Promoting Inclusive Participatory Design of Water and Sanitation Infrastructure in Urban Informal Settlements

4 STEPS TO IMPROVE PROJECT DESIGN AND IMPLEMENTATION

Water For Women

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SETTLEMENTS AND
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Summary

The decisions and practices of donors, funders, governments and policymakers around gender equality and social inclusion (GESI) strongly influence the success and sustainability of water and sanitation infrastructure projects. Our research and experience in the Asia-Pacific region, specifically Indonesia and Fiji, have shown us that participatory design can facilitate effective GESI practices in water and sanitation infrastructure projects in urban informal settlements.

This policy brief supports donors, funders, governments and policymakers to facilitate the participatory design of water and sanitation infrastructure in an inclusive way. To this end, the policy brief provides concise guidance, recommendations, and links to additional resources.

The policy brief complements the **Reflecting on Water and Sanitation Infrastructure Toolkit** we have designed to support water, sanitation and hygiene (WASH) practitioners to deliver inclusive and participatory design in water and sanitation infrastructure in urban informal settlements.

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Promoting Inclusive Participatory Design of Water and Sanitation Infrastructure in Urban Informal Settlements

Why invest in Inclusive Participatory Design?

To operationalise effective GESI practices

For more sustainable infrastructure

To impact the social capital and wellbeing of diverse communities

To co-deliver other community needs and aspirations

What problems does inclusive participatory design help with?

Project design problems

- Lack of specific strategies for GESI, despite a commitment to the general principles of GESI.

- Sufficient resources for inclusive participatory design are not required or are not provided.

Implementation problems

- Participatory design is not inclusive of diverse community members, including those most affected by the infrastructure and the most vulnerable.

- Safeguards and GESI policies may inadvertently restrict flexible responses to project types and contexts and prevent meaningful co-developed outcomes.

Longer-term problems

- Program outcomes are unrealised because water and sanitation infrastructure is not used or maintained.

- Projects unintentionally reduce community wellbeing and social capital.

What needs to be done?
4 steps to improve project design and implementation

1. Expect to invest in adequate resourcing to allow inclusive participatory design to take place.

2. Invest not just in participatory design, but in inclusive participatory design.

3. Expect that each community is different and will require a tailored inclusive participatory design process.

4. Understand that team diversity should reflect community diversity at all levels.

1. Introduction

1.1
CONTEXTUAL BACKGROUND: WASH, GESI AND WATER AND SANITATION INFRASTRUCTURE

WASH GLOBALLY

The current COVID-19 pandemic has brought into better focus existing problems and inequalities in cities. It has centred the urgent need for all people to have access to public health measures, like appropriate hygiene practices, to combat infectious diseases[1]. For example, 3 in 10 people globally were estimated to be unable to wash their hands with soap and water in their homes during the pandemic[2]. In a USAID survey of six African countries, it was found that COVID-19 had caused significant disruption to water supply services, and 1 in 4 people reported that it had become even more difficult to access drinking water[3]. The need for public health measures underscores the urgency of investing in water, sanitation and hygiene. Yet, five years after the launch of the 2030 Agenda for Sustainable Development, the world is not on track to achieve "availability and sustainable management of water and sanitation for all" under Sustainable Development Goal (SDG) 6, and the ambitious

indicators for WASH services (targets 6.1 and 6.2)[4]. These indicators, in particular target 6.2, draw specific attention to "the needs of women and girls and those in vulnerable situations".

From 2015 to 2020, the number of people without access to safely managed drinking water services decreased by 225 million in rural areas but increased by 32 million in urban areas. In 2020, around 1 in 4 people lacked safely managed drinking water in their homes[5]. Over the same period, the proportion of the global population using safely managed sanitation services increased from 47% to 54%, rural coverage increased from 36% to 44%, and urban coverage increased from 57% to 62%. In 2020, nearly half the global population lacked safely managed sanitation. Following the current trajectory, only 67% sanitation coverage will be achieved globally by 2030, leaving 2.8 billion people without safely managed sanitation services[6].

