

Abbreviations and symbols

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| ABS | American Bureau of Shipping |
| AD | Anaerobic Digestion |
| ADB | Asian Development Bank |
| AGCA | Associated General Contractors of America |
| AIT | Asian Institute of Technology |
| ANSI | American National Standards Institute |
| ApT | Appropriate Technology |
| ARSO | African Organization for Standardization |
| AS | Standards Australia |
| ASAL | Arid and Semi-arid Lands |
| ASCE | American Society of Civil Engineers |
| ASHRAE | American Society of Heating, Refrigerating and Air Conditioning Engineers |
| ASTM | American Society for Testing Materials |
| AWE | Aquaculture-Wetland Ecosystem |
| AWF | Alliance for Water Efficiency |
| BaB | Biomimicry and Biophilia |
| BGC | Bio-Geo-Chemical |
| BMGF | Bill & Melinda Gates Foundation |
| BOD | Biochemical Oxygen Demand |
| BoP | Base-of-the-Pyramid |
| BPDST | Biogas Project For Domestic Sewage Treatment |
| BPL | Below Poverty Line |
| BSI | British Standards Institution |

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|----------------|---|
| CalTech | California Institute of Technology, USA |
| CAWST | Centre for Affordable Water and Sanitation Technology |
| CBOs | Community Based Organizations |
| CCTV | Closed Circuit Television |
| CEAMA | Morelos State Water and Environmental Commission |
| CEN | Comité Européen de Normalisation (European Committee for Standardization) |
| CHP | Combined Heat and Power Generation |
| CiM | Continuous improvement |
| CLTS | Community Led-Total Sanitation |
| CoCT | City of Cape Town |
| ConSan | Conventional Sanitation |
| COPANT | Pan American Standards Commission |
| CPDA | Clay Pipe Development Association |
| CRSP | Central Rural Sanitation Programme |
| CSF | Centralized Sanitation Facilities |
| CSIR | Council for Scientific and Industrial Research |
| CSO | Combined Sewer Overflow |
| CSTEP | Center for Study of Science, Technology and Policy |
| CWTRC | California Wastewater Training & Research Center |
| DAF | Dissolved Air Flotation |
| DALY | Disability Adjusted Life Year |
| DBD | Demand-Based Designs |
| DCS | Distributed Centralized Systems |
| DeBoP | Design for the Base-of-the-Pyramid |
| DeN | Design for Nature |
| DeRaR | Design For Recovery And Reuse |
| DeSaP | Design for Service and Products |
| DESAR | Decentralization Sanitation And Reuse |
| DFID | Department for International Development |
| DGTSS | Domestic Greywater Treatment Systems |
| DOHWA | Department of Health Western Australia |
| DSF | Decentralized Sanitation Facilities |
| DSF | Design For Service Framework |
| DPR | Direct Potable Reuse |
| DWA | German Association for Water, Wastewater and Waste |
| DWAF | Department of Water Affairs and Forestry, Pretoria, South Africa |
| DWWTS | Domestic Wastewater Treatment Systems |
| EcoSan | Ecological Sanitation |
| EDIE | Environmental Data Interactive Exchange |

