



# Developing urban circular bioeconomy investment projects

Tools and resources for cities and regions



Circular  
Cities & Regions  
Initiative

CCRI Project

An initiative  
of the



European  
Commission



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# 1. Introduction

The EU Bioeconomy Strategy sees cities becoming major circular bioeconomy hubs, where urban biowaste is a feedstock for safe and sustainable bio-based products.

Indeed, a whole host of innovative processes are currently under development to valorise the Organic Fraction of Municipal Waste (OFMSW) and Urban Wastewater Sludge (UWWS) into added-value products. But until now very few cities and regions have developed large-scale projects to produce innovative bio-based products, such as bioplastics or biopesticides.

The HOOP project aims to unlock innovative urban circular bioeconomy projects by providing project development assistance (PDA) to 8 European cities and regions. After identification of a suitable project, HOOP partners support with technological, feasibility and environmental studies, definition of circular business models, and financial engineering and innovation public procurement. This is facilitated by a suite of tools which have been developed by project partners. These tools and resources will be elaborated in this document.

## 2. Barriers

There is a growing demand for circular bioeconomy solutions that can mitigate the emissions and consumption of virgin raw materials. Searching for suitable solutions is a real challenge for cities and regions, since the offer of innovative technologies coming from scientific proposals, research projects, start-ups and technology-providers is wide. Additionally, there are still many barriers that hinder adoption and upscaling, namely: lack of consumer awareness and interest, low prices of virgin raw materials, high upfront costs of circular business models, complex and fragmented supply chains, insufficient information on product design and production, regulatory and policy barriers, and lack of technical skills and standards.

When it comes to barriers that limit the availability and accessibility of finance for circular bioeconomy projects, it is worth mentioning:

- high risks and uncertainties, low profitability and return of investment, lack of financial instruments and incentives, and lack of awareness and capacity among investors and financiers.
  - low project maturity level and low technology readiness level of circular bioeconomy projects.
  - absence of and/or strict restrictions imposed by national and European regulatory frameworks.
  - high number of risks not allocated to the project during the due diligence process.
  - high level of uncertainty regarding the quantity and quality of the biowaste supply chain.
  - low quality of feedstocks and/or significant levels of contamination with other waste streams.
  - low performance and high costs of maintenance for the process/technology
- business models without state-of-the-art technologies and processes, and absence of important technical studies such as market research and analysis, feasibility studies, environmental studies like Life-cycle Assessment, carbon footprint, Environmental Impact Assessment, etc.
  - lack of knowledge or uncertainty about economic indicators, which make it hard to accurately calculate Return on Investment (RoI), Net Present Value (NPV), or simple payback, for a horizon of 20 years.
  - unclear business models without a project promoter, despite a city's efforts to support the technology
  - small local or regional market with a high number of competitors with a low awareness for innovative bio-based products.





Campaign for the 5th container for organic urban waste - Murcia, Spain

### 3. Advice and assistance

Support is available at the EU level to help cities and regions launch innovative urban bioeconomy projects.

Launched and funded by the EU as part of the Circular Economy Action Plan, the Circular Cities and Regions Initiative (CCRI) focuses on implementing circular economy across Europe's cities and regions.

The CCRI capitalises on the results of European projects dedicated to Project Development Assistance (PDA), and itself provides PDA to CCRI pilot cities and regions through financial support and technical assistance, as well as through the forthcoming Circular Economy Technical Assistance Facility from the European Investment Bank (EIB). Project Development Assistance (PDA) refers to the support and guidance provided to individuals, organisations, or entities in the early stages of planning and preparing a project. This assistance is typically offered to help these stakeholders navigate the complexities of turning an idea or concept into a well-defined and feasible project. HOOP is the first, and most advanced, of seven current projects under the umbrella of the CCRI which provide PDA to cities and regions across Europe.

In addition to the CCRI other EU advice and support services include:

- The Circular City Centre (C3), a competence and resource centre within the European Investment Bank, aims to support EU cities in their circular economy transition.
- JASPERS helps cities and regions deliver high-quality projects by providing independent, hands-on support in strategies, programmes and projects to make EU-funded investments that promote growth and pave the way to a greener, more connected and more innovative Europe.
- The InvestEU Portal is a matchmaking platform for project promoters and investors. By registering a project in the portal promoters boost its visibility to a large network of international investors.
- fi-compass is designed to support EU shared management managing authorities and other interested parties, by providing practical know-how and learning tools on financial instruments.

## 4. Meet the experts

RdA Climate Solutions are an independent advisory boutique specialised in climate change mitigation and adaptation strategies with a special focus on circular economy, energy transition and sustainable finance.

