

HOOP FINANCIAL TOOLS TO PROVIDE TECHNICAL ASSISTANCE FOR URBAN CIRCULAR BIOECONOMY PROJECTS FROM BIOWASTE AND WASTEWATER SLUDGE

D.R. Silva¹, J.R. Almeida² and L. Vaz³

1 RdA Climate Solutions, R. Antero de Quental 10, 3880-148 Ovar, Portugal, david.silva@rda.pt

2 RdA Climate Solutions, R. Antero de Quental 10, 3880-148 Ovar, Portugal, almeida@rda.pt

3 RdA Climate Solutions, R. Antero de Quental 10, 3880-148 Ovar, Portugal, leandro.vaz@rda.pt

ABSTRACT

The HOOP project offers project development assistance (PDA) to eight European Cities and Regions, unlocking bio-based investments and deploying urban circular bioeconomy (UCBE) projects. The HOOP portfolio comprises 17 technologies/processes to valorise biowaste and wastewater sludge. Hence, the HOOP PDA provides the technical, economic, financial and legal expertise needed to develop concrete investments.

The PDA focuses on a variety of projects with different investment volumes that are expected to be complemented by public and private investments. In this context, several financial tools were developed, such as the Investment Package Manual, the Investment Intake Form and Facility, the Project Maturity Level Framework, and the Due Diligence Standard.

Other services and tools are under development, namely the tailored circular business models, financial model with a prediction of 20 years for relevant financial metrics, market research and analysis, business plans, among others.

Those tools and studies have been provided during the PDA to the UCBE projects to increase its maturity and bankability. In order to increase confidence, all financial tools were developed under the contributions from the HOOP Circular Investors Board - a structure that aggregates 20 European private investors in circular bioeconomy.

Keywords: urban circular bioeconomy; biowaste; wastewater sludge; project development assistance (PDA); financial tools.

INTRODUCTION

The HOOP project [1], “hub of circular cities boosting platform to foster investments for the valorisation of urban biowaste and wastewater”, emerges to unlock bio-based investments and to deploy local bioeconomies in Europe through a systemic and cross-cutting approach. It offers project development assistance (PDA), budgeted with EUR 5.78 million, to a group of eight Lighthouse Cities and Regions to build the technical, economic, financial and legal expertise needed, to develop concrete investments to valorise biowaste (OFMSW) and wastewater sludge (UWWS), with the aim of obtaining safe and sustainable bio-based products.

The HOOP portfolio of 17 technologies/processes comprises: bioprocess involving methanotrophic bacteria using biomethane arising from the anaerobic digestion (AD) of the OFMSW; black soldier fly larvae fed with OFMSW or digestate from AD; nutrients recovered from residual dewatering liquid from AD; microalgae cultivation from biowaste; fermentation of used cooking oils; volatile fatty acids production from UWWS; cellulosic rejections of wastewater treatment plants to ethyl lactate bio-solvent; polylactic acid production from fruits and vegetables waste; 2,3-butanediol from OFMSW, garden waste and UWWS; slow pyrolysis; production of functional ingredients from spent coffee grounds; biochemical production of functional ingredients from animal by-products; biochemical conversion of OFMSW to biopolymers; production of biotic pesticides from OFMSW; productions of biofertilisers and biostimulants from OFMSW and UWWS; bioconversion of UWWS: CO₂

fermentation with bioelectrochemical systems; bioconversion of UWWs: production of PHBV and other PHAs.

The biotechnologies/processes and the investment commitment are addressed to Bergen region (Norway), Kuopio (Finland), Almere (Netherlands), Münster (Germany), Murcia (Spain), the Greater Porto region (Portugal), Albano Laziale (Italy), and the Western Macedonia region (Greece).

The PDA focuses on a variety of projects, within those cities and regions, with different investment volumes planned, that are expected to be complemented by public and private investments. In this context, several financial tools were developed namely the following mentioned within this article.

Other services and tools are under development, namely the tailored circular business models, financial model with prediction of 20 years for relevant financial metrics market research and analysis, business plans, among others.

Those financial tools and studies have been provided during the PDA to the UCBE projects to increase their maturity and bankability.

INVESTMENT PACKAGE MANUAL FOR EUROPEAN CITIES AND REGIONS

The Investment Package Manual was firstly designed as confidential for the HOOP pilot projects from Lighthouse Cities and Regions, supporting them with knowledge, funding and financing opportunities in their circularity journey.

The manual demonstrated a practical utility over time, being an extensible and valuable resource for other EU Member States and their cities and regions. For this reason, the authors developed a public version to be disseminated among Cities and Regions of the HOOP Network and others across Europe, offering an overview on funding and financing schemes and opportunities at European, national and regional levels. The Investment Package Manual was developed on a three-step approach and the public version distributed through three respective volumes.

