

Legal Lab for Alternative Proteins (LLAP): Building a digital platform for innovators.



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REPORT - EVENT / WORKSHOP

LEGAL LAB FOR ALTERNATIVE PROTEINS (LLAP)

Workshop, 15th November 2018

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1 Event or Series of event Details

Event Name	<i>Legal Lab for Alternative Proteins (LLAP)</i>
KAVA reference	
Event Lead	<i>Department of Food and Economic Resources – The University of Copenhagen</i>
Date of Event (s)	<i>15th November 2018</i>

2 Summary

This report describes the proceedings of the Legal Lab for Alternative Proteins (LLAP) workshop executed on the 15th of November in Copenhagen at the Food and Resource Economic s IFRO and on the identification of main regulations shaping the European Union (EU) legislation on alternative protein as ingredients of feed and food products in EU. The meeting gathered experts from the Department of Food and Economic Resources of the University of Copenhagen, the Danish Technical University (Department of Food and Department of Environment) and Global Project X as an attempt to identify and define the pillars of a digital platform as an informative tool that supports innovators working in the alternative protein development, in order to navigate and to recognise the main barriers and challenges before scaling-up to the market level.

The main objective of the day was to identify and classify the current EU legislation and regulations covering alternative proteins for feed and food products, along with the selection of best software tool(s) to serve as communication tools to inform innovators and help them to navigate into the maze of regulations concerning the food and feed safety to enter the market.

The asset and the opportunity for collaboration between The University of Copenhagen (LLAP Project Lead), the Danish Technical University and the Project X Global organisation, were facilitated by the Nordic Ideation Day award in Trondheim (2018), where the consortium was granted by Climate KIC to elaborate first insights of the establishment for a Legal Lab for Alternative Proteins aimed at innovators. The workshop was designed focusing on the understanding of the current EU regulations and their effects on how innovators produce, process, sell and commercialize ingredients from alternative protein sources such as insects, algae, microbial proteins (Single Cell Protein-SCP) and legumes, to be introduced while maintaining nutritional and safety standards on food and feed products in the European bioeconomy market.

3 Introduction

Over the last years, Europe has seen significant growth in the demand for alternative sources of protein. Several factors related to consumer changes in attitude around food in the European region are driving a growing interest and acceptance for alternative sources of protein. The new generations are concerned on health and sustainability terms, so there is a growing consideration about animal welfare, in terms of their interest for alternative sources of food. Moreover, the

climate challenges for the feed industry call for a higher decision agenda on the production of sustainable animal feed, as it is considered to be a key leverage point in the transition towards sustainable livestock production. The Nordic region has a strong position to reinforce the local production and implement the technology-based feed to reduce pressure on land and water use, and not the least to find sustainable solutions for the Nordics to find pathways to reduce geopolitical vulnerability and stimulate responsible production standards, despite environmental, social, economic impacts shaped e.g. by soy agriculture, especially the imports of soy beans and meal from Brazil, Argentina, China and United States needed to feed the animals to produce meat based products for human consumption. Accordingly, the Intergovernmental Panel on Climate Change – IPCC (2018) report, governments are expected to implement emission pathways and system transitions consistent with 1.5°C global warming, one of the recommendations based on their models is that reductions can be achieved through combinations of new and existing technologies and practices, including electrification, hydrogen, *sustainable bio-based feedstocks*, *product substitution*, and carbon capture, utilization and storage (CCUS). In relation to sustainable bio-based feedstocks and product substitution, the recognition of our food system as a major driver of climate change, together with expected changes in population and income levels, Springmann et. al. (2018) conclude that the environmental effects of the food system could increase by 50–90% in the absence of technological changes and dedicated mitigation measures, reaching levels that are beyond the planetary boundaries that define a safe operating space for humanity. Moreover, innovation seems to benefit alternative protein sources for food and feed, but has been challenged by current EU regulations and legislations, as discussed at the LLAP workshop, which might slower the integration of such technologies into a desirable new food/feed system. The legal and policy aspects can represent a barrier for innovators whom are experiencing obstacles when applying for venture capital at regional scale or even from private investors, which represents the call for more transparency and communication of legal procedures that will benefit the raising alternative protein products to enter the market, considering their potentials for the circular economy.

The EU's food safety policy covers food from farm to fork. It is designed to guarantee safe, nutritious food and animal feed, high standards of animal health and welfare and plant protection, as well as clear information on the origin, content, labelling and use of food. Moreover, Food and Feed Safety policy is a solid example set of EU legislation in place, but then again there is a need to find better ways to establish easier communication of such complex topic. The innovators ask constantly for better understanding of the regulatory body behind alternative proteins innovation. Therefore, expertise of each of the participant organisation, focused on the attempt to gather most relevant information and action oriented results, which shaped the consortiums final decision to prepare an early stage application for the construction of a digital platform to elaborate the LLAP as a digital innovation in the agenda of the upcoming alternative protein markets.



4 Planning and format

The Legal Lab for Alternative Proteins (LLAP) workshop resulted at the [Nordic Ideation Day](#) on 29th August in Trondheim, Norway. The project idea was one of the awarded proposals which pitched on how to build up digital tools to communicate the legal aspects discussed at the alternative protein session of the day.

It is important to highlight, this project proposal has no attempts to change nor reorient any of the existing regulations in the European Union, and the objective is to find better platforms for communication of the current legislations and standards which are subject for mandatory consideration by all innovators. This project then identified the actual EU regulations in relation to alternative proteins component selection and production to be used for feed and food ingredients.

The workshop engaged the experts to share results of current project activities related to alternative proteins, and where legal aspects were playing a key aspect for the development and success of the project. More details can be seen on the agenda included on section 9 *Associated documents* on the present report.

