An illustration on a light blue background featuring a central globe with a white outline. Surrounding the globe are various eco-friendly symbols: wind turbines, a bicycle, leaves, and clouds. The text 'Building eco-design at competition stage: a case study' is written in bold black font to the right of the illustration.

Building eco-design at competition stage: a case study

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Content

- Context, goal and scope
- Eco-design process
- Conclusions and perspectives



Context, goal and scope



Context

- Tekhnê made a proposal during an **architectural design competition** for the construction of a secondary school.

- Tekhnê included a **Life Cycle Assessment (LCA)** in their proposal.



Cycleco®

- Cycleco took over this LCA and decided to deepen the interpretation phase in order to use it as of a case study for training purposes.



Goal

- Tekhnê's objectives:
 - Meet building owner's requirement: assess embodied energy
 - Stand out from the competitors by going one step further and providing a comparison of 2 scenarios on primary energy and climate change impacts
- Cycleco's objectives:
 - Validate Tekhne's conclusions by extending the analysis to a more complete set of indicators
 - Adjust design according to impacts results



Scope

- Functional unit:
 - “Provide an enclosed and insulated space of 1544m² floor area, with an energy consumption of 57 kWh_{ep}/m²/year, for use as a secondary school during 60 years.”
- Scenarios:
 - a wood-framed building (favourite scenario)
 - a shuttered concrete building
- System boundaries:
 - Structure, interior & finishing work packages
 - Included processes: manufacture, transport, installation, deconstruction and landfill of building products (construction and replacements)



