GLOBAL PERSPECTIVES ON MARINE BIOTECHNOLOGY S&T POLICY

Jacqueline Allan, Rachael Ritchie and Jim Philp
STP Division, DSTI, OECD
• The number of predicted ocean species is about 10 times higher than the number of catalogued species (200,000).
• How many more are there if we include meiofauna (animals < 0.5 mm), micro-organisms and bacteria?
• Over 1600 new marine species discovered every year
• Our knowledge of marine biodiversity is minute

What is Marine Biotechnology?

OECD Definition

Marine biotechnology can be thought of as the use of marine bioresources as the target or source of biotechnological applications.
Promise of Marine Biotechnology

Much needed new source of innovation and economic growth in many countries ....... viewed as a way to address global grand challenges:

- Pursuing human **health** and well-being
- Offering a sustainable supply of high-quality **food**
- Developing sustainable sources of **energy** alternatives to crude oil and gas
- Providing new **industrial products and processes** with lower GHG emission

but needing ..........

- **Protection and management** of the already stressed marine environment
Promise of Marine Biotechnology ..... 

...... may be driven by scientific and technological advances.....

.....but the promise can only be realised through sound policy and investment.
The bioeconomy offers technological solutions for many challenges facing the world ... achieving its potential will require appropriate national, regional and, in some cases, global policies.

OECD: The Bioeconomy to 2030: designing a policy agenda
Responsible Development of Marine Biotech

Organism-based Technology
- Bioprospecting
- Marine genome sequence and bioinformatics
- Metagenomics and other omics technologies

New Materials
- Drug discovery
- Industrial materials
- Health supplements, nutraceuticals
- Biofuels and bioenergy
- Biorefining

Marine organism production
- Organism cultivation and collection
- Disease control and monitoring
- Marine biosafety
- Mass production e.g. seaweeds

Marine conservation
- Monitoring environmental change
- Pollution prevention and control
- Biodiversity conservation and ecosystem recovery
OECD: an inter-governmental organisation

- Founded 1960, currently 34 members
- Represents the most industrialised nations
- www.oecd.org

OECD works co-operatively on trade, finance, agriculture, education, science policy, development, governance, statistics, nanotech, biotech...
Role of the WPB

- To advise upon **emerging policy-relevant issues** of science, technology, research and innovation related to biotechnology including, as appropriate, their social, ethical and economic implications.
- To assist **Member Countries** in understanding and managing the changing nature of research, development and innovation in the bio-related sciences.
- To take into account the **global context of R&D** in biotechnology, including issues such as the progression of climatic and environmental changes and the globalisation of human activities.
Objectives:

- To review the potential of marine biotechnology
- To identify challenges to realising this potential
- To identify areas of focus for future policy work
This international dialogue identified the need for future policy work at OECD level on:

- Measures and indicators for marine biotechnology
- Infrastructure for R&D for marine biotechnology
- Governance of marine bioresources and ecosystems

See upcoming OECD publication: “Marine Biotechnology – Enabling Solutions for Ocean Productivity and Sustainability”
My key points from the report:

• Appreciating the vastness and diversity of the marine environment
• Marine as “target or source”
• Addressing the challenges of responsibly governing differing and distributed bioresources
• Needing to go beyond economics to societal and environmental issues
• Increasing/broadening international collaboration in defining needs and options
• Learning from each other/from other areas of science
Next steps

Working Party on Biotechnology 2013-14

Supporting the sustainable development of marine biotechnology (policy project)

I. policies for marine biotechnology infrastructure (e.g. for biobanks, databases, screening platforms) – mutual learning, PPPs, megaprojects; and

II. statistics and indicators for marine biotechnology.
Supporting sustainable development of MBT

I. Policies for MBT R&D infrastructure
   – Examine how governments are making decisions about marine biotechnology infrastructure globally
   – Draw on existing work e.g. ESFRI, ESF, globally
   – Share experiences and identify good practice models
   – Report on policies & good practices and identify future actions

II. Statistics and indicators for MBT
    – Initially gathering information about existing definitions and categorisations of marine biotechnology
    – Work with OECD NESTI and others
    – Report on existing work, develop definitions and categorisations to enable future data gathering and use
Complementary OECD work

International Futures Programme work on *The Future of the Ocean Economy (to 2030)*

- **Established** sectors of the ocean economy (shipping, shipbuilding, fisheries, tourism, ports)
- **Emerging** sectors (energy, marine bio, cruise tourism, aquaculture, sea-bed mining, ocean monitoring...)

- Focus on potential sources of economic growth & employment creation, required scientific and technological breakthroughs, investment needs, funding and business models, skills, environmental implications, avenues for policy action.

Contact: pierre-alain.schieb@oecd.org; barrie.stevens@oecd.org
Some OECD reports and the web link

www.oecd.org/sti/biotechnology
GLOBAL PERSPECTIVES ON MARINE BIOTECHNOLOGY S&T POLICY

www.oecd.org/sti/biotechnology

With thanks to Rachael Ritchie and Jim Philp

THANK YOU FOR YOUR ATTENTION!