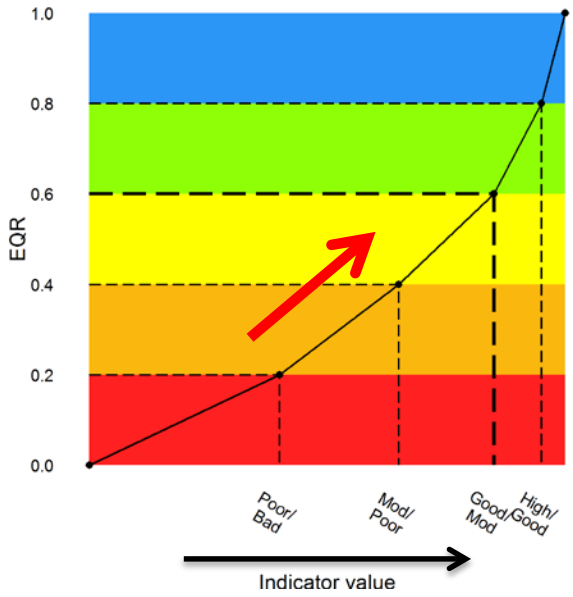
# Proposals on making indicators comparable to include in the assessment tool

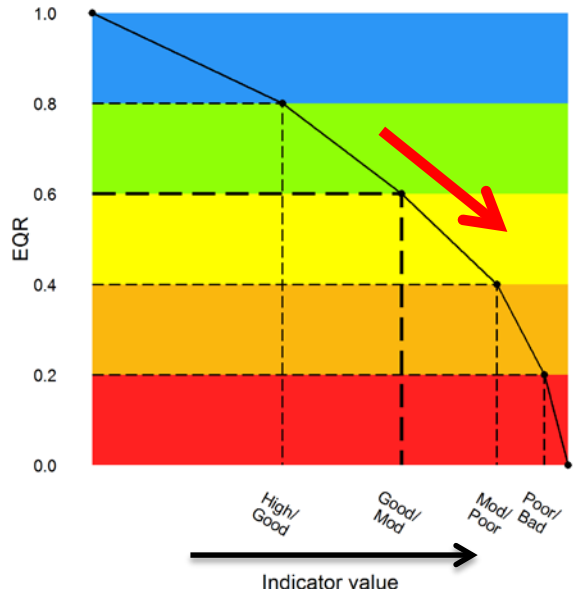
HELCOM

# Comparable classification through normalization

Indicator value ***increasing*** with improved biodiversity
*e.g. number of species*




Indicator value ***decreasing*** with improved biodiversity
*e.g. fish mortality*



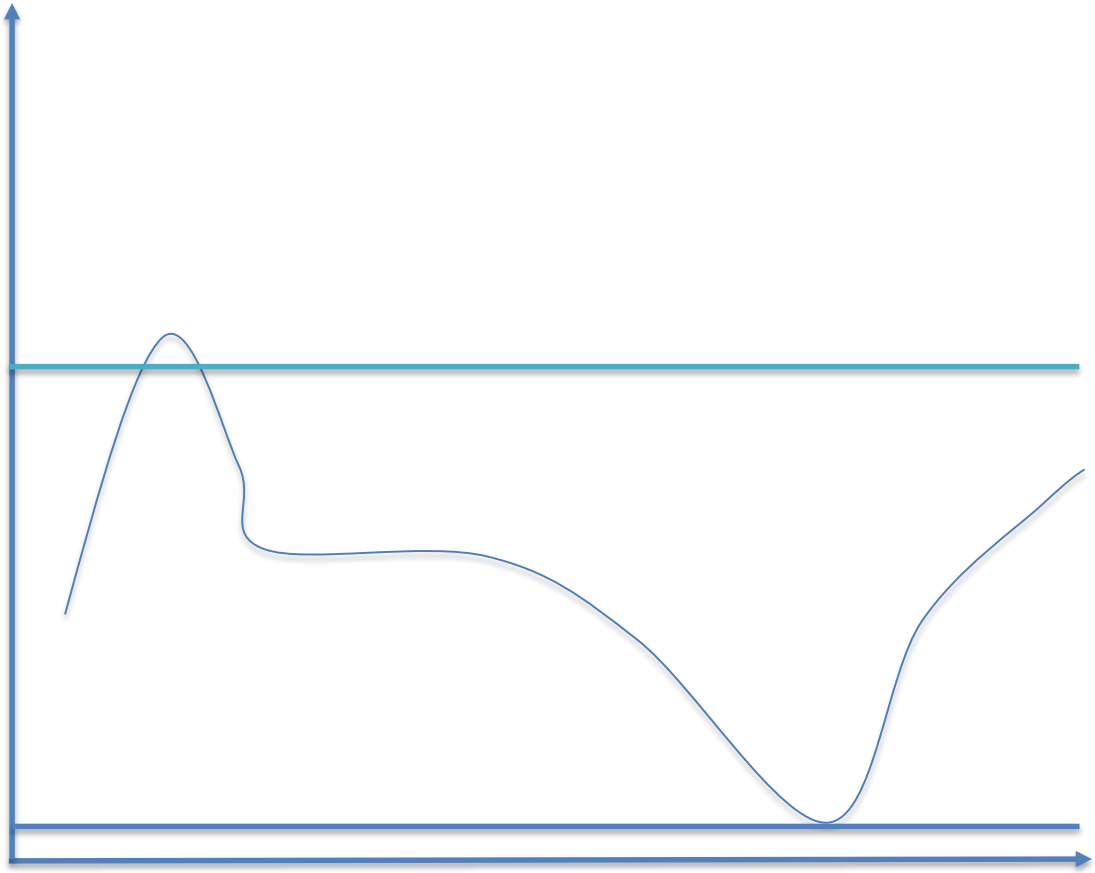
# Why normalization?

