Review and Recommendations for the Environmental Bowtie Risk Analysis Tool (v5.0.0)

General observations

*Issues*

* When switching between browser tabs or windows (after just a few minutes), the app shows a message saying the data needs to be reloaded, forcing the user to start over.
* After working for a while, the app shows a *“Disconnected from the server”* error.
* The entire workflow is lost upon disconnection.

*Suggestions*

* It might be helpful to add an autosave or session recovery function.

1. Data Upload

*Issues*

* The introductory information about bowtie diagrams and their functionality is limited. There is a box with general elements, but it might still be confusing for first-time users.
* The “Generate Granular Data v5.0.0” and “Generate Multiple Controls Data” are two different files, but share the same file name, which may cause confusion.
* Changes made to the Excel file, such as renaming rows or altering connections, are reflected in the generated bowtie diagram. However, it was initially unclear that numerical changes or deletions in the Excel file affect diagram colors.

*Suggestions*

* We would suggest assigning distinct names to the downloadable files to avoid confusion.
* It might be helpful to add a short introduction or explanation of the Bowtie concept on the home/upload page to support first-time users.
* We suggest including in the guidelines how edits to the Excel file affect the Bowtie diagram output.

2. Guided Bowtie Creation Wizard

*Issues*

* The ‘help’ button is currently not working
* The step-by-step process is thorough, but users need prior knowledge of how a Bow-Tie works to understand and complete it successfully.
* While creating a Bow-Tie step by step, we encountered the following issues:
  + General
    - We like the planned AI support features.
    - We also like the idea that the app will try to correct you if you’re about to make a “wrong” choice.
    - Progress beyond Step 3 is currently not possible.
    - Data input is not saved when navigating between steps.
  + Project set-up
    - There are currently no templates to select
  + Threats & causes
    - No activities or pressures appear in the dropdown box when typing, and nothing can be added in these boxes
    - “Link activities to the pressures they create”: does not show any options.
  + Preventive Controls
    - If nothing is added in the last step (as is not possible yet), this step gives the following error: “An error has occurred. Check your logs or contact the app author for clarification.”
  + Consequences
    - Consequence can be entered, but not added
  + Protective Measures
    - Input fields are available, but Protective Control cannot be added
  + Review & Validate
    - Because we could not add anything, there is no Bowtie Summary
    - “Edit problem,” “Add threats,” and “Add consequences” buttons are non-functional.
    - It is possible to proceed without validating any boxes, and it is unclear if this is intentional.
  + Finalize & Export
    - Options to download, save to cloud, and explore advanced features are not working.
    - ‘Complete Workflow’ is not possible.

*Suggestions*

* It might be helpful to add a link or clearly indicate where users can find the guidelines on the bowtie method, to help them understand the concept and create their own diagrams.
* We would suggest implementing data persistence between steps.

3. Bowtie Diagram Tab

*Issues*

* “Quick Add Enhanced” does not work. Entering new elements crashes the app, and the data needs to be reloaded.
* No explanation is provided for checkboxes or interface options.

*Suggestions*

* We suggest adding mouse-over tooltips or clickable help icons (“?”) for each function.

4. Bayesian network

*Issues*

* Changing “set evidence” only affects the text output, not the visual network.
* Clicking on risk scenarios causes the app to reload.
* “Run inference” does not work currently.

*Suggestions*

* It might be helpful to add short explanation of the Bayesian network concept and its purpose in the app.
* We suggest clarifying how user interactions (e.g., setting evidence) are expected to influence the network.

5. Enhanced Data Table

*Issues*

* Users cannot add, remove, or edit rows directly within the app. All edits require downloading the Excel file, making modifications, and re-uploading.

*Suggestions*

* We suggest allowing basic row editing functions within the app to streamline the process.

6. Enhanced risk matrix

*Issues*

* We get frequent error messages.

*Suggestions*

* We suggest including a short description of this feature.

7. Help tab

*Issues*

* The 'Help' tab includes a short user guideline, while the rest seems focused on installation and modification.

*Suggestions*

* We suggest adding a more detailed description and troubleshooting tips.

8. Security and Privacy

*Issues*

* Anyone can access and use the app, which might be a risk if sensitive environmental or stakeholder data is uploaded.
* It is not clear whether the uploaded data is:
  + Stored permanently
  + Anonymized
  + Automatically deleted after use

*Suggestions*

* We would suggest including a clear statement within the app regarding data handling and privacy.
* During the meeting, you mentioned that stakeholders could create Bow-Ties as an exercise based on location-specific Bow-Ties and then download the corresponding Excel file. Would each stakeholder then have access to their own individual Excel files, or is there a shared cloud environment, per location or for all Bow-Ties, where these files could be uploaded? Who would then have access to this?