GESI AND WATER AND SANITATION INFRASTRUCTURE

Historically, the technical aspects of WASH have taken precedence in project design and implementation. Yet, different people need and use infrastructure in different ways. In addition to providing universal access to water, sanitation and hygiene, it is also necessary to address peoples' different needs and priorities in these matters. For example, women and girls experience sanitation in unique ways. It is now widely accepted that WASH provision impacts their wellbeing, status, education, health, income, and safety[7,8] (See Box 1). It is critically important to refocus, moving from the technical aspects of WASH to the social factors that are required to deliver WASH for all, and to meet the rights and unique needs of people of diverse genders and abilities[9] (see Box 1). Beyond women and girls, this includes other underrepresented or marginalised groups, such as people with disabilities or chronic illness, gender-diverse people, or the elderly[10]. Although there have been shifts in WASH programming towards inclusivity, there is still an urgent need to support diverse, underrepresented and

marginalised groups to participate fully, effectively, and equally in WASH decision-making so that programs meet diverse needs[11,12] (see Box 3).

The 2030 global sustainable development agenda, in particular the SDGs, provides a distinctive framework and opportunity to implement the necessary public health measures and address poverty and inequality[13]. To accelerate WASH coverage to meet the identified SDG shortfalls, international agencies and governments will need to make WASH a priority in decision-making. At the same time, the development of initiatives to improve water and sanitation infrastructure in urban areas – including in urban informal settlements – presents a unique opportunity to embed a GESI focus into these programs. Indeed donors, funders, governments and policymakers have a responsibility to promote equality. Recognising this will ensure that they work toward more participatory, gender-equitable, socially just, and sustainable outcomes in the future.

Figure 1: A kitchen sink is cantilevered from a window in Suva, Fiji. The water supply pipe is a thin, vulnerable polypipe, and wastewater is piped onto a plantation area below. (RISE program)

UN SUSTAINABLE DEVELOPMENT GOALS AND INCLUSIVE PARTICIPATORY DESIGN OF WATER AND SANITATION INFRASTRUCTURE

Promoting inclusive participatory design of water and sanitation infrastructure enables donors, funders, governments and policymakers – along with the private sector, civil society organisations, communities and individuals – to contribute simultaneously to *four* separate social and environmental **Sustainable Development Goals** (SDGs) under the **Agenda 2030** action plan.

First, by recognising the crucial role played by those who perform unpaid care and domestic work in relation to water and sanitation infrastructure (Target 5.4), the above-mentioned entities can contribute to **Goal 5 (Gender Equality)**. Additionally, they can encourage diverse women to fully and effectively participate in decision-making around crucial water and sanitation infrastructure in their community, respecting their already overloaded work burdens (Target 5.5).

Second, inclusive participatory design of water and sanitation infrastructure will assist donors, funders, governments and policymakers to work towards achieving **Goal 6 (Clean Water and Sanitation)** by helping to provide equitable access to safe and affordable drinking water for all (Target 6.1), along with safe and equitable access to sanitation and hygiene, paying special attention to the needs of women and girls and those in vulnerable situations (Target 6.2). By using diverse teams, participatory design can contribute to international cooperation and capacity-building support to developing countries in water and sanitation-related activities and programs (Target 6.a). It will also support and strengthen the participation of local communities in improving water and sanitation management (Target 6.b).

Third, participatory design of water and sanitation infrastructure will assist donors, funders, governments and policymakers to contribute to achieving **Goal 10 (reduced inequalities)**. This can be done through empowering and promoting the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status (Target 10.2) and through contributing to opportunity and reduced inequalities of outcome – including by eliminating discriminatory policies and practices and promoting appropriate policies and action (Target 10.3).

Finally, **Goal 11 (Sustainable Cities and Communities)** can be progressed by promoting participatory design of water and sanitation infrastructure. It can help to ensure equitable access to adequate, safe and affordable housing and basic services and the upgrading of slums (Target 11.1). It can enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management (Target 11.3).