The lead project, The Department of food and resource economics ([IFRO](#)) from the University of Copenhagen, guided the workshop session based on the main focus of the day, more exactly how to create an accessible platform for innovators to navigate within the difficult regulatory system of production of alternative proteins as ingredients for food and feed products in EU. The objectives of the workshop covered where i) to identify and map the main EU regulations which cover also Nordic country regulations in relation to introduce food and feed products containing alternative proteins ingredients into the EU market; ii) to create tools for easier access to and understanding of the legislative aspects for the use of alternative proteins in food and feed production; and iii) to define and elaborate on a project roadmap for the LLAP initiative.

Additionally, IFRO established initial discussions on how the facilitating role of the LLAP platform will engage innovators into Climate Smart Agriculture tools, in terms of possible benefits to open up or accelerate the access to market opportunities and key investors. An introductory list of current Legal matters relevant for feed companies in the European Union, covering innovators in the field of alternative proteins was also included (Figure 1, section 5). Essentially, the aim was to explore better ways to collapse and manage the huge amount of information to be re-designed as a digital platform resource for innovators in the field.

First, representatives of the [Food Institute](#) of the Danish Technical University (DTU) presented their insights on key Danish examples, such as insect based proteins for food and feed products, the microbial fermentation products as organically certified feed and grass proteins and seaweed as examples of novel foods.



Second, the [Department of environmental engineering](#) of the Danish Technical University (DTU) presented their research based work on microbial protein as an alternative protein source enabling circular bioeconomy approaches in a Danish context, with possibilities for replication in other Nordic and European contexts.

Finally, a presentation from [Project X Global](#), which is a corporate systems accelerator that focus and enables entire industries to make difficult transitions in their sustainability agenda. The focus of FEED X, the project presented at the workshop, is to source, test, finance and scale alternative feed ingredients into the global feed industry. The programme will hone down on salmon and shrimp as two aquaculture species with wholly different feed requirements and industry structures to cater to. The projects target is that 10% of the global feed industry adopts alternative feed ingredients into value chains and [Skretting](#) will be the lead partner in achieving this goal for aquaculture industry. The FEED X project expected impacts include a significantly reduction of feed ingredient production related environmental impacts, specifically those which are i) contributing to land deforestation, ii) exhausting global carbon emissions budget and iii) relying on non-responsible fishing practices.

5 Key outputs/ results/achievements

The objectives and goals of the LLAP workshop were achieved. The main output of the workshop is the development of an application and joint collaboration to work on a new project proposal to set up first insights for the building a digital platform for its purpose for the first second of 2019.

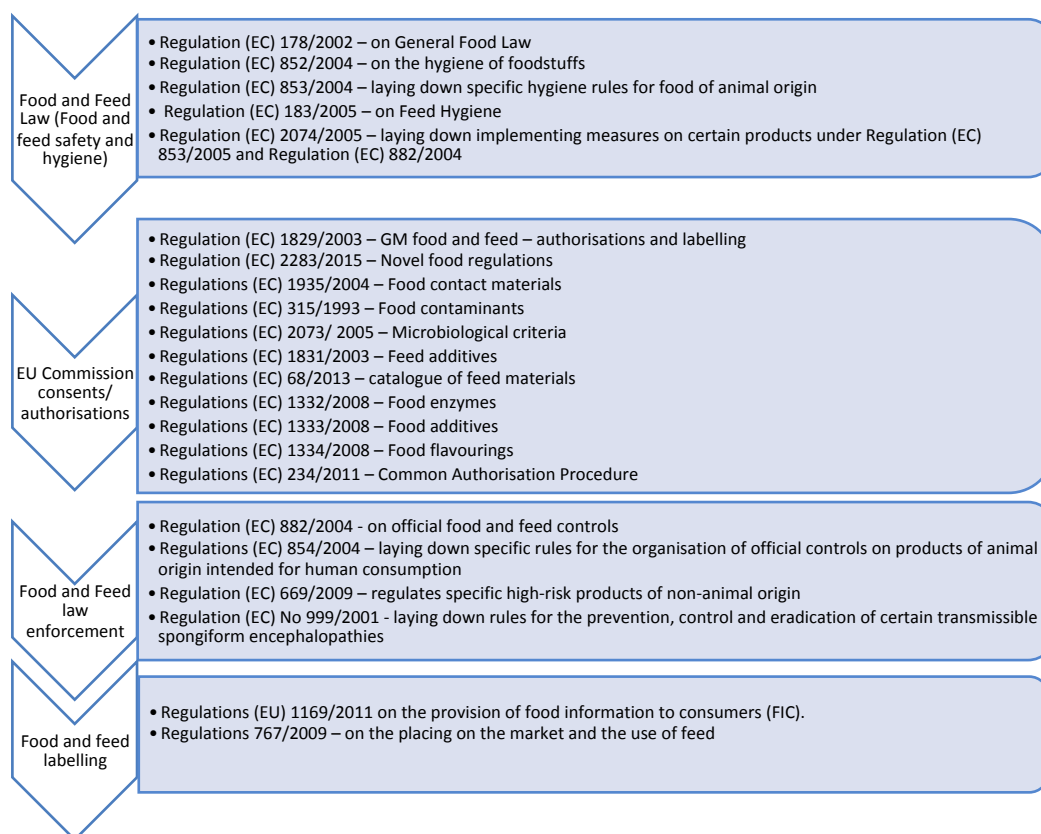
The key outputs and achievements will be presented in order to represent each organization, to conclude in next steps and recommendations.

DTU Food: insects as feed ingredients

The presentation started with an introduction of the European Food Safety Authority (EFSA), an agency of the European Union that provides independent scientific advice and communicates on existing and emerging risks associated with the food chain to European consumers, based on scientific evidence to inform European laws, rules and policymaking in this topic.

More specifically, in terms of insect proteins to be use as main feed ingredient, the Food Institute (DTU) provided an overview of most relevant regulations that affects any innovator in this field with focus in Denmark, included in Figure 2 (showing all EU regulations relating to food and animal feed). An important example raised here, was the risk profile related to production and consumption of insects as food and feed report in 2015, where the Food Institute from DTU was a member of the working group among others who worked together to present the biological, chemical allergenicity and environmental hazards associated with farmed insects used as food and feed, taking into account the entire chain, from farming to product (EFSA, 2015).





