

*Innovative Quality Mentoring program for  
development of a Blue Competence  
Framework in fin-fish production*

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**Output 4 - Fin-Fish work-based pilots.**

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**D4.5:**

Produce guidelines with multimedia materials, that give examples, outlines, and describes how the Guri Kunna VET school cooperates and interact with the aquaculture industry in the Mid-Norway region. The goal is to inspire stakeholders at Iceland and Scotland to consider revising their current models.

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## The Guri Kunna aquaculture VET Development model



### Summary:

Trough the Erasmus+ programme, Centres of Vocational Excellence (CoVE) the goal is to develop centres of VET excellence and also enable VET schools to be regional HUB's for VET innovation and guidance for SME start-ups and innovation project development. In the BRIDGES CoVE project this is targeted in the context of the aquaculture industry in four Nordic countries, Sweden, Finland, Iceland and Norway.

The Norwegian salmon industry is probably the most developed aquaculture industry in Europe and Guri Kunna VET School is maybe the school with closest and most extensive collaboration with the aquaculture industry. This close collaboration with the industry has in many ways, over a couple of decades, developed Guri Kunna VET School to act as a centre of vocational excellence.

Thus, we like to describe the Guri Kunna VET development model and this task is described like this:

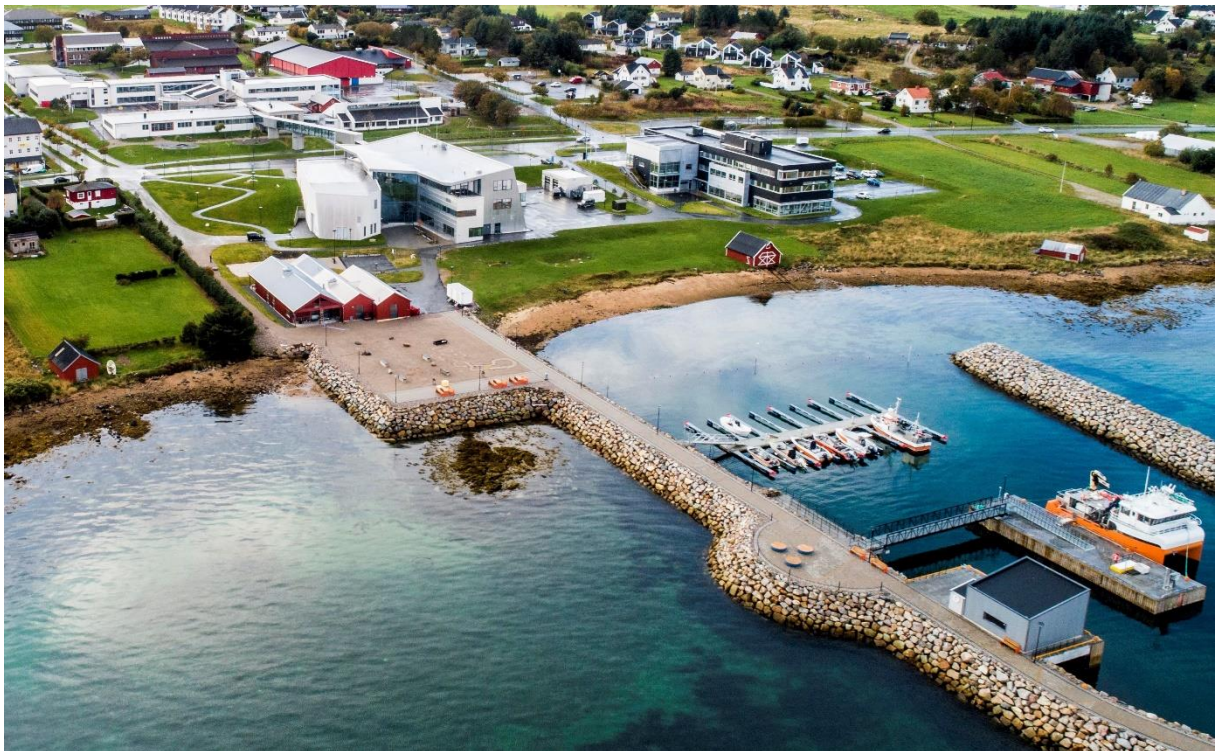
- Produce guidelines with multimedia materials, that give examples, outlines, and describes how the Guri Kunna VET school cooperates and interact with the aquaculture industry in the Mid-Norway region. The goal is to inspire stakeholders at Iceland and Scotland to consider revising their current models.

