



ISIpedia

Stakeholder Feedback Report

For further development of the ISIpedia Portal

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1. Overview

The ISIpedia Stakeholder Feedback Report summarizes the results from recent efforts by the Stakeholder Engagement team to collect feedback on the beta version of ISIpedia and by the Editorial Team to integrate it into the final version. The ISIpedia project aims to develop an online portal of climate impact information that is easily accessible and comprehensible to users with various backgrounds and contributes to bridging the knowledge gap between policymakers and scientists. ISIpedia's climate impact information is derived from the outputs from the ISIMIP 2b simulations and based on peer-reviewed publications, thus boasting its scientific rigor. The beta version was pilot-tested in January, 2020 by a selected group of key stakeholders identified during its development phase. Their feedback and the responses from the Editorial Team are reported here. Further improvement will be made based on the collected feedback and the final version of the portal will be available under www.isipedia.org in late 2020/early 2021.

2. Methods

A total of seven webinars, including one-on-ones, took place in January of 2020 with 18 future users to collect feedback on the beta version of ISIpedia. The participants' profiles varied: their affiliations ranged from research institutions, Meteorological offices and development agencies

(The Deutsche Gesellschaft für Internationale Zusammenarbeit –GIZ– & The Agence Française de Développement – AFD) to consultancy and private companies and their backgrounds from climatology, economics, international development, risk assessment and adaptation planning to the grassroots movements (e.g. Fridays For Future). These participants were chosen as ISIpedia aims to offer easily accessible and understandable climate impact information to anyone whose work can benefit from the provided information (national adaptation planning, climate risk assessments, etc.). All participants had at least a bachelor's degree, some exposure to environmental issues and some experience with reading data based on graphs; but their levels of knowledge in climate science and modelling varied. Each webinar lasted about an hour, mostly in the format of semi-structured discussion for feedback. A number of comments and feedback were received from the participants of the webinars and were categorized into six different themes detailed below: technical issues, design, navigation, content, usability of the ISIpedia assessments, suggestions for further development.

3. Feedbacks on the ISIpedia portal

3.1 Technical issues

Some technical issues that need to be addressed including browser and device compatibility, issues with downloadable files and their formats and minor widgets. Currently, the portal is not fully compatible with the Microsoft browsers (Internet Explorer and Edge); when using either of these browsers, the maps are not correctly displayed, and the downloaded text files do not have the correct format. For example, the text file of country ranking generated a horizontal list rather than a vertical one. Some participants expressed concerns as they were required to use only Microsoft browsers on their work devices for security purposes (e.g. GIZ and other governmental organizations). The issue of text width not adjusting to different screen sizes was also brought up. One participant also mentioned that it is important to check if the graphs and maps, particularly the colors, are easily readable by those who are visually impaired. Other easy-to-fix issues included typos, incomplete labels (graphs and maps did not have titles or legends when downloaded individually, Figure 1.), legend (the line color in the legend does not match the line color in the graph), improperly displayed characters (e.g. the German umlaut), and toggle switch (“Show methods only” button does not switch to “Show all” when the page is in the methods-only mode, Figure 2.) for the glossary.

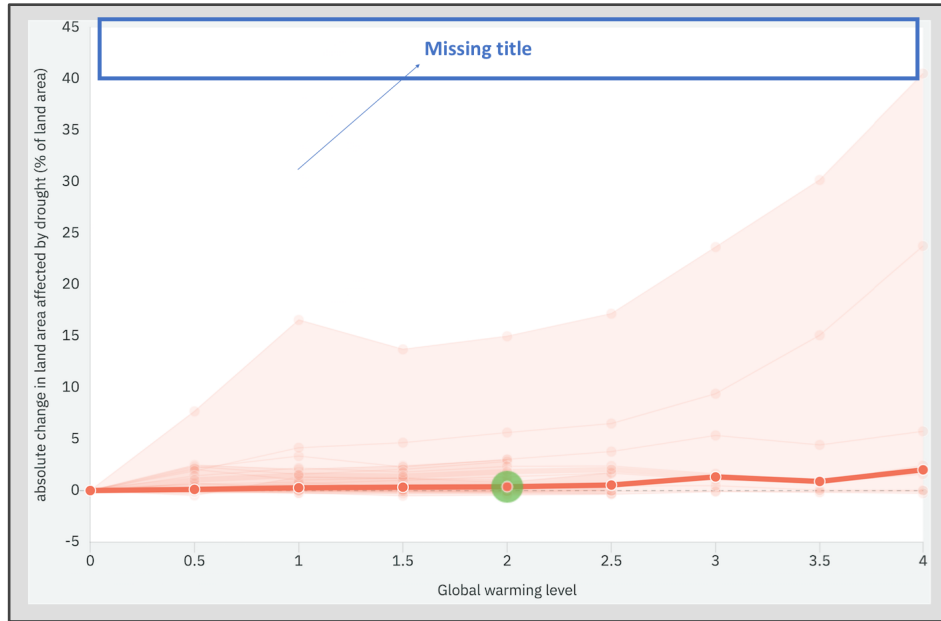


Figure 1. Missing titles in graphs and maps.

