

[Check for updates](#)**AUTHORS:**

Lubabalo Luyaba<sup>1,2</sup>

Pilate Moyo<sup>1</sup>

Nonjabulo Mbhele<sup>1</sup>

Mukundi Mochothoane<sup>1</sup>

**AFFILIATIONS:**

<sup>1</sup>Urban and Public Infrastructure Research Initiative (UPIRI), Department of Civil Engineering, University of Cape Town, Cape Town, South Africa

<sup>2</sup>South African Local Government Association, Cape Town, South Africa

**CORRESPONDENCE TO:**

Pilate Moyo

**EMAIL:**

Pilate.Moyo@uct.ac.za

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# Unwilling or unable? A critical reflection on the state of municipal water services, 2019–2024

**Significance:**

The South African Constitution entrusts basic service provision to municipalities. Water and sanitation services are among these basic services. This paper provides a substantiated perspective on the current sub-optimal state of municipal water and sanitation services. Municipal water and sanitation services are considered for the 2019–2024 period using a seven-pillar assessment framework to evaluate whether the status quo is underlain by unwillingness or inability (or both) on the part of municipalities. The analysis shows that there is much room for improvement and identifies inefficiency as a critical priority area for improvement.

**Introduction**

Water and sanitation infrastructure is crucial to national health, economic development and environmental conservation. It generally forms the first line of defence against communicable diseases such as cholera and dysentery. Thus, the current government has often used the motto, “water is life, and sanitation is dignity”. According to the South African Institution of Civil Engineering (SAICE), the current state of water and sanitation infrastructure in South Africa is poor.<sup>1</sup> This situation is expected to deteriorate with increasing urbanisation, thus putting human health and economic development at risk. While the South African government has made efforts to invest in infrastructure, the outcomes generally do not match the investment as reflected in the Auditor General’s reports.<sup>2,3</sup> It is thus critical to have a deeper understanding of some of the underlying causes of the poor condition of South Africa’s water and sanitation services to develop impactful future solutions.

In this Perspective, we examine the performance of municipalities in delivering water and sanitation services by reviewing their outcomes in seven areas as presented below. The approach provides an objective measure of assessing municipalities’ performance using credible data for each of the seven areas. While the results provide the current performance levels of municipalities for water and sanitation services, the analysis can be extended to other municipal services and periods (years).

**Developing a comprehensive assessment framework**

To develop a comprehensive understanding of the status quo of water and sanitation services, we developed a seven-pillar framework evaluated from four perspectives. The seven pillars are: (1) infrastructure planning, (2) infrastructure delivery, (3) infrastructure operations and maintenance, (4) financial health, (5) technical capacity, (6) transversal functionality and (7) an enabling environment. The four perspectives are: municipal (administration), community (the serviced and paying), national government (regulator, enabler and supporter), and independent (objective and outside government). The perspectives (equally weighted) are then aggregated to determine an overall performance. Each perspective is graded based on three levels: good, average and poor. The gradings consider applicable indicators corresponding to the seven pillars (performance areas).

The seven pillars and their subsequent indicators are primarily based on the national Department of Water and Sanitation’s Municipal Strategic Self-Assessment (MuSSA) framework for effective water services management, as shown in Figure 1. Clear and measurable indicators are required to objectively assess each of the seven pillars from the four perspectives. Table 1 presents the indicators corresponding to each performance area (and their data source). This approach was adopted as it leverages an existing government methodology that is widely used by the 144 municipalities that are water services authorities (WSAs) in South Africa.

**Framework results**

This section presents the analysis results obtained using the seven-pillar framework, from the four perspectives: municipal, community, national government and independent.

**Municipal perspective**

The municipal perspective is drawn directly from the MuSSA<sup>4</sup>, which the 144 WSAs undertake annually. The MuSSA consists of five strategic questions across the 18 areas shown in Figure 1 (note that the 18 areas constitute six of the seven pillars used in this framework). The municipalities, therefore, provide 90 (18x5) responses on their vulnerability regarding their effectiveness in providing water and sanitation services. Table 2 summarises the annual self-evaluations of the 144 WSAs from 2019 to 2023 and provides the average performance over the 5 years. Figure 2 shows a map of the 2022 MuSSA performance for each of the 144 WSAs across South Africa.

