Functional review of Blue Growth RIS3 steering process & operational structure

Analysis of the state of the play in Southwest Finland (WP 2.1)

Smart Blue Regions
Project Report

June 2018

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The Region of Southwest Finland

Southwest Finland is situated by the coast of the Archipelago Sea. Here maritime atmosphere meets urban city culture, a rich history is combined with high technology and global top know how.

The expertise in Southwest Finland creates products ranging from medicine to the world's biggest and most environmental cruise ships. The marine industry is a major employer in the region and represents global top competence. The research and development in biosciences is world class. Southwest Finland is also our country's food granary. Creativity and culture have shaped life in this region throughout ages.

Southwest Finland is a diverse educational region, and Turku has been selected the best student city in the nation.

Southwest Finland's central location as a gateway to the West makes it an important international actor in the Baltic Sea area.

By its population, Southwest Finland is the third biggest region in Finland. Almost 6 % of 473 000 inhabitants speak Swedish as their mother tongue. There are 27 municipalities in Southwest Finland; Turku is the fifth biggest city in Finland.

For centuries Southwest Finland was the centre of Finland, and Turku, the oldest city in Finland, was our nation's capital. The Vikings' eastern route went through the archipelago already in the 800s.

Southwest Finland is known for its unique archipelago comprising over 20,000 islands.

Economic life

Southwest Finland is Finland's leading agricultural area and a significant food producer. There is a unique competence network in shipyards, and the cooperation between Turku's shipyards and its subcontractors has resulted in the biggest and the most environmental cruisers in the world. Marine and metal industries form the base in the region's economic life.

The automobile factory in Uusikaupunki manufactures electric and hybrid cars. The metal and electric industries have been strengths of the region. The development of the electric industry is important for the whole region's wealth. The bio cluster has long been emphasized in the region's development.

The traditional industry has given room for the service sector. The region's environment offers unique possibilities for developing tourism. Southwest Finland has a unique archipelago and a growing cultural production.

Analysis of regional context/analysing the innovation potential

Regional Development Strategy of Southwest Finland

The Regional Strategy guides the activity and development of the region. The Regional Development Strategy for Southwest Finland sets the direction for the region towards the year 2035 +, and the Regional Programme 2018-2020 indicates the measures to be taken to reach these goals. The content and the aims of the smart specialisation strategy are directly lead from the Regional Strategy.

Maritime industry sector in Southwest Finland

Southwest Finland is the leading region of the Finnish maritime industry and hosts over 25 % of all Finnish maritime technology industry companies. There are about 250 companies operating in its maritime industry, 20 design agencies, 15 shipping companies and 3 shipyards. The maritime industry employs around 5 300 people in the Southwest Finland region. Also the future prospects are exceptionally bright in the region.

Case: Meyer Turku Oy

Meyer Turku Oy employs 1,800 persons and specializes in building highly complex, innovative and environmentally friendly cruise ships, car-passenger ferries and special vessels. Together with two sister shipyards in Germany, Meyer Werft in Papenburg and Neptun Werft in Rostock, Meyer Turku is one of the world's leading cruise ship builders. The successful shipbuilding tradition in Turku has been continuing since 1737. The company is currently building cruise ships for TUI Cruises and a fast ferry for Tallink. The company will also build two cruise ships for Costa Crociere.

Furthermore, Royal Caribbean Cruises Ltd. and Meyer Turku shipyard signed a memorandum of agreement for two next generation cruise ship orders to be delivered in 2022 and 2024. The around 200,000 gross ton large cruise ships under the project name "Icon" will mark the beginning of a new generation of LNG powered cruise ships with a number of innovations such as an application of fuel cells for power generation. Fuel cells are a very energy efficient and clean way to generate electrical energy. With the new orders, Meyer Turku shipyard will increase its output until 2024 substantially beyond Turku yard's all-time-high work load during Oasis/Allure times in 2007 – 2009. These new orders further lengthen the order book until 2024 and thus provide an unprecedented level of stability and allow for a smooth production ramp-up. The eight year long horizon creates a unique opportunity for Turku shipyard and the entire Finnish maritime cluster to invest and develop their capabilities with a long-term strategy and achieve new leaps in technology.

Meyer Turku has so far announced 200m€ of investments in Turku yard and further investments are on the drawing board. In addition to the machinery and IT systems of the yard, the family owned company is also investing heavily in people and is on a good way to increase the number of employees from around 1800 in 2017 to 2500 in the future. The total employment effect including the many specialized subcontractors is estimated to be larger than 20,000 in the future.

There are also several significant design projects ongoing, e.g. Deltamarin Ltd and Elomatic Ltd have signed a large scale tri-party engineering contract with MV Werften in Germany for the design of a Global Class mega passenger ship. The contract was signed by all parties in July 2016 and includes large parts of the basic and detailed design of the vessel. The contract is the largest in both Deltamarin's and Elomatic's histories and in total represents 860 man-years.

The Global Class mega passenger vessel for cruise line Star Cruises will be the largest passenger ship ever built in Germany and one of the largest ever built world-wide. It will be over 340 metres long, 45 metres wide and have a gross register tonnage of 200,001. The ship order is an important boost for the entire European high-end shipbuilding industry. The project will last almost 4 years and delivery to Star Cruises is scheduled for 2020.

Strategic marine economic activities in Southwest Finland[1]

Energy and marine materials

- Offshore Oil and Gas – especially deep water fields.

  - no manufacturing, but some design agencies are working with offshore issues

- Marine Renewables – including wind, wave and tidal generators.

  - Meriaura company has become a major transportation specialist for wind energy projects in North Europe and the Baltic Sea areas. Meriaura has successfully realized quite a number of transportations for wind turbine generators, blades, towers and other main components either directly or indirectly related to specific wind farm projects. The open deck and heavy cargo carriers M/V 'Meri' and M/V 'Aura', have participated in demanding offshore wind installation projects, supplying monopiles and transition pieces for various large offshore wind farm projects such as Sheringham Shoal and Walney OWF. Meriaura vessels are multifunctional and are capable to transform to installation vessel for grid lines or biofuel cargo.