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| EFP | Excreta-Fertilizer Products |
| EIDT | Existing Improved Design Technology |
| ELI | Environmental Law Institute |
| EMF | Ellen MacArthur Foundation |
| EU | European Union |
| FaST | Functionalism and System Theory |
| FLT | Fresh Life Toilets |
| FNSS | Formal National Sanitation Standards |
| FPG | Fit-for-Purpose Governance |
| FS | Faecal Sludge |
| FSM | Faecal Sludge Management |
| FSS | Formal Sanitation Standards |
| FWFD | Faecal Waste Flow Diagram |
| FWS | Free Water Surface |
| GDP | Gross Domestic Products |
| GIS | Geographic Information System |
| GLASS | Global Assessment and Analysis of Sanitation and Water |
| GNP | Gross National Product |
| GoF | Governance Function |
| GoI | Government of India |
| GPS | Geographic Positioning System |
| GTZ | Deutsche Gesellschaft für Technische Zusammenarbeit |
| HES | Health Education Service |
| HET | High Efficiency Toilets |
| HS | Hybridized solutions |
| HTC | Hydrothermal Carbonization |
| IAs | Institutional Arrangements |
| IDWSSD | International Drinking Water Supply and Sanitation Decade |
| IFSVC | Integrated Functional Sanitation Service Chain |
| IMA | Institute of Management Accountants |
| IPR | Indirect Potable Reuse |
| ISEAL | International Social and Environmental Accreditation and Labelling |
| ISO | International Organization for Standardization |
| ISS | Informal Sanitation Standards |
| IWA | International Water Association |
| JECES | Japan Education Center of Environmental Sanitation |
| JMP | Joint Monitoring Programme |
| JSWA | Japan Sewage Works Association |
| KaS | Knowledge and Skills |

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| LCA | Lifecycle Assessment |
| LCCA | LifeCycle Costs Approach |
| LIXIL | Link to Good Living |
| LoSWaS | Local Scale Wastewater Services |
| MDGs | Millennium Development Goals |
| MFA | Material Flow Analysis |
| MINALOC | Ministry of Local Government, Rwanda |
| MINECOFIN | Ministry of Finance and Economic Planning, Rwanda |
| MINEDUC | Ministry of Education, Rwanda |
| MININFRA | Ministry of Infrastructure, Rwanda |
| MINISANTE | Ministry of Health, Rwanda |
| MLIT | Ministry of Land, Infrastructure, Transport and Tourism, Japan |
| MMA | Modernized Mixtures Approach |
| MOA | Ministry of Agriculture, China |
| MOE | Ministry of the Environment, Japan |
| NDHS | Nigeria Demographic and Health Survey |
| NEWEL | Nutrients-Energy-Water-Environment-Land |
| NGO | Non-Governmental Organization |
| NISER | Nigerian Institute of Social and Economic Research |
| NoDT | Nouveau Design Technology |
| NOWRA | National Onsite Wastewater Recycling Association |
| NSBs | National Standard Bodies |
| NSF | National Sanitation Foundation International |
| NSF | National Science Foundation |
| NToB | No-Transfer-of-Burden |
| NZS | New Zealand Standards |
| OD | Open Defecation |
| ODF | Open Defecation Free |
| OECD | Organisation of Economic Cooperation and Development |
| OFWAT | Office of Water Services |
| OHS | Occupational Health And Safety |
| ORs | Operational Responsibilities |
| OSS | On-site Sanitation Systems |
| OWTS | On-site Wastewater Treatment Systems |
| PaP | Participation and Partnership |
| PaS | Place and Scale |
| PASC | Pacific Area Standards Congress |
| PDSS | President Deputy of Strategic Supervision |
| PLUM | Passive Latrine Use Monitor |

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| PSC | Psycho-Socio-Cultural |
| PSEP | Psycho-Socio-Ecophilia |
| PSS | Public Sanitation Service |
| RA | Rural Agriculture |
| RaSR | Recycling and Safe Reuse |
| RBP | Resource-based Paradigm |
| RD | Rural Development |
| RDDT | Regenerative Development and Design Theory |
| ReDT | Restorative Design Tech |
| ReGenSan | Regenerative Sanitation |
| ReGenSanC | Regenerative Sanitation Concept |
| ReGenSanP | Regenerative Sanitation Paradigm |
| ReGenSanT | Regenerative Sanitation Theory |
| ReS | Resource SubSystem |
| RFID | Radio Frequency Identification Technology (RFID) |
| RoDF | Rehabilitation of Dysfunctional Facilities |
| ROS | Resource-Oriented Sanitation |
| RRR | Resource Recovery and Reuse |
| SABS | South African Bureau of Standards |
| SaG | Sanitation Governance |
| SaPs | Sanitation Paradigms |
| SARSO | South Asian Regional Standards Organization |
| SC | Service Chain |
| SCF | Sanitation Conceptual Framework |
| SCR | Struvite Crystallizer Reactor |
| SD | Sustainable Development |
| SDC | Swiss Agency for Development and Cooperation |
| SDE | Sanitation-Derived Energy |
| SDO | Standard Development Organizations |
| SDFs | Sanitation-Derived Fertilizers |
| SDG | Sustainable Development Goals |
| SDNs | Sanitation-Derived Nutrients |
| SDPs | Sanitation-Derived Products |
| SE | Socio-Economic |
| SEI | Stockholm Environment Institute |
| SER | Society for Ecological Restoration |
| SES | Social-Ecological SubSystem |
| SF | Subsurface Flow |
| SFD | Shit Flow Diagram |