As mentioned above, Guri Kunna VET School's development model has been developed over a couple of decades and this model contains several measures aimed at children in kindergarten and primary

school, young people at secondary school and upper secondary school level as well as employees in the aquaculture industry. These are recruitment and education measures to promote knowledge of and interest for employment in the aquaculture industry. Networking with the industry is also an important measure in this model.

The measures examined individually may not look that special, but the totality of all the measures put together to form a culture for innovation and competence development makes this a very good development model. The cooperation actors in this model understand their role well and the model is almost self-sustaining.

### Networking:



Over the above-mentioned decades, Guri Kunna VET School has developed a close network with authorities and local businesses. An even closer network has been developed with the national development organisation, Young Entrepreneurship, local business associations and recognized higher education and research institutions such as NTNU and SINTEF. At the closest network level, Guri Kunna VET Skole has a very extensive collaboration with the development company, Blått Kompetansenter AS (Blue Competence Centre) (*figure 1*). Guri Kunna VET Skole was initially the initiator of establishing this company, precisely with a view to being a useful tool in the development, recruitment and competence development related to the aquaculture industry. Trøndelag County Municipality, which is the formal owner of Guri Kunna VET School, is per today also the largest owner of Blue Competence Centre. Today, this model is perceived as so successful that it has been copied at three other school locations along the long Norwegian coast, at Senja VET School in Troms county, at Austevoll VET School in Vestland county and in Agder county (for the time being at project level associated with the University of Agder).

However, a source of misunderstandings about Blått Kompetansenter in Trøndelag is that there is a company called Blått Kompetansenter AS (which is the development company referred to) and another company called Blått Kompetansenter Eiendom AS (Blue Competence Real Estate). This real

estate company owns the *building*, Blått Kompetansenter, which has been established close to Guri Kunna VET Skole which also is an important part of this network model.

The idea behind establishing such a building close to the school was to ensure an environment of aquaculture companies, or a cluster if you like, which could be an important resource for Guri Kunna VET School's development of school concept and education (*figure 2*). That employees in the aquaculture industry, VET and higher education and development companies are co-located and interact with each other in this way is an important part of the model. Another important concept behind the co-location is the shared canteen where the actors can interact in an informal way during lunch; “*The lunch is an underrated innovation arena.*”

