PCTI 2030
RIS3EUSKADI

innobasque
Berrikuntzaren Euskal Agentzia
Agencia Vasca de la Innovación

HACIA UNAS CIUDADES SALUDABLES Y CIRCULARES

14 de Enero de 2022

EUSKO JAURLARITZA
GOBIERNO VASCO

INNOVACIÓN CIRCULAR URBANA

Jordi Pascual
Cities Strategist at
Circle Economy

Enero 2022

PREGUNTAS

1. Quién es **Circle Economy**?
2. Cuál es nuestra **visión de la economía circular?**
3. Cuáles son los **desafíos** en las ciudades y cúal es nuestro rol?
4. Cómo podemos **acelerar** el cambio? **Circle City Scan**
5. Cómo se traduce a la **realidad**? **Prague Circle City Scan**

CIRCLE ECONOMY

Se centra en facilitar y dar soporte a la implementación de la Economía Circular a diferentes escalas


Nuestra **MISIÓN** es acelerar la transición hacia una economía circular que se base en evidencias a través de soluciones que sean prácticas y escalables
Y nuestra **VISIÓN** es la de contribuir a un mundo próspero de recursos finitos acelerando la transición a una economía circular.
CIRCLE ECONOMY

CIRCLE ECONOMY

Circle Economy empodera a una **comunidad global** de **gobiernos, ciudades** y **empresas** a través del intercambio de **conocimiento**, la creación de **herramientas**, y la **investigación** con el objetivo de lograr una **transformación sistémica**.

CUÁL ES NUESTRA VISIÓN DE LA ECONOMÍA CIRCULAR?

Nuestro paradigma económico actual sigue un modelo de **'take-make-waste' (extraer-producir-desechar)**

CIRCLE ECONOMY

THE CURRENT ‘LINEAR’ ECONOMY. . .

Consumes

100 billion tonnes of materials annually

Tripled in the last 50 years

Emits over

59.1 Gt of GHGs

Expected to hit 80 Gt by 2032

Is only

8.6% circular

Wasting 91% of everything we use

CONTINUED BUSINESS AS USUAL WILL BRING...

A world that is
3-6 °C warmer

Growing
inequalities
across our systems

Accelerated
biodiversity loss


IT'S TIME
TO RETHINK
EVERYTHING
AND REDESIGN
THE SYSTEM

A CIRCULAR ECONOMY **CHANGES THE WAY WE PRODUCE AND CONSUME MATERIALS**

Enabling us to...

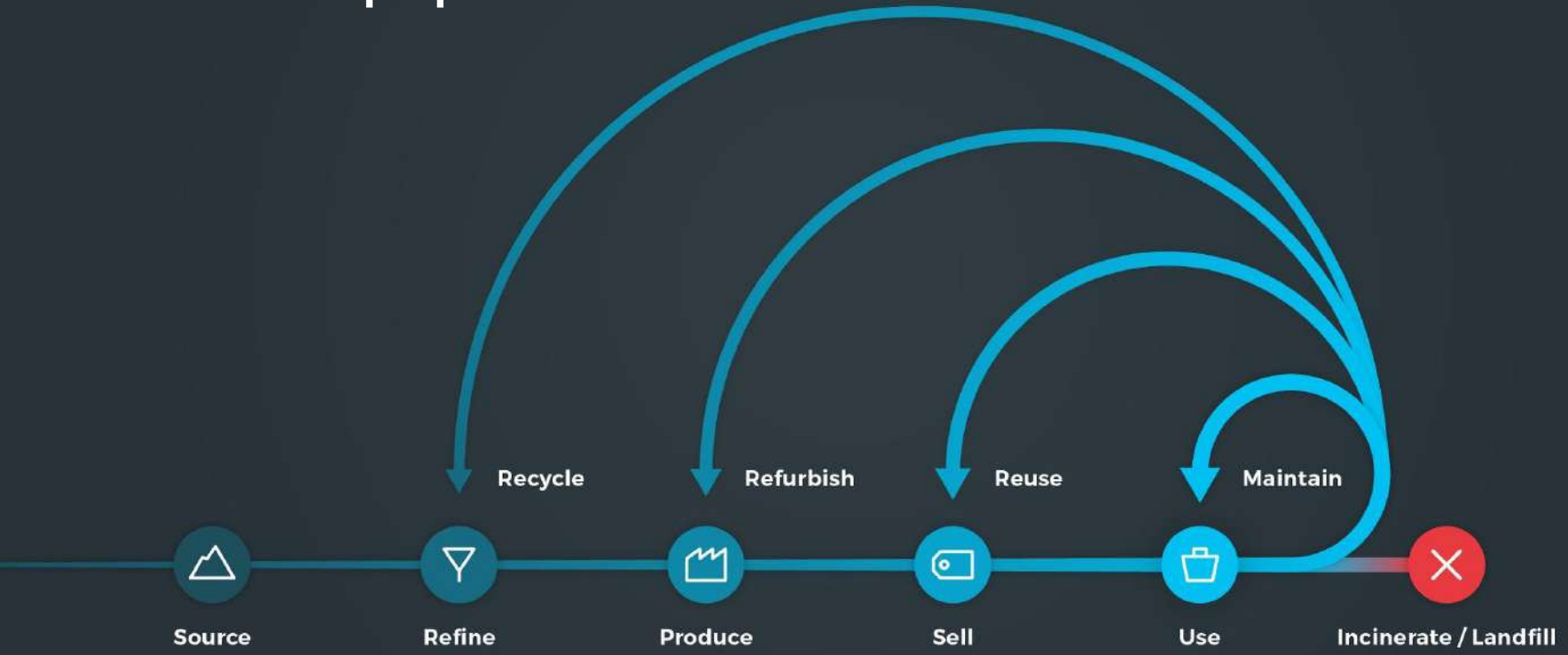
1 **prevent climate breakdown**

2 **create future-proof businesses**

3 **create decent jobs**

En una **economía circular**, los materiales y recursos son usados en su **máximo potencial** durante el **máximo tiempo posible**