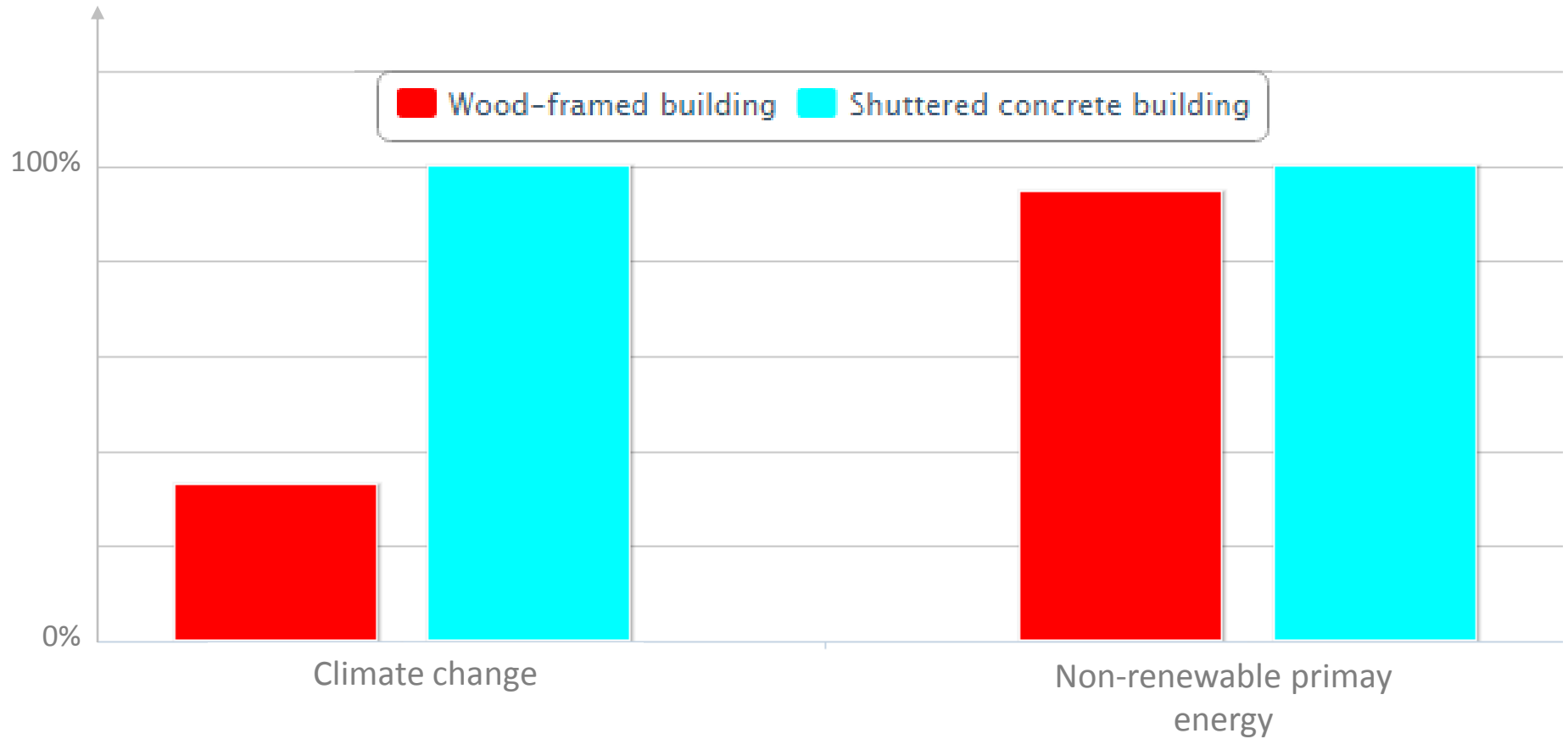
Tekhnê Architectes®



Eco-design process

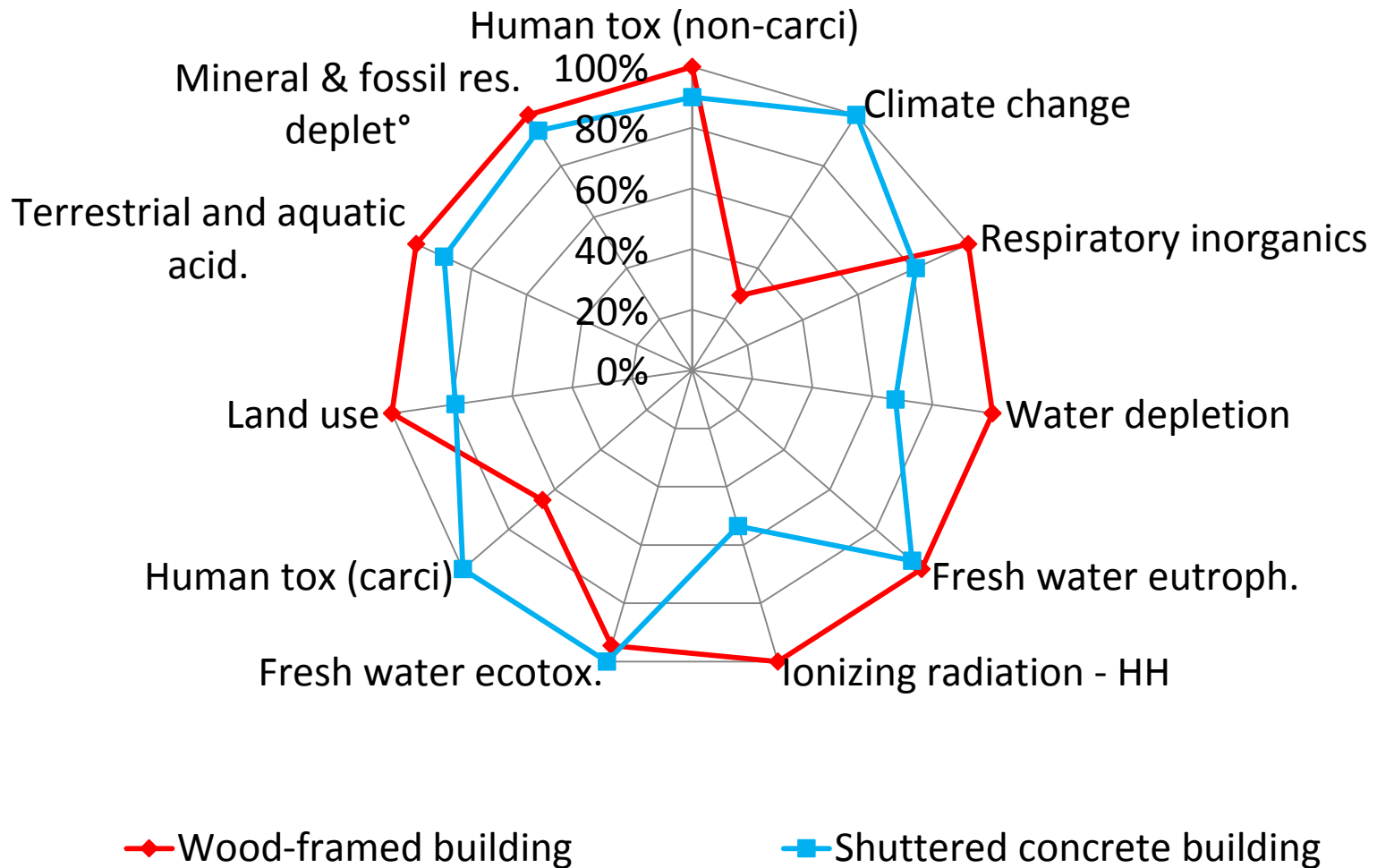


Firsts results



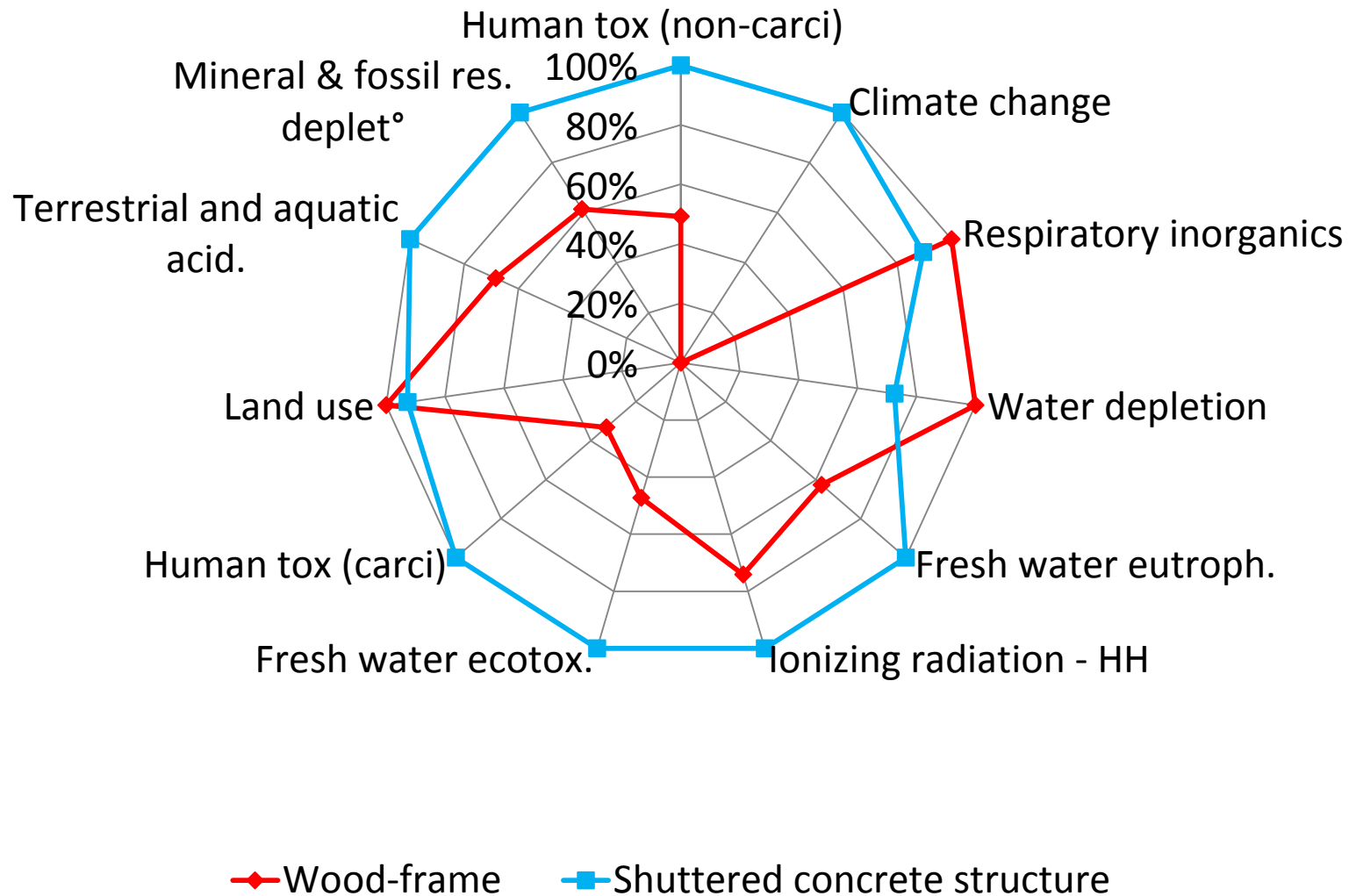


Extended set of indicators