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| SHI | Systemic Holistic Integration |
| SIs | Sanitation Infrastructure Standards |
| SIS | Sanitation Infrastructure Standardization |
| SLTS | School-Led Total Sanitation |
| SMEs | Sanitation Management Entities |
| SMS | Short Message Service |
| SON | Standards Organisation of Nigeria |
| SS | Sewage Sludge |
| SSA | Sub-Saharan Africa |
| SSC | Sanitation Service Chain |
| SSC-RaMs | Sanitation Service Chain Raw Materials |
| SSD | Source Separation And Decentralization |
| SSDC | Sanitation Service Delivery Chain |
| SSF | Satellite Sanitation Facilities |
| SSL | Sanitation Service Ladder |
| SOM | Soil Organic Matter |
| STE | Socio-Techno-Ecological |
| STED | Septic Tank Effluent Drainage |
| STR | Social-Technical Regimes |
| SuSan | Sustainable Sanitation |
| SuSanA | Sustainable Sanitation Alliance |
| SVC | Sanitation Value Chain |
| SVCA | Sanitation Value Chain Analysis |
| SWA | Sanitation and Water for All |
| TBC | Toilet Board Coalition |
| TeS | Technology SubSystem |
| TISI | Thai Industrial Standards Institute |
| TOP | Top-of-the-Pyramid |
| TSC | Total Sanitation Campaign |
| UD | Urine Diversion |
| UDCT | Urine-Diversion-Composting-Toilet |
| UDDT | Urine-Diversion Dry Toilets |
| UDT | Urine-Diverting Toilets |
| UF/RO | Ultrafiltration/Reverse Osmosis |
| UN | United Nations |
| UNCED | United Nations Conference on Environment and Development |
| UNDP | United Nations Development Programme |
| UN-Water | United Nations Water |
| UNESC | United Nations Economic and Social Council |

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|------------------|---|
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNGA | United Nations General Assembly |
| UNHRC | United Nations Human Rights Council |
| UNICEF | United Nations Children Fund |
| UR | Urban Regeneration |
| USAID | United States Agency for International Development |
| USDE | United States Department of Energy |
| USDOE | U.S. Department of Energy |
| USEPA | United States Environmental Protection Agency |
| USLG | Urban Sustainability Learning Group |
| UWWTD | Urban Wastewater Treatment Directives |
| VC | Value Chain |
| VC | Vacuum Closet |
| VF | Vertical-flow |
| VIPs | Ventilated Improved Pits |
| WASAC | Water and Sanitation Corporation, Rwanda |
| WCED | World Commission on Environment and Development |
| WCT | Waterless Composting Toilet |
| WECD | World Commission on Environment and Development |
| WEDC | Water, Engineering and Development Centre |
| WEF | Water and Environment Federation |
| WERF | Water Environment Research Foundation |
| WE&RF | Water Environment & Reuse Foundation |
| WHO | World Health Organization |
| WSDHWMP | Washington State Department of Health Wastewater Management Program |
| WSP | Water and Sanitation Program |
| WSSD | World Summit on Sustainable Development |
| WWAP | United Nations World Water Assessment Programme |
| WWPT | Wastewater Treatment Plants |