# Costed Road Map of Water, Sanitation and Hygiene (WASH) in healthcare facilities (HCFs) of I.R. Iran

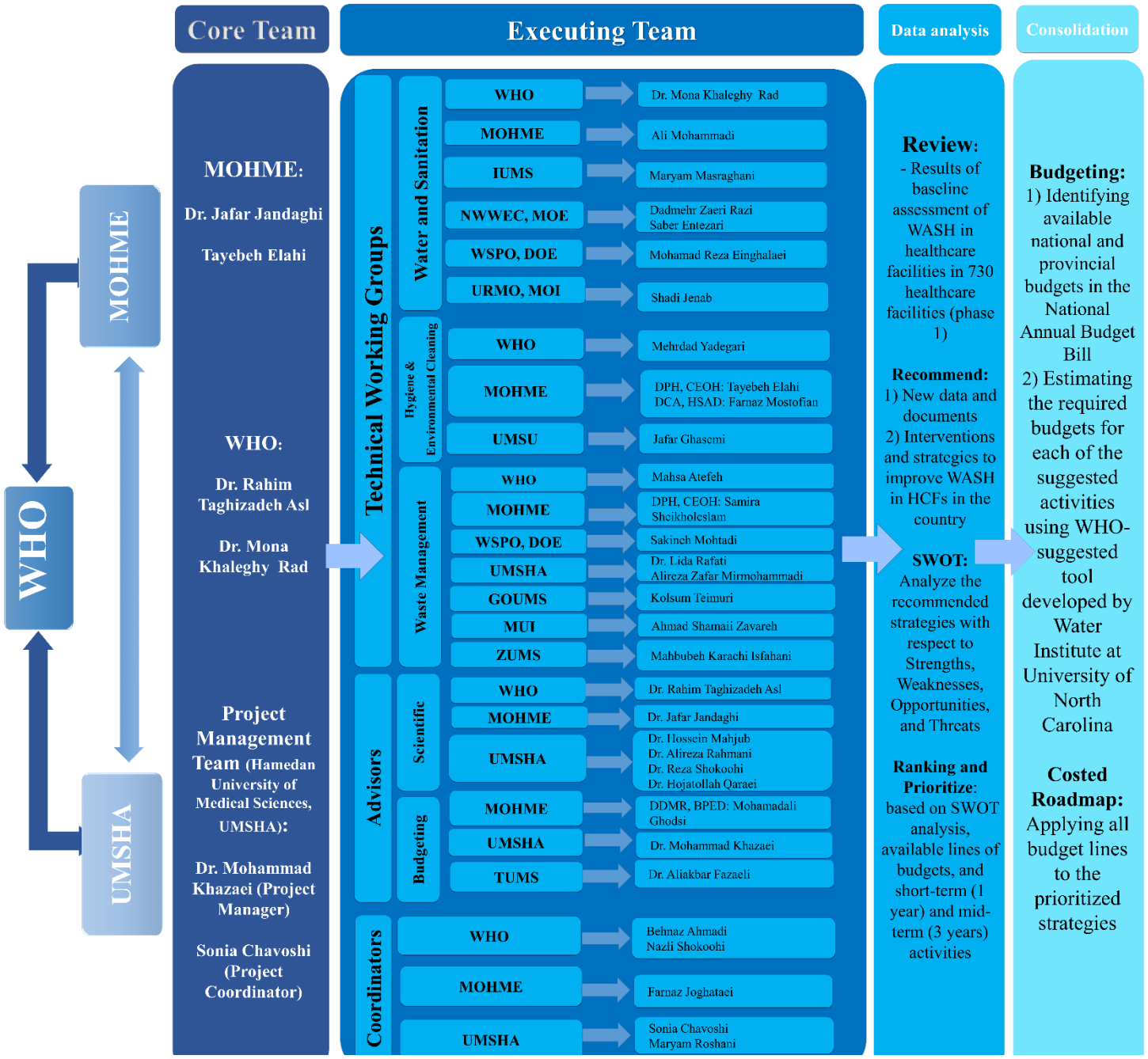
## Final Report

**April. 2023**

# Contents

## Funding

**This project was founded by WHO/CEHA, under supervision of Iranian WHO/EMRO office and was technical assisted by MOHME/CEOH/HAP.**




**MOHME**: Ministry of Health and Medical Education

**IUMS**: Iran University of Medical Sciences

**BPED**: Budget and Performance Evaluation Department)

**URMO**: Urban and Rural Municipalities Organization

**HSAD**: Hospital Supervision and Accreditation department

**DDMR**: Deputy of Development of Management and Resources

**DCA**: Deputy of Curative Affairs

**NWWEC**: National water and wastewater engineering company

**DOE**: Department of Environment

**MUI**: Isfahan University of Medical Sciences

**ZUMS**: Zahedan University of Medical Sciences

**MOI**: Ministry of Interior

**DPH**: Deputy of Public Health

**CEOH**: Center for Environmental and Occupational Health

**UMSU**: Urumiyeh University of Medical Sciences

**MOE**: Ministry of Energy

**UMSHA**: Hamadan University of Medical Sciences

**GOUMS**: Golestan University of Medical Sciences

**WSPO**: Water and Soil Protecting Office

## List of Acronyms

**WASH**: Water, Sanitation, Hygiene, Healthcare Waste Management, and Environmental Cleaning

**SDG**: Sustainable Development Goal

**EMRO**: Regional Office for the Eastern Mediterranean

**CEHA**: Regional Centre for Environmental Health Action

**JMP**: Joint Monitoring Programme

**HCFs**: Health Care Facilities

**HCFs-WASHIran.1**: phase 1: Situation Analysis and Assessment of WASH services in HCFs in Iran

**HCFs-WASHIran.2**: phase 2: National Coordination Mechanism and Publishing a WASH Costed Roadmap with Targets in the I.R. Iran

**TWG**: Technical Working Group

**TWG-WASH-HCFs:** Technical Working Group of WASH implementation in HCFs

**TWSG**: Technical Working Sub-Group

**EOH**: Environmental and Occupational Health

**WCO**: World Health Organization-Country Office

**HCW**: Health Care Waste

**HWTS**: Healthcare Waste Treatment System

**HCWM**: Health Care Waste Management

**HSAD**: Hospital Supervision and Accreditation department

**CTF**: Central Treatment Facilities

**IPC**: Infection Protection Control

**MOHME**: Ministry of Health and Medical Education

**CEOH**: Center for Environmental and Occupational Health, MOHME

**DOE:** Department of Environment

**WSPO**: Water and Soil Protection Office

**UNC**: University of North Carolina

**UMSHA**: Hamadan University of Medical Sciences (University of Medical Sciences, Hamadan)

**UMSU**: Urumiyeh University of Medical Sciences

**NWWEC**: National Water and Wastewater Engineering Company

**WAUMS**: West Azarbaijan University of Medical Sciences

**GOUMS:** Golestan University of Medical Sciences

**ZUMS**: Zahedan University of Medical Sciences

**MUI**: Esfahan University of Medical Sciences

**IUMS**: Iran University of Medical Sciences

**DEHE**: Department of Environmental Health Engineering

**DBS**: Department of Biostatistics

**DHE**: Department of Health Economics

**DHSM**: Department of Health Services Management

**DPH**: Deputy of Public Health

**DCA**: Deputy of Curative Affairs

**DT**: Deputy of Treatment

**DDMR**: Deputy of Development of Management and Resources

**HAP**: Hospital Accreditation Program

**WWOSO**: Wastewater Operation Supervision Office

**WOSO**: Water Operation Supervision Office

**SWOT:** Strengthen, Weakness, Opportunity, and Threats

**NISWL**: National Integrated Solid Waste Law

**EHS:** Environmental Health Services

**PoA:** Plan of Action

**HAI:** Healthcare-Associated Infection

**LMICs:** low- and middle-income countries

**NHAS:** National Hospital Accreditation System

**HWTP:** Hospital Wastewater Treatment Plant

**NABB:** National Annual Budget Bill

**MOI:** Ministry of Interior

**MOE:** Ministry of Energy

**BPED:** Budget and Performance Evaluation Department)

**IMO:** Iran's Municipalities and Village Administrations Organization

**URMO**: Urban and Rural Municipalities Organization

## Executive Summary

Water, sanitation, healthcare waste management, hygiene, and environmental cleaning (WASH) in healthcare facilities (HCFs) have not been recognized and considered adequately despite their associated risk with infection, antimicrobial resistance (AMR), and mortality. Unimproved WASH elements in HCFs has a vital impact on maternal and child survival.

The objective of this National Coordination Mechanism and WASH Costed Roadmap in Healthcare Facilities is providing a framework to articulate a pathway that will strengthen all HCFs in Iran to provide standardized and effective WASH services and generate a new way of public quality healthcare, with consideration of the costs associated with the suggested interventions.

This road map for health-systems strengthening developed based on the pre-determined objectives which were initiated from a precise reviewing the first step of WASH in healthcare facilities in Iran conducted during 2021 for 730 statistically representative HCFs regarding to the establishment of a reliable framework for conducting the roadmap. Conducting the stakeholder analysis to assess how the interests and priorities of the stakeholders should be addressed in a project plan, policy, program, or other action was also performed. The significant gaps on WASH in HCFs specially to support the most vulnerable groups and underserved areas and facilities to achieve national coverage to quality care was then achieved. The stakeholder mapping for ranking them based on needs and the relative importance of stakeholders was conducted and a technical working group (TWG) based on the stakeholder analysis with the support of the WHO was established. In the following, working procedure/teamwork/working schedule and list of potential stakeholders/networks to be consulted during the consultation process in coordination with TWG was created to facilitate various consultative processes both virtual and face to face relied on preparing the documents. The measures were tend to ensuring bottom-up inputs from the local levels through virtual specific consultative workshops for the government and was tend to conducting a draft roadmap that reimagines incremental improvements in WASH, IPC, and HCWM indicators in all healthcare facilities and meets the targets set as short and medium term. Because of some uncertainty factors such as the noticeable economic inflation and lack of long term legislative basis the long-term estimations were not considered.

The costs for all environmental health services in HCFs by using the costing Toolkit fillable spreadsheet developed by Water Institute at UNC was estimated and the resulted road map was presented under the guidance of the TWG, to the broader stakeholders and specific groups.

The costed road map was finalized comprising the final report and the executive summary on the whole project, including stakeholder engagement, committee meetings, undertaken procedures, technical methodologies, and results.

The strategy of carrying out this road map is based on four independent parts, which later formed the structure of the final report as complementary components. The first part is an in-depth review and evaluation of the previous project namely the situation analysis and assessment of WASH services in HCFs in Iran in 2021. In this section, based on the valuable database of that study, many new outputs were extracted, which were used as a framework for evaluating and deciding the status of the roadmap. For example, according to the statistical methodology of the project, the proportion of HCFs with basic WASH services in the National Zones (NZs) was provided so that the geographical distribution of WASH services was obtained.

The second part is an insight into the various sets of national and local laws and regulations related to the WASH services, which includes both the set of upper legal frameworks (e.g. the Constitution and five-year development plans), as well as the set of checklists for evaluating the HCFs in terms of WASH services (e.g. Hospital Accreditation Program). Also, paying close attention into the government's annual budget rules by addressing the budget codes (Budget Category Numbers) assigned into the WASH services in HCFs were taking into account.

The third part was to establish a thorough analysis framework in terms of WASH elements in HCFs. This work was done based on the stakeholder's identification and gap analysis in a framework of SWOT matrices and based on the methodological aggregation of the decisions of the Technical Working Sub-Groups (TWSG) relying on the outputs of the two above-mentioned parts. The third part finally led to the table of strategies defined to enhance WASH components in the HCFs. TWG held a total of 6 formal meetings that lasted a total of 2 months. In the intervals between meetings Technical Working Sub-Group (TWSG) continuously held coordination meetings and exchange of documents. Almost all disciplines related to WASH were participated in the team comprising the academic members, Hospital Accreditation Program focal point (HAP), Water and Wastewater Operation Supervision Officers (WOSO), Department of Environment head officer (DOE) and so on.
The fourth part was implemented based on the integration of the previous three parts with the aim of the establishment a scheduled decision-making framework for the short term (one year) and mid-term (up to three years) intervals. Furthermore, this phase was performed according to the division of duties in the four areas of the WASH (Water, sanitation, healthcare waste management, hygiene, and environmental cleaning) in all types of HCFs (Government/Non-Government, Urban/Rural, and Hospital/Non-Hospital). In this part, detailed tables related to the matrices of the program's activities were compiled. The costing of WASH elements in HCFs was obtained applying a tool (CTFS-EHSs-HCFs) which was used to formulate some goals based on cost estimation. Also, whenever possible, the related budget available in the Iranian National Budget (2023-24) was made available so that the source of the expenses (Budget Category Number) could be determined.
The costed road map development conducted under financial support and technical guidance of WHO/CEHA, close collaboration, technical collaboration, and facilitation of WCO Iran and under supervision, technical assistance, and national facilitation of MOHME/CEOH/HAP.
A multidisciplinary core TWG established consisting of members from WCO (Dr. Rahim Taghizadeh Asl, Head of Healthier Population Unit, and Dr. Mona Khaleghy Rad, Environmental and Occupational Health officer), CEHO, MOHME (Eng. Tayebeh Elahi; Senior Officer), and Hamedan UMS (Dr Mohammad Khazaei, executing officer of the project and head of Center for Health Sciences Research, Department of Environmental Health Engineering). The whole project was reviewed and overlooked by CEHA (Dr Rola Alemam, WASH and HCWM Technical Officer, and Mohammad Shakkour, UNV, WASH specialist).
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# Section 1: Introduction

## Background and context

Between 5.7 and 8.4 million deaths are attributed to poor quality care each year in low- and middle-income countries (LMICs), which accounts for up to 15% of overall deaths in these countries [1]. 60% of deaths in LMICs from conditions amenable to health care are due to poor quality care; the remaining deaths result from non-utilization of the health system [2]. In 2010 the United Nations General Assembly explicitly recognized water and sanitation as human rights that are "essential for the full enjoyment of life and all human rights" [3]. An estimated 10–25% of neonatal and maternal deaths are to be related to healthcare-associated infection (HAI), of which the majority are recorded in low- and middle-income countries (LMICs)[4]. The availability of water, sanitation, and hygiene (WASH) services and effective associated practices are important components of healthcare infection prevention and control (IPC) and thus must be addressed in any successful intervention to improve patient outcome in healthcare facilities (HCFs)[5]. Basic measures to ensure patient safety and to prevent transmission of HAI, such as clean drinking water, waste management, hand hygiene, personal protective equipment, and clean and safe sanitation facilities, all of which are components of 'WASH in HCF', are frequently missing [4, 6].

In 2018, the United Nations (UN) Secretary-General delivered a Global Call to Action to enhance the importance of and prioritize action on WASH in all healthcare facilities (HCFs). The call identifies the vital role of WASH elements in controlling infections and consequently, saving lives [7].

Accordingly, UN agencies, Ministry of Health of countries, and other partners are now organizing resources to invest more in this fundamental issue to provide worldwide quality care. Considering the JMP 2019 SDG baseline report for WASH in HCFs, WHO and UNICEF published the practical steps to obtain universal access to quality care [8].

Regarding 8 suggested practical steps (Fig. 1), setting target and defining roadmap is key step need to pursue by members at the national and sub-national levels to enhance WASH in HCFs. A costed roadmap needs to be developed according to the country situation analysis study comprising a clear method, intervention areas, responsibilities, targets, and budget for WASH improvements over a determined time period [9].


**Figure 1.** Eight practical steps of WASH to improving WASH in the healthcare facilities

**Importance of WASH in health care facilities**

According to an iterated quote mentioned in WHO documents; "No one goes to a healthcare facility to get sick. People go to get better, to deliver babies or to get vaccinated"[8]. Supplying safe drinking water, appropriate wastewater sanitation system, healthcare waste management, and environmental cleaning are the essential measures should be taken in healthcare facilities (HCFs) [10]. WHO/UNICEF, through the Joint Monitoring Programme (JMP) for Water Supply, Sanitation and Hygiene, have produced regular updates on water, sanitation and hygiene (WASH) since 1990. Together, they are responsible for monitoring the 2030 Sustainable Development Goal (SDG) targets 6.1 and 6.2 (Fig. 2) and supporting global monitoring of other WASH-related SDG targets and indicators [11].

WHO set the global essential standards of environmental health for HCFs in 2008 which covers the minimum demands assigning to the water supply, wastewater sanitation, solid waste management, environmental cleaning and food protection regarding the feasibility considerations for LMICs [12]. During 15 years age, some valuable international actions were governed by WHO in line with the WASH-related indicators to achieve SDG targets in Healthcare Facilities (HCFs) [13, 14].


**Figure 2.** The components of SDG 6 emphasizing on goals 6.1 (drinking water) and 6.2 (sanitation and hygiene)

In 2018, the United Nations (UN) Secretary-General issued a Global Call to Action to elevate the importance of and prioritize action on WASH in all health care facilities [15]. In 2019, considering the JMP 2019 SDG baseline report for WASH in health care facilities, WHO and UNICEF published practical steps to achieve universal access to quality care [8]. It introduces service ladders for 5 elements of WASH including Water, Sanitation, Hygiene, Waste management, and Environmental cleaning (Fig. 3) [16].

Data published in 2019 by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) showed that globally, one in four health care facilities lacks basic water services and one in five has no sanitation services. Furthermore, two out of five facilities do not have hand hygiene facilities at the point of care or safe health care waste management systems [17, 18]. Wastewaters from HCFs have the capability to harbor various pathogens, chemical-pharmaceutical compounds, heavy metals, and antibiotics, which pose

principal adverse effects on the staff, care seekers and the environment [19]. Different healthcare wastes such as infectious wastes, sharps, and chemical-pharmaceutical wastes are produced daily having high level of disease transmission risk such as those hazards attributed to the COVID-19 agent [19, 20].

The eight practical steps to improving WASH in the healthcare facilities and improving the quality of care form the basis and framework of the national actions and commitments made in the resolution. It represents the essence of “what works” in more than 50 countries and was developed through a multi-year iterative process with the help of WHO and UNICEF [7]. These steps are also the basis for tracking country progress and reporting on global commitments. 3 level of services were "Basic service", "Limited service", and "No service". It established national, regional and global baseline estimates that contribute towards global monitoring of SDG targets for universal access to WASH (SDG 6.1 and 6.2) and for universal health coverage (SDG 3.8) [18]. In the Global progress report on WASH in HCFs published in 2020, an extra level of “Higher levels of service”[7] or “Advanced service”[13] was added for those countries where "basic" services is not an ambitious aim [21].

Among eight suggested practical steps, setting targets and defining a costed roadmap is key step need to follow by member states at the national and sub-national level to improve WASH in health care facilities. A roadmap needs to be developed based on the country situation analysis (a situation analysis and assessment of WASH in HCFs was conducted successfully by our team in 2021 for Iran [22, 23]) through a clear approach, intervention areas, responsibilities, targets, and budget for WASH improvements over a defined time period [24]. During the WASH roadmap proceeds, it is anticipated that all partners must support and track progress toward agreed goals, giving priority to government-preferred tools and approaches over partner or donor preferences.

| Water | Sanitation | Hygiene | Health care waste | Environmental cleaning |
|---|---|---|---|---|
| **Advanced service**<br>To be defined at national level | **Advanced service**<br>To be defined at national level | **Advanced service**<br>To be defined at national level | **Advanced service**<br>To be defined at national level | **Advanced service**<br>To be defined at national level |
| **Basic service**<br>Water is available from an improved source located on premises. | **Basic service**<br>Improved sanitation facilities are usable with at least one toilet dedicated for staff, at least one sex-separated toilet with menstrual hygiene facilities, and at least one toilet accessible for people with limited mobility. | **Basic service**<br>Functional hand hygiene facilities (with water and soap and/or alcohol-based hand rub) are available at points of care, and within 5 meters of toilets. | **Basic service**<br>Waste is safely segregated into at least three bins and sharps and infectious waste are treated and disposed of safely. | **Basic service**<br>Basic protocols for cleaning available, and staff with cleaning responsibilities have all received training. |
| **Limited service**<br>An improved water source is within 500 meters of the facility, but not all requirements for basic service are met. | **Limited service**<br>At least one improved sanitation facility, but not all requirements for basic service are met. | **Limited service**<br>Functional hand hygiene facilities are available at either points of care or toilets, but not both. | **Limited service**<br>There is limited separation and/ or treatment and disposal of sharps and infectious waste, but not all requirements for basic service are met. | **Limited service**<br>There are cleaning protocols, or at least some staff have received training on cleaning. |
| **No service**<br>Water is taken from unprotected dug wells or springs, or surface water sources; or an improved source that is more than 500 m from the facility; or the facility has no water source. | **No service**<br>Toilet facilities are unimproved (pit latrines without a slab or platform, hanging latrines and bucket latrines), or there are no toilets or latrines at the facility. | **No service**<br>No functional hand hygiene facilities are available at either points of care or toilets. | **No service**<br>There are no separate bins for sharps or infectious waste, and sharps and/or infectious waste are not treated/disposed of. | **No service**<br>No cleaning protocols are available, and no staff have received training on cleaning. |

**Figure 3.** JMP service ladders for WASH in HCFs

## Section 2. Objectives of strategy and mission of health sector

### Study area

Islamic Republic of Iran is a country in west Asia. It borders Armenia and Azerbaijan to the northwest, the Caspian Sea to the north, Turkmenistan to the northeast, Afghanistan to the east, Pakistan to the southeast, and Persian Gulf and Gulf of Oman to the south. Turkey and Iraq borders are in the west. With an area of 1,648,195 km$^2$ (636,372 square miles), Iran is the fifth largest country in Asia and the second largest country in the Middle East (after Saudi Arabia). With a population of 85 million, it is the 17th most populous in the world. Tehran is

the largest city and the capital of Iran (Fig. 4). The country has 31 provinces, which are located in 10 regions based on the MOHME administration arrangement (Annex 1).


**Figure 4.** The political map of Iran and Middle East countries

Table 1 presents the HCFs of Iran comprising the residence (urban/rural), facility type (hospital/nonhospital), and management type (government/non-government). As represented, with more than 33000 HCFs, Iran has a vast and sophisticated system to deliver primary health services. Furthermore, Table 2 presents coverage distribution of water and sanitation services in Iran. As shown in Table 2, in most of the urban and rural areas, the coverage of public water distribution system is more than 95%. In contrast, a poor coverage of onsite/offsite sanitation facilities, especially in the rural areas, is represented in Table 2. It should be noted that poor coverage of onsite/offsite sanitation facilities, does not mean the completely lack of sanitation facilities. Conventionally, squat toilets connected to the dug pit with slab are used in the most of Iranian urban and rural areas. There is no any evidence of the open excretion in Iran.

The life expectancy in Iran is 75 years (male) and 77 years (female). Universal health coverage is enshrined in Islamic Republic of Iran's Constitution, and the government is the country's largest healthcare provider, focused on primary care. After significant gains in life expectancy and child mortality since the 1990s, the country is facing a growing burden of NCDs. Today most of the population benefits from health insurance, principally from public insurers, yet out-of-pocket spending as a share of health expenditure remain high at around 40%. The 6th five-year National Plan of Economic, Social and Cultural Development of Islamic Republic of Iran 2017–2021 prioritizes the health of the population by improving stewardship of the health system, expanding health service coverage and increasing financial protection mechanisms. In line with those priorities, the UHC Partnership is supporting an in-depth health systems governance and financing assessment which includes an evaluation of citizens' voice mechanisms, private sector engagement, and financial protection [25].

**Table 1.** Distribution of HCFs in Iran

| No. | Region (Province) | Population (×1000)[1] | Urban Population(%)[1] | HCFs | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | National[2] | Urban[2] | Rural[2] | Hospital (Active)[1] | Non-Hospital[2] | Government[2] | Non-Government[2] |
| | Nationwide | 84,926 | 0.74 | 33854 | 13498 | 20356 | 899 | 32955 | 31567 | 2287 |
| 1 | W.Azarbaijan | 3909 | 0.72 | 1062 | 698 | 364 | 50 | 1012 | 935 | 127 |
| 2 | S.Azarbaijan | 3265 | 0.65 | 1734 | 498 | 1236 | 29 | 1705 | 1684 | 50 |
| 3 | Ardabil | 1270 | 0.68 | 836 | 251 | 585 | 15 | 821 | 789 | 47 |
| 4 | Isfahan | 5120 | 0.88 | 1763 | 1125 | 638 | 63 | 1700 | 1560 | 203 |
| 5 | Alborz | 2712 | 0.93 | 552 | 447 | 105 | 16 | 536 | 431 | 121 |
| 6 | Ilam | 580 | 0.68 | 378 | 131 | 247 | 9 | 369 | 367 | 11 |
| 7 | Bushehr | 1164 | 0.72 | 483 | 213 | 270 | 16 | 467 | 475 | 8 |
| 8 | Tehran | 13268 | 0.94 | 2535 | 2175 | 360 | 162 | 2373 | 1889 | 646 |
| 9 | Chaharmahal | 947 | 0.64 | 594 | 196 | 398 | 9 | 585 | 581 | 13 |
| 10 | S.Khorasan | 769 | 0.59 | 570 | 169 | 401 | 12 | 558 | 559 | 11 |
| 11 | R.Khorasan | 6434 | 0.73 | 1060 | 454 | 606 | 61 | 999 | 870 | 190 |
| 12 | N.Khorasan | 863 | 0.56 | 523 | 134 | 389 | 11 | 512 | 510 | 13 |
| 13 | Khuzestan | 4711 | 0.76 | 2116 | 857 | 1259 | 49 | 2067 | 2034 | 82 |
| 14 | Zanjan | 1058 | 0.67 | 740 | 205 | 535 | 13 | 727 | 727 | 13 |
| 15 | Semnan | 703 | 0.80 | 315 | 154 | 161 | 10 | 305 | 303 | 12 |
| 16 | Sistan | 2775 | 0.49 | 2151 | 497 | 1654 | 21 | 2130 | 2097 | 54 |
| 17 | Fars | 4851 | 0.70 | 2243 | 804 | 1439 | 66 | 2177 | 2100 | 143 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 18 | Qazvin | 1273 | 0.75 | 560 | 242 | 318 | 15 | 545 | 524 | 36 |
| 19 | Qom | 1293 | 0.95 | 340 | 268 | 72 | 10 | 330 | 294 | 46 |
| 20 | Kurdestan | 1603 | 0.71 | 979 | 267 | 712 | 17 | 962 | 964 | 15 |
| 21 | Kerman | 3165 | 0.59 | 1555 | 387 | 1168 | 9 | 1546 | 1531 | 24 |
| 22 | Kermanshah | 1952 | 0.75 | 1067 | 343 | 724 | 23 | 1044 | 1019 | 48 |
| 23 | Kohgiluyeh | 713 | 0.56 | 531 | 115 | 416 | 9 | 522 | 514 | 17 |
| 24 | Golestan | 1868 | 0.53 | 892 | 183 | 709 | 25 | 867 | 846 | 46 |
| 25 | Guilan | 2531 | 0.63 | 1472 | 390 | 1082 | 31 | 1441 | 1417 | 55 |
| 26 | Lorestan | 1761 | 0.65 | 1100 | 281 | 819 | 22 | 1078 | 1076 | 24 |
| 27 | Mazandaran | 3284 | 0.58 | 2082 | 522 | 1560 | 43 | 2039 | 1995 | 87 |
| 28 | Markazi | 1430 | 0.77 | 730 | 267 | 463 | 19 | 711 | 708 | 22 |
| 29 | Hormozgan | 1777 | 0.55 | 1306 | 501 | 805 | 24 | 1282 | 1270 | 36 |
| 30 | Hamadan | 1738 | 0.63 | 1115 | 459 | 656 | 21 | 1094 | 1084 | 31 |
| 31 | Yazd | 1139 | 0.85 | 470 | 265 | 205 | 19 | 451 | 414 | 56 |
| 1. Based on 2016 National Census [26]<br>2. Data obtained from MOH supporting team. | | | | | | | | | | |

**Table 2.** The coverage distribution (%) of water and sanitation services in Iran

| No. | Region (Province) | Urban | | Rural | |
|---|---|---|---|---|---|
| | | Public Water Distribution System | Onsite or Offsite Sanitation Facilities | Public Water Distribution System | Onsite or Offsite Sanitation Facilities |
| - | Nationwide | 99.68 | 42.74 | 93.67 | 1.03 |
| 1 | W.Azarbaijan | 100 | 77.9 | 98.81 | 2.79 |
| 2 | S.Azarbaijan | 100 | 46.85 | 99.48 | 0.27 |
| 3 | Ardabil | 100 | 43.39 | 97.59 | 1.43 |
| 4 | Isfahan | 100 | 64.45 | 100 | 0.77 |
| 5 | Alborz | 100 | 9.34 | 99.47 | 1.07 |
| 6 | Ilam | 100 | 43.84 | 98.5 | 0 |
| 7 | Bushehr | 99.82 | 0 | 98.58 | 0 |
| 8 | Tehran | 100 | 41.82 | 99.65 | 2.34 |
| 9 | Chaharmahal | 98.72 | 61 | 99.33 | 0.84 |
| 10 | S.Khorasan | 100 | 32.37 | 88.49 | 0 |
| 11 | R.Khorasan | 100 | 46.12 | 99.22 | 0 |
| 12 | N.Khorasan | 100 | 30.85 | 97.41 | 0 |
| 13 | Khuzestan | 100 | 61.03 | 96.83 | 2.71 |
| 14 | Zanjan | 99.77 | 9.34 | 88.57 | 0 |
| 15 | Semnan | 100 | 1.38 | 100 | 0 |
| 16 | Sistan | 99.91 | 4.4 | 72.59 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 17 | Fars | 99.84 | 29.15 | 95.24 | 0 |
| 18 | Qazvin | 100 | 67.38 | 99.05 | 0.19 |
| 19 | Qom | 100 | 39.18 | 94.62 | 0 |
| 20 | Kurdestan | 99.84 | 98.03 | 100 | 4.88 |
| 21 | Kerman | 100 | 0 | 86.49 | 0 |
| 22 | Kermanshah | 100 | 93.4 | 95.78 | 5.82 |
| 23 | Kohgiluyeh | 100 | 16.2 | 99.85 | 0 |
| 24 | Golestan | 100 | 0.48 | 98.62 | 0 |
| 25 | Guilan | 90.33 | 66.63 | 67.95 | 1.48 |
| 26 | Lorestan | 100 | 65.7 | 99.29 | 2.71 |
| 27 | Mazandaran | 99.9 | 0 | 94.6 | 0 |
| 28 | Markazi | 100 | 17.65 | 98.99 | 0.15 |
| 29 | Hormozgan | 99.87 | 51.54 | 94.12 | 0.2 |
| 30 | Hamadan | 100 | 66.16 | 97.88 | 5.22 |
| 31 | Yazd | 99.89 | 16.94 | 97.5 | 0 |

Fig. 5 depicts an organogram revealing the organizational structure of HCFs in the country's health network system. As shown, the primary healthcare facilities are the Health Houses and Health Posts located in rural and urban areas, respectively. Also, it should be noted that Iran have 31 provinces.

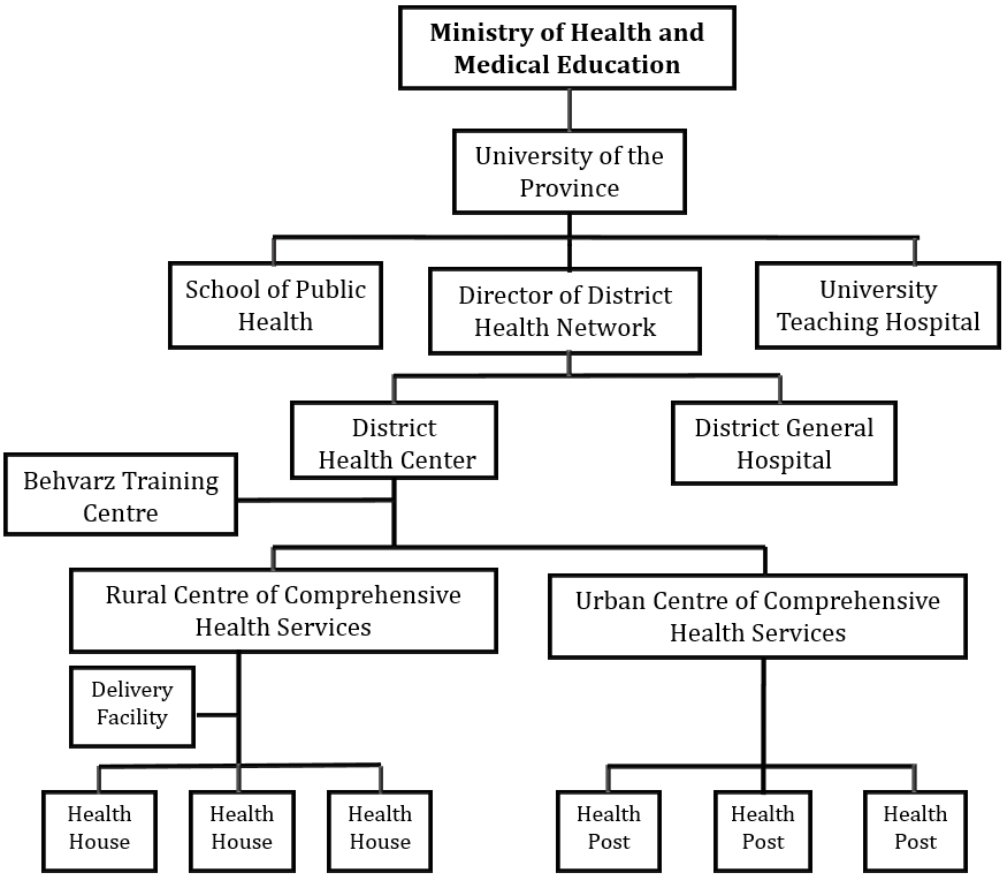



**Figure 5.** Organogram of the health network in Iran

**National Regulatory framework**

Although there is no an integrated framework focusing on WASH elements for Iranian HCFs, many regulatory frameworks can be tracked in Iranian legislation system which comprise most of WASH elements in HCFs. The main outlines of regulations related to the WASH elements in Iran and also WASH-related SDGs are represented in Table 3.

**Table 3.** Main national regulations/laws/standards related to WASH program in HCFs.

| **WASH element** | **Related regulation/law/standard** |
|---|---|
| Drinking Water | Drinking water – physical and chemical characteristics (No. 1053)[27]. Standards for Planning and Design of Safe Hospitals [28]. Sixth five-year plan law [29], National Hospitals Accreditation Standards [30, 31]; NHAS: A.6.3.1 |
| Sanitation | National Building Construction Regulations (Chapter 16.: Sanitary engineering, Equipment and |

| | |
|---|---|
| | supplies, Standards) [32]. Standards for Planning and Design of Safe Hospitals [28]. Guideline of Building's Sewer Connections [21], National Hospitals Accreditation Standards [30, 31]; NHAS: A.6.3.2 |
| Hygiene | National Hospitals Accreditation Standards [30, 31]; NHAS: B.5.4, B.5.5, B.5.7 |
| Solid Waste Management | Comprehensive law on solid waste management [33]. Regulations on the management of healthcare and other related wastes [34], National Hospitals Accreditation Standards [30, 31]; NHAS: A.6.4 |
| Environmental Cleaning | National Hospitals Accreditation Standards [30, 31]. |
| WASH-related budgeting and costing | Iranian National Budget (2023-24) - Single article and macro tables of budget sources and expenditures [35]. Iranian National Budget (2023-24)- Appendix 1: The budget of capital asset acquisition plans [36]; NHAS: A.6.1 |

Annex 4 contains regulations, standards, laws, and guidelines considered in this analysis. While the comprehensive law on solid waste management (CLSWM) covers most of health-based, industrial, agricultural and municipal aspects, there are two main obstacles regarding its complete implementation. First is the disagreement occurred between MOHME and municipalities regarding some definitions such as solid waste treatment, outsourcing and so on. According to CLSWM, after the treatment of healthcare wastes (sharps and infectious portion of HCW), the post-treated waste should be considered as general waste, like those collected in the residential areas. It means that, municipalities must collect, transport, and dispose post-treated waste through financial frameworks applied for the general wastes which has revenue much lower than those obtained from HCW contracts. While, before CLSWM, the treatment processes performed in the HCFs were neglected and all HCW delivered by HCFs was considered as non-treated so that the hazardous waste tariffs were applied. Second is low amount of penalties enacted in the CLSWM regulations which was not updated during several years so that, high rate of annual inflation makes the punishment mechanisms completely ineffective.