Shipbuilding and maritime transport

- Building and repair of merchant vessels;

  - Meyer Turku Shipyard focuses mainly on cruisers, passenger vessels and special vessels. Meyer is investing in modernisation of the shipyard in coming years.
  - There are also two smaller workboat shipyards in Southwest Finland: Uudenkaupungin työvene (Uki Workboat) and Oy Western Shipyard Ltd. Uki Workboat has extensive experience in designing and building boats and vessels for professional use. They know both aluminium and steel materials. Western Shipyard is concentrating on docking services, major overhauls and new production.
  - Turku Repair Yard Ltd in Naantali has one of the Northern Europe´s leading ship repair facilities with the largest drydock in the Baltic area. They are also currently extending their operations to ship demolishing business.
  - large network of subcontractors, designing, part delivery and turnkeys, device production
  - SO2 scrubbers

  Among the research institutions are:

  - University of Turku (Business Management, Maritime Logistics and, Port operations, Algae Research, Marine Biology)
  - Turku University of Applied Sciences (Mechanical and Production Engineering, Industrial Management, Automation and Transportation, Engineering; Business and Business Logistics)
  - Abo Akademi (Industrial Management, Energy and Environmental engineering)

[1] The information is presented followed by the structure used in CPMR survey 09/2016

- Novia University of Applied Sciences (Master Mariner, Watchkeeping Officer or Watchkeeping Engineer)

- Building, repair and maintenance of floating structures

- ADMARES Ltd. is a global company leading the alternative real estate field with the latest innovations in floating accommodations. ADMARES's solutions include Villas, Hotels, Resorts, Islands and complete Cities.

- Short sea shipping: National or International freight transport over relatively short distances

- Major ports are the Port of Turku, the Port of Naantali and the Port of Uusikaupunki.
- The Port of Turku is the leading port for Scandinavian traffic in Finland. In cargo transports the most frequent liner services are operated to Scandinavia and Germany. There are four daily departures to Stockholm and several weekly departures to Germany.
- Naantali is today 4th largest universal cargo port in Finland. The total annual traffic to and from the port is ca. 7–8 million ton.
- Turku and Naantali are TEN-T traffic network core ports
- Specialised equipment of Meriaura and Langh Shipping
- very advanced vessel tracking system

- Passengers ferry services: National or International transport of passengers on fixed routes

- The Port of Turku is the leading port for Scandinavian traffic in Finland, and measured by the total number of passengers, Finland's second largest passenger harbour. Each day around 10,000 passengers pass through the port of Turku. There are two shipping companies operating between Turku and Stockholm, namely, Viking Line and Tallink Silja. Both of them have two daily departures from Turku, one in the morning and one in the evening.
- There are also daily connections from Naantali to Kapellskär (Sweden)
- The archipelago ferries to Aland
- Large network of ferries in archipelago. Ferries delivers also small cargo to the islands.

Food, nutrition and health

- Fish for human consumption: Catching, processing and selling of fishery products fit for human consumption

- Archipelago Sea is the most significant and diverse area for fishery industry. Professional fishing and fish farming in a large scale have created a large network of transport and prosessing of fish in the area.

COMMERCIAL FISHING

- There is a long history for commercial fishing in the area, and commercial fishing plays a locally significant part in maintaining vitality and culture in the archipelago area. In the

beginning of 2016 there were 88 professional fisher men (in full time) and 132 fisher men in part time in the Archipelago Sea.

- The main catch consists of baltic herring and bristling when it comes to fishing in the open sea. In coastal fishing they use fish nets and fykes. During winter time they fish under ice by using fish nets. Most of the fisher men on the coast are fishing various species of fish.
- In 2015 the total catch of commercial fishing was all in all 26 Mkg, of which Baltic herring had a share of 23 Mkg. The other commercially significant species of fish are fyke, perchpike, perch, whitefish, pike and herring smelt. Bream and roach are also typically catched and used for human consumption in the Archipelago Sea area (there is a project going on with public funding on this topic and they are aiming to end up in a situation where this type of fishing would be profitable).
- Added value for the catch of commercial fishermen is offered by own processing and direct sale. Roughly estimated about 10-20% of the catch is processed by the fishermen (smoking, marinading, filleting). Direct sale for tourists for example in the guest harbours plays a significant part locally. Fish wholesails by their fish without processing. Restaurants by their fish mostly in fillets.

FISH FARMING

- There are about 50 fish farms in the area and these produce about 1/3 of the total amount of consumed farmed fish in our country. The average size of fish farms is about 60 tn. Rainbow trout is still the most important species but the share of farmed whitefish is strongly rising both when it comes to produced amounts and the number of producing units. In 2015 the total amount of farmed fish in these units was all in all 3,2 Mkg.

FISH FARMING USING RECIRCULATING AQUATIC SYSTEMS

- There is a lot of research and development going on regarding recirculating aquatic systems which is a huge opportunity for fish farming industry in the future.
- This kind of fish farming is a lot more environmental friendly than fish farming using old technologies. As the farms using old technology have been denied of environmental permits, the future of fish farming lies very much in recirculating systems.
- Sybimar Oy and Clewer Oy are strong players in the field of recirculating systems.

FISH PROCESSING UNITS

- The network of fish processing units is very large in the Archipelago Sea area (about 20 companies). These companies were processing or freezing about 20Mkg of fish in 2013, mostly Baltic herring. The biggest share of Baltic herring is exported and depending on the market situation about 50% is used as fodder for farmed animals. More and more wider varieties of fish species are used for food production as an attempt reduce the nutrition load of the baltic sea and to reduce the amount of fish that goes into waste.
- The main part of the fish that stays in domestic market is sold to the near area or to the area of Helsinki. Baltic herring but also smelt, roach, bream, perch and rainbow trout are imported for example to Estonia. The Russian import ban for groceries has made importing herring to Russia quite difficult.
- The effect for employment through fishing industry is 700 persons and the economic effect is over 100 M euros.

