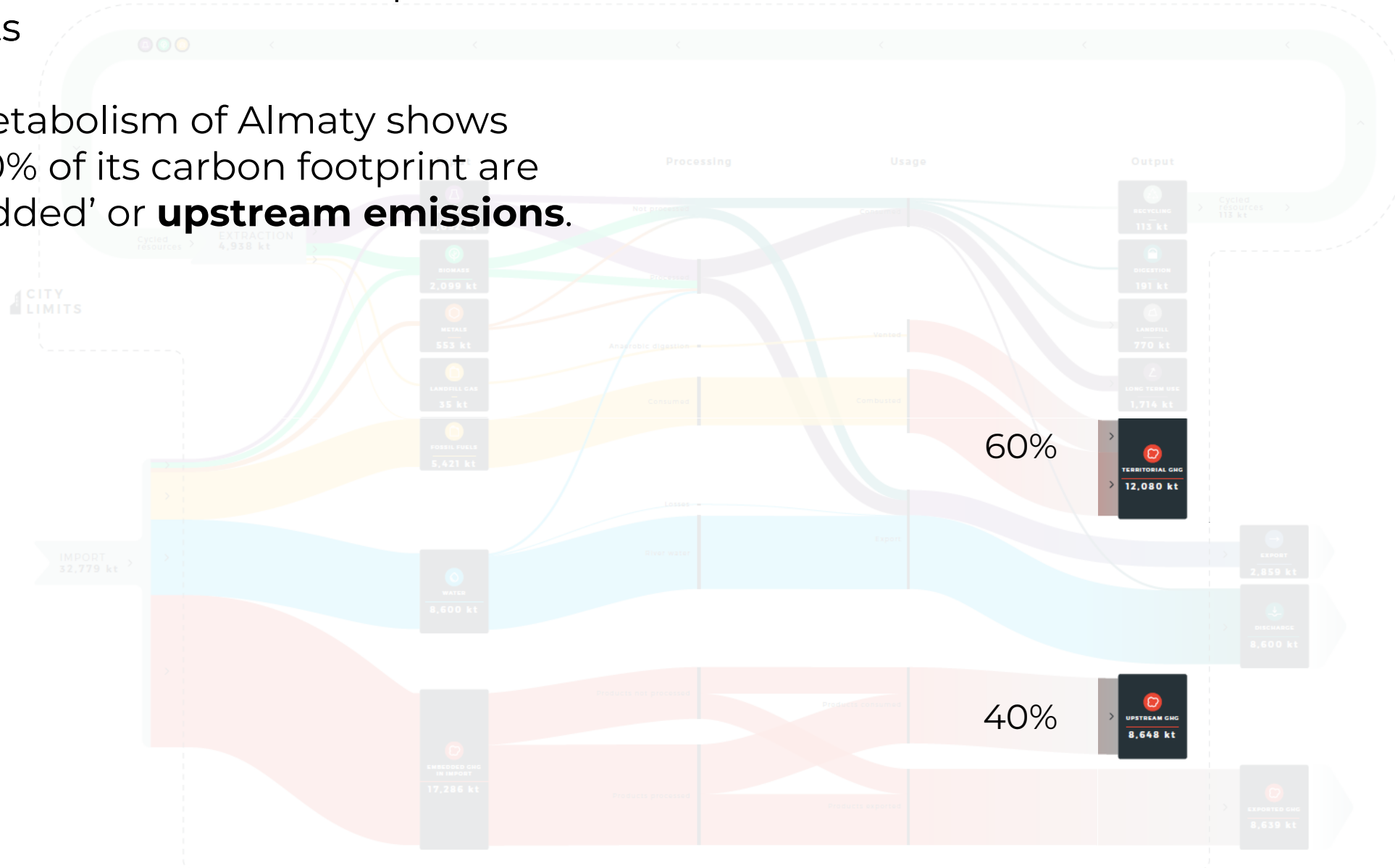
ALMATY GEN PLAN

KazFerroSteel

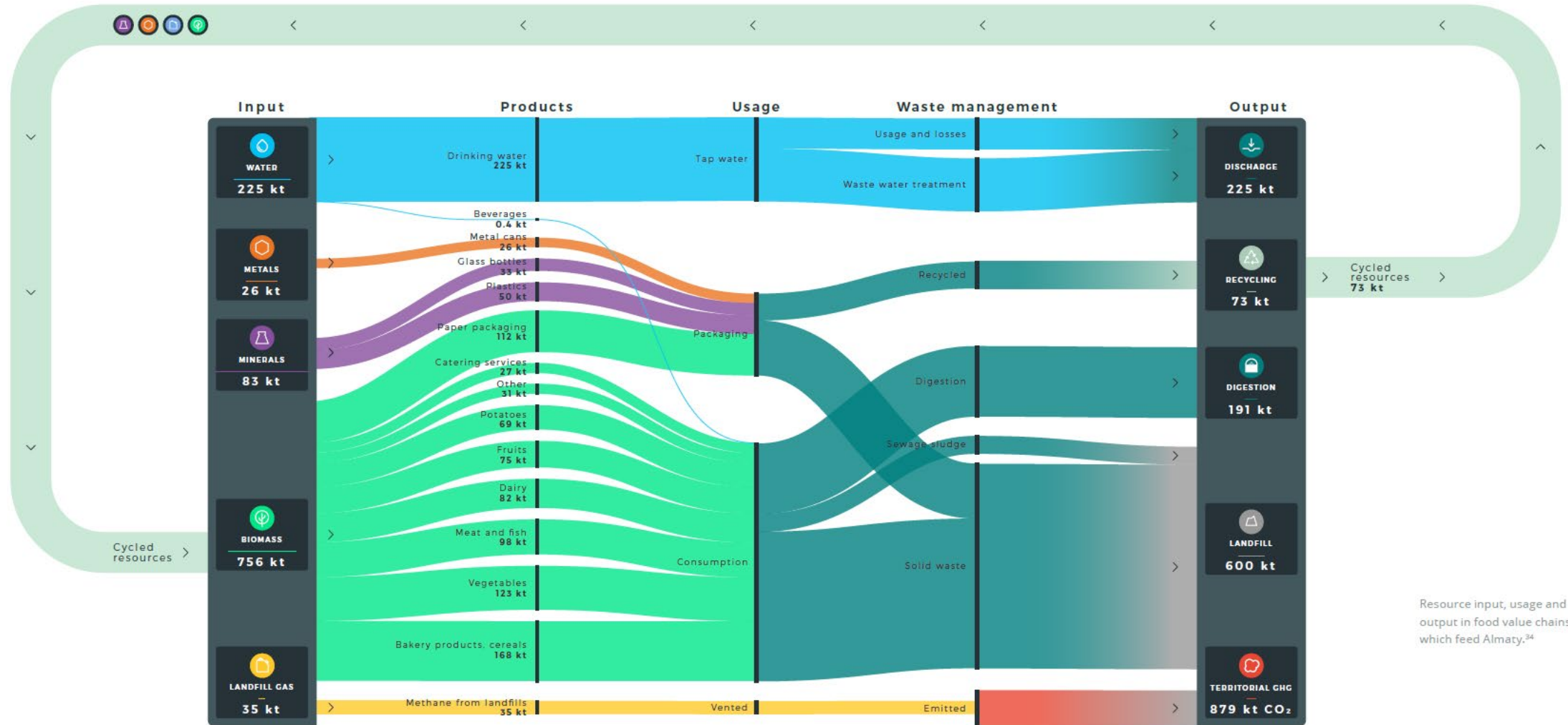


2. Look **beyond the city or regional boundaries** and consider upstream impacts

The metabolism of Almaty shows that 40% of its carbon footprint are 'embedded' or **upstream emissions**.



