social bugs

Report on cross-sectoral collaboration and innovation between the insect market and social and solidarity economy

January 2026

Co-funded by the European Union

Social Bugs

Partners

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Acknowledgement:

We would like to thank Violet Gwokyalya from Mothers Against Malnutrition and Hunger (MAMAH) and Edward Ssebbombo from Bobo Eco Farm, Co-PIs of Refugee Insect Production for Food and Feed (RefIPro) project from Uganda, Kirsten Sterling, Project Manager in Insekteriet, Tiago Leitão, Co-founder and CEO of Aproximar, Mathilde Miedema, program director at TNO innovation for life and Dorte Verner, Lead Agriculture Economist in Food and Agriculture Global Practice (GFADR) for providing valuable insights to the case-studies included in this report.

Project coordinator:

Bugging Denmark

Publication date:

31 January 2026

Project number:

2024-1-DK01-KA220-VET-000251164
Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Executive summary

This report presents a comprehensive comparative analysis of how edible insect production and the Social and Solidarity Economy (SSE) intersect across four EU Member States: Belgium, Denmark, Portugal, and Romania. It examines the regulatory environments that govern insects as food and feed, maps national SSE frameworks, analyses opportunities and barriers for cross-sector collaboration, and draws practical insights from five international case studies in Europe and East Africa. The goal is to understand how insect farming, a rapidly expanding in circular bioeconomy sector, can be leveraged to generate social, environmental, and economic value when aligned with SSE principles.

At the EU level, insect producers operate under common food and feed safety legislation, including the General Food Law and the Hygiene Package. However, insects intended for human consumption must undergo pre-market authorization under the Novel Food Regulation, while insects used as animal feed follow a compliance-based pathway without pre-market approval. All producers face detailed rules on hygiene, traceability, substrates, and animal-by-product handling. Although this EU foundation is uniform, national "overlays" differ considerably. Romania imposes stringent consumer signage and retail separation requirements; Denmark applies strict import controls and live-insect biosecurity rules; Portugal treats insect farms under livestock-style licensing and requires detailed plant approvals; Belgium offers clear activity-based guidance via the food safety authority.

In parallel, national SSE frameworks vary widely in maturity and structure. Belgium and Portugal have well-established, institutionally embedded SSE ecosystems with recognition mechanisms, support instruments, and alignment with circular economy strategies. Denmark offers a clear yet simple and minimally regulated registry for social enterprises, while Romania has a strong legal definition and certification system but limited fiscal or institutional incentives. These differences shape the extent to which SSE entities such as cooperatives, social enterprises, associations, and work-integration organizations can enter and scale within the insect sector.

A cross-sectoral comparison reveals both promising opportunities and structural barriers. Opportunities include strong legal recognition of social enterprises (Denmark, Romania), integration of SSE into national circular economy agendas (Belgium, Portugal), available support tools and practical guidance (Denmark, Portugal), and inclusive governance traditions across all four countries. Barriers include fragmented SSE legislation (especially in Belgium and Romania), limited fiscal incentives, high compliance costs in the insect sector, cultural resistance to insect consumption (notably in Portugal and Romania), skills shortages, and reliance on short-term funding cycles.

The report deepens this analysis through five case studies from Uganda, Denmark, Portugal, Kenya–Uganda, and South Sudan. These case studies illustrate how insect farming can support nutrition, income generation, STEM education, social reintegration, women's empowerment, circular waste management, and community resilience. Despite differences in context from classrooms to prisons to refugee settlements, the common success factors are participatory governance, cascade training models, low-cost and locally adaptable technologies, inclusive approaches targeting vulnerable groups, strong partnerships, and gradual scaling.

Synthesising the regulatory, institutional, and case-study insights, the report proposes a cross-sectoral model built on three interdependent systems:

1. The SSE, which contributes mission-driven governance, inclusion, and reinvestment of value;

2. The insect industry, which provides circular bio-conversion pathways and compliance routes for food and feed;
3. The entrepreneurial ecosystem, which offers skills development, incubation, finance, and market linkages.

At the intersection of these three systems emerges the social insect enterprise, a model that simultaneously generates social inclusion, circular environmental impact, and local economic value. Surrounding this model are external factors such as regulation, cultural acceptance, funding, and infrastructure, which determine how effectively countries can implement and scale such initiatives.

Overall, the report concludes that bringing SSE and insect farming together offers meaningful pathways for ecological transition, waste valorisation, skills development, and inclusive employment across Europe. With supportive legislation, coordinated support ecosystems, and cross-sector partnerships, the edible insect sector can become a significant contributor to socially just and environmentally sustainable futures.

Abbreviations

ANOFM	National Agency for Employment
ANSVSA	National Sanitary Veterinary Authority for Food Safety
ABP	Animal By-product
BSFL	Black Soldier Fly Larvae
CSA	Code des Sociétés et des Associations
CUT	Chinhoyi University of Technology
DGARD/DGADR	Directorate General of Agriculture and Rural Development/Direção Geral de Agricultura e Desenvolvimento Rural
DGAV	Directorate General for Food and Veterinary
DVFA	Danish Veterinary and Food Administration
EFSA	European Food Safety Authority
EU	European Union
FASFC	Federal Agency for the Safety of the Food Chain
GDP	Gross Domestic Product
HACCP	Hazard Analysis and Critical Control Points
IPSS	Private Institutions of Social Solidarity
NGO	Non-Government Organization
NSLF/NREAP	New Scheme of Livestock Farming/Novo Regime do Exercício de Atividade Agropecuária
PAP	Processed Animal Protein
PBO	Public Benefit Organisations
R&D	Research and Development
RSV	Registreret Socialøkonomisk Virksomhed
SOP	Standard Operating Procedures
SSE	Social and Solidarity Economy
STEM	Science Technology Engineering, and Math
TFEU	Treaty on the Functioning of the European Union
UNHCR	United Nations High Commissioner for Refugees
VET	Vocational Education and Training
WISE	Work Integration Social Enterprises

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Contents

1. General introduction

Social Bugs, an Erasmus+ funded project, seeks to build an innovation ecosystem that connects the social and solidarity economy with the growing edible insect industry. Drawing inspiration from international case studies of cross-sectoral collaboration between insect farming and Social and Solidarity Economy (SSE), the Consortium develops forward-looking vocational education and training (VET) curricula that prepare vulnerable citizens with practical insect farming skills. This approach expands access to employment opportunities in the edible insect sector and stimulates the creation of social businesses that can thrive within this emerging industry.

Across Europe, the regulation of edible insects has rapidly evolved from an experimental niche into a structured policy area linked to food security, sustainability, and the circular economy. Insects are increasingly recognized as a high-protein alternative both for human consumption and for animal feed. At the same time, their use intersects with other pressing policy agendas, including waste reduction, resource efficiency, and climate mitigation. Yet, regulation remains uneven across countries: some Member States have developed detailed pathways for authorizing insect products, while others are still adapting their administrative frameworks to the requirements of European Union (EU) novel food and feed law.

Parallel to this development, the SSE has grown in prominence as a model for delivering inclusive and sustainable growth. SSE entities–that is, cooperatives, social enterprises, mutuals, foundations, and associations, are not motivated by profit maximization alone. They reinvest surpluses in community benefit, provide employment to disadvantaged groups, and often pioneer innovative solutions in emerging sectors. Their role in the insect value chain could be decisive. They can organize local collection of organic by-products, operate insect farming facilities with a social employment mandate, and promote consumer acceptance of insect-based products through trusted community networks.

The convergence of these two domains, namely edible insects and the SSE, creates an opportunity for innovation. On the one hand, insect farming and processing provide new markets that can absorb waste streams and diversify protein sources. On the other, SSE actors bring models of governance and accountability that embed social and environmental value creation. This report explores how different regulatory and institutional settings across Belgium, Denmark, Portugal, Romania enable or constrain this convergence. The report also develops a cross-sectoral value model to quantify the contribution of the SSE to the insect market value chain.

2. Purpose

The purpose of this report is to examine how the emerging sector of insects as food and feed can be effectively aligned with the SSE to generate social inclusion, environmental sustainability, and economic value within the EU. By analysing both regulatory frameworks and real-world practices, the report seeks to identify conditions under which SSE actors can participate meaningfully in the insect value chain. Specific purposes of this report are

1. To examine EU regulatory framework on insects as food and feed, how EU rules are applied in practice, where national (partner countries) overlays exist, and how these differences influence market entry, compliance, and scaling opportunities for socially oriented actors

2. To map and assess national SSE frameworks in the partner countries, focusing on legal definitions, recognition systems, institutional responsibilities, incentives, and support mechanisms
3. To evaluate opportunities and barriers for cross-sector collaboration between insect producers and SSE actors
4. To draw operational lessons from international case studies where insect farming is used as a tool for education, employment, rehabilitation, food security, and circular resource use
5. To propose a transferable cross-sectoral model that captures how social economy actors contribute measurable social, environmental, and economic value throughout the insect value chain.

3. Scope

The scope of the analysis is deliberately wide. It covers national laws, administrative practices, and support instruments that influence how insects are brought to market and how SSE actors can participate.

This report focuses on the EU regulatory framework for insects as food and feed and compares how these rules are implemented in Belgium, Denmark, Portugal, and Romania, including relevant national overlays and competent authorities. It does not address technical production methods but focuses on legal, administrative, and institutional conditions affecting market entry and compliance.

In parallel, the report maps and analyses national SSE frameworks in the same four countries, covering legal definitions, recognition systems, governance structures, and available support mechanisms. It assesses how accessible and supportive these frameworks are for SSE organisations engaging in innovative sectors.

The scope further includes a cross-sectoral analysis exploring opportunities and barriers for SSE actors to participate in the insect value chain, supported by five international case studies illustrating practical applications of insect farming for inclusion, education, livelihoods, and circular economy outcomes.

Finally, the report develops a transferable cross-sectoral model showing how SSE, the insect industry, and entrepreneurial ecosystems can be combined to create socially inclusive, environmentally circular, and economically viable insect-based initiatives across diverse contexts

4. Structure of the report

4.1. Regulatory framework for insects as food and feed

This section (**Section 6**) opens the report by explaining the legal foundation that all insect producers in the EU must follow. It outlines the shared rules on food/feed safety, hygiene, traceability, and biosecurity, and then clarifies the key difference between insects for food (which require Novel Food authorization) and insects for feed (which follow general feed-law compliance without pre-market approval). It also covers which substrates insects may and may not be fed, what operators must do to enter the market, and the practical steps producers must take when planning production.

4.2. Partner country regulatory framework for insects as food and feed

After explaining the EU baseline, the report (**Section 6.2**) moves into a country-by-country comparison. Here, it shows how each partner country implements the EU rules and how they add their

own “national overlays.” This includes who the responsible authorities are, what additional approvals or documentation each country requires, and how rules differ for food vs feed insects. The section ends by summarizing the implications for market entry, showing that while EU laws are common, national execution differs significantly.

4.3. Partner country regulatory framework on SSE

The report (**Section 6.3**) then shifts from insect regulation to the institutional environment of the SSE. For each country, it presents the legal definitions, recognition processes, authorities involved, incentives, and support structures available for social enterprises. The section highlights the diversity of national SSE ecosystems and how these differences shape the ability of SSE actors to engage in innovative fields such as insect farming.

4.4. Cross-sectoral analysis

Building on the previous sections, the report analyses where insect regulation and SSE frameworks align, support each other, or create barriers. First, it (**Section 7**) identifies opportunities (**Section 7.1**) such as legal recognition of social enterprises, integration into circular economy strategies, and the availability of guidance tools. Then it discusses systemic challenges (**Section 7.2**) like fragmented laws, limited fiscal incentives, administrative burdens, and cultural resistance to eating insects. Finally, it compares countries across several dimensions: clarity, accessibility, ecological relevance and assesses how well each environment supports insect-focused SSE initiatives. Based on these several dimensions and all of the above assessments this section further synthesizes the regulatory comparison (**Section 7.3**) and SSE analysis to identify what a future cross-sector model must take into account. It highlights the need for adaptability to different national contexts, the importance of combining social and ecological value, the necessity of strong support ecosystems, and the need to address barriers such as funding limitations or compliance complexity. The section also emphasizes the value of cross-border learning and policy transfer.

4.5. Case studies

The report (**Section 8**) then proceeds to case studies showing real world examples on how insect farming works when combined with SSE principles. Each case study was prepared based on available information online, project reports of respective cases and interview with the contact person for the case study. The available information online and project reports mainly gave insights into the background information including activities, outcomes etc of each case study, whereas the interviews provided information on the major challenges and lessons learned. Each case focuses on a different context such as refugee settlements, schools, youth prisons, rural small holder farmers, and conflict-affected communities. These examples illustrate how insect farming can support nutrition, income, training, rehabilitation, inclusion, and circular resource use in different context. All these case study also reveal common patterns: participatory governance, local capacity building, low-cost technologies, and multi-actor partnerships as explained in **Section 8.6**.

Though five case studies were identified and analysed, only two are presented in detail in the public version of this report due to confidentiality constraints and data-sharing limitations associated with some of the cases. Nevertheless, all five case studies have informed the report’s findings and conclusions, including the insights described in **Section 8.6** and the development of the cross-sectoral model presented in **Section 9**.

4.6. Cross-sectoral model

Using insights from laws, SSE frameworks, and case studies, the report (**Section 9**) presents a three-pillar model that connects: the SSE, the insect industry, and the entrepreneurial ecosystem. It explains how each pillar contributes a different type of value that is., social, environmental, and economic and how their intersection creates a social insect enterprise capable of delivering inclusive and circular benefits. The model is surrounded by guiding external factors such as regulation, culture, funding, and infrastructure, which determine feasibility and scalability.

The report concludes (**Section 10**) by emphasizing that insect farming and SSE are naturally compatible. When combined through the proposed model, they can generate inclusive jobs, circular resource systems, and sustainable local markets, provided the right legal, institutional, and support structures are in place. The report frames this integrated approach as a scalable pathway for ecological transition and social innovation across Europe.

5. Methodology

This report is based on a structured comparative research design that integrates legal analysis, institutional mapping, and cross-sectoral examination across four European partner countries Belgium, Denmark, Portugal, and Romania combined with an international review of real-world insect-farming social enterprise case studies. The methodology follows four interconnected components.

5.1. Development of a common research template

To ensure comparability across countries, a shared reporting template covering two main domains was created and shared with partners. These two main domains were the regulatory framework governing insects as food and feed, and legal and institutional environment for SSE.

The insect regulation template required partners to document responsible authorities, alignment with EU legislation, national overlays, approval processes, hygiene and biosecurity rules, substrate restrictions, and import requirements.

The SSE template captured legal definitions, recognition systems, governance structures, support instruments, eligibility criteria, fiscal tools, procurement mechanisms, and known barriers.

All partners completed the templates using national legislation, policy documents, technical guidelines, and expert knowledge, ensuring a harmonised evidence base.

5.2. Cross-Sectoral Assessment

To move beyond descriptive comparison, the team applied a scoring framework that evaluated each country's readiness for SSE involvement in the insect sector. Countries were assessed on:

- Clarity and stability of legal frameworks
- Accessibility of administrative pathways
- Availability of incentives and support structures
- Degree of ecological and circular-economy integration
- Social acceptance and policy signals, and
- Clarity of biosecurity and substrate rules.

The cross-sectoral analysis then examined opportunities and barriers by overlaying the insect regulation findings with SSE frameworks. This dual-lens approach allowed identification of entry points, obstacles, and structural enablers for social enterprises engaging with insect farming.

5.3. Case study selection and qualitative analysis

To complement the legal-institutional analysis, the team identified five international case studies that demonstrated concrete examples of insect farming in social-purpose contexts. The concept of SSE is diverse, and there is no single way to determine whether a social enterprise meets all the criteria of SSE. Therefore, a set of four eligibility criteria was used to ensure alignment with SSE principles: activity within the insect farming sector; explicit social mission; reinvestment of profits into social/environmental value; involvement of disadvantaged or vulnerable groups.

Each case study from Uganda, Denmark, Portugal, Kenya-Uganda, and South Sudan was analysed for governance structure, capacity-building processes, technologies used, inclusion strategies, challenges faced, and practical mechanisms that enabled success. This qualitative component provided rich operational insights that could not be captured through regulatory comparison alone.

For this public version, only two case studies are described in full. Although the remaining three are not presented because of confidentiality and data-sharing constraints, all five nevertheless inform the report's analysis and cross-sectoral model.

5.4. Cross-sectoral model

The cross-sectoral model presented in this report was developed through a structured synthesis of findings from two analytical components: the Implications of legal and institutional frameworks and the Implications derived from five international case studies. These two sections together provided complementary insights into the opportunities, barriers, and enabling conditions that shape how SSE actors can engage with the insect value chain for food and feed. By bringing these findings together, the model was constructed through an iterative, evidence-driven process rather than through abstract theorisation.

The first component of the method examined the legal and institutional implications of insect regulation and SSE frameworks across Belgium, Denmark, Portugal, and Romania. This included comparing how EU Novel Food rules, feed and animal by-product legislation, hygiene requirements, and national regulatory overlays are implemented in each country, as well as assessing the clarity, accessibility, and supportiveness of SSE legislation. From this analysis, several structural conditions emerged: the need for adaptability due to divergent national approaches; the importance of integrating social and ecological value; the significance of support ecosystems such as manuals, advisory services, and incubation networks; and the presence of systemic barriers including compliance costs, cultural resistance, and fragmented governance. These insights provided the structural backbone of the model, indicating which aspects of the operating environment facilitate or constrain cross-sector collaboration.