### How do investors perceive the circular (bio)economy?

Investors look for projects with strong financial forecasts and a comprehensive risk assessment to analyse profitability and associated risks. Circular businesses, in particularly start-ups, are perceived as high-risk profiles, lacking the track record of profitable businesses. Within the circular bioeconomy other factors such as availability of feedstock pose a risk: project developers often lack contracts with feedstock providers, and the public contracting/procurement system is a risk with biowaste.

Tools and guidelines developed in HOOP, such as the Circular Valuation Method and Project Maturity Level calculator will allow investors to better navigate the intricacies of the Urban Circular Bioeconomy sector, ensuring the alignment of projects with investor expectations and the broader sustainable development goals. Engaging in a due diligence process is recommended, and the HOOP Due Diligence Standard Procedure is a suitable tool to support this.

### What advice do you give to project developers and promoters?

Firstly, to work on increasing the Project Maturity Level (PML) and Technology Readiness Level (TRL) of their projects, as well as the quality and acceptance of bio-based products. It is important to have a very clear business model and plan, supported by feasibility and market studies. The projects should comply with several environmental and circularity requirements from European (EU Taxonomy regulation, sustainability reporting, ESG criteria, etc.) and National (waste management general regulation, etc.) regulations and standards. For some bioproducts there is a high number of market competitors. In this case a market study is advisable.

There is a significant funding gap around TRL7 for up-scaling circular technologies and processes, with most investment needed for infrastructure. To address this gap, promoters should focus on reducing risk and time to market. Some projects could be integrated with other circular and energy projects to increase the value of the investment.

[Learn more about RdA](#)

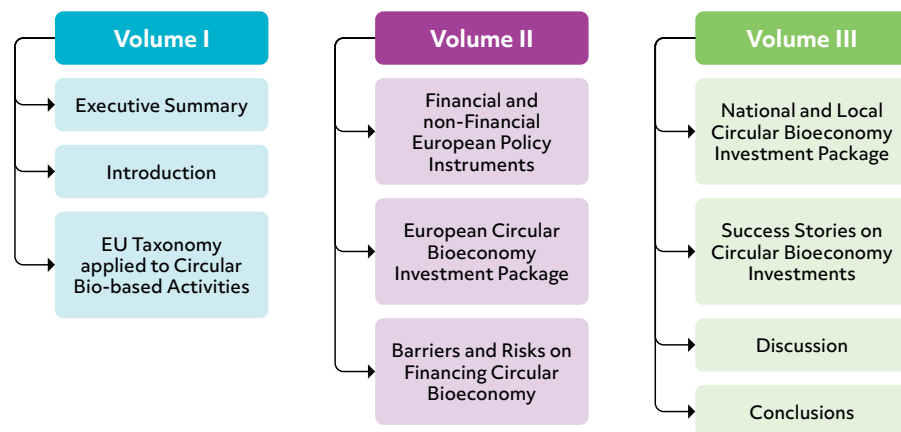
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# 5. HOOP resources

## Investment Package Manual

The Investment Package Manual was developed by RdA Climate Solutions with the aim of providing cities and regions with knowledge, funding and financing opportunities. The manual was distributed in three volumes. Volume I presents a description of the EU Taxonomy concepts applied to economic activities in the field of circular bioeconomy, including technologies, processes, activities and bioproducts from biowaste and wastewater sludge. The second Volume guides the reader through funding and financing schemes, programmes, instruments and tools for investment projects on circular bioeconomy and bioenergy at the European level. The third Volume presents a selection and inventory of funding and financing schemes, programmes, instruments and tools for investment projects on circular bioeconomy and bioenergy at National and Regional levels, focusing on 8 European countries and regional case studies in Finland, Greece, Germany, Italy, Norway, Portugal, Spain and The Netherlands.

Download the manuals



## Financial and technical support

The HOOP financial matchmaking service is a tool to connect project developers and investors, in order to mobilise green financing and funding for the implementation of Urban Circular Bioeconomy projects. It also contributes to assess and improve the maturity and bankability of the projects.

Once a user has completed some simple questions, a HOOP expert will review the project proposal in order to find potential investors and funding mechanisms that better match the type of project.

Cities and regions can also request one-to-one technical support from the HOOP partners. All they need to do is fill out a request form to describe the challenge they are facing in their territories and the kind of support they would like to receive from the HOOP partners.

Try the tool

## Due Diligence Standard Procedure

Due diligence is an important business technique to consider before making any key business decisions, such as implementation or financing a new project. Actually, there is no due diligence standard applied to Urban Circular Bioeconomy (UCBE) projects. Most of the due diligence applied to UCBE projects are confidential and performed by large companies, banks, funders/investors and consultants.

