Author Response – EGU Sphere – 2022-617

Developing a Bayesian network model for understanding river catchment resilience under future change scenarios

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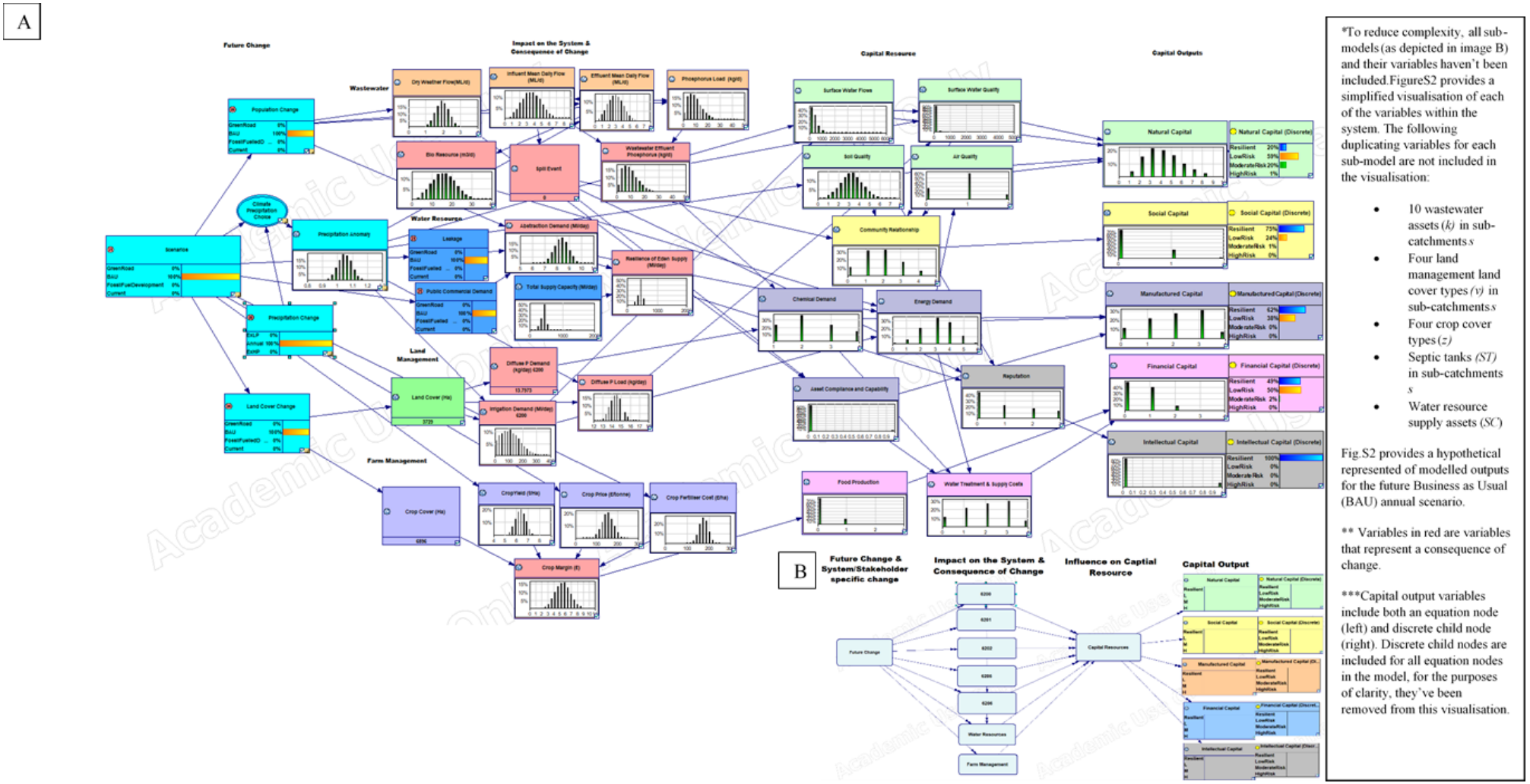
Referee Comments #1

Dear Dr Laura Uusitalo,

We apologise for the issue in uploading the visualisation of the Bayesian Network model in response to comment #1 in your review. Please find the visualisation below in Figure 1. We thank you again for all your comments to support improving the manuscript.

With best wishes,

Kerr Adams, on behalf of the co-authors.



*To reduce complexity, all sub-models (as depicted in image B) and their variables haven't been included. FigureS2 provides a simplified visualisation of each of the variables within the system. The following duplicating variables for each sub-model are not included in the visualisation:

- 10 wastewater assets (*k*) in sub-catchments *s*
- Four land management land cover types (*v*) in sub-catchments *s*
- Four crop cover types (*z*)
- Septic tanks (*ST*) in sub-catchments *s*
- Water resource supply assets (*SC*)

Fig.S2 provides a hypothetical represented of modelled outputs for the future Business as Usual (BAU) annual scenario.

** Variables in red are variables that represent a consequence of change.

***Capital output variables include both an equation node (left) and discrete child node (right). Discrete child nodes are included for all equation nodes in the model, for the purposes of clarity, they've been removed from this visualisation.

Figure 1: (A) Simplified visualisation of the Bayesian Network model, its variables and outputs for a hypothetical future Business As Usual (BAU) scenario (B) visualisation of how sub-catchments are considered using sub-models. Both models developed using GeNIe modeller (version 2.4.4601.0) (BayesFusion, 2017)