1 State-of-the-art Review

- Desk study review of BIM and sustainability studies in the literature and practice.
- How BIM can influence sustainability in the context of the built environment.

Published in *Journal of Cleaner Production* and *Journal of Civil Engineering and Management [Authors' details]*

2 Factors affecting green-BIM

- Delphi study via consultation with experts by consolidating the key barriers, benefits, & drivers of BIM and sustainability implementation.
- International surveys – to establish and further investigate these key factors.

Published in *several outlets [Authors' details]* among others

3 Developing the BSAM Scheme GBRS

- Experts consultations and in-depth review of the literature and the existing GBRS.
- Brainstorming to identify the sustainability criteria of the BSAM scheme.
- Determination of the relative weights of each criteria.
- Drafting the BSAM scheme documentation.

Published in *Journal of Cleaner Production* and *Mendeley Data [Authors' details]*

4 Develop appropriate weightings

- Employ the GCFI method to determine the importance weights of the BSAM scheme criteria.
- Finalize the certification grade system of the BSAM scheme.

Published in *Sustainable Cities and Society [Authors' details]*

5 C-SDSS platform development

- Apply high-level programming languages such as PHP, Jscript to develop the automated C-SDSS platform.
- Embeds the results and deliverables from stages 3 & 4 into the C-SDSS platform.
- Host the C-SDSS platform on a local server.

The C-SDSS platform has been launched on a local server and findings reported in detail by *[Authors' details]*

6 Developing the GBA tool

- Propose & conceptualize three key components identified in stages 1–3; *i.e. BIM, regulatory documents, and data & evidence.*
- Embeds these 3 components with the research deliverables from stage 5 to finalize the GBA system.
- Recommend ways to implement GBA system effectively.

The method and approach to the development of GBA tool are reported in this article.

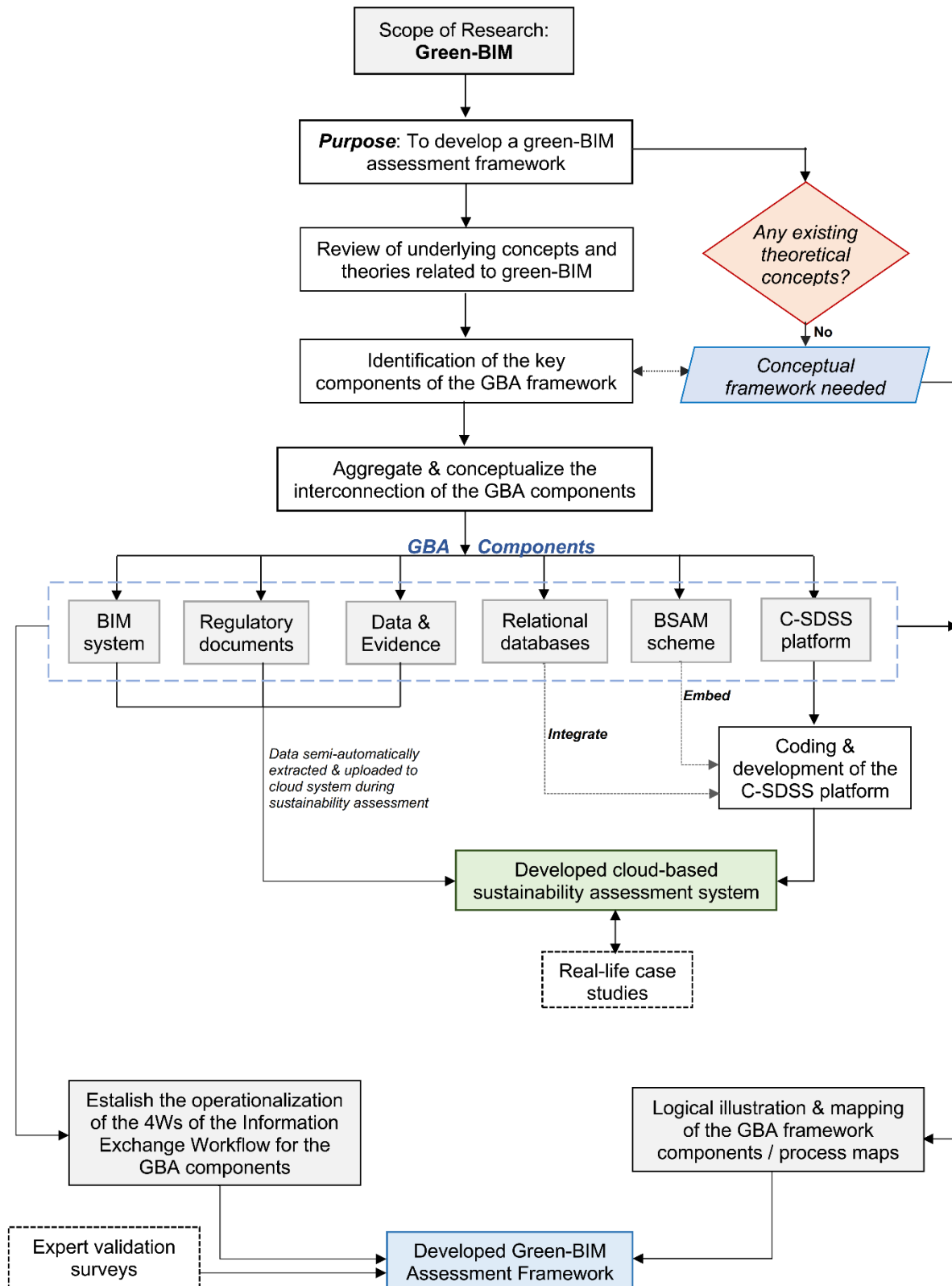*Figure 1: Stages of the development of the Green-BIM Assessment (GBA) framework*