- Fish for animal feeding: Catching and processing of fishery products unfit for human consumption or used for animal feeding and agriculture

  - The first fishmeal fabric in Finland started in Kasnäs in the first half of 2016. This fabric will produce 30-40 Mkg of fish annually and the production capacity is at the most 8 Mkg. Most part of the fishmeal is produced by Raisio Aqua to fish feed (fodder) and will be used in fish farms of Finland. This is an example of Blue economy in Finland and also economical effects of this fishmeal fabric are significant and it will open up a new domestic market for fishermen who are concentrating on Baltic herring (also more turnover, more jobs). Nutrition recycling benefits also environment. In 2017, RaisioAqua's fishmeal was used to grow 13,6 million kilos of fish. Phosphorous residues from fish farming have been successfully completely compensated and nitrogen residues have been compensated by 75%.
  - significant and it will open up a new domestic market for fishermen who are concentrating on Baltic herring (also more turnover, more jobs). Nutrition recycling benefits also environment.

- Blue biotechnology: All possible technology applications to marine living organisms including food, nutrition, health, environment enhancement, cosmetics, processing technologies, industrial applications, energy production

  - University of Turku is researching commercial uses of algae. Its research programme on algae has been awarded a status of a Nordic center of excellence.
  - Sybimar Ltd offers process equipment for food industry and energy sector and produce biofuels from food industry side streams
  - Natural Resources Institute Finland (Luonnonvarakeskus)
  - Finnish Environment Institute (SYKE)
  - In Smart Chemistry Park companies are developing marine fuel from plastic waste (tires etc.)


Meyer Turku shipyard is currently building cruise ships for TUI Cruise

Identified potentials in the region (S3 Priorities)

The smart specialisation priorities for Southwest Finland have been updated in December 2017 as the new regional programme 2018-2020 was accepted. The previous programme 2014-2017 did not have a specific priority for blue growth. During the project, we have found out that we certainly need a specific priority for blue growth. Because of this, a specific priority for Blue Growth was added. As heavy industry is strongly linked to blue growth, it has also been put together into a same priority.

Following themes have been identified as Southwest Finland's RIS3 priorities in the regional programme 2018-2020:

- Blue Growth and Industrial Modernization
- Innovative Food Chains
- Medicine and BIotechnology

Examples on competitive advantages and potential for excellence

Blue Industrial Park is an industrial development area adjunct to the Turku shipyard, one of the leading maritime industry actors in the Baltic. The aim is to improve productivity of the maritime industries by developing production process and technologies and network-based working method. The upcoming Pansio LNG terminal will provide new smart energy network in the area.

The aim is to create the leading European cluster of production and R&D by the year 2020.

- Blue Industry Park (BIP) is a cluster of maritime industrial operators, service business and R&D, which is to be built to the immediate vicinity of the dockyard in Turku.
- BIP offers concentration benefits, synergetic business benefits and competition benefits, and it improves the ability of marine and manufacturing industry to continuously develop their operations.

Blue industrial Park advantages:

- 290 companies representing 40 % of the Finnish maritime industry's volume
- Excellent logistics by road and rail network, large loading area possibility
- Skilled workforce and R&D services from Universities and private companies
- Blue Cleantech and development expertise. Arctic Business Centre planned.

Turku Future Technologies (**TFT)** is a unique business-driven knowledge network between four Turku area universities and all four technical universities in Finland. The network provides combined best-in-class research services to boost maritime and technology companies in Western-Finland.

TFT is a co-operational network that

- Tailors a broad-based research excellence to improve competitiveness and growth in technology companies in South-West Finland
- Supports a strategic development project of a company by speeding up know-how development–a product, production, business related–as well as market entries.
- Provides a seamless model of co-operation for researchers and companies which lead company-driven, multidisciplinary and profitable innovation collaboration.

BioTurku® is the leading biotechnology cluster in Finland, an active and dynamic community of bio actors and a centre of top expertise in Northern Europe. The biotechnical companies, universities and hospital in the cluster form a continuous chain of education, research, product development, production and commercialisation.

Turku has a strong tradition of drug development which dates back to the 1940s. Academic research and growth-seeking companies with R&D expertise have put Turku in the key position in the development of biotechnology and life sciences in Finland. Turku's drug development is known globally, and the nearly one hundred players in the BioTurku® community form a consistent chain from research to business development and production. BioTurku's activities emphasise the promotion of business expertise and internationalisation in particular.

Nearly half of the turnover of Finnish pharmaceutical industry is generated by companies operating in the Turku region. In addition to drug development, Turku has top expertise in diagnostics. Important areas of application are hormonal diseases, cancer, inflammatory diseases, and diseases of the central nervous system. These established life science strengths are supported by material and nanotechnologies.

Smart Chemistry Park® is an innovation platform and a cluster for start-ups and SMEs operating in the fields of chemistry, process chemistry and technology. The companies based in Smart Chemistry Park deliver novel technology solutions and business models to bio and circular economies. Smart Chemistry Park is located in Raisio, Finland and it offers laboratory, pilot and office space, as well as a broad network involving the public sector, universities and industry. In Smart Chemistry Park, SMEs work independently, developing their own technologies and businesses, but in close symbiosis with each other, sharing the infrastructure, equipment and know-how.

Setting out the RIS3 process

The Regional Council of Southwest Finland

The Regional Council of Southwest Finland is a regional authority representing the municipalities. The main tasks of the Council include regional development and regional planning as well as promoting regional interests. It creates cooperation over municipal and sector borders and is responsible for administering the EU programmes implemented in the region. Also the Regional Council is

responsible on a regional level for land use planning and is responsible for formulating a 20-year Regional Plan and Regional Programme that is reviewed every four years. The whole procedure is based on national legislation.