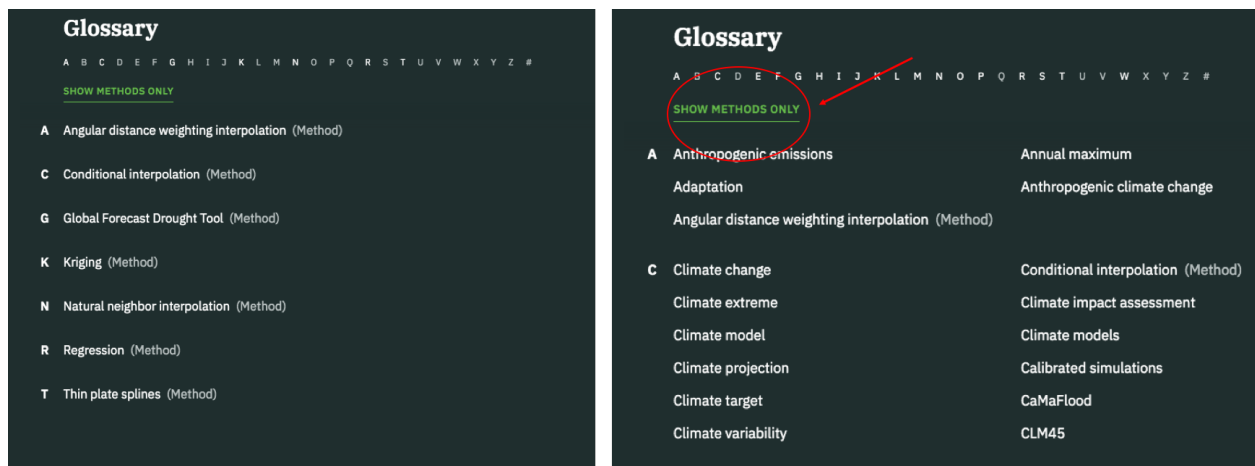


Figure 2. Toggle switch not showing “SHOW ALL”.

Response by the Portal developer:

To simplify future development and address the technical issues raised in the Stakeholder feedback the website codebase was overhauled and features were re-assessed. To especially improve compatibility with Microsoft Browsers like Edge or Internet Explorer 11 the framework used for website styling and interactions like menus was switched to Bootstrap (<https://getbootstrap.com/>), while keeping the current design. Bootstrap is a widely used and tested framework (also used in other web projects of the ISIMIP group) and provides excellent compatibility with a wide list of browsers (<https://getbootstrap.com/docs/4.4/getting-started/browsers-devices/>).

As governmental users and stakeholders might have no choice and must use Microsoft browsers provided with their operating systems, tests were performed with Internet Explorer 11 and Edge

on Windows. Further tests were done with Chrome, Firefox as well as Safari on macOS.

In the process a number of issues have been addressed and solved:

- the sidebar navigation menu is always visible
- the graph development visibility issues like color blindness are taken into account by using suitable color schemes
- downloads are improved by pre-rendering all PDFs through a Pandoc/LaTeX toolchain which should ensure proper display on all platforms.

In general, the figures are being re-thought and re-designed with the intent to provide simpler figures as an entry point and more complex explorative figures for interested users. In particular, figures are now developed on a case-by-case basis for each article, to encourage graphical innovation over standardized figure templates. As a result of this strategy however, interactive figures are developed separately from the portal itself, and do not follow the same procedure as for the rest of the portal. In particular and in contrast to some of the statements above, interactive figures are mainly developed for Chrome and Firefox browsers in mind and may present sub-optimal or unexpected behavior with Internet Explorer or other less known browsers. Over time and for newer articles, we aim towards greater cross-browser compatibility.

3.2. Design

In terms of design, participants liked the simple and clean design of the assessment report page but requested more differentiation between sections, either with different color blocks or fonts, so it's easily read through. Some pointed out that the texts on the landing page are not easily legible due to a busy background picture. An idea to integrate “climate stripes” (Figure 3.) a series of color stripes chronologically ordered to portray historical global warming into each country's assessment page was also suggested by a participant whose own involvement in climate service development made him understand that this is an effective visualisation of a changing climate. Overall, however, positive feedback was received on the website design.

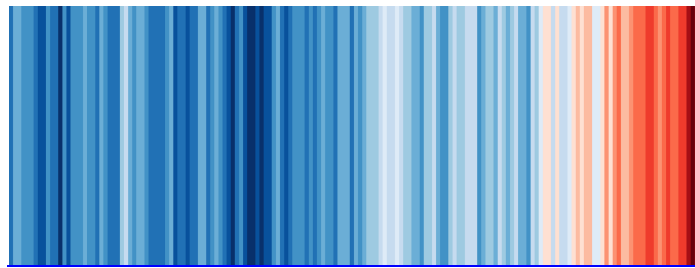


Figure 3. Warming stripes for 1850-2018 using the WM annual global temperature dataset.

