Global Virtual Workshop
Building Urban Economic Resilience during and after COVID-19

Understanding Metabolism: The Service to the Green and Circular Economy in Barcelona Metropolitan Area
José Luis Haro García – Head of Emerging Local Economies
Barcelona Metropolitan Area

- 3.2 millions inhabitants
- 36 municipalities
- GDP €124,687 millions (52% Catalonia)
- 1.67 millions active workers (52% Catalonia)
- 106,818 enterprises
— A local Public Administration that operates at the service of the 36 metropolitan municipalities.

— Operation of public infrastructures that guarantee the functioning of the metropolitan city: urban planning, mobility, water cycle, waste management and green infrastructure (network of natural parks and beaches).

— Created in 2018 as a body of the AMB.

— The Agency's role: to spearhead internationalisation programmes and to promote investments, to stimulate innovation and technological development and to support businesses and job creation.

— Creation of the department of Local Emerging Economies:
  - Green and Circular Economy
  - Social Economy
  - Food Policies

**RESILIENCE**
Green and Circular Economy

The European industry spends on average 40% of its costs on the acquisition of raw materials. It is estimated that global consumption of biomass, fossil fuels, metals and minerals will double in the next forty years, while annual waste generation will be increased by 70% per year 2050.

In the Spanish case, it is estimated that the economy needs more than two and a half times its area to meet the needs generated. In addition to the environmental impacts that this entails, the data show the inefficiency of the model in making our production system more dependent, vulnerable, and less competitive.

SOCIAL AND ECONOMIC IMPACT OF THE COVID-19 PANDEMIC

- The productive system of our societies has shown little resilience: the high integration of the economy on a global scale has hinted at its fragility in the face of the health crisis (e. g. supply of sanitary material).
- Second quarter of 2020: Spanish GDP (-18,5%); Catalan GDP (-15,6%).
- During the confinement 1,074 million jobs were destroyed in Spain while employment suspension cases have affected 3.4 million people.
European Green Deal

European Green Deal Goals

☐ No net emissions of greenhouse gases by 2050
☐ Economic growth decoupled from resource use
☐ No person and no place is left behind

Tools and plans

☐ European Green Deal Investment Plan (€ 1 trillion)
☐ Just Transition Mechanism (€ 100 billion)
☐ Proposal for a European Climate Law
☐ European Industrial Strategy
☐ Circular Economy Action Plan
☐ Farm to Fork Strategy
Support Service to the Green and Circular Economy

Need for data and training to detect and develop opportunities for industrial metabolism at the municipal and metropolitan level.

- Analysis of the metabolism of the territory (focusing on economic and industrial activity estates).
- Technical support to municipalities (local economic development policies).
- Technical support for companies that want to start a project in the circular economy.
Analysis of the local industrial ecosystem: what information are we looking for?

1. General data of the companies to include in the database:
   - Tax Identification Number (NIF)
   - Company name and address.
   - National Code of Economic Activities (CNAE)
   - Activity description.
   - Activity sector.
   - Billing.
   - Number of employees.
   - Contact person.

Source:
Business Register
City councils
AMB Database
Analysis of the local industrial ecosystem: what information are we looking for?

2. Data related to waste and raw materials from the different companies:
   - Quantity of raw materials used, disaggregated by Catalan Classification of Products by Activities (CCPA).
   - Quantity and type of waste generated classified by the code of the European Waste Catalog (CER).

Source: Agència de Residus de Catalunya
Analysis of the local industrial ecosystem: what information are we looking for?

3. Data related to water and energy use/generation:
   - Water consumption and effluent generation (indicating their pollutant load).
   - Electricity Consumption.
   - Potential for photovoltaic energy production on company roofs.
   - Potential for production of solar thermal energy on the company roofs.

Source:
- Utility companies.
- AMB.
Analysis of the local industrial ecosystem: what information are we looking for?

4. Unused productive capacities:
   - Underutilized capacity of the company's facilities
   - Underused storage spaces

Source:
- interview / questionnaire
Analysis of the local industrial ecosystem:

**DATABASE CONSTRUCTION**

1. **Companies that generate potentially reusable waste.**
2. **Companies with capacity to use that waste as resources for their production processes.**

**Detection of opportunities in industrial symbiosis**

1. Companies that generate potentially reusable waste.
2. Companies with capacity to use that waste as resources for their production processes.
Analysis of the local industrial ecosystem:

DATABASE CONSTRUCTION

Detection of other opportunities for circularity

1. Water re-use between companies
2. Photovoltaic power generation shared between companies
3. District heating
4. Sharing of facilities between companies
Analysis of the local industrial ecosystem:

DATA VISUALIZATION
### Analysis of the local industrial ecosystem: VISUALIZATION AND ANALYSIS OF DATA

<table>
<thead>
<tr>
<th>Residu</th>
<th>Generació (t)</th>
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<tbody>
<tr>
<td>170904: Residus mesclats de construcció i demolició diferents dels específics en els codis 170901, 170902 i 170903</td>
<td>426,12 t</td>
</tr>
<tr>
<td>200301: Mescles de residus municipals</td>
<td>179,88 t</td>
</tr>
<tr>
<td>150110: Envasos que contenen restes de substàncies perilloses o estan contaminats per aquestes</td>
<td>68,69 t</td>
</tr>
<tr>
<td>030308: Residus procedents de la classificació de paper i cartró destinats al reciclatge</td>
<td>65,70 t</td>
</tr>
<tr>
<td>030105: Serradures, encenalls, retalls, fusta, taulers de partícules i fulloles diferents dels esmentats en el codi 030104</td>
<td>43,10 t</td>
</tr>
<tr>
<td>200101: Paper i cartró</td>
<td>33,30 t</td>
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</table>
Analysis of the local industrial ecosystem:

VISUALIZATION AND ANALYSIS OF DATA

### CCAE 2529: Manufacture of large tanks and metal containers

<table>
<thead>
<tr>
<th>CER</th>
<th>Description waste</th>
<th>Tons per year</th>
<th>Number of potential consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>191001</td>
<td>Iron and Steel Waste</td>
<td>18.76</td>
<td>2</td>
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<tr>
<td>000301</td>
<td>Common waste</td>
<td>3.83</td>
<td>0</td>
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</tbody>
</table>

Waste generated by Arpe Inc.

Secondary raw material potentially usable by Arpe Inc.

### Analysis of the potentiality in circularity of companies

<table>
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<th>CER</th>
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<th>Tons per year</th>
<th>Number of generating companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>120101</td>
<td>Metal filings</td>
<td>22.78</td>
<td>3</td>
</tr>
<tr>
<td>000140</td>
<td>Metals</td>
<td>19.6</td>
<td>2</td>
</tr>
</tbody>
</table>
Analysis of the local industrial ecosystem:

VISUALIZATION AND ANALYSIS OF DATA

Potential for symbiosis and circularity strategies between companies in the territory.
Support Service to the Green and Circular Economy

• September: presentation of the database and the viewer.
• Updating of the database in charge of the AMB and technicians of the municipalities.
• In 2021 we will incorporate the information of all the economic activity estates of the metropolitan territory.
• Basic information to design green and circular policies for economic development and assess its impact.
  – Projects for the provision of shared infrastructures in economic activity estates.
  – Refinement of waste management policies
  – Comprehensive (and circular) management of the economic activity estates.
  – Promotion of shared projects between companies.
  – Reform of tax regulations and rules.
  – Promotion of green innovation.
  – Training in new professions associated with the circular economy.
  – Useful information for business landing.
Thank you for your attention

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