This Due Diligence was designed as a standard procedure applied to UCBE projects. Thus, the Due Diligence standard procedure is characterised as ongoing/continuous, multidisciplinary, proactive and reactive process through which Project Parties (Promoter, PPP, Public Entity, Contractor, etc.) can ensure that they covered several risk areas in order to deliver a responsible and successful project implementation.

The Due Diligence standard covers 22 risk areas. Other risks concerning human resources, force majeure events and compliance with regulations and standards were not considered as specific risk areas, because they are transversal to those 22 risk areas.

Using this Guidance, Project Promoters/developers are de-risking and increasing the bankability of their projects.

[Find out more](#)

## Circular Valuation Method

The Circular Valuation method is a clear and simple method for companies and public bodies to assess whether circular projects are financially attractive. The method comprises a measuring template with a set of indicators. The indicators are adapted to the characteristics of circularity and biowaste resulting in a multi-dimensional assessment method covering domains including financial, circularity, environmental, social, and a comparison to the previous situation. The results can be downloaded to show the circular potential of your project.

[Find out more](#)

### The HOOP Circular Valuation Method – The concept



#### Questionnaire

A comprehensive list of key indicators on financial, circularity, environment, social and progress domains.



#### Results

Scores for each individual domain.



#### Boost investments

Due to the clear and simple method investors, both public and private, can efficiently select projects.

## Project Maturity Level

The HOOP Project Maturity Level (PML) self-assessment tool is a standard guidance, questionnaire and ranking that evaluates the maturity level of the circular bioeconomy projects in accordance with a grade where each level has several criteria to accomplish and reach, in order to improve their maturity and bankability to mobilise green financing and funding for the project implementation.

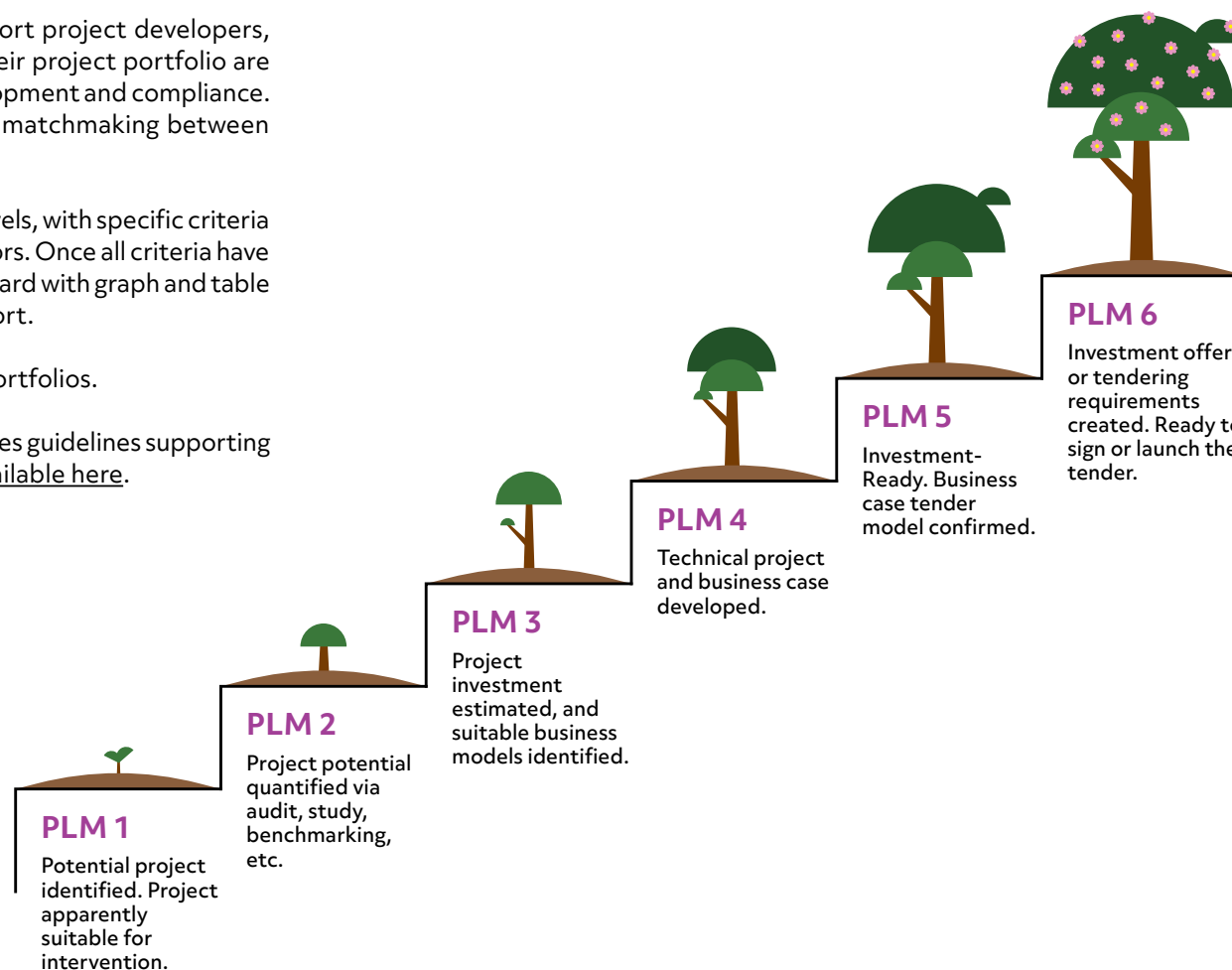
Therefore, the HOOP PML approach is aimed to support project developers, promoters, and investors to evaluate which parts of their project portfolio are investment-ready and which criteria need further development and compliance. At the same time, this tool will also contribute for the matchmaking between project developers/promoters and investors.