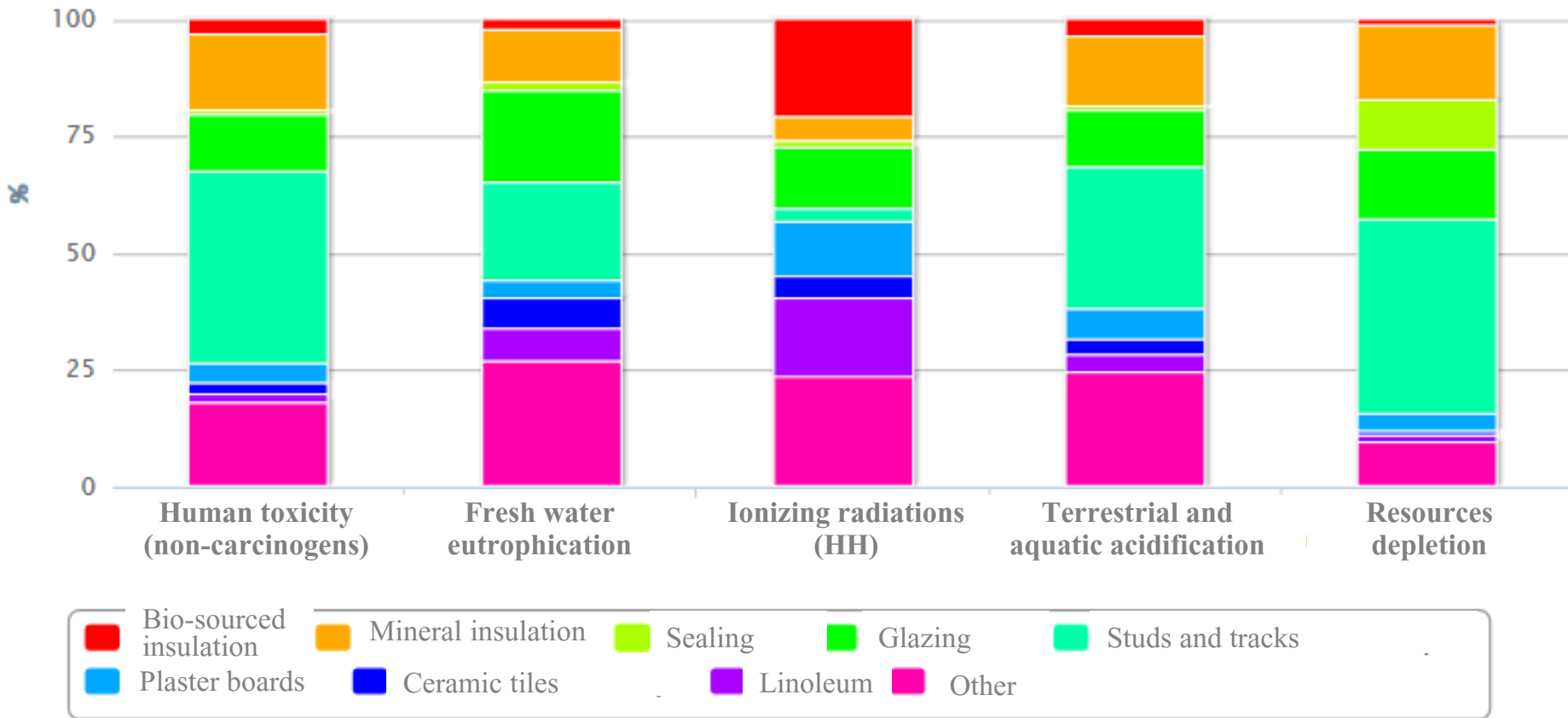




Comparison of structures

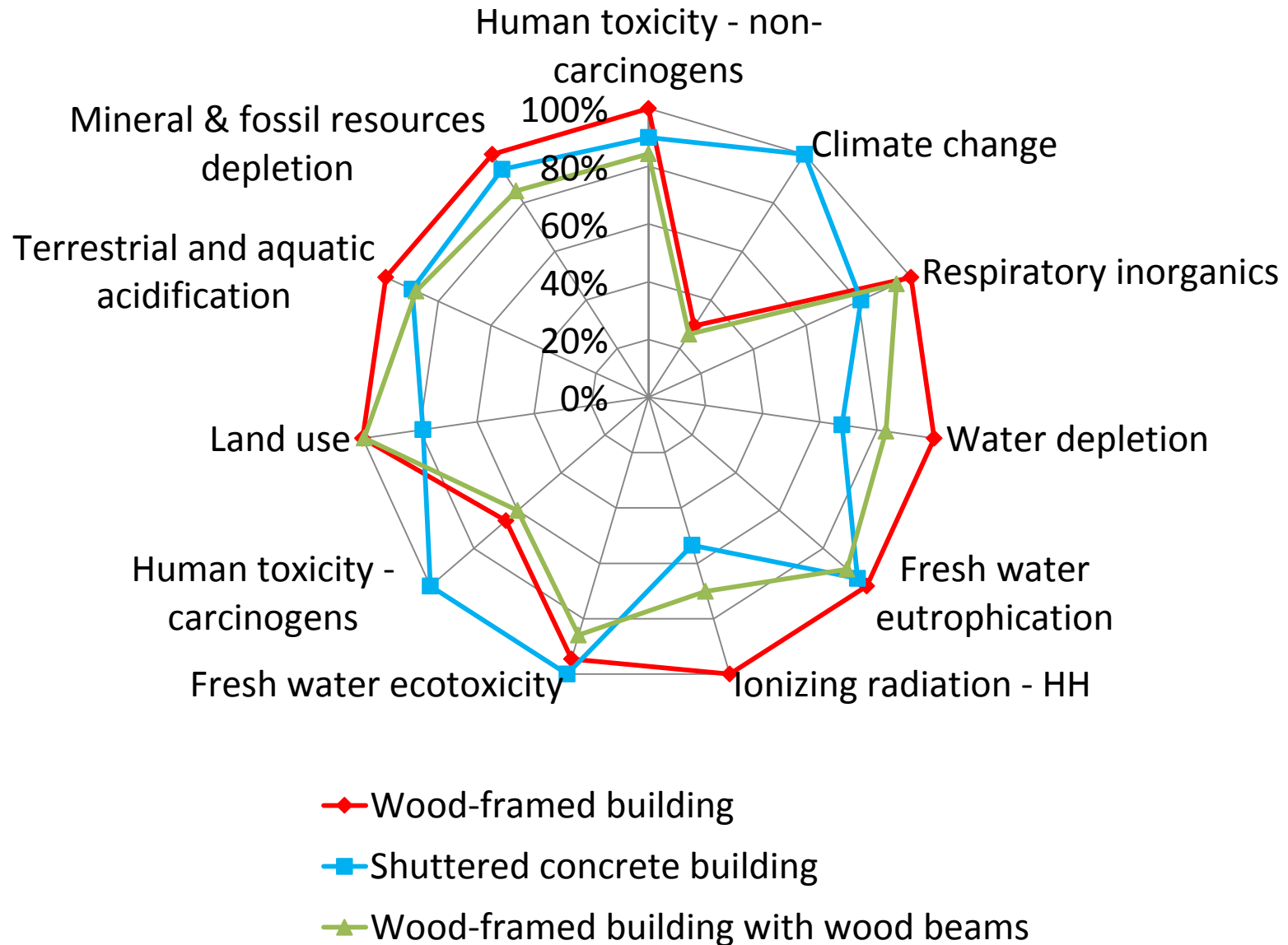


Wood-framed building hot spots analysis





Comparison with a third alternative





Conclusions and perspectives



Study outcomes

- It is of main importance to study the whole system
- Hot spots analysis is a valuable tool for eco-design
- It is of main importance to enlarge the scope of indicators
- Hot spots analysis should be conducted on indicators for which the “a priori” favourite scenario is not the best
- Eco-design is accessible to building professionals at competition stage



Tool for intuitive building eco-design

<http://e-licco.eu>

Thank you