Box 1
Water and sanitation impacts across genders differently

A female resident in Makassar collecting water from a local well.

Context and cultural practices can create disproportionate burdens for women in relation to WASH.

In one of the settlements involved in the RISE program in Makassar, Indonesia, a young mother shared her experiences with the design team in confidence. "Before you marry, you should ask your husband about his water supply", she said.

She herself had recently married and moved into the house where her husband and his parents were living. She then discovered that the water in the new house was brownish in colour. She didn't feel clean when she used it to bathe, and she didn't want to use it to brush her teeth. She would return to her previous home to take showers in secret, so she would not offend her mother-in-law. It got more complicated after she gave birth to their first child. She could not complain about the water supply, and she was not allowed to buy water from another source. Now, when her parents visit her, they bring bottles of clean water as a present for the baby.

This example demonstrates the urgent need to act to address GESI in WASH.

Box 2
Our research findings

We have done five years of research through the RISE randomised control trial and nearly three years of qualitative and quantitative research on GESI in RISE project implementation.

Quantitative analyses demonstrate that participatory community engagement activities in Indonesia had a positive effect on men's and women's feelings of trust within their communities.

Through qualitative analyses of interviews and focus-group discussions with project staff and residents, our research showed that the variety of community engagement mechanisms (large group workshops, household cluster meetings, and household visits) ensured that diverse groups of people participated in co-design, including those normally marginalised (such as older people or people with mobility issues).

Female residents in Suva participate in a focus group discussion on their experiences of RISE community engagement activities.

Male residents in Suva participate in a focus group discussion on their experiences of RISE community engagement activities.

Figure 2: Residents in Makassar mapping existing water and sanitation features of their neighbourhood in a participatory design activity. (RISE program)

1.2
GROUNDED IN RESEARCH, DRAWING FROM BEST PRACTICE

This policy brief for *Promoting Inclusive Participatory Design of Water and Sanitation Infrastructure in Urban Informal Settlements* is based on international best practice, project experiences, and the implementation research we have conducted into gender and socially inclusive co-design of water and sanitation infrastructure in urban informal settlements in Fiji and Indonesia. Our research has produced consistent findings about the importance of prioritising GESI through a participatory approach to water and sanitation infrastructure design (see Box 2 and Box 3). This brief was also developed through our experience conducting a gender and socially inclusive participatory design in the RISE (Revitalising Informal Settlements and their Environments) program (see box 4)[14,15], and through a review of relevant literature.

Box 3
Participatory Design and Inclusive Participatory Design

Participatory Design is an approach to designing that actively integrates stakeholders into the design process, to better understand and design for their needs. It brings together professional and lived experiences to achieve greater and deeper insight than professionals alone can achieve. Despite its intention to achieve greater inclusion and empowerment, Participatory Design can lead to exclusion when only certain people are capable of giving their time and resources to participate.

Inclusive Participatory Design calls specifically for representation and involvement by traditionally underrepresented or marginalised groups in the participatory design process. These include people with disabilities, women, the elderly, migrant communities, or children. Although participatory design is already recognised as good practice in water and sanitation infrastructure implementation, more careful consideration and resources are needed to enact participatory design in an inclusive and meaningful way.

Box 4
The RISE Program

This policy brief is based upon systematic analysis and knowledge gained from the participatory design phase of the **Revitalising Informal Settlements and their Environments (RISE) Program**. RISE is a research program, trialling a water-sensitive cities approach using nature-based solutions to water and sanitation management in 24 urban informal settlements in Makassar (Indonesia) and Suva (Fiji). Underpinned by the emerging discipline of 'planetary health', RISE's success will be measured by the health and wellbeing of residents – particularly children under five years of age – and the ecological diversity of the surrounding environment. The design of these systems resulted from a deliberate participatory approach, involving communities, governments, local leaders, partner institutions, scientists, engineers, product designers, and planners. These aspects of inclusive design were continuously challenged and reinvented in such a complex project.