The online PML tool consists of a ranking of 6 maturity levels, with specific criteria for each level, reaching the total of 43 qualitative indicators. Once all criteria have been fulfilled, the questionnaire, answers and the dashboard with graph and table can be downloaded and/or printed in the form of a report.

All users can self-assess their projects and respective portfolios.

“Circular Evaluation Framework Guidance Report” provides guidelines supporting the filling of the online PML tool, which is public and [available here](#).

Try it today





# 6. Dive deeper in the HOOP Virtual Academy

## Improving access to finance

The financial sector can still see circular projects as risky and often not bankable. To improve the conditions for financing circular economy projects, the European Commission Expert Group on Circular Economy Financing analysed barriers and identified the main areas where incentives need to be provided. The recommendations are addressed to three stakeholder groups — policy makers, financial institutions and project promoters.

[See the recommendations](#)

## Novel circular business models

HOOP partners undertook a screening exercise to identify novel circular business models for biowaste. 15 successful solutions for biowaste valorisation were selected and analysed.

[Read the full report](#)

## The EIB circular economy guide

The EIB Circular Economy Guide highlights the need and rationale for a circular economy transition, with the aim of inspiring circular change. The guide presents how the EIB supports the circular economy through financing, advisory and awareness raising. It is regularly updated in response to our evolving understanding of circular economy needs and opportunities, reflecting changes in the policy framework.

[Read the guide](#)

## Project Development Assistance learnings

Project Development Assistance (PDA) projects build the technical, economic and legal expertise needed for project development, leading to the launch of concrete investments. At the EU level such projects have been used extensively in the field of energy (efficiency). But (how) can the approach be transferred to Circular Economy projects?

Just over half-way through the project, HOOP partners shared their methodologies, experiences, encountered barriers and learnings with other EU projects, technology providers, consultancies and all interested stakeholders in a dedicated webinar.

[Watch the recording](#)

## 7. Key takeaways

1. There is a growing demand for circular bioeconomy solutions that can mitigate the emissions and consumption of virgin raw materials.
2. Urban circular bioeconomy projects are often deemed high risk by investors. This can be caused by low profitability and return of investment, lack of financial instruments and incentives, lack of data and indicators, and lack of awareness and capacity among investors and financiers.
3. Support is available at the EU level to help cities and regions launch innovative urban bioeconomy projects. The Circular Cities and Regions Initiative (CCRI) provides financial support and technical assistance as will the forthcoming Circular Economy Technical Assistance Facility.
4. In addition to the CCRI other EU advice and support services exist, including [The Circular City Centre \(C3\)](#), [JASPERS](#), [The InvestEU Portal](#) and the [fi-compass](#).
5. Project developers should work on increasing the Project Maturity Level (PML) and Technology Readiness Level (TRL) of their projects and have a very clear business model and plan, supported by feasibility and market studies, to reduce risk for investors.
6. Tools and guidelines developed in HOOP, such as the [Circular Valuation Method](#) and [Project Maturity Level calculator](#) will help investors to ensure the alignment of projects with investor expectations and the broader sustainable development goals.
7. HOOP offers a financial and technical support service to help mobilise green finance and support cities and regions with specific technical questions.
8. A wide range of additional resources to support the development of circular bioeconomy projects can be found on the [HOOP Virtual Academy](#).



HOOP is a Horizon 2020 project that supports 8 lighthouse cities and regions in developing large-scale urban circular bioeconomy initiatives that will focus on making bio-based products from urban biowaste and wastewater.

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