

REFLECTING ON WATER & SANITATION INFRASTRUCTURE

A TOOLKIT FOR WASH PRACTITIONERS
ON GENDER AND SOCIALLY INCLUSIVE
PARTICIPATORY DESIGN APPROACHES IN
URBAN INFORMAL SETTLEMENTS



Booklet



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FOREWORD



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This Fijian proverb was used by our elders to tell the younger generation how important it is to invest today (in education, family, wellbeing) so that we could prepare for a better future. We offer this toolkit as a new shoot from the coconut (I-Taukei: *niu*, Bahasa Indonesia: *bibit kelapa*, Bugis: *kaluku tuwo*), grown in the hope that we can help make our changing world more inclusive, fair and equal in the key area of water and sanitation infrastructure.

As the lead researchers on this project, from Fiji and Indonesia, we are proud to have nurtured this collaboration over several years. The coconut itself may represent Pacific and Indonesian values, but this offshoot is something new, yet still deeply rooted in the values and voices of the people.

The toolkit's strength – and ours – is in team diversity: across countries and cultures (Fiji, Indonesia, Australia, America, Serbia and England), across disciplines (public and global health, social work and policy, engineering, design and architecture, and law) and across genders.

To tend our project, our team has adopted Pacific values and Indonesian ethics: mutual respect (including spaces to speak out and make decisions), humility, reciprocity, honest reflections and cultural sensitivity. This has enabled us to adapt to the profound challenges brought by the COVID-19 pandemic.

For the communities in Suva and Makassar we worked with, this approach is already proving fruitful. What stood out for the communities themselves is that the experts worked alongside them instead of telling them what to do.

The opportunity provided by this project to co-design and build a water and sanitation system that will benefit many communities' future is a fitting illustration of this proverb.

” *Tea nikua me baleta na nomu mataka*
-Plant it today for your tomorrow-

– Fijian proverb



CONTENTS



05 EXECUTIVE SUMMARY

07 WHO IS THIS TOOLKIT FOR?

08 KEY MESSAGES

The core principles of inclusive water & sanitation design
Urban informal focus
Knowledge base

11 INTRODUCTION

Why a toolkit?
How should I use it?
Where to start?
Reflective practice
Is participatory design the right approach for this project?

18 GLOSSARY

20 TOOLS

22 UNDERSTANDING CONTEXT



- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration

35 WATER & SANITATION INFRASTRUCTURE



- 1 Co-define the design problem
- 2 Examine physical (re)connections
- 3 Examine social (re)connections
- 4 Define fixed and flexible
- 5 Consider the life cycle of infrastructure
- 6 Talk about the infrastructure

43 DESIGN PROCESS



- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the "constellation" of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the "voice" of design materials
- 11 Diversify resources and benefits

60 TEAM COMPOSITION AND DYNAMICS



- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

EXECUTIVE SUMMARY

Around the world, about 56% of the global population lives in cities, and this number is expected to increase to 60% by 2030¹. In many cities, the population is increasing rapidly, and infrastructure is not keeping up with population growth. 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**². More work is needed to improve water and sanitation infrastructure in cities, taking into account the specific challenges of working in densely populated areas with very diverse populations.

The need for improved infrastructure is especially acute for the **1.6 billion people** – 20% of the global population – who live in inadequate housing lacking access to municipal services and basic facilities³. In many cases, these dwellings are in overcrowded and hazardous locations, where it is difficult (if not impossible) to build new infrastructure.

In 2016, the United Nations General Assembly endorsed the New Urban Agenda, which is linked to the Sustainable Development Goals (SDGs), especially SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable. At the core of the New Urban Agenda is social, economic, environmental, and spatial sustainability. This includes planning for the empowerment of marginalised groups, gender equality, and the inclusion of migrants, ethnic minorities, persons with disabilities, and individuals of all ages⁴. The New Urban Agenda also emphasises “leaving no one behind” and the importance of ensuring that all stakeholders have a voice in urban planning processes. In line with the New Urban Agenda, this toolkit is designed to provide program implementers with **guidance to enable the participatory design of improved, sustainable water and sanitation infrastructure in urban areas**.