Wastewater disposal standards does not consider cut-of values regarding the sources. For example, role of HCFs having the dentistry services in the discharge of mercury into the wastewater collection system is not considered. Regulations enacted for health inspection does not cover all types of HCFs. Consequently, hospitals have sophisticated sets of accreditation standards that comprises all aspects of WASH whereas there is no any national regulation or standard to provide specific checklists for the environmental health survey of Health Houses, Health Posts, Clinics, and CCHSs.

The analysis shown the general inadequacies as follows:

- the absence of detailed WASH checklists for monitoring health issues in most of healthcare settings;
- vague descriptions which has provided under some important terms such as "healthcare waste", which is different from the those recommended by WHO;
- Considering lists of biohazards as cytotoxic waste which are belonged the old lists provided by WHO and does not updated during the recent decades.

The lack of complementary standards and guidelines which provides applied descriptions and guidance is obviously noticeable.

- the detailed aspects of WASH regarding per capita water allocations;
- the rate of ventilation (air change per hour) in various HCFs;
- a specific procedure to manage the runoffs and considering specific drainage system other than sanitary wastewater collection system
- provision of a training strategy for all staff and patients regarding the hand washing and applying the sanitizers

Table 4 represents some deficiencies revealed when the existing laws and standards are compared with the WHO recommendations.

**Table 4**. The existing regulations; Gaps and areas for improvement

| **Element** | **Areas for improvement** |
|---|---|
| Water quality | While it comprehensively addressed, but some drawbacks are noticeable:<br>• Lack of updated standards regarding the cut-off values for the emerging |

| | |
|---|---|
| | pollutants such as some new pesticides and pharmaceutical residues.<br>• Lack of Maximum Contaminant Level Goal (MCLG) for the standard levels.<br>• Drawback in the aspects regarding the operation and maintenance in the water supply system in HCFs.<br>• Limited aspects regarding the resilience of public water system in case of emergencies.<br>• Lack of the developed standard in terms applying high-tech methods for the measurement of the pollutants.<br>• Ignoring to propose standard values for some microbiological agents such as legionella and viruses |
| Water quantity and access | This is broadly fulfilled, but the following issues should be reconsidered:<br>• Mainly the staff was considered in the water consumption predictions and limited per capita water has been allocated for patients.<br>• Determining per-patient water faucets in HCFs according to the patient capacity predicted in the design criteria<br>• Determining the storage tank volume based on the drinking water demands.<br>• Considering the capability of using gray water in HCFs for non-drinking consumptions. |
| Hand hygiene | Gaps were observed in the following aspects:<br>• Lack of standards and regulations considering hand hygiene in small HCFs such as Health Houses, Urban Health Posts and so on. |

| | |
|---|---|
| | • Specific demands for predicting numbers and places of hand hygiene stations. |
| Wastewater disposal | Gaps and limitations:<br>• A lack of standards regarding the wastewater discharge form small HCFs such as minimum treatment consideration and sewage characteristics.<br>• A lack of standards providing the cut-off levels of the pharmaceutical, heavy metals, and radioactive agents. |
| Sanitation/excreta disposal | This is comprehensively addressed. |
| Environmental cleaning and laundry | Gaps and limitations:<br>• a lack of regulations containing practical appendices to provide precise criteria on classifications of detergents, surfactants, equipment, cleaning procedures and ventilations, especially for the small HCFs;<br>• Providing training issues which has limited compliance with IPC procedures regarding the staff responsible for the environmental cleaning and surface disinfection. |
| Waste management | Gaps and limitations:<br>• Vague in healthcare waste regulations regarding the waste classification, such as determining the class of emptied bottle serum (pharmaceutical or general category).<br>• producing tremendous amount of infectious wastes and sharps because of a broad and non-precise classification which consider both the needles and |

| | |
|---|---|
| | syringe in the category of sharps so that it should be disposed in safety box. |

**Reviewing the first step of WASH in health care facilities (HCFs-WASHIran. 1)**

A summary of situation analysis and assessment of WASH services in healthcare facilities (HCFs) in Iran will be provided here (https://washinhcf.ir/) [22, 24]. Table 5 illustrates the sample allocations into the HCF strata according to the WASH-demanded categorization. It is obvious that in both methods of allocation, the sum of HCFs were 730. Fig. 6 represents the geographical distribution of randomized-selected HCFs in all around the country.

Two documents published by WHO during 2022 have used the results delivered through HCFs-WASHIran.1 project. First is a Regional Snapshot of WASH in HCFs in the WHO Eastern Mediterranean Region [22] and second is Progress on WASH in Health Care Facilities 2000–2021 [23].

**Table 5.** Distribution of HCF Samples studied in WASHIran.1

| Region/UMS[1] | Government | Non-Government | Hospital | Non-Hospital | Urban | Rural |
|---|---|---|---|---|---|---|
| **Region.1** | 95 | 9 | 13 | 91 | 36 | 68 |
| **Sari** | 61 | 7 | 9 | 59 | 25 | 43 |
| **Golestan** | 34 | 2 | 4 | 32 | 11 | 25 |
| **Region.2** | 71 | 7 | 10 | 68 | 33 | 45 |
| **Tabriz** | 52 | 6 | 8 | 50 | 24 | 34 |
| **Ardabil** | 19 | 1 | 2 | 18 | 9 | 11 |
| **Region.3** | 78 | 3 | 8 | 73 | 36 | 45 |
| **Hamadan** | 59 | 2 | 6 | 55 | 29 | 32 |
| **Ilam** | 19 | 1 | 2 | 18 | 7 | 13 |
| **Region.4** | 64 | 5 | 9 | 60 | 24 | 45 |
| **Ahvaz** | 49 | 4 | 7 | 46 | 18 | 35 |
| **Lorestan** | 15 | 1 | 2 | 14 | 6 | 10 |
| **Region.5** | 89 | 9 | 13 | 85 | 39 | 59 |
| **Shiraz** | 64 | 4 | 8 | 60 | 26 | 42 |
| **Hormozgan** | 25 | 5 | 5 | 25 | 13 | 17 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Region.6** | 56 | 7 | 8 | 55 | 31 | 32 |
| **Zanjan** | 28 | 4 | 4 | 28 | 17 | 15 |
| **Qom** | 28 | 3 | 4 | 27 | 14 | 17 |
| **Region.7** | 64 | 4 | 4 | 64 | 33 | 35 |
| **Isfahan** | 55 | 3 | 3 | 55 | 28 | 30 |
| **Yazd** | 9 | 1 | 1 | 9 | 5 | 5 |
| **Region.8** | 73 | 2 | 3 | 72 | 15 | 60 |
| **Kerman** | 41 | 1 | 2 | 40 | 9 | 33 |
| **Zahedan** | 32 | 1 | 1 | 32 | 6 | 27 |
| **Region.9** | 44 | 7 | 9 | 42 | 21 | 30 |
| **Birjand** | 4 | 0 | 1 | 3 | 1 | 3 |
| **Mashad** | 40 | 7 | 8 | 39 | 20 | 27 |
| **Region.10** | 34 | 21 | 17 | 38 | 49 | 6 |
| **Tehran** | 11 | 8 | 5 | 14 | 17 | 2 |
| **Sh. Beheshti** | 23 | 13 | 12 | 24 | 32 | 4 |
| **Sum (742)** | **670** | **74** | **94** | **646** | **315** | **424** |
| **Percentage (%)** | **90** | **10** | **13** | **87** | **42** | **58** |


**Figure 6.** The nationwide geographical distribution of randomized selected HCF (Green points; N=730)

As mentioned, situation analysis and assessment of WASH services was conducted in 730 randomized sampled HCFs in Iran [22, 23]. Results provided noticeable insights into the general WASH status of Iranian HCFs. It clearly identified that many health care facilities have default provisions for various WASH components, particularly with regard to water, sanitation and waste management, and reflects past policies and efforts to implement them. Many positive results have been achieved and specific tasks and priorities have been identified. Overall, primary health care facilities (Health Houses), particularly those located in the rural areas of eastern and southern part of Iran, faced the biggest challenges regarding

drinking water shortage and sanitation drawbacks. Environmental cleaning and hand hygiene elements were in a relatively good circumstance in the most of Hospitals. It was mainly due to the national strategy regarding to vast providing the alcoholic based hand rubs, surface disinfectants, and detergents for the control of Covid-19 pandemic.

As depicted in Fig. 3, JMP defined three service levels for each WASH element. The lowest level is "No service" comprised the state of lacking minimum requirements regarding each WASH element. Because of the importance of "No service" level in terms of determining the underserved areas and facilities, estimating the number of HCFs with "No service" level is a prominent priority index for budgeting allocation for WASH services. Table 6 presented overall estimates of "No service" level of WASH elements in terms of each national zone. With a closer look, the "No service" level of WASH elements regarding each national zone for each HCF type can be observed in Table 7. In fact, Table 7 shows the heat map of "No-Service" HCFs by national zone and HCF type. As revealed, the maximum "No service" percent can be attributed into the Cleaning element in all HCF types except for Hospitals. As mentioned, set of measures taken during the Covid-19 pandemic and the establishment of Accreditation system in all Iranian hospitals during last decade are the main reasons of having better WASH circumstances comparing with the other HCFs.

The total number of HCFs belonged to each of the national zones can be found in Annex.1 (Table 1.1). Accordingly, the number of "No-Service" HCFs assigning into the each WASH element by each national zone (ENS) can be estimated. For example, in Table 7, the "No-Service" level for "Sanitation" element of WASH in the rural HCFs of sample national zone 8 (Kerman and Sistan provinces; southeast of the country) is 2.67%. Besides, as represented in Annex.1 (Table 1.1), the number of total rural HCFs in the national zone 8 is 2822. Consequently, the estimated number of rural HCFs having "No-Service" of Sanitation in Kerman and Sistan provinces is 76. In general, Eq. 1 can be applied to calculate the estimated number of "No-Service" HCFs.

$$\boldsymbol{ENS_x = TZ_x \times \frac{PNSZ_{yx}}{100}} \qquad \boldsymbol{Eq.1}$$

Where, $ENS_x$ is the **E**stimated number of HCFs with "**N**o-**S**ervice" in the national zone **x** (Table 8), $TZ_x$ is the **T**otal number of HCFs in the national **Z**one **x** (Annex.1; Table 1.1), and $PNSZ_{yx}$

is the **P**roportion (%) of HCFs with "**N**o-**S**ervice" in the studied HCFs, **y**, of the national **Z**one **x** (Table 7).

Fig. 7 depicts the proportion of HCFs with basic WASH services in the National Zones (NZs). As revealed, the water and hygiene elements have better situation comparing with the other WASH axes.

**Table 6.** Overall estimates of "No-Service" Index of WASH elements

| HCF Type | HCF Number, (y) (HCFs-WASHIran.1 Study) | WASH Element | HCFs with "No-Service" (%)*, ($PNSZ_{yx}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | National Zone, (x) | | | | | | | | | |
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Overall** | 730 | Water | 0.00 | 0.00 | 1.23 | 1.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.82 |
| | | Sanitation | 0.96 | 1.28 | 0.00 | 5.80 | 6.12 | 0.00 | 2.94 | 2.67 | 0.00 | 0.00 |
| | | Hygiene | 0.00 | 0.00 | 4.94 | 2.90 | 0.00 | 0.00 | 0.00 | 1.33 | 0.00 | 0.00 |
| | | Waste Management | 4.81 | 1.28 | 4.94 | 14.49 | 31.63 | 0.00 | 4.41 | 12.00 | 1.96 | 0.00 |
| | | Cleaning | 11.5 | 10.2 | 24.7 | 24.6 | 62.2 | 38.1 | 16.2 | 40.0 | 17.6 | 18.2 |

***Water:** No Service (No water source)

***Sanitation:** No Service (No sanitation facilities)

***Waste Management:** No service (there are no bins for sharps or infectious waste)

***Hygiene:** No Service (No hand washing stations at points of care or within 5 m of toilets)

***Cleaning:** No service (no cleaning policies or protocols are available, and no staff have received training on cleaning within the last 24 months)

**Government/ Non-Government, Urban/Rural, Hospital/Non-Hospital.**

**Table 7.** Detailed estimates of "No-Service" level of WASH elements in the 10 national zones

| HCF Type | HCF Number, (y) (HCFs-WASHIran.1 Study) | WASH Element | Proportion (%) of HCFs with "No-Service" (%)*, ($PNSZ_{yx}$) National Zone, (x) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **Government** | **670** | **Water** | 0.00 | 0.00 | 1.2 | 1.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Sanitation** | 0.96 | 1.28 | 0.00 | 5.80 | 6.12 | 0.00 | 2.94 | 2.67 | 0.00 | 0.00 |
| | | **Hygiene** | 0.00 | 0.00 | 4.94 | 2.90 | 0.00 | 0.00 | 0.00 | 1.33 | 0.00 | 0.00 |
| | | **Waste Management** | 4.81 | 1.28 | 4.94 | 14.49 | 28.57 | 0.00 | 4.41 | 12.00 | 1.96 | 0.00 |
| | | **Cleaning** | 10.58 | 10.26 | 24.69 | 23.19 | 58.16 | 31.75 | 14.71 | 38.67 | 13.73 | 12.73 |
| **Non-Government** | **74** | **Water** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.82 |
| | | **Sanitation** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Hygiene** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Waste Management** | 0.00 | 0.00 | 0.00 | 0.00 | 3.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Cleaning** | 0.96 | 0.00 | 0.00 | 1.45 | 4.08 | 3.17 | 0.00 | 1.33 | 3.92 | 5.45 |
| **Urban** | **315** | **Water** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.82 |
| | | **Sanitation** | 0.00 | 0.00 | 0.00 | 1.45 | 0.00 | 0.00 | 1.47 | 0.00 | 0.00 | 0.00 |
| | | **Hygiene** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Waste Management** | 0.00 | 0.00 | 0.00 | 1.45 | 5.10 | 0.00 | 4.41 | 5.33 | 0.00 | 0.00 |
| | | **Cleaning** | 2.88 | 3.85 | 2.47 | 4.35 | 12.24 | 15.87 | 13.24 | 6.67 | 7.84 | 16.36 |
| **Rural** | **424** | **Water** | 0.00 | 0.00 | 1.23 | 1.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Sanitation** | 0.96 | 1.28 | 0.00 | 4.35 | 6.12 | 0.00 | 1.47 | **2.67** | 0.00 | 0.00 |
| | | **Hygiene** | 0.00 | 0.00 | 4.94 | 2.90 | 0.00 | 0.00 | 0.00 | 1.33 | 0.00 | 0.00 |
| | | **Waste Management** | 4.81 | 1.28 | 4.94 | 13.04 | 26.53 | 0.00 | 0.00 | 6.67 | 1.96 | 0.00 |
| | | **Cleaning** | 8.65 | 6.41 | 22.22 | 20.29 | 50.00 | 22.22 | 2.94 | 33.33 | 9.80 | 1.82 |
| **Hospital** | **94** | **Water** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Sanitation** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Hygiene** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Waste Management** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | **Cleaning** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.76 | 0.00 | 2.67 | 0.00 | 0.00 |
| **Non-Hospital** | **646** | **Water** | 0.00 | 0.00 | 1.23 | 1.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.82 |
| | | **Sanitation** | 0.96 | 1.28 | 0.00 | 5.80 | 6.12 | 0.00 | 2.94 | 2.67 | 0.00 | 0.00 |
| | | **Hygiene** | 0.00 | 0.00 | 4.94 | 2.90 | 0.00 | 0.00 | 0.00 | 1.33 | 0.00 | 0.00 |
| | | **Waste Management** | 4.81 | 1.28 | 4.94 | 14.49 | 31.63 | 0.00 | 4.41 | 12.00 | 1.96 | 0.00 |
| | | **Cleaning** | 11.54 | 10.26 | 24.69 | 24.64 | 62.24 | 33.33 | 16.18 | 37.33 | 17.65 | 18.18 |

***Water:** No Service (No water source)

***Sanitation:** No Service (No sanitation facilities)

***Waste Management:** No service (there are no bins for sharps or infectious waste)

***Hygiene:** No Service (No hand washing stations at points of care or within 5 m of toilets)

***Cleaning:** No service (no cleaning policies or protocols are available, and no staff have received training on cleaning within the last 24 months)

**Table 8.** Detailed estimates of No-Service Index of WASH elements in the 10 national zones

| HCF Type | HCF Number (National) | WASH Element | Estimated number of HCFs with "No-Service" in the national zone x *, ($ENS_x$) National Zone, (x) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **Government** | **31567** | **Water** | 0 | 0 | 42 | 45 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Sanitation** | 44 | 44 | 0 | 180 | 267 | 0 | 75 | 97 | 0 | 0 |
| | | **Hygiene** | 0 | 0 | 170 | 90 | 0 | 0 | 0 | 48 | 0 | 0 |
| | | **Waste Management** | 219 | 44 | 170 | 451 | 1245 | 0 | 113 | 435 | 38 | 0 |
| | | **Cleaning** | 483 | 350 | 848 | 721 | 2535 | 852 | 376 | 1403 | 266 | 240 |
| **Non-Government** | **2287** | **Water** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| | | **Sanitation** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Hygiene** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Waste Management** | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 |
| | | **Cleaning** | 2 | 0 | 0 | 2 | 8 | 8 | 0 | 1 | 8 | 35 |
| **Urban** | **13498** | **Water** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 |
| | | **Sanitation** | 0 | 0 | 0 | 17 | 0 | 0 | 23 | 0 | 0 | 0 |
| | | **Hygiene** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Waste Management** | 0 | 0 | 0 | 17 | 83 | 0 | 70 | 47 | 0 | 0 |
| | | **Cleaning** | 36 | 56 | 30 | 50 | 200 | 227 | 210 | 59 | 59 | 356 |
| **Rural** | **20356** | **Water** | 0 | 0 | 29 | 30 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Sanitation** | 34 | 28 | 0 | 90 | 179 | 0 | 18 | 75 | 0 | 0 |
| | | **Hygiene** | 0 | 0 | 116 | 60 | 0 | 0 | 0 | 38 | 0 | 0 |
| | | **Waste Management** | 169 | 28 | 116 | 271 | 777 | 0 | 0 | 188 | 27 | 0 |
| | | **Cleaning** | 304 | 140 | 520 | 422 | 1465 | 332 | 36 | 941 | 137 | 7 |
| **Hospital** | **899** | **Water** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Sanitation** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Hygiene** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Waste Management** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Cleaning** | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 |
| **Non-Hospital** | **32955** | **Water** | 0 | 0 | 43 | 46 | 0 | 0 | 0 | 0 | 0 | 43 |
| | | **Sanitation** | 45 | 45 | 0 | 182 | 272 | 0 | 80 | 98 | 0 | 0 |
| | | **Hygiene** | 0 | 0 | 171 | 91 | 0 | 0 | 0 | 49 | 0 | 0 |
| | | **Waste Management** | 224 | 45 | 171 | 456 | 1407 | 0 | 121 | 441 | 41 | 0 |
| | | **Cleaning** | 537 | 363 | 856 | 775 | 2768 | 950 | 443 | 1372 | 365 | 431 |

***Water:** No Service (No water source)

***Sanitation:** No Service (No sanitation facilities)

***Waste Management:** No service (there are no bins for sharps or infectious waste)

***Hygiene:** No Service (No hand washing stations at points of care or within 5 m of toilets)

***Cleaning:** No service (no cleaning policies or protocols are available, and no staff have received training on cleaning within the last 24 months)

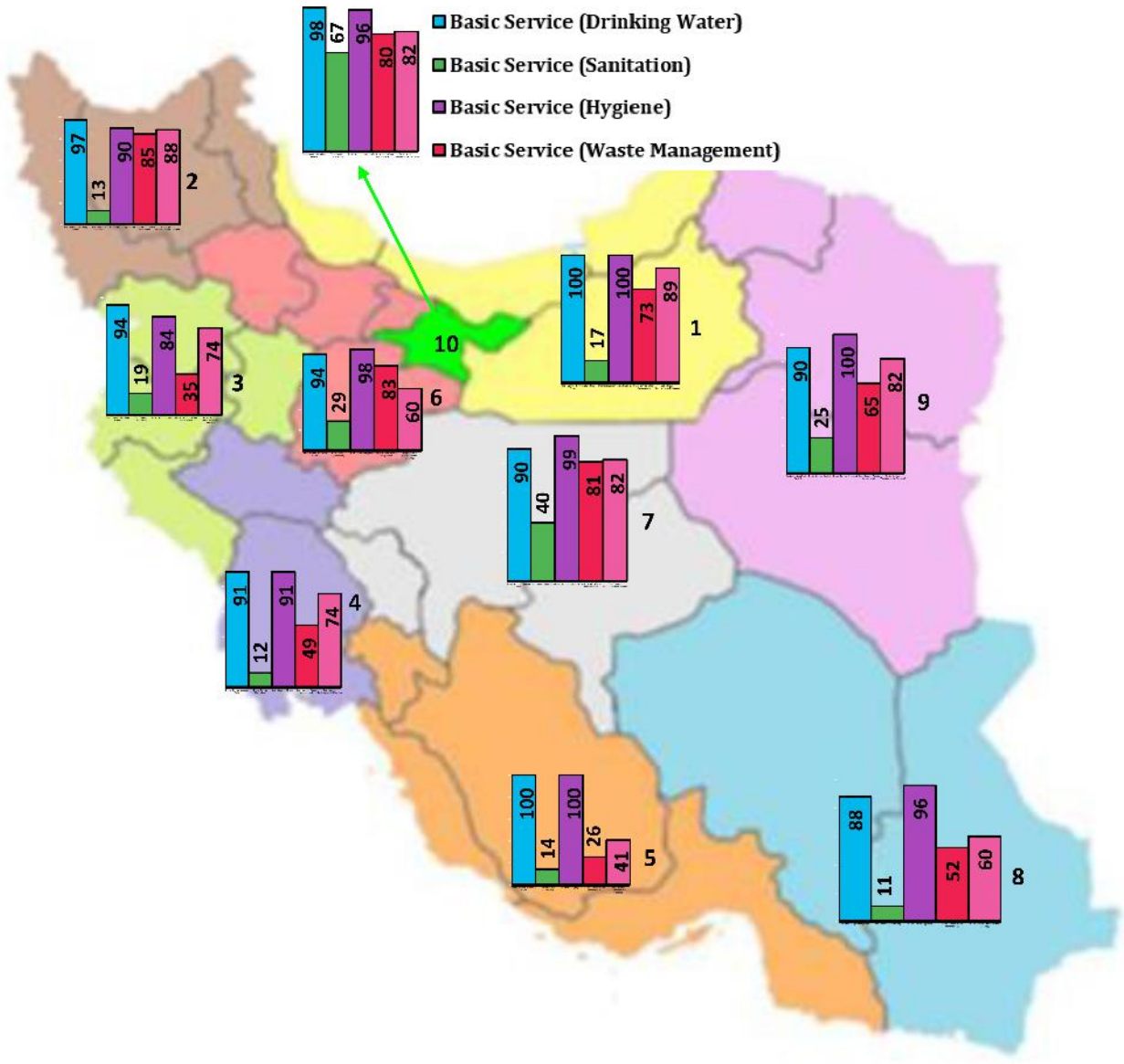



**Figure 7.** Proportion of HCFs with basic WASH services in the National Zones (NZs), Iran, 2021 (%). (Note: provinces belonged into each NZ: 1; Guilan, Mazandaran, Golestan, Semnan, 2; W. Azarbaijzan, E. Azarbaijan, Ardabil, 3; Kermanshah, Kurdistan, Ilam, 4; Lorestan, Khuzestan, 5; Fars, Bushehr, Kohgiluyeh , Hormozgan, 6; Markazi, Qazvin, Qom, Alborz, Zanjan, 7; Yazd, Esfahan, Charmahal, 8; Siatan, Kerman, 9; S. Khorasan, Razavi Khorasan, N. Khorasan, 10; Tehran)

## Main Objective

The overall objective of the task is to provide technical assistance to Ministry of Health and Population in developing a costed national road map for WASH in health care facilities.

In particular, the document aims to set targets and define a national roadmap for WASH in health care facilities based on the situation analysis and assessment and taking into consideration the special needs of vulnerable groups and underserved areas and facilities.

**Detailed Objectives**

The broader tasks of the party would be following, but not limiting to:

1. Providing a detailed project proposal based on reviewing the first step of WASH in healthcare facilities (HCFs-WASHIran.1); situation analysis and assessment of water, sanitation, hygiene, healthcare waste management, and environmental cleaning (WASH) services in healthcare facilities (HCFs) in Iran
2. Conducting the stakeholder analysis to assess how the interests and priorities of the stakeholders should be addressed in a project plan, policy, program, or other action
3. Identifying the significant gaps on WASH in healthcare facilities specially to support the most vulnerable groups and underserved areas and facilities to achieve universal coverage to quality care and infection prevention control during the health care
4. Conducting the stakeholder mapping for ranking stakeholders based on needs and the relative importance of stakeholders to others in the network
5. Establishment of the technical working group (TWG) based on the stakeholder analysis, the consultant needs to support the Ministry of Health and Medical Education (MOHME) to establish a national working group with the support of the WHO
6. Establishing working procedure/teamwork/working schedule and list of potential stakeholders/networks to be consulted during the consultation process by the consulting team, in coordination with TWG
7. Facilitating various consultative processes/meetings both virtual and face to face and preparing minutes/documents
8. Ensuring bottom-up inputs from the local levels through virtual specific consultative workshops for provincial and local governments
9. Conducting a draft roadmap that reimagines incremental improvements in WASH, IPC, and HCWM indicators in all healthcare facilities and meets the targets set as short, medium, and long terms

10. Estimating the cost for all environmental health services in HCFs by using the costing Toolkit fillable spreadsheet developed by Water Institute at UNC
11. Presenting the road map, under the guidance of the TWG, to the broader stakeholders and specific groups while ensuring there is political buy-in from a wide variety of governmental (all relevant ministries and departments at all three levels of government) and non-governmental stakeholders and collecting feedback
12. Finalizing cost road map, final report, and an executive summary on the whole project, including stakeholder engagement, committee meetings, undertaken procedures, technical methodologies, and results.

**Scope of the Work**

The scope of the consultant work is to use or recommend the WASH indicators; 1) Water supply, 2) sanitation, 3) hygiene, 4) HCWM, and 5) environmental cleaning in line with SDG/JMP and National standards, reachable targets and best available baseline data. Costing plan aims to cover development of the infrastructures for all government HCFs, but capacity building and monitoring activities could be for all type of HCFs (government and non-government). Some of the activities like water supply and CTF for HCWM could be combined with relevant stakeholders.

**Deliverables**

A total of 70 working days is estimated. Table 9 represents the estimated time required for completion the project, deliverable schedule, and the project activities.

**Table 9.** Details of the project activities and assigned deliverables

| No. | Activity | Estimated days/completion timeline (day) | Deliverable schedule |
|---|---|---|---|
| **1** | Counter-signed contract | **22** | **-** |
| **2** | Provide a detailed project proposal including summary of the results of the recent situational analysis and assessment of WASH in HCFs in Iran, and the stakeholder mapping. | **3** | Deliverables No. 1 |
| **3** | Provide a report on establishment of the working group, with a detailed terms of reference for the members, and the joint meeting plans. | **10** | Deliverables No. 2 |

| | | | |
|---|---|---|---|
| **4** | Draft of the road map based on a thorough analysis of current strategies and frameworks and joint meetings with stakeholders | **15** | Deliverables No. 3 |
| **5** | Finalized costed road map, final report and an executive summary on the whole project, including stakeholder engagement, committee meetings, undertaken procedures, technical methodologies, and results | **20** | Deliverables No. 4 (Final report) |
| **Sum.** | | **70** | - |

## Section 3: Implementation of strategies

### Methods

Detailed definitions of the service levels are illustrated in Fig .3. Based on the JMP, a "basic service" concerning to the lowest acceptable set of WASH services. As well as the basic service, an "Advanced service" can be defined at national level. This 4-level system allows more precise description of the WASH conditions and facilitates the development tracking and comparing the progress trend. Therefore, the national prioritization can be recognized in terms of improvement actions for obtaining the targets. A global harmonization will be also acquired in WASH monitoring approach in HCFs [20].

### Thorough analysis of current strategies and frameworks

Healthcare organizations must continually make adjustments to maintain optimal function [37] . A number of different techniques can be used to determine where adjustments need to be made. One essential technique involves a discussion of an organization's strengths, weaknesses, opportunities, and threats, commonly called SWOT analysis. SWOT analysis has been used extensively in other industries but has not been widely used in healthcare [38]. SWOT analysis is a precursor to strategic planning and is performed by a panel of experts who can assess the organization from a critical perspective [39]. This panel could comprise senior leaders, board members, employees, medical staff, patients, community leaders, and technical experts. Panel members base their assessments on utilization rates, outcome measures, patient satisfaction statistics, organizational performance measures, and financial status. While based on data and facts, the conclusions drawn from SWOT analysis are an expert opinion of the panel.

**Establishment of the Working Group**

A team of multidisciplinary experts are carry out the assignment in coordination with one another. The qualification background, experience and the affiliation of each team member is presented in Table 10.

**Table 10.** List of technical working group regarding their discipline and academic/official position

| NO. | Name | Organization/Position | Role |
|---|---|---|---|
| 1 | Dr. Mohammad Khazaei | UMSHA/DEHE/Assistant Professor | Executive |
| 2 | Dr. Rahim Taghizadeh Asl | WHO-CO Head of Healthier Population Unit | Supervisor |
| 3 | Ms. Tayebeh Elahi | MOHME/CEOH/HAP/Senior Officer | Hygiene and Environmental Cleaning TWSG (Member) |
| 4 | Dr. Mona Khaleghy Rad | WHO-CO, EOH National Professional Officer | Water and Sanitation TWSG (Member) |
| 5 | Dr. Reza Shokoohi | UMSHA/DEHE/Professor | Water and Sanitation TWSG (Member) |
| 6 | Dr. Alireza Rahmani | UMSHA/DEHE/Professor | Water and Sanitation TWSG (Member) |
| 7 | Dr. Hossein Mahjoub | UMSHA/DBS/Professor | Biostatistics advisor |
| 8 | Dr. Aliakbar Fazaeli | TUMS/ DHE/Associated Professor | Health Economics Advisor |
| 9 | Dr. Hojatollah Qaraei | UMSHA/ DHSM/Assistant Professor | Health Services Management advisor |
| 10 | Mr. Dadmehr Zaeri Razi | NWWEC/WWOSO/Senior Officer | Water and Sanitation TWSG (Representative) |
| 11 | Mr. Saber Entezari | NWWEC/WOSO/Senior Officer | Water and Sanitation TWSG (Member) |
| 12 | Mr. Jafar Ghasemi | WAUMS/DPH/Senior Officer | Water and Sanitation TWSG (Member) |
| 13 | Mr. Ahmad Shamaei Zavareh | MUI/DPH/Senior Officer | Healthcare Waste TWSG (Representative) |
| 14 | Mrs. Mahbubeh Karachi Isfahani | ZUMS/ DPH/Senior Officer | Healthcare Waste TWSG (Member) |
| 15 | Mr. Mohammad Ali Qudsi Maab | MOHME/DDMR/Professional Officer | Budget Allocation Advisor |

| | | | |
|---|---|---|---|
| 16 | Mrs. Farnaz Mostofian | MOHME/DT/HAP/Senior Officer | Hygiene and Environmental Cleaning TWSG (Representative) |
| 17 | Mrs. Kolsum Teimuri | GOUMS/ DPH/Senior Officer | Healthcare Waste TWSG (Member) |
| 18 | Eng. Mohamad Reza Einghalaei | IDOE/WSPO/Senior Officer | Healthcare Waste TWSG (Member) |
| 19 | Mr. Sakineh Mohtadi | IDOE/WSPO/Senior Officer | Healthcare Waste TWSG (Member) |
| 20 | Dr. Maryam Mesreghani | IUMS/ DPH/Senior Officer | Water and Sanitation TWSG (Member) |
| 21 | Dr. Lida Rafati | UMSHA/ DPH/Senior Officer | Water and Sanitation TWSG (Member) |
| 22 | Mrs. Sonia Chavoshi | UMSHA/DEHE/Ph.D. Candidate | Meetings Coordination |
| 23 | Ms. Maryam Roshani | UMSHA/DEHE/Officer | Preparation of minutes |
| 24 | Ms. Farnaz Joghataei | MOHME/CEOH/HAP/Officer | Hygiene and Environmental Cleaning TWSG (Member) |
| 25 | Mr. Ali Mohammadi | MOHME/CEOH/HCWM/Officer | Healthcare Waste TWSG (Member) |
| 26 | Mrs.Mahsa Atefeh | WHO-CO, National Health Coordinator | Healthcare Waste TWSG (Member) |
| 27 | Mr. Mehrdad Yadegari | WHO-CO, National Health Coordinator | Hygiene and Environmental Cleaning TWSG (Member) |
| 28 | Ms. Samira Sheikholeslam | MOHME/CEOH/HCWM/Officer | Healthcare Waste TWSG (Member) |

As revealed in Table 10, the Technical Working Group (TWG) comprising 28 members who are belonged into multidiscipline related to five elements of WASH. Furthermore, regarding the different circumstances of HCFs which are varied from rural HCFs (e.g. Health House) to sophisticated HCFs (e.g. General Hospitals), applying members with the capability to focus on the specific aspects of each HCFs stratum is necessary. Consequently, the MOHM representative in hospitals inspection (e.g. No. 16 in Table 10) or MOHM representative in rural HCFs inspection (e.g. No. 24 and 28 in Table 10) were contributed in the TWG.

**Detailed Term of Reference for the Members**

The overall objective of the task is to provide technical assistance to MOHME in developing a national costed roadmap for WASH in healthcare facilities. In particular, the document aims to set targets and define a national roadmap for WASH in healthcare facilities based on the

situation analysis and assessment and taking into consideration the special needs of vulnerable groups and underserved areas and facilities.

Reviewing the outputs derived from the HCFs-WASHIran.1 was the first section of TWG meeting program, so that some detailed graphs describing the sub-elements of WASH are presented in the TWG meetings to depict an obvious profile of HCFs circumstances. The abovementioned graphs were not produced in the master Microsoft Excel file (IRN_Tracking_Progress_HCFs) approved by EMRO-CEHA. For more information, only four levels of linguistic terms comprising "basic service", "limited service", "no service", and "no data" were applied in HCFs-WASHIran.1 report to describe WASH elements (Fig. 8) so that many of detailed data which were extractable from the tool (questionnaire) had been set aside.