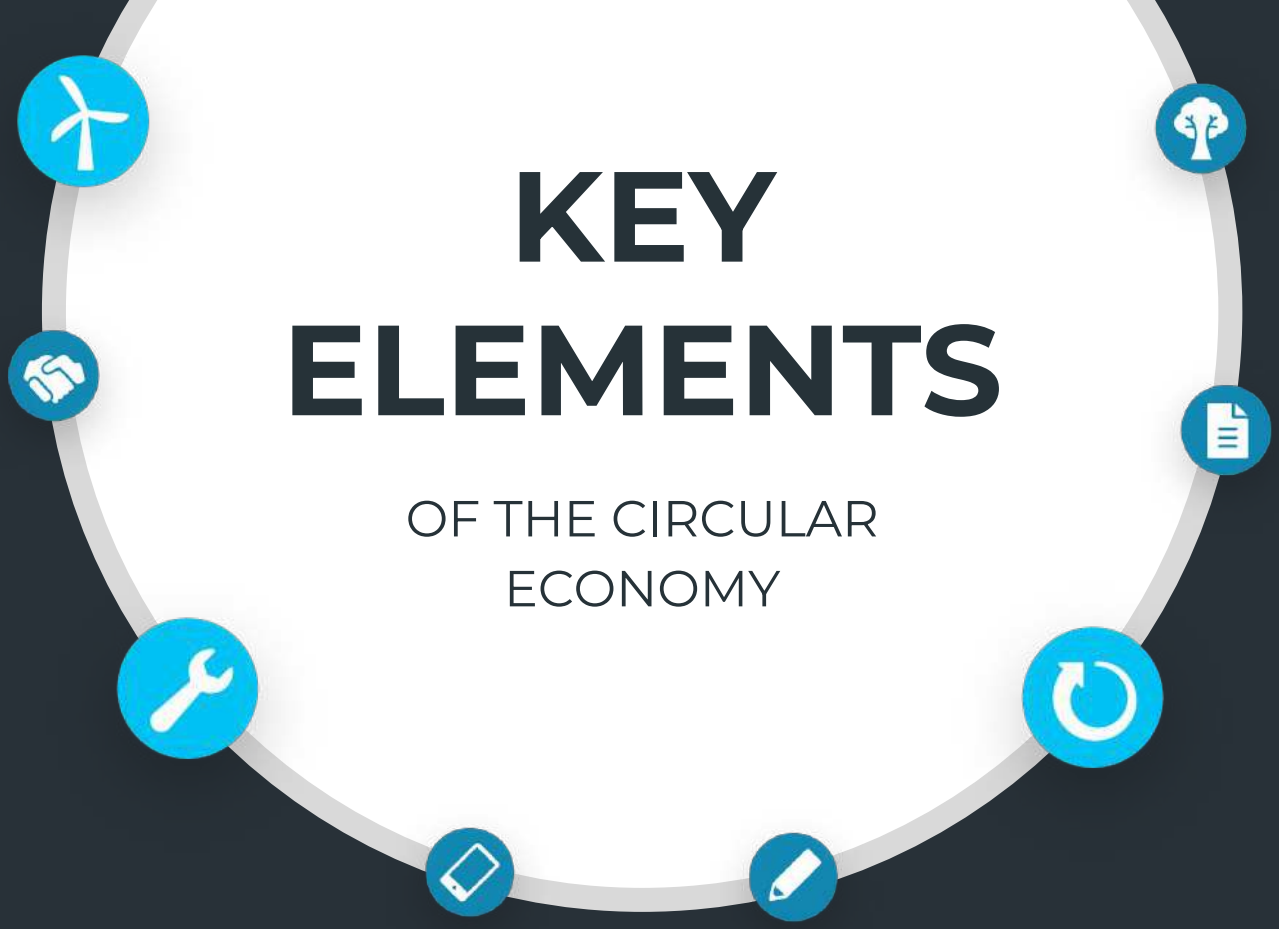
CIRCLE ECONOMY



Ganbatte powered by CIRCLE ECONOMY

AT THE MOMENT OUR WORLD IS ONLY 8.6% CIRCULAR

AND THE TREND IS GOING DOWN



KEY ELEMENTS

OF THE CIRCULAR ECONOMY

CIRCLE ECONOMY

CIRCLE ECONOMY'S

CORE ELEMENTS

Prioritise Regenerative Resources

Stretch the Lifetime

Use Waste as a Resource

CIRCLE ECONOMY'S

ENABLING ELEMENTS

Design for the Future

Rethink the Business Model

Incorporate Digital Technology

Team Up to Create Joint Value

Strengthen and Advance Knowledge

CIRCLE ECONOMY

CUÁLES SON LOS DESAFÍOS EN LAS CIUDADES Y CUÁL ES NUESTRO ROL?

Circle Cities

CIRCLE ECONOMY

En 2025, [el Instituto Global McKinsey] estima que las 600 principales ciudades tendrán casi el 60% del PIB mundial y el 25% de la población mundial. Estas mismas 600 ciudades ya tienen 1.500 millones de personas que producen más de la mitad del PIB mundial.

50%
OF GLOBAL POPULATION LIVES IN URBAN AREAS

80%
OF GLOBAL GDP IS GENERATED IN CITIES

2/3
OF GLOBAL ENERGY IS USED IN CITIES

75%
OF GLOBAL RESOURCES ARE USED IN CITIES

EL POTENCIAL DE LAS CIUDADES CIRCULARES

RESILIENCIA ECONÓMICA, SOCIAL, Y MEDIOAMBIENTAL

CIRCLE ECONOMY

Barreras hacia una economía circular (OCDE, Octubre 2020)

- Regulación
- Distancia y falta de comunicación entre agentes
- Cultura
- Falta de presupuesto

CIRCLE ECONOMY

European Union

700,000
Incremento neto de empleo en 2030[4]

296 millones toneladas
Reducción CO_2eq. en 2050 [2]

€1.8 trilliones
Beneficio económico total para 2030[1]

CÓMO PODEMOS ACELERAR EL CAMBIO?


CIRCLE ECONOMY
CIRCLE
CITY SCANS

Circle City Scan: A circular innovation journey for cities

El Circle City Scan es orientado hacia la acción y practicidad: ayudamos a diseñar estrategias e implementar proyectos circulares para acelerar la transición hacia una economía circular

CIRCLE ECONOMY

Join the **39+ cities and regions**, that Circle Economy has helped since 2015 to implement over 200+ circular pilot projects;


Brussel


Prague


Amsterdam


Amstelveen


Den Haag


North-Holland


Rotterdam


Quezon


Kongsvinger


Bilbao-Bizkaia


Bern


Basel


Lausanne


Zurich


Glasgow


Cornwall


Almaty


Toronto


Austin


Portland


Philadelphia


Sao Paulo


Turku


New York


Bonn


Rabat


Accra


Cape Town


Nairobi


Bogor City


Batangas


Quebec

Co-creación, Participativo, Colaboración

CIRCLE ECONOMY

Generamos entornos de colaboración creativa entre expertos, líderes, emprendedores y responsables políticos para ofrecer innovaciones circulares prácticas y escalables.