- Biodiversity indicators often on very different scales
- Indicator values need to be normalized in order to be combined quantitatively
- Combining several normalized indicators provides information about distance to target

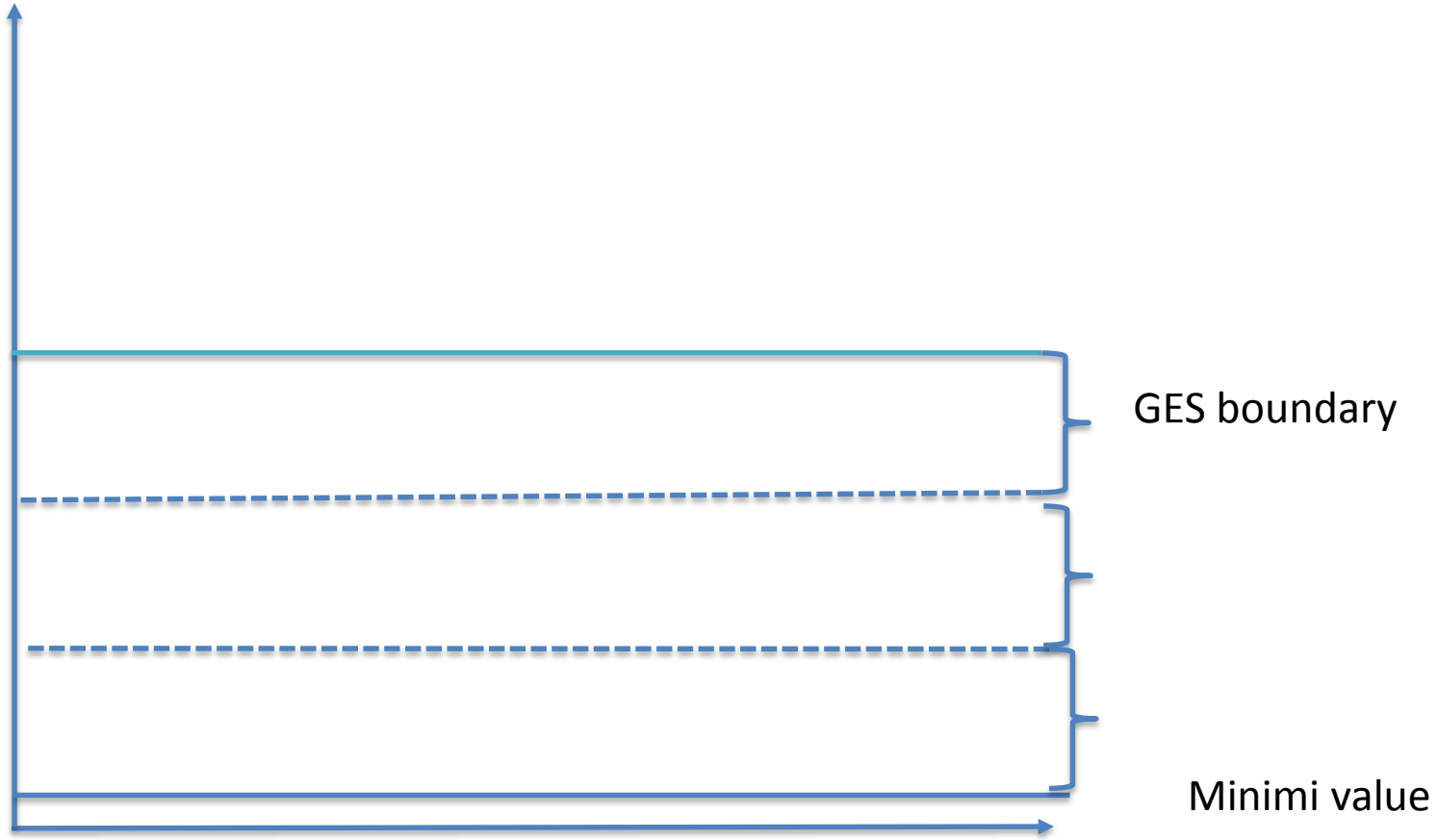
# Proposed approach

- Due to very short data trends and a history of environmental degradation in the Baltic Sea it is often very difficult to establish both min and max values for biodiversity indicators