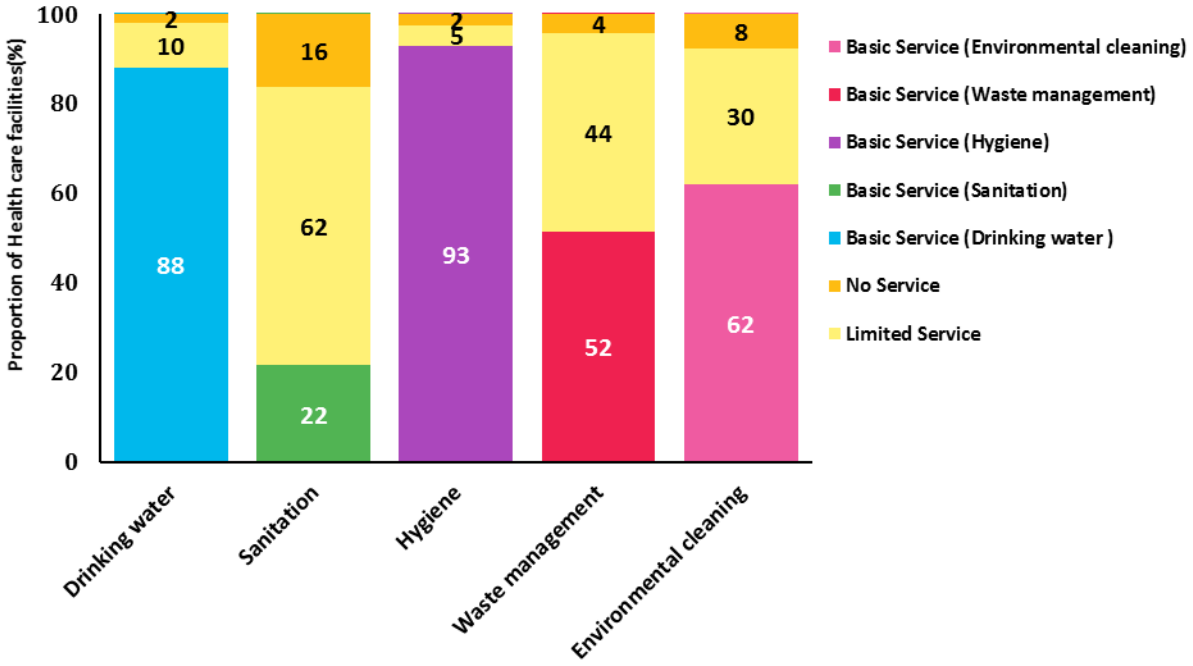



**Figure 8.** Basic services of WASH elements in health care facilities at national level, Iran [22].

In the reviewing phase of HCFs-WASHIran.1, TWG decided to fetch the dormant information laid beneath the database. Tables 6-8, Fig. 7, and annex 3 depict the detailed information prepared for use by TWG during the sessions. As revealed, the numerous detailed graphs belonged into the three main levels government/non-government, hospital/Non-hospital,

and urban/rural HCFs and those related into WASH elements regarding the regional outputs (e.g. geographical distribution of WASH elements) were available.

This approach helps TWG focusing on prose and cones of WASH elements regarding each HCF stratum (hospital/non-hospital, rural/urban, government/non-government), and each regional part of the country.

After pre-analyzing the WASH elements, three TWSGs were established, which include related disciplines to monitor each WASH element more precisely. These TWSGs include "Water and Sanitation", "Hygiene and Environmental cleaning", and "Healthcare Waste Management". Furthermore, a multidisciplinary supervisory team was established for conducting, monitoring, evaluation, and finalizing the TWSGs outputs. In Table 11, the TWSGs and supervisory team members are represented.

**Table 11.** Members of TWSGs and Supervisory Team

| | TWSG | | | Supervisory Team |
|---|---|---|---|---|
| | Water and Sanitation | Waste Management | Environmental Cleaning and Hygiene | |
| Group Members | Dr. Mona Khaleghi Rad | Mr. Ahmad Shamaei Zavareh | Mrs. Farnaz Mostofian | Dr. Mohammad Khazaei |
| | Mr. Dadmehr Zaeri Razi | Mrs. Mahbubeh Karachi Isfahani | Mrs. Tayebeh Elahi | Dr. Rahim Taghizadeh Asl |
| | Mr. Saber Entezari | Mrs. Kolsum Teimuri | Mr. Jafar Ghasemi | Dr. Hossein Mahjoub |
| | Ms. Maryam Mesreghani | Mr. Sakineh Mohtadi | Ms. Maryam Roshani | Dr. Aliakbar Fazaeli |
| | Dr. Lida Rafati | Mrs.Mahsa Atefeh | Ms. Farnaz Joghataei | Dr. Hojatollah Qaraei |
| | Mr. Ali Mohammadi | Ms. Samira Sheikhol Islam | Mr. Mehrdad Yadegari | Mr. Mohammad Ali Qudsi Maab |
| | - | - | - | Mrs. Sonia Chavoshi |
| | - | - | - | Dr. Alireza Rahmani |
| | | | | Dr. Reza Shokoohi |

**Joint Meeting Plans**

Due to the short time to complete the project (70 days), the selection of TWG members and the scheduling of meetings were done quickly. Table 12 represents the meeting schedule.

**Table 12.** Framework of TWG meeting regarding the costed roadmap strategies

| NO. | Meeting Date | Agenda | Venue | Type of meeting | Duration of the event |
|---|---|---|---|---|---|
| 1 | 30-OCT-2022 | -Establishing working procedure | Hamadan-UMSHA | Online | 10 am to 1 pm (3 Hours) |
| 2 | 16-NOV-2022 | -Reviewing HCFs-WASHIran.1 | Tehran-MOHME | face-to-face | 08 am to 2 pm (6 Hours) |
| 3 | 23-NOV-2022 | -organizing TWSG<br>-Gap analysis (SWOT) | Tehran-WHO-CO | face-to-face | 08 am to 2 pm (6 Hours) |
| 4 | 30-NOV-2022 | -strategic plan<br>-Action plan | Tehran-WHO-CO | face-to-face | 08 am to 2 pm (6 Hours) |
| 5 | 07-DEC-2022 | -Conducting a draft roadmap | Hamadan-UMSHA | Online | 08 am to 2 pm (6 Hours) |
| 6 | 19-DEC-2022 | Finalizing the roadmap activities | Tehran-MOHME | face-to-face | 08 am to 2 pm (6 Hours) |

As mentioned in the above session, two phases undertook to conduct HCFs-WASHIran.2 including the reviewing of HCFs-WASHIran.1 outputs and organizing three TWSG, which comprised related disciplines to monitor each WASH element. As represented in Table 12, the session agendas were determined to obtain a reliable tool to aggregate various input factors affect WASH coasted roadmap. To do this, applying a strategic plan according to a gap analysis approach was the main task. This approach finally tend to a number of goals which have been strengthened through time scheduled strategies and respective activities.

**WASH roadmap strategic plan**

As noted in the previous section, the WASH roadmap goals, strategies, and activities were obtained through a SWOT approach relied on a strategic plan. Here, the sub-sections of WASH roadmap strategic plan are presented according to the main outputs of TWSGs under conducting of the supervisory team. It should be mentioned that due to the large number of graphs produced, most of the details have been moved to Annex 2 of the report and only the main tables are included in the text.

**Establishment of the SWOT matrices**

Three distinct TWSGs; "Healthcare waste management" (MCWM), "Water and Sanitation", and "Hygiene and Environmental Cleaning" applied SWOT tools to achieve the strategies regarding WASH elements in HCFs. In the SWOT framework, factors attributed into each SWOT element were determined through decision making team (TWSG) by thorough analysis of HCFs-WASHIran.1 report as well as the practical experiences of the decision makers.

A conventional method was applied to determine likelihood (rating) and importance (weight) of factors assigned to each element of SWOT. The score regarding to each factor can be calculated via multiplying rating and weight belonged to that respective factor. The priority of factors then obtained through descending ranking of scores.

Tables 2.1-2.15 in Annex 2, represent the SWOT elements; Strengthens, Weakness, Opportunities, and Threats assigning into the WASH elements in Iranian HCFs. Furthermore, the SWOT Element Index (EI) can be obtained applying Eq. 2.

$$\boldsymbol{EI = \frac{(R_{si} \times W_{si})}{\sum_{i=1}^{n} W_{si}}} \qquad \textbf{Eq .2}$$

Where, $R_{si}$ and $W_{si}$ are rating and weight assigning into each SWOT factor, respectively. It should be noted that, for all SWOT elements, the range of each $R_{si}$ is between 1 and 5 and the range of each $W_{si}$ is between 0 and 10. The sum of all $W_{si}$ belonged to each SWOT element must not exceeded 10. Consequently, the value 10 is distributed between all $W_{si}$ belonged to each SWOT element according to the respective factor importance.

**Determining the strategic zone of output**

The strategic zones of WASH elements can be obtained by subtracting the internal factors (Strengthens and Weakness) and external factors (Opportunities and Threats), separately (Eqs. 3 and 4). Then the determined numbers serve as the coordinates in a Cartesian coordinate axes (Annex 2: Figs. 2.1, 2.2, and 2.3).

$$\boldsymbol{Strengthens - Weakness = X\ Coordinate} \qquad \boldsymbol{Eq.3}$$

$$\boldsymbol{Opportunities - Threats = Y\ Coordinate} \qquad \boldsymbol{Eq.4}$$

Tables 13, 14, and 15 represent the priority matrix of strategic subjects regarding the WASH elements.

**Table 13.** Priority matrix of strategic subjects regarding MCWM

| Num. | Strategic Subject | Capability to execute | Impact on WASH promotion (1-10) | Required cost* (1-10) | Considering the stakeholders (1-10) | Likelihood (1-10) | Magnitude (1-10) | Sum (6-60) | Priority |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Inclusion of special WASH textbook in HCFs in guild school programs to familiarize citizens with the right to access WASH services in HCFs | 4 | 5 | 7 | 8 | 7 | 5 | 36 | 7 |
| 2 | Clarification of the components currently being edited in the executive regulations of HCWM and related wastes, especially in the definition, separation and treatment sections | 8 | 8 | 9 | 8 | 9 | 8 | 50 | 1 |
| 3 | Creation of a mechanism for the accreditation of companies that supply and provide services for Healthcare Waste Treatment Systems (HCWS) by the Ministry of Health | 5 | 6 | 4 | 5 | 5 | 6 | 31 | 8 |
| 4 | Amending instructions related to pre-employment and periodical examinations regarding periodic hepatitis HBV vaccination | 8 | 8 | 4 | 10 | 9 | 9 | 42 | 6 |
| 5 | Establishing a national HCW database in the MOHME to continuously monitor the implementation of the waste management program produced in HCFs. | 8 | 9 | 5 | 8 | 7 | 8 | 45 | 5 |
| 6 | The use of financial resources listed in Paragraph A, Note 5 of the national Budget Law 2023 regarding the use of the capacity of financial bonds in order to develop rural infrastructures. | 9 | 8 | 9 | 7 | 8 | 8 | 49 | 2 |
| 7 | Using the capacity of the "Comprehensive System for the Benefit of Iranians" (currently being launched and under the responsibility of the Ministry of Cooperatives) contained in Paragraph C of Note 17 (Welfare and Health) of the national Budget Law 2023 in order to consider the problems of villagers in accessing WASH infrastructure in HCFs. | 6 | 8 | 6 | 9 | 8 | 9 | 46 | 4 |
| 8 | Creating credit lines in the national annually budget law and ministerial allocations in order to provide special WASH services in vulnerable groups and underserved areas and facilities (such as rural HCFs of Zahedan, South Khorasan and Ilam provinces) | 9 | 9 | 4 | 10 | 6 | 10 | 48 | 3 |
| 9 | Adding a supplementary paragraph to note 3 of the national annually budget law (financing chapter) in order to | 8 | 9 | 3 | 8 | 9 | 8 | 45 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | create the ability to use financial resources in for strengthening the relevant infrastructure of the program for separation, collection (special vehicles equipped with leachate tanks), and treatment of HCW in rural HCFs. | | | | | | | | |

* Values are in reverse order; higher cost required, lower value assigned.

**Table 14.** Priority matrix of strategic subjects regarding Water and Sanitation

| Num. | Strategic Subject | Capability to execute | Impact on WASH promotion (1-10) | Required cost* (1-10) | Considering the stakeholders (1-10) | Likelihood (1-10) | Magnitude (1-10) | Sum (6-60) | Priority |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Identification and attraction of approved financial resources | **8** | **9** | **8** | **5** | **7** | **8** | **45** | **2** |
| 2 | Outsourcing construction (construction and repairs) and laboratory services to the private sector | **7** | **6** | **1** | **3** | **7** | **4** | **28** | **7** |
| 3 | Attracting the financial support of donors in terms of capital costs and upgrading water and sanitation infrastructures related to WASH in underserved HCFs | **9** | **8** | **10** | **7** | **2** | **8** | **44** | **3** |
| 4 | Water and wastewater quality monitoring by accredited academic laboratories | **6** | **5** | **2** | **6** | **7** | **5** | **31** | **6** |
| 5 | Exempting health houses from paying water bills and the right to connect to the sewage collection network (like the resolution of the parliament regarding mosques) | **7** | **8** | **8** | **7** | **6** | **4** | **42** | **4** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Amendment of laws and regulations with a special approach to develop the WASH program in the less privileged areas of the country based on HCFs-WASHIran.1 and TWG comments. | **8** | **8** | **8** | **7** | **8** | **7** | **46** | **1** |
| 7 | Estimating water storage requirements in small HCFs and installing storage tanks | **6** | **8** | **3** | **7** | **7** | **6** | **37** | **5** |

*Values are in reverse order; higher cost required, lower value assigned.

**Table 15.** Priority matrix of strategic subjects regarding Hygiene and Environmental Cleaning

| Num. | Strategic Subject | Capability to execute | Impact on WASH promotion (1-10) | Required cost* (1-10) | Considering the stakeholders (1-10) | Likelihood (1-10) | Magnitude (1-10) | Sum (6-60) | Priority |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Promotion of hand hygiene programs in hospitals and health centers through the compliance and existence of community demands in the field of hand hygiene | **5** | **6** | **4** | **8** | **6** | **6** | **35** | **4** |
| 2 | Strengthening the WASH program by various centers in the Ministry of Health through the development of related guidelines (integration of guidelines, center evaluation system, information registration, placement, educational resilience standards, recruitment of | **8** | **7** | **8** | **7** | **8** | **9** | **47** | **2** |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | people especially in health centers, etc.) | | | | | | | | |
| 3 | Maintaining the general sensitivity of the society towards observing hand hygiene through demands from the centers and strengthening intra-organizational and extra-organizational cooperation according to the existence of an integrated view regarding the requirements of the WASH program. | **6** | **8** | **5** | **6** | **3** | **8** | **36** | **3** |
| 4 | Creating an integrated WASH management system in HCFs so that its output can be continuously monitored by ministerial and university managers through HCFs-WASHIran Observatory. | **8** | **8** | **6** | **9** | **9** | **8** | **48** | **1** |

* Values are in reverse order; higher cost required, lower value assigned.

Table 16 depicts the major goal, quantitative goals, and outcomes attributed to the WASH elements by applying the outputs of the priority matrix obtained from the SWOT method which was aggregated in tables 13-15 and the findings resulted from the WASHIran. 1 study that have summarized in Annex. 3, Table 6-8, and Fig. 7.

**Table 16.** Major goal, quantitative goals, and outcomes attributed to the WASH elements

| Main Goal | Quantitative Goal | Outcome | | | | | |
|---|---|---|---|---|---|---|---|
| | | Source | Indicator | Current Estimate (%) | Progress Timeline (By end of) | | |
| | | | | | Short-term | Mid-term | |
| | | | | | 2023 | 2024 | 2025 |
| Improving WASH Elements in HCFs | Improving facility estimates (%) regarding Water Element in HCFs | Table 14 Fig. 8 Annex. 3 | Basic Service | 88.14 | 91 | 94 | 97 |
| | Improving facility estimates (%) regarding Sanitation Element in HCFs | Table 14 Fig. 8 Annex. 3 | Basic Service | 21.8 | 25 | 30 | 35 |
| | Improving facility estimates (%) regarding Waste Management Element in HCFs | Table 13 Fig. 8 Annex. 3 | Basic Service | 51.6 | 60 | 65 | 70 |
| | Improving facility estimates (%) regarding Hygiene Element in HCFs | Table 15 Fig. 8 Annex. 3 | Basic Service | 93 | 95 | 97 | 99 |
| | Improving facility estimates (%) regarding Environmental Cleaning Element in HCFs | Table 15 Fig. 8 Annex. 3 | Basic Service | 62 | 70 | 75 | 80 |

As seen in Table 16, the Progress Timeline have been consider to achieve in the short and medium term. In this study, long-term goals (5 years and more) were not considered. This issue is due to the economic conditions of the country and the rapid growth of inflation, sanctions against the country, as well as the lack of sufficient stability in long-term plans due

to fragile economic condition. Table 17 represents the quantitative goals, strategies, and outputs attributed to the WASH elements.

| Num. | Quantitative Goal | Strategy | Code |
|---|---|---|---|
| 1 | Improving facility estimates (%) regarding Water Element in HCFs | Decreasing the number of "No Service" HCFs regarding Water Element in National level (HCFs-WASHIran.1 [23]; Annex. 3.1, Table 8) | GO1S1 |
| | | Exempting rural HCFs from paying the initial privilege purchase fee and annual bills for connecting to the public water network | GO1S2 |
| | | Attracting the financial support of donors in terms of capital costs and upgrading water infrastructures related to WASH in underserved non-hospital HCFs | GO1S3 |
| 2 | Improving facility estimates (%) regarding Sanitation Element in HCFs | Decreasing the number of "No Service" HCFs regarding Sanitation Element in National level (HCFs-WASHIran.1 [23]; Annex. 3.2, Table 8) | GO2S1 |
| | | Exempting all HCFs from paying the initial privilege purchase fee and annual bills for connecting to the sewer network | GO2S2 |
| | | Attracting the financial support of donors in terms of capital costs and upgrading Sanitation infrastructures related to WASH in underserved HCFs | GO2S3 |
| 3 | Improving facility estimates (%) regarding Waste Management Element in HCFs | Decreasing the number of "No Service" HCFs (there are no bins for sharps or infectious waste. Infectious and sharps waste are treated/disposed with an unimproved method) regarding HCWM Element in National level (HCFs-WASHIran.1 [23]; Annex. 3.3, Table 8) | GO3S1 |
| | | Training HCW workers regarding HCW risk factors, waste segregation, and other Waste Element considerations related to WASH in National level (HCFs-WASHIran.1 [23]; Annex. 3.3) | GO3S2 |
| | | Clarification of the components currently being edited in the executive regulations of HCWM and related wastes, especially in the definition, separation and treatment sections | GO3S3 |
| 4 | Improving facility estimates (%) regarding Hygiene Element in HCFs | Decreasing the number of "No Service" HCFs (No hand washing stations at points of care or within 5 m of toilets) regarding Hygiene Element in National level (HCFs-WASHIran.1 [23]; Annex. 3.4, Table 8) | GO4S1 |
| | | Increasing the number of HCFs having "Stations with soap and water at points of care" regarding Hygiene Element in National level (HCFs-WASHIran.1 [23]; Annex. 3.4) | GO4S2 |
| | | Amendment of laws and regulations with a special approach regarding Hygiene Element to develop the WASH program in the rural HCFs | GO4S4 |
| 5 | Improving facility estimates (%) regarding Environmental Cleaning | Decreasing the number of "No Service" HCFs (no cleaning policies or protocols are available, and no staff have received training on cleaning within the last 24 months) regarding Cleaning Element in National level (HCFs-WASHIran.1 [23]; Annex.3.5, Table 8) | GO5S1 |

| | | | |
|---|---|---|---|
| | Element in HCFs | | |

**Table 17.** Quantitative goals, strategies, and outputs attributed to the WASH elements

## Section 4: Costing Environmental Health Services in Healthcare Facilities

Maintaining environmental health services (EHS) is critical for safe, efficient care provision in healthcare facilities. Inadequate environmental conditions can reduce care seeking,[40] efficiency and quality of care, and retention of healthcare staff;[41] and increase risk of healthcare acquired infections[42, 43].

EHS in healthcare facilities prevent transmission of contamination from person-to-person and person-to-environment, and vice versa[44]. EHS protect patients and healthcare providers, but also other individuals visiting or working in the facility and individuals in the surrounding community that may be exposed to waste outputs, such as dump sites. While the specific services considered to be EHS vary across disciplines, here we consider EHS monitored in HCFs by The JMP for WASH of the World Health Organization and UNICEF. The JMP monitors progress toward targets 6.1 and 6.2 of the SDGs and interprets EHS in healthcare facilities to include: water, sanitation, hygiene, healthcare waste management, and environmental cleaning.[16]

Poor understanding of the costs of EHS delivery hinders progress toward adequate provision, particularly in low and lower-middle income countries. Only 22% of countries have budgets in place for EHS in healthcare facilities that are consistently funded[45]. Better quantification of these costs can encourage investment and facilitate improved allocation of resources for EHS in healthcare facilities[44].

Costing is the process of collecting, recording, calculating, and reporting the costs of providing services. Cost information is critical for budgeting, which is the process of estimating and allocating resources for anticipated expenses. A process model for budgeting for environmental health services in healthcare facilities has been proposed by Anderson *et al* [44]. As shown in Fig. 9, the model describes 10 steps across three phases: Planning, Data collection, and Synthesis.

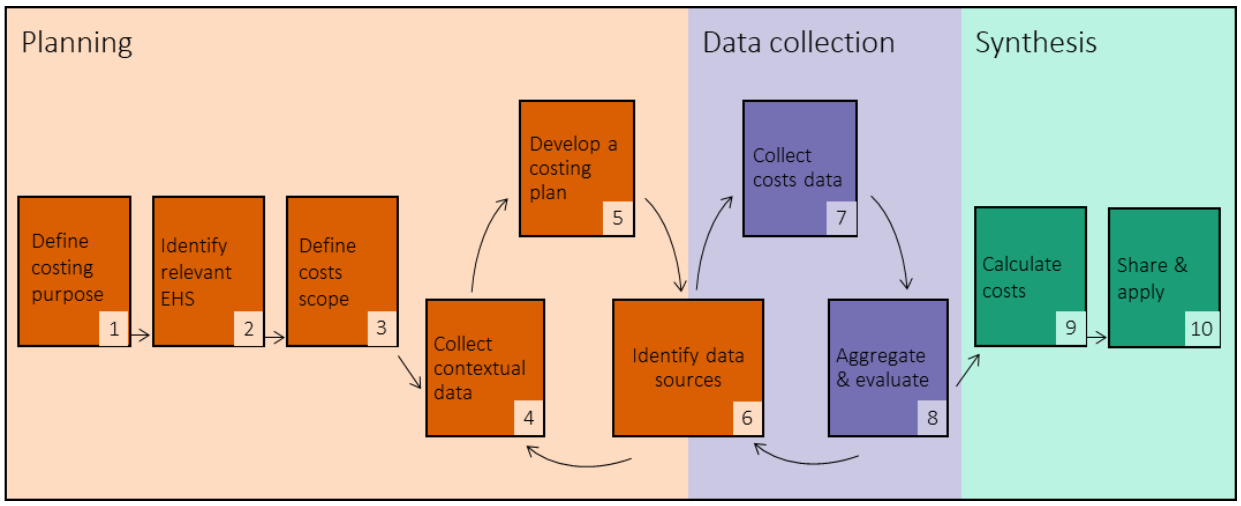



**Figure 9.** Ten steps for budgeting for environmental health services (EHS) in HCFs. Adapted from Anderson et al. [12]

This toolkit is a companion to this process model [44] and contains modules to guide through each step, with worksheets containing discussion guides, data collection tools, and a fillable spreadsheet.

By applying the abovementioned tool (CTFS-EHSs-HCFs), a primary budgeting process was conducted for HCFs-WASHIran. 2. The planning was organized in a 3-years scope, comprising short-term (1 year), mid-term (2 years), and near long-term (3 years) periods. As motioned earlier, because of some uncertainties regarding the current national economic circumstances like the imposed sanctions, intense inflation, and absence of a strict national economic plan, budgeting for HCFs environmental health services was avoided for timeframes more than 3 years.

Some useful definitions (Cost Categories) regarding CTFS-EHSs-HCFs can be addressed as follows [44]:

**Capital hardware** – Infrastructure or equipment purchases or rentals required to establish services or implement changes to environmental health service delivery method, which are not consumed during normal environmental health service operation.

**Capital maintenance** – Expenses required to repair, rehabilitate, or otherwise maintain functionality of capital hardware, including labor costs required for these purposes.

**Capital software** – Planning, procurement, and initial training costs associated with establishing new services or implementing changes to environmental health service delivery method.

**Recurrent training** – Training required to ensure proper ongoing environmental health service provision regardless of changes to environmental health service delivery.

**Consumables** – Products and supplies that are consumed during normal operation.

**Personnel** – Labor costs associated with normal operation of a service, including staff benefits.

**Direct support** – Expenses required to supervise and monitor environmental health service provision to ensure safety and sustainability that support but do not have direct environmental health service outputs, such as auditing or developing management plans.

**Contracted services** – Fees paid to external providers to perform all or part of normal environmental health service operation, including multiple other cost categories, where expenses cannot be accurately disaggregated into categories above; where fees fall solely within another cost category described above, expenses should be included therein.

**Facility manager** – Anyone who oversees the day to day functions of the healthcare facility. This may include, but is not limited to a general administrator, the head nurse, or the head physician.

Table 18 represents the detailed category numbers of National Annual Budget Bill (NABB;2023-24) regarding each element of WASH in the 10 national zones derived from NABB-Appendix 1 (The budget of capital asset acquisition plans [36]). As shown, the main emphasis of budgeting is improving the standard of hospital facilities, upgrading the Hospital Wastewater Treatment Plants (HWTPs), and establishment of hospital Healthcare Waste Treatment Systems (HWTSs). Although the water supply for remote rural areas are a promising budget regarding the improvement of Water element of WASH in the rural areas, the nonhospital HCFs in terms of WASH elements are not adequately considered in the national budget.

**Table 18.** Detailed category numbers of budget regarding each element of WASH in the 10 national zones (Iranian National Budget (2023-24)- Appendix 1: The budget of capital asset acquisition plans [36])

| Num. | Budget Category Number | Subject | Geographical Area | Included WASH Element | Included HCF Type | Number of Included HCFs | Start Year | End Year | (Million IRR) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Spent So Far | Estimated Budget in 2023 | Total Budget |
| 1 | 1601005001 | Establishment of Healthcare Waste Treatment Systems (HWTSs) | All 10 National Zones | Waste Management | Hospital | 500 | 2006 | 2026 | 214687 | 25000 | 826586 |
| 2 | 1601005002 | Upgrading the Hospital Wastewater Treatment Plants (HWTPs) | National | Sanitation | Hospital | 500 | 2009 | 2026 | 117583 | 150000 | 850682 |
| 3 | 1503003006 | Water supply for remote rural areas | National | Water | Rural | 1000 | 2014 | 2026 | 116676635 | 24200010 | 692732325 |
| 4 | 1602001134<br>1602001138<br>1602001139<br>1602001140<br>1602001149<br>1602001151 | Improving the standard of hospital facilities | National Zone 1 | Waste Management Hygiene Cleaning | Hospital | 109 | 2014 | 2023 | 1230132 | 158699 | 2752679 |
| 5 | 1602001126<br>1602001142<br>1602001150<br>1602001154 | Improving the standard of hospital facilities | National Zone 2 | Waste Management Hygiene Cleaning | Hospital | 94 | 2014 | 2023 | 413155 | 145677 | 1592062 |
| 6 | 1602001115<br>1602001130<br>1602001132<br>1602001137<br>1602001158 | Improving the standard of hospital facilities | National Zone 3 | Waste Management Hygiene Cleaning | Hospital | 47 | 2014 | 2023 | 610982 | 129582 | 1994773 |
| 7 | 1602001131<br>1602001133<br>1602001155<br>1602001161 | Improving the standard of hospital facilities | National Zone 4 | Waste Management Hygiene Cleaning | Hospital | 71 | 2014 | 2023 | 817550 | 143709 | 1872684 |

**Table 18.** Detailed category numbers of budget regarding each element of WASH in the 10 national zones (Iranian National Budget (2023-24)- Appendix 1: The budget of capital asset acquisition plans [36]), (Continued)

| Num. | Budget Category Number | Subject | Geographical Area | Included WASH Element | Included HCF Type | Number of Included HCFs | Start Year | End Year | (Million IRR) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Spent So Far | Estimated Budget in 2023 | Total Budget |
| 8 | 1602001116<br>1602001117<br>1602001118<br>1602001119<br>1602001120<br>1602001143<br>1602001144 | Improving the standard of hospital facilities | National Zone 5 | Waste Management Hygiene Cleaning | Hospital | 115 | 2014 | 2023 | 1656254 | 219720 | 3330316 |
| 9 | 1602001111<br>1602001113<br>1602001114<br>1602001148 | Improving the standard of hospital facilities | National Zone 6 | Waste Management Hygiene Cleaning | Hospital | 73 | 2014 | 2023 | 203805 | 86614 | 1180602 |
| 10 | 1602001110<br>1602001129<br>1602001147 | Improving the standard of hospital facilities | National Zone 7 | Waste Management Hygiene Cleaning | Hospital | 72 | 2014 | 2023 | 696987 | 147405 | 1349356 |
| 11 | 1602001135<br>1602001136<br>1602001145<br>1602001146<br>1602001156<br>1602001160 | Improving the standard of hospital facilities | National Zone 8 | Waste Management Hygiene Cleaning | Hospital | 30 | 2014 | 2023 | 447125 | 82679 | 1237219 |
| 12 | 1602001121<br>1602001122<br>1602001123<br>1602001124<br>1602001125<br>1602001152<br>1602001153<br>1602001159 | Improving the standard of hospital facilities | National Zone 9 | Waste Management Hygiene Cleaning | Hospital | 84 | 2014 | 2023 | 733556 | 142516 | 1772728 |
| 13 | 1602001109<br>1602001112<br>1602001127<br>1602001128<br>1602001141<br>1602001157 | Improving the standard of hospital facilities | National Zone 10 | Waste Management Hygiene Cleaning | Hospital | 162 | 2014 | 2023 | 3286632 | 273843 | 5009939 |

Tables 19-31 represent the activities assigned to the 13 strategies mentioned in table 17. By using Table 8 and 18, the "No Service" HCFs and the related applicable national budget has been addressed, respectively.

**Table 19.** Tasks (Activities) considered for each strategy regarding Water Element in HCFs- Strategy (GO1S1)

| **Main Goal (G): Improving WASH Elements in HCFs**<br>**Quantitative Goal (GO1):**<br>**Improving facility estimates (%) regarding Water Element in HCFs**<br>**Strategy (GO1S1): Decreasing the number of "No Service" HCFs regarding Water Element in National level (HCFs-WASHIran.1 [23]; Annex.2.1)** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Num.** | **Task (Activity)** | **Responsible** | **Output** | | | | **Timeline** | | **National PoA*Cost (USD)** | **Budget Category Number (NABB;2023-24)** |
| | | | **Indicator** | **Scale** | **Estimate (Quantity)** | | | | | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** | | |
| 1 | Zeroing "No Service" Non-Hospital HCFs in National Zone 3 | MOHME | Table 8 | Number | 43 | 0 | 24 | 2024 | 136,000 | 1503003006 |
| 2 | Zeroing "No Service" Non-Hospital HCFs in National Zone 4 | MOHME | Table 8 | Number | 46 | 0 | 24 | 2024 | | |
| *Plan of Action | | | | | | | | | | |

**Table 20.** Tasks (Activities) considered for each strategy regarding Water Element in HCFs-Strategy (GO1S2)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO1): Improving facility estimates (%) regarding Water Element in HCFs** | | | | | | | | |
| **Strategy (GO1S2): Exempting rural HCFs from paying the initial privilege purchase fee and annual bills for connecting to the public water network** | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Output** | | | | **Timeline** | |
| | | | **Indicator** | **Scale** | **Estimate (Quantity)** | | | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** |
| 1 | Providing justifications and completing the official request from the MOHME to the government cabinet | MOHME | Official correspondence | Number | 0 | 1 | 12 | 2023 |
| 2 | Approval of the request of the Ministry of Health in the government board and approval by the members | MOHME | The approval of the government Cabinet | Number | 0 | 1 | 12 | 2023 |
| 3 | Providing exemption Rural HCFs from paying water bills from the government cabinet to the parliament | government | Official government bill | Number | 0 | 1 | 24 | 2024 |
| 4 | Approval of the government bill in the parliament and notification to the NWWEC | NWWEC | The approval of the Parliament | Number | 0 | 1 | 24 | 2024 |

**Table 21.** Tasks (Activities) considered for each strategy regarding Water Element in HCFs-Strategy (GO1S3)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO1):**<br>**Improving facility estimates (%) regarding Water Element in HCFs** | | | | | | | | |
| **Strategy (GO1S3): Attracting the financial support of donors in terms of capital costs and upgrading water infrastructures related to WASH in underserved non-hospital HCFs** | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Output** | | | | **Timeline** | |
| | | | **Indicator** | **Scale** | **Estimate (Quantity)** | | | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** |
| 1 | Establishing a technical working group to attract the participation of donors and invite them to contribute to projects related to the Water Element of WASH program in less privilege HCFs | TWG-WASH-HCFs* | Invitation and holding meetings | Number | 0 | 4 | 12 | 2023 |
| 2 | Determining the type of donors' participation in WASH program development projects in less privilege rural HCFs | MOHME | Resolutions of the meetings | Number | 0 | 477** | 36 | 2025 |

*Technical Working Group of WASH implementation in HCFs
**Estimated HCFs with "No Service" in terms of Water Element of WASH program (No water source + Unimproved).

**Table 22.** Tasks (Activities) considered for each strategy regarding Sanitation Element in HCFs- Strategy (GO2S1)

| **Main Goal (G): Improving WASH Elements in HCFs**<br>**Quantitative Goal (GO2):**<br>**Improving facility estimates (%) regarding Sanitation Element in HCFs**<br>**Strategy (GO2S1): Decreasing the number of "No Service" HCFs regarding Sanitation Element in National level (HCFs-WASHIran.1 [23]; Annex.3.2)** | | | | | | | | | **National PoA* Cost (USD)** |
|---|---|---|---|---|---|---|---|---|---|
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** | |
| 1 | Zeroing "No Service" Non-Hospital HCFs in National Zone 1 | MOHME | Table 8 | Number | 45 | 0 | 36 | 2025 | 270,000 |
| 2 | Zeroing "No Service" Non-Hospital HCFs in National Zone 2 | MOHME | Table 8 | Number | 45 | 0 | 36 | 2025 | |
| 3 | Zeroing "No Service" Non-Hospital HCFs in National Zone 4 | MOHME | Table 8 | Number | 182 | 0 | 36 | 2025 | |
| 4 | Zeroing "No Service" Non-Hospital HCFs in National Zone 5 | MOHME | Table 8 | Number | 273 | 0 | 36 | 2025 | |
| 5 | Zeroing "No Service" Non-Hospital HCFs in National Zone 7 | MOHME | Table 8 | Number | 80 | 0 | 36 | 2025 | |
| 6 | Zeroing "No Service" Non-Hospital HCFs in National Zone 8 | MOHME | Table 8 | Number | 98 | 0 | 36 | 2025 | |
| *Plan of Action | | | | | | | | | |

**Table 23.** Tasks (Activities) considered for each strategy regarding Sanitation Element in HCFs- Strategy (GO2S2)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO2):**<br>**Improving facility estimates (%) regarding Sanitation Element in HCFs** | | | | | | | | |
| **Strategy (GO2S2): Exempting all HCFs from paying the initial privilege purchase fee and annual bills for connecting to the sewer network** | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** |
| 1 | Providing justifications and completing the official request from the MOHME to the government cabinet | MOHME | Official correspondence | Number | 0 | 1 | 12 | 2023 |
| 2 | Approval of the request of the Ministry of Health in the government board and approval by the members | MOHME | The approval of the government Cabinet | Number | 0 | 1 | 12 | 2023 |
| 3 | Providing exemption Rural HCFs from paying water bills from the government cabinet to the parliament | government Cabinet | Official government bill | Number | 0 | 1 | 24 | 2024 |
| 4 | Approval of the government bill in the parliament and notification to the NWWEC | NWWEC | The approval of the Parliament | Number | 0 | 1 | 24 | 2024 |

**Table 24.** Tasks (Activities) considered for each strategy regarding Sanitation Element in HCFs- Strategy (GO2S3)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO2): Improving facility estimates (%) regarding Sanitation Element in HCFs** | | | | | | | | |
| **Strategy (GO2S3): Attracting the financial support of donors in terms of capital costs and upgrading Sanitation infrastructures related to WASH in underserved HCFs** | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** |
| 1 | Establishing a technical working group to attract the participation of donors and invite them to contribute to projects related to the Sanitation Element of WASH program in less privilege HCFs | TWG-WASH-HCFs* | Invitation and holding meetings | Number | 0 | 4 | 12 | 2023 |
| 2 | Determining the type of donors' participation in WASH program development projects in the less privilege rural HCFs | MOHME | Resolutions of the meetings | Number | 0 | 3853** | 36 | 2025 |

***Technical Working Group of WASH implementation in HCFs
**Estimated HCFs with "No Service" in terms of Sanitation Element of WASH program (No Sanitation Facility + Unimproved Sanitation Facility).