The second component involved synthesising the implications drawn from five case studies from Denmark, Portugal, Uganda, Kenya-Uganda, and South Sudan. The case studies illustrated how insect farming operates in real social contexts such as schools, prisons, refugee settlements, and rural communities and revealed the practical mechanisms through which insect-based initiatives succeed when aligned with SSE principles. Across all contexts, several recurring patterns emerged:

participatory governance rooted in community structures; the centrality of training and human development; the use of low-cost and adaptable technologies; the intentional targeting of vulnerable groups; multi-actor cooperation between non-governmental organizations, public bodies, research institutions, and technical partners; the necessity of gradual scale-up; and the generation of interconnected social, environmental, and economic outcomes. These recurring operational features formed the functional backbone of the model.

The final model was generated by integrating these two analytical streams. The legal and institutional implications defined the conditions under which collaboration is possible, while the case-study implications clarified the mechanisms through which collaboration becomes effective on the ground. Their combination revealed three interdependent systems: the SSE, the insect industry, and the entrepreneurial ecosystem and showed how each system contributes a distinctive value that the others cannot provide alone. Mapping these contributions, overlaps, and shared operational mechanisms resulted in the three-pillar cross-sectoral model, with the “social insect enterprise” at the intersection. This model is therefore not a theoretical construct but a distillation of what the comparative analysis and case studies jointly demonstrate to be feasible, replicable, and supportive of SSE participation in the insect value chain

6. Regulatory frameworks for insects as food and feed

6.1. General overview of EU regulation frameworks and guidelines

EU law requires insect producers to follow the same fundamental food and feed safety rules that apply to all operators in the agri-food sector. These rules define how producers ensure the safety, hygiene, and traceability of their products throughout every stage of production. The core legal basis includes General Food Law (Regulation (EC) No 178/2002[1]) that establishes overarching food safety principles and Hygiene Package on the hygiene of foodstuffs (Regulation (EC) No 852/2004[2]) and laying down requirements for feed hygiene (Regulation (EC) No 183/2005[3]). These regulations mandate that insect businesses must register or obtain approval from national authorities, implement safety controls, and maintain appropriate hygiene practices.

Although insects intended for both human consumption as food and animal nutrition as feed are regulated under the same overarching EU food and feed safety principles, their specific compliance requirements differ in important ways. This analysis breaks down the similarities and differences across the major regulatory domains for insects as food and feed.

6.1.1. Core legal classification and safety framework

Common regulations

All insect producers operate under the EU's horizontal framework for safety and hygiene: General Food Law (Regulation (EC) No 178/2002[1]) that establishes overarching food safety principles and Hygiene Package, notably (Regulation (EC) No 852/2004[2]) on the hygiene of foodstuffs and Regulation (EC) No 183/2005[3]. These rules require producers to register/ obtain approval, maintain HACCP-based hygiene, and ensure safety and full traceability across the production chain.

Key differences

Food insects additionally fall under the EU Novel Food Regulation (Regulation (EU) No 2015/2283[4]), because insects and many derived ingredients are considered "novel food" (as they are not consumed to a significant degree before 15 May 1997). Therefore, pre-market authorization of insect product is required before placing them on the EU market. Whereas feed insects do not go through the novel food route as they are marketed as feed materials under the feed hygiene/marketing framework, while still respecting the same general safety principles.

6.1.2. Feed substrate allowed and prohibited to feed insects

Insects raised for both food or feed are legally treated as "farmed animals," and the same EU rules restrict what they can be and cannot be fed on. Therefore, the following rules apply regardless of whether the final insect output is used as food or feed:

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[1] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety, OJ L 31, 2002. http://data.europa.eu/eli/reg/2002/178/oj

[2] Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs, OJ L 139, 2004. http://data.europa.eu/eli/reg/2004/852/oj

[3] Regulation (EC) No 183/2005 of the European Parliament and of the Council of 12 January 2005 laying down requirements for feed hygiene (Text with EEA relevance) OJ L 35, 2005, http://data.europa.eu/eli/reg/2005/183/oj

[4] Regulation (EU) 2015/2283 of the European Parliament and of the Council of 25 November 2015 on novel foods, amending Regulation (EU) No 1169/2011 of the European Parliament and of the Council and repealing Regulation (EC) No 258/97 of the European Parliament and of the Council and Commission Regulation (EC) No 1852/2001 (Text with EEA relevance), OJ L 327, 2015, http://data.europa.eu/eli/reg/2015/2283/oj

Permitted to feed
Plant-based substrates, limited animal-origin materials such as milk and eggs and their products, honey, rendered fats, and blood products from non-ruminants

Prohibited to feed:
Manure, catering waste, most slaughterhouse and rendering products beyond the listed exceptions such as unsold retail/industry food that contains meat or fish.

Although both sectors share the same substrate permissions and prohibition, for food-destined insects, substrate and processing choices must also be consistent with the conditions evaluated in the Novel Food authorization[4] (e.g., substrate identity, process description, and product specifications assessed during European Food Safety Authority (EFSA) review and reflected in the Commission decision)

6.1.3. Market entry requirements

Food insects (novel food pathway).
Pre-market Novel Food authorization is mandatory, i.e., before marketing insects for human consumption, the operator must either ensure that the insect activities are covered by an existing Novel Food authorization or obtain pre-market authorization under Regulation (EC) No 2015/2283[4]. For this, the applicant/operator should submit a dossier (covering identity, production process, composition/specifications, toxicology, allergenicity, and intended uses), to initiate EFSA's safety assessment, followed by Commission implementing regulation that sets the authorized forms/uses and labelling conditions (often including allergen statements) followed by authorizing placement on the market with specified conditions (e.g., forms such as dried/powder, labelling requirements).

Feed insects (feed material pathway).
Pre-market Novel Food authorization[4] is not required, i.e., insects marketed as feed do not require a Novel Food authorization[4]. Instead, operators should demonstrate compliance with feed law ensuring safety (e.g., hygiene, contaminants, traceability) and with the substrate restrictions applicable to farmed animals, without a product-by-product pre-market authorization step i.e., there is no EFSA/Commission authorization step equivalent to Novel Foods.

Hence, the food route is longer, more costly, and product-specific, while the feed route is compliance-based without pre-market authorization, though still rigorous on hygiene, substrate legality, and safety assurances.

6.1.4. Hygiene, traceability and operator obligation

Common regulations
Producers of both food and feed insects must register/obtain approval from regulatory authorities, must ensure full traceability of inputs and outputs, implement/maintain Hazard control and hygiene procedures (HACCP) based hygiene systems, keep robust records, and maintain the ability to withdraw/recall products where necessary and be consistent with the General Food Law[1] and relevant Hygiene regulations[2,3].

Key Differences
For food insects, the authorization (Novel Food Implementing Regulations[4]) decision typically embeds product specifications (e.g., microbiological criteria, chemical limits, processing parameters) and labelling, including allergen warnings such as possible cross reactivity with crustaceans/mites. Producers must manufacture consistently with the assessed process and must label appropriately,

including any allergen warnings stipulated by the authorization as significant deviations can breach the authorization conditions.

For feed, the emphasis is on feed chain safety (contaminants, microbiology), substrate legality, and ensuring the material is suitable for target species (e.g., aquaculture, poultry, pigs) i.e., species appropriate end use, rather than human dietary risk and allergenicity. The compliance is demonstrated under the feed hygiene/marketing rules rather than a Novel Food decision.

6.1.5. Animal Health and Biosecurity

Since insects are farmed animals, operators must align with the EU's animal health Law (Regulation (EU) 2016/429)[5] framework responsibilities for keeping farmed animals (including insects) healthy and preventing disease spread. Producers in both sectors must implement biosecurity appropriate to insect species and production scale.

The Food insect facilities often place additional emphasis on postharvest hygiene and processing controls linked to the Novel Food regulations[4] (e.g., validated heat/drying steps) because the end consumer is human. Whereas feed insect facilities emphasize preventing disease transmission between animal population, cross contamination and meeting feed chain requirements that protect animal health downstream in the feed chain.

6.1.6. Imports from third countries

The producers outside the EU must meet equivalent standards to place insects' products as both food and feed on the EU market. In addition to this, insect products for food must also have a valid Novel Food authorization covering the species, form, and uses intended for the EU market. Whereas for insect products to be used as feed, no Novel Food authorization[4] is needed, and imports are assessed under feed law[3] and substrate restrictions.

6.1.7. Practical takeaways for operators

Decide primary market early (food or feed)
If primary market is human food, operator should plan for a Novel Food dossier, a realistic timeline for EFSA assessment and Commission decision, budget for studies (identity/specifications, stability, toxicology/allergenicity as relevant) and ensure production/labelling will match authorization conditions. Whereas, if primary market is animal feed, around feed hygiene compliance, substrate legality, distribution into allowed end-use species along with documentation of safety, contaminants/microbiology as per feed law.

Design the substrate policy before scaling
Draft a positive list (vegetable origin + the limited allowed animal-origin categories) and a negative list (manure, catering waste, supermarket returns with meat/fish, most slaughter-derived products) for substrate intended to be fed to the insects and insert this list into supplier contracts and in standard operating procedures (SOPs). This avoids structural non-compliance later.

[5] Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law') (Text with EEA relevance), OJ L 084, 2016, http://data.europa.eu/eli/reg/2016/429/2021-04-21

Build the authorization/specification (food route).
Ensure that production process and product specifications align with what will be/has been assessed in the Novel Food authorization (e.g., moisture limits, microbial criteria, thermal steps). Deviations can trigger non-compliance with the authorization conditions.

Traceability & recall readiness (both routes).
Implement end-to-end traceability (one step back/one step forward), retain records on substrates/batches, and define withdrawal/recall procedures consistent with the general EU framework for food/feed.

6.1.8. Conclusion

The comparative analysis of EU rules governing insects as food and insects as feed shows that while both sectors operate under a shared regulatory foundation namely the General Food Law[1] and the EU hygiene[2,3] framework each pathway diverges significantly in its market-entry requirements, regulatory burden, and safety obligations. Insects intended for human consumption face a stricter, authorization-based system under the Novel Food Regulation[4], requiring EFSA safety assessments and Commission approval before products can be sold. This ensures high consumer protection and tight control over species, processing methods, and labeling.

In contrast, insects intended for animal feed follow a lighter, compliance-based route under feed hygiene and substrate rules, without premarket authorization. Although strict substrate bans and hygiene requirements still apply, the regulatory burden is lower, enabling faster market access while maintaining feed chain safety.

Overall, the EU framework creates a balanced dual system: rigorous oversight for food insects and streamlined regulation for feed insects, both supporting safe, responsible, and scalable insect production. On one hand, the food pathway is authorization-driven and product-specific (species/form/use), with intensive front-loaded regulatory work and ongoing compliance to authorization conditions and in other hand, the feed pathway is compliance-driven under general feed law and animal by-product restrictions, with rigorous substrate and hygiene controls but no Novel Food authorization.

Like any other food producers, insect producers should adhere to the European Union (EU) law to produce and commercialise insects as food and feed in the EU. EU law applies a common baseline ('General Food Law' (Regulation No 178/2002[1]) and the 'Hygiene Package' (e.g. Regulation No 852/2004[2]) to all insect producers, with a key split: insects for human consumption require pre-market authorization under the Novel Food Regulation (EU) 2015/2283[4], while insects placed as feed are marketed as feed materials under feed hygiene/marketing rules. This brief synthesizes obligations, market-entry routes, substrate restrictions, import rules, and practical compliance steps.

6.2. Partner country regulatory framework on Insects as food and feed

This section compares how four EU member states Belgium, Denmark, Portugal, and Romania apply the shared EU framework on insects as food and as feed, and highlights where they add national overlays that differ from each other.

6.2.1. Compliance with EU regulations

Insect as food

- All four countries apply the same EU backbone i.e., all rely on EU Novel Foods Regulation (Regulation (EC) No 2015/2283[4]), follows the EU authorization process (dossier to the Commission, EFSA assessment, Commission implementing decision; generic authorizations unless protected data apply for specific countries).
- All countries place insects on the market if the species/form is authorized in the Commission's Union list (e.g., *Tenebrio molitor, Alphitobius diaperinus, Acheta domesticus, Locusta migratoria*) through implementing regulations (e.g., Commission Implementing Regulation (EU) 2021/1975[6] for *L. migratoria;* Commission Implementing Regulation (EU) 2022/169[7] for *T. molitor*; Commission Implementing Regulation (EU) 2023/5[8] for *A. domesticus* powder; Commission Implementing Regulation (EU) 2023/58[9] for *A. diaperinus*). Furthermore, a transitional measure exists for insects undergoing novel-food approval (see Chapter 6.2.3 below)
- All partner countries apply general food law (Regulation (EC) No 178/2002[1]) and the hygiene package (Regulation (EC) No 852/2004[2]) where relevant.
- All apply the EU food-information/novel-food labelling baseline (species identification, allergy notice for crustaceans/mite cross-reactivity), enforced through their national competent authorities.

Insect as feed

- All four countries enforce Regulation (EC) No 183/2005[3] (feed hygiene) and Regulation (EC) No 767/2009[10] (placing on the market and use of feed).
- All apply health regulations regarding Animal by-product (ABP) and derived products, Regulation (EC) No 1069/2009[11] and Commission Regulation (EC) No 142/2011[12] (ABP

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[6] Commission Implementing Regulation (EU) 2021/1975 of 12 November 2021 authorising the placing on the market of frozen, dried and powder forms of Locusta migratoria as a novel food under Regulation (EU) 2015/2283 of the European Parliament and of the Council and amending Commission Implementing Regulation (EU) 2017/2470 (Text with EEA relevance) C/2021/7987, OJ L 402, 2021, http://data.europa.eu/eli/reg_impl/2021/1975/oj

[7] Commission Implementing Regulation (EU) 2022/169 of 8 February 2022 authorising the placing on the market of frozen, dried and powder forms of yellow mealworm (Tenebrio molitor larva) as a novel food under Regulation (EU) 2015/2283 of the European Parliament and of the Council, and amending Commission Implementing Regulation (EU) 2017/2470 (Text with EEA relevance), C/2022/658, OJ L 28,.2022, http://data.europa.eu/eli/reg_impl/2022/169/oj

[8]Commission Implementing Regulation (EU) 2023/5 of 3 January 2023 authorising the placing on the market of Acheta domesticus (house cricket) partially defatted powder as a novel food and amending Implementing Regulation (EU) 2017/2470 (Text with EEA relevance, C/2023/6, OJ L 2, 2023, http://data.europa.eu/eli/reg_impl/2023/5/oj

[9] Commission Implementing Regulation (EU) 2023/58 of 5 January 2023 authorising the placing on the market of the frozen, paste, dried and powder forms of Alphitobius diaperinus larvae (lesser mealworm) as a novel food and amending Implementing Regulation (EU) 2017/2470 (Text with EEA relevance), C/2023/20, OJ L 5, 2023, http://data.europa.eu/eli/reg_impl/2023/58/oj

[10] Regulation (EC) No 767/2009 of the European Parliament and of the Council of 13 July 2009 on the placing on the market and use of feed, amending European Parliament and Council Regulation (EC) No 1831/2003 and repealing Council Directive 79/373/EEC, Commission Directive 80/511/EEC, Council Directives 82/471/EEC, 83/228/EEC, 93/74/EEC, 93/113/EC and 96/25/EC and Commission Decision 2004/217/EC (Text with EEA relevance), OJ L 229, 2009, http://data.europa.eu/eli/reg/2009/767/oj

[11] Regulation (EC) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation), OJ L 300, 2009, http://data.europa.eu/eli/reg/2009/1069/oj

[12] Commission Regulation (EU) No 142/2011 of 25 February 2011 implementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption and implementing Council Directive 97/78/EC as regards certain samples and items exempt from veterinary checks at the border under that Directive Text with EEA relevance, OJ L 54, 2011, http://data.europa.eu/eli/reg/2011/142/oj

implementing rules), and Regulation (EC) 999/2001[13] (Transmissible spongiform encephalopathies).

- Insect PAP (processed animal protein) can be used in aquaculture feed (and pet/fur-bearing
- animals), but not for other food-producing animals
- Non-processed insects are not permitted in feed for food-producing animals.
- Substrate rules follow the same Category 3 positive list (e.g., milk/eggs/honey/rendered fats) and negative lists (manure, catering waste, meat-containing returns, sewage sludge)

6.2.2. National overlays

This section showcases how much national overlay of the partner countries sits on the top of the EU regulations, i.e., how much extra national detail they add on top of backbone explained in the previous section. In the following section, the overlays are particularly categorized into country specific responsible authorities, regulatory frameworks on insects such as food and feed, approvals, documentation, biosecurity and hygiene and import.

Country specific responsible authorities

Belgium

Federal Agency for the Safety of the Food Chain (FASFC) is the central competent authority for both food and feed, clarifies what counts as "rearing" vs. "processing" (e.g., slaughter method such as cooling/freezing/CO_2 for killing are considered activities of the rearing process whereas slaughter methods used, such as heat treatment are considered to be part of the processing of the insects) and requires the appropriate registration/authorization under EU hygiene rules.
As heat treatment is not an implicit part of the rearing process, a processing operator must develop an auto-control system which is based on the principles of HACCP and includes the hazards associated with the processing step. Insect farmers who perform the processing step are obliged to register an additional activity with the FASFC. This is national scoping on top of Regulation (EC) No 852/2004[2] and Regulation (EC) No 183/2005[3].

Denmark

Danish Veterinary and Food Administration (DVFA) covers food, feed and veterinary approvals.