RISE team member collecting an environmental water sample for lab analysis.

Water and sanitation intervention for a neighbourhood in Makassar comprising below-ground tanks for temporary storage, and septic tanks and constructed wetlands for sewage treatment. The intervention also included a raised pathway and drainage.

Box 5
Using participatory design to address inclusion with flexibility

Using participatory design alone does not address inclusion in infrastructure design. Strategies for inclusion and participation need to be grounded within and adapted to cultural contexts, and even readjusted once engagement has already begun.

In 2021, participatory design activities in Suva communities were postponed due to COVID-19 public-health restrictions in Fiji. When activities could resume, the RISE team adjusted the workshop plan to allow for physical distancing, inviting a representative to attend each session on behalf of their household. Households were variously represented at workshops by male or female adults or youths. The teams also visited each household. Afterwards, community members described the household visits as an advantage of the RISE program's engagement – this is because they ensured that everyone was included. Within private spaces, those who might have found it harder to participate publicly – due to their age, ethnicity, language status, etc. – could also participate. This activity proved to be an important mechanism for gaining the trust and involvement of diverse residents in the ongoing RISE activity in Fiji.

This example demonstrates the importance of allowing flexibility to accommodate contextual dynamics, including amongst others, the social preconditions of each community. This can build trust and facilitate diverse participation in the infrastructure program.

In Suva, a representative of each household was asked to attend big gatherings.

In both countries, the RISE team followed up with household visits.

2. Promoting Inclusive Participatory Design of Water and Sanitation Infrastructure in Urban Informal Settlements

2.1
WHY INVEST IN INCLUSIVE PARTICIPATORY DESIGN?

Evidence gathered from the RISE program (coupled with existing evidence) demonstrates that inclusive participatory design used for water and sanitation infrastructure projects in urban informal settlements can be a high-yielding investment. This is because:

It can operationalise effective GESI practices in water and sanitation infrastructure projects in urban informal settlements.

- It can provide clear processes, tangible structures and specific tools to implement effective GESI practices in water and sanitation infrastructure projects in urban informal settlements (see Box 5).

- It can be a key mechanism for understanding resident preferences and ensuring that the needs of diverse residents (such as children) are met[16,17]. For example, household visits; regular contact with residents; specific activities for different groups (e.g. according to gender or age); flexible timing; and having different types of engagement

(e.g. large and small group activities) can provide different people with an opportunity to express their needs and preferences. It is important that these different styles of activities are adaptive to the existing power structures, norms and schedules in the settlements.

- It is also a key mechanism for building skills and building the capacity of the project design and implementation team to observe, understand and work towards inclusion in specific contexts and projects.

Figure 3: Residents discuss needs and preferences relating to water and sanitation infrastructure in small groups. (RISE program)

It can lead to longer-lasting, more sustainable infrastructure in urban informal settlements.

- It can facilitate effective engagement with diverse community members in urban informal settlements, which can lead to widespread community understanding, use and maintenance of water and sanitation infrastructure.

  For example, children's inclusion can influence household behaviour (i.e. water use and environmental protection) and children's career decisions. Children may also seek to be involved in infrastructure maintenance and environmental stewardship activities. This can have a profound impact on children and their community and contribute to the sustainability of the intervention[18].

- It can be used to help donors, funders, governments and policymakers better understand community needs, and thereby follow the most appropriate project scope from the beginning.

- It can be used to engage residents properly and respectfully (such as through regular activities and rapport-building) to establish the trust critical to program uptake and sustainability[19]. For example, the RISE project was able to demonstrate ongoing support of residents at the height of the COVID-19 pandemic by delivering food rations when conducting regular project activities was impossible.

It can impact the social capital and wellbeing of men and women in urban informal settlements.

- In more cohesive communities with responsive leadership, it can positively impact cognitive social capital for both men and women, providing opportunities for residents to create new community relationships, foster feelings of cohesiveness and social harmony, and perhaps improve health outcomes[20].

