Comparative Analysis of Water Sustainability Indices: A Systematic Review

Supplementary Materials

Table S1. Variables' values and their count

Variable	Variables' values and their count ()
1. Addressed SDGs (directly and indirectly)	SDG1 (1), SDG2(5), SDG3(2), SDG5 (0), SDG6 (62), SDG7 (2), SDG8 (0), SDG9 (0), SDG10 (0), SDG11 (1), SDG12 (1), SDG13 (6), SDG14 (2), SDG15(1), SDG16 (0), SDG17 (0)
2. Input data time frame	Historical (0), Historical to present (17), Present (39), Historical to future (4), Current to future (0), Future (forecast) (0), Dummy data (2)
3. Input data domain	Social (47), Economic (42), Environmental (60), Institutional (37), Built/Infrastructure (37)
4. Water data as the input	Water quality (13), Water quantity/availability (11), Water quality and quantity/availability (36), No water-related parameters (2)
5. Number of variables (raw data or parameters) used as the input	0-10 (8), 11-20 (36), 21-30 (7), 31-40 (2), 41-50 (2), 51-60 (3), 61 and above (4)
6. Data sources	Primary data (3), Secondary data (52), Primary and secondary data (7)
7. Geographical scale/area	Not specified (0), Rural (5), Urban (6), Regional/Watershed (44), National (6), Transboundary or global (0), Institutional/business (1)
8. Projecting future water sustainability	Yes (5), No (57)
9. Application of the indicator	General sustainability of water resources management (30), River water basin management (1), Water supply (7), Agriculture (7), Wastewater management (2), Water quality (3), Regional sustainable development (1), Project evaluation (1), Water resource conservation (1), Energy production (3), Watershed/nature conservation (4), Flood management (1), Water security (1)

Table S2. Indices listed in each reviewed publication.
Ordinal numbers of publications in cluster analysis (for the reference please refer to the reference list in the main text)

Publication and the index	Reference
(Juwana et al., 2009) West Java water sustainability index (WJWS)	[64]
(Juwana et al., 2011) West Java water sustainability index (WJWS)	[40]
(Juwana et al., 2016) West Java water sustainability index (WJWS)	[65]
(Juwana et al., 2010) West Java water sustainability index (WJWS)	[39]
(Juwana et al., 2010) West Java water sustainability index (WJWS)	[66]
(Maynard et al., 2017) Sustainability index	[62]
(Elfithri et al., 2018) Watershed sustainability index (WSI)	[37]
(Mititelu-lonus, 2017) Watershed sustainability index (WSI)	[63]
(Jahanshahl & Kerachian, 2019) Evidential reasoning-based sustainability index for water resources management	[67]
(Attari & Mojahedi, 2009) Canadian water sustainability index (CWSI)	[43]
(de Castro Pardo et al., 2023) Fuzzy-DEA water sustainability index	[68]
(Biswas et al., 2022) Water sustainability index	[69]
(Al-Mohammed, 2023) Canadian water sustainability index	[42]
(Zamanzad-Ghavidelet al., 2021) Hydro-social-economic-environmental sustainability index (HSEESI)	[70]
(Alvarado et al., 2023) West Java water sustainability index (WJWSI)	[71]
(de Castro-Pardo et al., 2022) Water sustainability indicator based on a multi-reference methodology (WSI-MR)	[72]
(ZamanZad-Ghavidel et al. 2021) Hydro-socio-economic index (HSEI)	[73]
(Kang et al., 2005) Water resources sustainability index (WRSI)	[74]
(da Silva et al., 2022) Water resources sustainability index (WRSI)	[75]
(Abdi-Dehkordi et al., 2021) Combined sustainable development index	[76]
(Da Silva et al., 2021) Water sustainability index (SI)	[38]
(Mvongo et al., 2022) Water service sustainability index (WSSI)	[77]
(Crispim & Fernandes, 2022) Rural water sustainability index (RWSI)	[78]
(Mvongo et al., 2021) Water service sustainability index (WSSD)	[79]
(Vieira et al., 2018) Water resources sustainability index	[80]
(Hernández-Bedolla et al., 2017) Sustainability index	[61]
(Sodhi and Yatskovskaya, 2014) Sustainability index	[58]
(Duarte et al, 2009) Global index of service quality	[81]
(Cánovas-Molina A et al., 2023) Irrigation sustainability index	[82]
(Sandoval-Solis et al., 2011) Sustainability index for water resources planning and management	[47]
(Odjegba et al., 2020) Sustainability indices	[41]
(Mvongo et al., 2023) Water service sustainability index (WWSSI)	[83]

(Bi, 1996) Water quality indices: quality index, a hazard index and a risk index	[84]
(Finco et al., 2022) Combining precision viticulture technologies and economic indices with CWSI	[85]
(Forouzani & Karami et al., 2011) Agricultural water poverty index (AWPI)	[86]
(Khan et al., 2022) Crop water stress index (CWSI)	[45]
(Kristiana et al., 2011) Index of sustainable functionality (ISF)	[87]
(el Behairy et al., 2021) Irrigation water quality index	[88]
(Cho et al., 2023) Korean water quality indices	[89]
(Khadija et al., 2021) Heavy metal pollution indices	[90]
(Duc et al., 2023) Weighted arithmetic water quality index (WAWQI)	[91]
(Derdour et al., 2022) Water quality indexes	[92]
(Najar & Persson, 2021) Sustainability Index	[57]
(Alexakis et al., 2021) Dpsir model linked with water quality indices	[93]
(Azmanajaya et al., 2020) Multidimensional sustainability index	[49]
(da Silva et al., 2020) River basin water sustainability index (RBWSI)	[15]
(Maio lo & Pantusa, 2019) Sustainable water management index, SWaM_index	[94]
(De Carvalho et al., 2009) Sustainability index for integrated urban water management (SIUWM)	[48]
(Srdjevic & Srdjevic, 2017) Sustainability index	[50]
(Malkina-Pykh & Pykh, 2001) Water resilience index (WRI)	[51]
(Kilkis, 2019) Sustainable development of energy, water and environment systems (SDEWES)	[95]
(Kilkis, 2018) Sustainable development of energy, water and environment systems (SDEWES)	[96]
(Cervantes-Jiménez et al., 2020) Water management sustainability	[97]
(Hirai, et al., 2020) Group maturity index (Gmi)	[44]
(Arcoverde et al., 2023) Collaborative index (SDG index)	[52]
(Gal et al., 2017) Kinneret sustainability index (KSI)	[53]
(Naubi et al., 2017) Watershed sustainability index (WSI)	[55]
(Sudha et al., 2013) Water bodies protection index (WBPI)	[54]
(Cai et al., 2021) SDG 6 index (SDG6)	[46]
(Kumar et al., 2022) Sustainability index (SI)	[59]
(Benassai et al., 2011) Sustainability index	[60]
(Leones et al., 2023) Water poverty index (WPI)	[56]

S.M.1. Full list of the reviewed papers

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