NIUCAP VENTURES

FURTHER IMPACT DIMENSIONS OF BIOFOULING

(1) IMPACT ON ECOSYSTEMS

The term ‘biofouling’ refers to a build-up of microorganisms and other life. That includes a wide range of different creatures, like algae and barnacles, often referred to as **invasive aquatic species**.

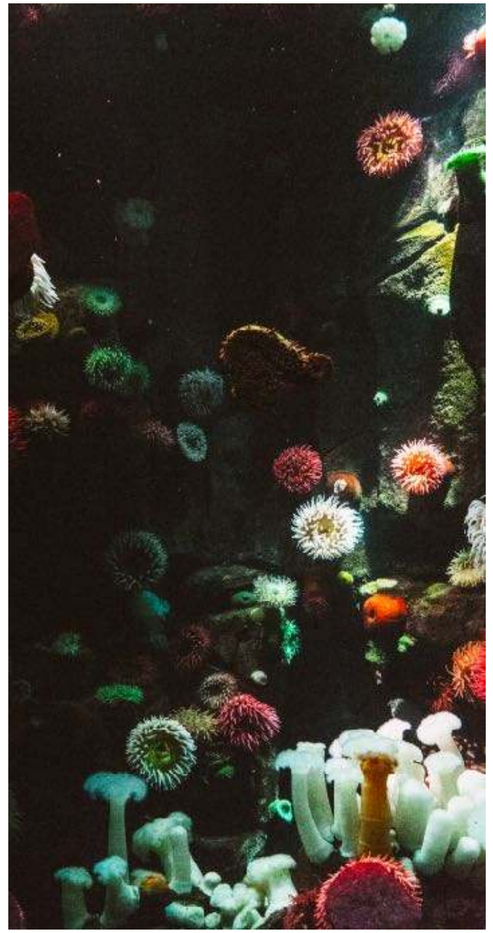
These invasive aquatic species may pose threats on human, animal and plant life, especially when hitching a ride on the bottom of the ship and **spreading to new environments** where they don’t naturally belong.

If permanently established by out-competing native species that have lived there naturally in the past, more and more **important organisms may be killed**.

Scientific evidence is pointing to a significant increase in the numbers of these unwelcome invaders. Today, some researchers go as far as estimating that we are **likely to lose 75% of the world’s species** in the next few centuries.

It is also worth mentioning that **climate change** and increasing ocean temperatures are another factor in driving this accelerating disruption to marine life.

*As a result, **delicate food chains** as well as the natural balance of aquatic nature may be disrupted.*



(2) IMPACT ON FOOD SUPPLY

Biofouling ultimately presents an extensive **challenge for the future supply of humankind** — with food and renewable energy.

Food supply:

Global **food demand is rising**, and serious questions remain about whether supply can increase sustainably. Malnutrition and hunger still plague many countries, and projections of population and income by 2050 suggest a future need for more than 500 megatonnes (Mt) of meat per year for human consumption.

Land-based expansion is possible but may exacerbate climate change and biodiversity loss, and compromise the delivery of other ecosystem services. Scaling up the production of land-derived food crops is challenging, because of **declining yield rates** and **competition** for scarce land and water resources.

Sea-based expansion will therefore play an important role for future food supply.

*If aquatic species **stay where they belong**, they have **no chance** to disrupt the natural balance of other ecosystems or outperform and kill native plants & organisms.*

ANALYSED BY NIUCAP VENTURES

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(3) IMPACT ON MARINE RENEWABLE ENERGY

The **marine renewable energy** sector, expected to become the main source of energy in the EU by 2050, is also affected by biofouling.

Renewable energy:

Companies in this field rely on submerged **equipment to capture offshore wind, wave, and tidal energy.**

But biofouling can make it **difficult to keep equipment clean and operational**. It requires constant maintenance of infrastructure and the use of special materials to protect these important investments in our future.

*Opportunity: If **autonomous cleaning robots** can perform the **maintenance & cleaning** tasks of **offshore energy equipment**, the performance can be maintained.*

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1) food supply