Note: Anyone can consult any of these regulations as full document on the EUR-Lex platform (Access to European Union LAW):


<https://eur-lex.europa.eu/homepage.html>  EUR-Lex
Access to European Union law

Figure 2. List of the main retained EU law relating to food and animal feed.

The Insect Safety Strategy (European commission, November 2016) includes regulations (EC) No 178/2002 (General Food Law) and 183/2055 (Feed Hygiene), which apply for all feed business operators and therefore also those rearing insects. Moreover, it also includes the regulation (EC) No 1069/2009 (Animal By-Products ABP) which establishes that insects kept in the EU for the production of food, feed or other purposes are "farmed animals".

In Denmark, for example if a primary producer wants to slaughter and maybe treat the insects (e.g. freeze dry, fry or grind them) before they are sold, these activities (e.g. registration, layout and hygiene) must be registered or approved separately by the Danish Veterinary and Food Administration in accordance with special rules on feed and food hygiene respectively (Figures 3 and 4).

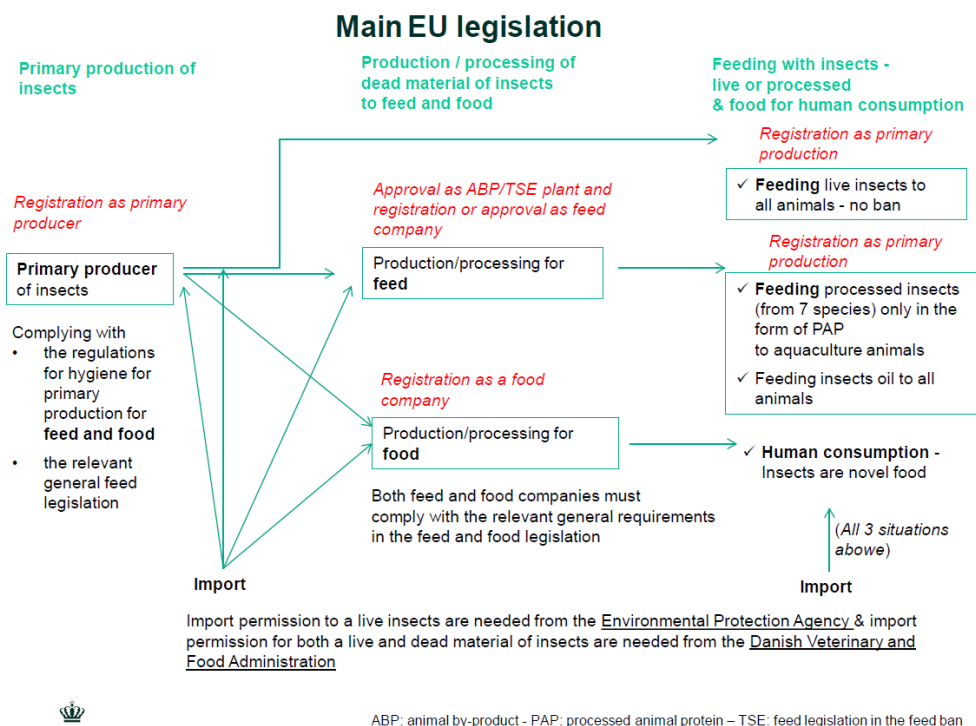


Figure 3. Main EU legislation for feed and food businesses using insects, in three different stages: 1) as primary production, ii) as processed dead material and iii) as feeding product for distribution or food for human consumption, according to the Danish Veterinary and Food Administration. Source: DTU Food Technical University of Denmark presentation LLAP workshop (2018).

Insect production - feeding substrates



Figure 4. Identified main legislative barriers when producing insects as feeding substrates. Source DTU Food Technical University of Denmark, DTU Food presentation LLAP workshop (2018).

Moreover, an example of novel foods regulations was used as brief example based on grass or seaweed proteins. The novel Food Regulation (EC) 2283/2015 is defined as food that had not been

consumed to a significant degree by humans in the EU before 15 May 1997, when the first Regulation on novel food came into force. The European Commission clearly stands that 'Novel Food' can be newly developed, innovative food, food produced using new technologies and production processes, as well as food which is or has been traditionally eaten outside of the EU. Some of the examples of Novel Food include e.g. new extracts from existing food (Antarctic Krill oil rich in phospholipids from *Euphausia superba*), agricultural products from third countries (e.g. chia seeds), or food derived from new production processes as UV-treated food e.g. yeast (Commission Regulation (EC) 2283/2015). There are three principles underpinning Novel Food in the European Union, these are that Novel Foods must be:

- Safe for consumers
- Properly labelled, so as not to mislead consumers
- If novel food is intended to replace another food, it must not differ in a way that the consumption of the Novel Food would be nutritionally disadvantageous for the consumer.

There are a number of steps necessary to be completed in order to pre-market authorisation of Novel Foods on the basis of an evaluation in line with the above principles. These are as follows:

- An application documenting the safety of the product is prepared (including toxicological studies/animal feeding studies)
- The application is submitted to the European Commission (online)
- The European Food Safety Authority (EFSA) carries out evaluation of the product
 - If the evaluation is positive, the EU commission prepares a proposal and a decision about authorization is taken by a vote among Member States.
 - Authorized products are entered in the Union List of Authorized novel foods (the authorization process takes up to 18 months, and it is generally valid for all food operators).