Response by the Portal developer:

The idea to include "climate stripes" is highly interesting and we retain it as a possibility for future articles, on a case-by-case basis, and according to technical capacities (acknowledging that each new figure type requires additional resources).

3.3. Navigation

Navigation issues mostly concerned the configurator, the interface where you select from three categories to create a report. As currently only one study type is available, participants often missed selecting the study type, which did not let them create a report. Rather than receiving an unambiguous notification on the missed category, the “create report” button simply did not function. One suggestion was to pre-select future projections as long as it’s the only element in “study type”. Users asked for a configurator with better guidance, one that would take them through these steps more explicitly. Additionally, some users wanted to easily modify their selection from the top menu once the report was created, rather than having to go back to the main page (e.g. in order to look at a different country, but for the same indicator). Users found it inconvenient to go back to the configurator for every new assessment report. They suggested allowing selection also at the top of the assessment report (Figure 4.).



Figure 4. Top bar of the assessment page not letting users change selections.

Another concern with navigation was regarding the left menu on the country report page. While scrolling down in the report, the menu on the left kept disappearing and participants suggested it should be a static view to always give an overview of the entirety of the report (Figure 5.)

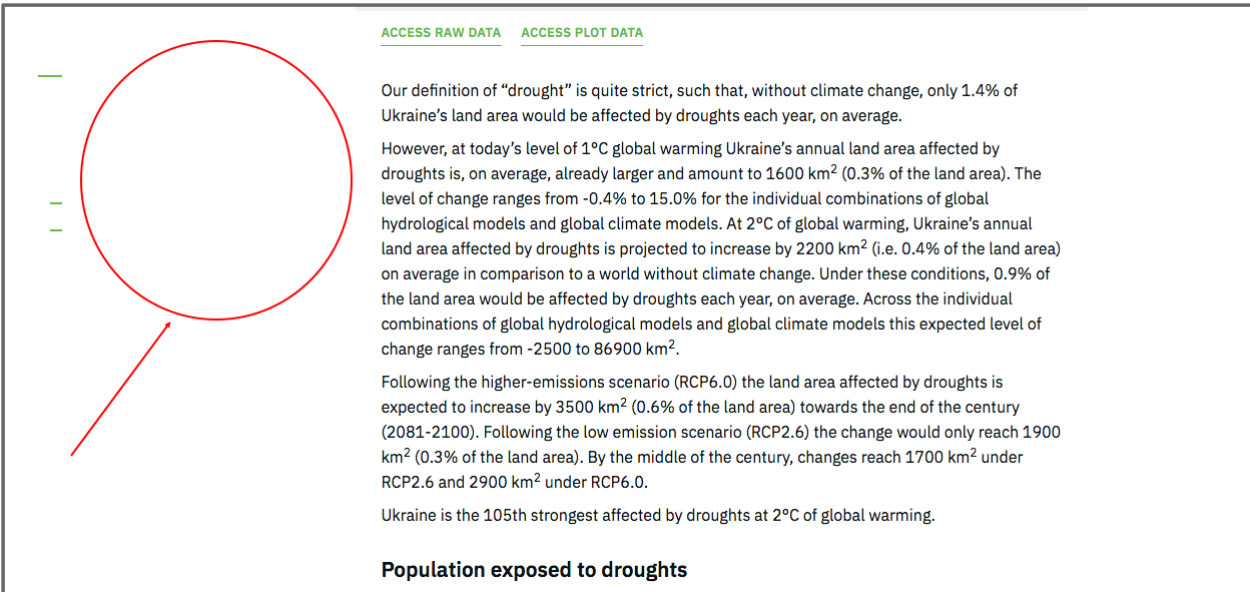


Figure 5. Sidebar menu disappearing during the navigation.

Response by the Portal developer:

As the configurator had accessibility issues (e.g. not possible to use without a mouse, i.e. keyboard only) and, in the beginning of the project, a limited number of reports can still be navigated with a simpler tool, the configurator was replaced with a drop down selection. To enable quick navigation it was included directly in the landing main page as well as in the navigation top bar of every other page. The sidebar navigation is now also always visible.

3.4 Content

Feedback regarding the content varied across participants' knowledge levels, backgrounds and professions; but the main discussions surrounded the technicality of the texts, key messages, country details, ranking and graphs and maps. Overall, the texts seemed to be too long, technical, and not easily followed due to their length, jargon and unnatural flow stemming from both the language and the template. A lot of webinar participants expressed the needs for model explanations (e.g. GFDL-ESM2M, MIROC5, LPJmL, WaterGAP2) and brief indicator descriptions in the glossary, in order to help "non-experts" find relevant information. Some suggested that the methodology part should be optional (e.g. as an appendix for those who wish to learn the methods in detail or an expandable section) as its lengthy description can deter users from continuing to read.