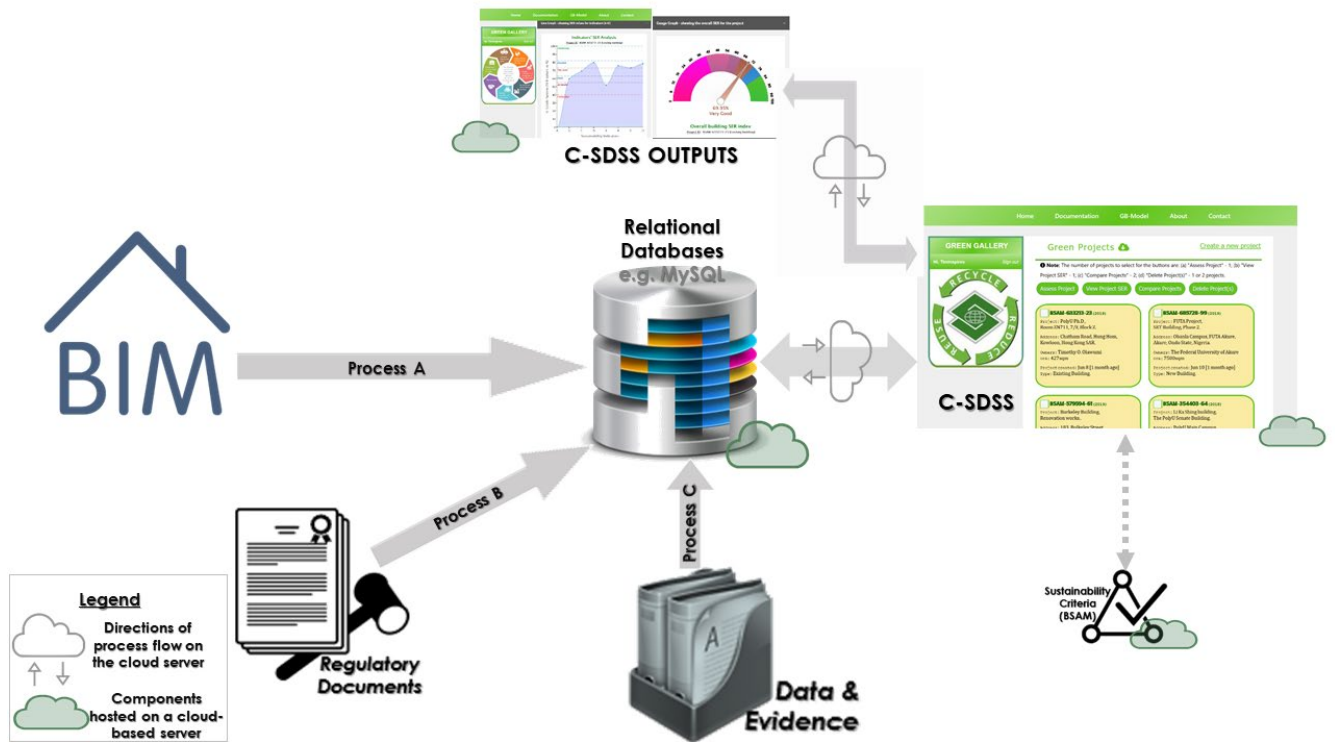**Figure 2: Outline of the research design**