Regional Strategy as a guiding document

The strategy process of Southwest Finland is strongly focused on customer needs and values therefore trying to serve those who genuinely benefit from the regional development work. One of the key ideas is the interactive teamwork approach bringing together and mixing various expertise across their traditional line of participation with the focus only on important topics. The final aim is a competitive development strategy that will contribute to the success of the whole region by giving a clear advantage over other competitive regions. Including smart specialisation into this whole process is seen very crucial to the region.

As a part of its tasks the Council also grants Regional Development funds for projects that put the goals of the Regional Programme and Plan into action.

In regional strategy the main strengths and the competence of the region have been identified to better target the development acts and to better support the relevant fields. The visions for the region include

- to maintain and to strengthen the high education level
- the high level of research and the position in international markets amongst others in the fields of food/bio industry, ICT, energy and environmental technology and maritime industries.

The versatile economic life in the region gives good possibilities to new innovations and experiments. A huge potential has been identified in the internalisation of both the SM enterprises and the R&D institutions. Clustering the different actors in the region as well as with the actors outside Southwest Finland has been identified to be a crucial task in order to enhance the competitiveness of the region.

A new strategic direction taken by Turku, the central city of the region, focuses on the utilization of the city as development partner and an innovation platform for companies. This includes creation of innovative public procurement procedures, making selected public services available as a living lab for new products and services and exploit the urban planning as a platform for new innovations.

The practical work on strategy is carried out by four (4) working *teams* on the following *subjects*: Economy, Competence, Environment, Values and Social Atmosphere. These four teams interactively iterate their ongoing work first within each individual team and secondly with each other in sessions taking the form of *Value creation forums* on any given regional development theme produced.

Together with the Turku Science Park Ltd it has been agreed to jointly organize the S3 Platform action in the region. Turku Science Park Ltd is an institution promoting the utilization of university-

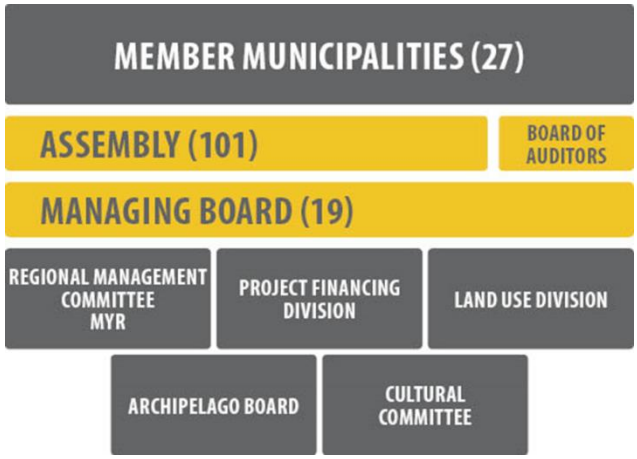
based expertise and competitiveness of enterprises as well as generating new business in the fields of biotechnology and information and communication technology.

Governance structure of the Regional Council

The Regional Council's highest decision-making body is its 101-member **Assembly**. The members of the Assembly are municipal councillors. **The Managing Board** functions as the executive body of the Assembly. The Council and the Managing Board are chosen every four years, according to the results in the municipal elections.

The Regional Management Committee (MYR) decides on the policies of the developmental projects and the distribution of the financing framework. The management committee is made up of 41 representatives from various regional organizations as well as from specialist quarters. The Regional Management Committee forms a cooperation platform that functions as information channel and network

The Committee also approves the Smart Specialisation Strategy and the updates to the strategy. The Committee appoints the expert group in charge of drafting the proposals for smart specialisation strategy.



Understanding the target group

The Partnership Forum

The Partnership Forum is the main activity of the regional strategy. The Partnership Forum is a new approach towards regional cooperation, ways of working, and structures of collaboration. People and knowledge are the basis of the Partnership Forum. The forum brings together open data and those whose aim is to accomplish more by working together and sharing information. The Regional Council organizes partnership meetings promoting the implementation of the regional strategy and taking the new ideas to the right stakeholders. The regional information platform of Southwest Finland enables better presentation, delivering and use of information and creates a new way of regional cooperation. The thematic entities of the Partnership Forum reflect the functional contents and objectives of the strategy and are implemented through the activities. The partnership networks develop thematic contents, bring partners together and support them in networking. The Partnership Forum is ever changing and continuously developing.

- A key implementation form of the regional strategy that is based on people and information
- A new approach on regional co-operation, practices and cooperation structures
- The Partnership Forum is not stable, but converts and takes new positions based on needs
- The Partnership Forum is a platform e.g. for meetings, seminars, utilisation of open data

- South-West Finland Regional Information Services has an important role providing information for the regional partners and stakeholders.

EXAMPLES OF MARINE INDUSTRY AND MANUFACTURING COMPANIES:

Almaco
AluSteel
Auramarine
Aurubis Finland
BMH Technology
Boliden
Cargotec
Cimcorp
Componenta
Cupori
Deltamarin
Elomatic
Fläktwoods
Forchem
Helkama Bica
Hella Lighting Finland
Hollming
Högfors
Insta Automation
Konepaja Häkkinen
Kvaerner Finland
Langh-yhtiöt
Lehtosen Konepaja
Leinovalu
Luvata Pori
Meriaura
Mesera Cranes Finland
Metso
Metsä Fibre
Meyer Turku
Nakkila Group
Naval Interior Team
Neorem magnets
Norilsk Nickel Harjavalta
Oras
Outotech Researchcentre,Pori
Piikkiö Works
Polartherm
Promeco Group
Rauma Marine Constructions
Raumaster
Rolls-Royce
Sampo-Rosenlew
Sandvik
Satmatic
Seger Technologies
SSAB
Stairon
Steerprop
Stera
Suisto Engineering Oy
Technip Offshore Finland
Teleste
Trafotek
Uki Work Boat
UPM-Kymmene
URV
Valmet Automotive
Wellquip
Wärtsilä

Maritime education in Southwest Finland

Upper Secondary School, City of Turku: Marine-orientated program (Turun Suomalaisen Yhteiskoulun lukio (TSYK))

The only marine-oriented program in Finland encourages maritime studies and professions. The program was established in 2008 and it is the only one of its kind in Finland. Each year, 30 students are admitted. The program focuses on mathematics and science, maritime environment, the Baltic Sea, maritime studies, seafaring and entrepreneurship. Own school ship *Lokki* is used. The program gives good resources for further studies.