Response by the Portal developer:

The Editorial Team has revised the available contents in order to make those easier to read and overall reducing the technical wording and ensuring that all technical terms are hyperlinked to the glossary. Additionally, a template with more detailed tips on how to write ISIpedia articles was developed and shared with new authors. These new template addresses some of the specific comments provided below.

3.4.1 Key messages

Many participants stressed the importance of key messages and their clarity, that they should be concise and comprehensible e.g. by placing the text on the top of the assessment page, or making the fonts of the authors' name smaller if key messages are to be placed below these names. Some country reports showed very small impacts (low numbers, Figure 6.) but the key messages were not adjusted to convey the low impact results due to a fixed template.

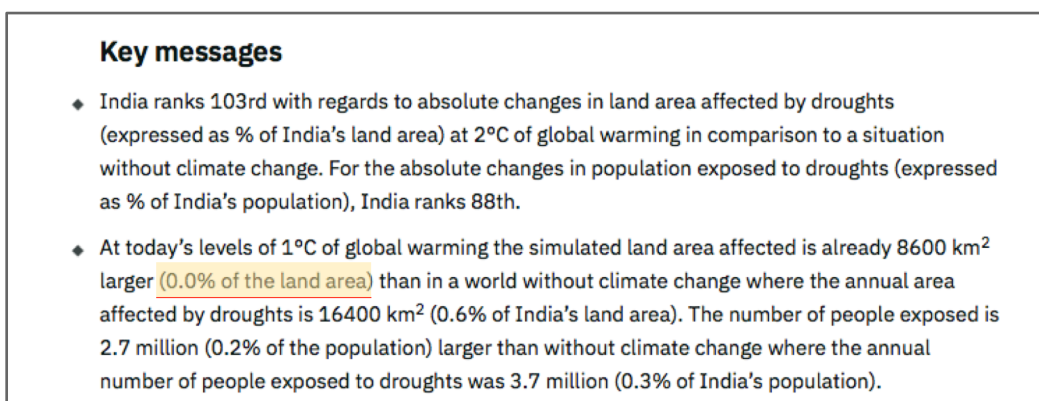


Figure 6. Some countries' key messages showing miniscule numbers.

Response by the Editorial team:

The articles which are written since this report was forwarded to the Editorial Team are formulated in an a more concise and comprehensible way as the Editorial Team recognize the importance of this section.

3.4.2 Country details

Some of the given indicators had unconventional units, such as HDI and GDP, and a few mentioned that GDP per capita would be a better indicator than GDP. The world ranking seemed to confuse a lot of them; a better way to describe this would be e.g. by including global mean values, indicating the number of all countries examined (e.g., 37/198), or adding the reverse ranking. Some also suggest additional indicators, such as the World Bank categorisation of countries (high/middle/lower-middle -income, least developed country, etc.) and inequality profile (UNDP).

Response by the Data manager:

The country details are now present in the country pages (e.g. /countries/AFG) instead of being present in each report, making them less prominent. The ranking as part of the country statistics was removed to avoid confusion.

3.4.3 Ranking

Many participants did not notice that the ranking existed and that they could also download the ranking list. More importantly, there was quite some confusion about the ranking, the purpose of this information and doubts about its usability. One participant was concerned that the ranking can easily be misinterpreted by ISIpedia's target group, particularly policymakers, due to the not-so-clear distinction between, or understanding of, impacts, risks and vulnerability. He recalled a similar incidence of Germanwatch's Global Climate Risk Index that listed Germany and Japan among the top 3 most affected countries and was criticised by some adaptation practitioners ([see related commentary](#)). This concern was echoed by another participant from GIZ who stated that in the regional or national settings, the ranking could be used against a call for action (e.g. the impacts can still be significant despite the low ranking). To avoid such misuse, the participant suggested that the ranking receives less prominence in the description of the results and the key messages. Additionally, a participant from AFD found this information interesting and useful in some contexts, such as proposal or report writing, but would not make use of the ranking graph (Figure 7.).

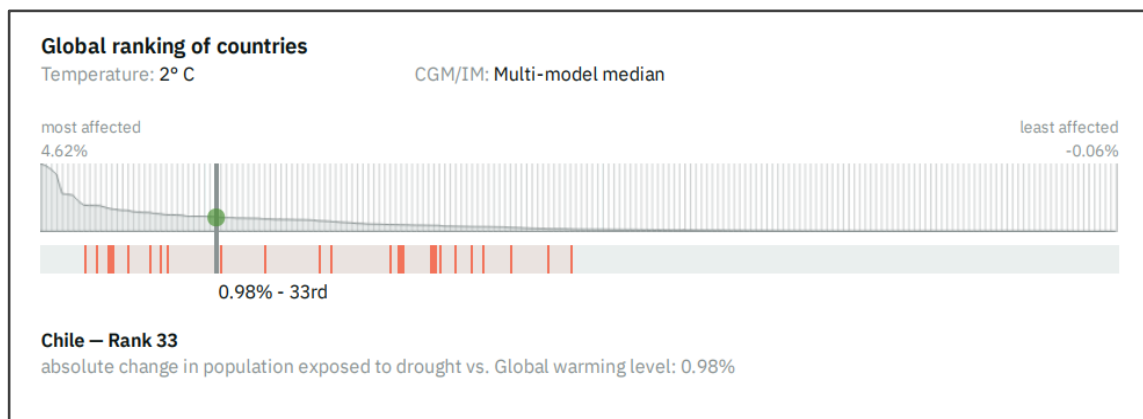


Figure 7. Questionable usefulness of the ranking graph.