Figure 3: Components of the proposed GBA framework

Note: The thick arrows, such as the arrows indicating the process flow from BIM, regulatory documents, and data & evidence components to the relational databases, and represents the process maps A, B, and C, respectively.
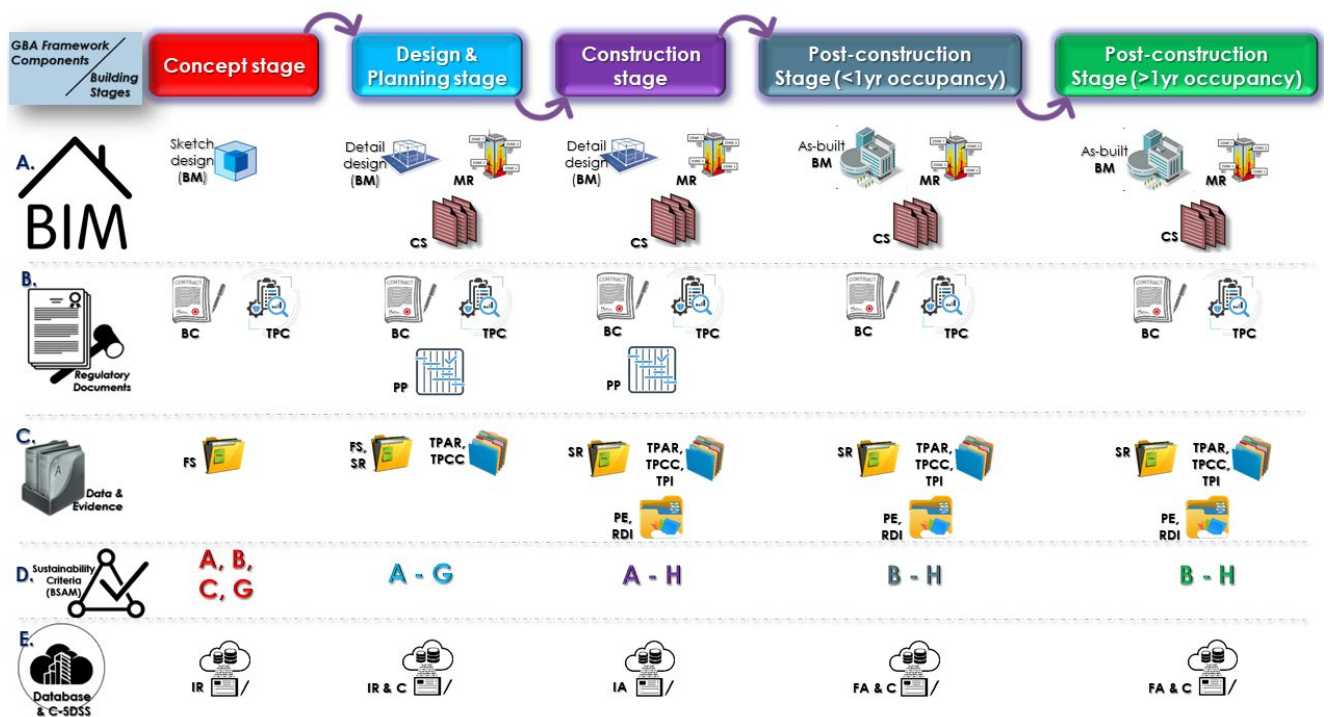