Aboa Mare educates international maritime professionals based on over two centuries of experience at Novia University of Applied Sciences and vocational institute Axxell. Sea captains, watchkeeping officers, watchkeeping engineers and maritime engineers are educated in Turku. Annually Aboa Mare has 70-80 graduates.

In addition to degree programmes, Aboa Mare offers a variety of short courses for maritime professionals and simulator training for shipping companies and authorities globally
Aboa Mare maritime simulation centre offers training in safety at sea and environmentally sustainable development issues related to seafaring. Aboa Mare has ten different ship bridge simulators, which are made of real consoles and equipped with real instrumentation. Furthermore, the simulated environment of Aboa Mare provides excellent opportunities for research, testing, and product development.

Aboa Mare provides a diversified training portfolio, including basic and advanced ice navigation training according to the Polar Code, as well as ice navigation training for Baltic ice conditions.

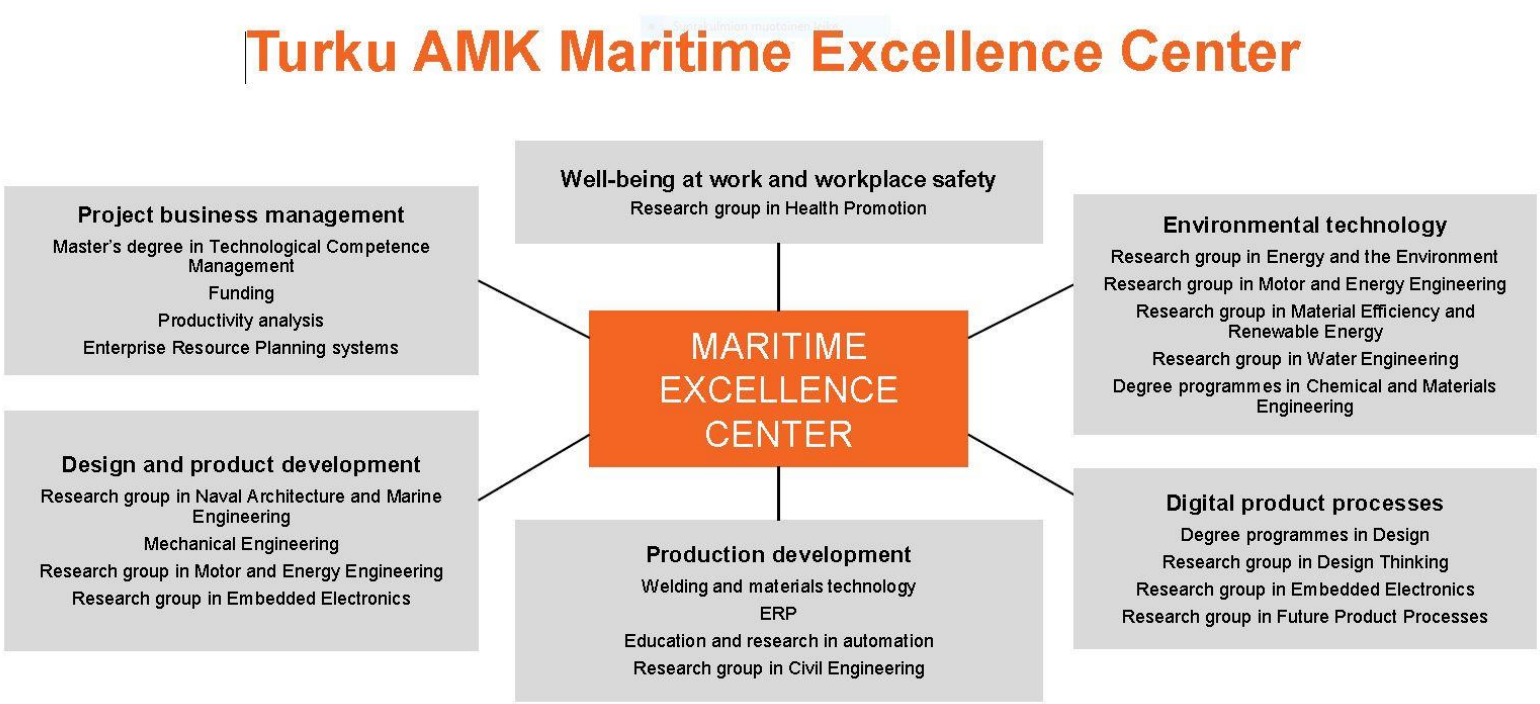
Turku Vocational Institute cooperates closely with companies in the region. Students can attend extended on-the-job learning or take part of their studies in business projects organised by Turku University of Applied Sciences, for example, as project work. Turku Vocational Institute educates machinists, plater-welders and maintenance fitters for the needs of the marine industry, among others. Those taking a Vocational Qualification in Metalwork and Machinery select their field of specialisation after the first year of their studies. Vocational Institute has close cooperation with the shipyard. The Vocational Institute offers businesses young on-the-job learners with flexible study paths to businesses.