**Table 25.** Tasks (Activities) considered for each strategy regarding Waste Management Element in HCFs- Strategy (GO3S1)

| **Main Goal (G): Improving WASH Elements in HCFs**<br>**Quantitative Goal (GO3):**<br>**Improving facility estimates (%) regarding Waste Management Element in HCFs**<br>**Strategy (GO3S1): Decreasing the number of "No Service" HCFs (there are no bins for sharps or infectious waste. Infectious and sharps waste are treated/disposed with an unimproved method) regarding HCWM Element in National level (HCFs-WASHIran.1; Annex.2.3)** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | | **National PoA*** Cost (USD)** |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** | |
| 1 | Zeroing "No Service" Non-Hospital HCFs in National Zone 1 | MOHME | Table 8 | Number | 224 | 0 | 24 | 2024 | 886,000 |
| 2 | Zeroing "No Service" Non-Hospital HCFs in National Zone 2 | MOHME | Table 8 | Number | 45 | 0 | 24 | 2024 | |
| 3 | Zeroing "No Service" Non-Hospital HCFs in National Zone 3 | MOHME | Table 8 | Number | 171 | 0 | 24 | 2024 | |
| 4 | Zeroing "No Service" Non-Hospital HCFs in National Zone 4 | MOHME | Table 8 | Number | 456 | 0 | 24 | 2024 | |
| 5 | Zeroing "No Service" Non-Hospital HCFs in National Zone 5 | MOHME | Table 8 | Number | 1407 | 0 | 24 | 2024 | |
| 6 | Zeroing "No Service" Non-Hospital HCFs in National Zone 7 | MOHME | Table 8 | Number | 121 | 0 | 24 | 2024 | |
| 7 | Zeroing "No Service" Non-Hospital HCFs in National Zone 8 | MOHME | Table 8 | Number | 441 | 0 | 24 | 2024 | |
| 8 | Zeroing "No Service" Non-Hospital HCFs in National Zone 9 | MOHME | Table 8 | Number | 41 | 0 | 24 | 2024 | |
| *Plan of Action | | | | | | | | | |

**Table 26.** Tasks (Activities) considered for each strategy regarding Waste Management Element in HCFs- Strategy (GO3S2)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO3): Improving facility estimates (%) regarding Waste Management Element in HCFs** | | | | | | | | |
| **Strategy (GO3S2): Training HCW workers regarding HCW risk factors, waste segregation, and other Waste Element considerations related to WASH in National level (HCFs-WASHIran.1; Annex.2.3)** | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** |
| 1 | Training HCW workers regarding Waste segregated in the consultation area related to WASH in National level | MOHME | Facility estimate | % | 60.6* | 85 | 24 | 2024 |
| 2 | Training HCW workers regarding Infectious waste disposed of safely related to WASH in National level | MOHME | Facility estimate | % | 81.5* | 90 | 24 | 2024 |
| 3 | Training HCW workers regarding Sharps waste disposed of safely related to WASH in National level | MOHME | Facility estimate | % | 88* | 95 | 24 | 2024 |
| *Average (Annex.3.3) | | | | | | | | |

**Table 27.** Tasks (Activities) considered for each strategy regarding Waste Management Element in HCFs- Strategy (GO3S3)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO3): Improving facility estimates (%) regarding Waste Management Element in HCFs** | | | | | | | | |
| **Strategy (GO3S3): Clarification of the components currently being edited in the executive regulations of HCWM and related wastes, especially in the definition, separation and treatment sections** | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** |
| 1 | Establishing a national HCWM database in the MOHME to continuously monitor the implementation of the waste management program produced in HCFs. | MOHME | Establishing national HCFs-WASH Observatory | Number | 0 | 1 | 36 | 2025 |
| 2 | Amending instructions related to pre-employment and periodical examinations regarding periodic hepatitis HBV vaccination | MOHME | Instructions issued by the MOHME | Number | 0 | 1 | 12 | 2023 |
| 3 | Using the capacity of the "Comprehensive System for the Benefit of Iranians" (currently being launched and under the responsibility of the Ministry of Cooperatives) contained in Paragraph C of Note 17 (Welfare and Health) of the national Budget Law 2023 in order to consider the problems of villagers in accessing WASH infrastructure in HCFs. | Ministry of | Launched online system | Number | 0 | 1 | 24 | 2024 |
| *Average (Annex.2.3) | | | | | | | | |

**Table 28.** Tasks (Activities) considered for each strategy regarding Hygiene Element in HCFs- Strategy (GO4S1)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO4): Improving facility estimates (%) regarding Hygiene Element in HCFs** | | | | | | | | | |
| **Strategy (GO4S1): Decreasing the number of "No Service" HCFs (No hand washing stations at points of care or within 5 m of toilets) regarding Hygiene Element in National level (HCFs-WASHIran.1; Annex.2.4)** | | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | | **National PoA*** Cost (USD)** |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** | |
| 1 | Zeroing "No Service" Non-Hospital HCFs in National Zone 3 | MOHME | Table 8 | Number | 171 | 0 | 24 | 2024 | 41,000 |
| 2 | Zeroing "No Service" Non-Hospital HCFs in National Zone 4 | MOHME | Table 8 | Number | 91 | 0 | 12 | 2023 | |
| 3 | Zeroing "No Service" Non-Hospital HCFs in National Zone 8 | MOHME | Table 8 | Number | 49 | 0 | 12 | 2023 | |
| *Plan of Action | | | | | | | | | |

**Table 29.** Tasks (Activities) considered for each strategy regarding Hygiene Element in HCFs- Strategy (GO4S2)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO4): Improving facility estimates (%) regarding Hygiene Element in HCFs** | | | | | | | | | |
| **Strategy (GO4S2): Increasing the number of HCFs having "Stations with soap and water at points of care" regarding Hygiene Element in National level (HCFs-WASHIran.1; Annex.2.4)** | | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | | **National PoA*** Cost (USD), Annual** |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** | |
| 1 | Increasing the number of HCFs having "Stations with soap and water at points of care" | MOHME | Number of stations without soap and water at points of care$(decimal) \times Total\ Number\ of\ HCFs \frac{4^{*}}{100} \times 20356^{**} = 814$ | Number | 1726 | 0 | 12 | 2023 | 86,000 |
| * Annex.3.4<br>**Table 8<br>***Plan of Action | | | | | | | | | |

**Table 30.** Tasks (Activities) considered for each strategy regarding Hygiene Element in HCFs- Strategy (GO4S4)

| **Main Goal (G): Improving WASH Elements in HCFs** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Quantitative Goal (GO4):**<br>**Improving facility estimates (%) regarding Hygiene Element in HCFs** | | | | | | | | |
| **Strategy (GO4S4): Amendment of laws and regulations with a special approach regarding Hygiene Element to develop the WASH program in the rural HCFs** | | | | | | | | |
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Quantity)** | | **Timeline** | |
| | | | | | **Current** | **Aimed** | **Time Required (Month)** | **Deadline (By end of)** |
| 1 | Creating an integrated WASH management system in HCFs so that its output can be continuously monitored by ministerial and university managers through HCFs-WASHIran Observatory | MOHME | Establishing national HCFs-WASH Observatory | Number | 0 | 1 | 36 | 2025 |
| 2 | Promotion of hand hygiene programs in hospitals and health centers through the compliance and existence of community demands in the field of hand hygiene | MOHME | Instructions issued by the MOHME | Number | 0 | 1 | 12 | 2023 |

**Table 31.** Tasks (Activities) considered for each strategy regarding Environmental Cleaning Element in HCFs- Strategy (GO5S1)

| **Main Goal (G): Improving WASH Elements in HCFs**<br>**Quantitative Goal (GO5):**<br>**Improving facility estimates (%) regarding Environmental Cleaning Element in HCFs**<br>**Strategy (GO5S1): Decreasing the number of "No Service" HCFs (no cleaning policies or protocols are available, and no staff have received training on cleaning) regarding Cleaning Element in National level (HCFs-WASHIran.1; Annex.2.5)** | | | | | | | | | **National PoA*** Cost (USD), Annual** | **Budget Category Number (NABB;2023-24)** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Num.** | **Task (Activity)** | **Responsible** | **Indicator** | **Scale** | **Estimate (Qua** | | **Timeline** | | | |
| | | | | | **Current** | **Aimed** | **Time Require** | **Deadline** | | |
| 1 | Zeroing "No Service" Non-Hospital HCFs in National Zone 1 | MOHME | Table 8 | Number | 537 | 0 | 36 | 2025 | 918,000 | - |
| 2 | Zeroing "No Service" Non-Hospital HCFs in National Zone 2 | MOHME | Table 8 | Number | 363 | 0 | 36 | 2025 | | - |
| 3 | Zeroing "No Service" Non-Hospital HCFs in National Zone 3 | MOHME | Table 8 | Number | 856 | 0 | 36 | 2025 | | - |
| 4 | Zeroing "No Service" Non-Hospital HCFs in National Zone 4 | MOHME | Table 8 | Number | 775 | 0 | 36 | 2025 | | - |
| 5 | Zeroing "No Service" Non-Hospital HCFs in National Zone 5 | MOHME | Table 8 | Number | 2768 | 0 | 36 | 2025 | | - |
| 6 | Zeroing "No Service" Non-Hospital HCFs in National Zone 6 | MOHME | Table 8 | Number | 950 | 0 | 36 | 2025 | | - |
| 7 | Zeroing "No Service" Non-Hospital HCFs in National Zone 7 | MOHME | Table 8 | Number | 443 | 0 | 36 | 2025 | | - |
| 8 | Zeroing "No Service" Non-Hospital HCFs in National Zone 8 | MOHME | Table 8 | Number | 1372 | 0 | 36 | 2025 | | - |
| 9 | Zeroing "No Service" Non-Hospital HCFs in National Zone 9 | MOHME | Table 8 | Number | 365 | 0 | 36 | 2025 | | - |
| 10 | Zeroing "No Service" Non-Hospital HCFs in National Zone 10 | MOHME | Table 8 | Number | 431 | 0 | 36 | 2025 | | - |
| 11 | Zeroing "No Service" Hospital HCFs in National Zone 6 | MOHME | Table 8 | Number | 3 | 0 | 36 | 2025 | | 1602001111<br>1602001113<br>1602001114<br>1602001148 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 12 | Zeroing "No Service" Hospital HCFs in National Zone 8 | MOHME | Table 8 | Number | 1 | 0 | 36 | 2025 | | 1602001135<br>1602001136<br>1602001145<br>1602001146<br>1602001156<br>1602001160 |
| *Plan of Action | | | | | | | | | | |

Table 32 represents the resources required for the WASH Costed Roadmap with Targets in the Iran, 2023-2025; existing financing expended at MOHME.

**Table 32.** National Plan of Action (PoA) Cost (USD) by Outcome and by Year

| Num. | Outcome | 2023 | 2024 | 2025 | Total |
|---|---|---|---|---|---|
| 1 | Improving facility estimates (%) regarding Water Element in HCFs | 136,000 | - | - | 136,000 |
| 2 | Quantitative Goal (GO2): Improving facility estimates (%) regarding Sanitation Element in HCFs | 270,000 | - | - | 270,000 |
| 3 | Quantitative Goal (GO3): Improving facility estimates (%) regarding Waste Management Element in HCFs | 886,000 | - | - | 886,000 |
| 4 | Quantitative Goal (GO4): Improving facility estimates (%) regarding Hygiene Element in HCFs | 127,000 | 86,000 | 86,000 | 299,000 |
| 5 | Quantitative Goal (GO5): Improving facility estimates (%) regarding Environmental Cleaning Element in HCFs | 306,000 | 306,000 | 306,000 | 918,000 |

## Conclusions

A costed roadmap of WASH in healthcare facilities (HCFs) was performed in I.R Iran via a project lasted about 90 days from September through November 2022. This project was carried out in the continuation of the previous project titled situation analysis and assessment of WASH services in HCFs in I.R Iran, which was accomplished in the second half of 2021 for 730 statistically representative HCFs.

A core team including the experts from multidiscipline form WHO, MOHME, and Hamadan University of Medical Sciences was responsible for organizing and designing the project. The identification of stakeholders and gap analysis were performed to recognize the vulnerable groups and underserved areas (National Zones) and HCFs (Government/Non-Government, Urban/Rural, and Hospital/Non-Hospital). A thorough analysis according to SWOT method was conducted relied on the close collaboration of a Technical Working Team (TWG) comprising the experts/representatives of the stakeholders (e.g. WHO/CEHA, MOHME, UMSs, DOE, NWWEC,…). Analyzing the regulations, laws, standards, budget allocations, identifying the underserved areas and HCFs priority for the budget allocations and so on were some of the TWG tasks. Based on the different nature of the WASH elements, the TWG was divided into three Technical Working Sub-Group (TWSG) namely water and sanitation, healthcare waste management, and hygiene and environmental cleaning. TWSGs accomplished technical interactions during 6 official meetings and various off-session coordinations during the project activity. They finally formulated those goals, strategies, and activities (tasks) that be taking into account as a costed roadmap to achieve the improvement of WASH elements in the HCFs. Estimating the required costs of higher priority HCFs, located in the underserved areas, was performed through a spreadsheet tool (CTFS-EHSs-HCFs) which has been developed by the University of North Carolina (UNC).

Results reveals that among the five elements of WASH, the element Waste Management and the Environmental Cleaning had most deficiencies and need to be reclaim with more priority. The weak status of Sanitation element specially in the rural HCFs is mainly due to the lack of public swage system which cannot be predicted to pose a significant improvement in the mid-tem period (3 years later) of the current roadmap mainly because of the expensive

nature of the sewers and limitations of the government budget because of the impact of the sanctions. Furthermore, regarding the geographical distribution, the HCFs located in the southern and southeastern part of Iran need to receive more considerations in terms of the annual budget allocations and training the WASH related staff. Regarding the type of HCFs, rural HCFs have more drawbacks in terms of "No Service" elements of WASH mainly due to the far geographical distances from the province centers (especially in the southern part of the country).

The activities regarding the costed roadmap were organized in 13 activity tables. Taking an insight into the National Annual Budget Bill (NABB) shows that most of the expenditures, addressed through Budget Category Numbers (BCNs) in the NABB tables, related into the WASH program in HCFs are allocated for the hospitals whereas more than 97% (as number) of the HCFs are belonged to the non-hospital facilities. Consequently, although some disperses budget sources in MOHME are spent annually for the rural and other non-hospital HCFs, but emphasizing on the specific budgeting program in the next annual budget bills is required.

# Annex. 1: MOHME National Zones

**Table1.1.** National Zones according to the MOHME divisions and the number of HCFs allocated to each Zone

| Num. | Zone Center (UMS) | Provinces | HCFs (Number), ($TZ_x$) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | Urban | Rural | Hospital (Active) | Non-Hospital | Government | Non-Government |
| **1** | **Guilan** | Guilan, Mazandaran, Golestan, Semnan | 4761 | 1249 | 3512 | 109 | 4652 | 4561 | 200 |
| **2** | **Tabriz** | W. Azarbaijzan, E. Azarbaijan, Ardabil | 3632 | 1447 | 2185 | 94 | 3538 | 3408 | 224 |
| **3** | **Hamadan** | Kermanshah, Kurdistan, Ilam | 3539 | 1200 | 2339 | 70 | 3469 | 3434 | 105 |
| **4** | **Ahvaz** | Lorestan, Khuzestan | 3216 | 1138 | 2078 | 71 | 3145 | 3110 | 106 |
| **5** | **Shiraz** | Fars, Bushehr, Kohgiluyeh , Hormozgan | 4563 | 1633 | 2930 | 115 | 4448 | 4359 | 204 |
| **6** | **Zanjan** | Markazi, Qazvin, Qom, Alborz, Zanjan | 2922 | 1429 | 1493 | 73 | 2849 | 2684 | 238 |
| **7** | **Isfahan** | Yazd, Esfahan, Charmahal | 2827 | 1586 | 1241 | 91 | 2736 | 2555 | 272 |
| **8** | **Kerman** | Siatan, Kerman | 3706 | 884 | **2822** | 30 | 3676 | 3628 | 78 |
| **9** | **Mashhad** | S. Khorasan, Razavi Khorasan, N. Khorasan | 2153 | 757 | 1396 | 84 | 2069 | 1939 | 214 |
| **10** | **Tehran** | Tehran | 2535 | 2175 | 360 | 162 | 2373 | 1889 | 646 |


**Figure 1.1.** Map of National Zones according to the MOHME

# Annex. 2: SWOT Analysis

## Annex. 2.1: SWOT Analysis; Health Care Waste Management

**Table 2.1.** Strengthens of HCWM in HCFs of Iran

| Num | Strengthen ($S_j$) | Evidence/ Reference | Rating ($R_{si}$) | Weight ($W_{si}$) | Score ($R_{si} \times W_{si}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | The presence of Healthcare Waste Treatment Systems on Hospitals | • HCF-WASHIran.1<br>• Hospital accreditation standards in Iran | 5 | 2 | 10 | 1 |
| 2 | Systematic identifying the prose and cones of healthcare wastes management in HCFs (segregation, collection, labelling, transportation, and disposal) | • HCF-WASHIran.1<br>• Regulations on healthcare wastes management | 5 | 2 | 10 | 1 |
| 3 | Requirement for separation, collection, transportation and treatment of infectious waste in hospitals | Executive regulations of the Waste Management Law (Article 14) | 5 | 2 | 10 | 1 |
| 4 | Requirement to develop an operational plan for healthcare waste management in hospitals regarding the executive management of all wastes in hospitals | Executive regulations of the Waste Management Law (Article 12) | 4 | 1.5 | 6 | 2 |
| 5 | The existence of a centralized site for treatment of infectious wastes in hospitals | Executive regulations of the Waste Management Law (Article 65) | 3 | 0.5 | 1.5 | 4 |
| 6 | Development of educational programs in the field of executive management of medical waste | HCF-WASHIran.1 | 3 | 0.5 | 1.5 | 4 |
| 7 | Issuing licenses for companies applying to provide healthcare waste management services | A guide to waste classification for environmental health inspectors | 3 | 0.5 | 1.5 | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | Existence of standard /SOPs in the field of waste management in all HCFs | A guide to waste classification for environmental health inspectors | 4 | 1 | 4 | 3 |
| Sum | | | | 10 | 44.5 | - |
| Element Index (EI) | | | | | 4.45 | |

**Table 2.2.** Weaknesses of HCWM in HCFs of Iran

| Num | Weaknesses ($W_i$) | Evidence/ Reference | Rating ($R_{wi}$) | Weight ($W_{wi}$) | Score ($R_{wi} \times W_{wi}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | Inadequacy of the capacity of waste treatment devices in hospitals according to the amount of waste produced | • HCF-WASHIran.1<br>• Hospital accreditation standards in Iran | 1 | 0.2 | 0.2 | **8** |
| 2 | Absence of temporary storage space for waste in HCFs from the lowest levels of HCFs (Health House) to the urban l HCFs. | • HCF-WASHIran.1<br>• Hospital accreditation standards in Iran | 5 | 2 | 10 | **1** |
| 3 | Lack of waste treatment sites in HCFs | • HCF-WASHIran.1<br>• Hospital accreditation standards in Iran | 5 | 1.5 | 7.5 | **2** |
| 4 | Absence of occupational examinations (hepatitis vaccination, etc.) Executive agents for waste collection and disposal | Executive regulations of the Waste Management Law (Article 5) | 3 | 0.5 | 1.5 | **6** |
| 5 | Absence of adequate and necessary sanitary equipment and facilities for the executive management of waste for separation, collection, labeling and storage and transportation in HCFs (absence of garbage bags/garbage bins with specific colors/labels) | Executive regulations of the Waste Management Law (Article 5) | 5 | 1.3 | 6.5 | **3** |
| 6 | Absence of special rules for special waste management in | HCF-WASHIran.1 | 2 | 0.25 | 0.5 | **7** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | low volumes of waste in remote, border, poor and inaccessible areas. | | | | | |
| 7 | Absence of standard vehicles to transport healthcare waste from the rural Health Houses to the referral HCF having HCW treatment site | HCF-WASHIran.1 | 5 | 1.25 | 6.25 | **4** |
| 8 | Lack of credits and financial allocations (proper budgeting) for all necessary equipment and facilities and human resources in the matter of separation, collection and transportation of waste in the HCFs | HCF-WASHIran.1 | 5 | 1.25 | 6.25 | **4** |
| 9 | The inadequacy of applicant companies in the management of HCW due to the mismatch between supply and demand in HCF centers | HCF-WASHIran.1 | 3 | 0.5 | 1.5 | **6** |
| 10 | Lack of collection and transportation steps of HCWM in HCFs checklists | HCF-WASHIran.1 | 2 | 0.25 | 0.5 | **7** |
| 11 | The lack of access of the Ministry of Health to accurately record online data of hospital waste and monitor the transfer of hospital waste and check its integrity | HCF-WASHIran.1 | 4 | 1 | 4 | **5** |
| Sum | | | | 10 | 44.7 | - |
| Element Index (EI) | | | | | 4.47 | - |

**Table 2.3.** Opportunities of HCWM in HCFs of Iran

| Num. | Opportunities ($O_i$) | Evidence/ Reference | Rating ($R_{oi}$) | Weight ($W_{oi}$) | Score ($R_{oi} \times W_{oi}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | Compilation of the WASH program report in the operational plan of the HOP of CEOH | Comprehensive law on solid waste management | 3 | 1.5 | 4.5 | **4** |
| 2 | Detailed and systematic planning for the executive management of waste in order to achieve the goals after the review of the strategic plan after HCFs-WASHIran.1 | HCF-WASHIran.1 | 5 | 3 | 15 | **1** |
| 3 | Existence of certified environmental laboratories for declaration of waste disposal on a monthly basis | HCF-WASHIran.1 | 5 | 2 | 10 | **2** |
| 4 | Using the capacity of trade's school to issue general waste health certificate for employees who work in the waste collection sector. | HCF-WASHIran.1 | 4 | 1.5 | 6 | **3** |
| 5 | Using the results of the HCFs-WASHIran.1 program in revising and modifying the medical waste executive management regulations due to the existence of challenges in the previous regulations by the relevant institutions. | HCF-WASHIran.1 | 5 | 2 | 10 | **2** |
| Sum | | | | 10 | 45.5 | - |
| Element Index (EI) | | | | | 4.55 | - |

**Table 2.4.** Threats of HCWM in HCFs of Iran

| Num. | Threats ($T_i$) | Evidence/ Reference | Rating ($R_{ti}$) | Weight ($W_{ti}$) | Score ($R_{ti} \times W_{ti}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | A different interpretation of the comprehensive waste management law and executive regulations and executive methods of HCWM | HCF-WASHIran.1 | 5 | 2 | 10 | **1** |
| 2 | Lack of timely financing of HCWM contracts in government HCFs with competent companies in medical waste disposal. | HCF-WASHIran.1 | 5 | 2 | 10 | **1** |
| 3 | Inadequacy of chemical and pharmaceutical waste disposal sites in the country | HCF-WASHIran.1 | 4 | 1.25 | 5 | **2** |
| 4 | The lack of resilience of the hospitals and HCFs system during the outbreak of new epidemics and pandemics and natural disasters and so on | HCF-WASHIran.1 | 4 | 1.25 | 5 | **2** |
| 5 | Poor provision of after-sale services for devices and the existence of backup systems for HWTS (service and maintenance) | HCF-WASHIran.1 | 3 | 0.5 | 1.5 | **3** |
| 6 | Failure to employ skilled and experienced personnel for the basic management of HWTS | HCF-WASHIran.1 | 3 | 0.5 | 1.5 | **3** |
| 7 | Lack of standard HCW landfills for safe disposing of HCW (central site) | • HCF-WASHIran.1<br>• Hospital accreditation standards in Iran | 4 | 1.25 | 5 | **2** |
| 8 | Unconventional tariffs in HCW treatment and disposal contracts. | • HCF-WASHIran.1<br>• Hospital accreditation standards in Iran | 4 | 1.25 | 5 | **2** |
| Sum | | | | 10 | 43 | - |
| Element Index (EI) | | | | | 4.3 | - |

$$\boldsymbol{Strengthens}\ (\mathbf{4.45}) - \boldsymbol{Weakness}\ (\mathbf{4.47}) = (\mathbf{-0.02})$$

$$\boldsymbol{Opportunities}\ (\mathbf{4.55}) - \boldsymbol{Threats}\ (\mathbf{4.3}) = (\mathbf{+0.25})$$

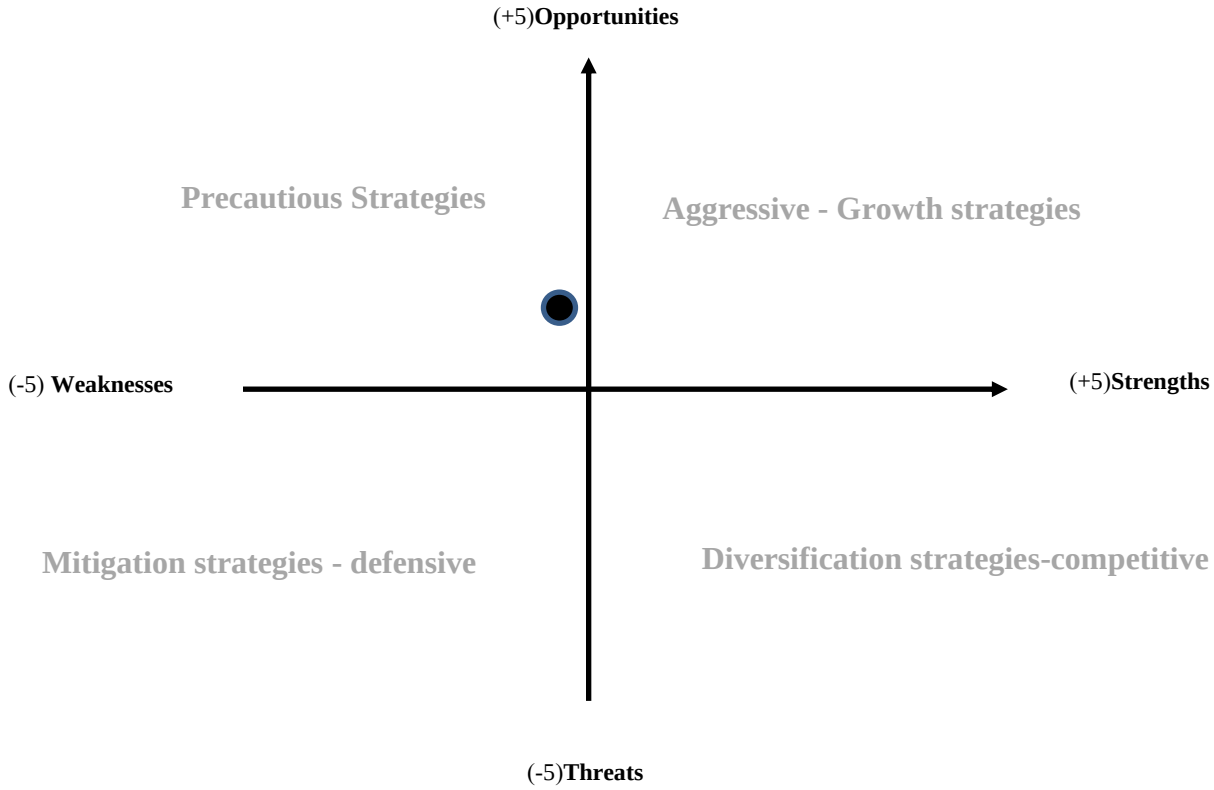



**Figure 2.1.** Cartesian coordinate axes of HCFs Healthcare Waste Management SWOT

**Table 2.5.** SWOT matrix of MCWM

| **Internal factors** / **External factors** | **Strengthens (S)**<br>1.The presence of Healthcare Waste Treatment Systems on Hospitals<br>2.Systematic identifying the prose and cones of healthcare wastes management in HCFs (segregation, collection, labelling, transportation, and disposal)<br>3.Requirement for separation, collection, transportation and treatment of infectious waste in hospitals<br>4.Requirement to develop an operational plan for healthcare waste management in hospitals regarding the executive management of all wastes in hospitals<br>5. The existence of a centralized site for treatment of infectious wastes in hospitals<br>6. Development of educational programs in the field of executive management of medical waste<br>7. Issuing licenses for companies applying to provide healthcare 8. waste management services<br>Existence of standard /SOPs in the field of waste management in all HCFs | **Weakness (W)**<br>1. Inadequacy of the capacity of waste treatment devices in hospitals according to the amount of waste produced 2. Absence of temporary storage space for waste in HCFs from the lowest levels of HCFs (Health House) to the urban l HCFs. 3. Lack of waste treatment sites in HCFs 3. Absence of occupational examinations (hepatitis vaccination, etc.) 4. Executive agents for waste collection and disposal 5. Absence of adequate and necessary sanitary equipment and facilities for the executive management of waste for separation, collection, labeling and storage and transportation in HCFs (absence of garbage bags/garbage bins with specific colors/labels 6. Absence of special rules for special waste management in low volumes of waste in remote, border, poor and inaccessible areas. 7.Absence of standard vehicles to transport healthcare waste from the rural Health Houses to the referral HCF having HCW treatment site 8.Lack of credits and financial allocations (proper budgeting) for all necessary equipment and facilities and human resources in the matter of separation, collection and transportation of waste in the HCFs 9.The inadequacy of applicant companies in the management of HCW due to the mismatch between supply and demand in HCF centers 10.Lack of collection and transportation steps of HCWM in HCFs Checklists 11.The lack of access of the Ministry of Health to accurately record online data of hospital waste and monitor the transfer of hospital waste and check its integrity |
|---|---|---|
| **Opportunities (O)**<br>1. Compilation of the WASH program report in the operational plan of the HOP of CEOH 2. Detailed and systematic planning for the executive management of waste in order to achieve the goals after the review of the strategic plan after HCFs-WASHIran.13. Existence of certified environmental laboratories for declaration of waste disposal on a monthly basis4. Using the capacity of trade's school to issue general waste health certificate for employees who work in the waste collection sector.5. Using the results of the HCFs-WASHIran.1 program in revising and modifying the medical waste executive management regulations due to the existence of challenges in the previous regulations by the relevant institutions. | • Inclusion of special WASH textbook in HCFs in guild school programs to familiarize citizens with the right to access WASH services in HCFs.<br>• Clarification of the components currently being edited in the executive regulations of HCWM and related wastes, especially in the definition, separation and treatment sections | • Amending instructions related to pre-employment and periodical examinations regarding periodic hepatitis HBV vaccination<br>• Establishing a national HCW database in the MOHME to continuously monitor the implementation of the waste management program produced in HCFs.<br>• The use of financial resources listed in Paragraph A, note 5 of the national Budget Law 2023 regarding the use of the capacity of financial bonds in order to develop rural infrastructures.<br>• Using the capacity of the "Comprehensive System for the Benefit of Iranians" (currently being launched and under the responsibility of the Ministry of Cooperatives) contained in Paragraph C of Note 17 (Welfare and Health) of the national Budget Law 2023 in order to consider the problems of villagers in accessing WASH infrastructure in HCFs. |

| | | |
|---|---|---|
| **Threats (T)**<br>1. A different interpretation of the comprehensive waste management law and executive regulations and executive methods of HCWM 2. Lack of timely financing of HCWM contracts in government HCFs with competent companies in medical waste disposal.<br>3.Inadequacy of chemical and pharmaceutical waste disposal sites in the country 4.The lack of resilience of the hospitals and HCFs system during the outbreak of new epidemics and pandemics and natural disasters and so on 5.Poor provision of after-sale services for devices and the existence of backup systems for HWTS (service and maintenance)<br>6.Failure to employ skilled and experienced personnel for the basic management of HWTS 7.Lack of standard HCW landfills for safe disposing of HCW (central site) 8.Unconventional tariffs in HCW treatment and disposal contracts. | • Creation of a mechanism for the accreditation of companies that supply and provide services for Healthcare Waste Treatment Systems (HCWS) by the Ministry of Health | • Creating credit lines in the national annually budget law and ministerial allocations in order to provide special WASH services in vulnerable groups and underserved areas and facilities (such as rural HCFs of Zahedan, South Khorasan and Ilam provinces).<br>• Adding a supplementary paragraph to note 3 of the national annually budget law (financing chapter) in order to create the ability to use financial resources in for strengthening the relevant infrastructure of the program for separation, collection (special vehicles equipped with leachate tanks), and treatment of HCW in rural HCFs. |

## Annex. 2.2: SWOT Analysis; Water and Sanitation

**Table 2.6.** Strengthen of Water and Sanitation in HCFs of Iran

| Num | Strengthen ($S_i$) | Evidence/ Reference | Rating ($R_{si}$) | Weight ($W_{si}$) | Score ($R_{si} \times W_{si}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | The proper condition of providing basic services (Basic Services) in the sanitary water supply sector of urban HCFs and hospitals | HCFs-WASH Iran.1 | **5** | **3** | **15** | **1** |
| 2 | Carrying out and continuously measuring the quality of drinking water in terms of microbial characteristics and chlorination | • Water safety program<br>• Standard 1053<br>• Standard 1011 Water operational plan of the Ministry of Health | **5** | **1.5** | **7.5** | **3** |
| 3 | The presence of a related graduate and university expert (bachelor's degree and above) | Organizational chart (organizational structure) | **4** | **1** | **4** | **4** |
| 4 | Budget line for providing health services in universities | Annual budgets | **3** | **1** | **3** | **5** |
| 5 | The existence of reference laboratories (microbial-chemical) in universities | Organizational chart (organizational structure) | **2** | **1.25** | **2.5** | **6** |
| 6 | The possibility of purchasing water chemistry test services from non-university laboratories. | • Outsourcing (Article 44 of the Constitution)<br>• Article 22 and 24 of the Civil Service Management Law | **2** | **0.25** | **0.5** | **8** |
| 7 | The presence of wastewater treatment plants in most hospitals in the country | HCFs-WASH Iran.1 | **4** | **0.5** | **2** | **7** |
| 8 | The presence of sanitary facilities with the necessary conditions with a sufficient distance from the hand sink in large HCFs (hospitals and | HCFs-WASH Iran.1 | **4** | **2** | **8** | **2** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | comprehensive health service centers). | | | | | |
| Sum | | | | **10** | **42.5** | - |
| Element Index (EI) | | | | - | **4.25** | - |