An additional example where regulations can represent constraints, in the Danish context, are microbiological fermentation products. These products require organic certification and they are subject of the non-GMO bacterial strains and qualified presumption of safety (QPS) (EFSA), as well as covered under the regulation (EC) 2017/1017 of 15 June 2017 amending Regulation (EC) 68/2013 on the catalogue of feed materials. As mentioned, the constraint is that materials of organic origin must be from non-mineral nitrogen sources, this creates a conflict with animal by-products use in feed products. In that case the Animal By-products Regulation 1069/2009 and the Implementing Regulation 142/2011 lay down public and animal health rules for animal by-products and derived products. They are in place in order to prevent and minimize risks to public and animal health arising from those products, and, in particular, to protect the safety of the food and feed chain (The Danish Veterinary and Food Administration (DVFA), 2017).

DTU Environment: The case of cultivation of green microalgae in industrial and municipal wastewater

The Danish Technical University (DTU) Department of Environmental Engineering, showed a new approach for the treatment of residual water (wastewater) from industrial and municipal facilities. Based on the identification of conventional water treatment technologies as they remove nutrients via resource intensive processes, new approaches for residual nutrient recycling are needed. Additionally, the increasing meat demand by a growing global population puts higher demands on protein for feedstock supply and still vegetable protein production is inefficient, generating large amounts of waste, which has a high land and water footprint and is energy intensive. According to Rasouli et al (2018) production of microbial protein from residual streams not only reduces the demand of vegetable protein, but also reduces the burden of anthropogenic activities by treating waste with more resource and cost efficient processes (Figure 5).

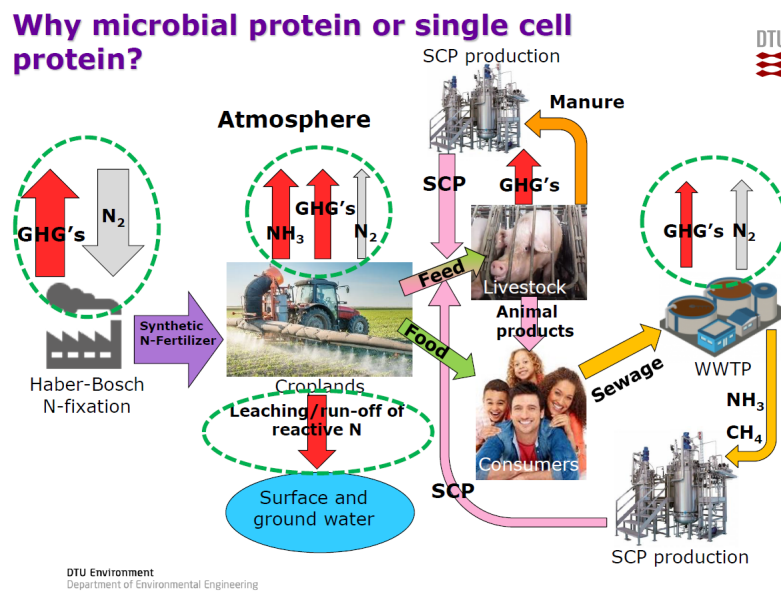


Figure 5. Microbial proteins producing high quality protein for feedstock, using the U Loop technology.

Despite its potential, several barriers exist when introducing microbial protein produced from residual resources. Using electro-dialysis for nutrient extraction from e.g. bio-pulp or urine as a means to recover ammonia free of pollutants, the extracted nutrients have been successfully fed to a methanotrophic microbial culture that accumulated protein suitable for substitution of soy or fish meal proteins. The research team have cultivated green microalgae and methanotrophs in effluents from potato processing industries and produced biomass with high quality protein (Rasouli et al., 2018). Thus, **UNIBIO** a pioneering Danish company venture in the biotechnology sector with core competences within fermentation technologies uses a unique fermentation technology – the U-Loop technology – which has been developed in cooperation with DTU and is the result of more than 30 years of research and development activities. The concept underlying Unibio’s U-Loop

technology is simple: natural gas (methane) can be converted into a highly concentrated protein product, **UniProtein**, which can be used as a direct supplement in feed for animals (See video: **UniBio - ULoop**). It can substitute fishmeal, a traditional feed component and an increasingly scarce resource. This pilot has successfully demonstrated that microbial protein can be produced from recovered resources as a promising alternative to traditional protein sources or microbial protein produced with first generation strategies (i.e., relying on fossil fuels). The opening of Unibio's first production facility is based in the municipality of Kalundborg in Denmark since 2016 and showcases the world's first commercial U-Loop fermentation production facility with a capacity to produce up to 80 tonnes of UniProtein, its proprietary single cell protein (SCP), per year (Figure 6).

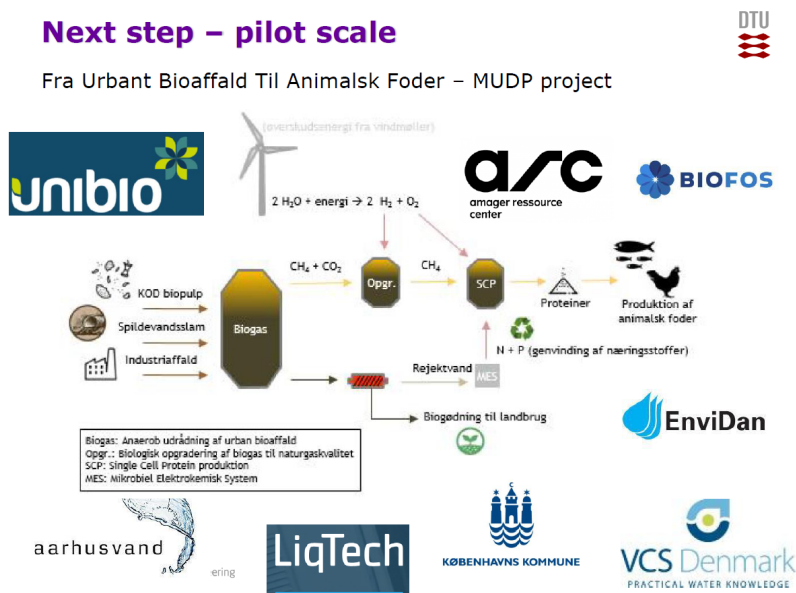


Figure 6. Unibio pilot scale project partnership: production of high-value animal protein feed from urban biowaste. Source DTU Environment.