Turku University of Applied Sciences (TUAS/Turku AMK) is an inspiring community of 10 000 members –an innovative and multidisciplinary higher education institution, which creates international competitiveness and well-being for Southwest Finland. TUAS graduates are practice-oriented professionals with top competences.

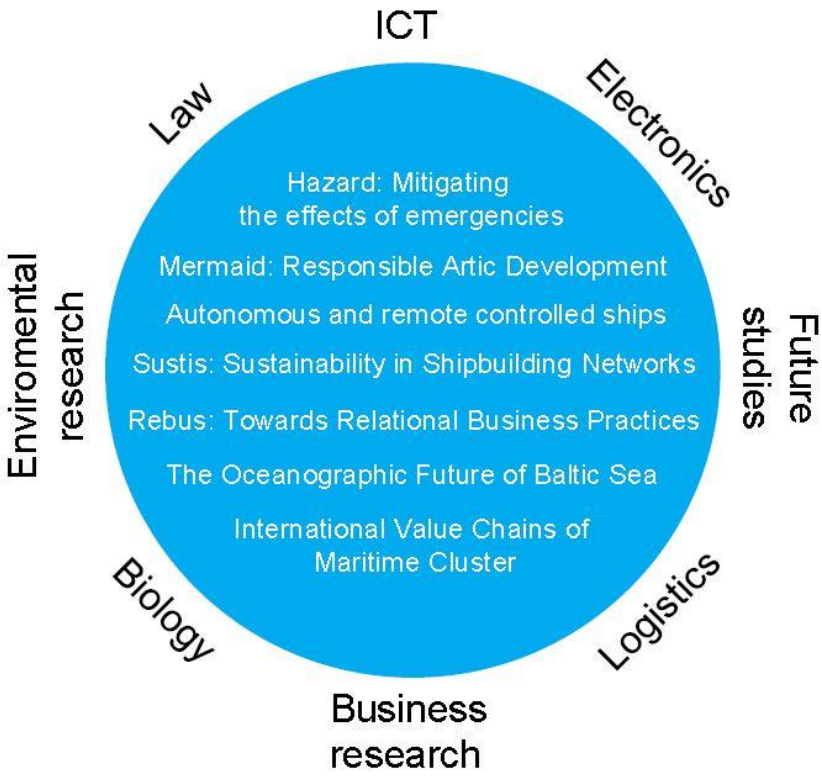
Studies at TUAS are working life-oriented, combining theoretical studies with professional skills. At the core of our teaching is Innovation Pedagogy, a new approach to learning developed at TUAS. Innovation Pedagogy emphasises the viewpoints of RDI and working life, making our graduates independently minded professionals with excellent international and communication skills. There were about 8850 students in TUAS in 2015.

In the field of applied research, Turku University of Applied Sciences represents the top tier in the country. TUAS coordinates or acts as a partner in over 200 RDI projects yearly.

Excellence Centers are a new network about to be launched. It puts together and develops the education, RDI activities and services for business of TUAS. Operations are multidisciplinary and transcend unit boundaries. The Excellence Centers look for solutions for different challenges in working life. The operations of the Excellence Centers shows as different projects, which provide information and competence to support the business life in Southwest Finland. Our research groups play a central part in the Excellence Centers. One of the centres is Maritime Excellence Center.



The University of Turku, established in 1920, has 7 faculties and 11 independent units. There are over 20,000 students and 3,300 staff members. University of Turku is Finland's second largest university and a regional center of academic maritime research. Our strength is in building research networks and interdisciplinary study.



Examples of relevant studies

Master of Science in mechanical engineering

- Two-year education leading to a Master's degree in mechanical engineering
- In cooperation with several universities
- 50 places available
- Major subject: Production and automation engineering
- Minor subject: Industrial Internet and Mechatronics

JEDI programme in mechanical engineering

- Two-year education leading to a Master's degree in mechanical engineering
- In cooperation with Turku University of Applied Sciences
- 25 places available
- Modern manufacturing technologies, including 3D printing on metal materials and laser materials processing
- Mechatronics, machine dynamics and simulation
- Materials technology, including smart materials and fibre composites, as well as sustainability in material choices and special aspects of packaging technology

DIODI programme in electrical engineering

- Two-year education leading to a Master's degree in electrical engineering
- In cooperation with Turku University of Applied Sciences
- 25 places available
- Electrical engineering and power engineering
- Electric power networks, electricity markets, electrical drives, power electronics, control systems, electronic components and electronic product design

- The University of Turku seeks new research possibilities in disciplinary interfaces and interdisciplinary research. *Sea and Maritime Studies* is one of our research profiles that combines different disciplines. Sea and Maritime Studies is rooted in our long-term research history and excellent research infrastructures in the coastal region of the SW Finland. Here, the unique archipelago environment, long-term settlement history, and diverse marine and maritime sectors are combined. This has provided empirical data for several disciplines for decades.

In addition to the wide array of research on the Baltic Sea, there is ongoing research on the Atlantic, the Pacific and the Arctic Oceans, as well as on the Mediterranean and the Caribbean Seas. The thematic collaboration of Sea and Maritime Studies is developed together with Åbo Akademi University in some research areas.

Multidisciplinary approaches enable us to focus on multifaceted challenges and to create innovations for building a sustainable future for coastal zones and seas worldwide.

The Centre for Maritime Studies (CMS) is an international education and research centre. Centre is specialised in marine sector, logistics and related fields. We offer high-quality university level further education, which is mainly aimed at working people. We arrange a number of international conferences each year. Annually we carry out dozens of research and consulting projects both nationally and internationally.