It can co-deliver other community needs and aspirations.

- By facilitating an understanding of community needs and preferences, it can deliver benefits to communities beyond project objectives[21]. For example, improving land tenure security, providing play spaces for children and youth, or improving access can make life better for those in affected communities. In one RISE settlement in Indonesia, a raised pathway facilitated access for itinerant traders and led to a reduction in women's time spent on domestic activities. Such approaches unite different urban agendas and improve the lives of people and the environment.

Box 6
A Toolkit for Gender and Socially Inclusive Participatory Design – Reflecting on Water and Sanitation Infrastructure

Inclusive participatory design is not appropriate for every project. For participatory design processes to be successful, it is first necessary to determine whether the right 'enabling conditions' are in place. **The following are some enabling conditions.**

- ✓ There is enough flexibility in the infrastructure program to allow some aspects to be co-designed with program participants.

- ✓ Program participants want to participate in the design of the water and sanitation infrastructure.

- ✓ The water and sanitation infrastructure program is taking place at a small-enough scale to enable participatory design processes to occur within allocated resources.

- ✓ Project leaders and implementers share a commitment to inclusive participatory design.

- ✓ There is a willingness amongst the implementation team to include people with different lived experiences (such as old people, young people, people with disability, all genders and races) *and* a willingness amongst those with different lived experiences to be involved.

For **more detailed information** on whether a participatory design is right for a particular project, see 'Is Participatory Design the Right Approach for this Project?' in *A Toolkit for Inclusive Participatory Design – Reflecting on Water and Sanitation Infrastructure*.

If an inclusive participatory approach is **not appropriate**, the project may instead be implemented through a series of consultations; or further work on the project conditions may be required to make a participatory approach possible.

2.2
WHAT PROBLEMS DOES INCLUSIVE PARTICIPATORY DESIGN HELP WITH?

Inclusive participatory design in urban informal settlements responds effectively to a number of common problems with water and sanitation infrastructure projects. These problems include:

PROJECT DESIGN PROBLEMS

- **A lack of specific strategies for GESI in water and sanitation infrastructure development**, despite a commitment to general GESI principles[22].

- **Donors, funders, governments and policymakers of water and sanitation infrastructure projects neither requiring nor providing sufficient resources for inclusive participatory design with urban informal settlement community members in water and sanitation infrastructure projects.** Inclusive participatory design is slow and resource-intensive. To meet project delivery timelines, community engagement may be reduced to consultation, rather than meaningful involvement through participatory design[23].

IMPLEMENTATION PROBLEMS

- **Participatory design is not inclusive of diverse community members**, including those most affected by the water and sanitation infrastructure and those who are most vulnerable[24].

- **Existing safeguards and GESI policies** do not cover the project type and cultural context. This can inadvertently **limit flexibility in application and prevent meaningful, co-developed outcomes**[25].

LONGER-TERM PROBLEMS

- **Water and sanitation infrastructure projects unintentionally reduce community wellbeing and social capital in urban informal settlements.** Non-inclusive participatory design programs can exacerbate conflict under conditions of existing community division. This occurs when groups within the community do not share goals, answer to different authorities, or differentially elect not to participate in certain aspects of the program[26].

- **Program outcomes are unrealised because water and sanitation infrastructure is not used or maintained by community members in urban informal settlements.** This may be caused by a lack of understanding of community needs and preferences or a lack of community understanding of the infrastructure[27].

Figure 4: Residents use tape and stakes to mark out potential locations for infrastructure. These markers are left behind after the session so they can be discussed with other members of the community. (RISE program)

Figure 5: Discussions about the integration of the infrastructure within the existing neighbourhood and community context in Suva. (RISE program)

Figure 6: By coordinating the delivery of water and sanitation infrastructure alongside vital access improvements in Makassar, a raised pathway facilitated access for itinerant traders and led to a reduction in women's time spent on domestic activities. (RISE program)

2.3
WHAT NEEDS TO BE DONE?
4 STEPS TO IMPROVE PROJECT DESIGN AND IMPLEMENTATION

Donors, funders, governments and policymakers should invest money and resources in participatory design as a key strategy for GESI in the development of water and sanitation infrastructure in urban informal settlements (See Box 7). **Donors, funders, governments and policymakers should:**

1

Expect to invest in adequate resourcing (time and money) to allow inclusive participatory design to take place in the development of water and sanitation infrastructure in urban informal settlements.