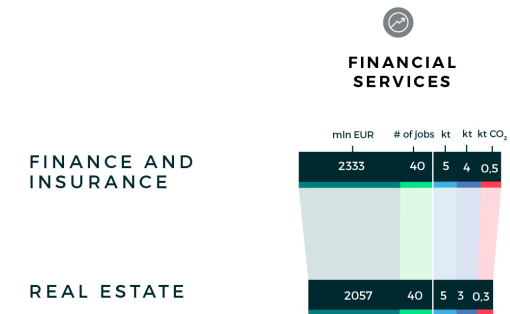
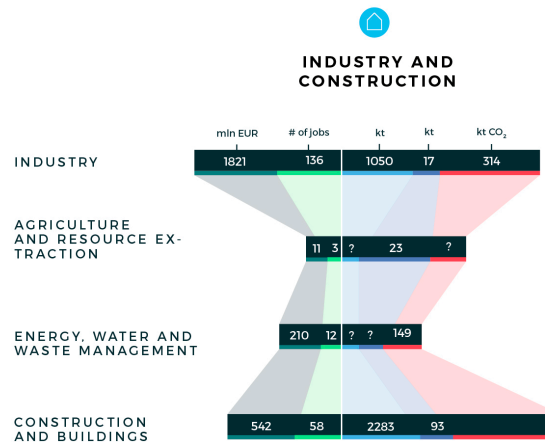
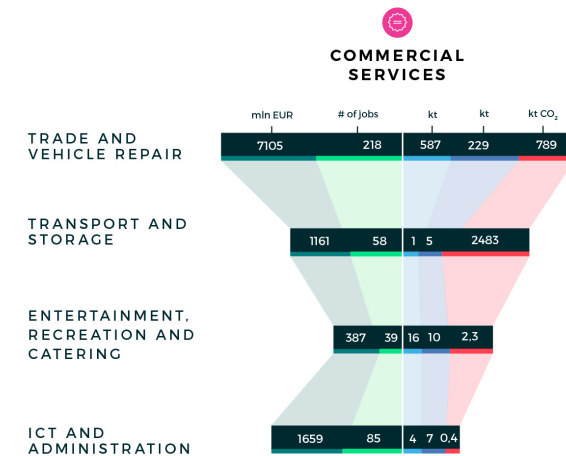
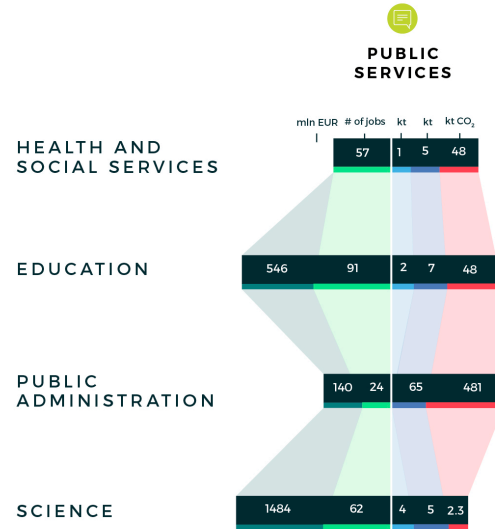
### 3. Focus on **key processes**, rather than sectors: Like agriculture, food processing and management of organic waste



Resource input, usage and output in food value chains which feed Almaty.<sup>34</sup>