- The Centre provides information to support decision-making in the maritime field, offers topical further education and organises conferences for maritime professionals.
- The Centre for Maritime Studies was established in 1980
- The Centre organises approximately 12 further education courses annually
- On average, 600 students annually

Åbo Akademi University is a Swedish-language university in Turku. The university has about 500 graduates each year. The university has four faculties. The faculties of:

- Arts, Psychology and Theology
- Education and Welfare studies
- Social Sciences, Business and Economics
- Science and Engineering

Turku Adult Education Centre is the biggest adult education centre in Southwest Finland, organising voluntary vocational adult education, apprenticeship training and labour policy education, as well as personnel and supplementary training for companies. Preparatory training for Further Qualification in Ship-building, various plater and welder trainings and qualification trainings are available for the needs of the marine industry. Approximately 2,500 students daily.

Some key business mediators

Turku Science Park Ltd.

The mission of Turku Science Park Ltd is linked to the well-being of enterprises. Innovative, successful and employing enterprises act as the engine of success for the Turku/Southwest Finland economic region, because expertise, jobs and profit-making companies also generate other benefits to share. Turku Science Park Ltd provides business and enterprise services in 11 municipalities in the Turku region. Services of Turku Science Park cover the entire lifecycle of entrepreneurial activities, ranging from testing a business idea and establishing a company to internationalisation and expanding of international business operations.

Business with a high level of expertise requires close co-operation between universities, enterprises and the public sector. Turku Science Park Ltd is a business policy company owned by the City of Turku and acts as a strategic partner of universities and enterprises, both start-ups and operational, growth-seeking ones. We serve all lines of business, but our focal fields are biotechnology (BioTurku® – life science), information and communication technology (ICT), chemical industry and cleantech, future technologies (manufacturing industry, maritime industry), as well as experience industry (games, movies).

Turku Science Park Ltd is an independent and impartial expert company which has promoted the business operations of SMEs based on leading know-how for more than 25 years. Our services are in general free of charge for our customers.

Machine Technology Center Turku Ltd.

Machine Technology Center Turku Ltd. is a modern learning, training and development center for enterprises, educational institutes and researchers in the region of Turku and Southwest Finland. The Center provides a dynamic and comprehensive environment for applied research and professional specialisation. Its facilities and services form a framework which supports and fosters cooperation between educational institutes, researcher organisations and local businesses. Services of the Center are offered to both students and professionals interested in deepening their knowledge and developing their skills in modern production methods and production automation processes.

The main shareholders of Machine Technology Center Turku Ltd. are Turku University of Applied Sciences, the City of Turku, Vocational Adult Education Foundation of Turku, and The Federation of Finnish Technology Industries in Southwest Finland, alongside approximately 80 enterprises. As an interface between companies and educational institutes in maritime and metal industries, the Center is committed to supporting and implementing regional development strategies and programmes.

Machine Technology Center Turku Ltd. offers companies a variety of services such as training, proto product design, product development, production development, manufacturing, measuring and calibration services.

Machine Technology Center's close cooperation with universities and other institutes of higher education fosters top-level research and development activities, and enables companies to participate in a wide range of development projects and initiatives. The objective is to promote and

carry out business-oriented research, development and innovation activities which lead to modern technology transfer, industrial innovations and more efficient production methods.

The Center hosts an endowed professorship in manufacturing engineering from Lappeenranta University of Technology. It aims to create and promote cooperation between research and industry, and facilitates the implementation of bachelor's and master's level studies as well as other kinds of research and development projects.

Bastu – acceleration concept

The focus of Bastu activities is on the testing of new ideas to achieve practical results, rather than mere research or 'education'. The scarcity of natural resources is the main driving force behind 6th wave entrepreneurship, which will require a rethink towards established conventions in innovative ways. As such, Bastu operates as a tool, platform and network. The project is a part of cooperation between the Sitra fund and the City of Turku, which has the objective to promote a circular economy.

Because of the competitiveness of Turku region it's highly important to be able to increase businesses in globally emergent markets. Smart applications of materials handling and energy production and use of energy are the most important areas of business. The focus has been targeted at the core competences of Southwest Finland which are fed by contribution from suitable cooperation partners.

Bastu accelerating concept started at the instigation of local entrepreneurs who saw that the situation called for a new approach. The objective of the Bastu accelerator is to create new methods of resource wise value creation through the use of core competences of those participating companies. New significant innovations can be realised through value creation with digital, material or intangible assets or various combinations of these.

In practice Bastu means the creative amalgamation of entrepreneurs, Finland Futures Research Centres, Sitra's and Turku citys know-how so as to achieve the solutions that support the idea of circular- and 6th wave economy; new business innovations and the redirection of the operations of existing companies and also to develop further existing structures and processes.

Bastu started on August 2015 and continues thereafter once a month with effective workshops and collaboration, with the aim to find smart 6th wave business models. Solutions will be sougth by approaching the questions which cross the traditional course and field of businesses. Mentoring and sparring on the construction of 6th wave business shall be both on hand, too.

Other relevant networks

Loura-network

The Intercity Collaboration of South-West Coast of Finland (Finnish abbreviation "Loura") is a strategic cooperation model between the cities of Turku, Uusikaupunki, Rauma and Pori. The objective of this co-operation is to increase the competitiveness, attractiveness and visibility of the entire region beyond what the cities could achieve individually. The intercity collaboration is

conducted in the development zone of the south-west coast of Finland, a framework combining regional development and urban policy. This framework is based on functionality instead of administrative boundaries.

Loura has six flagships, or main themes, under which cooperation is conducted:

- Maritime Expertise (strengthening the south-west Finnish maritime cluster)
- Energy Coast (strengthening the energy and environmental technology sector)
- Tourism (to promote and develop the region as tourist destination)
- Invest in South West Finland (to promote region's business opportunities)
- Proactive Business Development Policies (new initiatives and trials)
- Development of LOURA collaboration (strengthening the cooperation model)

Maritime Training Forum

Turku is a locus of both maritime industry and education. For this reason, it is important to invest in the continuous development of competences and expertise as well as to ensure the availability of skilled employees in the labour market.