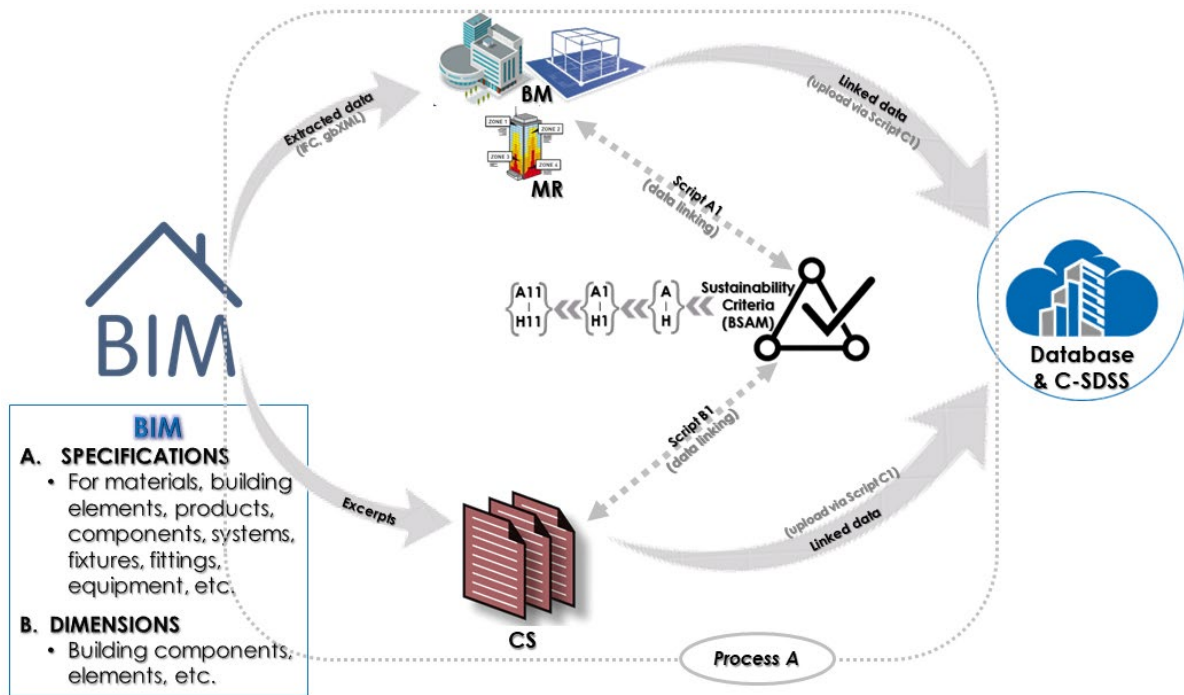**Figure 4: Data required by each component of the GBA framework at the various stages of building development**