- If the reference condition is known then a maximum value can be determined based on data (ref=max)
- In cases of short timeseries covering deteriorated environmental conditions, determining the minimum value could be done based on data
- If we assume linearity – then determining one fixed point (min or max) in addition to the GES boundary is enough to normalize

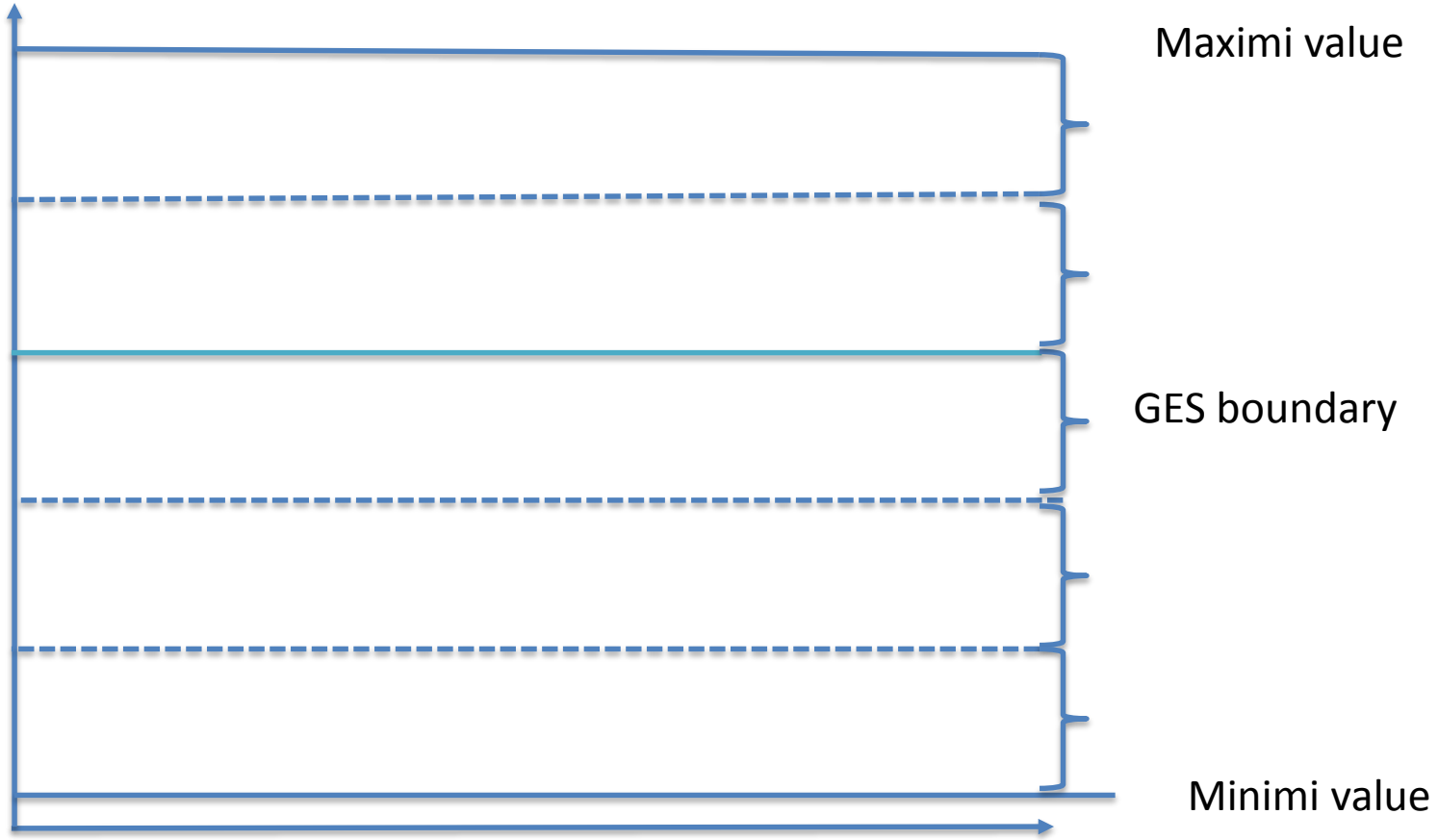
# Example – an indicator for which a time series is available for a period reflecting deteriorated status