**Table 2.7.** Weaknesses of Water and Sanitation in HCFs of Iran

| Num | Weaknesses ($W_i$) | Evidence / Reference | Rating ($R_{wi}$) | Weight ($W_{wi}$) | Score ($R_{wi} \times W_{wi}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | Shifting and shifting of allocated health budgets for other purposes, including medical expenses in HCFs | Annual budget (assignment to treatment department) | **4** | **1.5** | **6** | **1** |
| 2 | The instructions, rules and regulations of the ministry, in the same and uniform form in the whole country (due to the economic, cultural and social differences in the country, it is not possible to implement a single instruction in the whole country). Safe water in different regions of the country | HCFs-WASH Iran.1 | **4** | **1.25** | **5** | **2** |
| 3 | Lack of water storage resources in small HCFs (clinics and most comprehensive health centers) | HCFs-WASH Iran.1 | **4** | **0.75** | **3** | **6** |
| 4 | Inadequate improvement of absorbent wells and septic tanks, etc., in order to reduce surface and underground water pollution in rural areas | HCFs-WASH Iran.1 | **3** | **0.5** | **1.5** | **10** |
| 5 | Poor health facilities (toilets, etc.) for people with disabilities in non-hospital HCFs | HCFs-WASH Iran.1 | **4** | **1.25** | **4.75** | **3** |
| 6 | Lack of detergent near toilets in most small HCFs (sanitary houses). | HCFs-WASH Iran.1 | **5** | **0.5** | **2/5** | **7** |
| 7 | Lack of separate toilets for women and men in small HCF centers (health houses) | HCFs-WASH Iran.1 | **4** | **1** | **4** | **4** |
| 8 | Lack of special sanitary equipment for women's toilets | HCFs-WASH Iran.1 | **3** | **1.25** | **3.75** | **5** |
| 9 | Poor structural and equipment improvement in HCFs due to the high age of the buildings | Ministry's physical resources | **3** | **0.75** | **2.25** | **8** |
| 10 | Lack of hospital water reservoirs with proper capacity or operation | HCFs-WASH Iran.1 | **2** | **1** | **2** | **2** |

| | | | | |
|---|---|---|---|---|
| | Sum | **10** | **35** | **-** |
| | Element Index (EI) | **-** | **3.5** | **-** |

**Table 2.8.** Opportunities of Water and Sanitation in HCFs of Iran

| Num. | Opportunities ($O_i$) | Evidence/ Reference | Rating ($R_{oi}$) | Weight ($W_{oi}$) | Score ($R_{oi} \times W_{oi}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | The existence of the nationwide water supply network (Abfa) | Water and Sewerage Company | **5** | **3** | **15** | **1** |
| 2 | Access to drinking water in the majority of the country | Water and Sewerage Company | **3** | **1.75** | **5.25** | **3** |
| 3 | The budget line for the health service in the country | The budget of the entire country | **3** | **1** | **3** | **5** |
| 4 | Outsourcing some services related to water and sewage to contractor companies (wastewater treatment companies to environmentally trusted companies for sewage tests) | Article 44 of the Constitution and Articles 22 and 24 of the Civil Service Management Law | **2** | **0.5** | **1** | **7** |
| 5 | Sanitary disposal of wastewater in HCF (environment) | HCFs-WASH Iran.1 | **4** | **1.25** | **۵** | **4** |
| 6 | Online monitoring of hospital treatment plants by environmental organization | The criteria and achievements of the action criteria of the Environmental Protection Organization | **3** | **0.75** | **2.25** | **6** |
| 7 | Continuous monitoring and supervision of resources, water quality in the distribution network (water and sewage organization) | The Comprehensive System of the Ministry of Energy (ABFA) | **4** | **1.75** | **6** | **2** |
| | | Sum | | 10 | 20.5 | |
| | | Element Index (EI) | | | 2.05 | |

**Table 2.9.** Threats of Water and Sanitation in HCFs of Iran

| Num. | Threats ($T_i$) | Evidence/ Reference | Rating ($R_{ti}$) | Weight ($W_{ti}$) | Score ($R_{ti} \times W_{ti}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | Ethnic differences in some villages that lead to damage to water supply facilities. | HCFs-WASH Iran.1 | **1** | **1.25** | **1.25** | **8** |
| 2 | Drought and lack of water resources throughout the country | HCFs-WASH Iran.1 | **3** | **2.25** | **6.75** | **1** |
| 3 | Exhaustion of the water distribution network | HCFs-WASH Iran.1 | **4** | **1** | **4** | **4** |
| 4 | Water outages and its effects on the provision of health services in HCFs | HCFs-WASH Iran.1 | **2** | **1.75** | **3.5** | **5** |
| 5 | Non-delivery of water and the existence of areas and villages not covered by ABFA in the country | HCFs-WASH Iran.1 | **2** | **1.25** | **2.5** | **6** |
| 6 | Non-reuse of gray waste water | HCFs-WASH Iran.1 | **4** | **1.25** | **5** | **2** |
| 7 | Lack of sewage collection network in most villages of the country | HCFs-WASH Iran.1 | **3** | **1.5** | **4/5** | **3** |
| 8 | Outsourcing of some water and sewage related services to contractor companies (lack of trust in service provision and the need to monitor the service provider, including seasonal and six-monthly chemical and microbial tests of hospital sewage or handover of sewage treatment facilities by the contractor) | HCFs-WASH Iran.1 | **2** | **1** | **2** | **7** |
| | Sum | | | **10** | **30.5** | - |
| | Element Index (EI) | | | **-** | **3.05** | - |

$$\boldsymbol{Strengthens}\ (\mathbf{4.25}) - \boldsymbol{Weakness}\ (\mathbf{3.5}) = (+\mathbf{0.75})$$

$$\boldsymbol{Opportunities}\ (\mathbf{2.05}) - \boldsymbol{Threats}\ (\mathbf{3.05}) = (-\mathbf{1})$$

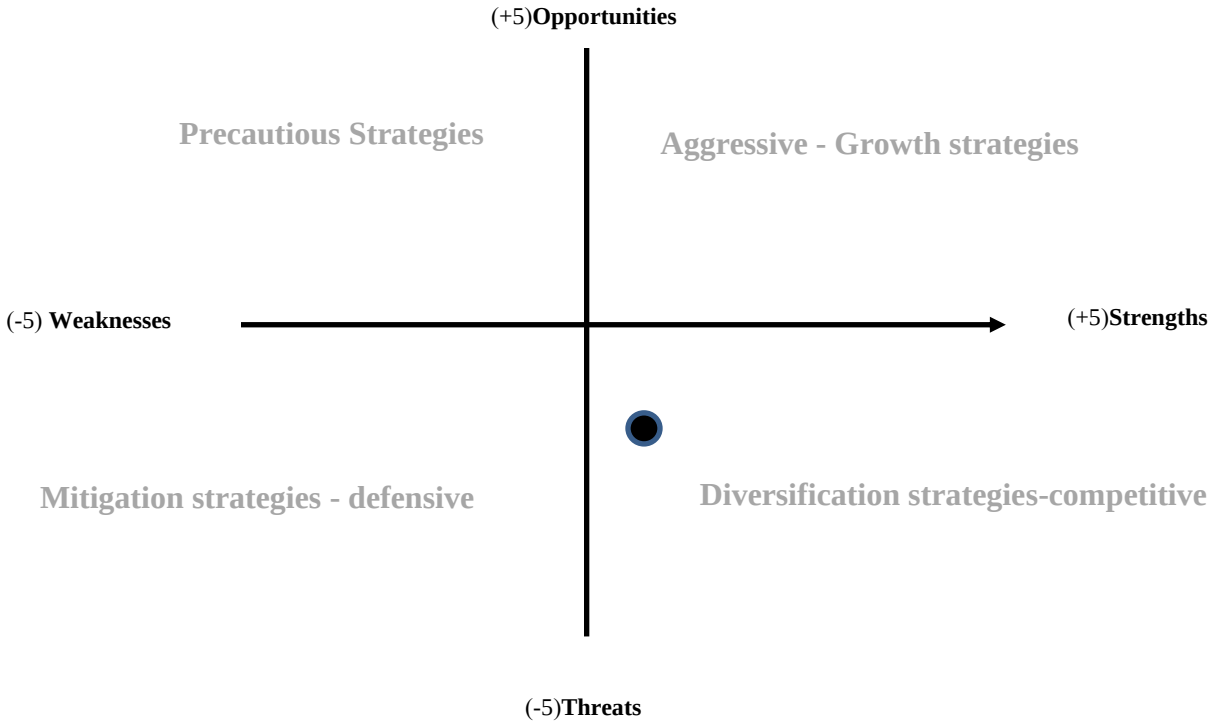



**Figure 2.2.** Cartesian coordinate axes of HCFs Water and Sanitation SWOT

**Table 2.10.** SWOT matrix of Water and Sanitation

| **Internal factors** / **External factor** | **Strengths (S)** | **Weaknesses (W)** |
|---|---|---|
| | 1) The proper status of providing basic services in the sanitary water supply sector of urban HCFs and hospitals. 2) Carrying out and continuously measuring the quality of drinking water in terms of microbial characteristics and chlorination Existence of related postgraduate and university education experts (Bachelor and above) 3) Budget line for providing health services in universities 4) Existence of reference laboratories (microbial-chemical) in universities 5) Possibility of purchasing water chemistry test service from non-academic laboratories 6 ) Existence of wastewater treatment plant in most hospitals of the country. 7) The existence of sanitary facilities with the necessary conditions with a sufficient distance from the hand washer in large HCFs (hospitals and comprehensive health service centers). | 1) Shifting and shifting of allocated health budgets for other uses, including medical expenses in HCFs2 and lack of credits for regular payment of water bills in small HCFs2) The instructions, rules and regulations of the Ministry, in the same and uniform form throughout the country (Due to the economic, cultural, and social differences in the country, a single instruction cannot be implemented in the whole country. Lack of proper implementation guidelines regarding access to safe water in different regions of the country. 3) Lack of water storage resources in small HCFs (hospitals and most Comprehensive Health Centers) 4) Inadequate improvement of absorbent wells and septic tanks, etc., in order to reduce surface and underground water pollution in rural areas 5) Poor health facilities (toilets, etc.) for people with disabilities in HCFs non-hospital 6) lack of detergent near the toilets in most small HCFs (sanitary houses) 7) lack of separate toilets for women and men in small HCF centers (sanitary houses) 8) lack of special sanitary equipment for women's toilets . 9) Poor structural and equipment improvement in HCFs due to the high age of the buildings. 10) Lack of hospital water tanks with adequate capacity or proper operation. |
| **Opportunities (O)**<br>1) The existence of the nationwide water supply network of the country (ABFA) 2) Access to drinking water in the majority of the country's regions 3) Budget line for the health service in the country 4) Outsourcing of some services related to water and sewage to contractor companies (sewage treatment companies to trusted environmental companies for wastewater tests) 5) sanitary disposal of wastewater in HCF (environment) 6) online monitoring of hospital treatment plants by the environmental organization 7) continuous monitoring and supervision of sources, water quality in the distribution network (water organization) and sewage) 8) the possibility of proposing to amend or insert guidelines related to WASH in the 7th development plan and the annual budget law 9) the existence of the capacity of health donors to help promote the WASH program | 1.Outsourcing construction (construction and repairs) and laboratory services to the private sector | 1. Identification and attraction of approved financial resources 2. Attracting the financial support of donors in terms of capital costs and upgrading water infrastructures related to WASH in underserved HCFs 3. Exempting health houses from paying water bills and the right to connect to the sewage collection network (like the resolution of the parliament regarding mosques) |

| | | |
|---|---|---|
| **Threats (T)**<br>1) Ethnic differences in some villages that lead to damage to water supply facilities 2) Drought and lack of water resource reserves in the whole country 3) Exhaustion of water distribution network 4) Water outages and its effects on providing health services in HCFs 5) Non-delivery of water and Existence of areas and villages not covered by ABFA in the country 6) Non-reuse of gray wastewater 7) Lack of wastewater collection network in most villages of the country 8) Outsourcing of some water and wastewater related services to contractor companies (Lack of trust in providing services and the need for monitoring Provider services, including seasonal and six-monthly chemical and microbial tests of hospital wastewater or delivery of wastewater treatment facilities by the contractor. | 1. Water and wastewater quality monitoring by accredited academic laboratories | 1. Amendment of laws and regulations with a special approach to develop the WASH program in the less privileged areas of the country based on HCFs-WASHIran.1 and TWG comments. 2. Estimating water storage requirements in small HCFs and installing storage tanks |

## Annex. 2.3: SWOT Analysis; Hygiene and Environmental Cleaning

**Table 2.11.** Strengths of Hygiene and Environmental Cleaning in HCFs of Iran

| Num | Strengthen ($S_i$) | Evidence / Reference | Rating ($R_{si}$) | Weight ($W_{si}$) | Score ($R_{si} \times W_{si}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | Evaluation of hand hygiene programs in hospitals | Hospital accreditation standards in Iran | 5 | 1.75 | 8.75 | **2** |
| 2 | The appropriate situation of supply and access to disinfectants in hospitals | Hospital accreditation standards in Iran | 4 | 2 | 8 | **3** |
| 3 | There are many demands from specialized centers and trustees for the benefits of observing hand hygiene and public health (Due to the Covid-19 pandemic, there has been a great sensitivity and care towards hand hygiene in the general public and society.) | Hospital accreditation standards in Iran | 4 | 1.75 | 7 | **4** |
| 4 | The existence of a structured evaluation system of hospitals in the form of accreditation criteria | Hospital accreditation standards in Iran | 5 | 2 | 10 | **1** |
| 5 | The presence of an integrated hospital management portal regarding the requirements of the WASH program | The portal of the Center for Environmental and Work Health | 4 | 1.25 | 5 | **6** |
| 6 | The existence of an integrated view of the management regarding the provision of the requirements of the WASH program | Hospital accreditation standards in Iran | 5 | 1.25 | 6.25 | **5** |
| | Sum | | | 10 | 45 | - |

| | | | | |
|---|---|---|---|---|
| | Element Index (EI) | - | 4.5 | - |

**Table 2.12.** Weaknesses of Hygiene and Environmental Cleaning in HCFs of Iran

| Num | Weaknesses ($W_i$) | Evidence/ Reference | Rating ($R_{wi}$) | Weight ($W_{wi}$) | Score ($R_{wi} \times W_{wi}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | Placement of sanitary services, especially in rural health centers and health houses, requires infrastructure changes and relatively high costs | Hospital accreditation standards in Iran | 4 | 1 | 4 | **6** |
| 2 | Absence of spending regulations on resources to improve the health status of hospitals and health centers | Hospital accreditation standards in Iran | 5 | 1 | 5 | **3** |
| 3 | The existence of multiple instructions from various trustees, which are sometimes set without regard to evidence or are contradictory. | Hospital accreditation standards in Iran | 4 | 0.75 | 3 | **7** |
| 4 | Failure to update hand hygiene instructions to refill hand washing supplies at centers | Hospital accreditation standards in Iran | 3 | 0.5 | 1.5 | **11** |
| 5 | Lack of assessment of hand hygiene programs in health centers | Hospital accreditation standards in Iran | 4 | 0.5 | 2 | **8** |
| 6 | Absence of a structured evaluation system for health centers and homes in the form of national accreditation | Hospital accreditation standards in Iran | 5 | 1 | 5 | **1** |
| 7 | Absence of human resource management (training to serve - continuous training during service) in HCF centers | Hospital accreditation standards in Iran | 4 | 1 | 4 | **5** |
| 8 | Lack of attention to technical and professional competence in hiring (contractual) or employing service forces lacking knowledge and skills in the field of cleaning methods and detergents and disinfectants. | Hospital accreditation standards in Iran | 4 | 1 | 4 | **5** |
| 9 | Lack of financial credits to implement corrective interventions after periodical evaluation | HCFs-WASH Iran.1 | 5 | 1.25 | 6.25 | **2** |
| 10 | Lack of regulation and centralized communication of environmental cleaning SOPs to HCF centers | HCFs-WASH Iran.1 | 3 | 0.5 | 1.5 | **9** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 11 | Absence of an integrated information registration system | HCFs-WASH Iran.1 | 3 | 0.5 | 1.5 | **10** |
| 12 | The lack of resilience of HCF centers in crisis and natural disasters | Hospital accreditation standards in Iran | 5 | 1 | 5 | **4** |
| | Sum | | | **10** | **42.75** | **-** |
| | Element Index (EI) | | | **-** | **4.275** | **-** |

**Table 2.13.** Opportunities of Hygiene and Environmental Cleaning in HCFs of Iran

| **Num.** | **Opportunities ($O_i$)** | **Evidence/ Reference** | **Rating ($R_{oi}$)** | **Weight ($W_{oi}$)** | **Score ($R_{oi} \times W_{oi}$)** | **Priority** |
|---|---|---|---|---|---|---|
| 1 | Observance of hand hygiene SOP in (public) healthcare centers is in accordance with the culture of the society. | Hospital accreditation standards in Iran | 5 | 1.25 | 6.25 | **4** |
| 2 | Strengthening the WASH program by different centers in the Ministry of Health | HCFs-WASH Iran.1 | 5 | 4 | 20 | **1** |
| 3 | Adaptation of the WASH program to the community perspective | HCFs-WASH Iran.1 | 5 | 1.75 | 8.75 | **3** |
| 4 | Using the capacity of guild schools to hold training courses for employees | HCFs-WASH Iran.1 | 5 | 3 | 15 | **2** |
| | Sum | | | **10** | **50** | **-** |
| | Element Index (EI) | | | **-** | **5** | **-** |

**Table 2.14.** Threats of Hygiene and Environmental Cleaning in HCFs of Iran

| Num. | Threats ($T_i$) | Evidence/ Reference | Rating ($R_{ti}$) | Weight ($W_{ti}$) | Score ($R_{ti} \times W_{ti}$) | Priority |
|---|---|---|---|---|---|---|
| 1 | The normalization of the situation due to the Covid-19 pandemic and the continuous lack of attention of the society towards the issue | Expert experiences | 5 | 1.75 | 8.75 | **2** |
| 2 | Irrational use of antimicrobial substances, which has led to a decrease in H.R. consumption. | HCFs-WASH Iran.1 | 4 | 1.5 | 6 | **4** |
| 3 | Lack of inter-sectoral cooperation at the country level for infrastructure development | HCFs-WASH Iran.1 | 5 | 4 | 20 | **1** |
| 4 | Lack of proper cooperation within the organization to organize projects in the Ministry of Health | HCFs-WASH Iran.1 | 4 | 1.75 | 7 | **3** |
| 5 | WASH program reforms in HCF centers are often in the form of large-scale projects that require high costs. | HCFs-WASH Iran.1 | 5 | 1 | 5 | **5** |
| | Sum | | | **10** | **46.75** | - |
| | Element Index (EI) | | | **-** | **4.675** | - |

$$\boldsymbol{Strengthens}\ (\mathbf{4.5}) - \boldsymbol{Weakness}\ (\mathbf{4.27}) = (+\mathbf{2.25})$$

$$\boldsymbol{Opportunities}\ (\mathbf{5}) - \boldsymbol{Threats}\ (\mathbf{4.67}) = (+\mathbf{3.25})$$

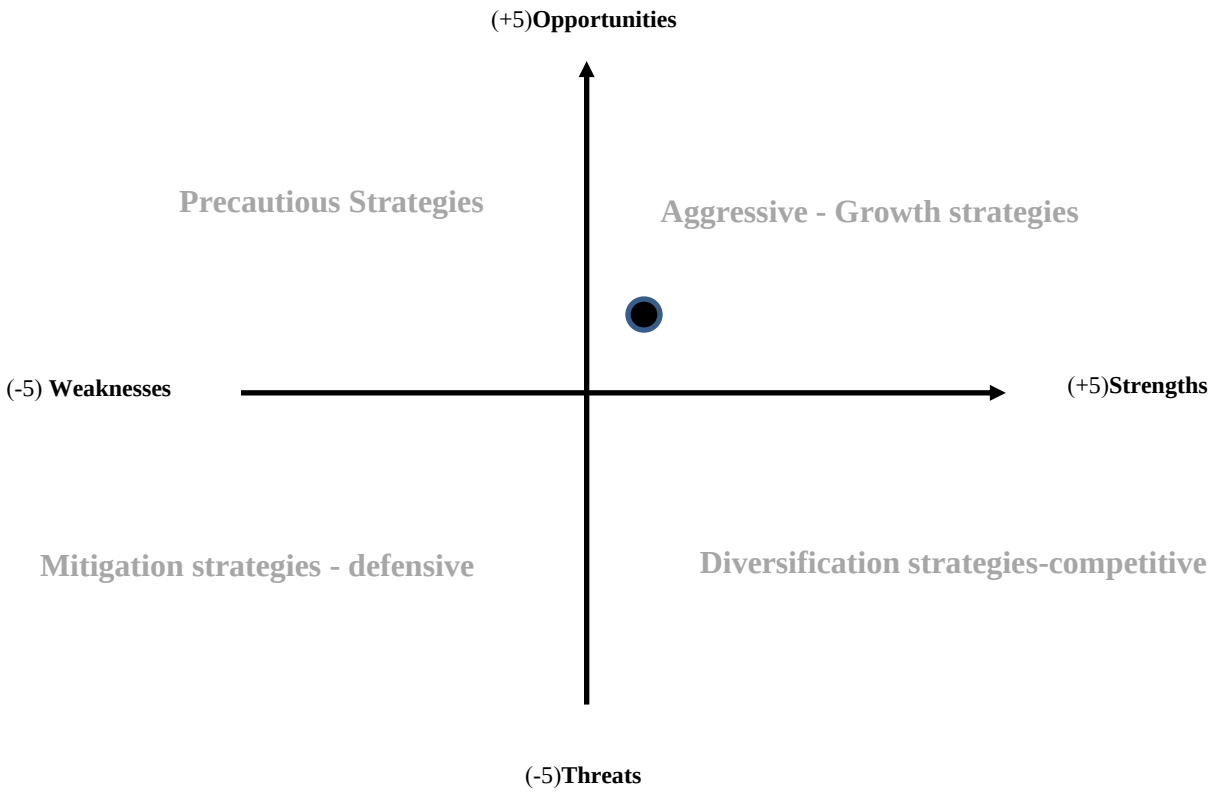



**Figure 2.3.** Cartesian coordinate axes of HCFs Hygiene and Environmental Cleaning SWOT

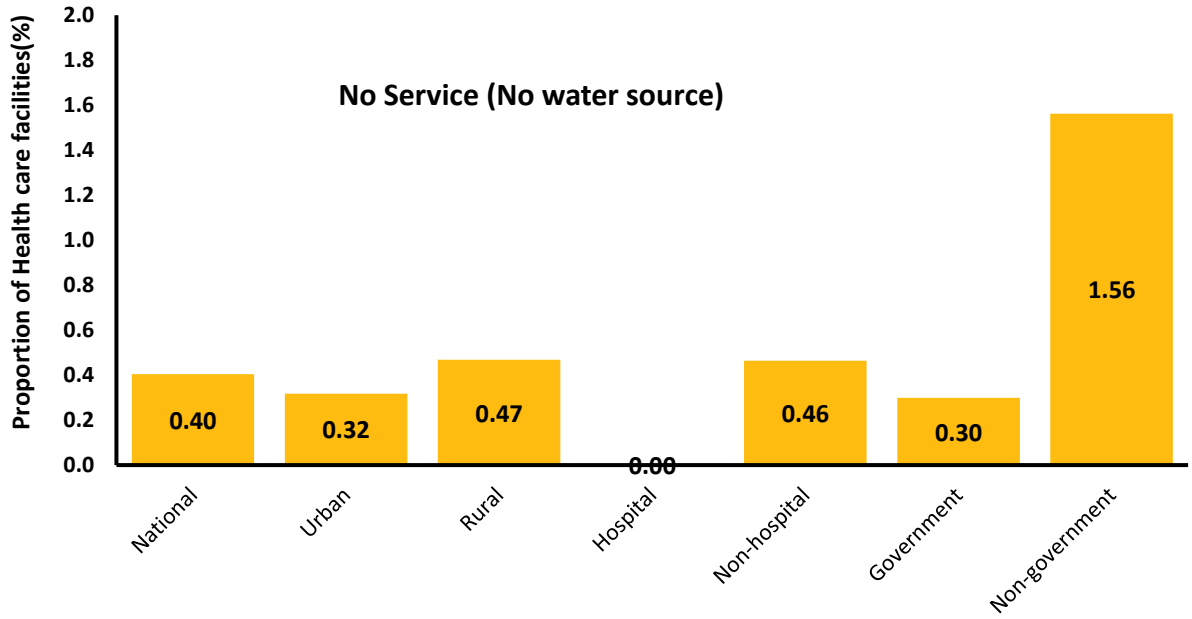
**Table 2.15.** SWOT matrix of Hygiene and Environmental Cleaning

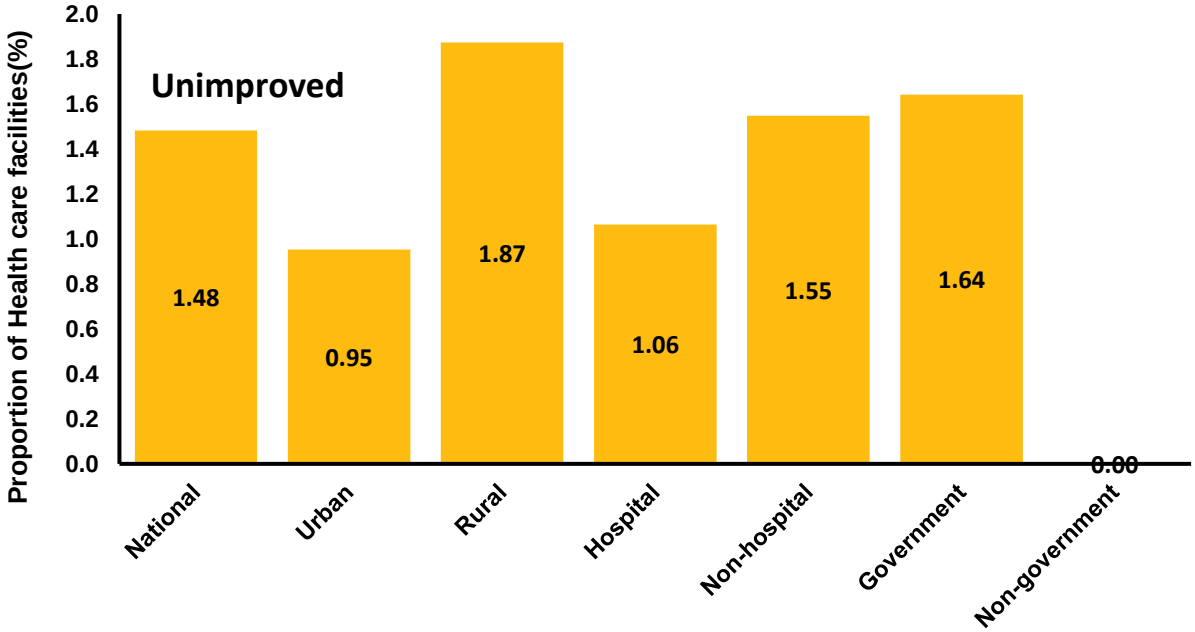
| **nternal factors**<br><br>**External factors** | **Strengths (S)**<br>1. Evaluation of hand hygiene programs in hospitals. 2. The appropriate situation of supply and access to disinfectants in hospitals. 3. There are many demands from specialized centers and trustees for the benefits of observing hand hygiene and public health (Due to the Covid-19 pandemic, there has been a great sensitivity and care towards hand hygiene in the general public and society.). 4. The existence of a structured evaluation system of hospitals in the form of accreditation criteria. 5. The presence of an integrated hospital management portal regarding the requirements of the WASH program .6.The existence of an integrated view of the management regarding the provision of the requirements of the WASH program | **Weaknesses (W)**<br>1. Placement of sanitary services, especially in rural health centers and health houses, requires infrastructure changes and relatively high costs. 2. Absence of spending regulations on resources to improve the health status of hospitals and health centers. 3. The existence of multiple instructions from various trustees, which are sometimes set without regard to evidence or are contradictory.4. Failure to update hand hygiene instructions to refill hand washing supplies at centers. 5. Lack of assessment of hand hygiene programs in health centers. 6. Absence of a structured evaluation system for health centers and homes in the form of national accreditation. 7. Absence of human resource management (training to serve - continuous training during service) in HCF centers. 8. Lack of attention to technical and professional competence in hiring (contractual) or employing service forces lacking knowledge and skills in the field of cleaning methods and detergents and disinfectants. 9. Lack of financial credits to implement corrective interventions after periodical evaluation. 10. Lack of regulation and centralized communication of environmental cleaning SOPs to HCF centers. 11. Absence of an integrated information registration system. 12. The lack of resilience of HCF centers in crisis and natural disasters |
|---|---|---|

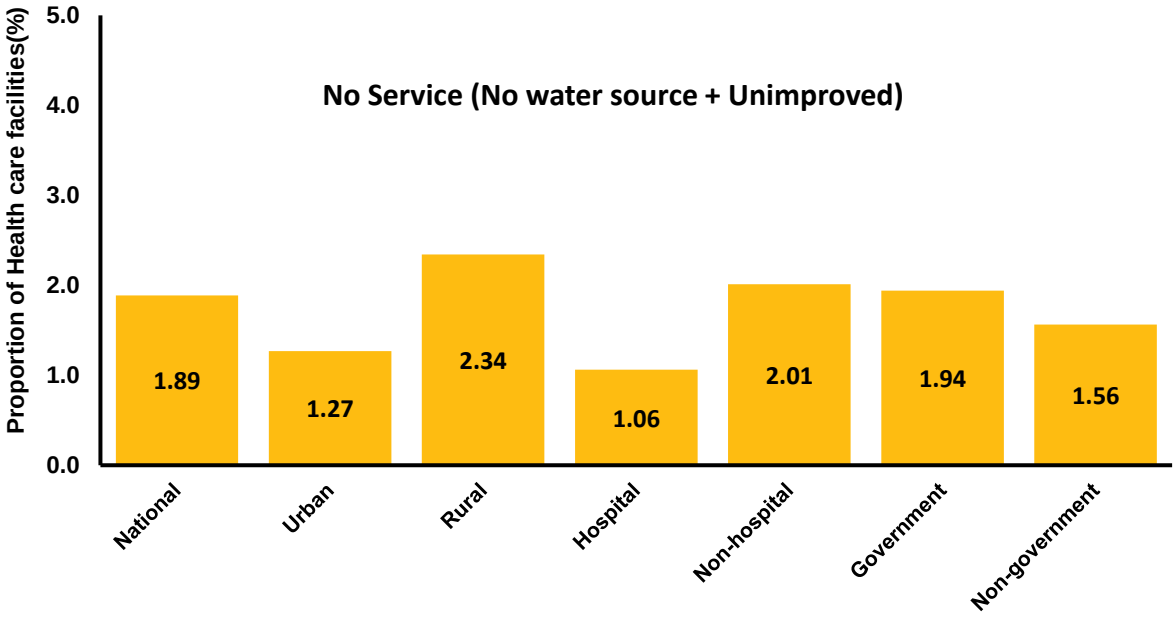
| | | |
|---|---|---|
| **Opportunities (O)**<br>1. Observance of hand hygiene SOP in (public) healthcare centers is in accordance with the culture of the society. 2. Strengthening the WASH program by different centers in the Ministry of Health. 3. Adaptation of the WASH program to the community perspective. 4. Using the capacity of guild schools to hold training courses for employees | 1. Improving hand hygiene programs in hospitals and health centers through compliance and the existence of community demands in the field of hand hygiene | 1. Strengthening the WASH program by various centers in the Ministry of Health through the development of related guidelines (integration of guidelines, center evaluation system, information registration, placement, educational resilience standards, hiring people especially in health centers, etc.) |
| **Threats (T)**<br>1. The normalization of the situation due to the corona pandemic and the continuous lack of attention of the society towards the issue. 2. Irrational use of antimicrobial substances, which has led to a decrease in H.R. consumption. 3. Lack of inter-sectoral cooperation at the country level for infrastructure development. 4. Lack of proper cooperation within the organization to organize projects in the Ministry of Health. 5. WASH program reforms in HCF centers are often in the form of large-scale projects that require high costs. | 1. Maintaining the general sensitivity of the society towards observing hand hygiene through demands from the centers and strengthening intra-organizational and extra-organizational cooperation according to the existence of an integrated view regarding the requirements of the WASH program. | 1. Creating an integrated WASH management system in HCFs so that its output can be continuously monitored by ministerial and university managers through HCFs-WASHIran Observatory. |