The project is partly supported by the Environmental Technology Development and Demonstration Program (MUDP). The established consortium - EnviDan A/S, BIOFOS, DTU Environment, Unibio, LiqTech, Aarhus Vand, VandCenter Syd Amager Ressource Center- has the main purpose to develop and evaluate: i) preparation of proteins (Single Cell Proteins, SCP) Based on upgraded biogas produced on urban biowaste, ii) recycling of nutrients after anaerobic digestion of urban biowaste for use in protein production and iii) to investigate the sustainability of the overall production process from anaerobic digestion, upgrading of biogas, recycling of nutrients and the production of high-value animal protein feed from urban biowaste based on circular economy principles. However, the project still bump into difficulties regarding the feasibility of the processes mainly related to product safety and quality, despite relatively strong networks for EU level projects.

Project X Global: FEED X programme

Project X enables entire industries to adopt sustainable solutions at scale, based on proven methodologies and using independent experts from the corporate, NGO and financial world. The project aims to radically transform 10 of the highest impact industries capable of stabilising the biodiversity and greenhouse gases curves by 2030. The organisation was incubated in WWF, but it is now an independent organisation, focusing on three fundamental principles i) to secure advanced market commitment to procure alternative solutions at scale, ii) to invest heavily in multi-stakeholder independent research to ensure the right solutions at scale and iii) to focus on the companies (the market pull) to help them de-risk the adoption. The initiative is opened under the lead researcher's team and the Category De-Risking (CDR) research team is formed by Wageningen University Research Center (WUR) and Blonk Consultant, the Law department at Utrecht University (UU), Harvard University (HUBEC), and Edinburg Centre for Carbon Innovation (ECCI), FAI Farms (Sustainable sourcing solutions for the food supply chain), and Brand Legacy. The project comprehends an overall of deliverables across six principal themes that will be assessed by the partners correspondingly (Figure 7).

Environmental lens & Nutritional lens	Policy & Legislative	Ethical Risk	Social Acceptability	Economic Assessment	Investment Readiness & Profitability
LEAD RESEARCHERS					
Wageningen University Research (WUR) & Blonk Consultant	Utrecht University (UU) & Edinburg Centre for Carbon Innovation (ECCI)	FAI Farms	Brand Legacy	Harvard Consulting on Business & Environment	Tbc
					

Figure 7. Project X Global partners and the six research themes of the project. Source Project X presentation LLAP workshop 2018.

As mentioned, Project X is working to accelerate the adoption of environmentally sustainable solutions within global supply chains. The pilot FEED-X challenge programme focus is to source, test, finance and scale alternative feed ingredients into the global feed industry. Following an extensive programme to identify the most impactful areas for innovation within the value chains for salmon and shrimp feed, Project-X and its lead partner, [Skretting](#) (world's 3rd largest producer of feeds for farmed fish) are working to identify organisations who are developing new ingredients and techniques. The project will identify the 9 most promising Innovator organisations in the space of feed sustainability based on alternative proteins in order to build their global profile, introduce them to a wide range of financing opportunities and most importantly, to provide direct market testing and access. The target of FEED-X is to enable 10% of the global feed industry to adopt

alternative feed ingredients into value chains. The plan is based on a nine-stage programme in 2 distinct phases (Figure 8). Climate Kic UK and Ireland office supports FEED X stage 1 to 8 as a project. Currently, the team is working on findings of phase 1.

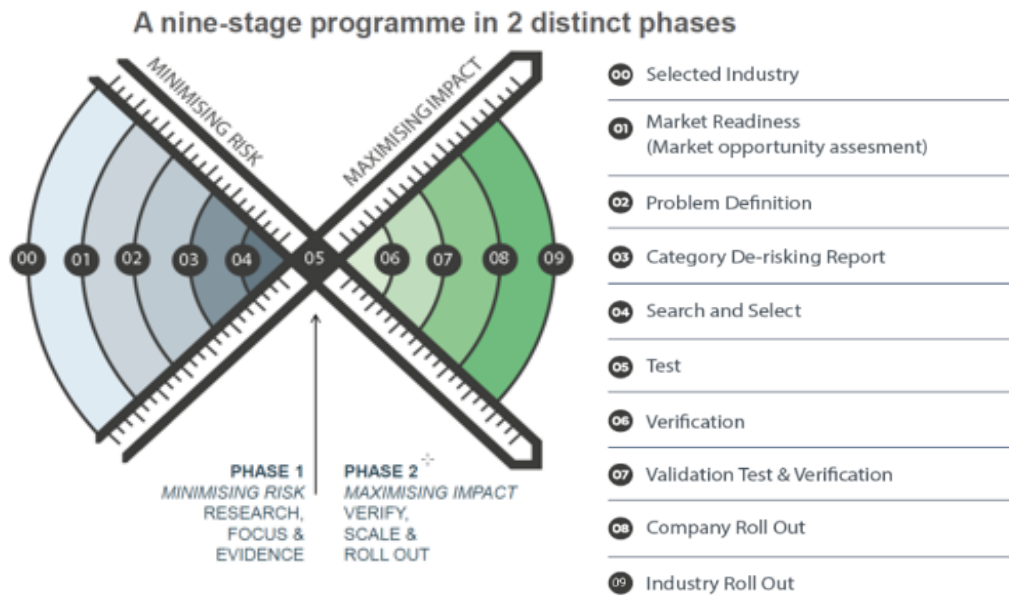


Figure 8. Nine stages of the business model adopted by FEED-X challenge programme.

The project is planning a Category De-Risking expert workshop in February 2019, where objectives will be focused on the validation of the findings of each report based on the risk matrix adopted by the project, validation of results and trade-offs of risk across the 6 themes and expand the criteria to address gaps in the defining risk assessments undertaken. One of those 6 themes being assessed are the Policy and Legal frameworks in the EU and US.