- The DVFA requires written import permission for non-harmonized (i.e. non-novel food approved) insects as food, including intra-EU/EEA movements under the transitional measure (as described in Chapter 6.2.3 below); third-country consignments must include risk analysis, processing/heat-treatment info, lab results, etc. (national overlay and goes beyond EU's general framework for official controls in Regulation (EU) 2017/625[14])
- Feeding live insects to poultry is prohibited based on National Salmonella rules (Feed Order; Danish "Foderbekendtgørelsen") which means no live insects for *Gallus gallus* and turkeys and is

[13] Regulation (EC) No 999/2001 of the European Parliament and of the Council of 22 May 2001 laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies, OJ L 147, 2001, http://data.europa.eu/eli/reg/2001/999/oj

[14] Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products, amending Regulations (EC) No 999/2001, (EC) No 396/2005, (EC) No 1069/2009, (EC) No 1107/2009, (EU) No 1151/2012, (EU) No 652/2014, (EU) 2016/429 and (EU) 2016/2031 of the European Parliament and of the Council, Council Regulations (EC) No 1/2005 and (EC) No 1099/2009 and Council Directives 98/58/EC, 1999/74/EC, 2007/43/EC, 2008/119/EC and 2008/120/EC, and repealing Regulations (EC) No 854/2004 and (EC) No 882/2004 of the European Parliament and of the Council, Council Directives 89/608/EEC, 89/662/EEC, 90/425/EEC, 91/496/EEC, 96/23/EC, 96/93/EC and 97/78/EC and Council Decision 92/438/EEC (Official Controls Regulation) (Text with EEA relevance) OJ L 95, 2017, http://data.europa.eu/eli/reg/2017/625/oj

an extra national restriction not required by EU law. Danish Environmental Protection Agency oversees Nature Conservation Act issues for live insects.

- This agency administers a rule that live non-resident insects must not escape, a live-insect biosecurity overlay, in addition to EU food/feed hygiene.

Portugal:

- New Scheme of Livestock Farming/ Novo Regime do Exercício de Atividade Agropecuária (NSLF/NREAP) livestock-style licensing for insect farms. Under Decree-Law 81/2013 (NSLF/NREAP), insect farms are treated as livestock holdings with class-based licensing, land-use and environmental checks. Directorate General of Agriculture and Rural Development/Direção Geral de Agricultura e Desenvolvimento Rural (DGADR/SDRAD) handle NSLF/NREAP farm licensing, land use and environmental checks.
- Institute for the Conservation of Nature and the Forests (ICNF) must approve exotic (non-EU-listed) species production.
- DGAV approvals for insect processed animal protein (PAP) plants + separation/cleaning SOPs. The DGAV Code of Good Practices requires DGAV-approved plants for insect PAP under Regulation (EC) 1069/2009[11] and Regulation (EU) 142/2011[12] and mandates physical separation, cleaning protocols, and national transport/cleaning documentation (e.g., Form 1253/DGAV for bulk transport re-use after validated cleaning) alongside EU rules (Regulation (EC) 999/2001[13]; methods/criteria in Annex IV/X of Regulation (EU) 142/2011[12]).
- Portugal follows Regulation (EU) 2015/2283[4] without adding consumer-facing shelf/signage obligations

Romania:

National Sanitary Veterinary Authority for Food Safety (ANSVSA, mainly on food/feed/veterinary supervision) and National Authority for Consumer Protection (ANPC, mainly consumer labeling, display, signage enforcement) together regulate insect foods; Ministry of Agriculture and Rural Development (MADR) has policy/coordinating roles (e.g., traditional products registers linked to the national prohibition).

- Law No. 411/2023 (national market conduct for insect foods).
- Separate shelf placement for insect-containing foods;
- Visible signage (“ACESTE PRODUSE SUNT/CONȚIN SPECII DE INSECTE”) with strict formatting;
- Menu/online pre-purchase disclosure for restaurants/online sales;
- Prohibition on using authorized insect ingredients in products listed in the National Register of Traditional Products and National Register of Established Recipes;
- High fines for non-compliance.

These are national overlays on top of Regulation (EC) No 2015/2283[4] and EU food-information rules.

- Feed/ABP enforcement: ANSVSA applies Regulation (EC) No 183/2005[3], Regulation (EC) No 1069/2009[11] and Regulation (EC) No 142/2011[12], with emphasis on ABP movement/neutralization records (Ordinance No. 80/2005).

6.2.3. Overlay regulations on Insect as food

Market authorization

Belgium operated a pre-2018 "tolerance policy" for certain whole insects, later withdrawn after the Court of Justice of the European Union (CJEU) clarified scope Belgium replaced the tolerance with the EU's Article 35 transitional measures under Regulation (EC) No 2015/2283[4] (for products legally on the market before 1 Jan 2018 with timely novel food applications). This historical tolerance and its managed phase-out are Belgium-specific features around the EU transition.

Denmark recognizes EU transitional measures and kept a national list/log of insects under transition, with documentation to prove lawful pre-2018 marketing; once EU authorizations are issued, operators must align with the EU Implementing Regulation.

Portugal has no extra food-side overlay beyond EU Novel Food; the National manual[15] mainly covers feed.

Romania fully respects EU authorizations but added national food-market conduct rules without altering what is authorized.

Consumer-facing display and signage

Romania requires physical separation on shelves for insect-containing foods and mandatory large signage ("These products contain insect species", formatted to strict specifications). These rules apply in stores, restaurants (menu disclosure), and online (pre-purchase disclosure). EU law has no such obligations; neither Denmark, Belgium, nor Portugal mandate shelf segregation or signage of this kind.

Traditional foods protection

Romania bans use of authorized insects in products recorded in the National Register of Traditional Products and Established Recipes; again, this goes beyond EU law and is not mirrored in Belgium, Denmark, or Portugal.

Import permissions for foods

In Denmark, insect species that are not yet novel-food approved, but permissible as food under the transitional measure, are treated as non-harmonized for hygiene at import stage and requires a DVFA import permission even for EU/EEA intra-Union movements plus a dossier for third-country foods (risk analysis, feed history for the insects, heat treatment, lab tests, etc.).

6.2.4. Overlay regulations on insect as feed?

Processed animal protein (PAP)

All four partner countries reflect EU policy that insect PAP may be used for aquaculture (and for pets/fur-bearing animals); non-processed dead insects cannot be used in feed for food-producing animals. None of the four countries go beyond the EU by allowing broader uses.

Substrate

The same EU positive e.g., plant materials + limited Category 3 ABPs such as milk/eggs/honey/rendered fats and negative lists (e.g. prohibitions on manure, catering waste, and

[15] Based on: Manual of good practices for insect production, processing and use in animal feeding, Directorate General for Food and Veterinary (DGAV) 2019.

unsold meat-containing foods) apply in all four countries. No country extends the positive list, but differences exist in enforcement detail:

- Belgium offers granular operational guidance and examples through FASFC and national guidebooks.
- Portugal provides very prescriptive handling/processing/storage guidance for substrates (pre-processing, segregation, traceability), reflecting its broader approach to classify insect production as livestock under NSLF and to manage ABPs with detailed documentation and approvals.
- Denmark restates the EU bans and stresses that insects must be fed "traditional" feeds (cereals, veg residues) and not animal-origin wastes; the Nature Conservation Act also overlays live-insect movement/containment obligations.
- Romania focuses on ABP documentation and veterinary records, clear tracing of any Category 3 materials used by insect farms, but it does not extend the EU lists

6.2.5. Facility approval, separation, transport & documentation

- Portugal stands out for feed-chain rigor:
  - Insects are licensed as livestock under NSLF/NREAP, with class-based farm licensing, land-use, and environmental checks. This is unique among the four partner countries.
  - PAP production must be in DGAV-approved plants dedicated to insects (or meeting specific separation/cleaning regimes), with strict transport/cleaning SOPs, and commercial documents mirroring/augmenting EU models (including national forms like Form 376/DGAV and Form 1253/DGAV for bulk-transport separation/cleaning validation).
  - Detailed physical separation and record-keeping requirements for factories producing ruminant, non-ruminant, and aquafeed are spelled out and checked (including sampling/testing programs).
- Belgium requires FASFC registration/authorizations; it also draws a clear line between rearing and processing steps (e.g., freezing/CO_2 killing counted as rearing, but heat treatment processing requiring additional authorization) a practical scoping that is less spelled out in the others.
- Denmark requires separate registration/approval when moving beyond primary production into killing/processing (freeze-drying, grinding), with full feed or food hygiene requirements at that stage. It also prohibits feeding live insects to poultry (Gallus gallus/turkeys) due to national Salmonella rules, none of the other three has that poultry-specific prohibition.
- Romania emphasizes ANSVSA veterinary registration/approvals and ABP documentation controls (movement documents, neutralization contracts for non-permitted ABPs). It does not add Portugal-style plant separation protocols or Denmark's live-insect poultry restriction.

6.2.6. Biosecurity & nature protection for live insects

Denmark explicitly applies the Nature Conservation Act for import/holding of live insects not indigenous to Denmark; that is, the live imports must be managed to prevent escape. This is more formalized than in the other three countries' regulations. Portugal and Belgium focus on containment and barriers/traps in production guidance; Portugal also requires eradication of any live forms in fertilizer before land application. Romania references general biosecurity via veterinary controls but does not add a nature-escape statute like Denmark's.

6.2.7. Imports

As Feed (insect PAP) from third countries

All four countries follow the EU Official Controls Regulation (checks at Border Control Posts, health certificates, third-country listing). Denmark's guidance is notably explicit and detailed on prior notification, certification models, and ruminant-material absence verification; Portugal is also very detailed on documentation and plant listing for imports/exports. Belgium and Romania reflect the same EU framework with fewer extra formalities in the shared documents.

As food (novel foods)

Denmark uniquely requires a DVFA import permission also for EU/EEA foods (because insects as food are treated as non-harmonized on hygiene/controls at import stage), plus extensive risk dossiers for third-country imports; the other three do not impose a pre-clearance permission step equivalent to Denmark's.

6.2.8. Conclusion

Across Belgium, Denmark, Portugal, and Romania, the core picture is clear: all four fully implement the EU backbone, Regulation (EC) No 2015/2283[4] for placing insects on the market as novel foods, and the feed/ABP/TSE framework (Regulation (EC) No 183/2005[3], Regulation (EC) No 767/2009[10], Regulation (EC) No 1069/2009[11] with Regulation (EC) No 142/2011[12], and Regulation (EC) No 999/2001[13] that limits insect PAP to aquaculture (plus pets/fur-bearing animals), prohibits non-processed insects in feed for food-producing animals, and harmonises substrate positive/negative lists. In other words, the "what" is EU-wide and common; the "how" differs nationally.

Where they diverge is in national overlays that reflect each country's risk focus and administrative style. Romania adds the strictest consumer-facing rules emphasising separate shelf placement, large signage, menu/online disclosure, and a ban on using insects in registered traditional products to maximise transparency and cultural protection beyond EU requirements. Denmark is toughest at the border and on live-insect biosecurity, requiring DVFA import permissions for insects as food (including intra-EU/EEA), forbidding live insects to Gallus gallus/turkeys under Salmonella controls, and applying the Nature Conservation Act to prevent escapes. Portugal is most prescriptive on the feed chain, treating insect farms as livestock units (NSLF/NREAP) and mandating DGAV-approved plants, physical separation/cleaning SOPs, and national transport/cleaning documentation alongside EU rules. Belgium, after its now-ended tolerance policy during the EU transition, sits closest to "EU-baseline-plus-practicality", using FASFC guidance to clarify what counts as rearing vs. processing and when extra authorisation is needed. Together, these overlays mean an operator can rely on the same EU substance rules but should plan for different compliance touchpoints such as Romanian consumer disclosure and shelf management, Danish import pre-clearance and live-risk controls, Portuguese plant licensing and operational SOPs, or Belgian activity scoping for approvals.

6.3. Partner country regulatory framework on SSE

The SSE provides the institutional setting in which social enterprises, cooperatives, associations, and similar actors operate. While the European Union increasingly recognizes the SSE as a pillar of inclusive and sustainable growth, the national frameworks remain diverse. Some countries have adopted comprehensive legal definitions and dedicated institutions, while others rely on voluntary registries or integrate social enterprises into general business law. These differences matter greatly for the insect sector, because they determine who can participate, how easily SSE actors can be recognized, and what financial or policy incentives they can access.

The following country snapshots highlight the main features of the SSE frameworks in Denmark, Portugal, Romania, and Belgium. They cover legal definitions, recognition systems, responsible authorities, and available incentives. Together, they show how institutional environments either enable or limit the participation of SSE actors in new markets such as insect production and processing.

6.3.1. Belgium

Belgium recognizes SSE through a multi-level governance model, with distinct legal and policy frameworks in the Walloon Region, Brussels-Capital Region, and Flemish Region. While there is no single federal law that defines SSE comprehensively, the concept is well-established and operationalized through regional decrees and ordinances. These frameworks align with European Union principles, emphasizing social utility, democratic governance, solidarity, and limited profit distribution.

Belgium's SSE is governed by a combination of federal and regional legislation, reflecting the country's decentralized institutional structure. At the federal level, the Code des Sociétés et des Associations (CSA), enacted by the Law of 23 March 2019, regulates the primary legal forms used by SSE actors, including cooperative companies (SC/CV), non-profit organizations (ASBL/VZW), and foundations. The CSA modernized and consolidated existing legislation, including the former Law of 27 June 1921. Although the CSA abolished "Social Purpose Companies" as a distinct legal form, it permits organizations to incorporate a social purpose into their statutes, particularly within cooperative companies. Cooperatives aligned with ICA principles are often used by SSE entities emphasizing democratic governance, limited profit distribution, and community benefit.

At the regional level, each region has its own framework:

- Wallonia: the Decree of 20 November 2008 on the Social Economy defines SSE and outlines eligibility criteria for recognition and support.
- Brussels-Capital Region: the Ordinance of 23 July 2018 establishes a legal framework for the recognition of social enterprises, specifying certification criteria and access to funding and procurement opportunities.
- Flanders: the Decree of 17 March 2023 on Social Entrepreneurship positions social enterprises as key contributors to employment, innovation, and sustainability, and integrates social entrepreneurship into strategies for the circular economy and inclusive labour market development.

Belgium also implements EU regulations relevant to SSE. Directive 2014/24/EU on public procurement enables reserved contracts for social enterprises and sheltered employment providers.

Article 107 of the Treaty on the Functioning of the European Union (TFEU) regulates state aid, ensuring compliance with competition rules while allowing subsidies and financing instruments. The General Block Exemption Regulation (GBER) allows some forms of state aid for SSE actors without prior EU approval.

Governance is decentralized. In Wallonia, the Ministry of Economy, Employment and Research oversees SSE policy, supported by the Walloon Council for the Social Economy. In Brussels, Brussels Economy and Employment implements the 2018 Ordinance, working with the Brussels Social Economy Platform. In Flanders, responsibility is shared between the Department of Work and Social Economy and the Flemish Agency for Innovation and Entrepreneurship (VLAIO), which implement the 2023 decree. At the federal level, FPS Economy and FPS Social Security regulate SSE legal forms, while the National Council for the Social Economy serves as a federal advisory body bringing together regional governments, networks, and institutions.

Key policy frameworks include the Wallonia SSE Strategy (2021–2025), the Brussels Social Economy Plan (2022), and the Flemish Action Plan for Social Entrepreneurship (2023). Belgium also actively contributes to the EU Social Economy Action Plan (2021–2030) and makes use of EU funding programs such as Horizon Europe, ESF+, and InvestEU.

Belgium provides fiscal incentives, though these vary by legal form and region. Non-profits are typically exempt from corporate income tax except on commercial activities and may receive local exemptions from property or business taxes. Social cooperatives can benefit from reduced corporate tax rates and reinvestment deductions. Donations to SSE entities may qualify for donor tax deductions. Public procurement is an important mechanism: reserved contracts are increasingly used by authorities to promote inclusive employment and local development.

The SSE sector contributes significantly to the economy, accounting for more than 10% of employment, with a strong presence in health and social care, education, circular economy, local services, and social housing.

Eligibility for SSE status generally requires a social mission, democratic governance, reinvestment of surpluses into the mission, autonomy from public authorities, and transparency. Regional recognition frameworks ensure compliance, such as the Wallonia decree (2008), Brussels ordinance (2018), and Flemish decree (2023).

Belgium also makes use of reserved procurement pathways, allowing SSE organizations to compete for certain public contracts under favourable conditions. This combination of federal legal forms and regional instruments creates a rich but sometimes fragmented landscape, where opportunities for SSE actors depend on both the type of legal entity chosen and the region of operation.

6.3.2. Denmark

In Denmark, the definition of social enterprise is grounded in the Act on Registered Social Enterprises adopted by Parliament in 2014 and closely aligned with the EU operational definition. A social enterprise is understood as a privately owned undertaking that pursues a primary social purpose through economic activity and uses its profits to advance that purpose. To qualify, an organisation must meet five cumulative criteria: it must have an explicit social objective that benefits society, carry out significant commercial activities through the sale of goods or services, remain independent from public authorities, apply inclusive and responsible governance practices, and manage profits in a

socially responsible manner, primarily through reinvestment or support for social aims, with only limited profit distribution permitted. This definition reflects a balanced combination of entrepreneurial activity, social impact, and participatory governance, and it provides the formal basis for recognition and registration of social enterprises in Denmark (European Commission, 2019).

Enterprises with a social purpose are recognized through the legal status of "Registered Social Enterprises," established by the Act on Registered Social Enterprises (2014), Act No. 711 of 25 June 2014. This act created the Registreret Socialøkonomisk Virksomhed (RSV) scheme, a voluntary registration system. Entities may obtain RSV status if they meet criteria on social purpose, profit management, and independence. This was a milestone, granting social enterprises visibility and encouraging responsible business conduct.

Beyond the RSV scheme, Denmark's SSE is shaped by sector-specific laws:

- Danish Companies Act (Consolidated Act No. 763 of 23 July 2019).
- Danish Foundation Act (Consolidated Act No. 2020 of 11 December 2020).
- Danish Associations Act (not codified, but grounded in case law and Constitution, Section 78).
- Cooperative laws, such as the Act on Cooperative Housing Societies (Consolidated Act No. 1115 of 29 September 2017).
- Tax Assessment Act (Consolidated Act No. 1161 of 1 September 2016, Section 8A).
- Corporate Tax Act, Section 3(1)(6), regulating public benefit organizations.

EU frameworks also apply, including Directive 2014/24/EU and Article 107 TFEU.