The top five (most reoccurring) challenges from 2019 to 2024 were<sup>4</sup>: (1) financial asset management, (2) wastewater and environmental compliance, (3) revenue collection, (4) operations and maintenance of infrastructure assets, (5) infrastructure asset management and (tied for fifth) (5) water conservation and water demand management. It



Source: © Department of Water and Sanitation<sup>4</sup>, reproduced with permission.

**Figure 1:** The Municipal Strategic Self-Assessment (MuSSA) framework of the South African Department of Water and Sanitation.

must be noted that there is a lack of acceptable improvement (progression to moderate and low vulnerability) and consistent improvement in the performance of municipalities on a year-to-year basis. While some provinces moved from extreme to high and high to moderate, there was no progression towards low vulnerability. Questions should, therefore, be asked about the responsiveness and efficacy of support provided to municipalities by the national government, as it does not seem to be making a difference from this one perspective.

### Community perspective

The *Local Government Municipal Systems Act*<sup>13</sup> outlines the roles and responsibilities of communities in a municipality. We used the Water Research Commission's (WRC) report, *The Water Services Barometer Study – User Perceptions of the Current Provision of Water Services in South Africa*<sup>14</sup>. The WRC study was undertaken three times – in 2011, 2015 and 2022 – and therefore provides a useful trend analysis over a reasonable period of time. The WRC studies are syndicated and undertaken on OMNIBUS and are area-stratified to be representative.

The studies focus on various issues; for this paper, we extracted the perceptions of communities about: (1) water quality, (2) reliability of water and sanitation services, (3) willingness to pay for water and sanitation services and (4) customer satisfaction. The WRC surveys showed that the urban community's perception of water quality decreased from 88% in 2015 to 78% in 2022, while the urban perception of the reliability of services decreased from 82% in 2015 to 65% in 2022.<sup>14</sup> Only 41% of consumers were paying for water (with only 15% knowing the exact amount).<sup>14</sup> Of the 59% who were not paying, 40% believed the cost was "nothing"; of this, 32% chose not to pay (up from 20% in 2015), indicating a rise in unwillingness to pay.<sup>14</sup> The decrease in reliability is supported by the findings of the SAICE report card<sup>1</sup> and the operations and maintenance challenge identified in the MuSSA<sup>4</sup>. The revenue collection challenges identified in the MuSSA<sup>4</sup> are also corroborated by the community data.

### National government perspective

For the national government perspective of municipal water and sanitation, we considered the Blue Drop Report<sup>9</sup>, the No-Drop Report<sup>10</sup>, the Green Drop Report<sup>11</sup>, and the Auditor General Reports<sup>2,3</sup>. The overall performance is a summation of the results of these four publicly available assessments.

The results were calculated as follows [\*refers to the weighting of each indicator towards the overall average]:

- Blue Drop Report<sup>9</sup> scores (\*30%), where good is 80–100%, average is 50–80% and poor is less than 50%
- No-Drop Report<sup>10</sup> scores (\*30%), where good is a non-revenue water (NRW) of 0–20%, average is a NRW of 20–30% and poor is a NRW > 30%
- Green Drop Report<sup>11</sup> scores (\*30%), where good is 80–100%, average is 50–80% and poor is less than 50%
- Auditor General Report outcomes<sup>2,3</sup> (\*10%), where good is 'clean and unqualified', average is 'qualified' and poor is 'adverse, disclaimer and outstanding'

**Table 3** shows a national perspective consolidated from the four sources. It is clear that municipalities are struggling with wastewater management (Green Drop<sup>11</sup>) and water conservation and demand management (No-Drop<sup>9</sup>), as corroborated by the MuSSA<sup>4</sup> above.

### Independent perspective

The 'independent perspective' relied on two complementary criteria: water and sanitation infrastructure management efficiency<sup>15</sup> and the ability to invest in repairs and maintenance. Efficiency refers to the relationship between inputs (available resources) and outputs (services rendered). High efficiency is achieved if adequate services are delivered within available resources.