Finally, as discussed at the workshop, the European Commission legal framework for food and feed safety and hygiene regulations, is key to uptake and update with further evidence, as this will ensure the ability for the organisations and innovators to be able to built-up the transformational direction of initiatives such as the FEED-X challenge. Consequently, there are synergies between LLAP and FEED X, and combined they could have a significant impact on shifts to adopt sustainable protein production technologies in order to reduce the reliance of the feed industry on plant (e.g. soya) and fish derived proteins in the short term, allowing change through diversity of proteins in the food and feed systems.

LLAP next steps: Digital Platform

One of the main results of the workshop was the selection of the most suited IT tool to fit the purpose of the LLAP. The consortium established the digital platform approach as the tool for

communication of legal aspects and probably to accelerate transformation in the industrial innovation operating systems in feed and food sectors. Taking a very general, economic approach, online platforms mean two-sided markets, first, namely digital infrastructure that allows interactions and helps fulfil the interests of two groups of users: suppliers and customers. A narrower approach limits online platforms to modern online marketplaces that allow for concluding, or facilitate the process of communication in order to implement a certain type of innovation. A key feature is that platforms allow the supply side (the producers and suppliers) to meet the demand side (the legal framework) to reach a market, creating a triangular structure that is based on relations between (i) the platform and the supplier, (ii) the platform and the consumer, and (iii) the supplier and the customer. From a legal point of view, this triangular structure is the fundamental aspect of platforms (Wiewiórowska-Domagalska & Maciejewski, 2017).

Moreover, multiple perspectives on how platforms are shaping business and organisational models and in fact are transforming entire economies (e.g. disruptive crossovers from digital technologies to finance (e.g. Kickstarter) to mobility (e.g. Uber); these are all fuelled by a digital platform logic. In the case of LLAP, the digital platform is not directed to establish business and market opportunities based on the development of alternative proteins, but rather to enable better clarification of information that can support innovators to take better decisions to be able to apply new business models based on a well-informed model agenda. This will eventually create impacts that can have the potential to create change and transform economic dynamics via digital platform architectures that are contextualized based on deep understanding of the domain in which they are embedded. In this case, the built platform will be based on all the available information open to all users on EUR-Lex platform, focusing in elements of trust, transparency and digitalization of complex information services.

Dr Carsten Sørensen a reader and associate professor of digital innovations at LSE was contacted by Project X during this exploration period to advise the team on potential areas to explore during the next steps of development. As part of that process it was suggested that the team provide some research questions that masters students could explore as part of his course which might provide useful insights with which to develop any further proposals. He suggested that a hackathon (the original idea) was not perhaps the best approach at this stage, but research to explore existing platforms both providing legal information as well as those related to feed as well as those unrelated that may offer insights in terms of how the platform could work and generate funds through a two tier entry system. The two tier entry system enabling sectors such as investors, and insurance companies to pay for the platform functionality whilst registered innovators obtained free or highly subsidised use.

The next steps is to write a new LLAP next proposal for a multi-year project (2-3 years) possibly at the later stage application form at Climate KIC's next call (First trimester 2019). This new project proposal is subject of confirmation for all partners to confirm co-financing availability and suggest new partners to be part of the consortium. Another important remarks, is the assessment for the inclusion of external regional and international funding opportunities for long-term including a pre-



assessed organisations and mechanisms such as e.g. H2020, Life+, Innovation Denmark, Innovation Norway, VINNOVA, SITRA, and/or Business Finland.

6 Lessons learnt

- The consortium is established by a solid group of experts, still it lacks a representative and expertise in the digital platform topic. As discussed at the workshop, a potential well-matched partner to engage for this purpose could be the Information Systems and Innovation Faculty Research Group at the London School of Economics and Political Science. The centre focuses on information technology (IT) innovation and concomitant organisational and social change. It is one of the largest groups of its kind in the world, and is well known for its research in the social, political and economic dimensions of information and communications technology.
- During DTU Food presentation at the workshops, two important platforms for information and to include for the LLAP, were identified as key actors for future steps.
 - a. The [European Algae Biomass Association](#) (EABA) acts as a catalyst for fostering synergies among scientists, industrialists and decision makers in order to promote the development of research, technology and industrial capacities in the field of Algae.
 - b. The [International Platform of Insects for Food and Feed](#) (IPIFF) is a non-profit organisation which represents the interests of the insect production sector towards EU policy makers, European stakeholders and citizens. Composed of 46 members, most of which are European insect producing companies, IPIFF promotes the use of insects and insect derived products as top tier source of nutrients for human consumption and animal feed. The IPIFF published in 2018 relevant guidelines on regulation (EU) 2015/2283 on novel foods, the first one is a summary of guidelines relevant for the commercialization of insect-based products intended for human consumption and the second is a briefing paper of the first one, both with emphasis in the European Union.

7 Conclusion/Next steps/future activity

This report shows the benefits to perform this type of events, where experts can discuss and align ideas and goals in order to approach long term results, in this case for the benefit of sustainable production of alternative proteins for feed and food products. The future long term impact of the LLAP digital platform, towards the economy is clearly a political instrument to support innovators in order to influence key decision makers and benefit the uprising alternative protein industry in Europe. However, the need to proceed with a legislation agenda will depend on next steps, (i) how such intervention should be designed for better results and (ii) what the scope of such a Legal Lab for Alternative Proteins platform should be.



As mentioned before, the next step of the plan is the new LLAP proposal for a multi-year project (2-3 years) possibly at the later stage application form at Climate KIC's next call (First trimester 2019).