Governance involves multiple authorities. The Ministry of Business and Growth drafts social enterprise policy, the Ministry of Employment supports job creation through SSE, and the Danish Agency for the Labour Market and Recruitment administers grants and employment programs. The Danish Business Agency manages the RSV registry, provides oversight, and integrates SSE into innovation strategies.

Policy frameworks include the Act on Registered Social Enterprises (2014), the National Strategy for Social Enterprises, and successive National Action Plans for Social Entrepreneurship. Denmark also adapts EU directives into its system.

Tax incentives are limited. Social enterprises do not benefit from special exemptions unless they qualify as Public Benefit Organisations (PBOs). PBOs may obtain gift and inheritance tax exemptions and VAT exemptions, but otherwise social enterprises face the same fiscal obligations as conventional businesses.

Eligibility for RSV status requires: a defined social purpose; commercial activity supporting the mission; independence from public authorities; inclusive and responsible management; and profit reinvestment. Up to 35% of profits may be distributed, the remainder must support the mission.

The sector remains small in scale, with limited data on employment or GDP contribution. Nevertheless, the RSV registration provides identity, and social enterprises play an important role in innovative approaches to inclusion, development, and job creation for vulnerable groups.

6.3.3. Portugal

Portugal's Social and Solidarity Economy, also referred as the social sector or third sector, can be "understood as the set of economic and social activities, freely carried out by Cooperatives, Mutual

associations, Holy Houses of Mercy, Foundations, Private Institutions of Social Solidarity (IPSS), Associations with Altruistic Goals which operate in the cultural, recreational, sports and local development spheres, entities covered by the Community and self-management subsectors, integrated under the Constitution in the cooperative and social sector, as well as other entities with legal personality that respect the principles." (Social Economy Satellite Account, 2023, p. 165).
The sector is established by the Framework Law on the Social Economy (Law 30/2013 of 8 May), commonly known as the Framework Law ("Lei de Bases"), which provides the fundamental principles of social economy, such as primacy of people, democratic control, solidarity, autonomous management, and reinvestment of surpluses.
The law also mandates the Social Economy Satellite Account, developed by Statistics Portugal and António Sérgio Cooperative for the Social Economy (CASES), with the latest edition published in 2023 covering 2019–2020.

Other frameworks include:

- Cooperative Framework Law (Law 119/2015, amended by Law 66/2017).
- Statute of Private Institutions of Social Solidarity (IPSS) (Decree-Law 119/83, amended by DL 172-A/2014 and Law 76/2015).
- Ordinances 303/2024/1 and 20/2025/1 creating the Competence Center for the Social Economy (CCES).
- Constitutional recognition (Articles 80, 82, and 85).

The Ministry of Employment, Solidarity and Social Security (MTSSS) and Ministry of Economy are the main government bodies responsible for social economy policy. Other important consultative, assessment and monitoring bodies are the National Council for the Social Economy (CNES), Portuguese Confederation for the Social Economy (CPES), Confederação Cooperativa Portuguesa (CONFECOP), to name a few. Each plays a role in regulation, funding, training, or representation.

Tax benefits include exemptions from corporate income tax for statutory income (Article 10 of the Tax Code), VAT exemptions for social services, and exemptions or reductions from property taxes (IMI and IMT) for IPSS and cooperatives.

Eligibility criteria under Law 30/2013 include primacy of people, voluntary membership, democratic governance, solidarity, autonomy, and reinvestment of surpluses. Certification and registration ensure compliance. In 2024–2026, the XXIV Constitutional Government reinforced financial support, signing a new Cooperation Agreement with the sector, aiming to develop a dedicated funding law.

6.3.4. Romania

Romania defines SSE under Law No. 219/2015 on Social Economy, which states that SSE consists of "activities organized independently of the public sector, whose purpose is to serve the general interest, the interests of a non-patrimonial community and/or personal interests, by increasing the employment of vulnerable groups and/or by producing and supplying goods, services and/or carrying out works." It also introduced "social enterprises" and "work integration social enterprises" (WISE).

Recognized SSE entities include cooperatives (Law 1/2005), credit cooperatives (GO 99/2006), associations and foundations (GO 26/2000, amended), employees' mutual aid associations (Law

122/1996), pensioners' mutual aid associations (Law 540/2002), and sheltered workshops under Law 448/2006. The Social Assistance Law (292/2011) also references SSE[16].

The Ministry of Labour and Social Solidarity leads SSE policy, supported by the National Agency for Employment (ANOFM), which certifies and registers social enterprises. The Ministry of Investments and European Projects aligns EU funds with SSE, while the Ministry of Economy links SSE to enterprise policy. Local authorities may also support SSE.

Policy frameworks include the National Strategy for Social Inclusion and Poverty Reduction (2015–2020)[17], the National Employment Strategy (2021–2027)[18], EU Operational Programmes such as POCU 2014–2020 and the current 2021–2027 POEO[19], and the draft Social Economy National Plan. Certification and labelling systems are key, with the "Social Enterprise" certificate and the "Social Mark" for insertion enterprises. Public procurement measures and subsidy programs support WISEs.

Fiscal incentives are limited. Local councils may grant tax exemptions; NGOs benefit from the non-profit regime and WISEs may receive subsidies and reserved contracts. EU funding has been crucial: 2,816 social enterprises were certified by 2022[20], up from just 49 in 2016, largely due to EU-financed programs.

Eligibility criteria include social/community purpose, reinvestment of at least 90% of profits, participatory governance, independence, transparency, and non-discrimination. Insertion enterprises must employ at least 30% vulnerable workers.

The sector remains quantitatively small, contributing ~1–2% of GDP and employment, but it plays a vital qualitative role in communities. Its rapid growth demonstrates potential for inclusion and innovation, particularly if strategic policy support continues.

6.3.5. Conclusion

Taken together, these four cases illustrate the diversity of SSE regulations in Europe. Portugal and Belgium represent the more institutionalized end of the spectrum, where social economy actors enjoy formal recognition, strong coordination bodies, and access to fiscal or procurement advantages.

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[16] Romania. (2000). Ordonanța Guvernului nr. 26/2000 cu privire la asociații și fundații [Government Ordinance on associations and foundations]. Monitorul Oficial al României, Partea I, nr. 39. https://legislatie.just.ro/Public/DetaliiDocument/21914; Romania. (2005). Legea nr. 1/2005 privind organizarea și funcționarea cooperației [Law on cooperatives]. Monitorul Oficial al României, Partea I, nr. 172. https://legislatie.just.ro/Public/DetaliiDocument/59644; Romania. (2006). Ordonanța Guvernului nr. 99/2006 privind instituțiile de credit și adecvarea capitalului [Government Ordinance on credit institutions and capital adequacy]. Monitorul Oficial al României, Partea I, nr. 1027. https://legislatie.just.ro/Public/DetaliiDocument/77063; Romania. (1996). Legea nr. 122/1996 privind regimul juridic al caselor de ajutor reciproc ale salariaților [Law on employees' mutual aid associations]. Monitorul Oficial al României, Partea I, nr. 253. https://legislatie.just.ro/Public/DetaliiDocument/10463; Romania. (2002). Legea nr. 540/2002 privind casele de ajutor reciproc ale pensionarilor [Law on pensioners' mutual aid associations]. Monitorul Oficial al României, Partea I, nr. 726. https://legislatie.just.ro/Public/DetaliiDocument/40457; Romania. (2006). Legea nr. 448/2006 privind protecția și promovarea drepturilor persoanelor cu handicap [Law on the protection and promotion of the rights of persons with disabilities]. Monitorul Oficial al României, Partea I, nr. 1006. https://legislatie.just.ro/Public/DetaliiDocument/76503; Romania. (2011). Legea nr. 292/2011 a asistenței sociale [Social Assistance Law]. Monitorul Oficial al României, Partea I, nr. 905. https://legislatie.just.ro/Public/DetaliiDocument/134014.

[17] Romanian Government. (2015). National Strategy for Social Inclusion and Poverty Reduction 2015–2020.

[18] Romanian Government. (2021). National Employment Strategy 2021–2027.

[19] European Commission, & Romanian Government. (2014). *Operational Programme Human Capital (POCU) 2014–2020*. European Union; European Commission, & Romanian Government. (2021). *Education and Employment Programme (POEO) 2021–2027*. European Union.

[20] OECD. (2023). Social economy in Romania: Country fact sheet (OECD/EU Social Economy and Social Innovation series). OECD. https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/social-economy-and-social-innovation/country-fact-sheets/country-fact-sheet-romania.pdf

Denmark and Romania, by contrast, provide recognition but offer more limited incentives. Denmark integrates social enterprises into mainstream business policy with a light-touch registry, while Romania's Law 219/2015 offers a legal definition but few financial advantages.

For the insect sector, this means that the potential role of SSE actors is not determined only by EU food or feed rules, but also by how supportive national SSE ecosystems are. In Portugal and Belgium, SSE actors can more easily align their legal status with public support and procurement opportunities, potentially accelerating their entry into insect farming, processing, or distribution. In Denmark and Romania, while SSE actors exist and are recognized, their scaling will depend more heavily on external funding or partnerships.

This comparison underscores why a cross-sectoral value model is needed: it allows us to measure not only what is legally possible, but also how institutional ecosystems either amplify or constrain the contributions that SSE actors can bring to innovative markets like insects as food and feed.

7. Cross sectoral analysis

The previous sections mapped the regulatory framework for insects as food and feed in EU and partner countries and the regulatory framework for SSE in partner countries and examined how insect production and SSE are regulated. In this section we explore what the specifics of insect production means for SSE actors in partner countries. Furthermore, this section aims to highlight where frameworks provide clear entry points for SSE actors in the insect value chain, and where they impose barriers that complicate participation.

7.1. Opportunities for cross sectoral collaboration

This section attempts to identify effective recognition systems for social enterprises, integration of SSE into circular economy and green transition policies, comprehensive support ecosystems, practical guidance tools, and inclusive governance structures

7.1.1. Clear legal recognition of social enterprises

One of the strongest good practices across partner countries is the presence of legal frameworks that formally recognize social enterprises, giving them visibility, identity, and credibility in the wider economy. Recognition ensures that mission-driven entities are not treated as marginal or informal actors but as legitimate players with access to funding, procurement, and partnerships. This is a critical enabler for sectors like edible insect farming, where trust, compliance, and innovation need to go hand in hand.

Denmark's RSV Act (2014) introduced the designation RSV[21]. This voluntary registration scheme allows organizations that meet clear criteria, namely social purpose, profit reinvestment, and organizational independence, to obtain RSV status. The RSV framework provides transparency and credibility, making it easier for social enterprises to build trust with consumers, regulators, and investors. For insect-related ventures, RSV status can signal that the enterprise combines ecological innovation with social purpose, which is particularly valuable in a market where consumer acceptance and regulatory scrutiny are high.

Romania's Law 219/2015[22] offers a comprehensive model that defines social enterprises and work integration social enterprises (WISEs). Certification through the ANOFM gives these entities an official status, with a dedicated registry and logo. The introduction of WISEs explicitly encourages the employment of vulnerable groups, reinforcing the social mission while providing access to funding and procurement preferences. For insect farming, this means a cooperative or social enterprise recycling organic waste and employing marginalized workers could be formally recognized, strengthening its credibility with public authorities and positioning it for EU or national funding streams.

[21] Erhvervsministeriet (2014) *LOV nr 711 af 25/06/2014*. Erhvervsministeriet. Available at: https://www.retsinformation.dk/eli/lta/2014/711 [Accessed 10 July 2025].
[22] Government of Romania. (2015). *Law 219/2015 on Social Economy*. Monitorul Oficial, Part I, no. 561. (official legal text)

Belgium's regional frameworks, such as Wallonia's social economy enterprise label[23] and VLAIO certification in Flanders,[24] offer recognition and support even in the absence of a federal SSE law. These mechanisms provide access to innovation vouchers, regional subsidies, and procurement advantages, giving certified entities visibility and preferential treatment. The flexibility of Belgium's regional approach is especially relevant for innovative sectors like edible insect production, where business models may not fit conventional categories but can still qualify as recognized social economy initiatives.

Relevance to the insect sector.
Recognition mechanisms across these countries are a good practice because they provide insect-focused SSE initiatives, whether cooperatives, WISEs, or associations, with a formal legal identity. This strengthens trust among partners and regulators, ensures eligibility for targeted funding and procurement, and enhances credibility in public discourse. In a sector facing cultural resistance and complex compliance requirements, the ability to operate under a recognized SSE status gives insect-related ventures a clearer pathway to legitimacy and support.

7.1.2. Integration of SSE into green and circular economy strategies

A second area of good practice is the explicit integration of SSE into green transition and circular economy policies. When social enterprises are recognized as drivers of ecological innovation, they gain access to funding streams, procurement tools, and political support that strengthen their role in emerging sectors such as edible insect farming. This integration positions SSE not only as a social policy instrument but also as a contributor to sustainability and innovation.

Belgium provides one of the clearest examples of this approach. Regional governments have developed strategies, such as Circular Flanders[25], Wallonia's Strategy for Circular Economy[26], and Brussels' Regional Innovation Plan[27], that link SSE actors directly with ecological transition goals. These strategies are backed by funding calls, reserved procurement criteria, and innovation programs that support hybrid models combining social inclusion with environmental sustainability. Belgian SSE actors already operate at this intersection, for example Ferme Nos Pilifs[28] (a WISE combining organic farming with inclusion). If such actors were to incorporate insect farming into their activities, they would already have access to recognition, funding, and procurement pathways under existing circular economy policies.

Romania has begun integrating SSE into broader policy goals, including the green and inclusive transition. Policy dialogues and academic research[29] highlight SSE as a contributor to waste reduction,

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[23] See Parlement de la Région wallonne. (2008, November 20). *Décret relatif à l'économie sociale* (Décret n° 2008-204798). Service public de Wallonie. https://wallex.wallonie.be/eli/loi-decret/2008/11/20/2008204798/2009/01/01

[24] Parliament of the Flemish Region. (2023, March 17). *Decree on social entrepreneurship* (Vlaams decreet betreffende sociaal ondernemerschap) [Decree]. Belgian Official Gazette.

[25] Circular Flanders is available at: https://www.vlaanderen-circulair.be/nl.

[26] Circular Wallonia. (2021). Deployment Strategy of the Circular Economy in Wallonia. Available at: https://economiecirculaire.wallonie.be/

[27] Government of the Brussels-Capital Region. (2021). *Regional Plan for Innovation 2021–2027: Smart Specialisation Strategy and Regional Innovation Plan*. Iris-cofund. https://iris-cofund.eu/storage/files/autotranslated-fr-to-en-innoviris-plan-regional-innovation.pdf

[28] Available at: https://www.fermenospilifs.be/

[29] See, for instance, OECD. (2025). Social Economy in Europe: Romania. Available at: https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/12/social-economy-in-europe-country-notes_2a940194/romania_dd9d0241/c775e15c-en.pdf; MMSS (2025), Strategic Institutional Plan, https://sgg.gov.ro/1/wp-content/uploads/2024/12/PSI-MMSS-2025-2028.pdf.

sustainable agriculture, and circular social economy models. Recent strategies connect SSE initiatives with anti-poverty, community development, and ecological goals, allocating funding to projects that combine social inclusion with environmental co-benefits. For edible insect farming, this policy alignment is significant: a WISE or cooperative that transforms food waste into protein and fertilizer can be framed both as a social inclusion project and as an ecological innovation, increasing its chances of policy recognition and funding.

Denmark similarly embeds SSE in its sustainability agenda. While there are no insect-specific incentives, national research projects such as InVALUABLE[30] and WICE4Soil[31] demonstrate that insect-based bioconversion fits within green innovation frameworks. SSE actors with RSV status can therefore present insect ventures as contributing to Denmark's broader sustainability objectives, gaining indirect support through R&D funding, innovation ecosystems, and municipal green transition programs.

Relevance to the insect sector.
The production of edible insects is in general a circular economy practice: it converts organic side streams into high-value protein and soil inputs, requiring fewer resources than conventional livestock. When SSE frameworks are explicitly tied to green and circular strategies, insect-related initiatives can position themselves at the nexus of social and environmental innovation. This dual framing, social inclusion plus ecological benefit, makes them particularly attractive for green transition funds, social economy programs, and public procurement opportunities. In practice, this means that a WISE or cooperative insect farm can access multiple support streams simultaneously, increasing both financial sustainability and policy visibility.

7.1.3. Support ecosystems and practical guidance

A third good practice lies in the development of support ecosystems that can provide practical tools, training, and advisory services to actors wishing to enter the insect sector. Beyond legal recognition and alignment with green policies, the existence of structured support systems makes the difference between formal status and effective participation. For insect-related ventures, which face high technical and compliance demands, such ecosystems and guidance materials are especially important.

Denmark stands out for its comprehensive support ecosystem. Social enterprises benefit from a network of national and local government agencies, municipalities, private organizations, and specialized intermediaries. This ecosystem provides capacity-building initiatives, tailored business development services, consultancy and incubation support, and access to diverse public and private funding schemes. For insect-related SSE initiatives, this means that technical and financial challenges such as navigating DVFA approvals, scaling production, or addressing consumer perception can be met with targeted advisory support. Networks also foster collaboration across sectors, making it easier for insect enterprises to form partnerships with municipalities, research institutions, or other mission-driven businesses.

[30] Www.dti.dk (2025) inVALUABLE. Available at: https://www.dti.dk/specialists/invaluable/38118 [Accessed 11 July 2025].

[31] WICE4Soil – Waste Insects and Circular Economy for soil improvement (2015) WICE4Soil – Waste Insects and Circular Economy for soil improvement. https://www.dti.dk/wice4soil-and-8211-waste-insects-and-circular-economy-for-soil-improvement/42384 [Accessed 11 July 2025].