Response by the Data manager:

As the ranking list take a large effort to unify and to avoid its misuse, it was decided to remove them from the country-report graphic for the time being. However, the initial six articles written by Lange et al. still contain ranking numbers in the main text of the country articles, and the world report does present a global ranking map.

3.4.4 Glossary

It appears that the glossary could be strengthened from including explanations of a lot of technical terms and their references. Additionally, many thought pop-up windows that show what the recurring acronyms (e.g. ISIMIP2, RCP2.6) stand for, would be useful.

Response by the Editorial team:

The glossary has been revised and to further aid readers, each glossary term can be read with a mouseover over the term directly in the article text. This is also possible to glance at references without scrolling to the bibliography.

3.4.5 Indicators

Some specific comments were made regarding the available indicators. Some participants suggested that we add more decimal points for results described in percentage and use different units for others (e.g. 0km², 0.0 million), for countries whose indicators indicated almost no impacts (Figure 7.). Additionally, it should be clarified whether the percentage of population affected refers only to the rural population or the total population. One participant mentioned that urban population can also be affected by droughts (through impacts on water availability upstream, runoff required to cool power plants...), pointing to the fact that not addressing urban areas constitutes a limitation that could be acknowledged.

- ♦ At 2°C of global warming the land area affected by droughts would decrease by 0 km² (-0.0% of the land area) compared to a world without climate change, to 0.0% of the country's land area. Assuming present-day population patterns, Uganda's population exposed to droughts would decrease by -0.0 million, to 0.0% of the population.

Figure 7. Uganda's key messages showing no impact under 2°C of global warming.

One participant enquired whether it would be possible to have more specific information on cropland affected, in order to link it to potential effects on the economy and food security. This illustrates a general interest for a wide number of indicators that was also expressed by other participants, but also the fact that the information provided by ISIpedia may be re-used in a variety of contexts. Providing a detailed description of the methodology and its caveats, in the spirit of what the first report meant to achieve, appears therefore important for such cases. Moreover, providing sustained means to exchange with the diverse users of this information, be it through webinars, feedback forms directly integrated on the website, workshops, social media, etc., is also crucial to become aware of the diverse uses that can be done of this information, and potentially adjusting the description of the methodology or results to tailor to them.

Response by the Data Manager:

A number of typos and number formatting was fixed in the new versions of the ISIpedia articles. We thank the participants for their detailed feedback and insights on the drought article (“Annual number of people and land area exposed to droughts” by Stephan Lange et. al). However, we would like to emphasize that the ISIpedia portal presents articles on a case-by-case basis, in line with a corresponding peer-reviewed article, and the author and ISIpedia editor attempt to make the content accessible for a wide range of stakeholders. We welcome feedback that can be of general use for the editors’ work but matters specific to one article cannot be addressed in a feedback on the ISIpedia portal in general.

3.4.6 Graphs and maps

Given the academic background and professional experience of participants, it was not possible to test for the understandability of the information provided by ISIpedia by an audience with a generally low understanding of climate impacts or of how to read scientific graphs. Still, during our feedback discussion sessions, we observed that for those with less knowledge or experience reading similar figures and data, provided graphs and maps were not always easy to understand. Firstly, the selected country and the indicator were missing in the line plot (Figure 8.). To most of the participants, the option to expand the plot or to switch to the time slice graph did not appear intuitive (Figure 8.) and therefore it was hard to match the information given in the texts with what is visualized on the graphs, e.g. when are certain global warming levels reached and under which scenarios. The difficulty of linking global warming levels to the years when they would be reached was brought up repetitively.