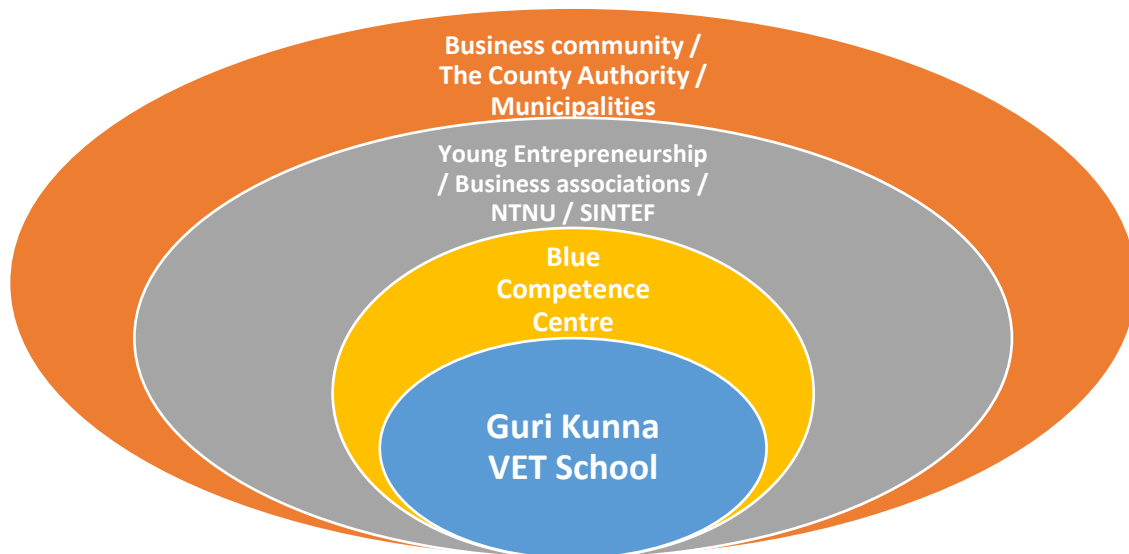


Figure 1



Figure 2

## Relevant companies in the Blue Competence Centre (Co-location Centre)

- **Blått Kompetansesenter AS (Blue Competence Centre)**

- Business and community development company especially aimed at the blue industries.
- This is how Blått Kompetansesenter's website describes its activity ( <https://bksnorge.no> ):
  - *"We are a growing innovation company that creates results through collaboration. It's about the ocean, peoples, opportunities, knowledge environment and dreams. It is also about nurturing new ideas, investing in new technology and finding sustainable solutions. We help you find people, develop new solutions and obtain funding."*

- **Guri Kunna VET school's development department and external course organizer.**

Guri Kunna VET school is an Upper secondary school (EQF level 3-4) with several vocational and general programs such as Building and Construction, Electrical and Computer Technology, Health and Childcare, Aquaculture, Restaurant and Food subjects, Industrial Technology and Study Preparation for higher education (General subjects).

- Education for Salmon Hatchery, Seabased farming and service wessels.
- Education for Industrial food production (salmon processing).

Guri Kunna VET school also offers, together with Trøndelag County Authority (Trøndelag Higher Vocational School), education at EQF level 5;

- Management in aquaculture operations (service wessels for the aquaculture industry)
- Management in sea-based aquaculture (the aquaculture industry itself)
- Mechatronics.

- **Opplæringskontoret i Sør-Fosen**

- Industry-owned actor who is responsible for the practical follow-up of apprentices.
- This is how The Training Office in Sør-Fosen's website describes its activity:
  - *"The training office in Sør-Fosen is a multidisciplinary office that helps companies find motivated apprentices, and students to find good apprenticeship companies. We help companies and apprentices succeed with a good apprenticeship in return for a vocational certificate."*

- **NTNU / SINTEF**

- Norwegian University of Science and Technology (NTNU) is Norway's largest university and an internationally oriented university with its headquarters in Trondheim (Trøndelag county).
- The company for industrial and technical research (SINTEF) is a Norwegian research company and one of Europe's largest independent research actors.
- These two organizations are considered important to the concept, Blue Competence Centre and the contact with the actors in research and higher education. They have been recruited to establish external offices/a work area in the Blue Competence Centre co-location to have the opportunity to collaborate closely with (especially) the aquaculture industry.

- **Nemko NorLab**

- Provides laboratory services and the aquaculture industry is a major customer.

- **Åkerblå ASA**
  - Åkerblå is among the world's leading actors in knowledge-based marine health and contributes to a sustainable farming industry.
- **MOWI**
  - The world's largest salmon producer and has significant operational activity in the region  
→ The whole value chain of salmon farming "from roe to a meal". Also, a producer of fish feed.
- **Måsøval**
  - Salmon producer and has significant operational activity in the region → The value chain of salmon farming "from roe to a meal".
- **Frøya Business Forum**
  - A member-owned organization that works for the best possible framework conditions for business organizations in Frøya municipality. Also has a collaboration with similar organizations throughout Mid Norway.

