Alternative Futures
Scenario downscaling for management planning

This tool enables downscaling from high level global IPCC Shared Socioeconomic Pathway scenarios to make them applicable to local or regional contexts.

This process can facilitate contingency planning for management and policy development which takes account of illustrative examples of alternative future global trajectories of societal, economic and geopolitical change.

The output can be used in conjunction with Bow Ties (an additional tool available in the MARBEFES tool box) to enable visualisation of alternative downscaled scenarios and so facilitate further discussion and decision-making.

It is based closely on a tool developed originally in the MARS project (https://www.mars-project.eu/index.php/tools.html) and adapted for use in the Land2Sea project (https://www.ucd.ie/land2sea/) and then the MARBEFES project. It is described in Mack et al. 2019, but in this workbook the descriptions of the high-level scenarios (Shared Socio-economic Pathways - SSPs) have been updated to reflect IPCC 2023.

The worksheets comprise (a) an outline of storylines derived from each of the high-level scenarios (the 'Storyline Overviews' worksheet), (b) a template for downscaling to be completed by your team, which includes a list of variables (the 'Template for downscaling' worksheet) and (c) a worked example (the 'Example from Dublin - Land2Sea' worksheet).

The listing of Activities and Pressures listed in Column B of the 'Template for downscaling' worksheet, with ID numbers in Column A is intended to be comprehensive for marine and coastal socio-ecological systems. **Your downscaling process should focus only on Activities and Pressures relevant to your own local or regional context. Other rows can be left blank.**
Each relevant Activity and Pressure will need to be downscaled under each of the three selected high-level scenarios. Each Activity may exert multiple Pressures. As such, if under a given high level scenario, you would expect several Activities to increase, then you would also expect the Pressures they exert to increase, and vice versa. As such, the downscaling of the Pressures should be guided by the downscaling of the Activities.

The downscaling process involves scoring the expected change in each relevant variable on a scale from -3 to +3, ranging from a strong decrease, to a strong increase. This needs to be done for each of the three scenarios (i.e. in Columns C, D and E) for each row corresponding to an Activity or Pressure relevant to your location or region. Refer to the 'Example from Dublin - Land2Sea' worksheet for an illustration of this process, but note that the variables are different from those in the Template (which has been updated in MARBEFES).

These scores can be derived from modelled projections and/or the opinions of experts and stakeholders, using the descriptions in the 'Storylines Overviews' worksheet to guide expectations under each high-level scenario.

Column F can be used for any comments you may have about your interpretation of the high level scenarios. Column G should used to explain your downscaling scores where necessary.

Mack, L. et al. (2019). Deliverable 2.1. Land2 Sea project. Storylines and scenarios for the case study catchments. Available as an accompanying document in this tool box.

IPCC (2023): Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001