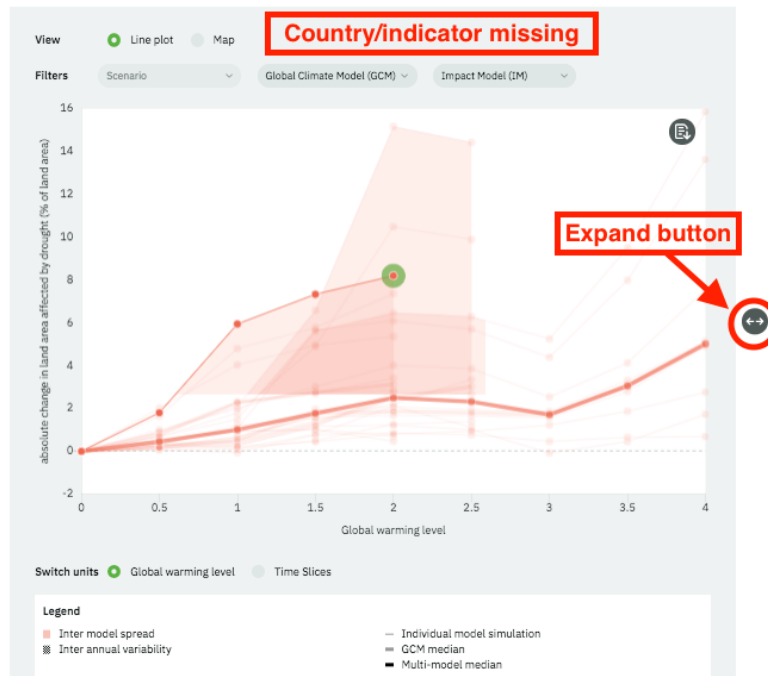


Figure 8. Line plot not showing which country/indicator it represents and the expand button not being easily spotted.

In terms of interactive elements, it wasn't clear which point on the line plot the map was referring to once the map was displayed, so having a side-by-side view of the graph and the map was suggested. When turning on and off different models, the median always showed the entire ensemble median (not just the median of the selected model combinations). The suggestion was made by a participant to have a median that evolves with the model selection to increase consistency. Additionally, participants requested explanations of both the climate and the impact models, and the levels of confidence associated with the given scenarios to be accessible directly from the graphs/maps. This was thought to help make sense of the often high model ranges.

When downloaded as a PDF, the report currently only prints out the main line plot and it should be able to let users select which visualization (GWL line plot, time slice graph, or map) they want printed on the report (Figure 9.). Ideally a line plot and a map should both be included in the report. Moreover, one mentioned that until the portal is entirely translated in different languages, translated graphs should be available to download at minimum so they could easily be used in reports and papers in the context of policy and development work in non-English speaking countries.

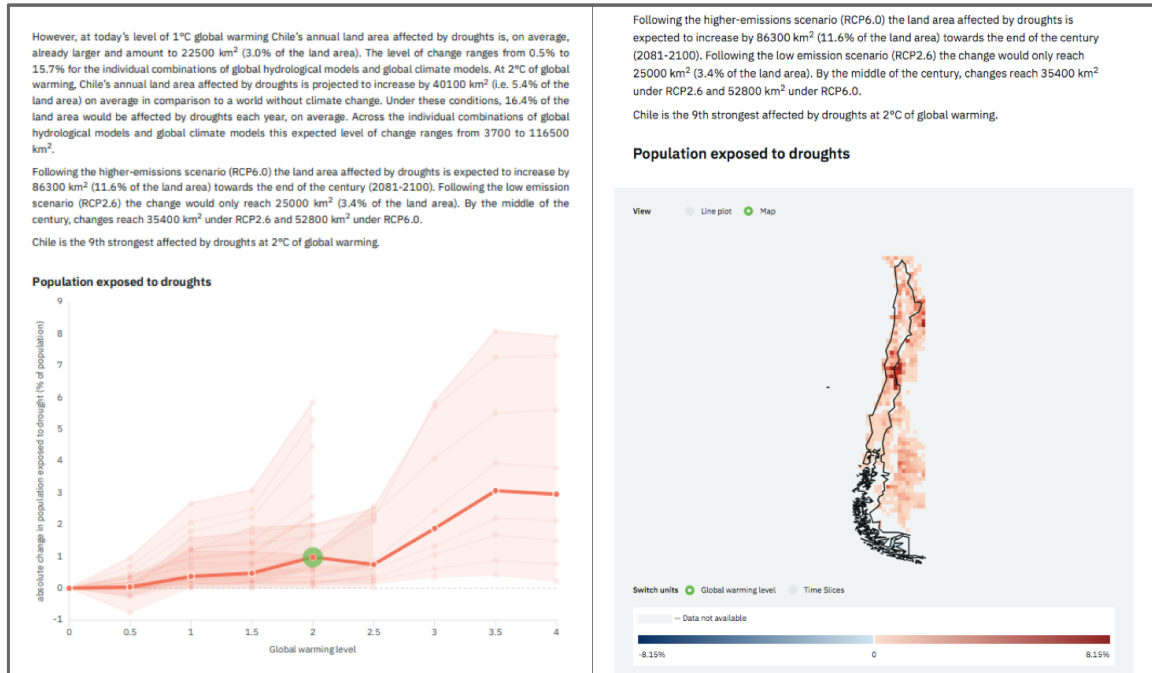


Figure 9. Report when downloaded vs. Information selected on the portal.

Response by the Data manager:

Along with the redesign of the ISIpedia website, we overhauled the interactive figures. They are now almost entirely different in design, despite sharing some of the basic functionality. That makes difficult to answer the feedback point-by-point, but we certainly had accessibility in mind when producing the new figures. Furthermore, since summer of 2020 we get support from a graphic designer who has been helping us improving clarity of every new figure produced. We are still in the process of improving styling for the first articles in the portal (the only one that existed when the feedback was collected), but we share here the current styling guide towards which we are working for that particular figure typology (be aware that we will likely proceed to adjustment in the wording and in graphical elements):

How many percent of land is affected by crop failure for different levels of global warming and where are the most affected areas?