Portugal offers another type of practical support through Good Practices Handbooks developed under DGAV.[32] These manuals guide insect producers step by step, from breeding and feeding to harvesting and processing. They standardize operations, clarify compliance procedures, and reduce uncertainty for new entrants. For SSE actors, such handbooks lower the technical barriers to participation by making complex processes accessible to organizations that may lack specialized expertise. They also facilitate training and integration of vulnerable workers by breaking down production into clear, replicable steps. In the absence of a detailed legal framework, these manuals provide a "soft law" form of guidance that enables consistent and safe insect production.

Belgium complements recognition with strong networked support structures. Regional agencies such as ConcertES (Wallonia) and VERSO (Flanders) provide SSE actors with representation, advocacy, and access to advisory services. Belgian SSE actors are also active in EU-funded consortia such as SUSINCHAIN[33], where they can collaborate with research institutions and private companies on sustainable food system innovation. This networking dimension is particularly relevant for insect initiatives, as it facilitates entry into transnational research projects, innovation pilots, and funding streams that might otherwise be out of reach for small cooperatives or NGOs.

Relevance to the insect sector

Support ecosystems and practical guidance lower the barriers for insect-focused SSE initiatives in three key ways:

- They provide technical certainty, reducing risks linked to compliance, hygiene, and food safety.
- They enable capacity building, helping SSE organizations professionalize operations while staying mission-driven.
- They create partnership opportunities, connecting insect-related ventures with municipalities, research projects, and EU-level networks.

Together, these practices ensure that recognition on paper is matched with practical tools in the field, giving SSE actors a real chance to develop viable insect-based enterprises.

7.1.4. Inclusive representation and democratic participation

Another important good practice is the inclusive governance of the SSE, ensuring that diverse voices are represented in decision-making and that democratic participation is embedded in the sector. This inclusivity strengthens the legitimacy of SSE actors, aligns policies with the realities of local communities, and fosters resilience by drawing on varied perspectives. For innovative fields like insect farming where public scepticism, regulatory uncertainty, and cultural barriers remain high, having inclusive structures makes it easier to gain community trust and institutional backing.

Portugal offers a strong example through the diverse representation of social actors in its SSE governance structures. A wide range of institutions and organizations dedicated to social development are involved in shaping policy, ensuring that the needs of social intervention agents are accurately identified and addressed. This diversity fosters innovative partnerships, allows context-specific responses, and brings visibility to issues that might otherwise remain overlooked. It also reinforces

[32] Direção-Geral de Alimentação e Veterinária. (2021). Manual para a produção e utilização de insetos para alimentação [Manual for the production and use of insects for food]. Available at:https://www.dgav.pt/wp-content/uploads/2021/08/MANUAL-INSETOS.pdf

[33] The project SUSINCHAIN is funded by European Union's Horizon 2020 Research and Innovation programme; available at: https://susinchain.eu/

democratic participation, as different organizations whether focused on care, employment, or community development contribute territorial insights and lived experience. For insect-related initiatives, this inclusive model ensures that vulnerable groups and underrepresented communities can participate meaningfully in shaping interventions, for example through training programs, cooperative ownership models, or community-led education campaigns.

Belgium embeds inclusivity within its cooperative and ASBL structures, which are legally recognized under the CSA and reinforced by regional recognition systems. These legal forms ensure democratic governance, typically one member, one vote, while also enabling access to support instruments such as innovation vouchers and coaching. By combining participation with financial and advisory support, Belgian SSE frameworks make it easier for insect-related cooperatives or NGOs to gain credibility and embed themselves in local communities. This participatory dimension is especially valuable in a sector that may face public scepticism, as decision-making structures rooted in community involvement can help build acceptance of insect-based products and services.

Relevance to the insect sector.
Inclusive representation and democratic participation support insect-related SSE initiatives in three main ways:

- They enhance legitimacy and trust, vital for a sector that requires public acceptance.
- They ensure that vulnerable groups are actively involved, aligning insect farming projects with social inclusion goals.
- They promote collaborative governance, enabling cooperatives, associations, and community groups to adapt quickly to local needs and challenges.

By giving SSE actors both a voice in policymaking and a stake in enterprise governance, inclusive frameworks create the conditions for insect farming initiatives to be not only technically viable but also socially accepted and community driven.

7.1.5. Conclusion

Across the partner countries, several good practices stand out as enablers for SSE actors entering the edible insect sector. First, clear legal recognition of social enterprises in Denmark, Romania, and Belgium's regions provides mission-driven ventures with credibility, visibility, and access to support. Second, the integration of SSE into circular economy and green transition strategies aligns insect farming with broader sustainability priorities, opening access to funding and procurement tools. Third, support ecosystems and practical guidance, ranging from Denmark's advisory and incubation services to Portugal's DGAV handbooks and Belgium's research networks, lower technical and financial barriers for SSE initiatives. Finally, inclusive representation and democratic participation ensure that community voices are reflected in policy and governance, which strengthens legitimacy and fosters acceptance of innovative activities such as insect production.

Together, these practices demonstrate that where recognition, alignment with green strategies, support tools, and inclusivity are in place, SSE actors can credibly position insect-related ventures as both socially and environmentally beneficial. This creates a solid foundation for experimentation, scaling, and cross-border collaboration. However, realizing the full potential of these good practices also depends on how effectively countries address the legal and policy challenges that still constrain SSE actors in novel sectors, an issue explored in the next section.

7.2. Challenges for cross-sectoral collaboration

While this analysis highlights promising good practices in SSE legislation and support, it also reveals structural and operational challenges that constrain the participation of Social and Solidarity Economy actors in the edible insect sector. These challenges are not unique to insect farming, but they are magnified in a field that is both highly regulated and culturally sensitive. Key issues include fragmented legal frameworks, limited fiscal incentives, regulatory complexity, cultural resistance, skills shortages, and funding fragility. Taken together, these obstacles shape the ability of cooperatives, WISEs, and social enterprises to enter, survive, and scale in this innovative but demanding sector.

7.2.1. Fragmentation and inconsistency of legal frameworks

One of the most pressing challenges arises from the fragmented and inconsistent regulation of SSE across jurisdictions. Belgium illustrates this issue most clearly, with Wallonia, Flanders, and Brussels each adopting distinct SSE recognition systems without an overarching federal strategy. This creates administrative burdens, duplicative procedures, and uncertainty for SSE actors, especially those working across regions or scaling nationally. Similarly, Romania's SSE law remains narrowly focused on social inclusion, leaving ecological missions central to insect production and under-supported. This inconsistency hampers the ability of SSE actors to position insect farming within a coherent national policy framework and limits opportunities for cross-regional scaling.

7.2.2. Lack of targeted fiscal incentives

Across all four countries, fiscal frameworks remain limited or absent for SSE actors, with Denmark providing a stark example. Danish social enterprises face the same corporate and VAT obligations as conventional businesses, unless they qualify as PBOs. Belgium offers only modest tax exemptions for cooperatives and non-profits, and Romania relies heavily on short-term EU grants without sustainable fiscal tools. For insect-related SSE initiatives, which require capital-intensive infrastructure and face long development cycles, the lack of dedicated tax relief, donor incentives, or social finance mechanisms significantly constrains investment and scaling potential.

7.2.3. Regulatory complexity and administrative burden

SSE actors face disproportionately high compliance costs and regulatory complexity in the insect sector. Denmark requires detailed licensing through the DVFA, strict adherence to EU Novel Food rules, and constant alignment with evolving hygiene standards. Belgium similarly applies stringent oversight through FASFC, while Portugal demands extensive EU-compliant dossiers for novel foods. Romania's Law 411/2023 further adds segregated shelf placement and labelling restrictions for insect-based foods, amplifying public scepticism. These requirements, while necessary for safety, impose technical and financial barriers that smaller, mission-driven organizations struggle to navigate without costly external expertise.

7.2.4. Cultural resistance and public perception

In Portugal and Romania especially, cultural resistance to insect consumption creates additional legal and market barriers. In Portugal, insects are still perceived as "strange and unsafe," delaying investment and slowing regulatory adaptation. Romania's restrictive Law 411/2023 reflects similar public unease by banning insect ingredients in traditional recipes and mandating separate retail

placement. Such measures not only stigmatize insect products but also undermine the capacity of SSE actors, who typically rely on community trust and social legitimacy to advance innovative practices.

7.2.5. Talent retention and skills development

Specialized skills in agri-tech, food safety, and circular economy engineering are essential for insect production. Yet, SSE actors often lack the ability to recruit and retain such talent, as competitive salaries are more easily offered in the private sector aiming for profit. Belgium highlights this problem explicitly, while Portugal notes the need for accessible training tailored to SSE organizations. Without targeted capacity-building, insect-related SSE projects risk being constrained by skill shortages.

7.2.6. Sustainability of Funding

Finally, across all contexts, funding sustainability remains fragile. Romania illustrates this challenge most clearly: thousands of new social enterprises emerged under EU-funded programs, but their survival beyond project cycles is uncertain. In the insect sector, where profitability is not immediate, this dependence on time-limited EU or regional grants creates vulnerability. Without structural support mechanisms, such as long-term subsidies, impact-linked finance, or preferential procurement guarantees, SSE actors risk exiting the sector prematurely.

7.2.6. Conclusion

Across Belgium, Denmark, Portugal, and Romania, the main legal and policy barriers converge on four themes: fragmentation of SSE recognition frameworks, absence of targeted fiscal tools, burdensome compliance requirements, and persistent cultural resistance to insect consumption. These are compounded by cross-cutting challenges such as talent retention and short-term funding cycles. For insect-related SSE initiatives, the result is a mismatch between mission-driven innovation and structural support.

7.3. Comparative assessment on cross sectoral collaboration

The SSE frameworks define the rules of engagement for cooperatives, associations, mutuals, and social enterprises. For innovative sectors such as edible insect farming, the clarity, accessibility, and inclusiveness of these frameworks determine whether SSE actors can participate effectively. The following comparative assessment focuses on five dimensions: (1) clarity of the legal framework, (2) supportiveness of law for SSE–business collaboration, (3) accessibility for SSE actors, (4) relevance to circular/ecological innovation, and (5) potential to integrate insect farming into SSE. Drawing on Belgium, Denmark, Portugal, and Romania, the analysis highlights both enabling conditions and systemic barriers, pointing to where reform or support is needed.

7.3.1. Clarity of SSE legal framework

Belgium's clarity is undermined by regional fragmentation. Flanders, Wallonia, and Brussels-Capital each maintain their own SSE legislation and recognition schemes. Within regions, definitions of cooperatives, mutuals, and social enterprises are clear, and agencies such as VLAIO (Flanders) and ConcertES (Wallonia) provide guidance. However, for initiatives spanning multiple regions, the lack of a federal framework creates administrative burdens and uncertainty.

Denmark scores higher on clarity due to its Act on Registered Social Enterprises. This law sets precise criteria for mission, profit allocation, and independence, providing a transparent pathway to

recognition. Yet, because Denmark lacks an overarching SSE law covering cooperatives and mutuals, the framework remains narrower in scope than in other countries.

Portugal's Framework Law[34] provides recognition but is outdated and vague, leaving room for broad interpretation and inconsistencies. The law does not adequately capture the diversity of new initiatives, creating a gap between legal definition and practice.

Romania's Law 219/2015, complemented by secondary norms[35], provides one of the clearest national definitions of social enterprises and WISEs. It includes certification, registries, and reporting rules. However, bureaucratic procedures and uneven implementation at local level reduce practical clarity.

7.3.2. Supportiveness of law for SSE–business collaboration

Belgium promotes collaboration mainly through public procurement policies, regional subsidies, and innovation vouchers. While collaboration is encouraged in practice, explicit fiscal incentives or hybrid legal forms are lacking.

Denmark's RSV recognition facilitates cooperation with municipalities and public agencies, especially in procurement. Partnerships are also common in innovation projects, but systemic legal incentives are absent.

Portugal has some legal instruments to support collaboration, but these are underfunded and fragmented. The law recognizes the need for partnerships but lacks consistent financial tools to sustain them.

Romania enables collaboration through reserved contracts and subcontracting rules, giving SSEs an edge in public procurement. Recognition under Law 219/2015 improves credibility, but tax breaks or formalized hybrid partnerships with private businesses are missing.

7.3.3. Accessibility of law to SSE actors

Belgium's legal resources are dispersed across three languages and three regions, which complicates access for cross-regional or international actors. Larger organizations can navigate this, but smaller initiatives struggle.

Denmark stands out with user-friendly RSV registration, clear online guidelines, and consultancy services. The main barrier is linguistic: most guidance is in Danish, reducing accessibility for international actors.

Portugal lags, as its legislation is technical, fragmented, and difficult to navigate. Sporadic training exists but is not enough to ensure consistent understanding.

Romania provides published laws and manuals, but uneven local capacity and bureaucratic hurdles make navigation difficult for grassroots actors. Some officials remain unfamiliar with procedures, creating inconsistent application.

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[34] Portuguese Government. (2013). Law No. 30/2013: Framework for the Social Economy. Retrieved July 31, 2025, from https://www.pgdlisboa.pt/leis/lei_mostra_articulado.php?nid=2469&tabela=leis

[35] Romania. (2015). Legea nr. 219/2015 privind economia socială [Law on social economy] (Monitorul Oficial al României, Partea I, nr. 561 din 28 iulie 2015); Romania. (2016). Hotărâre nr. 585/2016 pentru aprobarea normelor metodologice de aplicare a prevederilor Legii nr. 219/2015 privind economia socială [Government Decision approving the methodological norms]. Monitorul Oficial al României, Partea I, nr. 660 din 29 august 2016.

7.3.4. Relevance to circular/ecological innovation

Belgium is the leader in this area, as its regional SSE policies explicitly integrate circular economy and ecological goals. Programs like Circular Flanders and Wallonia's green innovation funding support projects linking sustainability with inclusion.

Denmark provides strong indirect support, as its national sustainability and green transition strategies create opportunities for SSE actors. However, ecological missions are not explicitly recognized in the RSV Act.

Portugal acknowledges circular innovation through good practice manuals, but its legal framework does not systematically integrate ecological innovation.

Romania's SSE law focuses primarily on social inclusion. Although recent policy discourse links SSE to green transition, legal provisions remain neutral, offering neither incentives nor recognition for ecological missions.

Comparative insight: Belgium embeds ecological innovation into its SSE policies; Denmark supports it indirectly; Portugal and Romania are catching up but lack explicit legal recognition.

7.3.5. Potential to integrate insect farming into SSE

Belgium's flexible regional frameworks, strong cooperative tradition, and circular economy focus create favourable conditions. Insect farming ventures could fit easily into WISEs or cooperatives, particularly if tied to waste valorisation or employment.

Denmark's science-driven regulation and RSV framework make it possible for insect farming projects to be recognized as mission-driven enterprises. The lack of targeted fiscal incentives remains a limitation.

Portugal faces barriers due to negative public perception of insect consumption and the absence of insect-specific regulation. Still, innovative insect projects could access national funding lines for social interventions.

Romania offers a moderate pathway: insect farming ventures can qualify as SSE entities if they include social inclusion, but purely ecological models may struggle under Law 219/2015. Consumer perception and restrictive food labelling rules add to the barriers.

7.3.6. Conclusion

The comparative assessment shows that the capacity of SSE frameworks to host edible insect ventures varies widely. Belgium and Denmark are best positioned, though each faces gap (fragmentation and lack of fiscal incentives). Romania provides a clear legal identity for social enterprises but focuses narrowly on social inclusion, while Portugal faces both regulatory and cultural barriers.

For the edible insect sector to become a viable arena for SSE experimentation, countries need to:

- Harmonize legal frameworks or reduce fragmentation;
- Expand SSE definitions to explicitly include ecological innovation;
- Simplify procedures and improve access for smaller actors;
- Develop fiscal incentives tailored to mission-driven green ventures

7.4. Implications of legal frameworks for a cross-sectoral model

The analysis of SSE frameworks and insect regulation across Belgium, Denmark, Portugal, and Romania reveals not only diversity in national contexts but also common threads that are critical for building a cross-sectoral model. Such a model aims to bridge the SSE and the edible insect industry, positioning them as mutually reinforcing contributors to ecological transition and social inclusion.

7.4.1. Adaptability to diverse legal and institutional contexts

The first implication is the need for adaptability. SSE frameworks vary widely: Belgium relies on a regionalized governance system, Denmark operates with a voluntary registry of social enterprises, Portugal enshrines SSE in a framework law that has become outdated, and Romania anchors SSE in a relatively young but structured legal definition. A cross-sectoral model must therefore be modular, offering pathways that can be tailored to each country's institutional architecture. Instead of prescribing a single approach, the model should function as a toolkit, allowing SSE actors to align with local definitions, recognition schemes, and support instruments. This ensures that the model can be replicated across different jurisdictions without losing coherence.

7.4.2. Integration of social and ecological value

The second implication is the importance of positioning ecological and social value as inseparable. Insect farming naturally fits circular economy principles, converting organic by-products into high-value protein and soil inputs. SSE entities, by their nature, add dimensions of inclusion, democratic governance, and community benefit. When brought together, these logics reinforce one another: insect production becomes not just an environmental innovation but also a vehicle for employment, local development, and trust-building. The Belgian case, where circular economy strategies explicitly incorporate SSE, illustrates how powerful this integration can be. A cross-sectoral model should therefore articulate a dual value proposition: ecological efficiency coupled with social inclusion. This framing enhances legitimacy, attracts political support, and strengthens access to diverse funding streams.

7.4.3. Embedding support ecosystems and practical guidance

Third, the analysis underscores the need for embedded support ecosystems. Insect farming is a highly regulated and technically demanding sector. Without access to advisory services, incubation, and training, many SSE actors risk being excluded despite their potential. Good practices from Denmark's ecosystem of consultancies and municipal partnerships, Portugal's DGAV manuals that translate regulation into practice, and Belgium's networks such as ConcertES and VERSO show how ecosystems can lower entry barriers. A cross-sectoral model should therefore be designed not only as a regulatory framework but also as an infrastructure of support, ensuring that mission-driven organizations have the knowledge, tools, and partnerships to succeed.

