Outcomes report - ISIpedia Indicator Development Workshops

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1. Key Outcomes

- The stakeholder-modeller dialogue supported a two-way learning process: stakeholders learned what ISIpedia can offer (as a climate information portal) and how impact models work and modellers learned about what is useful and necessary in the policy and administrative sphere.
- Both workshops demonstrated a need for capacity building among participants-- in understanding the ISIMIP data and its potentials, and linking climate impacts to the vulnerability framework.
- A few new cross-cutting climate-impact indicators and ideas for indicators emerged from the workshops.
- Modellers and stakeholders perceive vocabulary related to climate impact science differently. Thus, reconciling these differences is a valuable discussion, one that needs to be taken into consideration for the ISIpedia portal.
- Overall, participants expressed satisfaction with the general outcomes of the workshops but participants from the West Africa workshop hoped for more involvement of local actors throughout the entire process.
- A number of stakeholders have expressed willingness and enthusiasm to share data for calibration. However, this appeared to be mostly achievable at a personal one-to-one exchange with modellers due to the importance of trust building.
- In order to make the most out of the momentum created during these workshops and to ensure the use of ISIpedia, further engagement activities, such as webinars and regular progress/news updates, should be planned (in addition to the planned future workshops).
- The Stakeholder Engagement Team encourages the participation of ISIMIP modellers in the upcoming ISIpedia capacity building workshops with stakeholders.

2. Project and Workshop Overview

The ISIpedia project aims at developing an open, online “encyclopedia” that provides national-level climate impact assessments, based on ISIMIP data. By engaging stakeholders throughout the project development period, ISIpedia makes sure that the end-product contains the climate-impact information that is relevant for policy decision-making and that ISIMIP modellers are informed of stakeholders’ needs. So far, the ISIpedia Stakeholder Engagement Team (SET) has conducted one online stakeholder survey and organised two

regional indicator development workshops in an effort to support modeller-stakeholder exchange.

Two ISIpedia workshops were held in ISIpedia's two focus regions - West Africa and Eastern Europe - with the main objective of identifying and building relevant climate-impact indicators as well as facilitating modeller-stakeholder exchange (which was explicitly added after the first workshop). Both workshops brought together a wide range of stakeholders, including inter- and intra- government officials, NGOs and private sectors, regional climate modellers and modellers from the ISIMIP community. The first workshop took place in Krakow, Poland in November 2018, with 14 stakeholders (from 10 countries) and 4 modellers and the second workshop in Ouagadougou, Burkina Faso in February 2019 with 41 stakeholders (from 15 countries) and 4 modellers. Both workshops followed a similar structure that consisted of common vocabulary building session, modeller-led review of existing indicators and indicator frameworks, the "From needs to indicators" discussion (which was the main interactive session dedicated to developing indicators addressing the needs for climate-impact information of the participating stakeholders), and participant presentations. The aims and objectives of the second workshop were adjusted and the sessions reordered according to feedback from the Krakow workshop. Programmes of both workshops and all other related materials can be found here: https://drive.google.com/drive/folders/0B_uKE9KYQOuhcnNZcWNFWmxEcHc?usp=sharing.

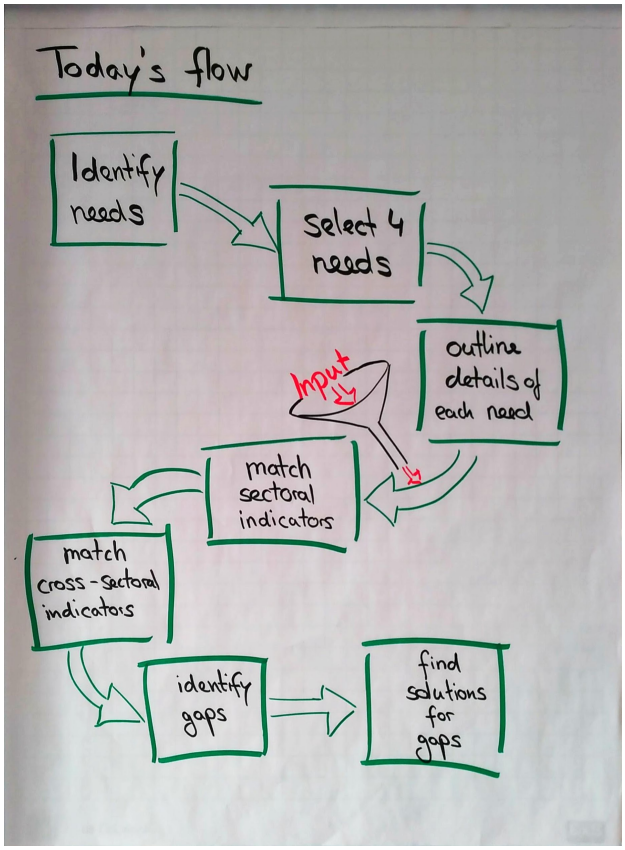

Image 1. Flow of the "From needs to indicators" discussion from the Krakow workshop.