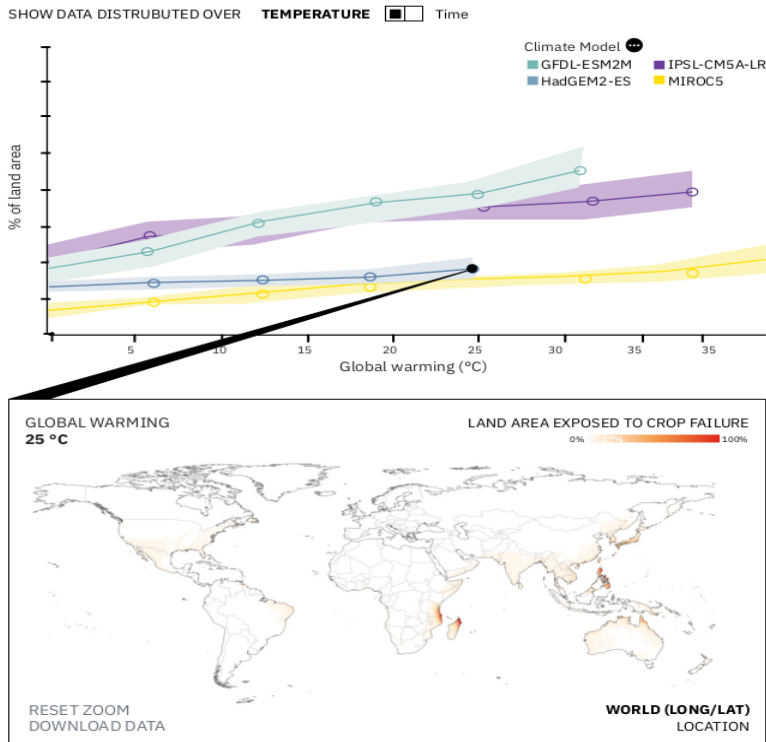


FIG 2

3.4.7 Uncertainties

As some country reports gave quite miniscule numbers or huge ranges for the population exposed/land area affected by droughts, the results sometimes appeared surprising to the participants, and a few of them even questioned their usefulness for awareness-raising.

A clear and transparent methodology thus seemed to be essential to understanding the results. It was suggested to add a section describing how to use the results in light of the uncertainties. In particular, it was suggested to provide information about each model already around the graphs (e.g., about their capabilities, strengths and weaknesses), so that an informed decision can be made when it comes to selecting model combinations (see also 4.6).

One participant (AFD) said he just needed the median values accompanied with confidence levels and percentiles rather than the full spread with all individual model combinations. This suggests that adding a simpler version of the graphs would provide enough information for some categories of users. Since most participants were somewhat used to reading scientific graphs, it was rather difficult to evaluate whether the content is understandable to the general public.

Response by the Editorial Team:

This feedback concerns specific articles (the pilot articles indeed), and do not reflect the ISIpedia strategy in general. However, we admit that this is an issue inherent to the “global articles”. The articles, which are originally published on a global scope, make the data available at the country level but do not undergo systematic country-specific validation (as we do not have the capacity to review around 200 reports for each article). The Editorial Team has been considering options to alleviate this issue, in particular by making the nature of these articles more transparent. The decisions made so far include having a clear labeling of global articles, along with the following disclaimer:

“Disclaimer

Note, that although this report is based on an article published in a peer-reviewed scientific journal, the original publication focused on a global analysis. Therefore, the results presented here for 200+ countries have not been reviewed individually. ISIpedia provides data on country level for convenience but cannot be held responsible for any issues with the data. Please contact the ISIpedia editorial team (isipedia.editorial.team@pik-potsdam.de) for more information or questions about this report.“

3.5. Direct usability of the provided information

In terms of usability of the impact information ISIpedia provides, participants foresaw using it in a variety of contexts, such as input to impact or vulnerability studies for climate litigation purposes, development/adaptation planning or further research. However, others also expressed concerns that the available indicators might be only useful for very specific contexts, an issue that may be resolved once other indicators become available. While some participants liked that ISIpedia offered a broader (national- to global-) picture of climate impacts, some, especially in the development sector, mentioned that sub-national scale is more pertinent to their work. The same sector also preferred to have other RCPs, such as RCP 4.5 and RCP 8.5, which highlights that different sectors use different RCPs in their work.

A recurring theme surrounded the application or the fit of ISIpedia information in the vulnerability framework. Even though ISIpedia explicitly denotes that it provides climate “impact” information, some scientists were concerned that some users might perceive it as “risk” information. It is important to note that ISIpedia should be clear on how to use its information correctly. It was suggested that a user guide or video would improve this clarity. Having a short explicit disclaimer or explainer about the data (e.g. if it is bias-corrected or downscaled, where it is published and by which organizations) was also suggested for ISIpedia to gain more credibility.