**Table 1:** Overview of indicators (assessment criteria) and data sources for each performance area

Performance area (pillar)	Indicators	Data source
1. Infrastructure planning	Water and sanitation services planning	Integrated development plans (IDP) <sup>5-8</sup> , municipal self-assessments (MuSSA) <sup>4</sup> , Drop reports (Blue <sup>9</sup> , Green <sup>10</sup> and No-Drop <sup>11</sup> ), Census 2022 <sup>12</sup>
	Water resource management	
	Water conservation and water demand management	
2. Infrastructure delivery	Water access levels	Division of revenue act (DORA) <sup>6</sup> , MuSSA <sup>4</sup> , Drop reports <sup>9-11</sup> , Census 2022 <sup>12</sup>
	Sanitation access levels	
	Grant expenditure performance	
3. Infrastructure operations and maintenance	Drinking water safety	Annual financial statements (AFS) <sup>6</sup> , MuSSA <sup>4</sup> , Drop reports <sup>9-11</sup> , Census 2022 <sup>12</sup>
	Wastewater / environmental compliance	
	Infrastructure asset management	
	Operations and maintenance of assets	
4. Financial health	Financial asset management	AFS <sup>6</sup> , MuSSA <sup>4</sup> , Drop reports <sup>9-11</sup> , Census 2022 <sup>12</sup> , National Treasury (NT) reports <sup>5-8</sup>
	Revenue collection	
	Financial management	
	Auditor general opinion	
5. Technical capacity	Management skill level (technical)	Drop reports <sup>9-11</sup> , MuSSA <sup>4</sup> , Drop reports <sup>9-11</sup>
	Staff skill level (technical)	
	Technical staff capacity (numbers)	
6. Transversal functionality	Information management	AFS <sup>6</sup> , Drop reports <sup>9-11</sup> , MuSSA <sup>4</sup>
	Organisational performance	
	Water services quality	
	Customer care	
7. Enabling environment	Policy landscape	MuSSA <sup>4</sup> , DORA <sup>5</sup> , AG reports <sup>2-3</sup> , NT reports <sup>5-8</sup>
	Regulatory landscape	
	Responsiveness and efficacy of support to municipalities (timing, quality and quantity)	

The University of Cape Town's Urban and Public Infrastructure Research Initiative (UPIRI) has developed what is called the Municipal Water and Sanitation Infrastructure Management Efficiency (MWaSSIME) Index.<sup>15</sup> The MWaSSIME measures how well a municipality manages its water and sanitation infrastructure compared to an ideal municipality using reported data on parameters such as water losses, water quality, and expenditure on repairs and maintenance.<sup>15</sup> The MWaSSIME Index utilises the Data Envelopment Analysis (DEA). The DEA was selected after considering other non-parametric and parametric methods used to measure efficiency, such as the Free Disposal Hull (FDH), the Stochastic Frontier Approach (SFA) and the Ordinary Least Squares (OLS) method.<sup>14</sup> The DEA assesses the efficiency of municipalities by analysing the relationships between input (resources) and output (service delivery).<sup>16</sup> To ensure a useful comparison, the 144 WSAs were clustered by municipal category as follows: Metros (A), Secondary Cities (B1), Large Towns (B2), Small Towns (B3), Rural Small Towns (B4) and Rural Districts (C2), as shown in Figure 3. The 144 WSAs are constituted of 8 Metros (A), 115 Locals (B) and 21 Districts (C2).

As shown in Figure 3, all South African WSAs are functioning below 50% of the ideal in regard to their efficiency in the management of water and

sanitation infrastructure. The average level of infrastructure management efficiency in the Metros decreased from 33% in 2018 to 26% in 2023, and all municipalities decreased on average from 2018 to 2023. It is interesting to note that Secondary Cities consistently outperformed the Metros from 2018 to 2023. A causal link for further investigation would be the impact of political (Council) stability on infrastructure management efficiency.