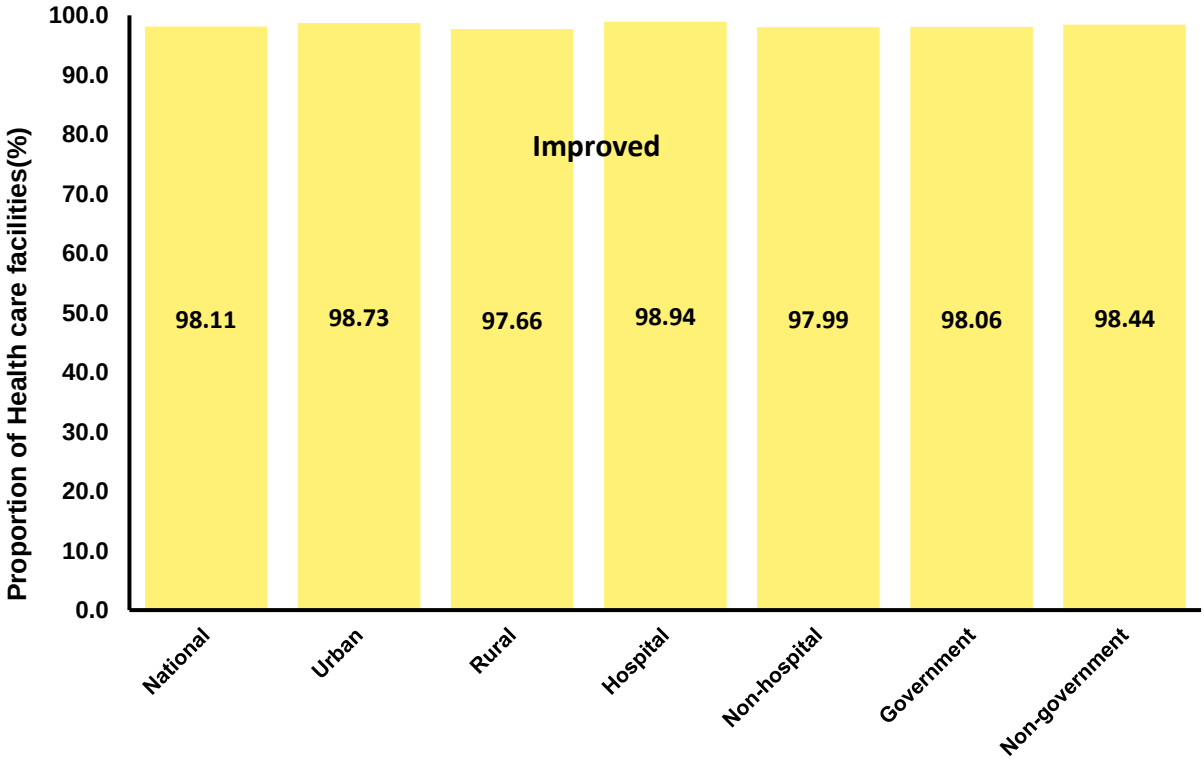
## Annex. 3: Detailed Graphs

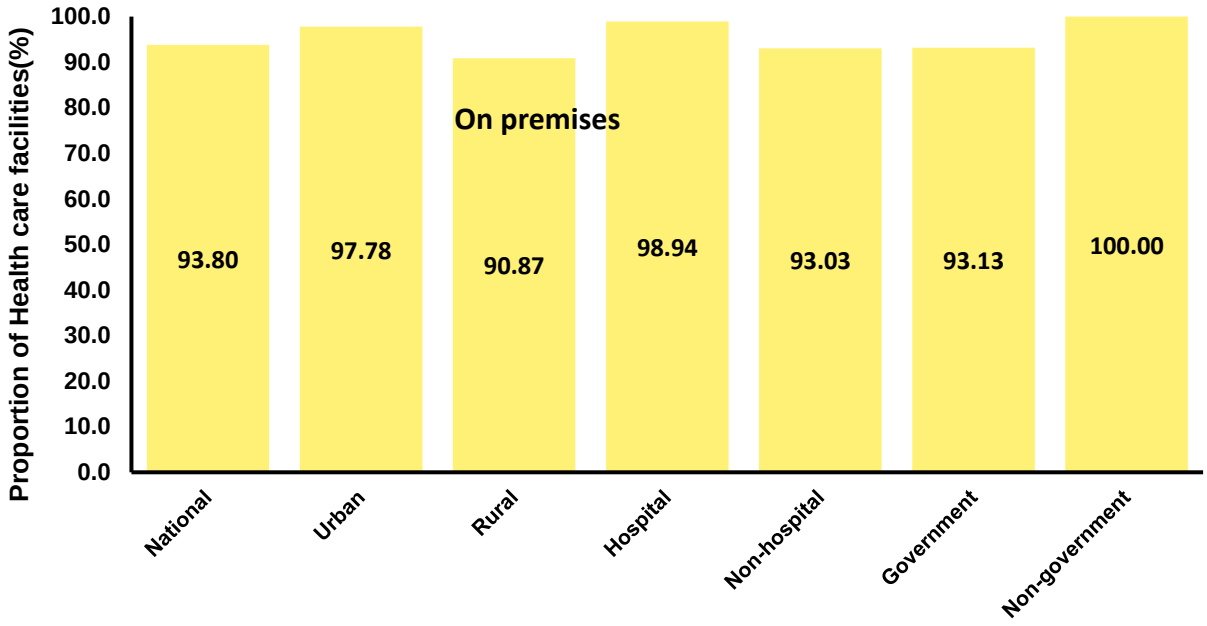
## Annex. 3.1: Detailed Graphs; Water



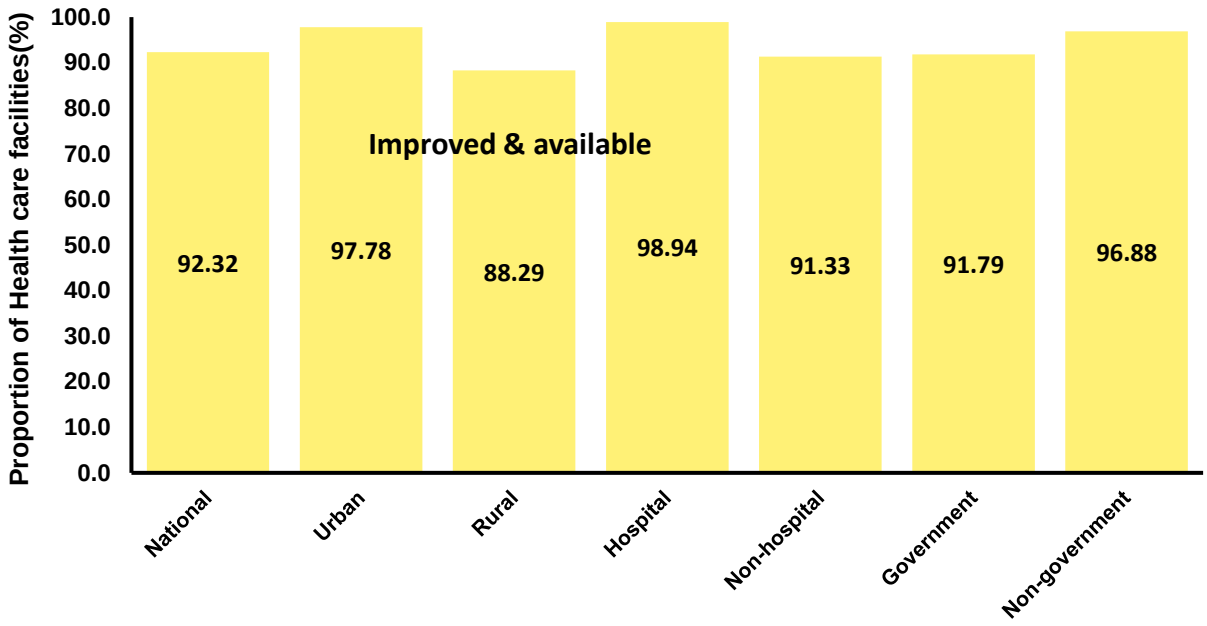



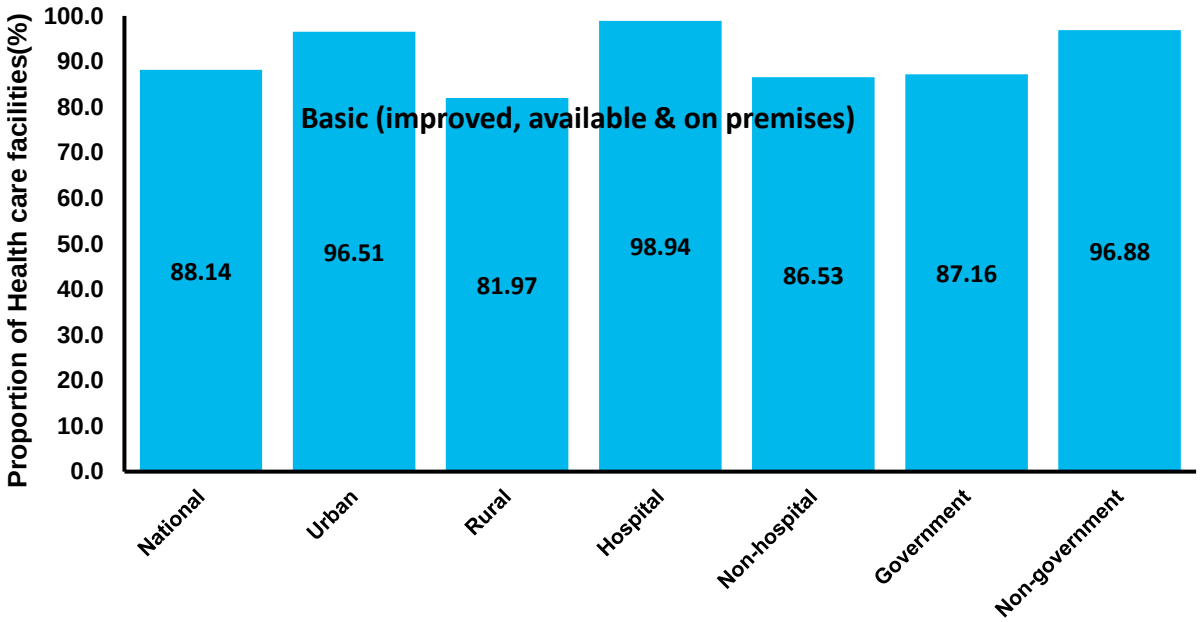

No Service (No water source + Unimproved)
Proportion of Health care facilities(%)
5.0
4.0
3.0
2.0
1.0
0.0
1.89
1.27
2.34
1.06
2.01
1.94
1.56
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government


Improved
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
98.11
98.73
97.66
98.94
97.99
98.06
98.44
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

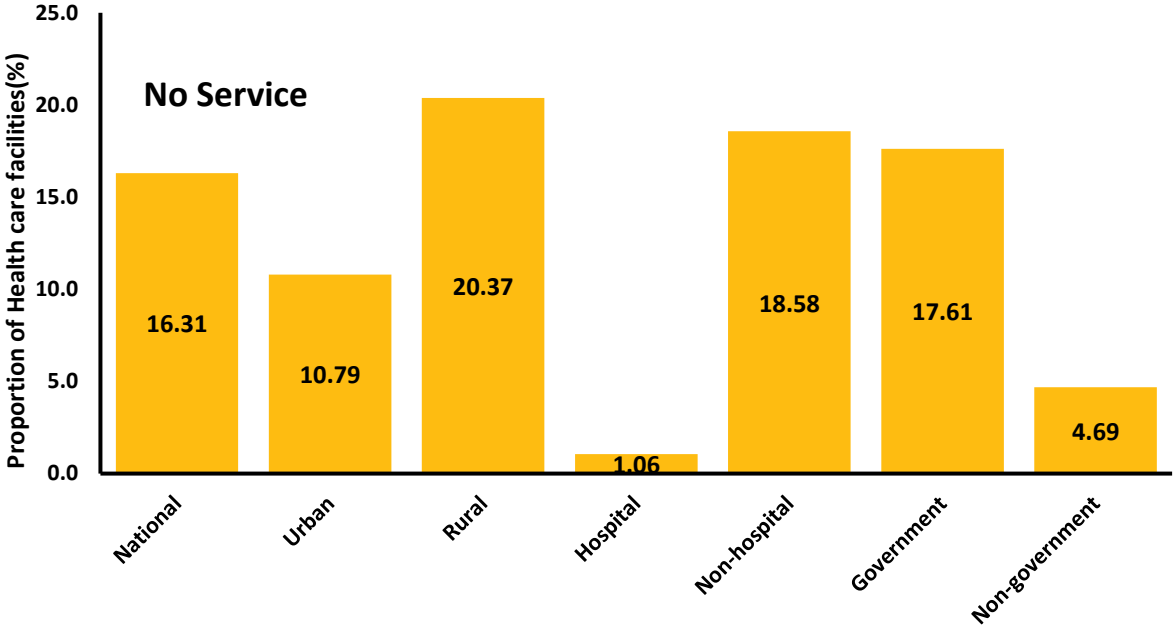

On premises
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
93.80
97.78
90.87
98.94
93.03
93.13
100.00
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

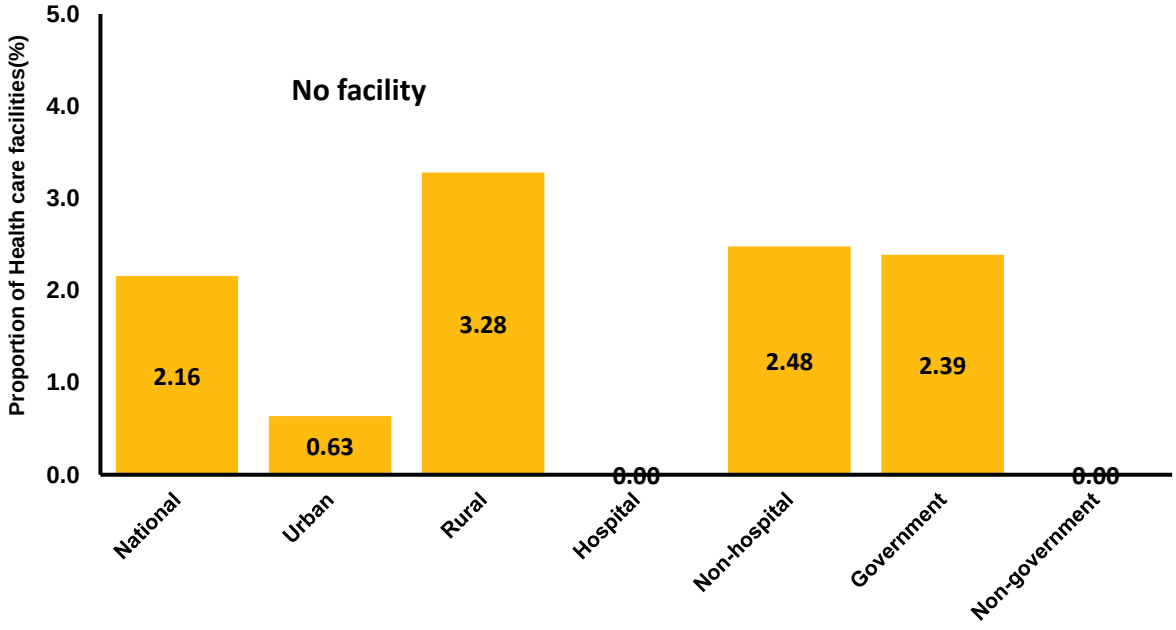

Available
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
93.80
99.05
89.93
100.00
92.88
93.28
98.44
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

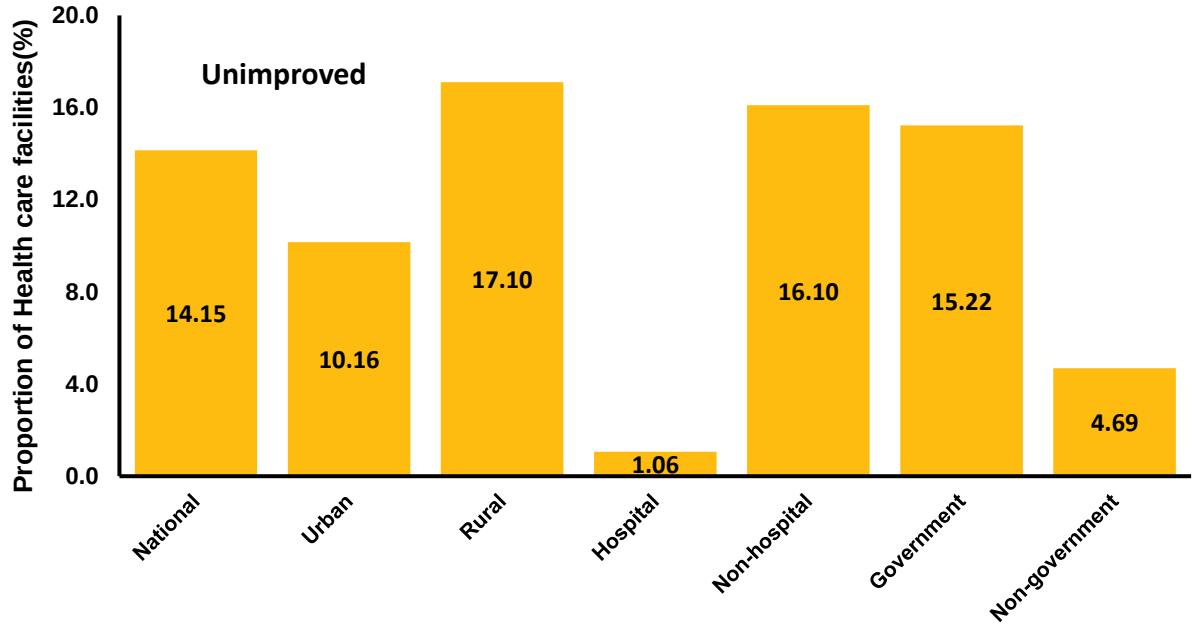

Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Improved & available
92.32
97.78
88.29
98.94
91.33
91.79
96.88
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

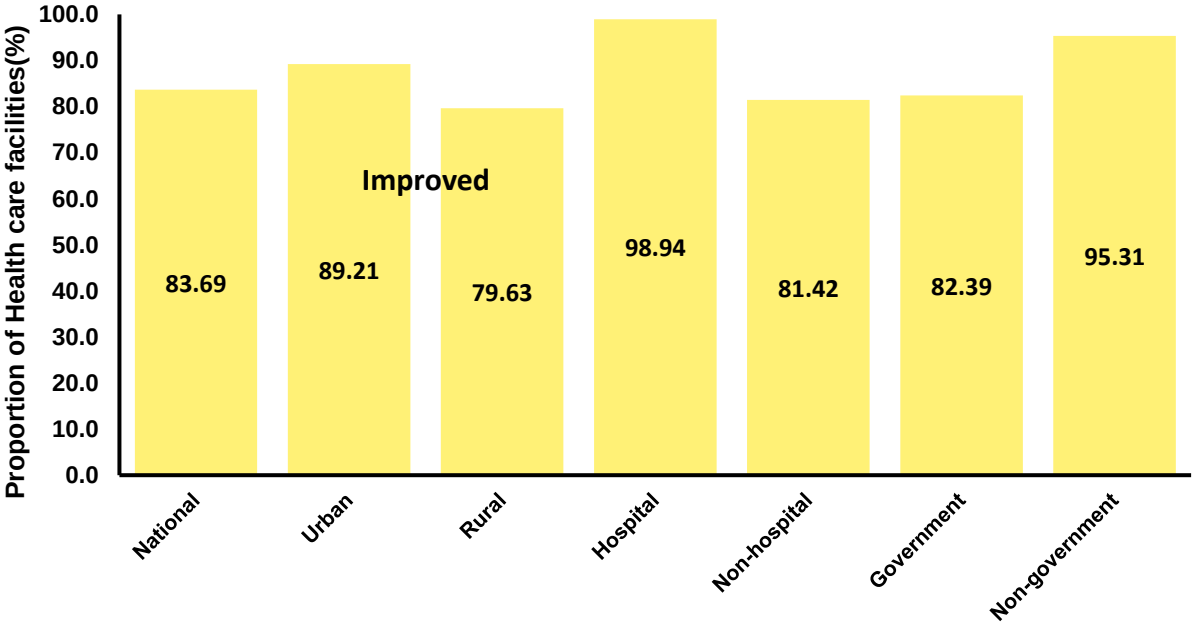

Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Basic (improved, available & on premises)
88.14
96.51
81.97
98.94
86.53
87.16
96.88
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

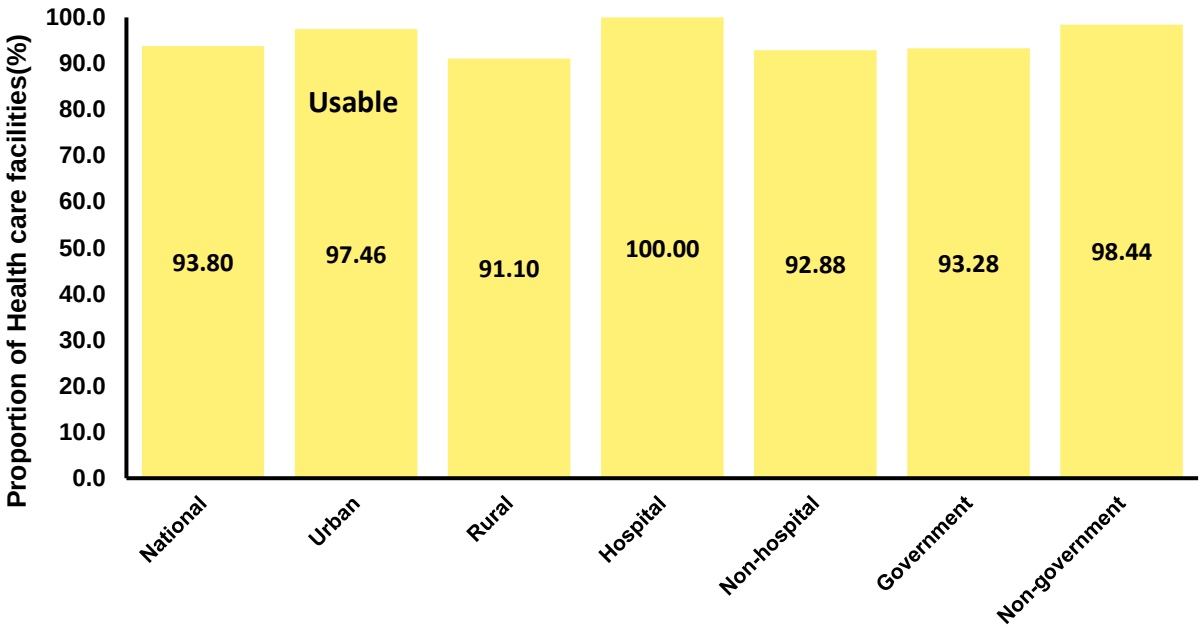
## Annex. 3.2: Detailed Graphs; Sanitation

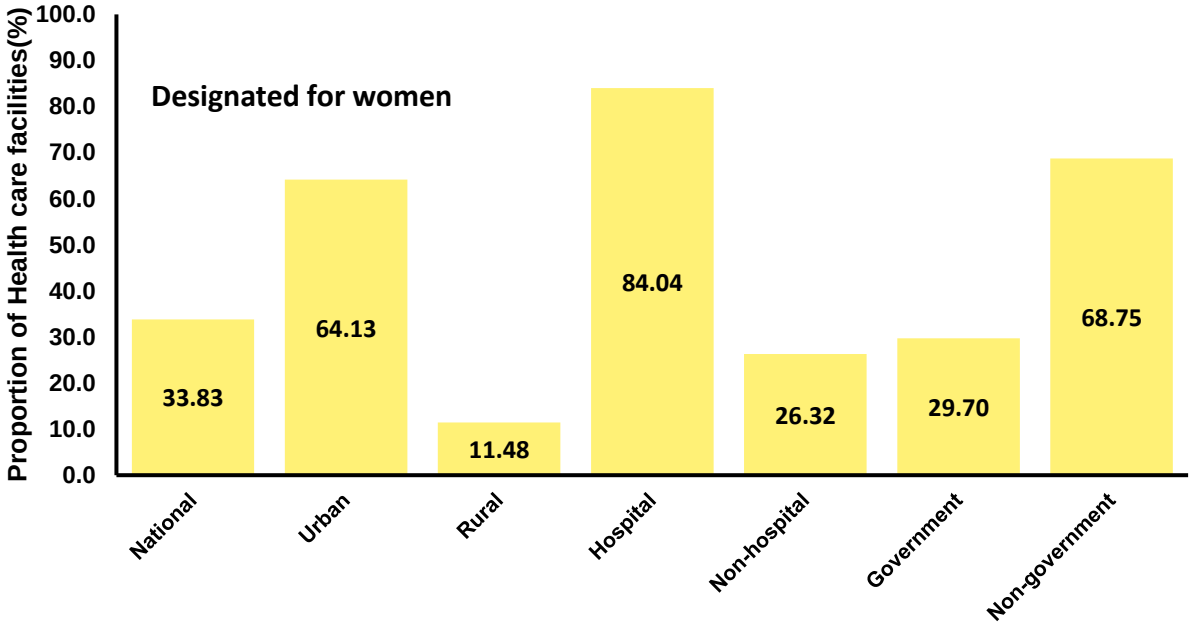


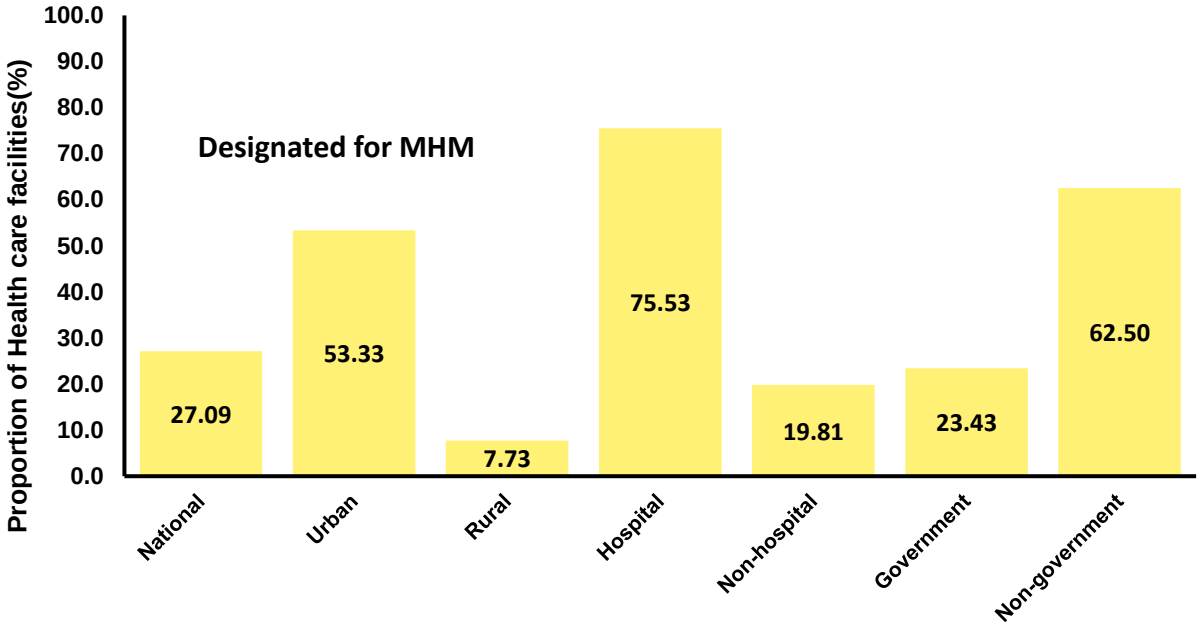



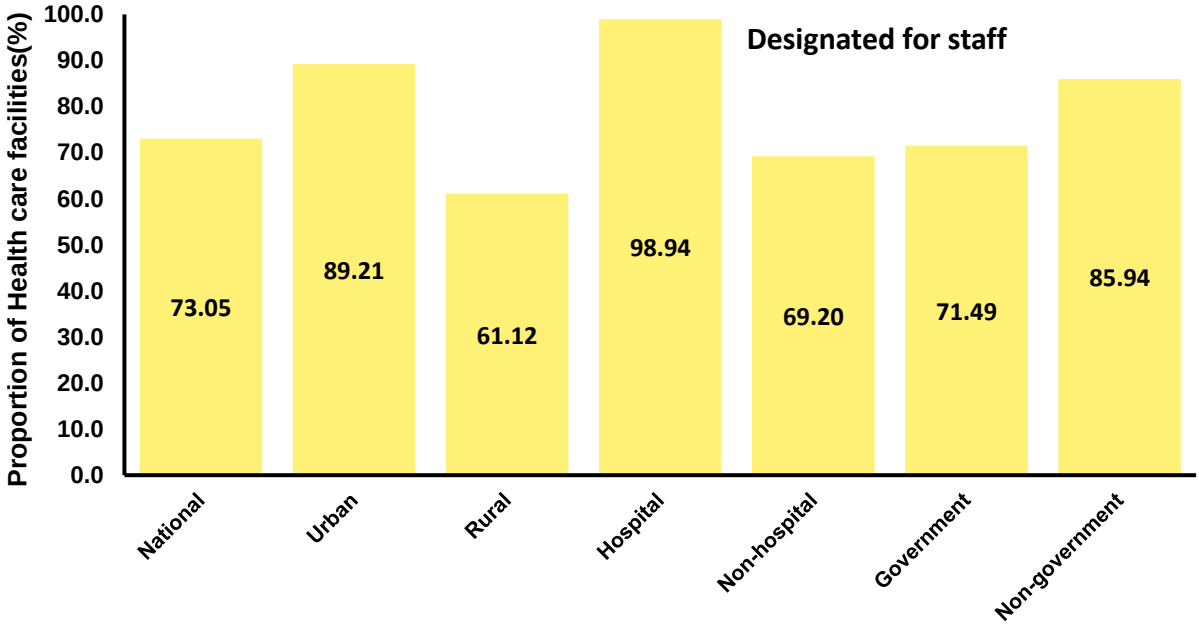

Unimproved
Proportion of Health care facilities(%)
20.0
16.0
12.0
8.0
4.0
0.0
14.15
10.16
17.10
1.06
16.10
15.22
4.69
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

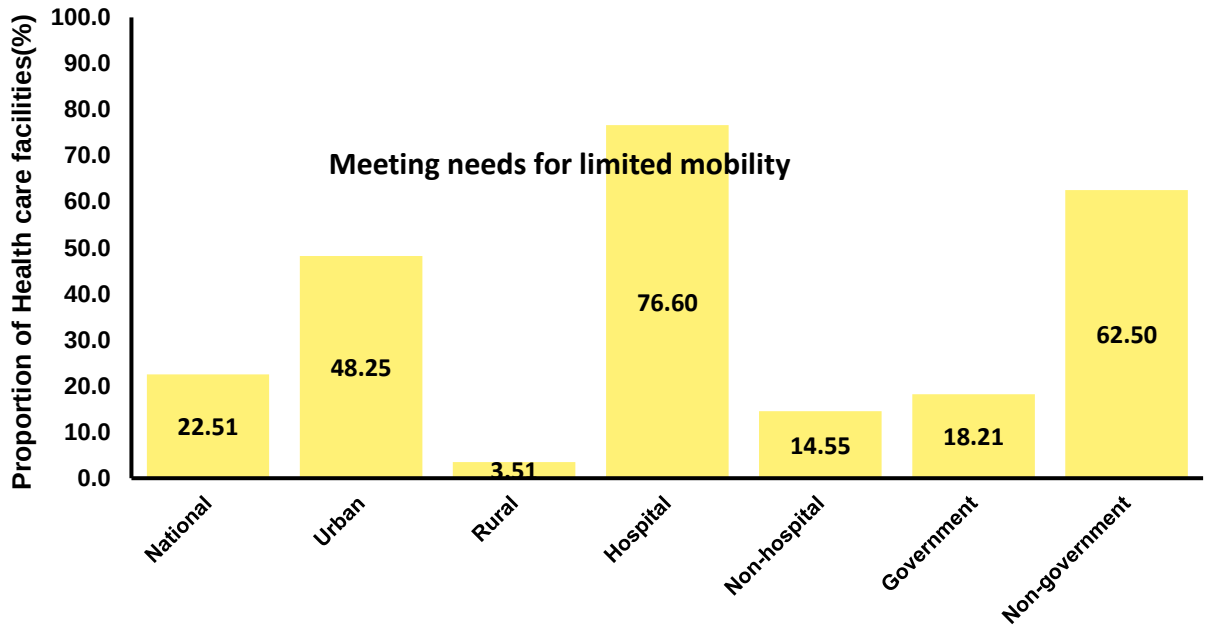

Improved
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
83.69
89.21
79.63
98.94
81.42
82.39
95.31
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

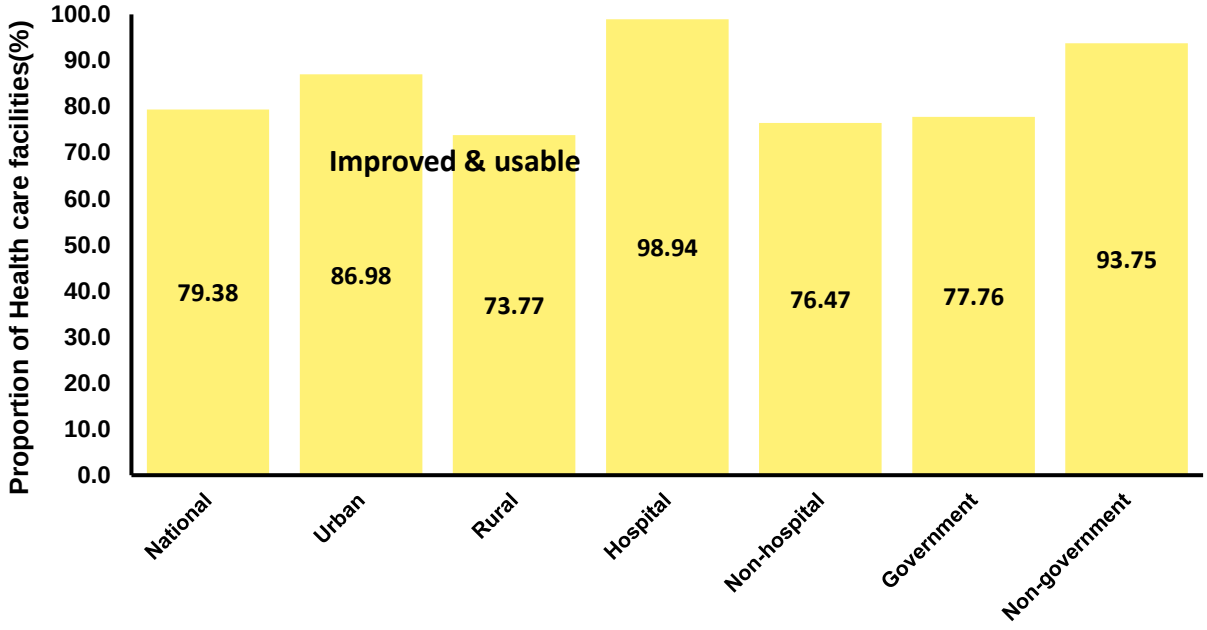

Usable
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
93.80
97.46
91.10
100.00
92.88
93.28
98.44
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

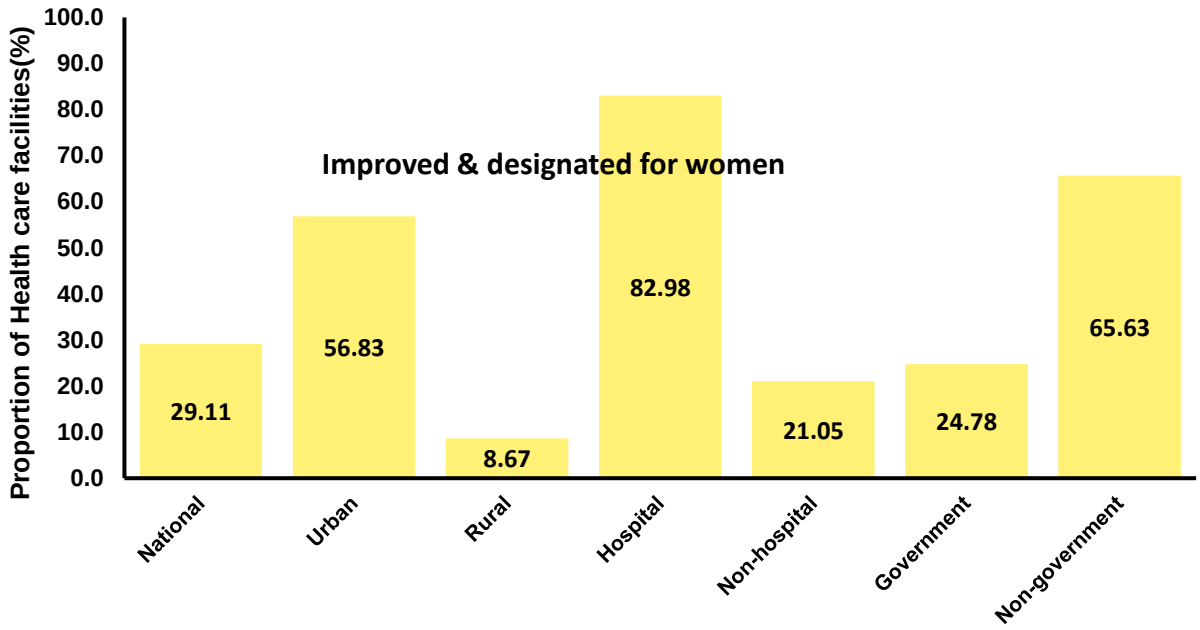

Designated for women
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
33.83
64.13
11.48
84.04
26.32
29.70
68.75
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

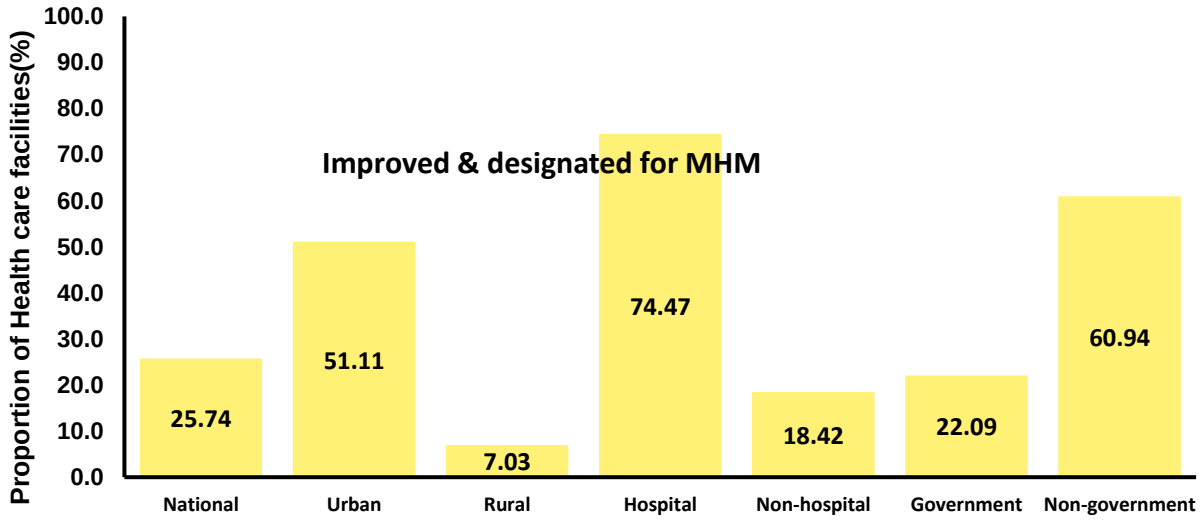

Designated for MHM
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
27.09
53.33
7.73
75.53
19.81
23.43
62.50
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

