Stress sub-group meeting March 11 2014

Present:
Anne-Marie Boulay
Stephan Pfister
Jane Bare
Montse Nunez
Philippe Loubet
Michael Lathullière
Inga Klemmayer

Agenda:

- Reminder of options being explored
- Advancement for option B2
- Presentation of Jane Bare's work
- Discussion

Note: A powerpoint is available along with these minutes

A special note is made to communicate that "All material presented in this group represents intellectual property. Please respect this and do not use, share or independently publish something using these ideas."

Summary of approaches is made:

- Approach A from Brad (weighted combination of human health and ecosystem indicators)
  - This approach is not yet investigated, and will be discussed upon results from the human health and ecosystem working groups
- Approach B1: Generic midpoint including a WSI and vulnerability parameters for human health and ecosystems
- Approach B2: stress based on the ratio of all water user's needs to available water
  - The definition of water scarcity from ISO DIS214046 is recalled: "extent to which **demand** for water compares to the replenishment of water in an area, e.g. a drainage basin"
  - It is reminded that in the past, scarcity indexes had a HH or ecosystem focus:

Human point of view: $\frac{\text{Human water use}}{\text{Water available}}$

Ecosystem point of view:

$$\frac{\text{Human water use}}{\text{Water available} - \text{ecosystem requirements}}$$

Considering that 1 m^3 of water has the same value if used by human or ecosystems, then:

$$\text{Scarcity/stress} = \frac{\textbf{Human water use + ecosystem requirements}}{\textbf{Water available}}$$

- The point that Montse sent by email is discussed and agreed on: If live carbon mass is used to determine water requirement, this would be inclusive of green water and hence would not be representative of blue water needs (and hence inconsistent).
- The EWR approach from Smathkin approach is discussed
  - Water dependent ecosystems? How about terrestrial?
  - Philippe: Richter 2011, criticizes approach of Smathkin
  - SP: possibly South African context only
  - Watershed data management at the European level: Montse to send

- **How else to appropriately quantify EWR**?
- Contact ecologists (Anne-Marie did but others shoul do)
- Inga: which impact pathways should be included for ecosystems?
  - Anne-Marie: Work of Master student will be sent and discussed in Ecosystem sub-group, but here is more simple, simply an assessment of water needs and availability for ecosystems (all)
  - Stephan: should be based on outcome from ecosystem subgproup (learn what is relevant)
  - Anne-Marie: Ecosystem group is more behind and the simpler might be the better for communication
  - Stephan: compare e.g. Hanafiah et al with Smakhtin to see if there is relevant differences in spatial pattern.
- **Discussion on the inclusion of Green water:**
  - Montse and Phillippe: reg. Green water issue metioned in email: consider in denominator also green water availbility (total precipitation). Would be green and blue water scarcity (see slide 7)
  - Jane: Agriculture also needs green water too. Maybe for both aspects (humans and ecosystem)
  - Mike: Since green water indicators are not yet developed, one way to integrate it could be to quantify how the use of green water could be converted in a change of blue water availability

        - Inga:If greenwater is included in human needs, then any agricultural activities – even if not irrigated – would lead to scarcity, and this would be an overestimation
        - Montse: difference of green water consumption vs green water consumption of natural vegetation, quantifying an environmental intervention which could lead to a scarcity
        - *The group is to think about these proposals and the inclusion of green water in the indicator or not*

- Jane presents her work currently being explored for her PhD:
    - Key: simplistic & more comprehensive
        - Include groundwater depletion
        - WRI groundwater and baseline water stress not well correlated
            - -> aggregate the two based on current withdrawal
        - Seaonal / interannual variability
        - Sites and sector specific WSI
        - What about no data? -> to be determined
        - Anne-Marie: did groundwater based WSI for her PhD thesis (already published)
        - Stephan: mentions uncertainty of groundwater data to low quality
            - Jane trusts aqueduct data a lot

Jane brings the point that human and ecosystem do not necessarily have to be included in the stress index.
AM: This has been determined from the beginning as the reason for this sub-working group, HH-specific midpoint and ecosystem-specific midpoint are to be addressed in the other sub-groups, the stress indicator sub-group should be inclusive of both.
Jane does not recall a decision being made on this and wants to re-open this question at the next meeting when other members not currently present will attend.

Note from AMB: *It is mentioned in the minutes of the Kick-off meeting as well as the February Stress meeting minutes that the stress indicator is meant to not focus only on HH or ecosystems and should include aspects of both or remain generic enough not to favor one specific AoP (since the other two working groups will do that). In the eventuality that there was a misunderstanding, the question will be brought up at the next stress meeting, but it should be kept in mind for future meetings that the work of this group builds on the discussions from one meeting over the other, and points of disagreement should be brought forward immediately or in the next following meeting as to not slow down the process.*

Tasks for next meeting:

- SP: compare Smathkin with Hannafiah
- AMB: look into Smathkin application data, and contact P.Döll
- Discussion on source of data (Jane, AMB)
- Philippe: Richter 2011 and critic of Smathkin
- watershed management at the European level: Montse to send
- Mike: to check with local ecologists on work on environmental flow requirement
- Inga and Montse: to look into studies that consider EWR

Doodle next meeting early April