2

Invest not just in participatory design, but in inclusive participatory design. This goes beyond the design of the water and sanitation infrastructure itself. Implementation, operation and maintenance should also be planned and undertaken in an inclusive and participatory manner, both to reflect the project context and be sustainable.
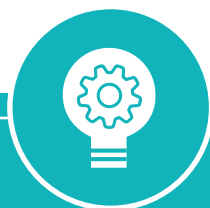
3

Expect each community to be different and will require a tailored inclusive participatory design process. Program flexibility is central to building community trust and approval for the water and sanitation intervention. Participatory design may not be the right choice for all water and sanitation infrastructure projects (see Box 6). Allow the flexibility to carefully consider social conditions in each community and identify outcomes that matter most to program participants. This will optimise program outcomes – in terms of WASH achievements, GESI outcomes and gains in social capital – while avoiding unintended consequences. Flexibility is useful for engagement, in particular, because it builds trust, contributes to community uptake, and brings about other positive outcomes.

4

Recognise, respect and value diversity. Understand that team diversity should reflect community diversity at all levels. Team diversity is an important, albeit indirect mechanism for engaging diverse community members. This could be supported by basing implementation teams in the project setting. Diverse individuals should be included at all levels – from policymaking and funding to project design teams – and within the design of the water and sanitation infrastructure.

Box 7

A Toolkit for Gender and Socially Inclusive Participatory Design – Reflecting on Water and Sanitation Infrastructure
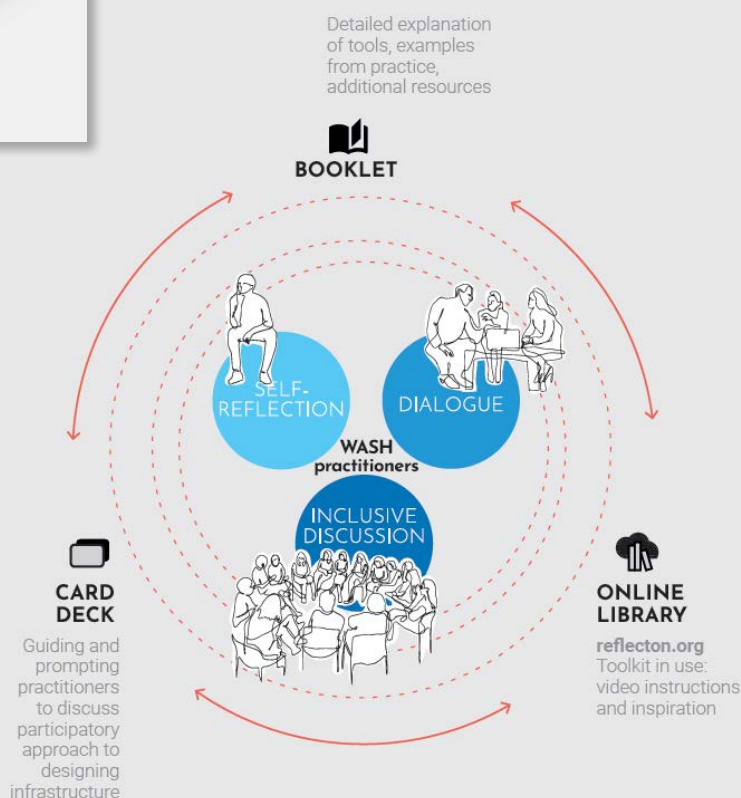
The toolkit is primarily for WASH practitioners, particularly those working in the context of urban informal settlements. It consists of **three components: a booklet**, which has tools organised in four categories – Understanding context; Water and sanitation infrastructure; Design process; Team composition and dynamics – as well as **a card deck** with discussion prompts, and **an online library**. The toolkit can be used flexibly, based on the needs of the user.