7.4.4. Addressing systemic barriers and risks

Fourth, the model must directly address systemic barriers. Cultural resistance to insect consumption is particularly visible in Portugal and Romania, where scepticism has translated into stricter labelling rules or slow uptake. Fiscal incentives for SSE actors are limited across all countries, with Denmark providing no special relief and Romania heavily dependent on EU funds. Regulatory compliance is often costly and complex, especially for small actors. If unaddressed, these barriers will restrict participation to well-capitalized private firms, undermining the inclusive potential of the insect sector.

A robust cross-sectoral model should therefore integrate financial mechanisms such as social impact investment, tax relief, and long-term subsidy schemes; create simplified compliance toolkits tailored for SSE entities; and incorporate communication strategies to increase consumer acceptance of insect-based products.

7.4.5. Cross-border learning and policy transfer

Finally, the analysis demonstrates the value of cross-border learning. Each country brings distinctive strengths: Denmark's RSV status provides credibility, Romania's WISE certification links directly to vulnerable employment, Belgium's regional circular economy integration embeds ecological innovation, and Portugal's good practice manuals reduce uncertainty for producers. A cross-sectoral model should act as a platform for harvesting these strengths and making them transferable. By framing insect farming as a test case for broader SSE–innovation integration, the model can contribute to EU-level objectives while supporting local adaptation. Transnational cooperation also creates opportunities for scaling, joint research, and cross-market recognition of SSE initiatives, which is essential in a sector that is still emerging and politically sensitive.

7.4.6. Towards a coherent framework for action

Taken together, these implications suggest that a cross-sectoral model should not be conceived merely as a static set of rules. It should be an evolving framework that combines regulatory flexibility, ecological and social integration, support ecosystems, barrier mitigation, and transnational learning. In practical terms, this means building a platform that provides legal pathways, financial instruments, technical guidance, and shared knowledge infrastructures. Such a model would enable SSE actors to enter and thrive in the insect value chain, while simultaneously advancing sustainability, inclusion, and innovation across Europe.

8. Case studies

Five case studies were identified and analysed and informed the findings of this report (**Section 8.6 and 9**) but for the public version of this report this chapter only includes two case studies presented in detail and the remaining three case studies are only listed due to confidentiality constraints and data-sharing limitations associated with these case studies.

8.1. Case Study 1: Empowering refugees and host communities through sustainable insect farming - A social solidarity economy approach in Uganda

8.2. Case Study 2: Insekteriet – sustainable education through social enterprise

This case study is based on an expert interview kindly agreed to by Kirsten Sterling, Project Manager in Insekteriet, combined with publicly available information on the Insekteriet project website

8.2.1. Criteria for selecting case study

Insekteriet is a Danish initiative run by Bugging Denmark that features an educational insect-farming program where students raise edible insects (mealworms) in small "mini-farms". While the program is directed at Danish public schools in general, it has over the years frequently featured activities in special education schools for mentally vulnerable children that align well with SSE principles. While the insects grow over 3-4 weeks, learners are taught about sustainable food production, climate impacts, and the farm-to-table cycle.

The project Insekteriet is structured as a public-benefit project (not-for-profit), meaning that all funding raised for its activities are invested into its educational purposes rather than private gain. The program focuses on fostering curiosity and as well as skills, and the recipients, students in the Danish primary education system including vulnerable youth, benefit from hands-on learning in an emerging green industry.

Insekteriet illustrates SSE in practice through community-cantered development, equitable participation and environmental sustainability. Its main objectives are to improve educational outcomes, tangible skills and well-being for students (including special-needs students) through insect farming, to promote sustainable food habits, and to strengthen social inclusion by building confidence and skills among disadvantaged youth.

8.2.2. Background of the case study

Modern education faces the challenge of engaging all students in STEM (science, technology, engineering, and math) learning, especially as society grapples with complex issues like climate change and technological change. Yet many youths find STEM subjects abstract or unrelatable, leading to disengagement over time. In Denmark and elsewhere, studies show a decline in students' interest in science and math during adolescence, which contributes to fewer young people pursuing science pathways and exacerbates skill shortages. There is a clear need for new approaches to STEM education that make learning more tangible, relevant, and inclusive, so that more students, regardless of background stay interested in science.

Traditional teaching methods often struggle to reach students who don't thrive in lecture-and-textbook settings. This is especially true for vulnerable or disadvantaged learners, such as those with learning difficulties or from under-resourced communities. Many special education students, for example, have limited access to high-quality science experiences; their lessons are frequently watered down or

focused on rote learning, which can leave them disengaged. In practice, when science is made concrete – through experiments, real-life examples, and tactile activities – students of all abilities are more likely to connect with the material. They become active learners rather than passive observers, which is a key step toward improving STEM outcomes for those who might otherwise be left behind.

Insekteriet was developed in response to these educational needs. Launched in 2019 by the social enterprise Bugging Denmark, Insekteriet is an innovative project that brings edible insect farming into schools as a teaching tool. Over a 3-to-4-week program, students raise mealworms in small classroom farms, observing the insects' life cycles from egg to adult. As the insects grow, the class engages in experiments and discussions about biology, ecology, and food sustainability – for instance, measuring how well the mealworms consume various feed sources, and comparing their environmental footprint to traditional livestock. Abstract concepts like ecosystems, resource efficiency, or the food cycle become tangible: children can see and touch the organisms involved, making science and environmental education feel real. This farm-to-table approach culminates in the students harvesting the insects and even cooking a meal with them, bridging theoretical learning and practical application.

Bugging Denmark secured grants and partnerships with local municipalities and science centre's so that schools could participate free of charge. This ensured that even schools with limited resources, including special education schools, could join. This illustrates the project's community benefit and accessibility.

8.2.3. How Insekteriet works

Insekteriet aims to provide a novel approach to STEM education as a hands-on program for schools, teaching sustainability and "farm-to-table" concepts with edible insects.

The program was piloted in 2019 and launched widely in 2020 after receiving funding from the Novo Nordisk Foundation. With local government support, especially Copenhagen's Open School ("Åben Skole") program, the project expanded through partnerships with regional science canters and education networks. By 2023, Insekteriet had reached thousands of students across Denmark. The project is on target to reach 360 school classes in 2025 alone.

Insekteriet operates as a 3 to 4 week in-school course. Classes receive "mini-insect farm" kits with mealworm larvae, care instructions, and support from educators or facilitators. Students are involved in every step: feeding the insects (often with food waste, demonstrating circularity), keeping habitats clean, and observing the insect life cycle. The curriculum combines science, math, environmental studies, and even language arts. Students decide on experiments (for example, which food scraps to use for feed) and co-create classroom activities. They compare insects' resource use with that of traditional livestock, learning about insects' lower environmental impact and see firsthand how food waste becomes insect feed, and frass (insect droppings) can be used as fertilizer, which provides a practical lesson in closed-loop systems.

The project ends with harvesting and preparing the insects. Students bake mealworm cookies and chili-con-mealworms or host tasting events, often inviting the wider school community.

Some classes continue insect-rearing or start small initiatives (like selling frass fertilizer), suggesting a longer lasting impact.

While Insekteriet I mainly used by 8–15-year-olds, it can also be used by older students in a special education setting. By the end of 2025, the initiative is expected to have reached more than 12,000

students. One-hundred-seventy to 200 of these are special needs students, with approximately 5% of school classes served being special ed classes – a Danish school class has 21 pupils on average, while there are typically only 6-7 pupils in a special ed class.

Insekteriet serves vulnerable children and non-traditional learners by design. The program's activities are highly concrete, visual, and interactive – elements known to support students who struggle in normal classroom settings. By offering multiple ways to participate and allowing students to engage at their own pace, the program ensures that all forms of participation are legitimate and valued. The idea is to foster a safe and inclusive environment where children who typically have difficulty concentrating or communicating become involved in caring for the insects. The simple routine of feeding and checking on the creatures each day provided structure and a sense of responsibility. Students who are hesitant to touch insects can still engage through observation or related tasks, and this legitimacy of varied participation fosters confidence and inclusion. Teachers note that even initially hesitant students become active participants and report calmer behaviour and genuine excitement. However, there should still be room for students to decide on their own level of participation – or not participate at all. This allows students with various challenges (autism, ADHD, language barriers, etc.) to participate on an equal footing with others. For example, a non-verbal student can help measure insect feed with a scale – a task of value to the group – even if that child does not participate in a traditional discussion-based lesson.

Bugging Denmark runs Insekteriet as a not-for-profit venture, with a team including a project leader, a few instructors, and collaborating teachers. Grant funds cover the cost for participating schools. The program's approach means curriculum design and feedback are collaborative, with direct input from teachers, educational experts, and public partners.

Insekteriet is therefore grounded in both a broader educational innovation context and a commitment to social inclusion. The project addresses a recognized gap in STEM education by making science hands-on and relatable, and it deliberately extends these benefits to students who often miss out on cutting-edge learning experiences. By combining sustainable insect farming with an inclusive teaching model, Insekteriet exemplifies how a social enterprise can complement the formal education system.

8.2.4. Criteria for selecting the social enterprise

Bugging Denmark is an urban insect farm producing crickets and mealworms. As such, Bugging Denmark operates firmly in the edible insect farming sector while having and explicit social mission of inclusive education and increasing awareness of alternative protein among the public.

That said, Bugging Denmark is a private company (in Danish enkeltmandsvirksomhed), and the company structure prevents registration as a Registered Social Economic Enterprise RSV. However, Bugging Denmark operates projects, such as Insekteriet, that are strictly non-profit, meaning that all funding associated granted to the project goes to address the social mission of the project. For instance, funding granted to Insekteriet is solely dedicated to developing and run the project's teaching activities.

8.2.5. Compliance of the project with SSE

Insekteriet was chosen as a case study for social bugs, since it aligns with the SSE criteria defined for Social Bugs. However, we are mindful that some aspects may not be typical for social economy - i.e. that Bugging Denmark is a private company, not registered as an RSV.

Operates in the insect farming sector:
Bugging Denmark is at its core an insect farm and therefore operates in the edible insect farming sector. As such, Insekteriet's activities also canter on edible insect farming, since the project develops learning programs where students raise their own mealworms in small school farms. Throughout this hands-on insect cultivation (from nurturing larvae to harvesting insects for food) the students gain an understanding of insect farming and the insect farming sector.

Explicit social mission as primary objective
Insekteriet is driven by a social and educational mission. Its primary goal is to teach children – including those from vulnerable groups – about sustainable food production and science. It is defined as a public-benefit project with the main purpose to deliver public good in the form of high-level education, and societal and sustainability awareness. This explicit social/environmental mission is at the core of project activities.

Reinvests profits for a social/environmental purpose
While Insekteriet is housed by Bugging Denmark, a private company, Insekteriet as a project operates on a not-for-profit model. It operates with grant funding (currently support from the Novo Nordisk Foundation) and all funds are dedicated to promoting the core project mission and are not distributed as profits. Importantly for Insekteriet to comply with this core criteria as an SSE project, the dedication of all funds to project activities such as providing free materials to schools, developing better curriculum, and extending the project's reach, is legally binding and a prerequisite for the external funding granted by the Novo Nordisk Foundation.

Involves vulnerable or disadvantaged groups
Insekteriet actively involves vulnerable and disadvantaged children in its teaching activities by working with special education schools and classes, engaging mentally vulnerable children and those with learning challenges. Insekteriet's experience shows that vulnerable children (such as those from other language families and mentally vulnerable children) are often at least as enthralled by insect farming as other students.

Practices inclusive and participatory governance
The daily operations of Insekteriet are run by Bugging Denmark, but the project exhibits some participatory governance traits. The program is delivered through partnerships – Bugging Denmark collaborates with schoolteachers, local nature centres, and science education networks to co-create and run the program. Teachers and partners have input on how the project is implemented in their schools, and the content is adapted based on feedback from these stakeholders. This collaborative approach mirrors inclusive governance, where multiple voices (educators, students, community partners) shape the project's development.

Registered under a social enterprise-oriented legal form
As mentioned above, Bugging Denmark is a private company, not a cooperative or foundation, and is not registered as an RSV. However, Insekteriet itself operates in a public-benefit capacity. It is run as a non-profit initiative under the company's umbrella. While not a separate legal entity, its status as a

public-benefit project signifies a binding commitment to public benefit. This means it cannot distribute profits and must serve a charitable purpose, aligning it with the intent of a social enterprise legal form.

That said, the fact that Insekteriet is a non-profit project run by a private company does call for consideration of at what point projects can be considered SSE and may place Insekteriet in a "grey zone" as to whether Insekteriet is truly an SSE project. For instance, some altruistic foundations do not grant funding to projects run by private companies and would therefore by principle rule out supporting Insekteriet.

Measures and reports social impact

Insekteriet tracks its impact. The team gathers qualitative and quantitative feedback to evaluate outcomes – for instance, recording the number of students reached and collecting teachers' observations on student engagement and learning progress. They document stories of student development (such as increases in confidence or interest in science among participating youth) and share these results with funders and partners. This practice not only demonstrates accountability to its mission, but also allows for continuous improvement of teaching materials

8.2.6. Major challenges and lessons learned

The "Yuck" factor

Cultural aversion to insects as food was expected to be an obstacle. Some students (and teachers) were initially uncomfortable with handling insects or eating them. This was expected to be particularly true for students at special education schools where a safe and predictable environment is strived for and anything out of the ordinary is best introduced gradually.

Approach: The team used gradual exposure. Initial sessions focused on care rather than consumption. Scientific context and group tasting events reframed insects as nutritious, sustainable food, while making participation optional. Positive peer experiences turned reluctance into curiosity for many students. Importantly, the program emphasized that all participation forms are valid. Students could choose not to touch or eat insects and still be fully included in the learning experience. However, especially at special education schools, it proved important to accept that some students simply were not comfortable with the program – as is the case with all activities at special education schools, not only those that involve edible insects. This reaction must be accepted to allow the students to prioritize their mental well-being.

Lesson learned: Exposure, education, and hands-on experiences can shift cultural perceptions. Framing new ideas in familiar contexts - like making chili-con-mealworms - helps overcome psychological barriers.

School capacity and logistics

An initial risk was thought to be that teachers would feel unprepared to manage insects in the classroom or worried about time and infrastructure demands.

Approach: Insekteriet addressed this via plug-and-play kits, guides - both printed and online video guides - and person-to-person support over the phone. Shipment of insects were made in accordance with the individual need of the classes that used the teaching unit. The program was designed to fit with existing curricula.

Lesson learned: Perhaps the most important learning to come out of Insekteriet is that teaching lessons should make the life of teachers easier, not require extra work for implementation. The program's flexibility and visual structure allow teachers to adapt lessons to their students' needs, especially in special education settings where responsiveness and structure are crucial. This important step grants access to the general population of teachers, not only to the ones that are particularly dedicated to STEM or with a pre-existing interest in edible insects. Reducing the burden on educators and aligning with existing school routines is crucial for adoption. Responsive support and curriculum integration enable broader participation.

Steady supply of insects

It was the original intention of Insekteriet to source mealworms, pupae and larva from 3rd party mealworm producers. However, suppliers were either unable to deliver in the necessary quality or closed down their business in the project period.

Approach: To accommodate the need for mealworms at Insekteriet, Bugging adjusted its production from producing crickets to producing mealworms.

Lesson: It is risky to allow the success of a project to rely on deliveries from 3rd party or have a supply chain without inbuilt redundancy or – even better – to have capabilities in-house or within the project consortium.

Financial and operational sustainability

As with many non-profit projects, Insekteriet is dependent on third-party donors for its operation. This becomes particularly critical since Insekteriet's teaching program is hardware heavy and deals with living animals. As such, it demands storage and continued production of mealworms.

Approach: The project documented its impact and strives for excellence, to warrant future funding, while also exploring multiple funding sources. Also, strong partnerships add to the capabilities of the project and therefore future growth and impact.

Lesson learned: Impact measurement, quality and partnerships are critical for sustainability and can support future growth without diluting mission or quality. Redundancy can be recommended not only in implementation, but also in financial support. Time will tell whether this strategy will be successful.

8.2.7. Conclusion

Insekteriet illustrates how innovative, socially driven projects in emerging sectors can embody SSE values and generate social and educational impacts. By meeting core SSE criteria, the project illustrates that social enterprises may take unconventional forms - like education programs with insect - while advancing sustainability and inclusion.

By learning from start-up enterprises, Insekteriet has focused on delivering a scalable teaching unit, that can be delivered by teachers without the physical presence of the project staff in the classroom. This allows for much wider distribution of the program.

This goal of scalability is further strengthened by the project being non-profit, since teaching materials and instructions can be placed online and accessed by teachers for free instead of being protected IP only being shared with those who can afford it. The project can therefore dedicate itself to delivering maximum value to schools (including special education schools) and allow teachers to deliver with quality.

The open-access design ensures all participants, particularly marginalized groups, have equitable access to learning and development. This makes project outcomes democratic and inclusive.

Together, these points result in a wide distribution of the teaching unit. This may in turn transform attitudes toward edible insects, boost science literacy, and foster community engagement.

8.3. Case Study 3: Freedom Crickets - sustainable insect farming with the social reintegration of young people in custody

This case study is based on an expert interview kindly agreed to by Tiago Leitão, Co-founder and CEO of Aproximar, combined with experience of the key person working in the project.

8.3.1. Criteria for selecting case study

Freedom Crickets, a Portuguese initiative, located at Leiria Youth Prison (EPL-J), meets the four core criteria of the SSE. Firstly, it operates directly in the edible insect farming sector, focusing on the sustainable production of crickets (*Acheta domesticus*). Secondly, it has a clear social mission: to empower and reintegrate young people in custody by providing them with training, skills, and entrepreneurial pathways linked to sustainable food production. Thirdly, the cooperative reinvests resources into social and environmental purposes, ensuring that benefits are channelled towards community development and ecological impact rather than profit. Finally, it actively involves vulnerable groups, particularly young people in custody and those recently released, thereby addressing exclusion and inequality.