3. Indicator Development

Because there was a higher need for capacity-building than expected (see Section 4), developing a set of useful (for stakeholders) and feasible (within the framework of ISIMIP) indicators proved to be a more ambitious task than anticipated. Nevertheless, [ideas for] indicators were developed across a multitude of ISIMIP sectors and cross-sectoral topics. Suggestions of participants ranged from disaggregating existing indicators to the inclusion of new "data layers", such as those that would reflect socio-economic conditions. Especially, the latter would help better quantify impacts on society, in which participating stakeholders were often most interested. A key piece to facilitating the indicator development was reviewing the layers of information inputted to impact models and breaking down the steps of information (including the distinction between modelling and post-analysis).

3.1 Energy

Feedback on the energy sector indicator "energy supply" illuminated that stakeholders would rather have a **disaggregated indicator that separates the various renewable energies**: wind energy, PV, etc. Another energy-related indicator **"changes to heating costs"** was created by the inclusion of information on energy efficiency and cost to the variable "heating/cooling degree days." It is important to note that this indicator originated from a process that started with a question on what exactly "heating/cooling degree days" means.

3.2 Biodiversity, Forests

The group working on biodiversity sector developed two strands of biodiversity-related variables: **"distribution of climate-driven alien species"** and **"habitat suitability for key or emblematic species."** They also brainstormed on sectoral and cross-sectoral indicators related to a) forestry health and bark beetle populations, b) bioenergy production (across forestry, agriculture and energy ISIMIP sectors) and c) the impact on forest carbon storage.

3.3 Health (malaria risk)

In Ouagadougou, some of the most interesting cross-sectoral indicators dealt with health and gender. The breakout group whose focus was on health envisioned what other layers or dimensions would make health indicators more interesting. They came up with an indicator, **"population at risk of contracting malaria per month"** which would give spatially-explicit estimates of the number of inhabitants at risk for malaria every month under climate change scenarios, based on the combination of climatic factors that are suitable for the spread of the disease and population information.

3.4 Gender

Participants reflected on how activities specifically carried out by women in some regions, such as collecting water or firewood or cultivating land, are especially impacted by climate change. Climate impacts on availability of water, firewood or fertile land can be derived from impact models and participants suggested to add a layer on gender information for the

above-mentioned activities in order to **quantify how climate change could affect gendered activities**.

4. Focus on Capacity Building

The workshops (in both regions) demonstrated the benefit of exchange between modellers and stakeholders and the learning that took place from both ends. This was also confirmed by evaluation completed by participants, where a large majority of both workshops indicated "interaction between modellers and stakeholders" as useful. An overall key outcome was stakeholder learning on what ISIpedia can offer, how impact models work and a conceptualization of what climate-impact indicators are. As well, ISIMIP modellers could learn a lot about what is useful and necessary in the policy and administrative sphere.

Learning from the Krakow workshop, where the participants expressed their confusion about ISIpedia as a project, the beta version was presented and ISIMIP (as the "scientific underpin") was introduced earlier in the opening session of the Ouagadougou workshop, giving participants a clearer idea of ISIpedia, its framing, possibilities and limits. **In the future, it is important that the information presented (e.g. information on impact models, results, evaluation, uncertainty) is not too technical and can be understood by different audiences.** Due to the various professional (and/or academic) backgrounds of stakeholders, many participants of both workshops often misunderstood the possible applications and naming of the *indicators* used in science. Modellers, in this respect, can play an important role by taking the lead in knowledge transfer of ISIMIP data and models and impact indicators. Prepping ISIMIP modellers to facilitate group work was a key lesson learned between the Krakow and Ouagadougou workshops.

Some pedagogical methods like example-based approach, step-by-step explanation and the use of well-known frameworks (i.e. SDGs, Sendai Framework Disaster Risk Reduction indicators), can also be valuable in strengthening the common understanding. Providing examples was especially helpful to explain complex concepts like impact indicators. It is also important to note that by having stakeholders understand how aggregate indicators, such as "energy supply," are constructed and look at discrete steps of information production, they are able to come up with new disaggregated indicators or combine existing indicators to address their needs within the possibility of ISIMIP data (see 3. Indicator Development).