Ayudamos a traducir datos en decisiones

CIRCLE ECONOMY

Nuestro análisis de flujo de material identifica los puntos clave de acción donde la ciudad puede tener el mayor impacto; ya sea reducción de GEI, creación de empleos o entornos más habitables para los ciudadanos

Circle City Scan

CIRCLE ECONOMY

1 Análisis socio-económico

2 Análisis de Flujo de Materiales

3 Estrategias circulares

4 Plan de acción

CIRCLE CITY SCAN

CIRCLE ECONOMY

SOCIO-ECONOMIC ANALYSIS

¿CUÁL ES EL ESTADO ACTUAL DE MI CIUDAD DE CIRCULARIDAD? DÓNDE EMPIEZO?

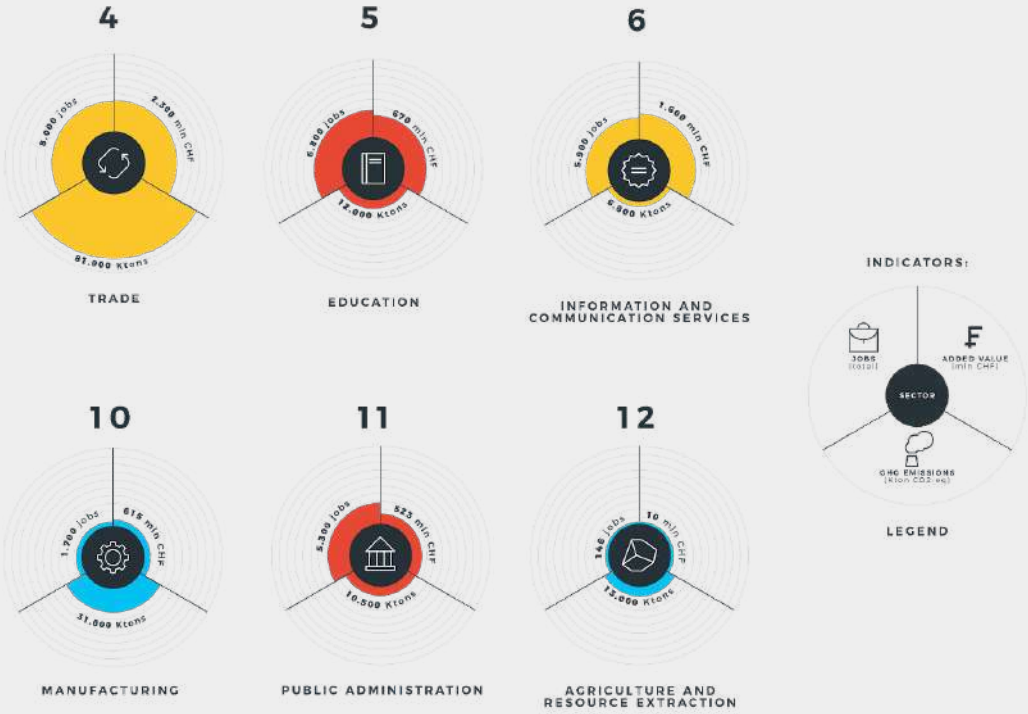
CIRCLE CITY SCAN

STEP-BY-STEP

SOCIO-ECONOMIC ANALYSIS

1a Socio Economic analysis
Analysis of key economic sectors and policy directions

KICK OFF WORKSHOP
Consortium kick-off combined with results of phase 1



CIRCLE CITY SCAN

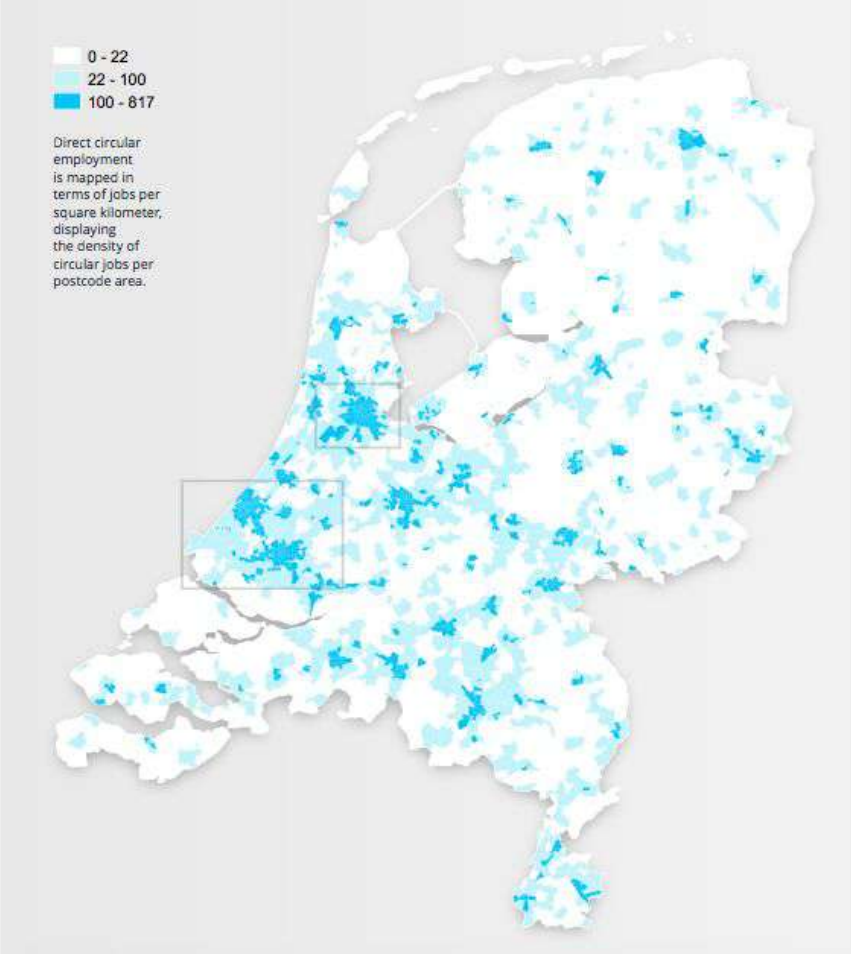
STEP-BY-STEP

SOCIO-ECONOMIC ANALYSIS

1a Economic analysis
Analysis of key economic sectors and policy directions

1b Circular jobs
Baseline measurement of circular jobs

KICK OFF WORKSHOP
Consortium kick-off combined with results of phase 1



CIRCLE CITY SCAN

STEP-BY-STEP

SOCIO-ECONOMIC ANALYSIS

1a Economic analysis
Analysis of key economic sectors and policy directions

1b Circular jobs
Baseline measurement of circular jobs

1c Initiative mapping
Of circular economy activities in the city

KICK OFF WORKSHOP
Consortium kick-off combined with results of phase 1

CIRCLE CITY SCAN

CIRCLE ECONOMY

MATERIAL FLOW ANALYSIS

¿CUÁL ES EL METABOLISMO DE RECURSOS DE MI CIUDAD?