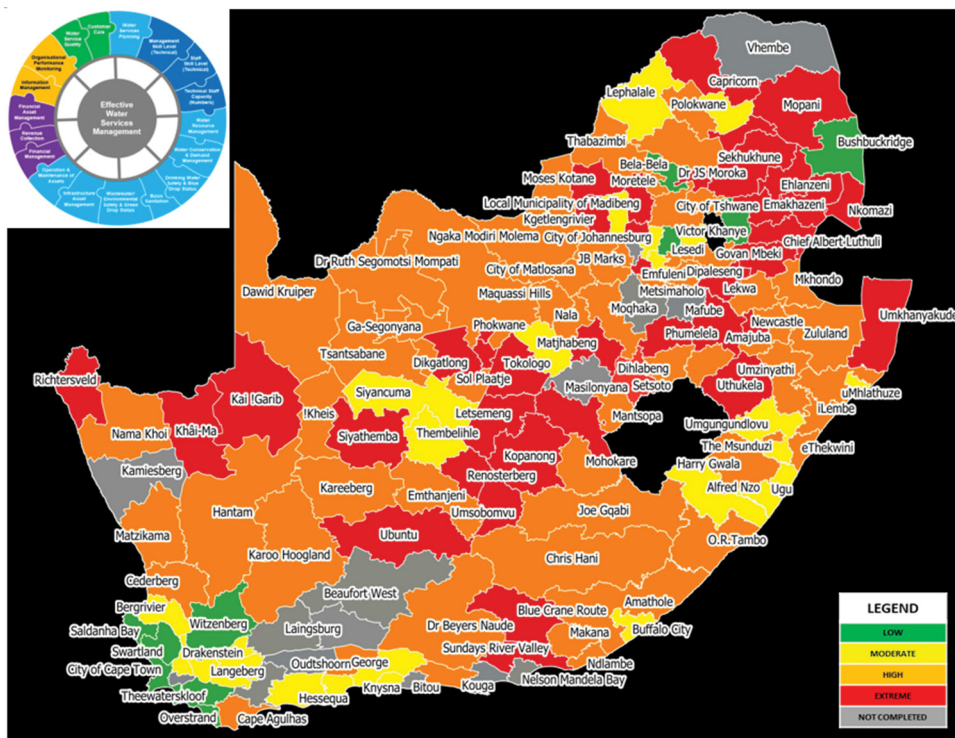
The second independent analysis considers the ability to invest in infrastructure repair and maintenance. One of the root causes of poor service delivery is underinvestment in existing infrastructure, as evidenced by low expenditure on repair and maintenance, which generally results from:

- a systemic shortage of funding in certain municipalities (an inability to invest in operations and maintenance); and/ or
- a failure (unwillingness) to spend on existing infrastructure, even when some funding is available.

In the first case (inability), municipalities, despite their best efforts, cannot generate enough money to invest in the upkeep of existing infrastructure. This is a municipal finance question as it speaks to municipal budgets,

Table 2: A 5-year overview of municipal vulnerability from a municipal perspective <sup>4</sup>

Province	Municipal self-assessed vulnerability per year					Average
	2019	2020	2021	2022	2023	
Eastern Cape	High	High	High	High	High	High
Free State	Extreme	Extreme	Extreme	Extreme	Extreme	Extreme
Gauteng	High	High	High	High	High	High
KwaZulu-Natal	High	High	High	High	High	High
Limpopo	High	High	High	High	High	High
Mpumalanga	High	High	High	High	High	High
Northern Cape	Extreme	Extreme	Extreme	Extreme	Extreme	Extreme
North West	High	High	High	High	High	High
Western Cape	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Average	High	High	High	High	High	High



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Figure 2: A national overview of the 2022 MuSSA results.<sup>4</sup>

expenditure and financial viability, and ultimately raises questions on the local government equitable share and the division of revenue and, most fundamentally, the assumptions that underpin the funding model to local government; all of which are the purview of National Treasury.

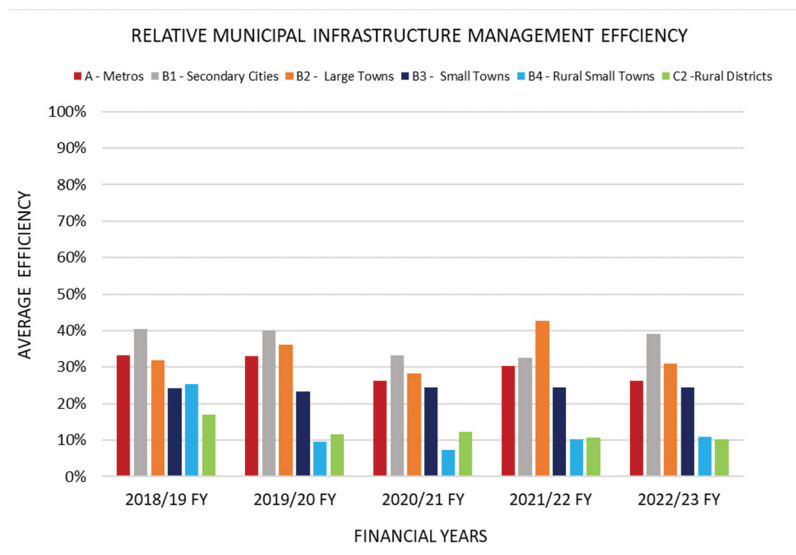
To determine which municipalities do not have enough financial resources to maintain existing infrastructure, we use a simplified formula that compares total available revenue to the amount needed to repair