# 4. Visuals are crucial to be able to oversee the immense amount of data:

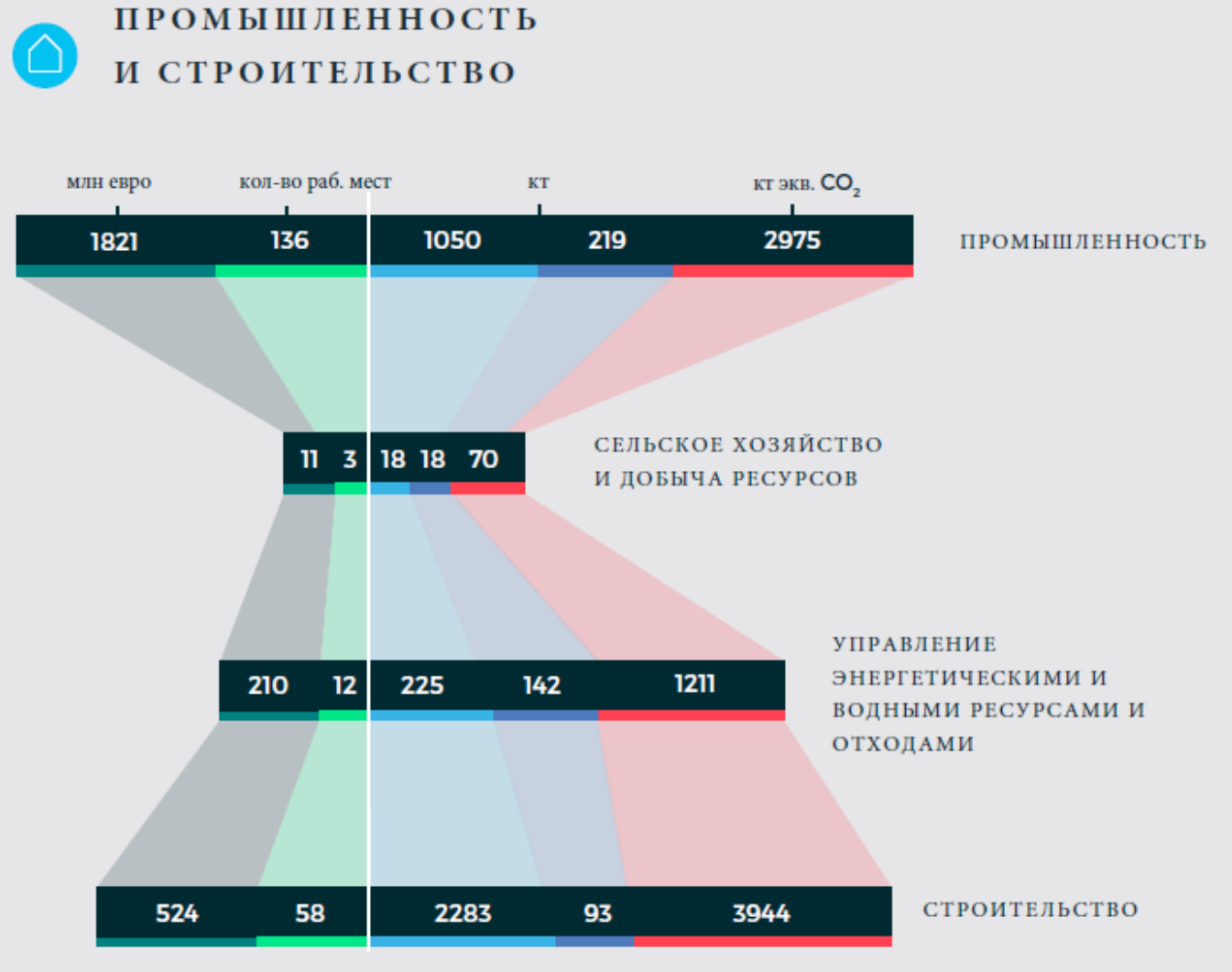
Socio-economic and environmental impact per sector



- Gross Regional Product / mln EUR
- Resource use / kt per year
- Employment / number of jobs
- Waste disposal / kt per year
- Territorial CO<sub>2</sub> emissions / kt CO<sub>2</sub>

## 5. Focus on the **immediate challenges** of the region or city:

- Added value
- Employment
- Waste disposal
- Resource use
- GHG emissions
- Etc.