#### Other relevant companies located in the region:

- **SalMar ASA**
  - The world's second largest salmon producer and has significant operational activity in the region → The whole value chain of salmon farming "from roe to a meal"
- **Lerøy Midt AS**
  - The world's third largest salmon producer and has significant operational activity in the region → The whole value chain of salmon farming "from roe to a meal"
- **Scale AQ**
  - Global actor in equipment for aquaculture facilities with the head office in the region.
- **Aqua Group**
  - Global actor in equipment for aquaculture facilities.
- **Ervik Laks og Ørret AS**
  - Salmon producer with its operation activities in the region (sea based).
- **Knutshaugfisk AS**
  - Salmon producer with its operation activities in the region (sea based).
- **NorCod?**
  - Cod producer with operation activities in the region (sea based).
- **Vikan Settefisk**
  - Smolt producer with its operation activities in the region (land based RAS)
- **Frøy ASA**
  - Well boat services.
  - Sea freight.
  - De-lice and lice treatment.
  - Mooring services.
  - Cage washing and cage service.
  - Net washing, net repair and inspection.
  - Inspections and certification.
  - Bottom mapping and documentation.
  - Towing services.
  - ROV and diving services.
  - Control systems.

- **AQS**
  - De-lice and lice treatment.
  - Mooring services.
  - Cage washing and cage service.
  - Net washing, net repair and inspection.
  - Inspections and certification.
  - Bottom mapping and documentation.
  - Towing services.
  - ROV and diving services.
- **FSV Group**
  - Sea freight.
  - De-lice and lice treatment.
  - Mooring services.
  - Cage washing and cage services.
  - Net washing, net repair and inspection.
  - Inspections and certification.
  - Bottom mapping and documentation.
  - Towing services.
  - ROV and diving services.
- **Abyss**
  - Sea freight.
  - De-lice and lice treatment.
  - Mooring services.
  - Cage washing and cage services.
  - Net washing, net repair and inspection.
  - Inspections and certification.
  - Bottom mapping and documentation.
  - Towing services.
  - ROV and diving services.
- **EWOS (Cargill)**
  - Cargill established its operations in Norway in 2015 with the acquisition of EWOS, a global leader in salmon feed. Cargill employs approximately 366 people at eight locations in Norway. The sites include three feed factories and a state-of-the-art research and development centre.
- **Skretting**
  - Skretting is a world-leading supplier of innovative and sustainable nutritional solutions for the aquaculture industry. Skretting has production facilities in 20 countries on five continents, and has three factories in Norway distributed along the coast. We supply feed for various fish species from hatching to slaughter. The head office for the Norwegian and global operations is in Stavanger.
  - Products:
    - Feed for various fish species. Salmon, trout, halibut, cod, lumpfish, wrasse, char and wolf-fish. Globally, Skretting supplies feed for more than 60 different species
- **Hitra Business Association**
  - A member-owned organization that works for the best possible framework conditions for business organizations in Hitra municipality. Also has a collaboration with similar organizations throughout Mid Norway.

#### ▪ **Hitra and Frøya Municipalities**

- "The Mid Norway's salmon region's" largest municipalities. The municipalities, both administratively and politically, have a great interest in promoting the aquaculture industry. This is of great importance for the municipalities' attractiveness, both residential and visitor attractiveness. The municipalities are therefore constructively willing to cooperate in relation to Guri Kunna VET school's development goals and initiatives to achieve these goals.

### Agreements of intent with research and higher education institutions

In order to make the vocational training more interesting and development-oriented, Guri Kunna VET School has written cooperation and letter of intent agreements with several relevant institutions in research and higher education. An example of measures through such agreements is that students from Guri Kunna look after research equipment in the sea around the school and obtain test results from such equipment. In this way, the students will gain an insight into research work and this is also an activity that is easy to implement in teaching in line with the curriculum objectives. Institutions which such agreements have been written are, for example:

- **NMBU Veterinærhøgskolen**, Norwegian University of Life Sciences
- **Veterinærinstituttet**, Norwegian Veterinary Institute
- **Havforskningsinstituttet**, Institute of Marine Research
- **NTNU**, Norwegian University of Science and Technology
- **SINTEF**, The Company for Industrial and Technical Research at the (*former*) Norwegian Technical University (today, NTNU)

### The training license for salmon farming

Guri Kunna VET Skole has been granted a teaching permit for salmon production by the Norwegian authorities. This permit and the way Guri Kunna VET Skole have chosen to organize the operation of this permit is one of the most important components of the development model.