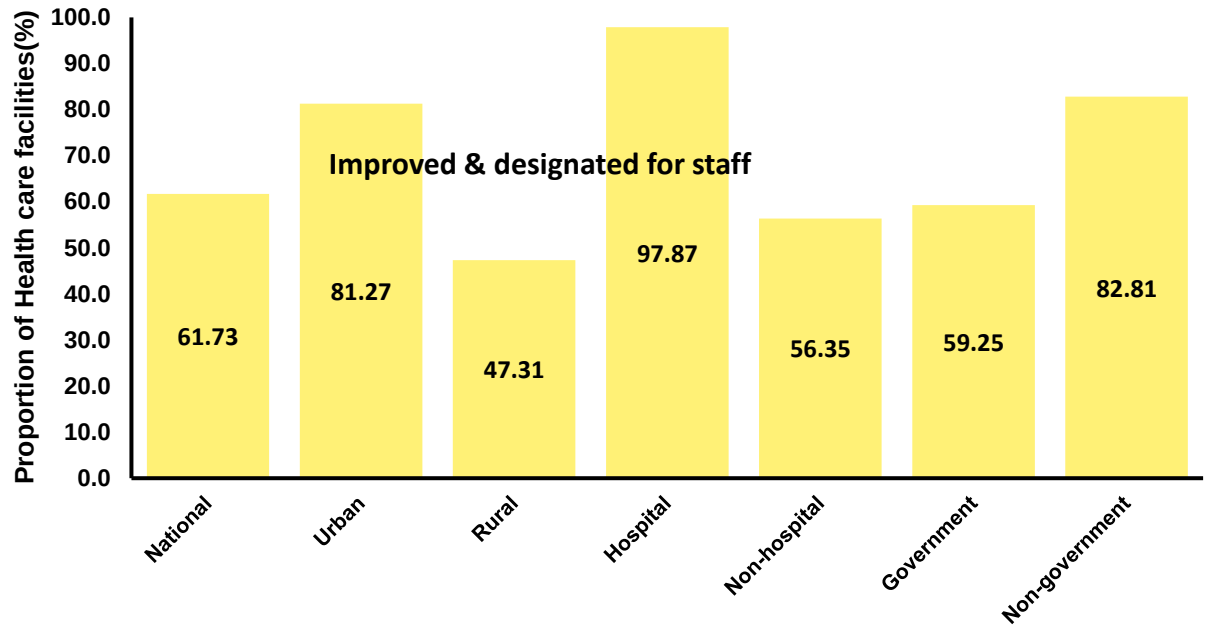

Designated for staff
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
73.05
89.21
61.12
98.94
69.20
71.49
85.94
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

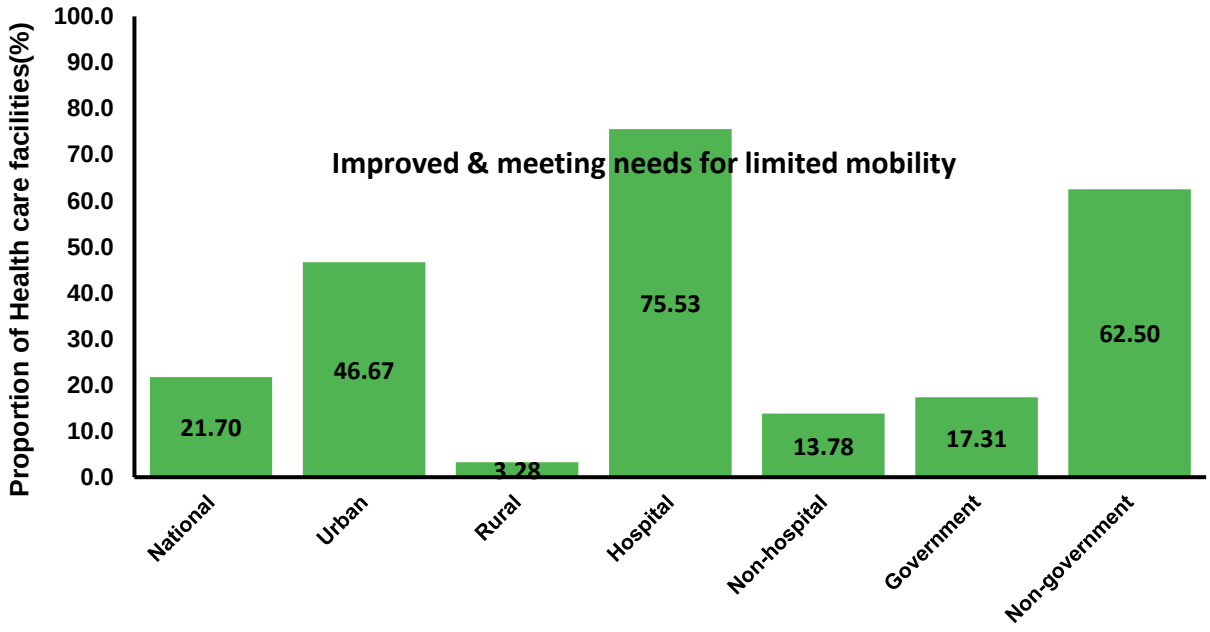

Meeting needs for limited mobility
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
22.51
48.25
3.51
76.60
14.55
18.21
62.50
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

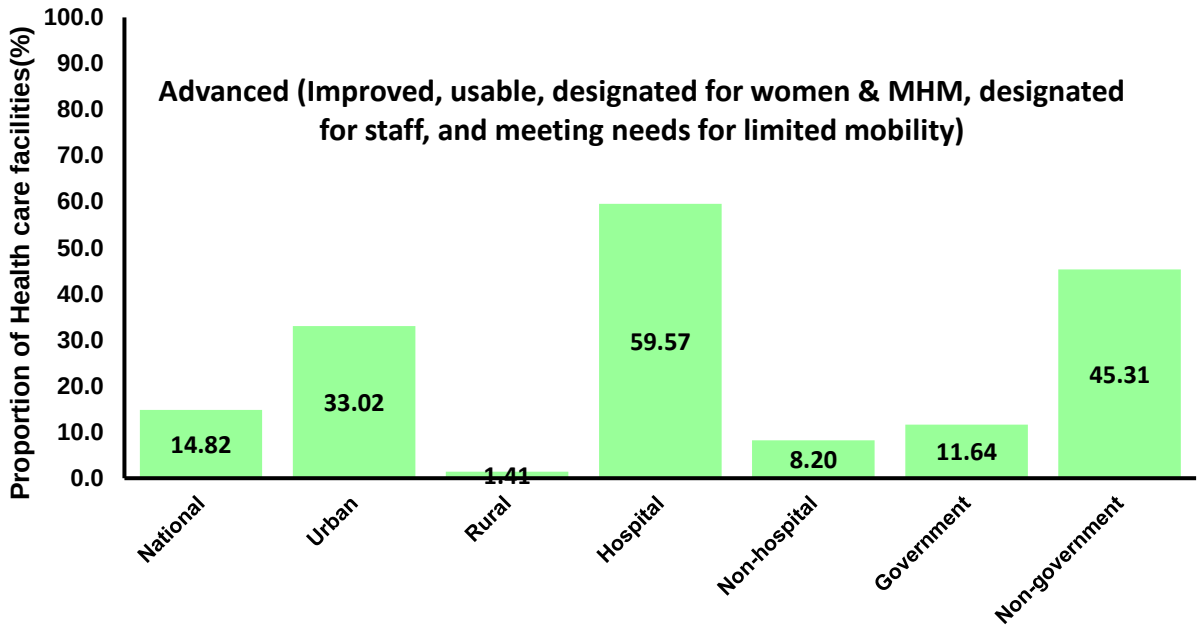

Improved & usable
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
79.38
86.98
73.77
98.94
76.47
77.76
93.75
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government


Improved & designated for women
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
29.11
56.83
8.67
82.98
21.05
24.78
65.63
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

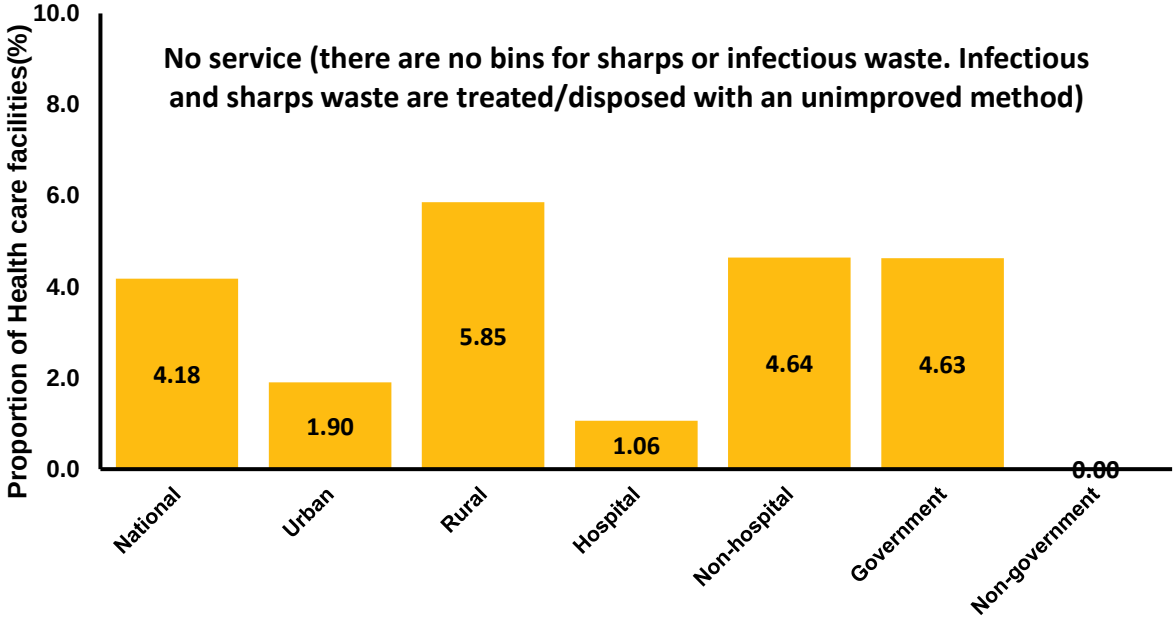

Improved & designated for MHM
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
25.74
51.11
7.03
74.47
18.42
22.09
60.94
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

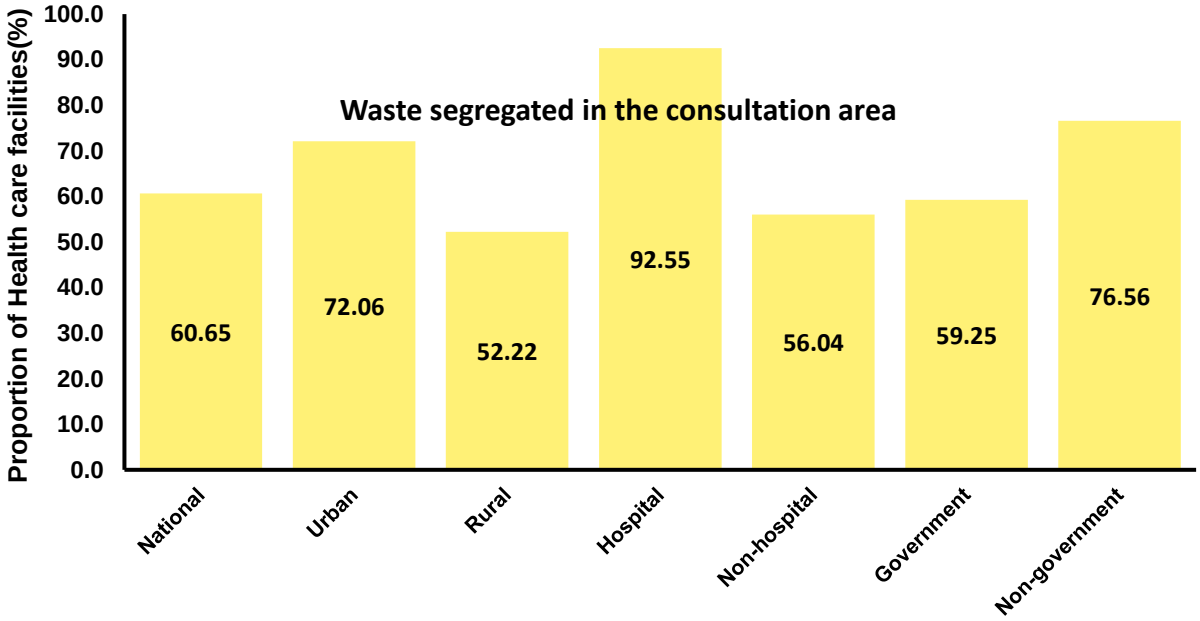

Improved & designated for staff
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
61.73
81.27
47.31
97.87
56.35
59.25
82.81
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

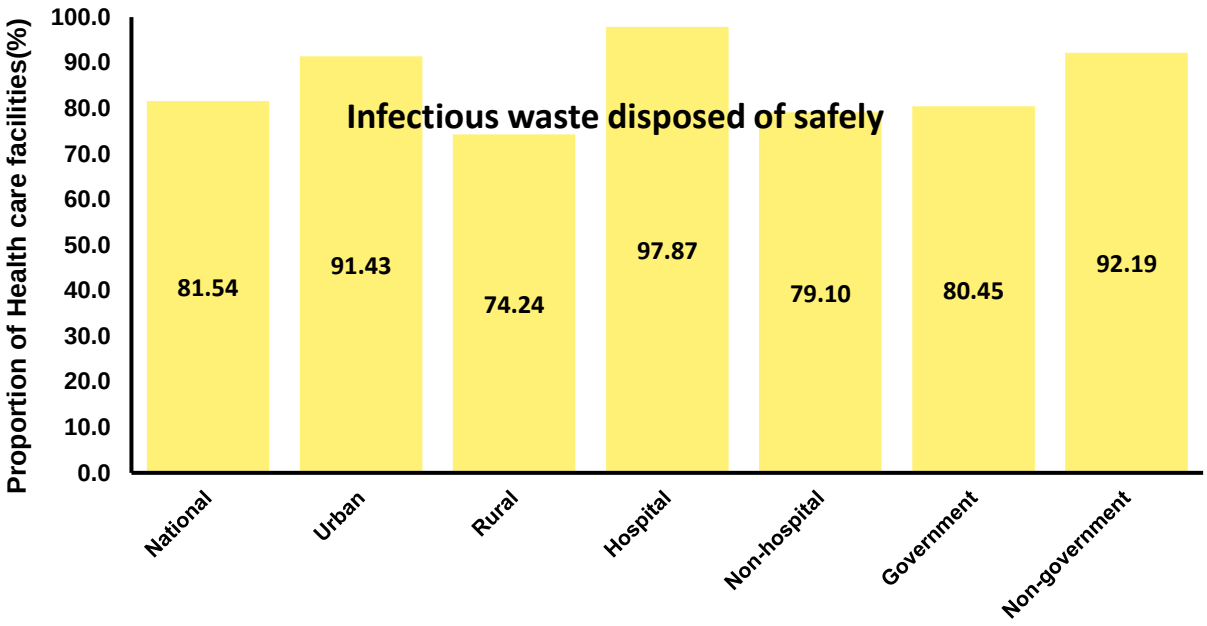

Improved & meeting needs for limited mobility
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
21.70
46.67
3.28
75.53
13.78
17.31
62.50
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

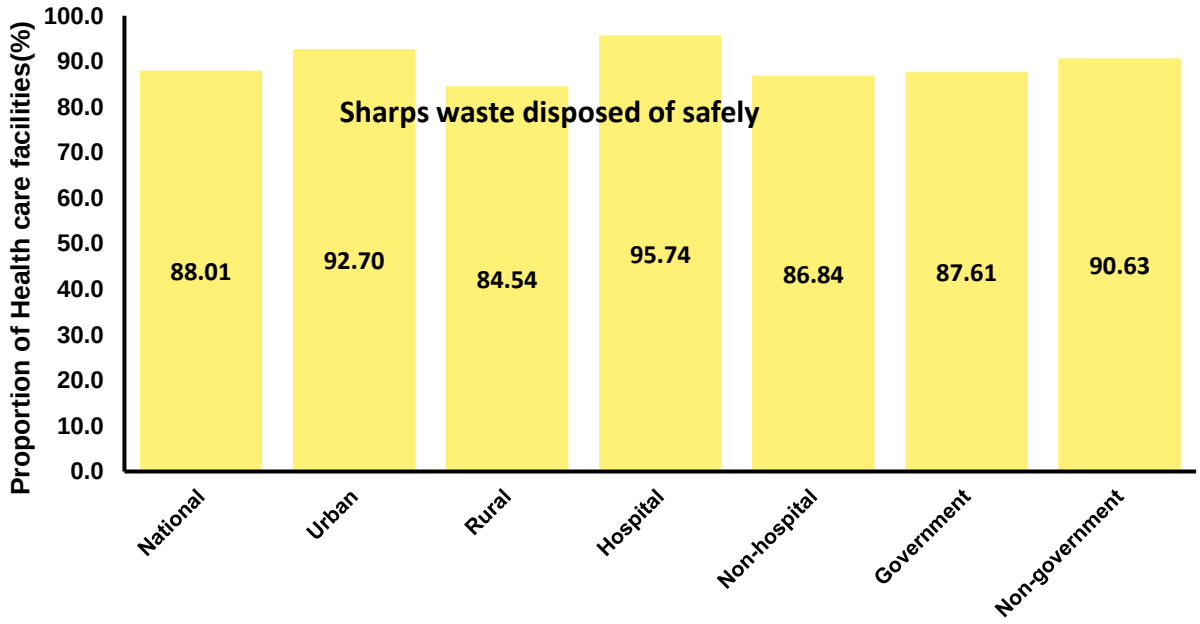

Advanced (Improved, usable, designated for women & MHM, designated for staff, and meeting needs for limited mobility)
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
14.82
33.02
1.41
59.57
8.20
11.64
45.31
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

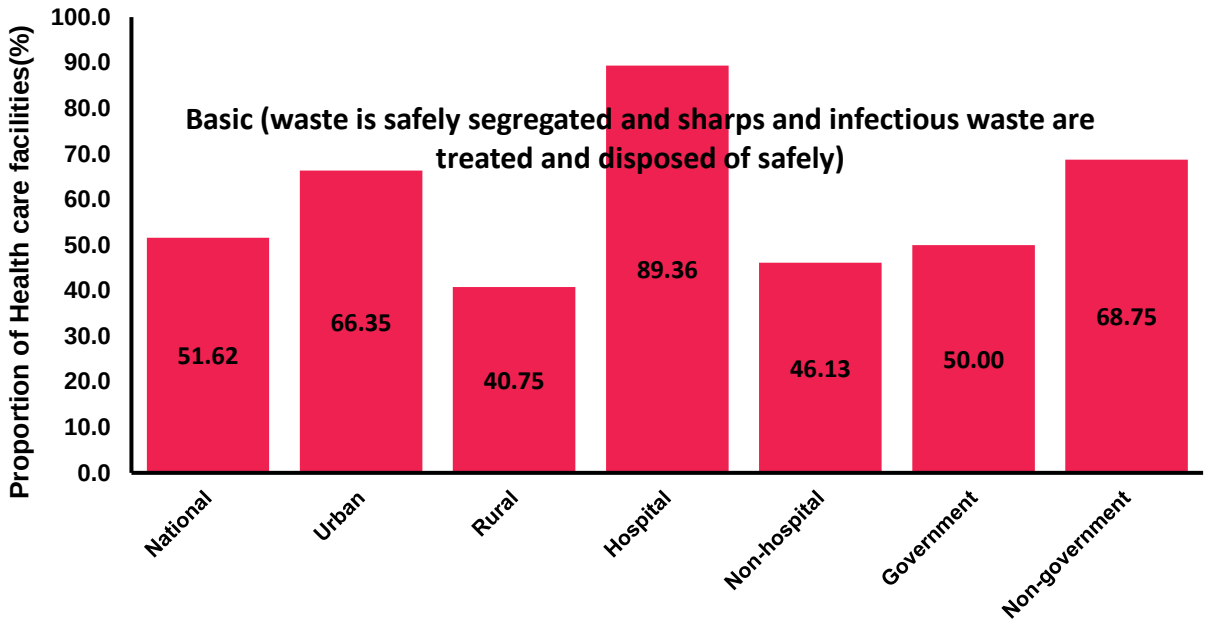
## Annex. 3.3: Detailed Graphs; Health Care Waste Management



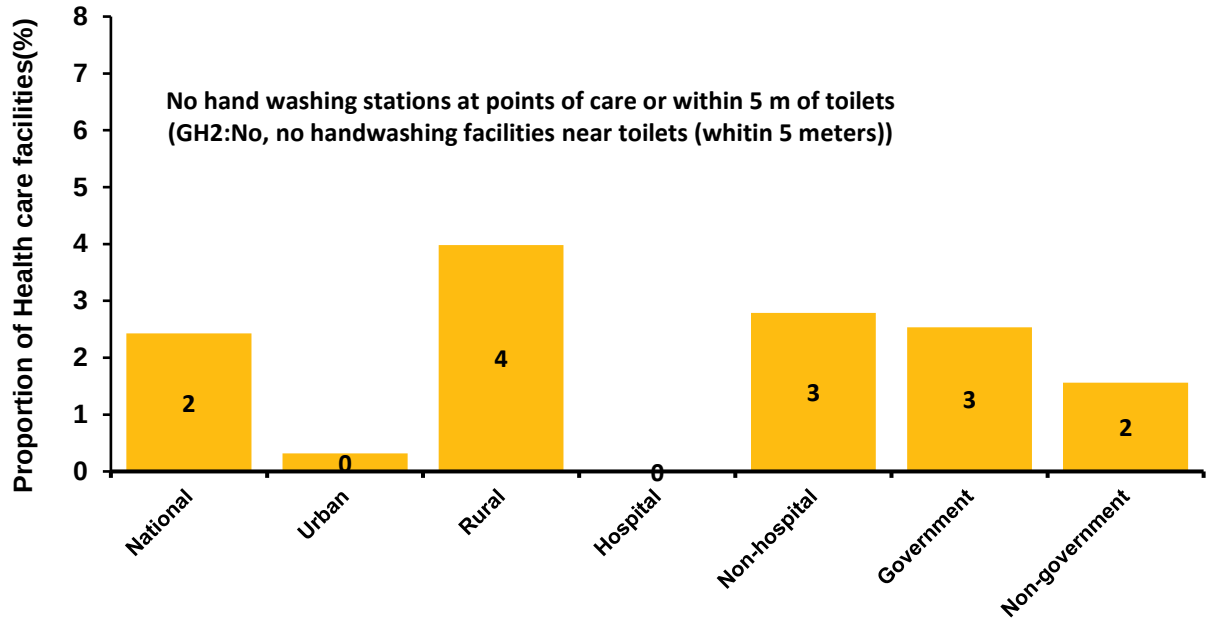



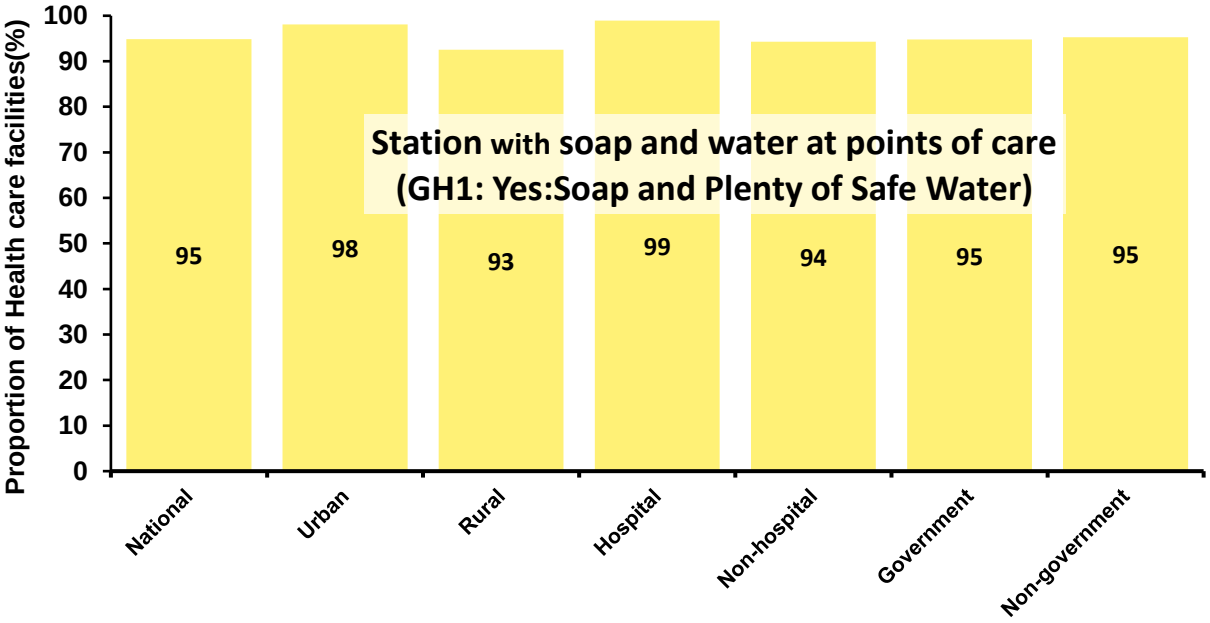

Infectious waste disposed of safely
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
81.54
91.43
74.24
97.87
79.10
80.45
92.19
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

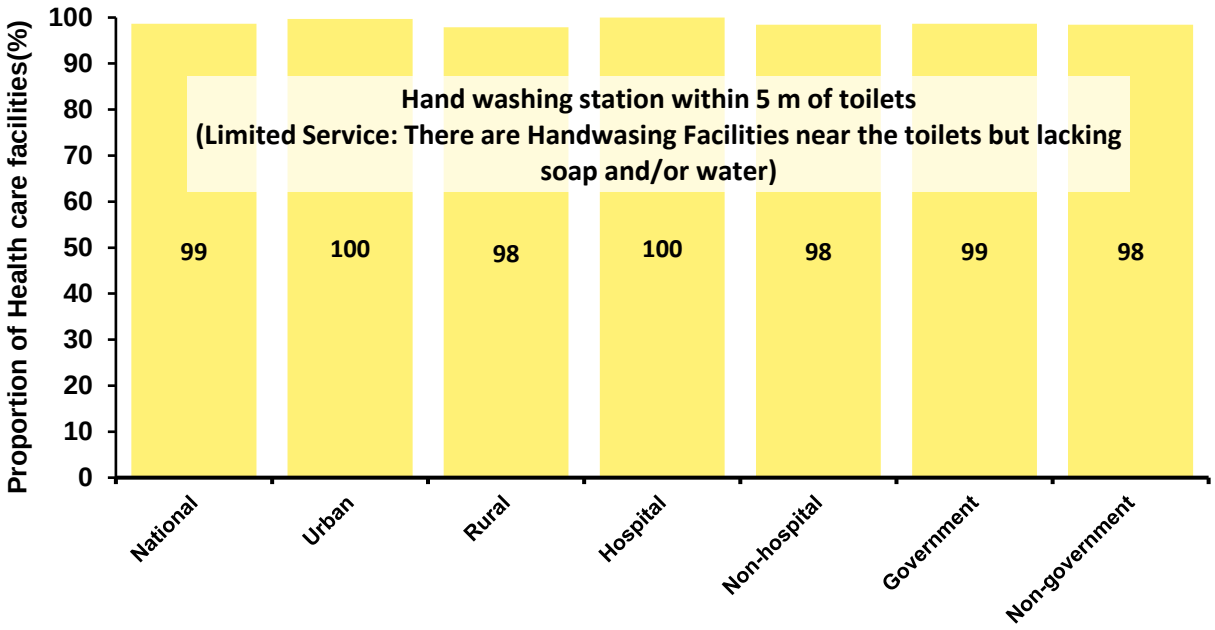

Sharps waste disposed of safely
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
88.01
92.70
84.54
95.74
86.84
87.61
90.63
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

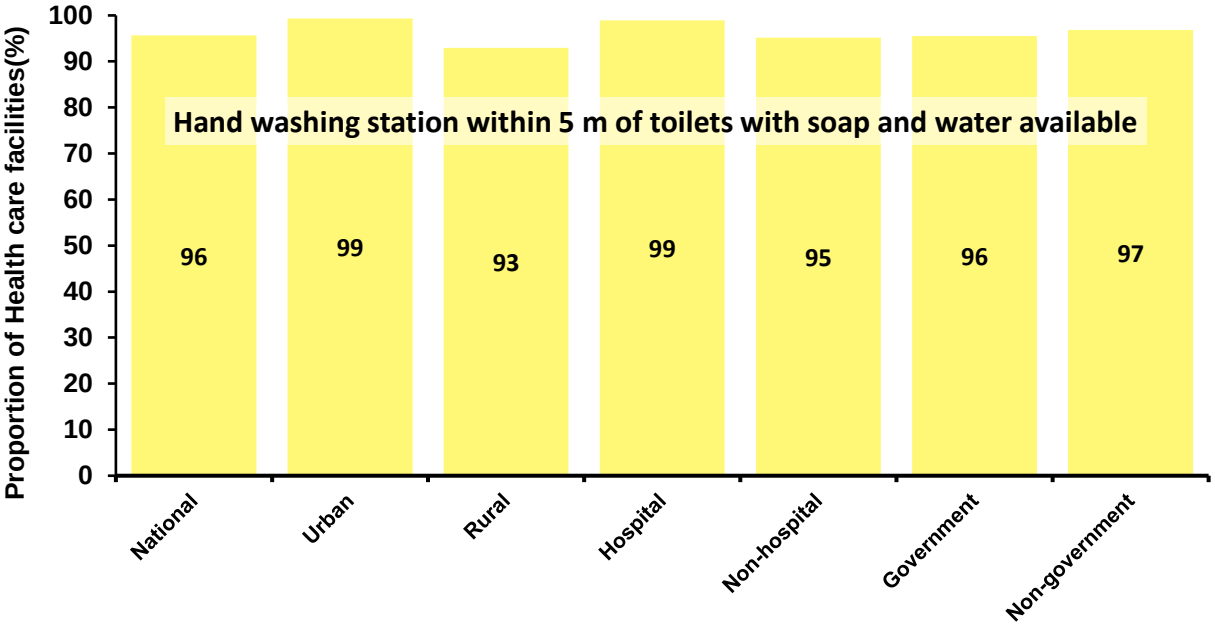

Basic (waste is safely segregated and sharps and infectious waste are treated and disposed of safely)
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
51.62
66.35
40.75
89.36
46.13
50.00
68.75
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

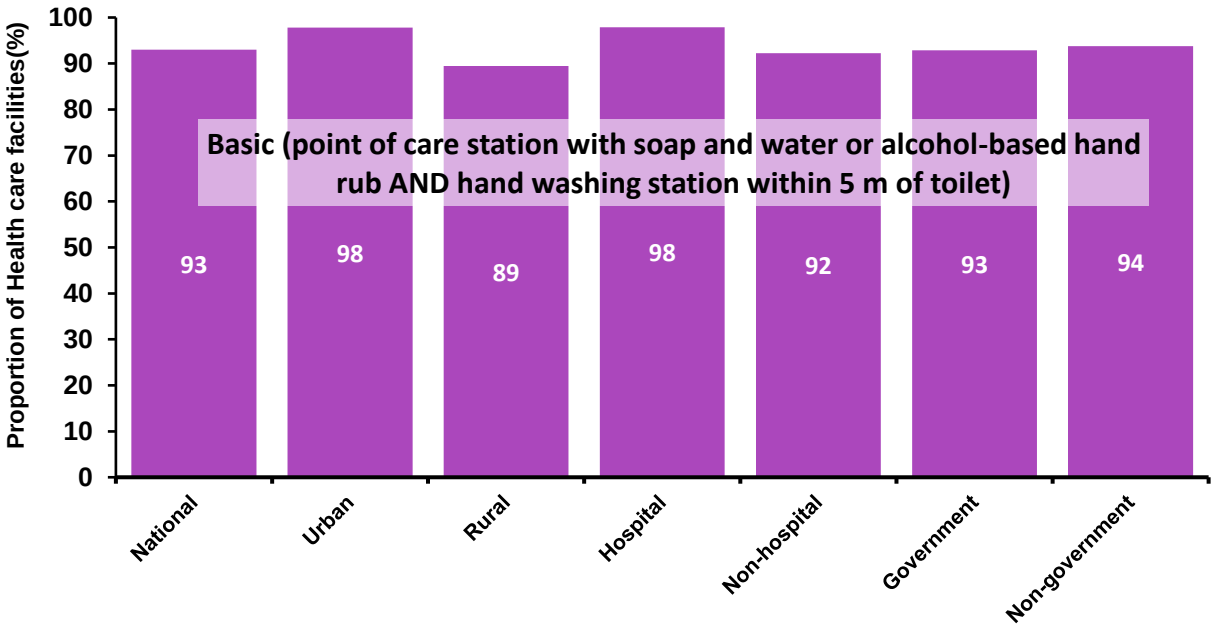
## Annex. 3.4: Detailed Graphs; Hygiene



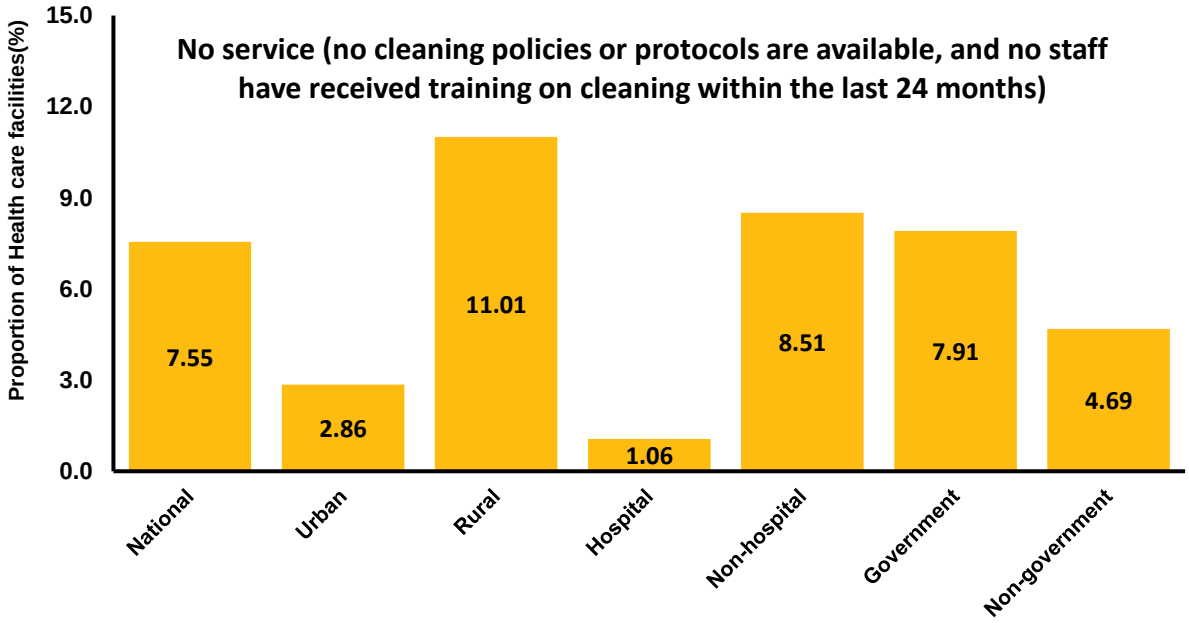



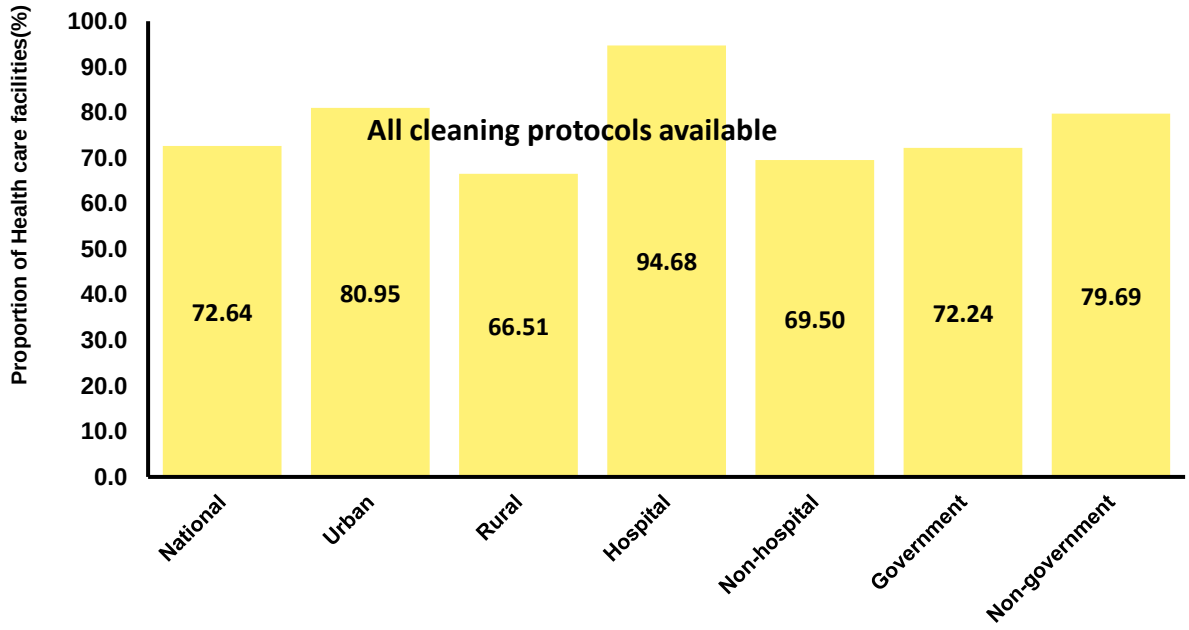

Hand washing station within 5 m of toilets
(Limited Service: There are Handwasing Facilities near the toilets but lacking soap and/or water)
Proportion of Health care facilities(%)
100
90
80
70
60
50
40
30
20
10
0
99
100
98
100
98
99
98
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