and maintain existing infrastructure effectively. The assumption is that the repairs and maintenance should not exceed 25% of a municipality's revenue and that 8% of the value of property, plant and equipment (PPE) should be set aside for repairs and maintenance.<sup>5</sup> This translates to the criterion shown by Equation 1:

$$\frac{8\% \text{ of PPE}}{\text{Total Potential Revenue}} \leq 25\% \quad \text{Equation 1}$$

**Table 3:** Summary overview of municipal performance from a national perspective<sup>2,9-11</sup>

Province	Green Drop	Blue Drop	No Drop	Auditor General outcome	Average
Eastern Cape	Poor	Average	Poor	Average	Poor
Free State	Poor	Poor	Poor	Poor	Poor
Gauteng	Average	Good	Poor	Good	Average
KwaZulu-Natal	Poor	Average	Poor	Good	Average
Limpopo	Poor	Average	Poor	Average	Poor
Mpumalanga	Poor	Average	Poor	Average	Poor
Northern Cape	Poor	Average	Poor	Average	Poor
North West	Poor	Poor	Poor	Poor	Poor
Western Cape	Average	Good	Average	Good	Average
<b>Average</b>	Poor	Average	Poor	Average	Poor



**Figure 3:** Relative infrastructure management efficiency of water services authorities over a 5-year period, 2018/2019 to 2022/2023.

**Model assumptions:**

- a) Audited data provided in the municipal annual financial statements are accurate and true as legally expected in the *Municipal Finance Management Act (MFMA)*.<sup>17</sup>
- b) The 8% requirement for repairs and maintenance as per National Treasury Circular 71<sup>7</sup> of 2014 is the minimum amount required to maintain existing infrastructure effectively.
- c) All existing infrastructure is ageing and included in PPE. The MFMA (Section 63) enjoins municipalities to maintain all the infrastructure (assets).
- d) Anything above 25% of total revenue is unreasonable as municipalities have other functions to perform.

By applying the criterion, the following results are obtained: 40% (58 of 144) of all WSAs are identified as unable to maintain existing assets, with 71% (15 of the 21) of Rural Districts (C2) appearing on this list, 44% (4 of 9) of Rural Small Towns (B4) and 40% (27 of 68) of Small Towns (B3). This finding supports the view that a lack of financial resources makes the efficient management of water and sanitation infrastructure extremely unlikely, as it takes revenue (equitable share and own revenue) to look after existing infrastructure. This again points to an environment

that is not enabling, especially for more grant-reliant municipalities. This group of municipalities must be treated differently when considering support and solutions.

**A summary overview of performance**

The Constitution recognises the three spheres of government as distinctive, interdependent and interrelated.<sup>18</sup> The three spheres are expected to work as one in delivering services. Table 4 summarises how the government has performed on the Medium-Term Strategic Framework (MTSF) for 2019–2024.<sup>19</sup> The government has set these targets, and performance is generally poor.

While the performance is poor, one can still appreciate that the targets were appropriate. The progress made in the sub-activities indicates efforts made by the sector department (the national Department of Water and Sanitation (DWS)), and time may be required to see if the positive momentum translates into tangible and lasting change.

Table 5 summarises the state of municipal water and sanitation services across the seven pillars in the 2019–2024 period. While the picture looks very dire, there is ample opportunity for change. What will be key is selecting the appropriate priorities and moving as one. From the analysis above, it should be abundantly clear that there is no silver bullet for municipal water and sanitation service delivery.