Response by the Editorial Team:

These are really important feedbacks which will be considered in the future.

Regarding the comment on sub-national scale: If articles provide sub-national information (gridded) this information is now provided, but it is important to bear in mind that much of these

sub-national assessments are extracted from global studies, and thus surrounded with uncertainties.

Regarding the comment on various RCPs: The current choice of RCPs in ISIpedia (RCP2.6, RCP6) covered by ISIMIP2a/2b input data goes back to the discussion within the Steering committee and with the ISIMIP Scientific Advisory Board. The ISIMIP3 protocol will cover SSP1-RCP2.6, and SSP5-RCP8.5 condition, thus we will consider adding more RCPs to the features of interactive maps displayed in the ISIpedia articles depending on the peer-reviewed study that is behind. To help the reader, there will be an ISIpedia story article about the interpretation of different RCP's.

A user-guide video will be created and published on the website to deal with the last concern raised.

3.6 Suggestions for further development

As an extension of the discussions above, participants wanted to see some extra features on the ISIpedia portal. Some expressed that it would be useful to be able to compare plots or maps with different degrees of warming (e.g. 1.5°C, 2°C and 3°C), as well as to see both the line plot and the map side by side. One participant (a hydrologist based in and doing research on Brazil) wanted to see and compare what the existing literature says about the given indicators, and asked whether it would be possible to add a section on that in the report. This is reflecting a wider observation that it is difficult, notably for stakeholders working at the national scale, to access overviews of the literature or dissemination portals providing information relevant for a specific country or topic of interest. If ISIpedia would include a “useful links” section or feature, this would therefore potentially increase its attractiveness and therefore also the audience of the reports.

As mentioned before, a user guide or manual in a video format would be beneficial for all types of users so they know how to use the ISIpedia climate impact information in different contexts, as well as how to make the best use of ISIpedia. This idea was also advocated by an African stakeholder who confirmed its feasibility despite unstable internet connection.

Grouping countries with similar geographic, climatic, or political characteristics together for assessment (e.g. EU, Sub-Saharan Africa, Southeast Asia), moreover, would add value to those who work in certain regions, such as the development sector.

A chart that illustrates the probabilities of reaching different global warming levels was also proposed. This suggestion revisits not only the issue of communicating uncertainties but also that of linking the provided information with risk assessments.

Additionally, one participant asked about a possible collaboration with the SENSES project, a plan that was mentioned in the project development process early on.

Response by the Portal developer:

Responsive video embeds have been included for YouTube videos and could be extended to other platforms if required. The idea for tutorials could be supported by making use of the Picture-in-Picture mode introduced in recent browser versions, enabling the video to be visible at the bottom while the user scrolls in the text.

Response by the Editorial team:

Thanks for these suggestions, they are overall really creative and mostly doable. We will keep all these suggestions in mind for a later stage. Once the portal is fully established and we have the capacity to go such considerable steps forward we will implement them. However, they are out of scope of the current project lifetime.

Key takeaways

- Overall, webinar participants were able to navigate the portal and create assessment reports with ease and were in favor of the simple and clean design. Positive feedback for the overall design, functionality and content was shared by many test users. The focus of this report, however, will be on possible improvements.
- A lot of participants found the texts of the reports too lengthy and technical and some wordings unnatural and incomprehensible and demanded explanations of acronyms, models and technical terms to be available on the portal.
- Some features like the key messages, country details and glossary can be strengthened, whereas the usefulness of the indicator ranking information was questioned.
- For many, it was not evident that two types of graphs (time slice and global warming levels) are available and that they are expandable. It appeared to be important to clearly show which degree/time the map view corresponds to (e.g. by having the graph and the map side-by-side) and to have an option to compare maps with different degrees of warming/years.
- Overall, there was high interest in the climate-impact information that ISIpedia could provide, which also signaled that it has the potential to be used in a variety of contexts. However, it seemed like some unclarity on and how to apply the information for different purposes (e.g. in vulnerability studies) may hinder this potential. To avoid these hindrances as well as the possibility of misinterpretation, the portal needs to provide a clear guideline on where the information delivered by ISIpedia stands in the vulnerability framework, what conclusions users can and cannot derive from the results, and possibly case studies based on ISIpedia to guide the users.
- Several measures to address uncertainties when using ISIpedia information can be suggested after these webinars, ranging from also providing a simpler version of the graphs (with only the median and the range) to adding an explainer about each scenario and model with their associated uncertainty level in order to better make sense of the model spread,

and also including the addition of a brief section or case study on ‘how to interpret results under uncertainties’.

- It is important to note that given the academic background of all the participants, it was not possible to test for the understandability of the information provided by ISIpedia, particularly the graphs and maps, for an audience with a generally low understanding of climate impacts or of how to read scientific graphs. This can be addressed in further engagement activities, which will also allow the refinement of the understanding of how ISIpedia can potentially be used.