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REVIEWER'S REPORT

Manuscript No.: IJAR-57699

Title: META ANALYSIS OF WATER FOOTPRINT OF MAJOR MATERIAL FLOW IN URBAN AREAS.

Recommendation:

Accept as it is ……

Accept after minor revision

Accept after major revision

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity			✓	
Significance			✓	

Reviewer Name: **ANAPANA GOPAL**

Reviewer's Comment for Publication.

General Comments

The manuscript presents a broad review and meta-analysis of water footprint concepts associated with minor material flows in urban areas. The topic is highly relevant considering increasing urban water stress, virtual water trade, and sustainable resource management. The study attempts to integrate conventional urban water balance concepts with hidden or virtual water associated with commodities such as crops, textiles, bioenergy, construction materials, and food products.

The manuscript contains extensive literature compilation and comparative analysis across Indian states, which is commendable. However, the study requires substantial revision in terms of scientific rigor, methodological clarity, statistical interpretation, language quality, organization, and formatting. The manuscript currently reads more like a dissertation or project report than a focused scientific research article.

Content and Originality

The manuscript addresses an important and emerging topic: integration of water footprint assessment into urban material flow analysis. The attempt to link physical and virtual water flows at city level is conceptually valuable and provides a useful perspective for sustainable urban water governance.

Strengths:

Broad coverage of water footprint concepts across multiple sectors.

Comparative state-level analysis of crop water footprints.

Inclusion of both direct and indirect water use.

Integration of Water Footprint Assessment (WFA) and Life Cycle Assessment (LCA) approaches.

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Concerns:

1. The manuscript lacks a clearly defined research hypothesis and objectives.

2. Novel scientific contribution is not strongly articulated.

3. Much of the manuscript is descriptive and literature-based rather than analytical.

4. Several sections summarize known concepts without sufficient critical interpretation.

5. The "meta-analysis" terminology may be inappropriate because standard meta-analysis procedures (effect size estimation, heterogeneity testing, publication bias analysis, etc.) are not followed.

The title may therefore need revision to better reflect the actual scope of the study.

Technical Quality

The manuscript includes numerous equations, comparative tables, graphs, and statistical analyses. The effort toward quantitative assessment is appreciated.

However, several technical issues need attention:

1. Methodology is insufficiently rigorous:

Data selection criteria are unclear.

Inclusion and exclusion criteria for literature sources are not described.

No explanation of sample size, database sources, or screening procedures.

2. Statistical analysis requires improvement:

T-test and Mann–Whitney analyses are mentioned, but assumptions and calculations are poorly explained.

Correlation analysis lacks confidence intervals and significance reporting.

No proper meta-analytic statistical framework is used.

3. Equations require standardization:

Several equations are poorly formatted and difficult to interpret.

Symbols and units are inconsistently defined.

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4. Figures and tables:

Many figures have low readability and require clearer labels and captions.

Some graphs appear descriptive without statistical significance indicators.

5. Units are inconsistent:

m^3/ton, m^3/GJ, L/kg, and other units are mixed throughout the manuscript without standardization.

6. Several claims are not adequately supported with references or quantitative evidence.

Language and Presentation

The manuscript requires minor English language revision. Numerous grammatical, typographical, and stylistic errors are present throughout the text.

Examples include:

Incorrect sentence construction.

Repetition of phrases.

Informal wording.

Inconsistent capitalization and punctuation.

Spacing errors and formatting inconsistencies.

Examples:

"This study is aimed to focus at water footprint…" should be revised for grammar.

"The study also focused on comparison of different states to use water…" is awkwardly structured.

Presentation issues:

Excessive use of long paragraphs.

Inconsistent chapter formatting.

Some figures appear stretched or unclear.

References within text are inconsistently formatted.

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Professional language editing is strongly recommended.

Structure and Organization

The manuscript follows a thesis-style organization:

Introduction

Literature Review

Methodology

Results

While logically arranged, the structure is excessively long and repetitive for a journal article.

minor concerns:

1. The literature review is overly descriptive and occupies a large portion of the manuscript.

2. Results and discussion are not clearly separated.

3. Many sections repeat previously discussed concepts.

4. The manuscript lacks a concise conclusion section summarizing minor findings and policy implications.

5. Flow between sections is sometimes weak.

Suggestions:

Condense the literature review.

Separate results from interpretation/discussion.

Add a dedicated conclusion and future scope section.

Reduce repetitive explanations of water footprint basics.

References and Citations

The manuscript cites a large number of relevant studies related to water footprint assessment, urban metabolism, crop water use, and LCA approaches. This demonstrates substantial literature exploration.

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Strengths:

Inclusion of classical references such as Hoekstra and Allan.

Use of interdisciplinary literature.

Concerns:

1. Citation formatting is inconsistent.

2. Several references appear incomplete or improperly formatted.

3. Some in-text citations lack publication formatting consistency.

4. Certain references are repeated in different styles.

5. Reference style should strictly follow journal guidelines.

More peer-reviewed and recent international studies could strengthen the scientific foundation.

Overall Recommendation

The manuscript addresses an important and relevant topic with potential significance for sustainable urban water management and policy planning. The compilation of data across sectors and states is valuable.

However, the manuscript currently requires extensive revision before it can be considered suitable for publication. minor improvements are needed in:

Scientific focus,

Methodological rigor,

Statistical analysis,

Language quality,

Organization,

Data interpretation,

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Formatting consistency.

The work would benefit greatly from restructuring into a more concise and research-focused manuscript.

Final Decision

minor Revision