**Table 4:** Government's Medium-Term Strategic Framework (2019–2024) target achievement<sup>19</sup>

No	Target	Achieved (Yes/No)	Activities	Achieved
1	100% of water services authorities (WSAs) have acceptable MuSSA scores	No	Annual assessment of all WSAs	No
			WSAs being supported to develop and implement	Partial
2	90% have access to sanitation and hygiene	No	Development and implementation of the National Sanitation Integrated Plan	Partial
			Eradication of the bucket system	No
3	95% reliability of water services	No	Refurbishment projects to address functionality of reliability implementation plans	Partial
			Blue Drop assessment and compliance	Partial
			Non-compliance monitoring	Yes
			District Municipal 5-year reliability plans	Partial
4	100% wastewater treatment works functionality	No	Bulk projects implementation	Partial
			Green Drop assessments and compliance	Partial
			Wastewater system monitoring against regulatory standards	Yes

**Table 5:** A summary overview of performance from 2019 to 2024

Performance area	Municipal perspective	Community perspective	National government perspective	Independent perspective	Overall performance
Infrastructure planning	Good	Average	Average	Average	Average
Infrastructure delivery	Good	Average	Average	Poor	Average
Infrastructure operations and maintenance	Poor	Poor	Poor	Poor	Poor
Financial health	Poor	Good	Average	Poor	Average
Technical capacity	Poor	Poor	Poor	Average	Poor
Transversal functionality	Average	Poor	Poor	Average	Poor
Enabling environment	Poor	Poor	Poor	Poor	Poor

## Conclusions and recommendations

Due to the impact of water and sanitation services on societal well-being, economic development and the natural environment, these services must be provided efficiently and effectively. The results from the analysis suggest that a lot more work is required if South Africa is to say that the majority of the population receives reliable and sustainable basic services. The high-level conclusions and recommendations for each performance area (pillar) are:

**Infrastructure planning** – Mechanisms to measure the efficacy of municipal water and sanitation infrastructure planning are required. This area is not meaningfully assessed through any intergovernmental mechanisms, even though we all recognise the importance of infrastructure planning.

**Infrastructure delivery** – Inefficiency in infrastructure delivery needs to be urgently addressed; between 2011 and 2022, access to water only increased by 0.1% (91.2% to 91.3%) and sanitation by 11.5% (71.3% to 82.3%), despite an investment of nearly ZAR20 billion per annum into municipal water and sanitation.<sup>5,12</sup> The government should not only focus on expenditure monitoring for conditional infrastructure grants but also implement a more holistic approach, as Ndalasi et al.<sup>20</sup> argued.

**Infrastructure operations and maintenance** – This is a neglected area that needs urgent attention from both a financial and skills perspective.

The funding model and the extent to which it allows municipalities to balance between CAPEX (capital expenditure) and OPEX (operational expenditure) should also be closely examined.

**Financial health** – This area is complex, as there are problems with the funding model, municipal financial management<sup>2</sup>, and end-user willingness to pay. These must be attended to simultaneously, but more money alone is not the answer.

**Technical capacity** – Much has been said and written about skills in municipalities, but these commentaries seldom appreciate that the problem is three-pronged: attracting, retaining and affording. Alternative models must be explored to address the problem on all three fronts.

**Transversal functionality** – While seen as ‘softer’ issues, information management, organisational performance and customer care require attention to improve the quality of water services. Customer knowledge of their obligations also warrants a closer investigation across all Living Standard Measures (LSMs).<sup>17</sup>

**Enabling environment** – Care must be taken to strengthen the level and quality of monitoring and evaluation of provincial and national governments, as their shortcomings inevitably affect municipalities. More accountability for supporting and strengthening the capacity of municipalities is required. The MuSSA results<sup>4</sup> suggest that the quality of support provided to municipalities is ineffective.



From the analysis, we conclude that municipalities are both unwilling and unable to deliver quality water and sanitation services. On the one hand, their administration and infrastructure management is poor; on the other hand, they are constrained by inadequate support from the other spheres of government and a critical shortage of funds (for services rendered and from the fiscus). We argue that existing legislative and administrative processes can address some of these challenges.

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## Data availability

The data supporting the results of this study are available upon request to the corresponding author.

## Declarations

We have no competing interests to declare. We have no AI or LLM use to declare. All authors read and approved the final version.

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