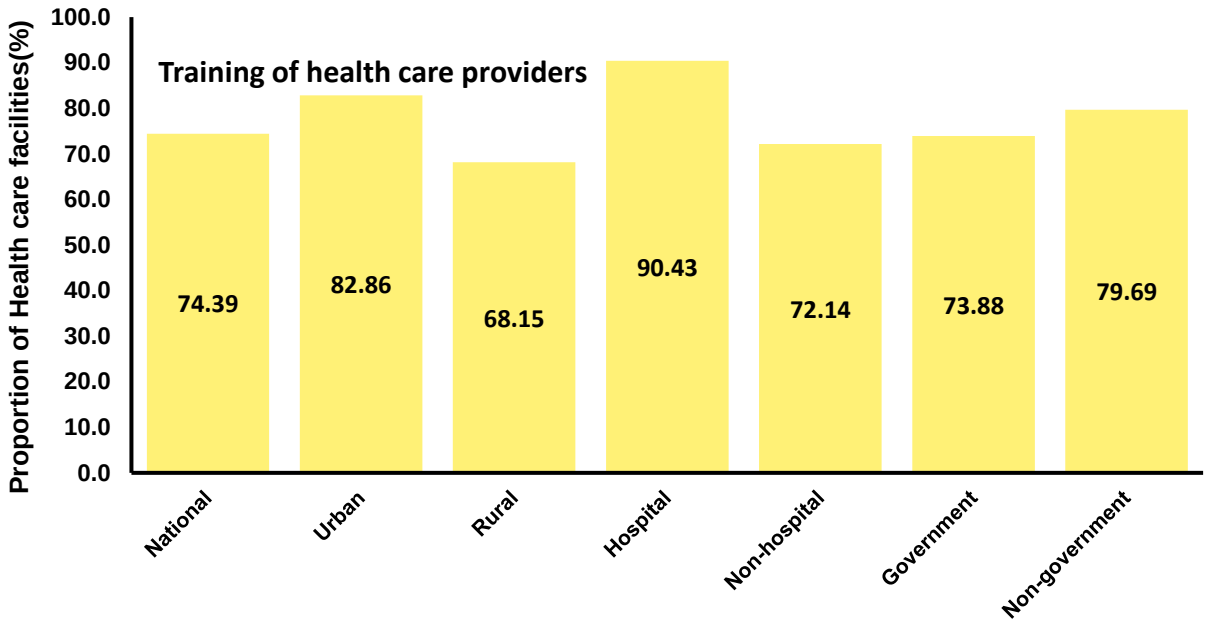

Hand washing station within 5 m of toilets with soap and water available
Proportion of Health care facilities(%)
100
90
80
70
60
50
40
30
20
10
0
96
99
93
99
95
96
97
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government


Proportion of Health care facilities(%)
100
90
80
70
60
50
40
30
20
10
0
Basic (point of care station with soap and water or alcohol-based hand rub AND hand washing station within 5 m of toilet)
93
98
89
98
92
93
94
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

## Annex. 3.5: Detailed Graphs; Environmental Cleaning

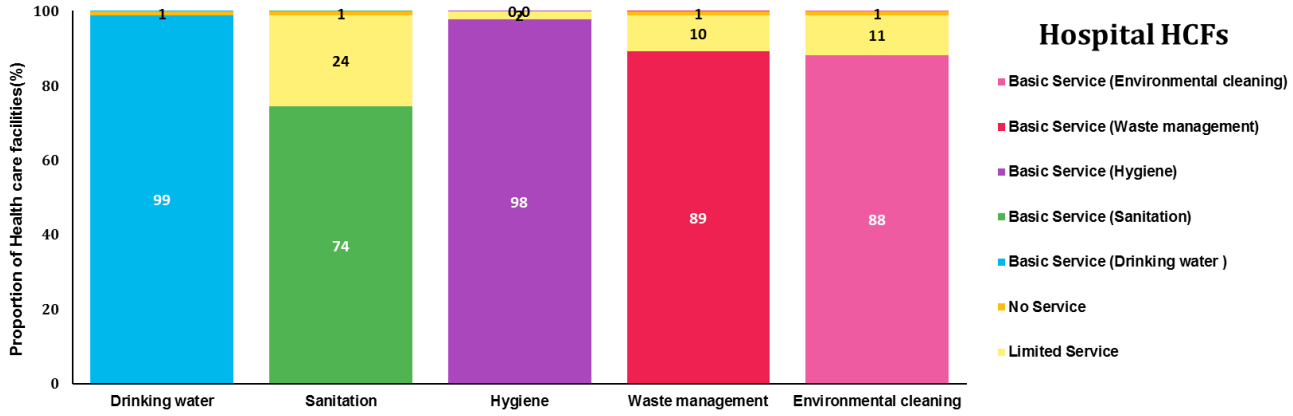


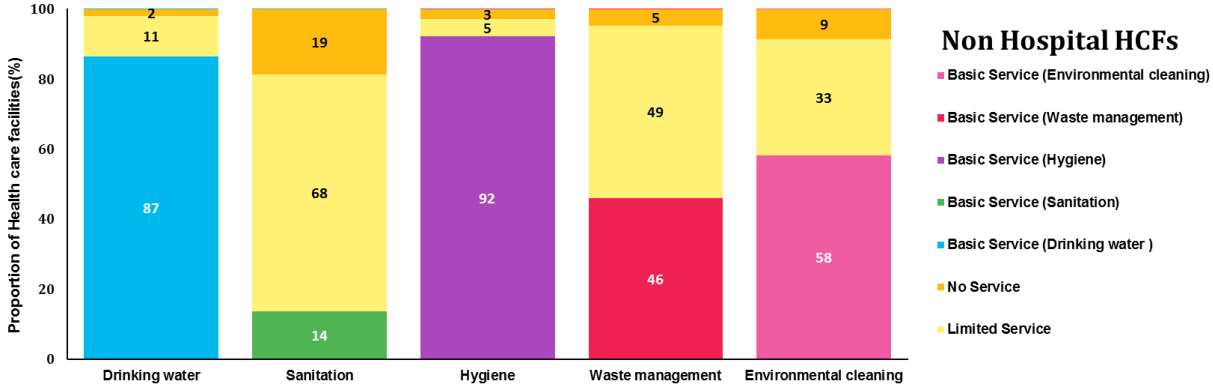



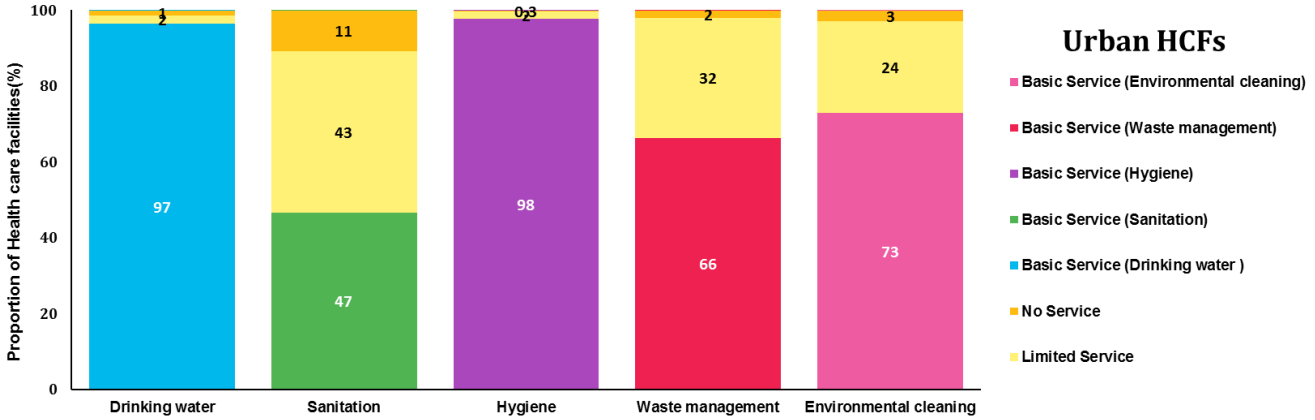

Training of health care providers
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
74.39
82.86
68.15
90.43
72.14
73.88
79.69
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

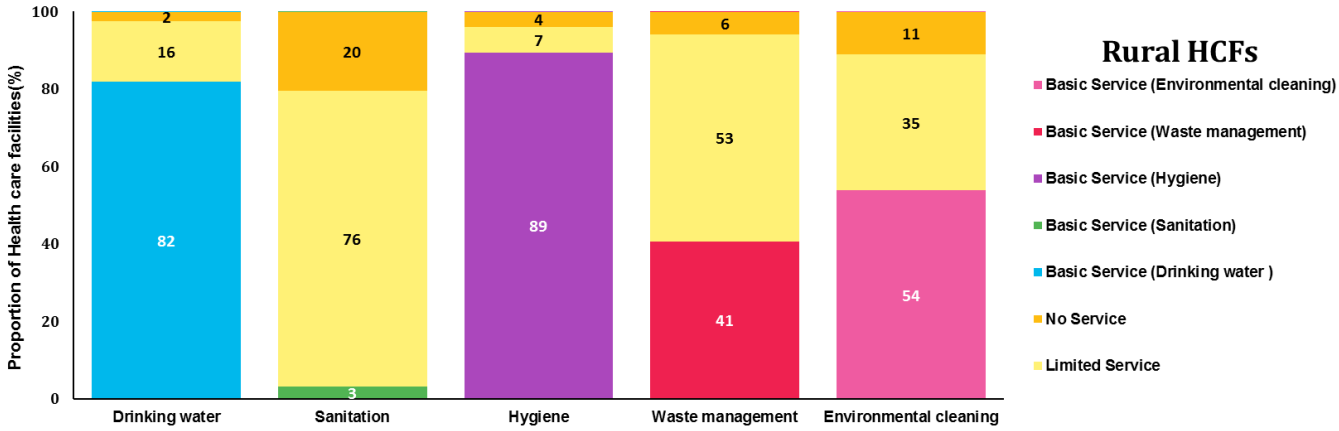

Basic (standard written policies and protocols for cleaning available, and staff with cleaning responsibilities have all received training within the last 24 months)
Proportion of Health care facilities(%)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
61.99
73.02
53.86
88.30
58.20
61.49
68.75
National
Urban
Rural
Hospital
Non-hospital
Government
Non-government

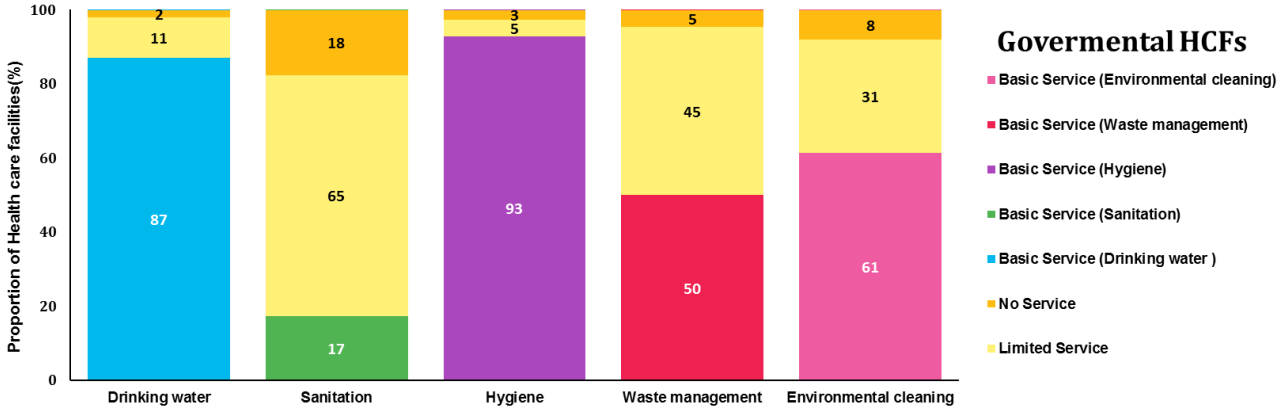
## Annex. 3.6: Detailed Graphs; WASH elements regarding HCFs strata in national level

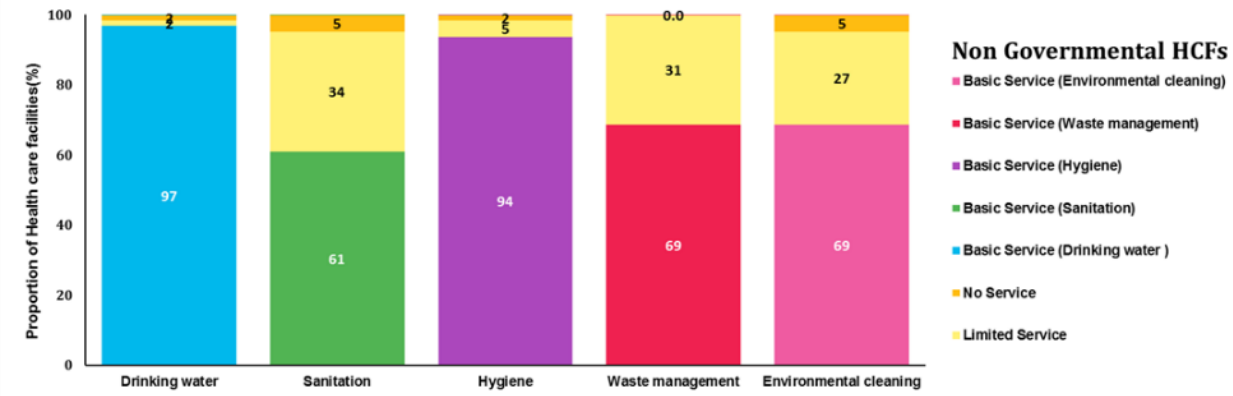



Urban HCFs
Proportion of Health care facilities(%)
100
80
60
40
20
0
Drinking water
Sanitation
Hygiene
Waste management
Environmental cleaning
1
2
97
11
43
47
0
3
98
2
32
66
3
24
73
Basic Service (Environmental cleaning)
Basic Service (Waste management)
Basic Service (Hygiene)
Basic Service (Sanitation)
Basic Service (Drinking water )
No Service
Limited Service


Rural HCFs
Proportion of Health care facilities(%)
100
80
60
40
20
0
Drinking water
Sanitation
Hygiene
Waste management
Environmental cleaning
2
16
82
20
76
3
4
7
89
6
53
41
11
35
54
Basic Service (Environmental cleaning)
Basic Service (Waste management)
Basic Service (Hygiene)
Basic Service (Sanitation)
Basic Service (Drinking water )
No Service
Limited Service


Govermental HCFs
Basic Service (Environmental cleaning)
Basic Service (Waste management)
Basic Service (Hygiene)
Basic Service (Sanitation)
Basic Service (Drinking water )
No Service
Limited Service
Proportion of Health care facilities(%)
100
80
60
40
20
0
Drinking water
Sanitation
Hygiene
Waste management
Environmental cleaning
2
11
87
18
65
17
3
5
93
5
45
50
8
31
61


Non Governmental HCFs
Basic Service (Environmental cleaning)
Basic Service (Waste management)
Basic Service (Hygiene)
Basic Service (Sanitation)
Basic Service (Drinking water )
No Service
Limited Service
Proportion of Health care facilities(%)
100
80
60
40
20
0
Drinking water
Sanitation
Hygiene
Waste management
Environmental cleaning
97
5
34
61
2
5
94
0.0
31
69
5
27
69

# Annex. 4: Key references used for analysis of the regulatory framework

| Title | Year of Enactment | Ministry responsible | Brief Description |
|---|---|---|---|
| National laws | | | |
| Constitution (Chapter IV; Articles 45 and 50) [46] | 1979 | Presidential Administration | New Constitution of Iran which was enacted after the Islamic Revolution |
| Clean Air Act | 2016 | Ministry of Health<br>Department of Environment | First national law enacted especially regarding controlling ambient air pollutants |
| Justice Water Distribution | 1981 | Ministry of Agriculture<br>Ministry of Energy<br>Department of Environment | National law on water allocation in the agricultural, municipal and industrial sectors |
| Environmental Protection and Sanitation | 1953 | Ministry of Health<br>Department of Environment | First national law enacted to fulfil the demands of environmental protection and sanitation |
| comprehensive law on solid waste management | 2002 | Ministry of Health<br>Department of Environment | First national law comprises a precise categorization of different types of solid wastes having precise definitions regarding healthcare wastes, industrial wastes and so on |
| Law on Water | 1968 | Ministry of Health<br>Ministry of Energy<br>Ministry of Agriculture | First national law enacted especially regarding the protection of water resources |
| Protection against Infectious Diseases | 1941 | Ministry of Health | First national law enacted mainly to control malaria and other water-borne diseases |
| Law on Biological Safety | 1999 | Ministry of Health | Focuses on biosafety in industrial work environments |
| Islamic Penal Law (Article 688) | 1997 | Judicial system | A detailed set of laws derived from Islamic jurisprudence, some of which, such as Article 688, are related to environmental areas. |
| Edible, Drinking, Hygienic, and Cosmetic Products (Article 13) | 1967 | Ministry of Health | A detailed set of rules related to food and beverage, in which the sections related to WASH are well mentioned |

| | | | |
|---|---|---|---|
| Labor Law | 1945 | Ministry of Labor | One of the oldest laws in the country, which has undergone many changes over the years, and in the field of manpower of the Ministry of Health, part of the service personnel who are very much related to the WASH program are employed under this law. |
| Quinquennial Development Program (VI) (2016-2021) | 2016 | Presidential Administration | The last ongoing development program of the country, which is the end of 2022 |
| Civil Service Management Act | 2007 | Ministry of Interior | One of the comprehensive laws governing human resource management in major parts of the government such as health and education |
| Regulations | | | |
| Regulations on environmental health inspection of hospitals | 2010 | Ministry of Health | Set of regulations for monitoring and auditing the performance of hospitals in the field of environmental health |
| Regulations on the management of healthcare and other related wastes | 2007 | Ministry of Health<br>Department of Environment | The set of regulations is subject to the comprehensive waste law |
| Regulation on prevention of water contamination | 1995 | Ministry of Energy<br>Ministry of Health<br>Department of Environment | National law on prevention of pollution of water resources |
| Regulation on planning, projecting and construction of facilities to ensure access for people with disabilities and elder people | 2004 | State Welfare Organization<br>Ministry of Health | The first set of rules for adapting public places and offices for use by people with disabilities. |
| Regulation on the detailed considerations for the HCFs construction | 2011 | Ministry of Health | The first set of rules used to establish a systematic procedure for constructing standard buildings for HCFs. |

| | | | |
|---|---|---|---|
| Regulations on health inspection of public places | 1998 | Ministry of Health | A set of rules for the environmental monitoring and evaluating public places such as schools, swimming pools, mosques, etc. |
| Regulations on storage, transport, consumption, and safety of the hazardous materials | 2020 | Ministry of Health | The first national law to regulate and control the transfer, storage and management of hazardous substances, which is mainly derived from the provisions of the Basel and Stockholm Conventions |
| Regulations on protection against flammable and ignitable hazardous materials | 2010 | Ministry of Petroleum | A set of national regulations for working with flammable and explosive chemicals developed by the Ministry of Petroleum |
| National building regulations-Chapter 14; Ventilation and air conditioning | 2009 | Ministry of Road and Urban Development | One of the most important chapters in the National Building Code, which deals with the issue of ventilation in public places such as HCFs |
| Standards | | | |
| Hospital accreditation standards in Iran | 2014 | Ministry of Health | A comprehensive set of rules and regulations related to the hospital, which includes significant sections of WASH elements and has been regularly implemented and audited in hospitals |
| Drinking water – physical and chemical characteristics (No. 1053) | 1993 | Ministry of Energy<br>Ministry of Health | Standard available to determine acceptable and permissible limits of physical and chemical contaminants in water. |
| Drinking water – microbiological tests and characteristics (No. 1011) | 1997 | Ministry of Energy<br>Ministry of Health | A standard for determining acceptable and permissible limits of biological pollutants and methods of microbial testing in municipal wastewater effluent |
| Using wastewater effluents in communities (No. 6571) | 2001 | Ministry of Energy<br>Ministry of Health | Provides the main criteria for the use of wastewater effluent for green space use |

| | | | |
|---|---|---|---|
| Using wastewater effluents for irrigation proposes (No. 7401) | 2000 | Ministry of Energy<br>Ministry of Health | Provides the main criteria for the use of wastewater effluent for agricultural use |
| Ventilation in public toilets and bathrooms (No. 3547) | 2005 | Ministry of Health<br>Ministry of Interior | Set of special ventilation standards in public toilets and bathrooms |
| Wastewater disposal standards | 1992 | Ministry of Energy<br>Ministry of Health | The first national standard developed for the discharge of municipal wastewater effluent |
| Guidelines | | | |
| A guide to surveillance drinking water supply systems | 2013 | Ministry of Health | Comprehensive guidelines for monitoring the country's water resources |
| A guide to the clinic environmental health | 2011 | Ministry of Health | The first guideline for monitoring WASH indicators in clinics |
| A guideline for hospital wastewater management | 2011 | Ministry of Health | Specific guidelines for hospital wastewater treatment and disposal |
| A guide to waste classification for environmental health inspectors | 2013 | Ministry of Health | Special guidelines for the classification of healthcare waste for environmental health inspectors |
| A guide to ventilation system in hospitals | 2014 | Ministry of Health | Comprehensive guidelines for designing and managing ventilation systems in hospitals |
| National strategies and programmes | | | |
| A guide to chemical, and pharmaceutical waste management in HCFs | 2016 | Ministry of Health | Specific National Guidelines for Chemical and Pharmaceutical Waste Management in HCFs |
| A guide to recognition and evaluation of chemical agents in the work environment | 2012 | Ministry of Energy<br>Ministry of Health | A brief guide to familiarizing people with hazardous chemicals in the workplace |
| A guide to use of hazardous chemical substances | 2016 | Ministry of Energy<br>Ministry of Health | Comprehensive guide to awareness and application of chemicals in industrial environments |

| | | | |
|---|---|---|---|
| National Adaptation Strategy and Plan of Action (NASPA) for Climate Change and Health | 2015 | Ministry of Health Department of Environment | The first set of guidelines and management aspects regarding climate change intervention factors |
| National Strategy for Drinking Water Quality Improvement | 2011 | Ministry of Energy Ministry of Health | The first identified roadmap for improving the quality of drinking water resources |
| A guide to environmental health and its role in controlling hospital-acquired infections | 2020 | Ministry of Health | A set of guidelines focusing on the role of health and preventive factors in control the transmission of infectious agents in hospitals |

## Annex. 5: HCFs-WASHIran.1 Assessment Tool

| General Questions |
|---|
| 1. Name of the enumerator |
| 2. Date of assessment |
| 3. Time of the assessment |
| 4. Governorate (depends on country context – please add more administrative levels) |
| 5. District |
| 6. GPS coordinates |
| 7. Name of the interviewee |
| 8. Title of the interviewee |
| 9. Contact (Mobile No.) |
| 10. Name of the Health Care Facility |
| 11. Name of the Directorate of Health |
| 12. Type of the Health Care Facility<br><br>- Hospital (skip to Q14)<br>- Non-Hospital |
| 13. Type of the non-hospital facility (country-specific)<br><br>- Primary Health Care Center<br>- Mobile Clinic<br>- Mobile Medical Unit<br>- Other (please specify_____) |
| 14. Number of beds |
| 15. Type of Health Care Facility (in terms of managing authority)<br><br>- Government/Public<br>- Private<br>- NGO/Not for profit<br>- Mission/Faith-based<br>- Other (please specify_____) |
| 16. The Health Care Facility is considered in _____ areas:<br><br>- Rural<br>- Urban |
| 17. Number of female workers |

18. Number of male workers

## Water

**G-W1. What is the main water supply for the facility?** (Note: For general purposes, including drinking, washing, hygiene, environmental cleaning, and laundry, it does not cover water for medical purposes, such as dialysis) (Select the most frequently used one)

- Piped supply inside the building (if yes, skip to G-W3)
- Piped supply outside the building
- Tube well / Borehole
- Protected dug well
- Unprotected dug well
- Protected spring
- Unprotected spring
- Rainwater
- Tanker truck
- Surface water (river/dam/lake/pond)
- Other (specify) _____
- Don't know (skip to G-S1)
- No water source or patients bring water from home (skip to G-S1)

**G-W2. Where is the main water supply for the facility located?** (Note: The water where it is accessed for use in the health facility (e.g., tap, borehole), rather than the source where it originates.)

- On premises (within the building or facility grounds)
- Up to 500 m
- 500 m or further

**G-W3. Is water available from the main water supply at the time of the survey?** (Note: The enumerator should confirm that water is available from this source, e.g., check that taps or hand pumps deliver water)

- Yes
- No

**G-W4. What is the secondary/supplementary water supply source for the health facility?**

- Piped supply inside the building
- Piped supply outside the building
- Tube well / Borehole
- Protected dug well
- Unprotected dug well
- Protected spring
- Unprotected spring
- Rainwater
- Tanker truck
- Surface water (river/dam/lake/pond)
- Other (specify) _____

- No secondary water supply source

**G-W5. Is there a water storage/tank that is sufficient to cover water needs for at least 2 days during main water shortages?**

- Yes
- No

**G-W6. In total, do all water sources provide enough water for the general needs?** (Note: for Food preparation, Toilets, Hand washing basins, Bathing for inpatient facilities and Laundry)

- Yes
- No

**G-W7. Is there at least one reliable drinking water station that is accessible for staff, patients, and caregivers at the time of the survey?** (Note: drinking water station should be observed by the enumerator)

- Yes
- No

**G-W8. Is the quality of water regularly verified?** (Note: Records on drinking water quality should be observed by the enumerator)

- Yes
- No

## Sanitation

**G-S1. What type of toilets/latrines are at the facility for patients?** (Note: If more than one type of toilet is used, the most common type of toilet/latrine in the service area should be selected)

- Flush / Pour-flush toilet to sewer connection
- Flush / Pour-flush toilet to tank or pit
- Pit latrine with slab
- Composting toilet
- Flush / Pour-flush toilet to open drain
- Pit latrine without slab/open pit
- Bucket
- Hanging toilet/latrine
- No toilet/latrine (skip to G-H1)
- Other (specify) _____

**G-S2. Is at least one toilet usable at the time of the survey (available, functional, private)?**

(Note: **Available**: toilet on premises, door is always unlocked or with a key available at all times
**Functional**: the hole or pit is not blocked, water is available for flush/pour flush toilets, and there are no cracks or leaks in the toilet structure
**Private**: the toilet stall has a door that can be locked from the inside and there are no large gaps or holes in the structure
** If any of these criteria are not met, the toilet/latrine is not counted as usable)

- Yes
- No

**G-S3. Is there at least one toilet that is exclusively dedicated for staff?**

- Yes
- No

**G-S4. Is there at least one toilet that is in sex-separated or gender-neutral rooms?** (Note: Toilets can be in a room with multiple stalls or in a private room with a single toilet. Toilets in rooms with multiple stalls should all be dedicated for use by either women or men. A gender-neutral room with a single toilet is also considered as sex-separated, as it allows women and men to use toilets separately)

- Yes
- No

**G-S5. Is there at least one toilet that has menstrual hygiene facilities?** (Note: Has a bin with a lid on it for disposal of used menstrual hygiene products, and water and soap available in a private space for washing)

- Yes
- No

**G-S6. Is there at least one toilet that is accessible for people with limited mobility?** (Note: The enumerator should observe the following conditions: can be accessed without stairs or steps, handrails for support are attached either to the floor or sidewalls, the door is at least 80 cm wide, and the door handle and seat are within reach of people using wheelchairs or crutches/sticks)

- Yes
- No

## On-site sanitation facilities

**G-S7. Has the Pit Latrine / Septic Tank ever been emptied?**

- Yes
- No (skip to G-H1)

**G-S8. How were the excreta disposed of?**

- In-house treatment unit
- Buried in a covered pit
- Don't know
- Other (specify)

## Hygiene

**G-H1. Is there a functional hand hygiene facility at points of care on the day of the survey?** (Note: **Functional**: have soap and water with a basin for washing hands, or alcohol-based hand rub, **Points of care**: any location in the HCF where care or treatment is delivered (e.g., consultation rooms))

- Yes
- No, there are hand hygiene facilities at points of care but not functional, or lacking soap and water or alcohol-based hand rub
- No, no hand hygiene facilities at points of care

**G-H2. Is there a functional handwashing facility in at least one or more toilets on the day of the survey?** (Note: Functional Handwashing facilities at toilets must include water and soap, rather than ABHR alone, since ABHR does not remove faecal matter. Check "yes" if at least one toilet has a handwashing facility with soap and water within 5 meters)

- Yes
- No, there are handwashing facilities near the toilets but lacking soap and/or water
- No, no handwashing facilities near toilets (within 5 meters)

**G-H3. Are there any hand hygiene promotion materials (posters) displayed near hand hygiene stations and/or patient waiting areas?** (Note: Enumerator should observe if any material is posted on the wall)

- Yes
- No

**G-H4. Is there an established and working procedure to check and refill the handwashing supplies?**

- Yes
- Yes, established but not working
- No

## Health Care Waste Management

**G-WM1. Is waste correctly segregated into at least three labelled bins in the consultation area?** Notes:

- Select one consultation room at random and observe whether sharps waste, infectious waste and non-infectious general waste are segregated into three different bins.
- Requirements for bins
  - The bins should be color-coded and/or clearly labelled
  - no more than three quarters (75%) full
  - each bin should not contain waste other than that corresponding to its label
- Bins should be appropriate to the type of waste they are to contain; sharps containers should be puncture-proof and others should be leak-proof. Bins for sharps waste and infectious waste should have lids.

- Yes, waste is segregated into three labelled bins
- No, bins are present but do not meet all **requirements** or waste is not correctly segregated
- No, bins are not present

**G-WM2. How does this facility usually treat/dispose of infectious waste?** (Note: Select the method used most often)

- Autoclaved
- Incinerated (two chamber, 850-1000 o C incinerator)
- Incinerated (other)

- Burning in a protected pit
- Not treated, but buried in lined, protected pit
- Not treated, but collected for medical waste disposal off-site
- Open dumping without treatment
- Open burning
- Not treated and added to general waste
- Other (specify) _____

**G-WM3. How does this facility usually treat/dispose of sharps waste?** (Note: Select the method used most often)

- Autoclaved
- Incinerated (two chamber, 850-1000 o C incinerator)
- Incinerated (other)
- Burning in a protected pit
- Not treated, but buried in lined, protected pit
- Not treated, but collected for medical waste disposal off-site
- Open dumping without treatment
- Open burning
- Not treated and added to general waste
- Other (specify) _____

**G-WM4. Is there a person (appointed and adequately trained) responsible for the management of health care waste in the health care facility?**

- Yes
- Appointed but not trained
- Not appointed

**G-WM5. Is healthcare waste stored in a secured area and with access restricted to authorized personnel only?**

- Yes
- No

**G-WM6. Which elements of the health care waste management are managed by the health care facility?** (Mark as applicable)

- Collection
- Storage
- Treatment
- Final disposal
- Nothing
- Don't know

## Environmental Cleaning

**G-C1. Are cleaning protocols/standard operating procedures/guidelines/instructions available?**

(Notes:

- Protocols may or may not be written given cleaners may not be literate. Protocols should include:
  - step-by-step techniques for specific tasks, such as cleaning a floor, cleaning a sink, cleaning a spillage of blood or body fluids, and
  - a cleaning roster or schedule specifying responsibility for cleaning tasks and frequency at which they should be performed.
- Protocols should be observed by the enumerator)

- Yes
- No

**G-C2. Have all staff responsible for cleaning received training?** (Note: Staff responsible for cleaning" refers to non-health care providers such as cleaners, orderlies or auxiliary staff, as well as health care providers who, in addition to their clinical and patient care duties, perform cleaning tasks as part of their role. Training refers to structured training plans or programs led by a trainer or appropriately qualified supervisor)

- Yes, all have been trained
- No, some but not all have been trained
- No, none have been trained
- No, there are no staff responsible for cleaning

**G-C3. Are cleaning materials available at the time of the survey (such as detergents and other cleaning products)?** (Note: Cleaning products should be observed by the enumerator)

- Yes
- No

**G-C4. Are floors, surfaces and toilets of the health center clean at the time of the survey?** (Note: Enumerator should observe if floors, surfaces, and toilets are cleaned at the time of survey)

- Yes
- No

## Annex. 6: Meeting Photos


World Health
Organization


World Health
Organization
Islamic Republic of Iran


World Health
Organization

## Annex. 7: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