The toolkit is primarily targeted at WASH practitioners, however, donors, funders, governments and policy-makers can also use this toolkit to:

- support WASH practitioners to deliver inclusive participatory design of water and sanitation infrastructure.

- understand the scope, resource implications and outcomes of inclusive participatory design work by funded organisations that impose gender and social inclusion targets or benchmarks in the water and sanitation context.

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TOOL CATEGORIES

WHERE
UNDERSTANDING CONTEXT

WHAT
WATER AND SANITATION
INFRASTRUCTURE

HOW
DESIGN PROCESS

WHO
TEAM COMPOSITION AND
DYNAMICS

Detailed explanation of tools, examples from practice, additional resources

BOOKLET

SELF-REFLECTION

DIALOGUE

WASH practitioners

INCLUSIVE DISCUSSION

CARD DECK
Guiding and prompting practitioners to discuss participatory approach to designing infrastructure

ONLINE LIBRARY
reflecton.org
Toolkit in use: video instructions and inspiration

3. Resources and tools

We have designed the *Reflecting on Water and Sanitation Infrastructure Toolkit* to support water sanitation and hygiene (WASH) practitioners to deliver inclusive participatory design of water and sanitation infrastructure in urban informal settlements (see Box 7). The Toolkit also refers to other GESI and PD resources that can support donors, funders, governments and policymakers to better understand and promote inclusion in water and sanitation infrastructure projects. A few examples are provided below.

3.1
GESI TOOLS

'WaterAid: Understanding and addressing equality, non-discrimination and inclusion in water, sanitation and hygiene (WASH) work'

https://washmatters.wateraid.org/ publications/equality-non-discrimination-and-inclusion-toolkit
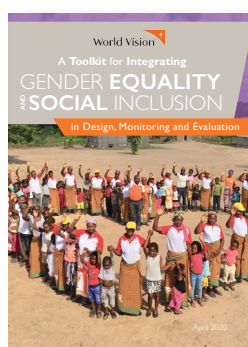
'World Vision: A Toolkit for Integrating Gender Equality and Social Inclusion in Design, Monitoring, and Evaluation'

https://wvusstatic.com/2020/landing-pages/gender-equality/Gender_Equality_and_Social_Inclusion_DME_Toolkit.pdf

'World Bank Group: Toolkit for Mainstreaming Gender in Water Operations'

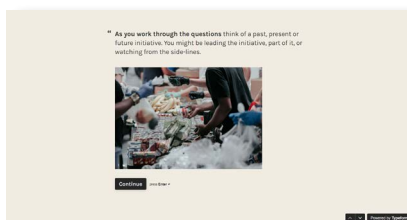https://www.climateinvestmentfunds. org/sites/cif_enc/files/ genderinwater_07_040416_web.pdf

3.2
PARTICIPATORY DESIGN TOOLS

'MakeTools'
by Liz Sanders, one of the leading researchers and practitioners in this field, is a great place to start learning more about participatory design tools.

https://maketools.com

'Co-design Quick Test'
developed by Kelly Ann McKercher is an interactive tool to think about four key elements of co-design: mutual learning, designing, co-deciding and recognising lived experience.

https://g8mvf9i2x72.typeform. com/to/K6PpU2xZ?typeform-source=healthvoices.org.au
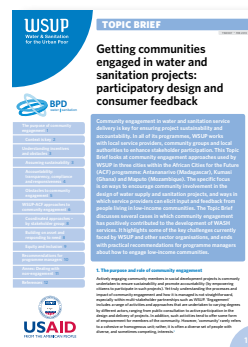
'USAID: Getting Communities Engaged in Water and Sanitation Projects: Participatory Design and Consumer Feedback'

https://www.issuelab.org/ resources/23422/23422.pdf

4. Glossary

Cognitive social capital refers to how individuals feel about their community and includes shared values, beliefs, and attitudes[28]. (See also: Social capital)

Design in this policy brief is mainly used as a verb. It refers to a broad range of activities that are important for developing water and sanitation systems, such as sharing experiences and knowledge, learning about and defining the problems together, exploring possible solutions, evaluating future scenarios, re-thinking risk, developing ideas, building prototypes, identifying maintenance schemes, and developing construction methods and materials.

