Sustainable development of China's construction industry in the 21st century

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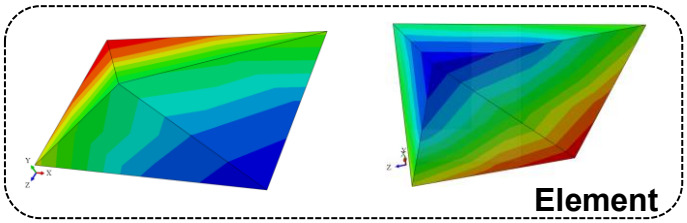
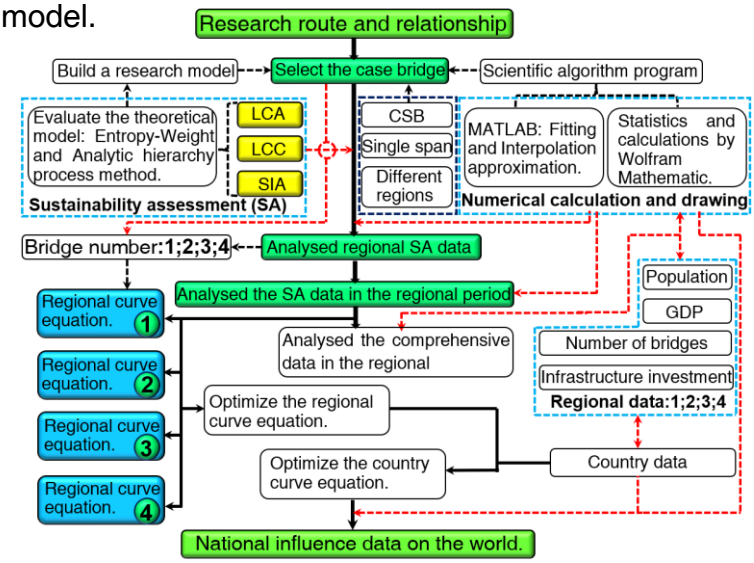


Abstract: The research synthesized data from a comprehensive assessment of the sustainable impact of China's construction industry on the global ecological environment in 100 years through interdisciplinary integration methods, including Advanced Mathematics, Engineering Science, Computer Science, Environmental Management, and Economic Sociology [1-2].

Keywords:
TO=Topology Optimization.
LCA= Life cycle assessment.
SRSW= Structural Response Sensitivity Weight.

Interdisciplinary research

Methods: Description of the research route and model.



Results: Five indicators are developed as evaluation criteria for regional cases.

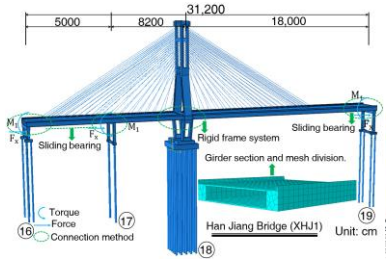


Fig.1. Layout drawing.

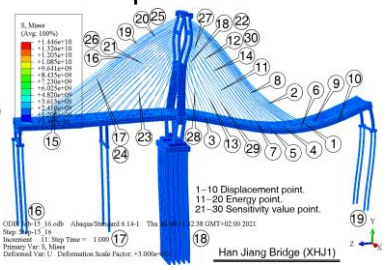


Fig.2. Structural optimization.

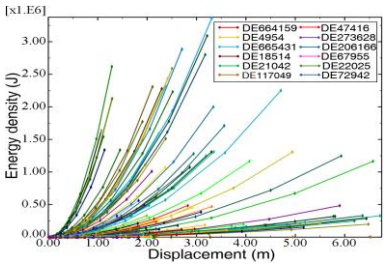


Fig.3. Finite element analysis.

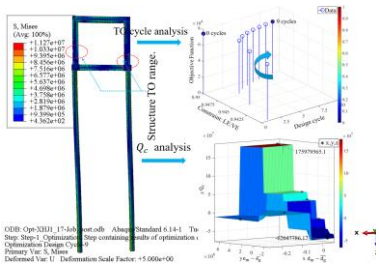


Fig.4. Design of TO.

Research innovation: 1.The research verified the scientific Ty of China's carbon emission target proposed at the United Nations conference from theoretical data and scientific models. 2. The theoretical innovation model SRSW was established in this research to determine more accurately and intuitively the TO conclusion.

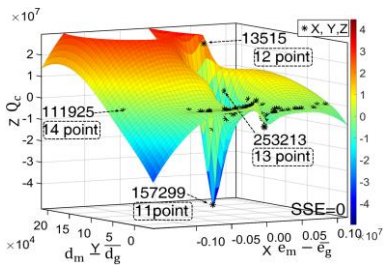


Fig.5. Analysis of SRSW(0#).

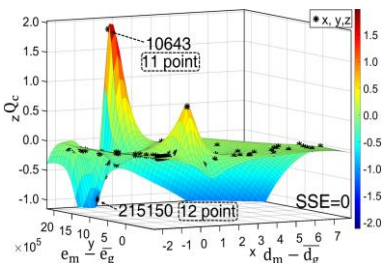


Fig.6. Analysis of SRSW(1#).

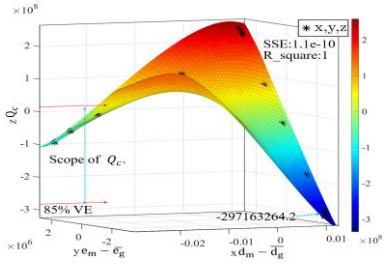


Fig.7. Analysis of SRSW(2#).

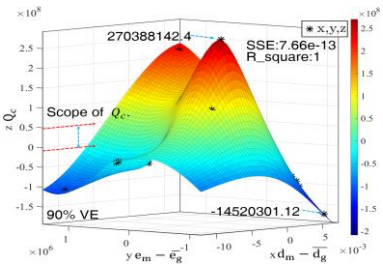


Fig.8. Analysis of SRSW(3#).

Conclusions: China's LCA will reach a peak of 2.73 GT by 2030, and SIA will reach a peak of 4.26 GT by 2048. LCA and SIA will reach a negative peak of – 1.82 GT and – 0.30 GT by 2060.

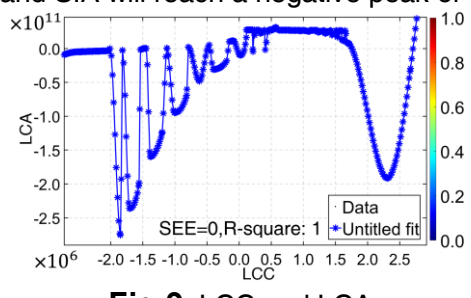


Fig.9. LCC and LCA.

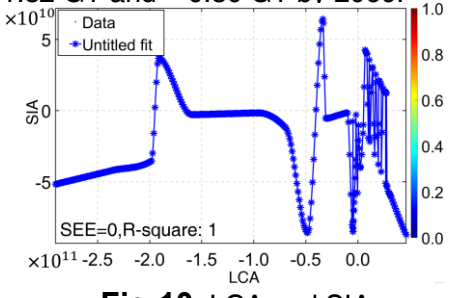


Fig.10. LCA and SIA.

Microstructure → **Macroeconomic Control**

References:
[1] https://doi.org/10.3390/ijerph17165953.
[2] https://doi.org/10.1016/j.istruc.2022.05.047.