To summarize, Freedom Crickets Program combines sustainable insect farming with the social reintegration of young people in custody, preparing them for employment and life after release through training, work experience, and psychosocial support.

To ensure the unit is both operational and sustainable, it is essential to maintain appropriate safety conditions.

- Production unit: 226 m², capacity up to 24 tonnes/year.
- Participants (per year): 15 young people in the program, divided in two working groups, involved in rearing, collecting (“harvesting”), and in the future, processing crickets.
- Support model: Vocational training, mentoring, employability skills, and post-release follow-up.
- Partnerships:
  - Aproximar (APX) – Certified Training, capacity-building activities,
  - Estabelecimento Prisional de Leiria – Jovens (EPL-J) – infrastructure & institutional support
- Guarantee Circular economy (future goal): Use of agricultural by-products from EPL-J in cricket feed.

8.3.2. Background of the case study

Freedom Crickets Unit and Programme was established at the Leiria Youth Prison (EPL-J) as part of a reintegration programme for young people in custody. The initiative brings together sustainable insect farming and social reintegration, following a holistic approach that includes vocational training, psychosocial support, mentoring, and post-release follow-up. The project is delivered by Aproximar (APX), that combines its expertise in social innovation, education, and criminal justice, in partnership with EPLJ’s experience and networks within the justice system. While APX leads on programme design, training, and capacity-building activities, EPLJ facilitates access to young people in custody and supports the integration of project activities within the justice framework. Together, they ensure the effective delivery of initiatives aimed at social reintegration, skills development, and empowerment of vulnerable youth. A dedicated team works daily at Leiria Youth Prison, which houses young people aged between 16 to 25 years old. Within the prison, Freedom Crickets runs an insect farming programme where 15 participants per year gain practical skills and strengthen existing

abilities through informal learning, preparing them for social and professional reintegration. After release, participants benefit from a mentoring scheme and personalised support to help them secure employment and continue their pathway towards inclusion.

Freedom Crickets was established at the Leiria Youth Prison (EPL-J) as a pioneering reintegration programme for young people in custody. The initiative began when the prison's deputy director for economic activities contacted Tiago Leitão (Aproximar CEO), seeking a social entrepreneurship project to utilize the prison's agricultural capacity with insect production. The project was designed to link the production of sustainable protein with the rehabilitation of young inmates. At the time of its inception (2020), the team could not find any other projects globally that combined cricket production with a prison environment for young people, making benchmarking impossible. This lack of existing models meant the project was highly innovative but also carried risk. However, implementing this in a prison setting required navigating a complex environment where security is the primary priority, followed closely by health, particularly challenging during the COVID-19 pandemic. Despite these hurdles, the project successfully introduced young participants to the green economy, allowing them to contribute to fighting climate change while acquiring structured work habits essential for the highly regulated food industry.

8.3.3. Compliance of the project with SSE

Freedom Crickets is aligned with SSE:

- Operates in edible insects' sector (sustainable production).
- Explicit social mission: inclusion of vulnerable groups.
- Reinvests resources into social & environmental impact.
- Participatory governance via multi-stakeholder collaboration.

8.3.4. Major challenges and lessons learned

The Major Challenges & Lessons learned are:

- Institutional: Adapting to prison logistics & security.
- Regulatory: Navigating evolving edible insects standards rearing.
- Social: Overcoming stigma (insect consumption & young people on custody reintegration).
- Financial: Ensuring sustainability while prioritising reinvestment.
- Lessons learned: Strong partnerships, adaptability, and communication are essential.

Industry opacity and lack of benchmarking

The insect farming sector is in an early stage, characterized by a lack of open information sharing. Freedom Crickets could not benchmark against similar social initiatives because none existed, and private companies were reluctant to share intellectual property or business models to maintain a competitive edge.

Approach: The team had to proceed with a "discovery" mindset, relying on funding to mitigate the risks of testing new production models without a clear roadmap.

Lesson learned: In a nascent industry, social entrepreneurs must possess both management resilience and technical competence (or strong technical partnerships) to survive the initial "valley of death" where information is scarce.

Regulatory and contextual barriers

The project launched during a period of legal uncertainty regarding the "Novel Foods" regulation in Europe and was severely impacted by the COVID-19 pandemic. In a prison context, security and health protocols override all other activities; when the pandemic hit, the prison had to close access, halting the program and threatening the survival of the biological assets (the crickets).

Approach: The team navigated the slow licensing process (achieved in 2022) and adapted to the rigid security constraints of the prison environment.

Lesson learned: Securing a "champion" within the institution—in this case, a prison director passionate about the job—is key to overcoming bureaucratic and operational hurdles.

Aligning Social Mission with Technical Partners

A critical challenge arose from the partnership with a private technical entity. While the technical partner focused on profit and production efficiency, Freedom Crickets prioritized the social mission (rehabilitation) over surpluses.

Approach: The project leaders had to constantly clarify that surpluses were a means to serve the mission, not the end goal. This friction highlighted the difficulty of finding partners who possess both technical expertise and social drive.

Lesson learned: Future initiatives should define the specifications of cooperation with technical partners much earlier. It is vital to find technical leads who understand that in the SSE, the mission dictates the business model.

Commercial sustainability vs. social value

While the program is sustainable organizationally (through grants and prison support for the rehabilitation program), commercial sustainability (selling the product) has been slower to realize.

Approach: The project utilizes a "cross-subsidization" view where the service provided (rehabilitation) is funded by the state/grants, while the product sales (crickets for animal feed/zoos) are developed gradually to support post-release mentoring and other activities.

Lesson: Investment in sales and marketing was underestimated. If starting over, the team would invest more in a dedicated salesperson and faster implementation of the production unit.

Dual Mission: social purpose with financial needs

A critical takeaway from Freedom Crickets is the complex balance between maintaining a social mission and achieving financial viability in a nascent industry.

- Defining Sustainability and Sales: Tiago highlights a distinction between organizational sustainability and commercial success. The organization can be sustainable through grants and institutional support solely by delivering the rehabilitation program. However, to fund the "full length" of the vision, specifically post-release support, housing, and mentoring for the youth, commercial sales are necessary.
- The Cross-Subsidization Model: A possibility for social entrepreneurs is the logic of "cross-subsidization," like how banks might sell a loan to cross-sell insurance. The core "product" funded by the state is the rehabilitation service, while the commercial sale of crickets is intended to subsidize the additional social support layers that grants do not cover.

- Friction with Partners: This dual mission created friction with technical partners who prioritized surpluses and profit. For the social entrepreneur, surpluses are a means to serve the mission, not the end goal. This misalignment highlighted the difficulty of finding partners who possess both technical expertise and a "social driven goal".

8.3.5. How to work with young people in prison with insect production

Implementing an insect farming program in a youth prison requires specific strategies to engage participants and manage the unique environment.

- The "Green" Appeal: Framing the work as a contribution to the "green economy" and the fight against climate change proved highly attractive to young participants. It offers them a sense of purpose, allowing them to tell society they are contributing to a global solution.
- Structure as Rehabilitation: The food industry is highly regulated and requires strict adherence to procedures. This necessity becomes a rehabilitation tool: inmates learn to follow structured workflows and safety protocols, which helps "open their minds" and prepares them for professional life.
- Incentives and Behaviour: The program uses a tangible incentive structure. Participants receive a training grant, but they also have an incentive scheme linked to behavioural goals. Higher grant payments indicate that the youth have avoided disciplinary measures and internal problems, serving as a key indicator of the program's success.
- Managing Resistance: Initial reactions mirror the general public's "yuck factor". However, youth with agricultural backgrounds adapt faster. The resistance usually fades quickly once they realize the insects are harmless, moving from hesitation to acceptance.

8.3.6. Competences for social entrepreneurs in the edible insect market

To succeed in this specific intersection of social economy and insect farming, the interview identifies a specific "triad" of necessary skills, along with soft skills required for the current market maturity.

The Skill Triad: A successful team needs to combine three distinct areas:

1. Management/Entrepreneurship: The ability to navigate business risks and the "valley of death".
2. Technical Knowledge: Expertise in insect biology and production systems (or a strong partnership with someone who has it).
3. Social Sector Expertise: Deep knowledge of the specific environment (i.e., prisons, schools) and how to navigate its bureaucracy and partnerships.

Communication and marketing: Because the European market still holds significant resistance to insect consumption, a social entrepreneur must possess strong marketing skills to "educate" the consumer. It is not enough to produce; one must be able to convince the market to try the product.

Collaborative networking: The insect industry is currently characterized by secrecy and IP protection, which hinders growth. A key competence for future social entrepreneurs is the ability to break this trend and "join efforts," sharing knowledge to help the industry mature together.

Resilience: Given the lack of legal frameworks initially and the operational difficulties (like COVID-19 lockdowns), resilience is cited as a fundamental trait for survival – for example, other entrepreneurs can face different “resilience tests”.

8.3.7. Conclusion

The impact and Freedom Crickets Programme contribution ramifies on 4 different knowledge areas: Social: Empowers young people on custody with employability, facing and working entrepreneurial skills; Environmental: Promotes sustainable protein production; Systemic: Shows insect farming as a tool for both Ecological/organic innovation and social justice.

8.4. Case study 4: Building inclusive cricket farming value chains in Kenya and Uganda

Case study 4 is only listed due to confidentiality constraints and data-sharing limitations associated with this case study.

8.5. Case study 5: Insect farming to reduce hunger risk in South Sudan: a pilot project

Case study 5 is only listed due to confidentiality constraints and data-sharing limitations associated with this case study.

8.6. Implications of case study for cross-sectoral model

Across all five cases, we see a clear pattern: insect farming succeeds when social, ecological, and economic value creation are intentionally combined through community-centred governance, training, low-cost technology, and purpose-driven partnerships. From these patterns we can derive a model element applicable across countries and different contexts.

8.6.1. Community rooted participatory governance

In every one of the five cases, the initiative begins by anchoring itself within the community and shaping the project together with the people who will ultimately participate in or benefit from it. In Uganda, this takes the form of co-design sessions with refugee leaders, farmer associations, and schools, where even the choice of suitable feed substrates emerges from bottom-up knowledge and experimentation. In South Sudan, insect farming only begins after extensive consultations with refugees, internally displaced people, host communities, and local authorities, ensuring shared approval and contextual fit before any production site is established. The Flying Food initiative similarly evolves through collaborative structures, as farmer cooperatives, women's groups, and microfinance institutions collectively influence production methods, training approaches, and market strategies. In Portugal's Freedom Crickets project, governance is shaped jointly by prison authorities, the NGO Aproximar, and the incarcerated youth themselves, creating a sense of shared responsibility and mutual investment in the program's success. In Denmark, Insekteriet reflects the same participatory ethos by inviting teachers, schools, and students to actively co-create the curriculum and learning activities. This co-design approach ensures that the insect farming systems reflect local needs, cultural realities, and limitations. Participatory structures such as farmer associations, school-teacher partnerships, prison administration collaborations, and multi-stakeholder committees create legitimacy and trust. They allow communities not only to influence the direction of the initiative but also to assume a sense of responsibility for its long-term success. Across all cases, this local governance foundation proves essential for sustainability, equity, and resilience. Together, these cases show that embedding insect-farming initiatives within community structures and making co-creation a foundational practice is essential for legitimacy, trust, and long-term sustainability.

From this pillar following key model elements can be identified

1. Create a participatory governance body (community representative + trainers + implementing organisation).
2. Ensure co-ownership: decisions about substrates, production volume, training schedules, pricing, and distribution are shared.

8.6.2. Skills, training & human development as the core driver

Across all five case studies, the central pattern that emerges is a strong reliance on hands-on, iterative training combined with sustained capacity building. In Uganda, this approach is reflected in the training of more than 200 farmers and schoolchildren, supported by continuous multi-layered technical assistance that allows learners to apply and refine their skills over time. South Sudan builds on a cascade model in which international experts train national staff, who then prepare local trainers to work directly with community members, creating a durable and locally rooted knowledge base. The Flying Food initiative reinforces this pattern by using standardized manuals, certified trainers, and starter kits that ensure consistent, practical learning across different sites. Portugal's Freedom Crickets project deepens the training dimension further by integrating vocational instruction with psychosocial

support and employability development, recognizing that skill acquisition is inseparable from personal growth and reintegration needs. In Denmark, Insekteriet adapts the training model to an educational context, using experiential, classroom-based insect farming to strengthen STEM understanding, build confidence, and foster inclusion among vulnerable students. Together, these cases demonstrate that effective insect-farming initiatives depend on a training system that progresses from master trainers to local trainers and ultimately to participants, blending technical knowledge with emotional support, mentoring, and confidence-building. Hence, in every setting, training is the engine through which communities build expertise, retain knowledge, and sustain production over time. They also show the importance of simple manuals, visual guides, and accessible on-site coaching, which allow learners of varied backgrounds to master new skills and sustain insect-farming practices over time.

From this pillar following key model elements can be identified

3. **Cascade training system**: Master trainers train local trainers and local trainers further train participants.
1. Combine technical training with **social learning**, mentoring, and confidence-building.
2. Produce **simple manuals, visual guides, and on-site coaching**.

8.6.3. Low-cost, locally adaptable technology with respect to circularity

Across all five case studies, simplicity consistently proves to be the key to successful insect-farming systems, especially in environments where resources, infrastructure, or technical support are limited. In Uganda, both BSFL and mealworm production rely on materials that are already available locally, allowing farmers and schools to build and maintain rearing units without specialized equipment. South Sudan demonstrates the same principle, using improvised “love cages,” locally sourced substrates, and even WhatsApp-based technical guidance to maintain production under extremely resource-poor and logistically challenging conditions. The Flying Food project reinforces the value of adaptability by shifting from bucket systems to crate systems after field trials showed they were more reliable and easier to manage in rural settings. Portugal’s Freedom Crickets initiative must function within the strict physical and procedural constraints of a youth prison, proving that insect farming can thrive even in highly regulated, space-restricted environments. Denmark’s Insekteriet illustrates simplicity in a different context, using small, easy-to-handle classroom kits that teachers and students can operate with minimal training. Together, these cases show that low-tech, modular units that can be repaired locally, substrates drawn from everyday organic waste streams form the backbone of resilient insect-farming models, and a circular loop that transforms waste into larvae, feed, fertilizer, and ultimately community benefits are essential design features that demonstrate how circularity and simplicity can be leveraged to support both ecological and social objectives in a wide range of environments. Insect-farming initiatives are most resilient when they remain accessible, repairable, and deeply connected to the circular flows of local resources. From this pillar following key model elements can be identified

1. Use low-tech, modular rearing units that can be repaired locally.
2. Use locally available substrates (market waste, crop residues, household waste, very case dependent).
3. Build circular loops: waste to larvae to feed/fertilizer to income/crops to community.

8.6.4. Social inclusion and empowerment as a design principle

Across all five case studies, insect farming consistently functions as a targeted mechanism for including vulnerable groups and expanding access to meaningful opportunities. In Uganda, the approach brings refugees, host communities, women, and schoolchildren into a shared livelihood system, while in South Sudan it enables refugees, IDPs, returnees, and especially women and youth to take leadership roles in BSFL production. The Flying Food initiative reinforces this inclusive orientation by engaging predominantly women, along with youth and rural low-income households. Portugal's Freedom Crickets adapts the model to a correctional setting, using insect farming to support the skills development and reintegration prospects of incarcerated young people. In Denmark, Insekteriet applies insect farming within a pedagogical framework that supports children with learning difficulties and special-needs students, using hands-on, curiosity-driven activities to foster confidence, engagement, and social inclusion. Across the cases, insect farming becomes a platform that creates dignity, participation, and opportunity for individuals who are often overlooked by traditional economic systems. Collectively, these cases demonstrate that insect farming can be intentionally positioned as a therapeutic empowering confidence-building practice that targets vulnerable groups such as refugees, women, youth, justice involved individuals, and learners with special needs and create pathways into training, employment, and social participation, particularly when ongoing mentoring and post-training support are incorporated into the model. They also highlight the importance of providing mentoring and post-training support to ensure that vulnerable participants can continue to grow, apply their skills, and access meaningful opportunities over time.

This pillar identifies following key elements of the model

4. **Target vulnerable groups**: e.g., women, youth, refugees, justice-involved, special-needs learners.
5. Position insect farming as **therapeutic, empowering, and confidence-building**.
6. Provide continued **mentoring and post-training support**.

8.6.5. Cooperative or multi-actor partnership

Another pillar evident across the case studies is the reliance on multi-actor networks that connect communities with NGOs, local authorities, research institutions, SMEs, schools, and training partners. Across all five case studies, it is evident that successful insect-farming initiatives depend on cooperative or multi-actor production networks rather than the efforts of any single organization. In Uganda, farmer associations work alongside schools, NGOs, and universities to coordinate training, production, and research, while the Flying Food project brings together SMEs, microfinance institutions, farmers, processors, and R&D partners to build an inclusive value chain. South Sudan follows a similar logic through collaborations between UNHCR, local trainers, community groups, and technical universities, enabling knowledge transfer and local ownership in highly fragile environments. Portugal's Freedom Crickets relies on a partnership between prison authorities, the NGO Aproximar, and technical specialists to operate within a tightly regulated correctional context, and Insekteriet in Denmark functions through coordinated efforts between a social enterprise, schools, municipalities, and science centers. Together, these cases show that building cooperative clusters that link production, processing, training, and buyers, while clearly defining the roles of technical leads, social leads, community representatives, research partners, and market actors is essential for stability and impact. They also demonstrate the importance of fostering open knowledge sharing, countering the competitive secrecy that posed challenges in initiatives such as Freedom Crickets and Flying

Food, and instead promoting collaborative learning as a foundation for long-term sustainability. These networks allow projects to combine technical expertise, social support, infrastructure, and market access. They create a collaborative ecosystem in which knowledge, responsibilities, and value can circulate effectively. This Pillar informs following key model elements,

1. Build cooperatives or clusters (production + processing + training + buyers).
2. Formalize roles: technical lead, social lead, community reps, research partner, and end-buyers.
3. Encourage knowledge sharing.