The practical operation of the permit has been leased to commercial breeding companies, for the first ten years between SalMar, Lerøy and MOWI, but now Måsøval has this agreement with Guri Kunna VET Skole.

The rental income from the farming companies obviously provides opportunities for the development of the aquaculture training at Guri Kunna, but the practical benefits of the lease agreements are perhaps even more significant for the same training.

It is the farming companies themselves that provide farming facilities and the equipment linked to this in line with routines for ordinary facilities in the companies. If the school itself had been responsible for this, the experience is that production equipment and facilities would quickly become outdated due to tight public budgets for renewal. With the help of this organization of the permit, the students are guaranteed training in state-of-the-art facilities.

This way of organizing the permit also links the farming companies even more closely into the school's network. This means that the school's students actually have access to training at any farming facility in the entire region, regardless of breeding company.

We can also mention the following benefits of this organization and the rental income:

- Gives access to a practical training arena at any locality/farm in the region close to the school. Also gives access to fish for the implementation of laboratory exercises.
- The students from Guri Kunna VET School have the opportunity for practical training in a state-of-the-art facility several times a week. This provides a unique contact with those who have experience from the industry and work in the industry every day. This also means that Guri Kunna's aquaculture education stays up to date and develops in line with the industry.
- Purchase of buses and boats so that students can quickly get to the facilities both on land and at sea.
- A couple of annual meetings in a reference group connected to the permit. Provides close cooperation and ongoing dialogue with decision makers in the industry about both practical issues with the operation avf the permit and competence development.
  - Måsøval (currently the operator)
  - SalMar
  - Lerøy
  - MOWI

### Development activities

Over the last couple of decades, Guri Kunna VET School has initiated several development activities and events where several of these activities and events are organized annually. The development company, Blue Competence Centre (BCC) has become a very close partner for Guri Kunna in this context. Some of the events are Guri Kunna's "property", while others are BCC's "property", but Guri Kunna and BCC have developed an almost intuitive and well-defined relationship for which of the organizations is responsible for initiating which events. In any case, BCC is crucial for the practical implementation, whether the events are the "property" of one or the other.

It is absolutely essential for Guri Kunna, whose main activity is teaching, to have close cooperation with an organization that can take on such a large operational responsibility for implementing such recruitment and promotion events in relation to the aquaculture industry and aquaculture education.

### Microforums

Arranging so-called microforums is part of this development model. This can be shorter meetings, events or webinars with a specific theme that is useful for the whole or industries within business/social life. Here too, BCC plays a central role. Examples of such theme meetings in the past year are:

- Knowledge of using metals
- Industrial Symbiosis
- Webinar - Feeding farmed salmon
- RAS (Recycling Aquaculture System) Smoltification

### The Aquaculture Week

Aquaculture week is organized in collaboration between Guri Kunna VET Skole and BCC. The week consists of several different events aimed at the aquaculture industry and educational institutions

with relevant educational programmes. This can be education from VET level to higher education (EQF level 3-6):

#### *Aquaculture Skills Foresight Forum (ASFF)*



ASFF is an initiative that is part of the trans-Nordic project, BRIDGES, financed through the EU program "Centres of Vocational Excellence" (CoVE). This measure is the project's most important measure to have a close dialogue about competence and recruitment needs with the aquaculture industry in the participating countries.

Through the project, such forums have been created both at national and Nordic level. Guri Kunna VET School has chosen to implement this event in Aquaculture Week for the past two years.

#### *The top leader meeting*



At "The top leader meeting", company leaders (mainly at CEO level) from all over Norway are invited to a workshop on competence, recruitment and any needs for new education programmes. This meeting is especially with regard to the aquaculture industry, but not necessarily exclusively for this industry.

#### *NTNU Students Camp*



During the aquaculture week, it has more or less become a tradition that NTNU brings bachelor's and master's students from relevant educational programs to the region for a project week. Here, students work in teams to

solve relevant cases. These may be cases that they have come up with themselves, or cases that have been given as a challenge by the aquaculture industry in the region.

The students' solutions are presented to the participants at the closing Bridgehead conference.

