

# ALTERNATIVE FUTURE SCENARIOS FOR BLUE ECONOMIES 3/4

## BLUE BIOECONOMY & SUBSEA RESOURCES

In Estonia and Finland the emphasis in bioeconomy is given to development of aquaculture sector, which follows the global trend. New markets for all fish products are searched.

Currently there is not a huge pressure on subsea resources such as sand and gravel. Development in mining technologies and prices of rare metals may increase interests in seabed mining.

### SUSTAINABILITY ABOVE ALL

Sustainable, circular-economy-based blue bioeconomy. New bio-based products are cultivated in the sea. Systems are sold to global markets. People are interested in locally produced food. Environmental policy and legislation restrict the emissions caused by blue bioeconomy and the subsea, and they restrict also the over-exploitation of subsea resources.

Countries will start immediately and efficiently to implement the UN Sustainable Development Goals. Cleantech and innovations in bioeconomy technologies, e.g. multi-trophic aquaculture. Circular fish farming and subsea mineral extraction. Efficient interaction of different smart, ubiquitous technologies.

### UNLIMITED GROWTH

Subsea resources and fish stocks are overexploited. Aquatic flora and fauna suffer from deteriorating of the environment and the consequences of climate change. The production and availability of blue bioeconomy has decreased. Attitudes towards the environment and sustainability are careless.

No environmental leadership. No focus on environmental thinking in schools. No control of the overall picture, poor cooperation. Decision makers are not educated on issues related to blue bioeconomy. Accelerating of economic development and continuing economic boom will increase the flow of tourists in the BSR, and will also have an impact on the unsustainable over-exploitation of the sea space. The building of the Helsinki-Tallinn tunnel will increase sand and gravel extraction, more fish farms will be established on the coasts.

### SUSTAINABILITY DILEMMA

Awareness of the environmental problems and their impacts on blue bioeconomy, but old technologies are used instead of innovative systems. Old customs and consumer habits prevail. Conflicts of different sea use continue. Small measures addressing environmental impacts despite concerns and sea pollution.

Weak environmental leadership and no innovations. No common focus on circular economy. The Baltic Sea Region states will proceed in different timing in their operations. The price of new technologies continues to be high.

### VIRTUAL REALITY

Resource wisdom: digital-based production and circular economy. New, digital offshore aquaculture technologies are used, for example independent, floating aquaculture units. Automation used in blue bioeconomies and the subsea.

EU funding will be provided for experimental projects and for risk investments. New product and service models will be built. Environmental legislation will be changed so that permits to moving platforms can be granted.

### WEAK SIGNALS

= Even minor developments which may strengthen and lead to a certain future scenario.

Fish spawning areas are destroyed or disappearing also in the sea

Fish farming and aquaculture on land in circular systems

### TOP DRIVERS FOR BLUE BIOECONOMY & SUBSEA RESOURCES

- Policies concerning the use of natural resources
  - Cleantech innovations for blue business
- Environmental regulations and legal practices - industrial policy
  - State of the environment
  - Attitudes