The Volume I [2] presents the description of the EU Taxonomy concepts, methodology, objectives, technical screening criteria and “do no significant harm” (DNSH) applied to economic activities linked to the circular bioeconomy technologies, processes, activities and bioproducts from OFMSW and UWWs feedstocks, and respective regulation package. The economic activities selected are related to the bio-based technologies and processes being invested in the HOOP project by the cities and regions.

The Volume II [3] guides the reader through the selection and inventory of funding and financing schemes, programmes, instruments and tools for investment projects on circular bioeconomy and bioenergy at European level.

The Volume III [4] 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 from the eight HOOP Lighthouse countries.

INVESTMENT INTAKE FORM AND FACILITY

The HOOP Investment Intake Form and Facility [5] is a standard questionnaire that collects information and translates an investment project idea into financial language, in order to mobilise green financing and funding for its realisation. At the same time, the tool facilitates matchmaking between project developers and investors (banks, venture capital, etc.). Thereby, contributing to assessing and improving the maturity and bankability of UCBE projects. The purpose of the HOOP Investment Intake is to:

- Provide investors, funders, and financial institutions with the basic information necessary to assess an investment project in a simple and fast manner.
- Transform circular bioeconomy plans into sound investment packages and thus, facilitating the access to funding and green financing for Municipalities, public entities, and private promoters.

The facility is available online on the web-based platform of the HOOP Urban Circular Bioeconomy Hub. Based on best practices from the financial industry, the European Commission’s Smart Cities Marketplace, consultations of RdA with investors and financial partners, the Investment Intake was standardised and structured into eight sections to collect relevant data from each UCBE project.

Valuable data, as key economic and financial indicators (CAPEX, OPEX; turnover, ROI, etc.), has been collected as basis for EU Taxonomy reports, selection of type of investment and financing schemes, identification and assessment of business model of the project.

PROJECT MATURITY LEVEL EVALUATION FRAMEWORK

The Project Maturity Level (PML) Evaluation Framework [6] is designed to help project developers and investors to assess which parts of their portfolio are investment-ready and which projects need further development.

The PML is a well-known ranking method and concept, recognised as a common language and widely accepted/used by investors, banks, institutions, companies and agencies of the European Union. The innovative concept introduced by HOOP was related to the tailoring UCBE projects.

A PML calculator was created in order to quantify the compliance of the UCBE project with the criteria of each level, as well as the respective justification and evidence identification. This ranking consists of six maturity levels, with a set of specific criteria for each level. The six PML matrixes comprises criteria, rationale, checklist and evidence sections.

During the HOOP PDA, the UCBE projects were assessed using the PML matrixes and respective calculator. Subsequently, the results were compared and validated.

After the pre-check and ranking of the projects, they will be ready to match with an investor looking for projects that meet their requirements (in terms of PML score, TRL, technology, size, etc.). This is not a due diligence process, but a first approach and a ranking system to understand how close the project is to being bankable.

DUE DILIGENCE STANDARD PROCEDURE FOR URBAN CIRCULAR BIOECONOMY

The HOOP Due Diligence Standard Procedure [7] was developed to be applied to urban UCBE projects with a high impact for investors and project developers, given that, actually, there is not a standard procedure for this field.

An innovative multistep methodology was followed to develop the Due Diligence standard, involving: 1) an inventory of relevant due diligence standards; 2) design of the risk matrixes for each risk area, with a set of indicators, assessment of risk allocation, and identification of mitigation measures; 3) consultation of external experts and HOOP Circular Investors Board, to ensure that the due diligence complies with all the financial requirements and the process can be accepted in the future as a valid due diligence process; 5) presentation and public discussion by the HOOP's Circular Investors Board, in order to increase the confidence in the developed due diligence process and standard.

The HOOP Due Diligence standard covers 22 risk areas, such as credit; currency; financial market; governance and management; interface and partnering; regulatory; land availability and site; permitting and intellectual property; construction; technology; information technology; supply chain; circularity; performance; operation & maintenance; bioproduct; environmental; social and cultural heritage; political and material adverse government action; and EU Taxonomy. However, other risk areas concerning human resources, force majeure events and compliance with regulations and standards are transversal to those 22 risk areas.

Hence, using this guidance, project promoters are de-risking and increasing the bankability of their projects. Cities and local entrepreneurs are better prepared to prevent and mitigate some risks if they want to keep having green funding and financing support. Thereby, European cities and regions will be able to accelerate their transition to a low-carbon, resilient and resource-efficient economy through the implementation of the HOOP Due Diligence standard in order to monitor, prevent and mitigate several key risks and, therefore, complying with requirements and goals from public policies and strategies toward a circular and carbon-neutral economy by 2050.

Acknowledgements

The HOOP project, "Hub of circular cities boosting platform to foster investments for the valorisation of urban biowaste and wastewater", has received funding from the European Union's Horizon 2020, Research and Innovation Programme, under grant agreement N°101000836.

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