8 Role of partner(s) and linked third parties

Partner number and name (*).	Role on Project	Brief description of work undertaken by the partner on project in 2018, including area of expertise contributed by partner.
P242 The University of Copenhagen	<i>Lead partner</i>	Design and coordination of the workshop. Expertise in Bioeconomy and sustainable management of natural resources.
P240 The Danish Technical University	Associate partner	Contribution with expertise in EU Legal Frameworks for alternative proteins
P424 Project X Global	Associate partner	Contribution for system thinking and global impacts for sustainable value chains based on the increment of alternative proteins in the supply market

9 Associated Documents

Associated documents	Description of additional deliverable documents																				
<i>Agenda</i>	<p><i>Thursday 15 November for 2018</i></p> <table border="1"> <thead> <tr> <th colspan="2">Legal Lab for Alternative Proteins (LLAP) workshop</th> </tr> <tr> <th>Time</th> <th>Name and organization</th> </tr> </thead> <tbody> <tr> <td>10:00-10:15</td> <td>Welcome and introduction- IFRO (Lead partner) Context of the LLAP proposal "kick-off" <i>Jesica Murcia López</i></td> </tr> <tr> <td>10:15-10:35</td> <td>DTU Food - https://www.food.dtu.dk/english <i>Anette Nygaard Jensen – Senior Researcher, Division for Microbiology and Production</i> <i>Dorte Lau Baggesen - Head of Division, National Food Institute</i></td> </tr> <tr> <td>10:35-10:45</td> <td><i>Coffee break</i></td> </tr> <tr> <td>10:45-11:15</td> <td>DTU Environment - http://www.env.dtu.dk/english/research <i>Borja Valverde Pérez, Associate Professor of the Department of Environmental Engineering</i></td> </tr> <tr> <td>11:15-11:35</td> <td>Project X Global – https://projectxglobal.com/ <i>Karen Lawrence, Research Manager</i></td> </tr> <tr> <td>11:35-12:00</td> <td>Remarks for action plan</td> </tr> <tr> <td>12:00–12:30</td> <td><i>Lunch served by IFRO</i></td> </tr> <tr> <td>12:30-13:40</td> <td>All participants <ul style="list-style-type: none"> a. Discussion - EU regulations and Nordic regional regulations to include b. Hackathon as the right tool to move forward c. Food-feed competition d. LLAP functionality </td> </tr> </tbody> </table>	Legal Lab for Alternative Proteins (LLAP) workshop		Time	Name and organization	10:00-10:15	Welcome and introduction- IFRO (Lead partner) Context of the LLAP proposal "kick-off" <i>Jesica Murcia López</i>	10:15-10:35	DTU Food - https://www.food.dtu.dk/english <i>Anette Nygaard Jensen – Senior Researcher, Division for Microbiology and Production</i> <i>Dorte Lau Baggesen - Head of Division, National Food Institute</i>	10:35-10:45	<i>Coffee break</i>	10:45-11:15	DTU Environment - http://www.env.dtu.dk/english/research <i>Borja Valverde Pérez, Associate Professor of the Department of Environmental Engineering</i>	11:15-11:35	Project X Global – https://projectxglobal.com/ <i>Karen Lawrence, Research Manager</i>	11:35-12:00	Remarks for action plan	12:00–12:30	<i>Lunch served by IFRO</i>	12:30-13:40	All participants <ul style="list-style-type: none"> a. Discussion - EU regulations and Nordic regional regulations to include b. Hackathon as the right tool to move forward c. Food-feed competition d. LLAP functionality
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Time	Name and organization																				
10:00-10:15	Welcome and introduction- IFRO (Lead partner) Context of the LLAP proposal "kick-off" <i>Jesica Murcia López</i>																				
10:15-10:35	DTU Food - https://www.food.dtu.dk/english <i>Anette Nygaard Jensen – Senior Researcher, Division for Microbiology and Production</i> <i>Dorte Lau Baggesen - Head of Division, National Food Institute</i>																				
10:35-10:45	<i>Coffee break</i>																				
10:45-11:15	DTU Environment - http://www.env.dtu.dk/english/research <i>Borja Valverde Pérez, Associate Professor of the Department of Environmental Engineering</i>																				
11:15-11:35	Project X Global – https://projectxglobal.com/ <i>Karen Lawrence, Research Manager</i>																				
11:35-12:00	Remarks for action plan																				
12:00–12:30	<i>Lunch served by IFRO</i>																				
12:30-13:40	All participants <ul style="list-style-type: none"> a. Discussion - EU regulations and Nordic regional regulations to include b. Hackathon as the right tool to move forward c. Food-feed competition d. LLAP functionality 																				



The Legal Lab for Alternative Proteins (LLAP)

Thursday 15th November 2018, IFRO, Copenhagen

The main objective of this workshop is to create a digital platform to support innovators to face regulation challenges on alternative protein sources for food and/or feed considering its complexity and lack clear information in order to:

- Develop/validate efficient production and processing approaches to convert/integrate them into high quality, safe, healthy, and sustainable products or ingredients.

The platform intends to include different types of alternative proteins for food and feed, including plant-based, fungus-based, insect-based, algae-based, and microbial-based. In alignment with EU's Innovation action for food security, sustainable agriculture and forestry, marine, water research and the Bioeconomy.

The LLAP platform seeks to find innovative communication tools for "best" and most efficient ways to tackle the information gap about alternative proteins legal frames. Two major lines will be discussed *i)* alternative proteins for food based on plant-based proteins, micro-organisms, terrestrial non-chordate phyla, algae and plankton or sources not deploying natural resources; and *ii)* for terrestrial and aquatic animal feed: algae, insects and other terrestrial non-chordate phyla, micro-organisms, plankton and possibly other sources whose production is not in direct competition with food production.

The EU is suffering from a major deficit in vegetable proteins, which are used to feed the livestock, and is dependent on imports from third countries. The European production of protein-rich products rose from 24.2 to 36.3 million tonnes between 1994 and 2014, but at the same time the consumption increased from 39.7 million tonnes to 57.1 million tonnes, increasing the Union's overall deficit from 15.5 to 20.8 million tonnes. The EU Commission is expected to develop the EU's strategy on proteins and launched it at the end of November 2018 as a manner on tackling Union's deficit in plant proteins and reducing its dependency on protein imports by the end of 2018.