CIRCLE CITY SCAN

STEP-BY-STEP

MATERIAL FLOW ANALYSIS

2a. Material Flow Analysis
High-level understanding of material flows, and key leverage points for impact

HIGH-IMPACT DIRECTIONS
Present MFA and identify leverage points for intervention

Circular opportunity: Increase use of secondary materials

Circular opportunity: Improve data on materials in built environment

Circular opportunity: Circular construction & demolition criteria

CIRCLE CITY SCAN
STEP-BY-STEP

2

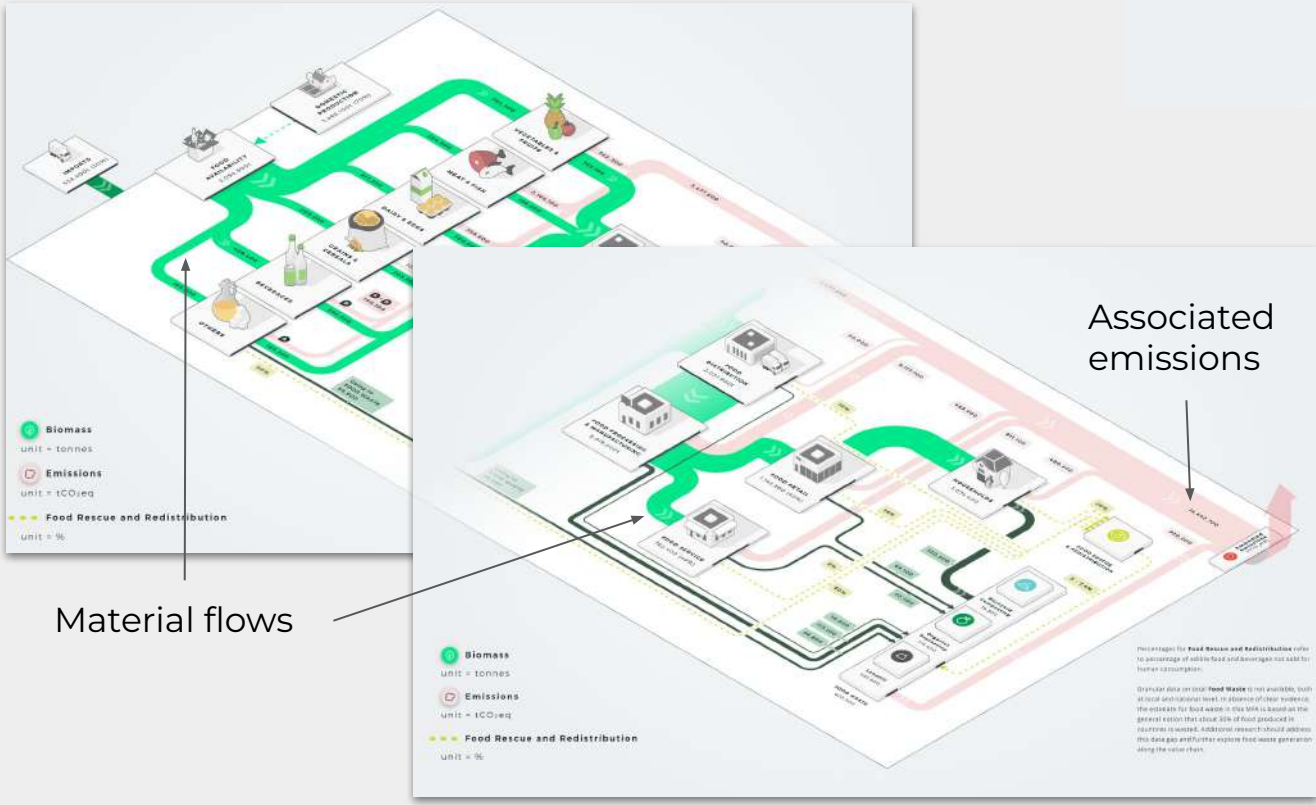
MATERIAL FLOW ANALYSIS

2a. Material Flow Analysis
High-level understanding of material flows, and key leverage points for impact

2a. Material and carbon Flow Analysis
Understanding of carbon flows, and key leverage points for impact

HIGH-IMPACT DIRECTIONS
Present MFA and identify leverage points for intervention

CIRCLE CARBON SCAN powered by Circle Economy



FOR ILLUSTRATIVE PURPOSES ONLY

CIRCLE CITY SCAN

CIRCLE ECONOMY

CIRCULAR STRATEGIES

¿QUÉ ESTRATEGIAS DE ECONOMÍA CIRCULAR PUEDEN OFRECER LOS MEJORES RESULTADOS?

CIRCLE CITY SCAN
STEP-BY-STEP

CIRCULAR STRATEGIES

2a. Circular business strategies
Actionable strategies measured on key KPI's

INDUSTRY/POLICY WORKSHOP
Co-create business or policy strategies with expert stakeholders

Circular opportunity: Increase use of secondary materials

1. Online secondary materials marketplace

An online marketplace for secondary materials provides an open-access platform to facilitate the growth of secondary materials market within the city by matching of supplies of residual material streams to the demand. This increased accessibility and information about secondary raw materials can increase the overall use of these materials in construction projects.

Case study: **Austin Materials Marketplace (US)**

2. Cycling sludge as construction material

Sludge generated in WWTPs holds attractive material properties and can be utilized as an alternative input for the manufacture of bricks. Clay and ceramic bricks can contain ~<25% sludge without substantial reduction in material strength.[6]

Case study: **ECOCERAMICA (EU)**

OPPORTUNITY 3
Circular construction and demolition criteria

In an ideal circular city, all (de-)construction activities will adopt circular materials, technologies and designs to close material loops.

1. Circular tendering criteria in construction projects

Municipal government can influence the demand for circular design and construction practices through the incorporation of circular criteria in the tendering process. For example, these criteria could demand a minimum proportion of secondary materials in the project, or that the building is modular, or designed to be deconstructed.

Case study: **Brummen Town Hall (NL)**

2. Circular (de-)construction practices

By dismantling existing buildings through more effective methods, such as the selective removal of structural components like window frames and doors, materials and components of old buildings can be maintained at higher values.

Case study: **BIG Reuse (US)**

CIRCLE CITY SCAN

STEP-BY-STEP

3

CIRCULAR STRATEGIES

2a. Circular business strategies
Actionable strategies measured on key KPI's

2b. Policy instruments
Actionable strategies for the city council

INDUSTRY/POLICY WORKSHOP
Co-create business or policy strategies with expert stakeholders

CIRCLE CITY SCAN

CIRCLE ECONOMY

ACTION PLAN

¿CÓMO IMPLEMENTAR Y ESCALAR LA ECONOMÍA CIRCULAR EN MI CIUDAD?