5. Reconciling Vocabulary

As anticipated, **establishing a common vocabulary was a necessary and valuable step** when participants came from different academic and professional backgrounds. Specifically, modellers and stakeholders often define climate-related terms differently. A striking anecdote to illuminate this difference was "near-future," a term stakeholders defined as "within the next 1-3 years" (private sector) or "within the next ten years" (national administration) whereas modellers defined as 2030-2040. The following keywords (selected by SET) were collectively defined: climate-impact indicators, sectors, cross-sectoral analyses, near-future projections,

and climate-impact data. This session seemed to be essential to facilitating more effective communication and resolving potential misunderstanding between modellers and stakeholders.

6. Participant Feedback

Evaluations were collected from 8 participants from the Krakow workshop and 34 from the Ouagadougou workshop. Overall, participants were satisfied with the general workshop outcomes (*Figure 1*). Especially, they seemed to have benefited most from interaction with their counterparts (stakeholders with modellers and modellers with stakeholders).

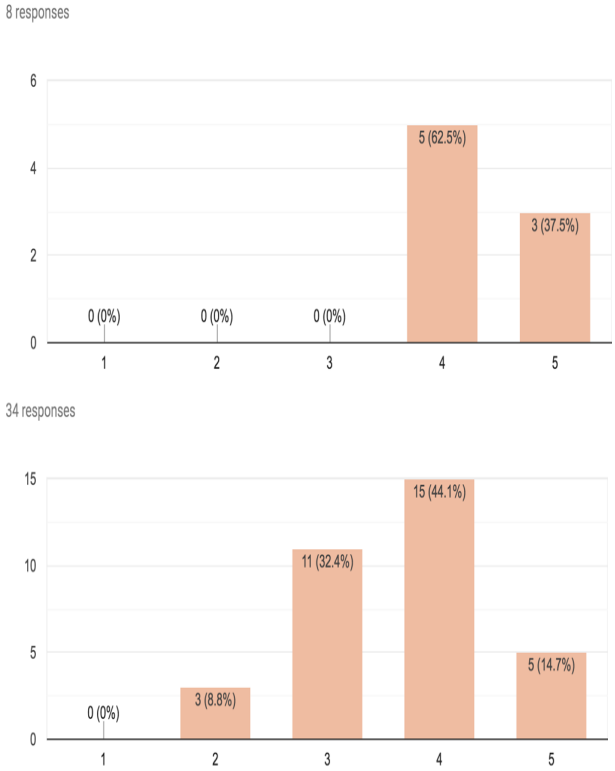

Figure 1. Responses to the question "Were your expectations met?" from the Krakow workshop evaluation form (left) and the Ouagadougou workshop (right).

The participants who gave "2" or "3" in the overall expectations in the Ouagadougou workshop stated that "the workshop focused more on ISIMIP models than impact indicators," "some sectors like forestry or economy were missing," "indicator development was not achieved," and "the workshop was mostly in English." More specifically, some Ouagadougou workshop participants wanted clarification on how ISIpedia and ISIMIP data/models can be relevant and applicable in local settings, for this was not addressed in every breakout group. Additionally, both on-site and through evaluation, quite a few West African participants expressed their hope of involving more local actors and institutions throughout the entire project. **In addition to the constructive criticism mentioned above, the SET received a lot of positive feedback** orally on-site, as well as by email overall.

Moreover, there was a **high interest in engaging further with ISIpedia**. Notably, 4 participants from the Krakow workshop and 21 participants from Ouagadougou indicated that they would be interested in sharing data by "providing local data for calibration and validation of impact models." This is a surprisingly good result given the difficulty to trigger an interest in data exchange during the kick-off workshop, as well as the known barriers (including costs) to accessing such data especially in West Africa. This indicates that the presentations from ISIMIP modellers and the face-to-face discussions that followed helped convince participants that the local data they could provide would be used to improve the models and eventually deliver better climate-impact assessments. It also suggests that this data sharing is likely to occur via the bilateral exchanges initiated during the workshops, but does not yet guarantee that it would work via a more "impersonal" central collection point linked to the ISIpedia portal.