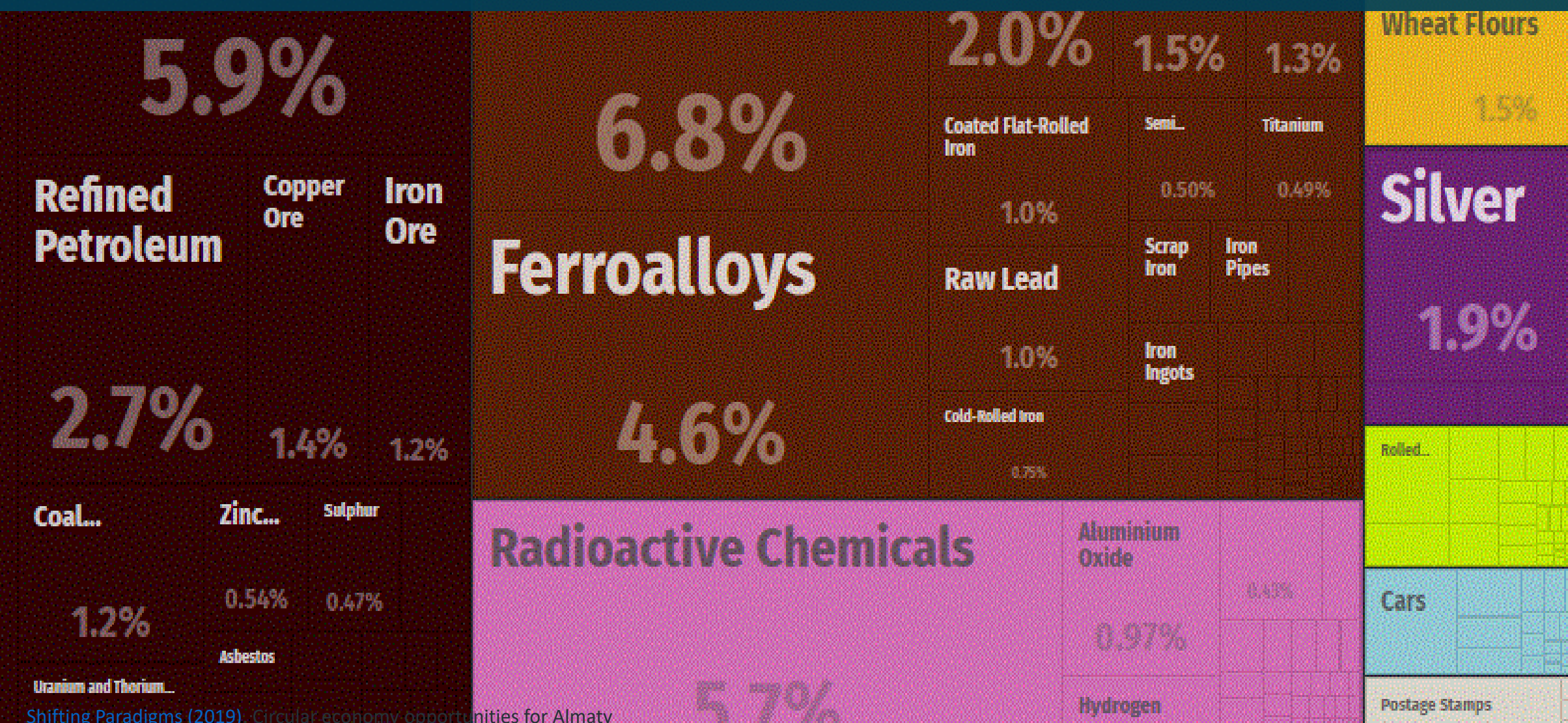


### УСЛОВНЫЕ ОБОЗНАЧЕНИЯ

- Валовый региональный продукт/ млн евро
- Занятость /кол-во рабочих мест
- Использование ресурсов/ кт в год
- Утилизация отходов / кт в год
- Территориальные выбросы CO<sub>2</sub> / кт эквивалента CO<sub>2</sub>