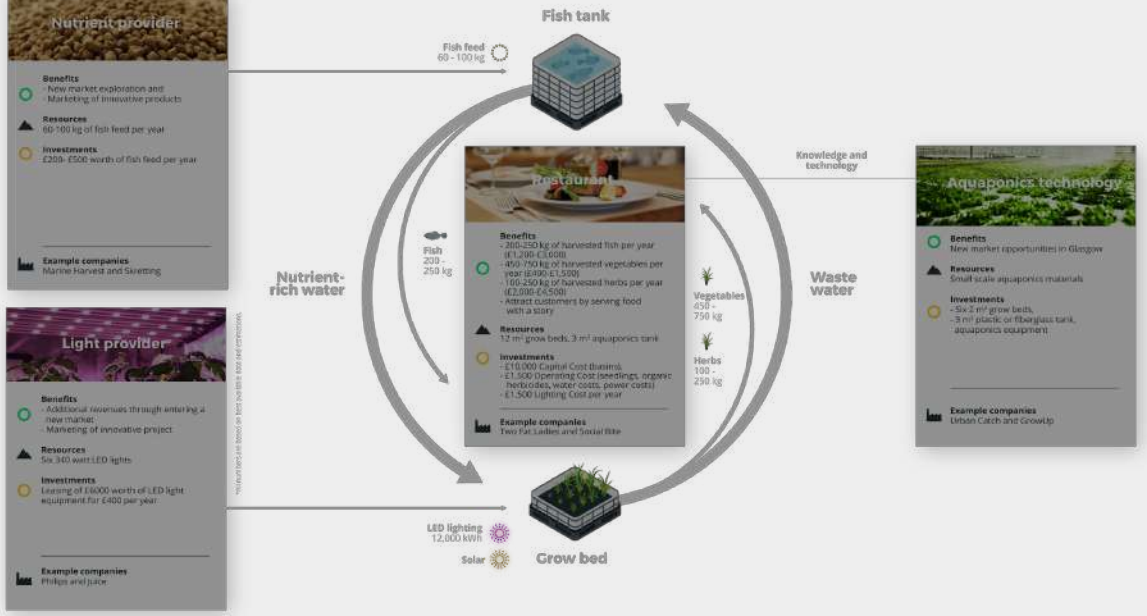
CIRCLE CITY SCAN

STEP-BY-STEP

2

ACTION PLAN

3a. Business innovation
Actionable business plan with C&B analysis and circularity impact

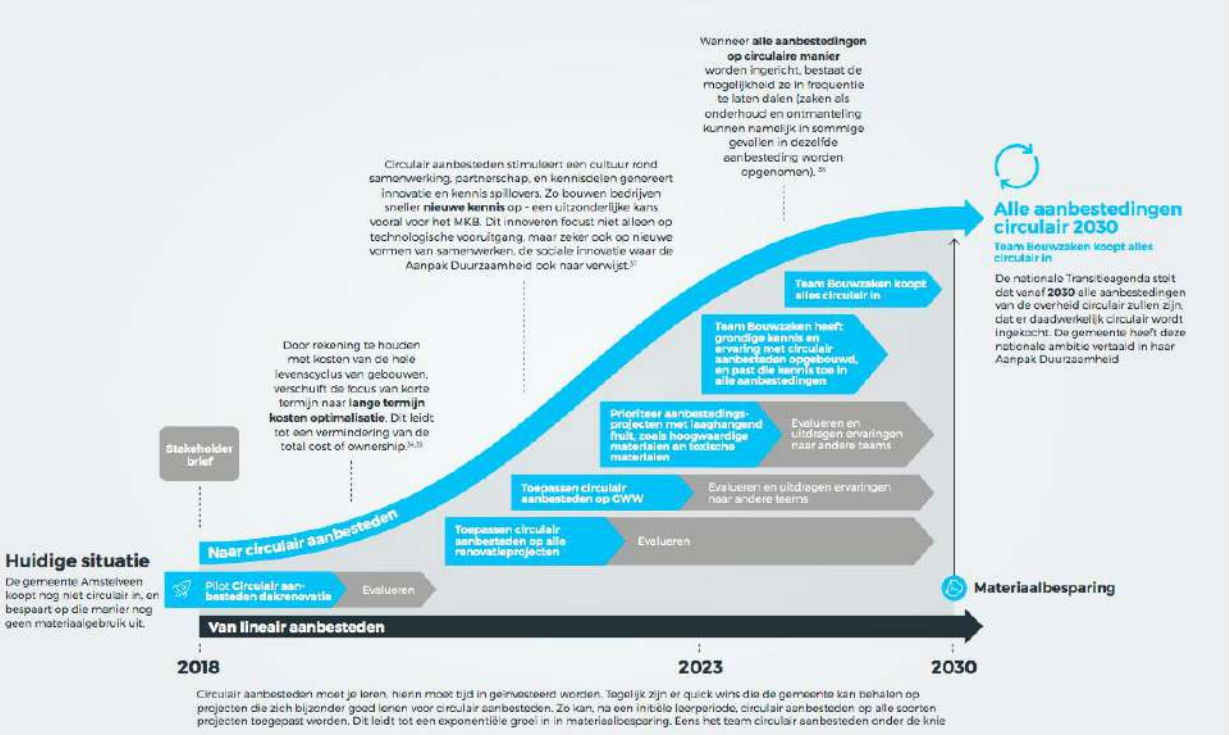


CIRCLE CITY SCAN
STEP-BY-STEP

ACTION PLAN

3a. Business innovation
Actionable business plan with C&B analysis and circularity impact

3b. Policy intervention
A policy roadmap for the city, addressing key policy instruments