8.6.6. Gradual scaleup

A consistent lesson across the five cases is that insect farming must expand slowly and carefully. Pilot phases allow communities to test the system, learn from mistakes, and build confidence. Stabilization often defined by achieving two or more successful breeding cycles is crucial before attempting to scale. Across all five case studies, it is clear that, premature scaling consistently undermines outcomes, making gradual, phased growth essential for long-term success. In South Sudan, production was only expanded after two full and stable breeding cycles demonstrated that colonies could be maintained without disease or collapse. The Flying Food initiative similarly learned from early mistakes, including disease outbreaks linked to rapid expansion, and only scaled after refining systems and improving hygiene protocols. Uganda followed a careful progression, beginning with small-scale mealworm and BSFL units and expanding only once more than 200 farmers were trained and reliable substrate systems were in place. Portugal's Freedom Crickets required several years of learning, adaptation, and regulatory navigation before achieving licensed and consistent production within the constraints of a prison environment. Denmark's Insekteriet also grew incrementally, starting with a handful of school classes before eventually reaching numerous students nationwide. Taken together, these experiences underscore the importance of beginning with micro-pilots, establishing colony stability over multiple cycles, enabling trained local actors to lead replication, integrating products gradually into local markets, and only then progressing toward a broader hub-and-spoke model. Overall, this sequencing protects biosecurity, builds community capacity, and reduces the risk of project failure.

The key model elements identified in this pillar are

1. Step 1: Micro-pilot (1–3 units).
2. Step 2: Colony stability (min. 2 cycles, no disease).
3. Step 3: Local trainers lead to replication.
4. Step 4: Market integration (feed, snacks, fertilizer).
5. Step 5: Scale to hub-and-spoke model.

8.6.7. Social, environmental, and economic value capture

Across all five case studies, insect-farming initiatives consistently generate intertwined social, environmental, and economic value, though each context emphasizes these benefits differently. Socially, insect farming creates meaningful opportunities for refugees, youth, women, rural households, and incarcerated populations, offering not only employment but also confidence, identity rebuilding, and, in cases like Freedom Crickets and Insekteriet, a reduction in stigma through structured routines and supportive learning environments. Environmentally, all initiatives convert organic waste streams into high-value protein and frass, reducing waste burdens while improving soil health, as demonstrated in Uganda, Flying Food, and South Sudan. The inherently low resource

requirements of insect farming further strengthen its ecological appeal. Economically, households gain supplemental income in Uganda and Flying Food, while youth in both Freedom Crickets and South Sudan develop employability and entrepreneurial capacities. In Flying Food, local SMEs and coordinated processing activities help consolidate stronger, more resilient value chains. Finally, all cases show that the purpose of insect farming in an SSE context is to generate simultaneous social, environmental, and economic benefits. Social value appears through improved livelihoods, empowerment, educational gains, and rehabilitation outcomes. Environmental value emerges through waste-to-protein conversion, reduced pressure on ecosystems, and improvements in soil health via frass. Economic value arises from income generation, reduced feed costs, development of microenterprises, and new market opportunities. Rather than prioritizing profit alone, these initiatives reinvest value into community wellbeing, long-term environmental health, and inclusive growth. The integration of these three forms of value is what makes insect farming a powerful and holistic model within the SSE. The model elements from this pillar are

1. The initiative must measure and communicate three forms of value, not just income.
2. Demonstrate circularity and impact (e.g., kg waste converted, frass used, trainee employment).
3. Use these outputs to secure long-term funding or sales agreements.

9. The Cross sectoral model

The cross-sectoral model was developed through an integrated synthesis of two analytical strands: the legal-institutional implications of insect and SSE regulation across Belgium, Denmark, Portugal, and Romania, and the operational implications drawn from five international case studies. The legal analysis identified the structural conditions shaping collaboration such as regulatory divergence, compliance demands, and the role of support ecosystems while the case studies revealed the practical mechanisms through which insect-based initiatives succeed in real settings, including participatory governance, cascade training, low-cost circular technologies, multi-actor partnerships, and gradual scale-up. By combining these structural and operational insights, the model was generated inductively as a representation of what is both feasible and effective: a three-pillar system (SSE, insect industry, entrepreneurial ecosystem) whose intersection enables the creation of inclusive, circular, and economically viable social insect enterprises.

9.1. Introduction

This report proposes a simple, adaptable model that links three interdependent systems: the Social and Solidarity Economy, the edible insect industry for food and feed, and the entrepreneurial ecosystem, so that they mutually reinforce ecological transition and social inclusion. Each system contributes a distinct function:

- The SSE provides mission lock, inclusion, and democratic governance
- The insect industry delivers circular bio-conversion and regulated routes to market
- Entrepreneurial ecosystems bring the skills, finance, incubation, and partnerships that allow promising initiatives to grow.

Where these systems overlap in pairs, they generate practical collaboration spaces such as work-integration insect farms, inclusive entrepreneurship pathways, and compliant, innovation-driven production. At the centre, where all three meet, they create “social insect enterprises” that convert local organic by-products into protein and fertilizer while training and employing vulnerable groups, thereby producing social, environmental, and economic value at once. The model is designed to work across different legal and cultural contexts by using modular building blocks that reflect the enabling constraints documented in Belgium, Denmark, Portugal, and Romania, as well as the operational lessons from case studies in Europe and East Africa.

9.2. Purpose and scope

The purpose of conceptualizing this cross-sectoral model is to translate complex cross-sector insights into a clear, transferable intervention model that any country can adapt in different contexts. The scope includes insects as food under the Novel Food pathway and insects as feed under the feed and animal by-products framework; SSE actors such as cooperatives, associations, foundations, and work-integration social enterprises; and entrepreneurial supports ranging from incubation and public procurement to VET and R&D partnerships. The model aligns with the legal and institutional findings in of this report and the operational lessons from schools, prisons, refugee and host communities, and SME value chains.

9.3. Core drivers of cross-sectoral model

The core drivers/pillars of the cross-sectoral model sit three interdependent systems that together enable socially inclusive, environmentally circular, and economically viable insect-based enterprises. These three core pillars are:

9.3.1. The Social and Solidarity Economy

This pillar highlight's purpose before profit, inclusive employment, democratic governance, and the reinvestment of surpluses into community benefit. It turns insect farming from a purely commercial activity into a tool for inclusion and trust, as seen in work-integration initiatives, education programmes, and community-based cooperatives.

9.3.2. The insect industry

This pillar basically highlights circularity and compliance. It transforms organic side-streams into high-value protein and frass while following two distinct routes to market. The food route requires Novel Food authorization with product specifications and labelling, whereas the feed route relies on compliance with feed, animal by-product, and TSE rules without pre-market Novel Food authorisation, which can shorten time to market for certain uses. Each partner country adds its own overlays such as import permissions, plant approvals, or consumer signage rules

9.3.3. The entrepreneurial ecosystem

This pillar highlights skills, finance, incubation, and market access. It provides the business capabilities, advisory support, public procurement channels, and R&D linkages that allow social insect ventures to be born, de-risked, and scaled. In practice this includes cascade training and VET curricula, innovation networks, municipal partnerships, and anchor-buyer contracts for feed or food products where authorised.

9.4. Intersection and synergies (pairwise intersection)

9.4.1. SSE x insect industry

When the SSE meets the insect industry, inclusion is embedded directly into production. In this space, insect farms are designed as work-integration units in schools, prisons, or communities, with cooperative governance, social hiring, and transparent impact reporting. The shared focus of this overlap consists of

- Using insect farming for social goals (jobs, education, rehabilitation)
- Cooperative farms
- Community-based waste-to-protein loops
- Social licence and trust building

9.4.2. SSE x entrepreneurial ecosystem

When the SSE meets the entrepreneurial ecosystem, disadvantaged groups gain pathways into enterprise. Recognition regimes, together with incubation and procurement, allow mission-driven organisations to professionalise, access finance, and partner credibly with municipalities and buyers while keeping their social mission intact. The shared focus of this overlap consists of

- Helping disadvantaged groups become entrepreneurs

- Incubation and mentoring for social enterprises
- Access to public procurement and grants
- Governance structures that ensure fairness

9.4.3. Insect industry x entrepreneurial ecosystem

When the insect industry meets the entrepreneurial ecosystem, innovation becomes investable and in compliance. Technical partners, universities, and incubators help new operators select the right market route, implement hygiene and biosecurity procedures, and translate circular technology into viable business models for food and feed, with measured quality assurance and documented traceability. The shared focus of this overlap consists of

- Turning insect production into viable small and medium enterprise
- Innovation: feed, food, frass fertiliser
- Regulatory navigation + HACCP/Novel Food/Feed compliance
- R&D partnerships, universities, technical specialists

9.4.4. SSE x insect industry x entrepreneurial ecosystem

At the centre at the intersection of all three drivers, we find the **social insect enterprise** creating social value (inclusion, employment, education), environmental value (waste reduction, soil regeneration, low-impact protein) and economic value (local jobs, micro-enterprises, cost-effective feed markets). It is a mission-driven operator that

1. Uses insect farming to create dignified training and jobs for vulnerable or underrepresented groups
2. Runs circular production that converts local organic streams into insect protein for authorised food uses or compliant feed materials for aquaculture, poultry, or other permitted species, and frass for soil regeneration
3. Applies entrepreneurial tools, contracts, cost control, go-to-market planning, and impact measurement to remain viable and scalable

This is the only locus in the model where social inclusion, environmental circularity, and local economic impact are generated at the same time, which is why the centre is the preferred target state for cross-sector interventions.

9.5. Guiding factors for cross-sectoral model

These guiding external factors are not part of the three sectors, but they shape and constrain them. Therefore, these factors govern what can be built and how quickly it scales. The sustainability of this model depends on these guiding factors.

The first guiding factor **is legal and regulatory frameworks.** For example, food products must comply with the Novel Food Regulation and related hygiene and labelling rules; feed products must comply with the feed and animal by-products regime. National overlays matter in practice, for example shelf-segregation and signage requirements for insect-containing foods in Romania, import permissions and nature-escape controls for live insects in Denmark, livestock-style licensing and DGAV-approved plants for insect PAP in Portugal, and FASFC scoping of rearing versus processing approvals in Belgium.

The second guiding factor is **culture and public perception**, which determines how readily consumers, schools, or public institutions accept insects, and therefore whether food or feed is the better first route.

The third guiding factor is **funding and procurement**, including EU and national programmes, impact investors, and municipal purchasing; these mechanisms are essential during early years when margins are tight, and compliance costs are high.

Finally, **infrastructure and market conditions** such as substrate availability, logistics, biosecurity capacity, and anchor buyers shape feasibility and the pace of scale-up.

Overall, these factors determine the strictness of regulatory requirements, the financial feasibility of this initiative, the speed at which innovations can scale, and the degree of community acceptance of insect-based products thereby, ultimately shaping the long-term sustainability of the model.

9.6. Conclusion

Overall, the cross-sectoral model provides SSE actors with the conceptual and operational tools needed to engage in the insect value chain in a way that is technically compliant, socially purposeful, and economically viable. It leverages the natural complementarities between insect farming and SSE practice and translates them into a coherent framework that can be adapted across EU Member States and beyond.

Overview of cross sectoral model

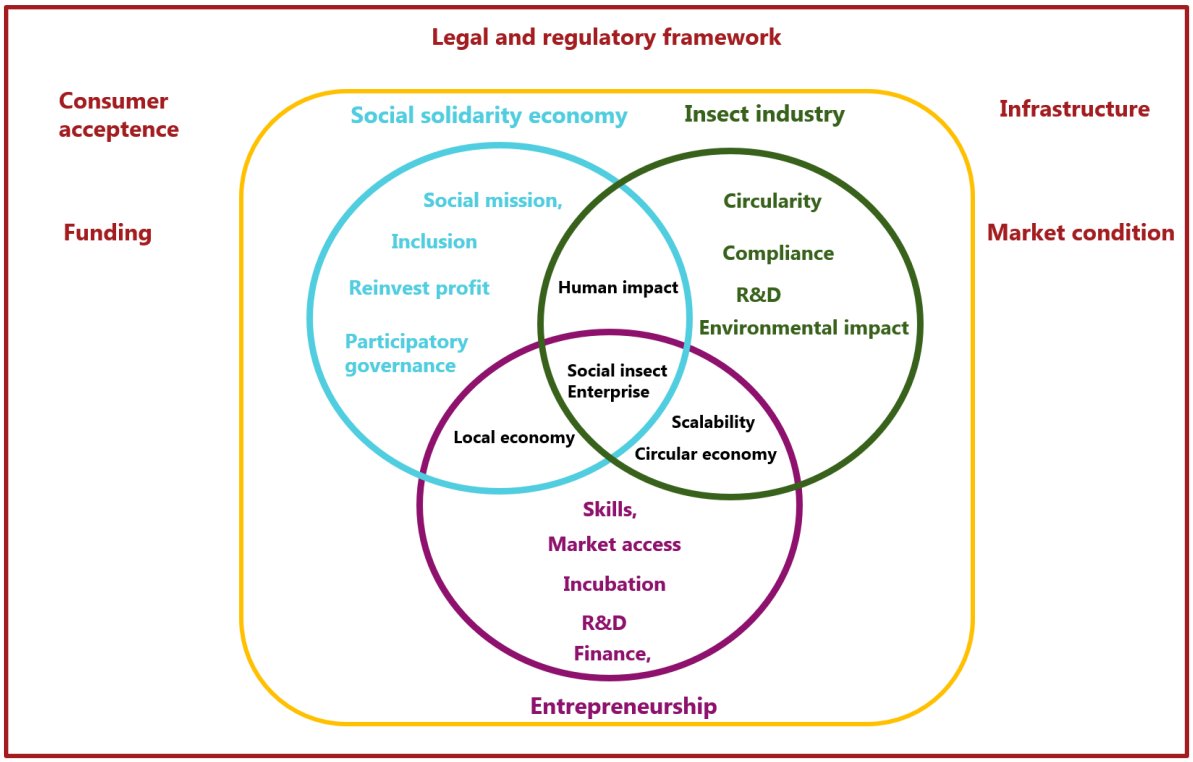

Figure1: Cross-sectoral model: The Venn diagram in figure 1 represents three interdependent systems that together enable socially inclusive, environmentally circular, and economically viable insect-based enterprises. The SSE circle represents mission-driven organisations such as cooperatives, associations, and work-integration social enterprises that prioritise inclusion, community benefit, and democratic governance. The Insect Industry circle represents insect production as food or feed, shaped by EU and national regulations on hygiene, substrates, traceability, Novel Food authorization, and feed/animal by-product rules. The Entrepreneurial Ecosystem circle represents the skills, incubation, finance, and market access that allow innovations to transform into viable enterprises.

Where the SSE and the insect industry meet, social aims are embedded in circular insect production, making insect farming a tool for education, rehabilitation, community development, or refugee livelihoods thereby, human impact. Where the SSE and entrepreneurial ecosystem meet, social enterprises gain pathways to training, incubation, procurement, and finance, enabling disadvantaged groups to participate meaningfully in new green industries thereby, local economy. Where the insect industry and entrepreneurship meet, production models become technically sound, compliant, and market-ready through innovation, VET, R&D partnerships, and risk-managed scaling. At the centre, where all three circles overlap, a new kind of organisation emerges: the social insect enterprise. This entity simultaneously creates social value (training and employment for vulnerable groups), environmental value (waste valorisation, low-impact protein, frass fertiliser), and economic value (local income and market activity). Surrounding the entire model are external guiding forces, including regulatory frameworks, cultural attitudes towards insect consumption, funding systems, and infrastructure availability. These factors shape what is possible and determine the pace and direction of this collaboration

10. Conclusion

This report examined how edible insect production and the SSE interact within the EU, focusing on Belgium, Denmark, Portugal, and Romania. By combining regulatory analysis, institutional mapping, cross-sectoral assessment, and international case studies, it shows how insect farming can function not only as a sustainable protein source, but also as a tool for social inclusion, circular economy practices, and local economic development.

At EU level, insects are governed by a harmonised safety framework, with a clear distinction between the authorization-based Novel Food pathway for human consumption and the compliance-based feed pathway. While this common baseline applies across Member States, national implementation differs significantly. Country-specific overlays such as strict consumer-facing rules in Romania, import and biosecurity controls in Denmark, livestock-style licensing in Portugal, and activity-based guidance in Belgium shape the practical feasibility and cost of operating in each national context.

The analysis of SSE frameworks shows substantial variation in how social enterprises are recognized and supported. Belgium and Portugal benefit from more institutionalised SSE ecosystems and closer alignment with circular-economy strategies, while Denmark and Romania provide clearer legal identities but fewer fiscal or long-term support mechanisms. These differences strongly influence the capacity of SSE actors to engage in highly regulated sectors such as insect farming.

International case studies from Europe and East Africa demonstrate that insect farming can successfully deliver education, employment, rehabilitation, food security, and waste valorisation when combined with participatory governance, targeted training, low-cost technologies, and multi-actor partnerships. Despite differing contexts, common success factors include community participation, cascade training, gradual scaling, and the intentional inclusion of vulnerable groups.

Synthesising these findings, the report proposes a cross-sectoral model that connects the SSE, the insect industry, and the entrepreneurial ecosystem. At their intersection lies the social insect enterprise, capable of generating social, environmental, and economic value simultaneously, while remaining compliant with regulatory requirements.

Overall, the report concludes that the convergence of insect production and the SSE offer a credible pathway toward ecological transition and inclusive growth in the EU. Realising this potential depends on supportive national implementation of EU rules, stronger support ecosystems, and policies that recognise the combined social and environmental value created by SSE-led insect initiatives.

social bugs

Agreement number: 2024-1-DK01-KA220-VET-000251164

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for them.