Diversity is about what makes each person unique. It combines individual differences that shape their worldview, perspective and approach. It is about recognising, respecting and valuing differences based on ethnicity, gender, age, race, religion, disability and sexual orientation, background, personality, life experiences and beliefs. It also includes other characteristics and experiences, such as career path, educational background, geographic location, income level, marital status, parental status, and other variables that influence a person's perspective.

Do no harm is a key part of a gender and socially inclusive approach to the design and implementation of water and sanitation infrastructure. Do No Harm means making a conscious effort to ensure that no harm or negative consequences occur to anyone; this includes unintended consequences.

Gender and social inclusion, or GESI, is the continued, iterative process of ensuring that the needs and experiences of all are considered in a policy, project, program, intervention, etc., from start to finish. GESI aims to ensure that all individuals, regardless of their background, have an opportunity for a meaningful and fulfilling life. It calls for representation and involvement by groups traditionally underrepresented or marginalised, such as people with disabilities, women, or the elderly.

Inclusive participatory design calls specifically for representation and involvement by traditionally underrepresented or marginalised groups in the participatory design process, for example, people with disabilities, women, the elderly, or children. (See also: Participatory Design)

Leaving No One Behind in WASH delivery means recognising each person's human right to water and sanitation and acting to decrease inequalities between different groups and populations as quickly and effectively as possible. But it also relates to the effectiveness and sustainability of water and WASH interventions, i.e. harnessing the capacities and knowledge of all in communities.

Marginalisation is the treatment of an individual as 'lesser than' or less deserving of certain freedoms, activities, or basic rights. Marginalisation can occur through a variety of avenues, including economic (less or limited access to economic goods), social (less opportunity to participate in social processes), or political (limited voice or power in democratic processes). Marginalised individuals often belong to groups that may have less power in society, such as those with low incomes or people living with disabilities.

Participatory Design is an approach to designing that actively integrates stakeholders into the design process to better understand and design for their needs, with them.

Social Capital is those "features of social structures – such as levels of interpersonal trust and norms of reciprocity and mutual aid – which act as resources for individuals and facilitate collective action"[29]. Social capital is often broken down into two core domains – cognitive social capital and structural social capital[30]. Research has shown that communities with higher existing levels of social capital perform better than communities with lower social capital in community-based WASH interventions[31].

Urban informal settlements are residential areas where: (1) inhabitants have no security of tenure vis-à-vis the land or dwellings they inhabit, with modalities ranging from squatting to informal rental housing; (2) the neighbourhoods usually lack, or are cut off from, basic services and city infrastructure, and (3) the housing may not comply with current planning and building regulations and is often situated in geographically and environmentally hazardous areas. People living in informal settlements are highly vulnerable to negative impacts of environmental stressors; to social, spatial and economic exclusion from the broader urban environment; and to lack of services and governance frameworks.

Water Sanitation and Hygiene, or WASH, is a sector that integrates disciplines including engineering, public health, urban planning, and many others. It focuses on increasing access to clean water and quality sanitation infrastructure and promoting positive hygiene behaviours. Two of the primary goals of the WASH sector are to increase human health and wellbeing globally, through decreasing exposure to unsafe water and foodborne pathogens; and to uphold human dignity through increased access to quality infrastructure in communities and homes.

Water and sanitation infrastructure in this policy brief refers to a broad range of projects, including technologies, systems and services – for example, centralised and decentralised water supply and sewer systems, sewage treatment, surface runoff management and treatment, waste disposal facilities, rainwater capture, etc.

5. References

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