CIRCLE CITY SCAN
STEP-BY-STEP

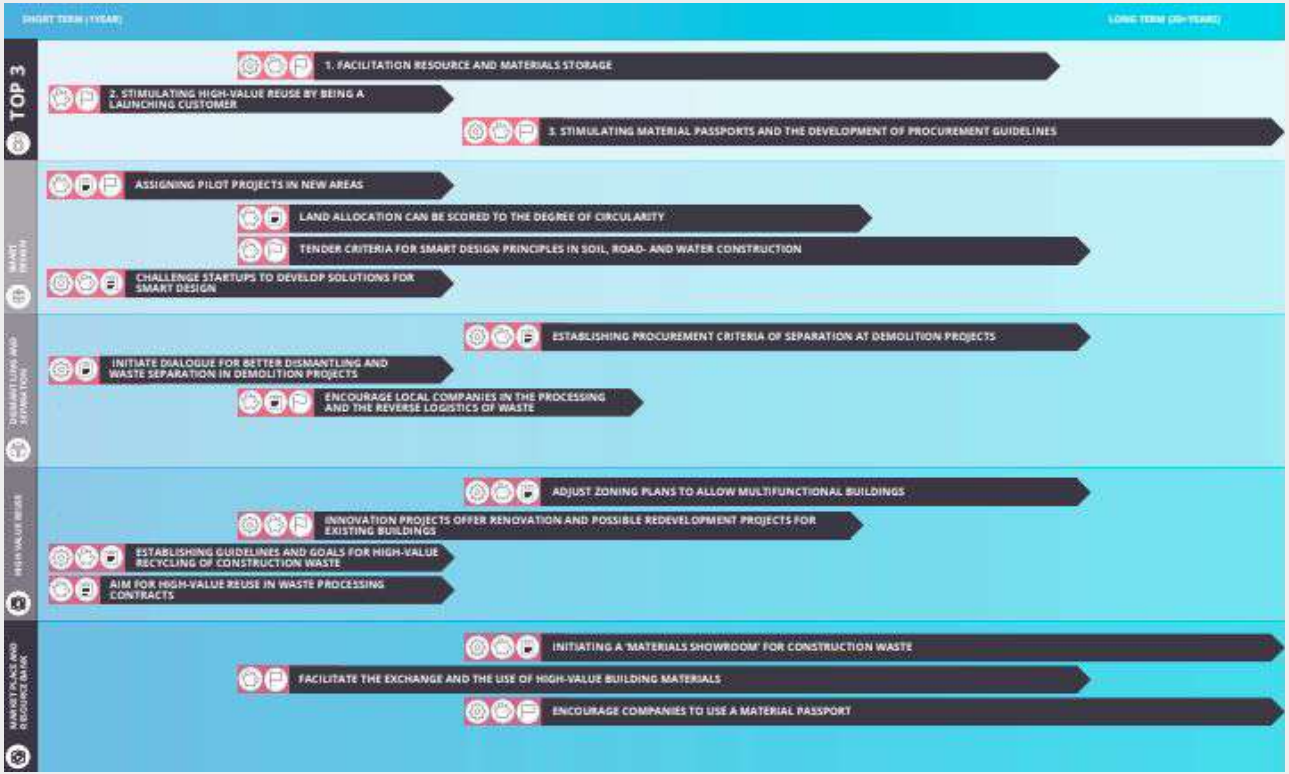
2

ACTION PLAN

3a. Business innovation
Actionable business plan with C&B analysis and circularity impact

3b. Policy intervention
A policy roadmap for the city, addressing key policy instruments

3c. Roadmap
Timeline for implementation and key targets



CÓMO SE TRADUCE A LA REALIDAD?


CIRCLE
ECONOMY
ReLondon
CIRCULAR
LONDON

CIRCLE CARBON SCAN

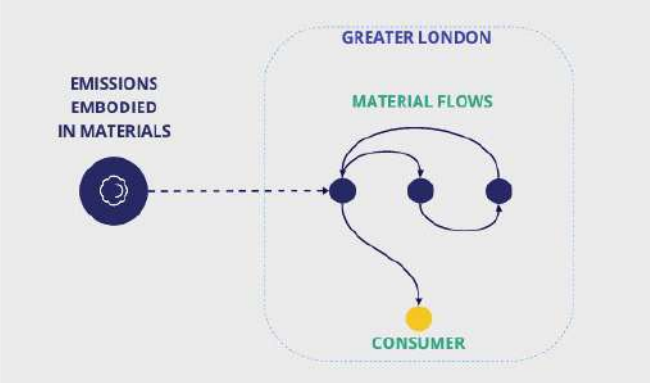
ReLondon

CIRCLE ECONOMY

SCOPE

- Taking a consumption-based emissions perspective can increase in the carbon footprint of cities by **60%** - associated to the **materials and products that are consumed** within the city's boundaries*

- London has set the target to become a zero carbon city by 2030, and tackling CBE by having more **direct influence on the material flows** generated by Londoners consumptions is key. **How can the circular economy support carbon neutrality in**



FOOD SYSTEM FLOW ANALYSIS

CIRCLE ECONOMY

ReLondon

WHAT IS THE RESOURCE METABOLISM OF LONDON'S FOOD SYSTEM?

The Food-system flow analysis provides a system-wide overview of the flow of this material group throughout Greater London.

- *Quantify and visually map the flows of food throughout the breadth of London's food system*
- *How is food processed, consumed, disposed of, and managed within the city?*
- *Where is value being lost and where can we close loops to lower GHG emissions?*