### *Innovation Camps for youth*



Such innovation camps have been implemented annually in the region over the past 10-15 years. Here, 10th grade students as well as upper secondary school students are invited to solve industry-specific cases. During the Covid19 pandemic, we were forced to arrange this innovation camp online, and in the last

year we actually reached over 2,000 students in central Norway. The three best solution proposals receive cash prizes, sponsored by the industry and regional banks, and one of the winners is selected for a viewing trip (with rib boats) to the Coastal Museum's demonstration facility for salmon farming in the region. this viewing trip has been very popular with the young people and is thus also a good showcase for the aquaculture industry and vocational education in the region.

### *The Bridgehead Conference*



The Bridgehead Conference is an aquaculture-based conference organized in collaboration between Guri Kunna VET Skole, BCC and an NTNU-led project (the "Brohode" project). Here, aquaculture leaders from all over Norway have participated, but also leaders internationally. We have also had visits from several Norwegian ministers during the conference over the years. The conference has

leaders from the aquaculture industry as presenters and the conference implements a specific theme each year, a theme that is attempted to be implemented throughout the aquaculture week.

### Trainee program, Trøndelag

Originally a collaborative project between 11 municipalities on the Trøndelag coast, at the time called Kyst-Trainee (“Coastal Trainee Program”). The program is currently led by BCC.

The ambition is to be the most exciting coastal region in Europe based on the resources, advantages and qualities that the region has. The program works towards as many people as possible getting an insight into the opportunities the Trøndelag coast represents, both for residents, newcomers, establishers, investors and other groups.

The program originally had three main focus areas:

- Reputation building and the desire to establish oneself with work and housing in the region.
- Competence development.
- Comprehensive land and nature management.

KystTrainee is an initiative within the coast that is directly aimed at acquiring new residents. This is a regional trainee scheme that covers the coastal area in Trøndelag. The scheme was initiated in 2008 and formally started in 2010 and in the long term the aim is to have 10 trainees on the coast at all times.

### Guri Kunna / NTNU cooperation workshops

In addition to the aquaculture week, Guri Kunna VET School and the management at NTNU have several meeting points throughout the year where the development of competence is the theme. This may be anything from smaller informal meetings to larger workshops as well as student work (“Experts in Teams”).

## The Research Days



The research days are an initiative organized at several schools across Norway. Guri Kunna VET Skole has held a two-day event in this context over several years. The target group for this event is children in kindergartens and the youngest two or three classes in primary school, where we try to stimulate the children's curiosity with a view to future education. In this event too, we get good help from the local business community through their setting up stands and demonstrations in relation to their research activities.

## Courses

Through its course and innovation centre, Guri Kunna VET Skole organizes several courses aimed at adults outside the regular school system. In addition, BCC also offers some courses that Guri Kunna does not have the personnel to offer. This can be shorter specialization courses and longer courses with the aim of obtaining a formal national qualification within a specific vocational field. In principle, this can be any course for which there is a demand. Access to course teachers nevertheless limits the possibilities in relation to offering certain courses. Guri Kunna uses teaching staff from the regular education programs in such courses and this sets limits to the breadth of such course offerings.

Examples of courses:

- HSE Mentor
- Operator in Aquaculture
- D6 Ship Officer
- Industrial Food Production
- Course in safety management and risk analysis in aquaculture

## YOU (Educational Fair)



Guri Kunna VET School organizes an annual Vocational and Education Fair in collaboration with BCC. The target group is high school students who are faced with educational choices in relation to Upper Secondary School.

Here again, local companies participate with stands, and the aim is to make the high school students as well equipped as possible to make a wise educational choice and also a choice that suits the individual student.



Over the years, this fair has undergone a shift in focus. In the first years, the fair had the feel of being a showcase for the individual companies and in a way that the most profitable companies received the most attention. There is nothing directly wrong with that, but an acknowledgment was made that this might not be the best help in relation to the students' choice of education for Upper Secondary School. There has therefore been a search for less focus on great and flashy stands for individual

companies and more focus on the presentation of professional fields and career paths into these. This is considered a successful shift in focus for the fair.



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