5. Focus on the **immediate challenges** of the region or city:

Resource scarcity and access





5. Focus on the **immediate challenges** of the region or city:

The Belt and Road Initiative



5. Focus on the **immediate challenges** of the region or city:

**Import restrictions** imposed by China on waste and Central Africa on textiles



6. Data tends to **hide circular solutions**  
and emphasize linear practices



7. Solutions do not have to be high-tech:  
Many rely on, **creativity,**  
**entrepreneurship and cooperation**



### 3. Examples of circular initiatives



# SEVEN KEY ELEMENTS OF THE CIRCULAR ECONOMY



**Prioritise**  
regenerative  
resources



**Design**  
for the  
future



**Preserve**  
& extend what's  
already made



**Rethink**  
the business  
model



**Incorporate**  
digital  
technology



**Use**  
waste as  
a resource



**Collaborate**  
to create  
joint value

**Promote organic farming**, permaculture and connecting products with local and international markets through certification, food safety and recreation



**Use**  
waste as  
a resource



**Prioritise**  
regenerative  
resources



**Preserve**  
& extend what's  
already made

**Centralized composting** or biodigestion to turn organic residues from agriculture and food processing into a soil enhancer



**Use**  
waste as  
a resource



**Prioritise**  
regenerative  
resources





**Industrial symbiosis:** Bread made out of organic residues from beer production, and beer from bread residues.



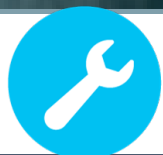
Use  
waste as  
a resource



The background is split into two vertical panels. The left panel shows a close-up of several bright red, ripe tomatoes with green stems. The right panel shows a stack of white paper with a blue-tinted, textured overlay.

**Valorise waste fibers:** Paper made out of organic fibres, like from greenhouse or food processing waste

**Remanufacturing:** to extend the lifetime of vehicles and machinery  
Renault: remanufacturing car parts



**Preserve**  
& extend what's  
already made



## Planned obsolescence



**Product as a service:** Street and office lighting paid for per lux, incentivizing suppliers to provide lights which are efficient and easy to maintain





**Product as a service:** Jet engines are paid for by the hour and tires per landing and take-off



**Rethink**  
the business  
model



A wide-angle photograph of an industrial facility, likely a steel mill, at night. The scene is illuminated by numerous bright yellow and white lights, creating a stark contrast against the dark blue night sky. Several tall smokestacks are visible, with some emitting plumes of white smoke. The facility's complex structure of pipes, walkways, and buildings is reflected in the dark water in the foreground.

**Industrial symbiosis:** connect energy and resource flows to enhance the competitiveness of a cluster of companies



**Rethink**  
the business  
model



**Construction as a carbon sink:** Forests can deliver industrial construction materials which store and avoid CO<sub>2</sub> with up to 7-9 t CO<sub>2</sub> per tonne wood applied







**Circular design:** Tap into regenerative resources to construct modular and flexible buildings



**Prioritise**  
regenerative  
resources



**Design**  
for the  
future



**Substitute imports** with local production: mushroom production from used coffee grounds or composted chicken manure and straw



**Use**  
waste as  
a resource



**Prioritise**  
regenerative  
resources

# Circl Pavilion: waste as a resource



**Use**  
waste as  
a resource



**Design**  
for the  
future



**Preserve**  
& extend what's  
already made



**Smartcrusher:** recycling the homogeneous composite elements of concrete: sand, gravel, hydrated and unhydrated cement



Use  
waste as  
a resource

**Passive building design:** can save up to 60-70% of the energy use of a building



**Use**  
waste as  
a resource



**Design**  
for the  
future

A photograph showing two people, a woman on the left and a man on the right, working together at a table. They are focused on repairing a silver portable electronic device, possibly a speaker or a small radio, which is open to reveal its internal components like a speaker driver, a battery, and various wires. The woman is wearing a light-colored t-shirt and has her hair tied back. The man is wearing a dark grey long-sleeved shirt. On the table, there are several items: a yellow spray can with a red cap, a white plastic bottle with an orange cap, and some other tools and parts. The background is slightly blurred, showing other people and what appears to be a workshop or community space setting.