CARBON FOOTPRINT ASSESSMENT

CIRCLE ECONOMY

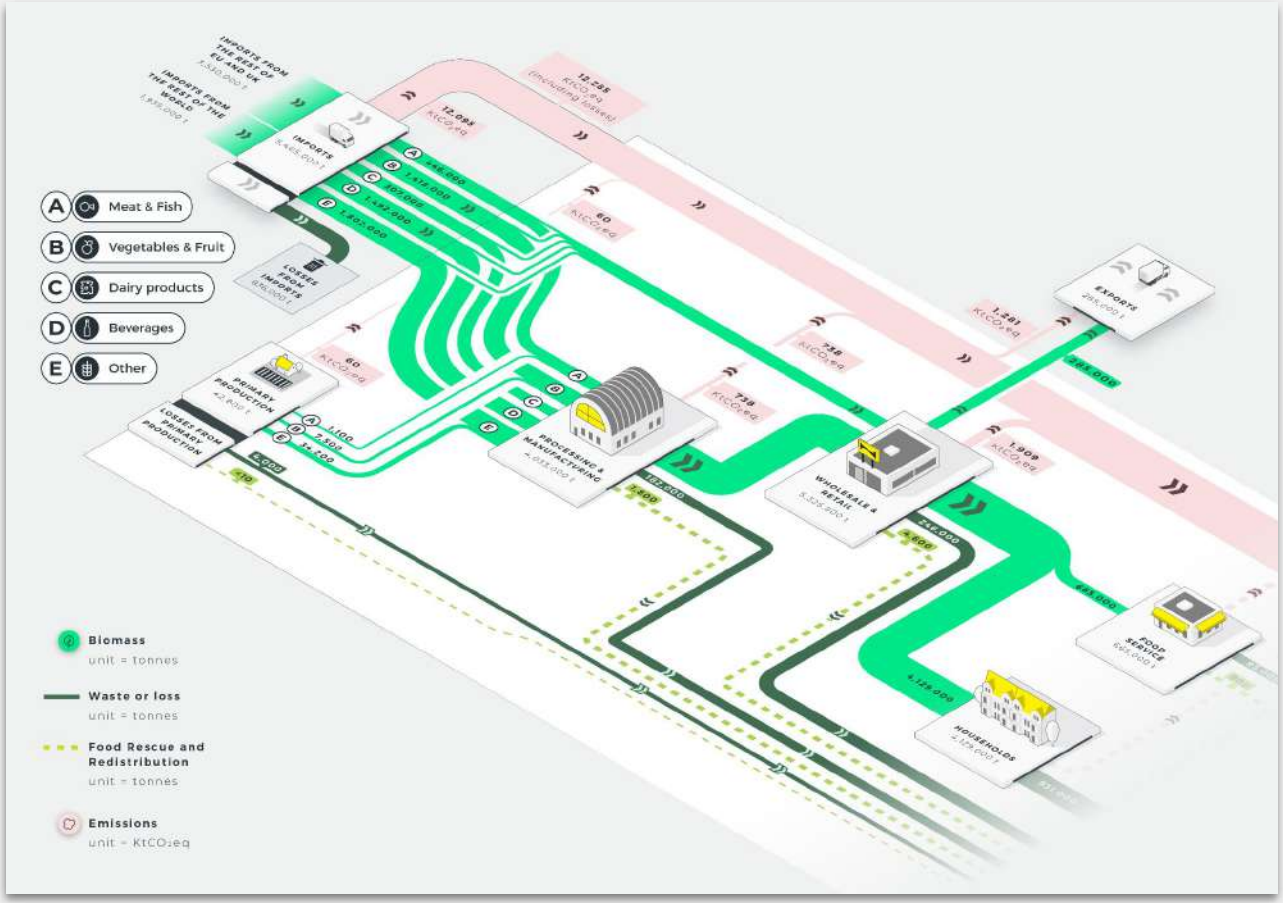
ReLondon

WHAT ARE THE FOOD SYSTEM CONSUMPTION-BASED EMISSIONS GENERATED WITHIN GREATER LONDON?

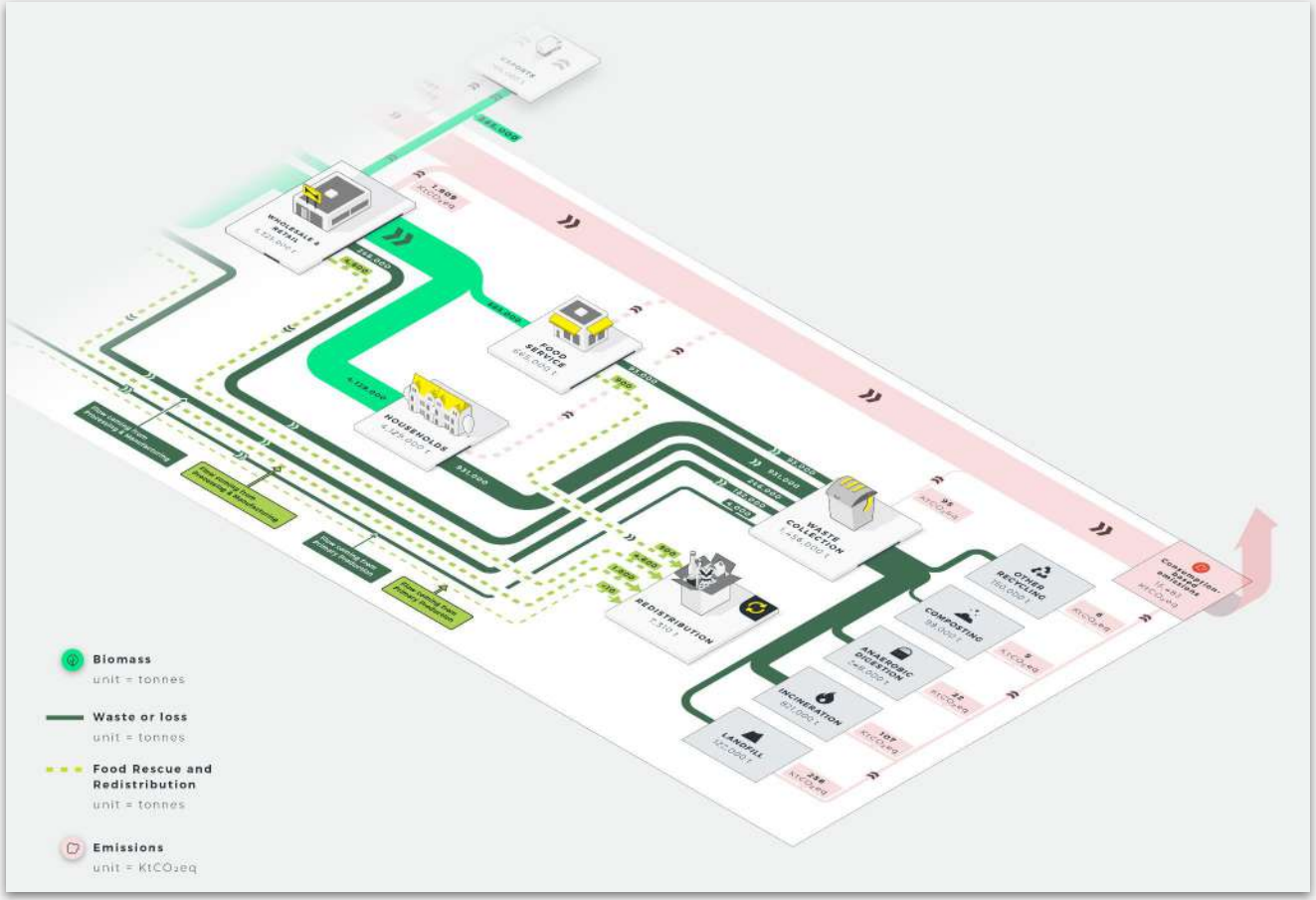
This analysis enables the linkage between food material flows and consumption-based emissions.