Development activities of the maritime cluster are currently conducted by a broad collaborative network consisting of company representatives, actors from the educational sector, and other stakeholders. Communication and collaboration with enterprises have indicated a clear need to strengthen education-related coordination between the network actors.

The maritime education forum advances the effectiveness and visibility of maritime and metal education, and strives to motivate prospective students to careers in these occupational and professional fields. The forum will also complement regional abilities and capacity to forecast educational needs. Furthermore, the forum will have a central role in developing new educational solutions as well as in strengthening co-operation between companies and educational institutes.

The forum consists of representatives from vocational institutes for both young people and adults, including also those universities of applied sciences with educational programmes in marine technology and maritime studies in the region of Turku. Other members comprise of representatives from central stakeholder organisations.

Strategic cooperation with other Baltic regions

Cooperation between **Pomerania (Pomorskie)**, Poland and Southwest Finland is rather active. The flight connection between the sister cities of Gdansk and Turku was established in 2008. The joint working plan for the years 2015-2016 was signed in 2014:

"Principles and starting points of cooperation

In addition to traditional regional development plans, a new emphasis on the Baltic Sea and to the EU Strategy for the Baltic Sea Region has raised incentives for deeper cooperation between regions around the Baltic Sea. The common goals in Europe, such as freedom, peace, political stability, economic growth and prosperity can in many ways be pursued on the level of regional cooperation. These objectives call i.a. for structural conversation, entrepreneurship and innovation, education, cultural development, investments and international cooperation."

In addition to stating the principles, also concrete joint actions were listed; e.g. joint study visit for maritime actors in Brussels and the harbor of Rotterdam, joint participation in the European Maritime Days 2016 in Turku and journalists visits to support the flight connection. All this was done, and because of good connections also different projects have gained support from the Regional Council and from the Pomeranian Marshalls Office.

Naturally e.g. universities and other actors steer their cooperation independently.

Mecklenburg-Vorpommern, Germany

Cooperation between the regions of Mecklenburg-Vorpommern and Southwest Finland started in the year 2000, when the partnership agreement was signed. It has meant regular meetings and support to the joint projects, mainly financed from the Baltic Sea Interreg – programme. At least 20 projects have been supported during the years and a joint flagship project for tourism was also launched. The cities of Rostock and Turku are sister cities.

Regular visits of delegations have ensured good connections and initiated projects of common interest. Nowadays the cooperation is most active in the framework of the CPMR Baltic Sea Commission.

Developing a shared vision

The vision for the future

Vision of Southwest Finland:

In Southwest Finland the quality of life is at its best. The successful and well-being region is built through cooperation and partnership.

The regional strategy for Southwest Finland includes four priorities:

- Future is shaped by choices now - Responsibility
- Together across the borders - Cooperation skills
- Approachable gateway of the Baltic Sea - Accessibility
- Innovative forerunner - Resource efficiency

The vision is implemented through partnership in which the aim for the region's future is shaped together. It requires commitment to a joint venture and common means to reach the goals. The regional strategy wishes to involve all regional actors: people, companies, educational institutions and associations.

The vision can be reached in an innovative atmosphere that allows for testing and new types of activities and where it is possible to also make mistakes. The regional focus is on activities improving involvement, openness, encounters, interaction and communities.

Partnership is a way of thinking in which the common goal is considered more important than single benefits. All areas have an identity of their own and a meaningful role in the whole, where developing the strengths and characteristics is seen more valuable than the mental and geographical borders.

International positioning of the Blue Growth in Southwest Finland – though the Baltic Sea is the main focus of the region´s international relationships and cooperation, the scope must be wider when it comes to Blue Growth. The main capabilities include ship yarding, building ships and environmental solutions in machinery and technology and in these fields, the markets are global. Also in new bio- and cleantech innovations the aim is to reach further than in the Baltic Sea region. If natural and beneficial contacts/partners are to be found in the Baltic sea region, it is naturally easier to aim to global markets with bigger muscles.

Defining an action plan with a coherent policy mix

Unfortunately nowadays the possibilities to enhance the blue economy with EU-funding are very limited in our region. In the decision power of our region there is only 1,8 million euros of ERDF and 2,3 million of ESF funding per year. This includes all the projects, not just for projects supporting the Blue Growth and the Blue Economy. Naturally, the stakeholders of the region are using other funding instruments as well. Most important sources of funding are the Interreg programmes (e.g. Central Baltic and Baltic Sea Region Programmes), Horizon2020, Erasmus+ and Life to mention some.

In the national level there is for example the programme for the Arctic seas run by Tekes – the Finnish Funding Agency for Innovation. The programme seeks companies and research organisations for renewal and networking. The goals of the programme are for example expand emerging products and services into global business and turn our arctic skills into an internationally attractive concentration of arctic know-how.

Monitoring and evaluating

The Partnership Barometer is the most important tool to follow up and monitor the implementation of the regional strategy. The Partnership Barometer survey is carried out once a year as an online survey. The barometer provides the overall picture of the development of South-West Finland.

The Partnership Barometer was conducted for the fourth time in November 2017. The survey was sent to a total of about 750 respondents in Southwest Finland, and 176 people corresponded (23% of responses). The majority of respondents represented municipalities or joint municipal boards, but answers were collected also from other organizations. On the positive side is that also plenty of companies answered to the survey.

The results are reported under specific website: www.lounaistieto.fi

There is no specific monitoring and evaluation system for smart specialisation strategy. We are however monitoring the yearly EU funding for each of our smart specialization priorities.

RIS3 Guide (and different RIS3 steps presented) has not been used in Southwest Finland; however the strategy process follows similar logic.

The main gaps to be tackled in Southwest Finland

- Lack of skilled labour force meeting the needs of growing demand by the manufacturing industries (especially the maritime industry)
- The need to further develop the cooperation between all relevant stakeholders working in the blue field
- To widen the use of different funding instruments and to receive more EU financing in the region