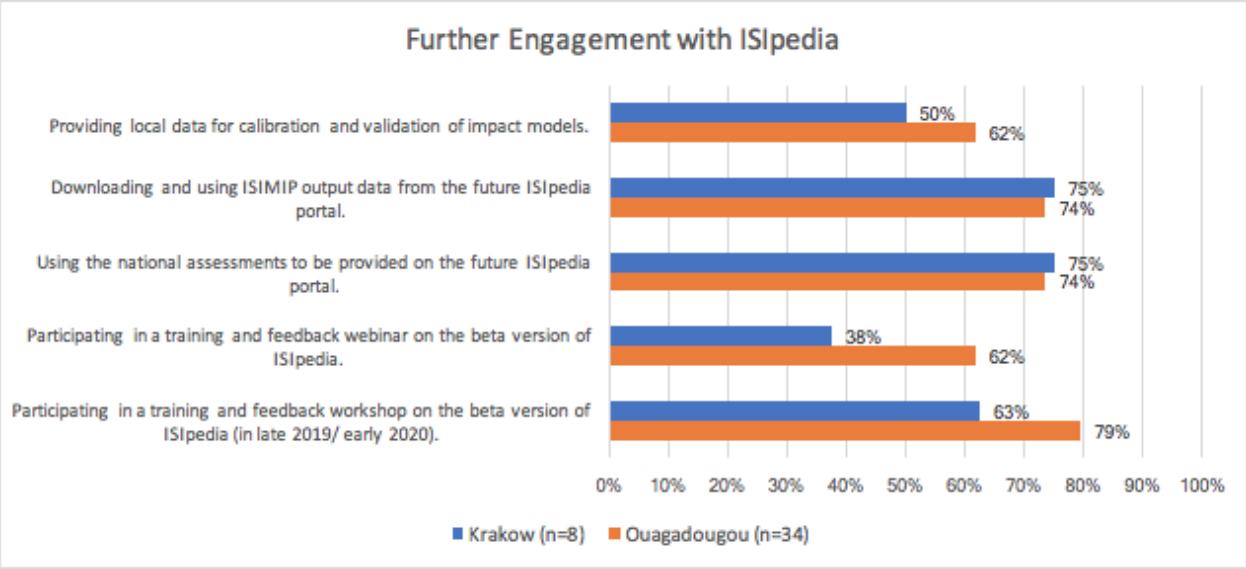

Figure 2. Responses to the question "What would you be interested in to further engage with ISIpedia?" from the Krakow workshop evaluation form (blue) and the Ouagadougou workshop (orange).

7. Reflections and Action points

7.a. Network building and further work with local stakeholders

Both workshops were a good opportunity to expand networks for the ISIpedia project as well as for the involved stakeholders and modellers. The workshops also revealed that even though ISIpedia has established a network of stakeholders in West Africa, **there still is need for building a network in Eastern Europe**. Some programmes, like the proposed **ISIpedia Champions/Ambassadors**, who would act as a national contact point or advocate for ISIpedia, were also suggested. This would entail having a voluntary representative in each focus region country to disseminate information about ISIpedia and promote the use of the portal. Additionally, as requested by a few stakeholders, involvement of local institutions e.g., through partnership, is strongly encouraged to strengthen ISIpedia's credibility in the focus regions. Many participants from the West African workshop, especially those working in or

adjacent to academia, expressed their **interest in guest researcher programmes**, which would be mid- to long-term research residencies at partner institutions. It is envisioned that a guest research programme would have a synergy effect with other ISIpedia activities (like the ISIpedia Champions). This would strengthen research in and on West Africa in the realm of climate impacts and would also be a step towards a more collaborative, reciprocal North-South research.

7.b. Communication with Stakeholders: the future portal, workshops and website updates

The importance of conveying what ISIpedia is and can offer resurfaced throughout the two workshops. Having the beta version online in the Summer 2019 and clarifying what it can deliver on local levels will further help facilitate workshops better in the future. Until then it would be **important to update the ISIMIP webpage on ISIpedia** (as has been done for the ISIpedia project page on Climate Analytics website: https://climateanalytics.org/projects/isipedia/) to reflect how the project has progressed so that stakeholders (old and new) have a concrete source to go to for information on ISIpedia and the future portal. Additionally, **it could be interesting to engage ISIMIP modellers to create informational videos** on e.g. how impact models work for the website updates.

As most of the participants expressed a strong interest in further engaging with ISIpedia, SET will make sure to include these stakeholders in the planned capacity building workshops on the ISIpedia portal and will also offer webinars in line with the workshops, to reach a wider audience and to ensure that all stakeholders who wish to stay involved can do so.

7.c. Integration of indicators developed and further collaboration with modellers

It is not yet explicit how these indicators will be integrated into ISIpedia. The project partners, in tandem with the ISIMIP community, should set a plan for how to best incorporate these newly developed indicators, making sure that the outcomes of these workshops are taken into account, both in terms of a) meeting project aims and b) expectation management. This can potentially be addressed in the ISIMIP Cross-Sectoral Meeting in June 2019, under the ISIpedia agenda item.

For the future workshops meant to focus on collection of feedback on the beta version of the ISIpedia portal and training for its use, the SET encourages modellers' attendance. As mentioned earlier, modeller presence proved to be invaluable to diffuse knowledge to other workshop participants, and being exposed to stakeholders' needs and considerations, would help modellers better understand how research outcomes align and fit into others' work and establish contact with potential future collaborators or data providers.