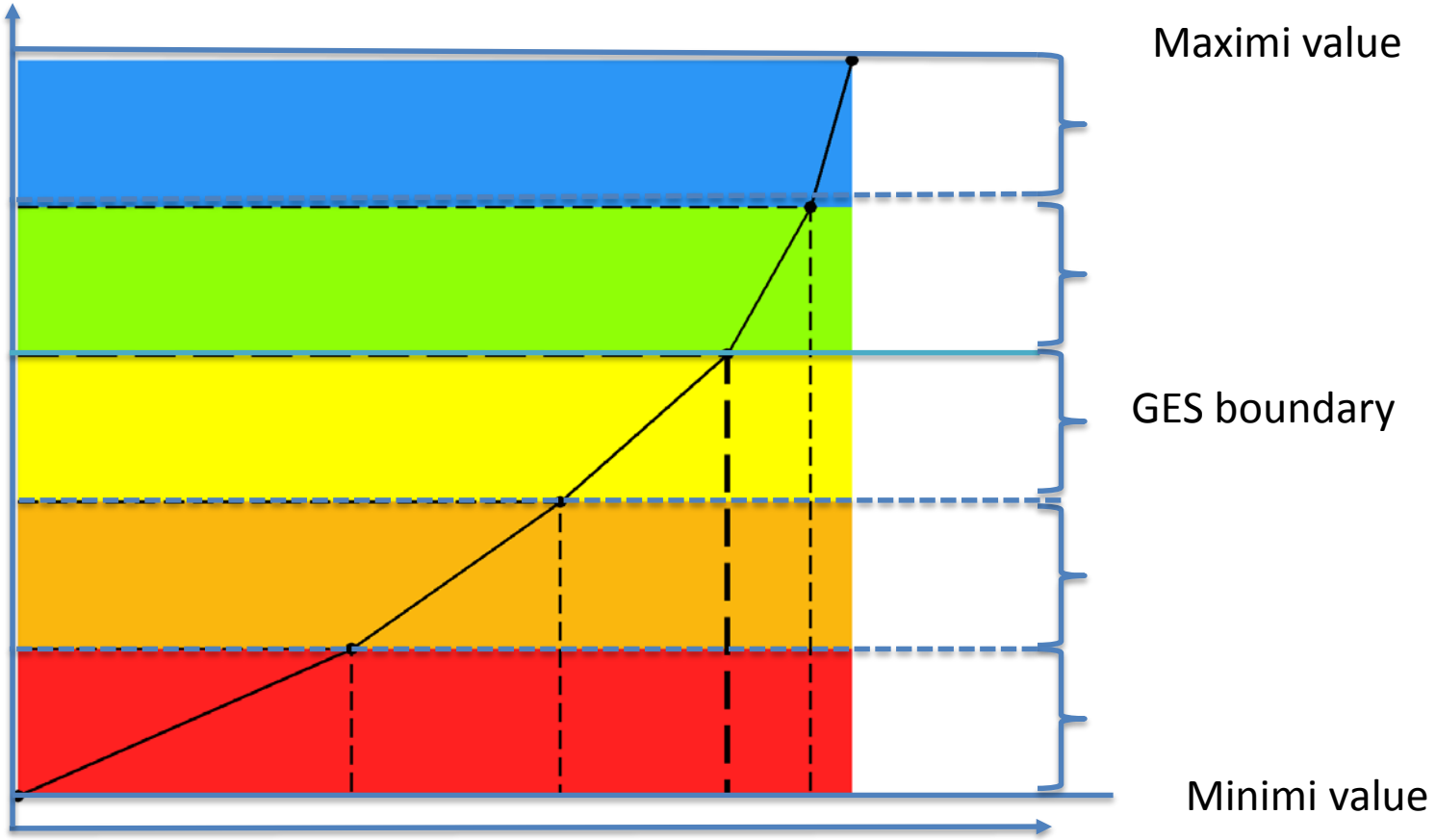


# Assume linearity and split equally



# ”Mirror” for the above-GES

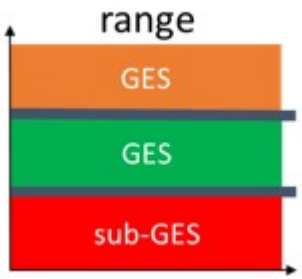



Maximi value
GES boundary
Minimi value

- This approach is simple for indicators with a single value GES-bounday
- How to apply this on the other GES boundary types?
  - Conditional, interval
  - Trend

# Example: Abundance of waterbirds in the wintering season

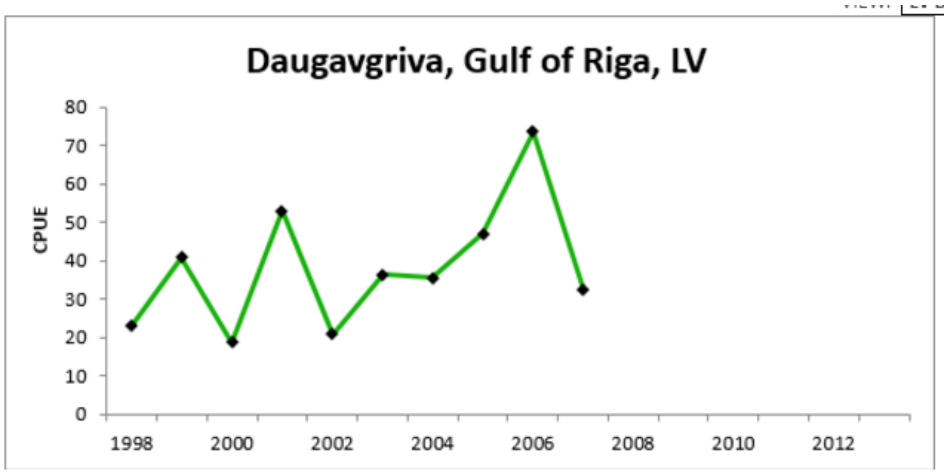
GES is achieved if 75% of the considered populations are not more than 30% below the baseline level (20% in species laying only one egg per year). Upward deviations (>30% above abundance at the baseline) are not considered to reflect a sub-GES status, but rather indicate possible imbalance in the ecosystem.

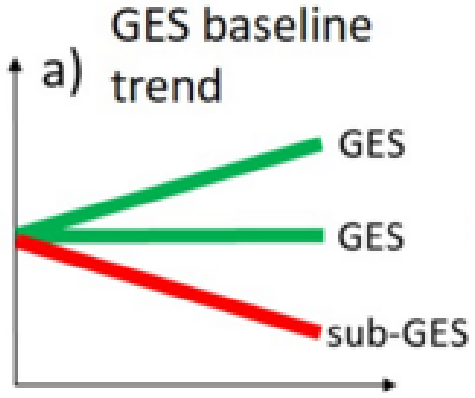



1. GES: <75% of species deviate <30% from baseline
2. Max: 100% species deviate <30% from baseline
3. Good/high: 87,5%
4. Moderate/poor: 50%
5. Poor/bad: 37.5%

# Example: Abundance of coastal fish key functional groups

GES is defined based on the direction of the trend of the indicator compared to the desired direction of the indicator over time




If trend GES boundaries are expressed as slopes as proposed to enable inclusion in tool, then;

GES = 0

Max=?

Min=?

# Alternative methods of making indicators comparable

| methods | pros | cons |
|---|---|---|
| Normalization | • Values comparable<br>• Allows combining indicators quantitatively<br>• Provides distance to target information | • Determining min/max values difficult |
| Ratio | • Only GES boundary and measurement needed<br>• Provides distance to target information that can be used if scales are similar | • Outcome affected by initial values and the range of possible values of each indicator |
| Binary | • All GES/sub-GES evaluations can be taken in | • Only qualitative combinations possible<br>• No information about distance to target |

# The proposal

1. BalticBOOST WP 1.1 will attempt identifying tentative minimum and maximum values to test the normalization approach using core indicators
2. The indicator Lead Country representatives will be given the opportunity to review and adjust the tentative values if needed
3. BalticBOOST WP 1.1 tests the biodiversity tool using available core indicators