Nevertheless, the over the past few years, insect use in animal feed and products for human consumption has slowly been growing, and several products have shown commercial viability. Same case for microbial protein, algae, or other alternative proteins. However, the industry is obstructed by the lack of a clear legal framework and firms operating in this field have done so under significant regulatory uncertainty. The clarification of the regulation in the EU is therefore a welcome development and focus of the discussion behind LLAP partners. The creation of a digital platform to understand this problem will hopefully provide fertile ground for the industry and academy innovators to scale up past the pilot stage, while at the same time drawing the attention of other regulators around the world towards this promising industry.

Up until now, however, the legal framework surrounding alternative proteins has been very complex, with many regulations being unprepared for the possibility of different sources as both feed for animals and food for human consumption. Upcoming EU legislation will likely bring more clarity.

The research in action process will be the main approach to establish the discussion to respond the following questions:

- Could upcoming changes in EU legislation signal the breakthrough of alternative proteins in Europe?
- How the LLAP digital platform will reduce uncertainty and better inform the legal framework and regulations for alternative protein innovation in the Nordic region and possibly EU level?

Based on the following objectives:

1. To identify and map the main EU regulations and regional Nordic country regulations in relation to introduce food and feed products containing alternative proteins ingredients into the EU market.
2. To create easier access to and understanding of the legislative aspects for the use of alternative proteins in food and feed production.
3. To define and elaborate on a project roadmap for the LLAP initiative.

The Legal Lab for Alternative Proteins (LLAP) aims to create an accessible platform for innovators to navigate within the difficult regulatory system of production of alternative proteins as ingredients for food and feed products in EU.

The facilitating role of the LLAP platform will engage innovators into Climate Smart Agriculture tools as well as it will benefit a probably open up more access to market opportunities from investors whom wants to tackle and the sustainable transformation of food and feed current systems.

Venue



- Location: Rolighedsvej 25, 1958 Frederiksberg C, Department of Food and Resource Economics
- Room: Ester Boserup - Building B, stuen (1st floor); Google link [here](#)



Building view



Street view

<p><i>Social media</i></p>	<p> Pernille Martiny Modvig · 1st Sustainable innovation 1mo</p> <p>With a growing world population, global food security will be one of the greatest challenges of our time. The area of farmed land is constantly expanding thus outcompeting the forests which we depend on to keep CO2 levels at stake. It is essential for future food security in EU, that we replace imported soy with sustainable, local sources for protein for feed and food. @Climate-KIC Nordic is addressing this problem with a series of activities over the coming months Jesica Murcia Lopez Henrik Søndergaard Marco Carreira Silva Mads Randbøll Wolff</p>  <p>Alternative Protein in the Nordics Susanne Pedersen on LinkedIn</p> <p>5 Likes</p>
<p><i>Speaker Profiles</i></p>	<p>Danish Technical University - DTU</p> <p>Dorte Lau Bagessen - Head of Department DTU Food Institute</p> <p>Almost 30 years of experience with microbiology and food, feed and animal safety. Based on research she has strong competences regarding governmental and industry advice (DK and EU), collaboration and governance and had participated in a high number of cross disciplinary and –sectornary working groups aiming to find joint solutions to societal challenges. Her research background is on diagnostic, characterization and monitoring of food-borne pathogens in food and feed production incl. assessment of contagious risk in handling and treating animal by-products including fertilizers and manure.</p> <p>Annette Nygaard Jensen - Senior Researcher DTU Food Institute</p> <p>Research and scientific advice in relation to microbial food safety with special focus on transmission of zoonotic bacteria (Campylobacter, Salmonella, E. coli). Responsible for antibiotic susceptibility testing (MIC) in the Salmonella diagnostic lab.</p> <p>Borja Valverde Perez - Assistant professor at DTU Environment, department of Environmental Engineering.</p> <p>Research on waste/water treatment technologies combining several approaches, including lab and full scale experimentation, process modelling and control and microbial ecology. Development of processes that enable</p>

	<p>circular bio-economy in the urban, industrial and rural context.</p> <p>Barth Smith: - Professor at DTU Environment, department of Environmental Engineering.</p> <p>Research on new biotechnological processes for water purification and used water treatment; the engineered nitrogen cycle: applications and fundamentals with focus on autotrophic processes, laughing gas, anammox processes; link between community dynamics and system performance and stability; bacterial adhesion & biofilm formation; new biofilm/bioaggregate based reactors; the new wastewater management paradigm.</p> <p>Project X</p> <p>Karen Lawrence (MSc., PhD) Senior Research Manager at ProjectX.</p> <p>Expertise on forestry, community based natural resource management, indigenous rights and protected area programmes in Latin America, South East Asia, and Nigeria as well as coastal resources, multi-stakeholder dialogue processes in Europe and South East Asia. Analysing deforestation dynamics associated with non-timber forest product (NTFP) supply chains at the project level considering various counterfactual scenarios and at the Amazon biome. Monitoring and evaluation, and impact assessment.</p> <p>The University of Copenhagen</p> <p>Morten Gylling – Senior advisor IFRO</p> <p>Lead partner. Expertise and extensive experience into food value chains, sustainable biomass production for feed, GMO economical effects on food industry, and biorefinery sustainable development.</p> <p>Jesica Murcia López- Junior Researcher IFRO</p> <p>Project Coordinator. Research and management of projects focused in the sustainable management of forests and natural resources, considering economic, social and environmental opportunities and challenges. Coordinator of the Climate-KIC project: CSA Regional Nordic Hub.</p>
<p>Event website link</p>	<p>---</p>

10 Document History

Version	Date	Author	Change Description
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<i>Document Number 1.0</i>	<i>18th January 2019</i>	<i>Jesica Murcia López, Department of Food and Resource Economics (IFRO), The University of Copenhagen</i>	<i>Initial Report</i>
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11 References



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