- *Quantify and allocate GHG emissions along the food supply chain.*
- *How do GHG emissions accumulate along the supply chain until the point of consumption and waste disposal?*
- *Where are the main GHG emission generation hotspots?*

RESULTADO


A Meat & Fish
B Vegetables & Fruit
C Dairy products
D Beverages
E Other
Biomass
unit = tonnes
Waste or loss
unit = tonnes
Food Rescue and Redistribution
unit = tonnes
Emissions
unit = KtCO2eq

RESULTADO


WHOLESALE & RETAIL
FOOD SERVICE
HOUSEHOLDS
REDISTRIBUTION
WASTE COLLECTION
OTHER RECYCLING
COMPOSTING
ANAEROBIC DIGESTION
INCINERATION
LANDFILL
Biomass
unit = tonnes
Waste or loss
unit = tonnes
Food Rescue and Redistribution
unit = tonnes
Emissions
unit = KtCO2eq

Insights

- London's food system consumption-based emissions **15.5 million tCO2eq**, - Same as the emissions from the energy use of about 1.8 million houses for a year

- **78% GHG emissions** of London's food system occurs outside of London

- **1,361,000 tonnes** total food loss and waste before reaching households - Equivalent to 152kg per capita per year

SCENARIO ANALYSIS

WHAT ARE THE POTENTIAL IMPACTS OF THE IDENTIFIED INTERVENTIONS?

The scenario analysis enables to measure the potential GHG emission reductions.

- *Measurement of the impact potential of key interventions*
- *What are the leverage points with the most potential for GHG emission reduction?*

FOOD SYSTEM
CHALLENGES AND OPPORTUNITIES

David Suzuki Foundation

CIRCLE ECONOMY

Consumption and production: SHIFT CONSUMPTION PATTERNS

- **Meat** alone accounts for almost 40% of total consumption-based emissions (excluding waste treatment) in London

REDUCING MEAT CONSUMPTION BY 20%

CAN DECREASE food-related consumption-based emissions by 20%

FOOD SYSTEM
CHALLENGES AND OPPORTUNITIES

David Suzuki Foundation

CIRCLE ECONOMY

Food losses and wastes leakages: DECREASE LOSSES AND WASTES GENERATION

- From all **food supplied** to GL almost 20% gets **lost** before being available for consumption, 40% within GL boundaries, 60% outside. Accounting for 87% of total emissions associated with food losses and wastes generated
- **About 102 kg waste per capita per year** → about 14% of what's purchased → 60% of which is considered edible

REDUCING FOOD LOSS & WASTE BY 50%

CAN DECREASE food-related consumption-based emissions by 10%

FOOD SYSTEM
CHALLENGES AND OPPORTUNITIES

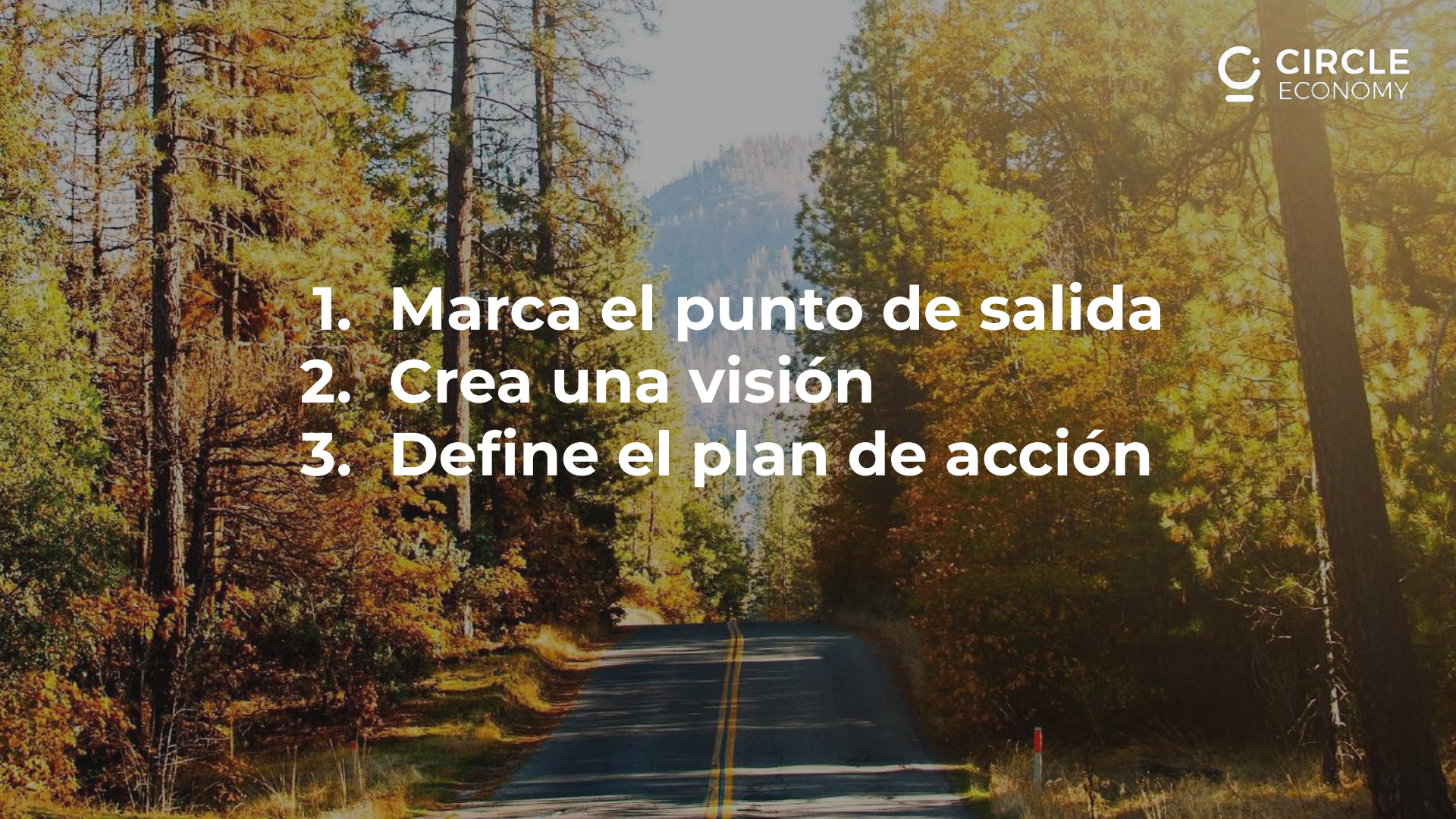
David Suzuki Foundation

CIRCLE ECONOMY

Waste treatment: IMPROVE FOOD LOSSES AND WASTES TREATMENT

- Almost 60% of total food waste is **landfilled or incinerated** → low value treatment and high emissions

MAKING A BETTER USE OF WASTE
CAN DECREASE food-related consumption-based emissions by an additional 0.4%


CIRCLE
ECONOMY
1. Marca el punto de salida
2. Crea una visión
3. Define el plan de acción


CIRCLE
ECONOMY
GRACIAS

DO YOU WANT TO KNOW MORE?
THEN CONTACT US!

Jordi Pascual
Cities Strategist
jordi@circle-economy.com

CIRCLE ECONOMY