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5b. Climate-related marine ecosystem change

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BACC I version of the same chapter was a thorough review of various types of interactions between factors *potentially* affected by climate change (water temperature, salinity, stratification, pH, ice conditions etc.) and various chemical (nutrients, O₂, contaminants) and biological variables and organisms (bacteria, phytoplankton, zooplankton, benthos, fish, mammals, birds)

While there certainly is new research on most of these fields, it will not be useful to repeat the same exercise, with the same structure

Rather, we should aim for a synthesis and evaluation of the existing hypotheses

This will require a system-oriented approach, rather than one concentrating on organism groups and individual interactions and single processes

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To achieve this we should

- Review the state of the art and new research (since BACC I)
- Review and perhaps newly compile existing key (system-level) data that illustrate the main processes
- Classify the interactions, e.g. to direct and indirect ones
- Reveal and perhaps quantify uncertainties
- Identify knowledge gaps – classify them according to importance
- Identify counteracting processes
- Rate the strength and relative importance of interactions
- Recognise conflicts and opposing hypotheses
- Prepare conceptual models of interactions and chains of events (graphically)

Other key-words

- Time scales
- Resilience
- Feedbacks
- Trophic efficiency
- Regime shifts – or gradual change?

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Finally, a bridging to the next chapter – Socioeconomic impacts – should be created:

Why is understanding these interactions and processes important?

An obvious linkage may become through the concept of *ecosystem services* affected by changing climate

Also, conclusions supporting decision-making should be emphasized:

Which effects of climate should be taken into account when determining measures that make the Baltic Sea to return to a Good Environmental Status (cf. Marine Strategy Framework Directive)?

No draft on the structure and contents of the chapter exists, yet. This will be created through a discussion with a core group of Chapter 5b co-authors (not selected yet).