Figure 5: Process map for the BIM System of the GBA framework
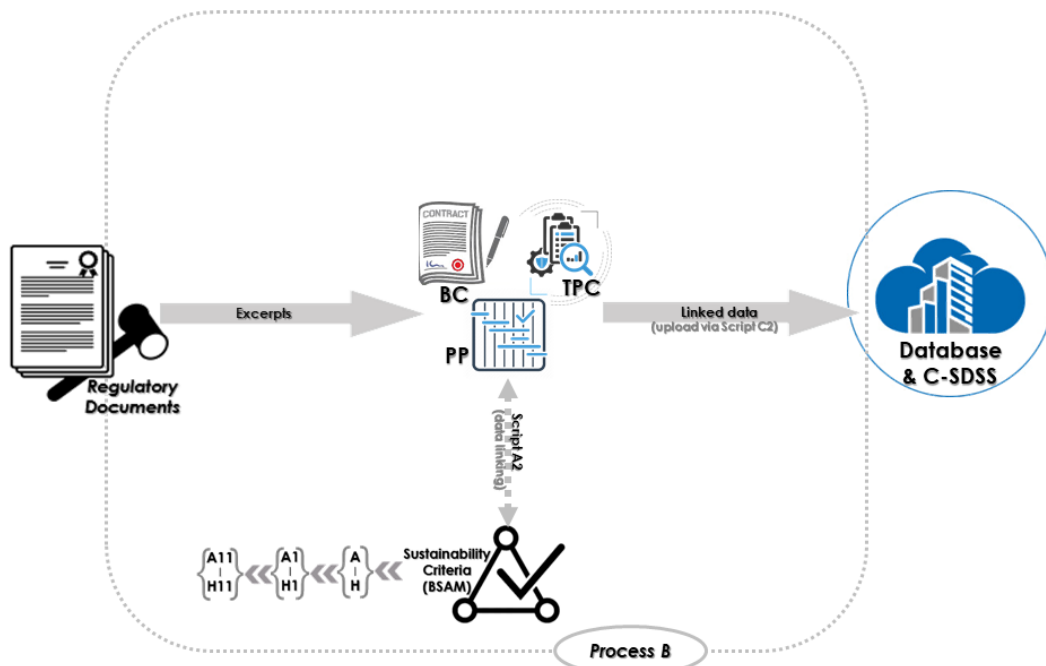
Figure 6: Process map for the Regulatory Documents of the GBA framework
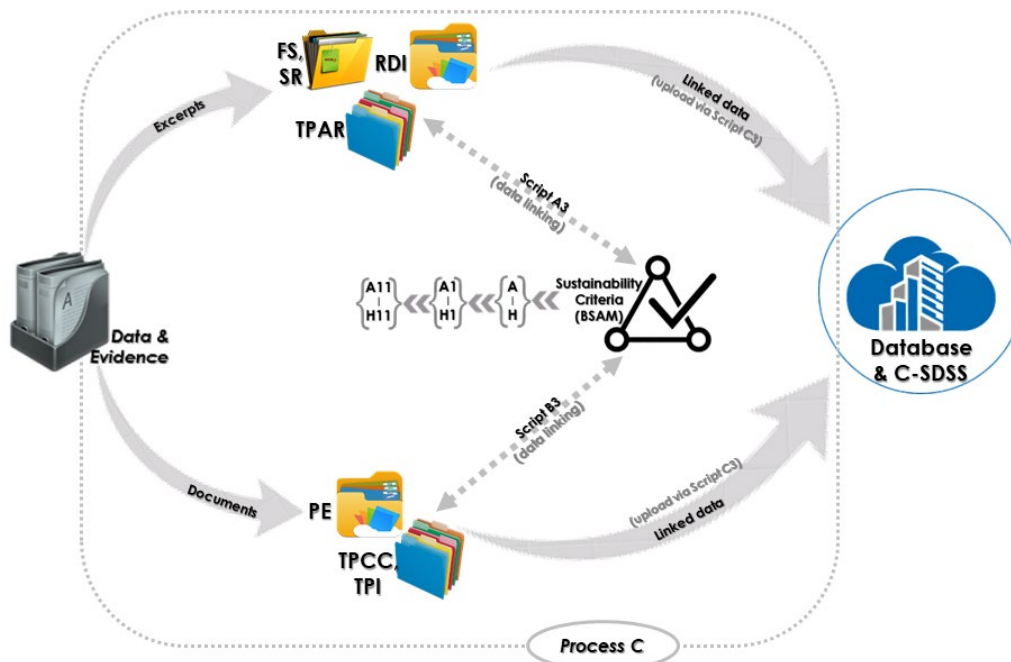
Figure 7: Process map for the Data and Evidence component of the GBA framework

Figure 8: The C-SDSS system's project assessment interface