**Repair café's:** mobilise the collective knowledge in a neighbourhood to extend the lifetime of consumer products



**Preserve**  
& extend what's  
already made





**Repurpose:** develop a creative industry which uses secondary products and materials for refurbishment or redesign (ReTuna, Sweden)



**Preserve**  
& extend what's  
already made



**Circular demolition:** take the time to carefully disassemble obsolete structures and find a buyer or user for the harvested materials



**Use**  
waste as  
a resource



**Design**  
for the  
future



**Preserve**  
& extend what's  
already made



**Crowdsourcing construction materials:** People's pavilion with rented concrete poles and tiles from plastic waste collected and sorted by nearby communities



**Use**  
waste as  
a resource



**Design**  
for the  
future



**Preserve**  
& extend what's  
already made

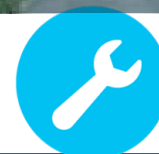
**Legal room for experiment:** Buiksloterham is a circular development area, where the government does not enforce certain legislation



**Use**  
waste as  
a resource



**Design**  
for the  
future



**Preserve**  
& extend what's  
already made

## Policy options

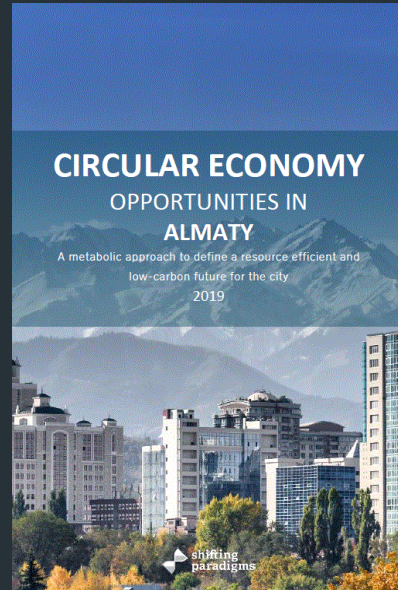
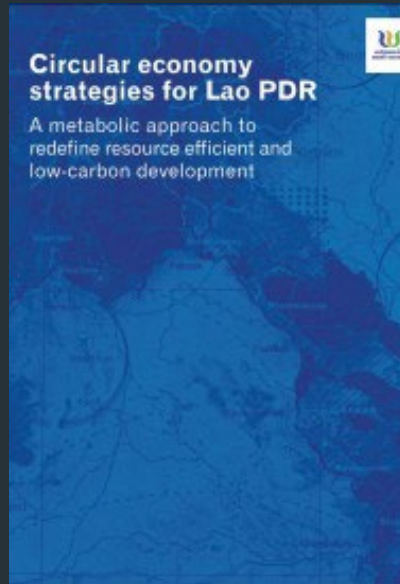
### 1. Facilitate innovation by:

- a) Mapping out resource flows and assets to support circular business development
- b) Making data available
- c) Employing light regulation, waivers and free zones
- d) Using circular procurement
- e) Matchmaking, circular labs

### 2. Align the tax regime with development ambitions:

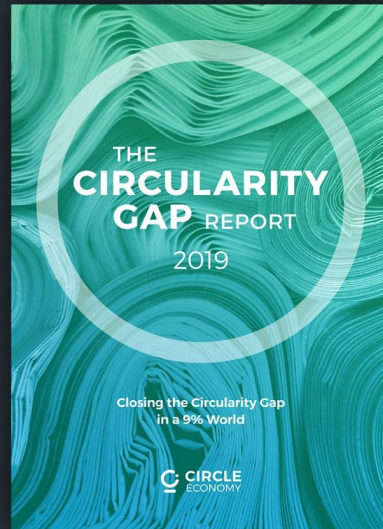
- a) Tax pollution and excessive resource use
- b) Invest revenues in social security, infrastructure and circular business development

3.



Stay tuned!

[www.shiftingparadigms.nl](http://www.shiftingparadigms.nl)



[circularity-gap.world](http://circularity-gap.world)





Thank you