It recognises the specific challenges of working in cities, where resources are at a premium and diverse individuals live together in dense settlements.

¹ UN-Habitat. *World Cities Report 2020*. Nairobi: United Nations Human Settlements Programme, 2020.

² *Progress on household drinking water, sanitation and hygiene 2000-2020: five years into the SDGs*. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2021.

³ UN-Habitat. *World Cities Report 2020*. Nairobi: United Nations Human Settlements Programme, 2020.

⁴ UN-Habitat. *The New Urban Agenda Illustrated*. Nairobi: United Nations Human Settlements Programme, 2020.

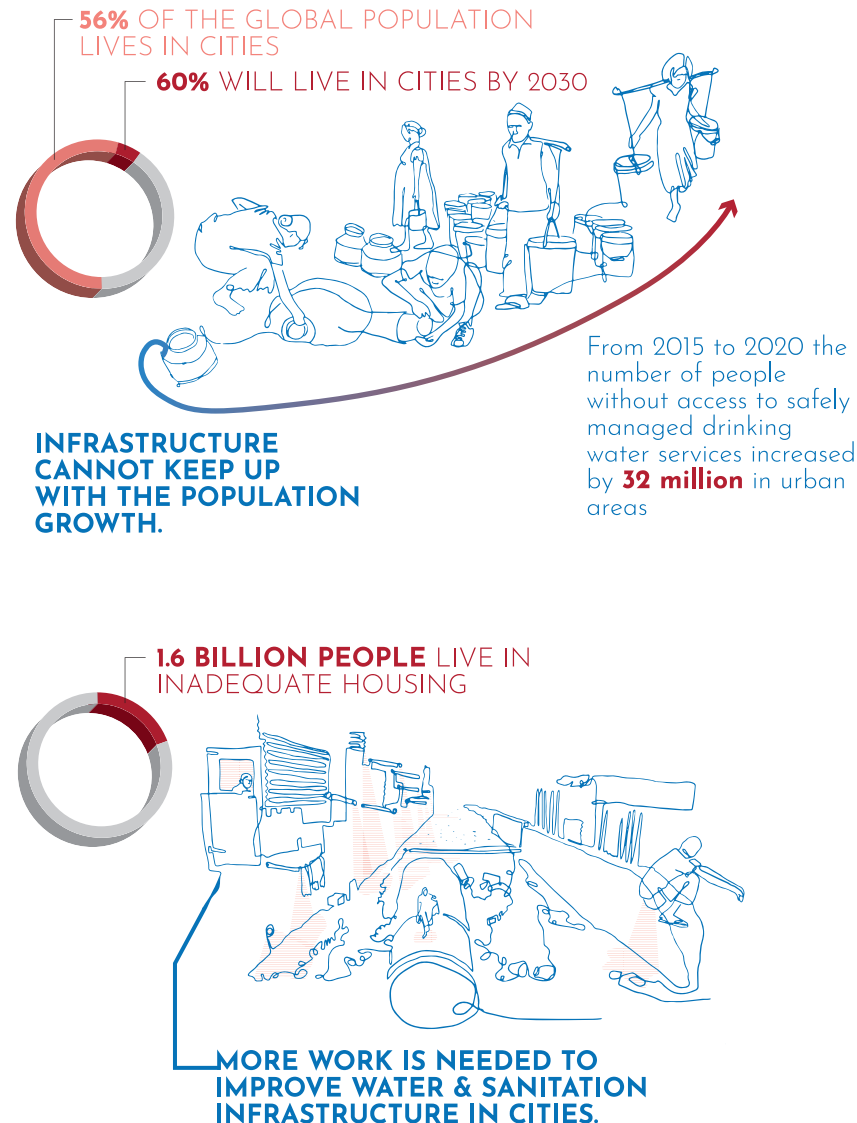


Image 1 | The main driver for this toolkit

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary
- 6 Tools

This toolkit is primarily for **WASH practitioners**, particularly those working in the context of urban informal settlements (see page 7). It consists of three components: this 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 the online library. The toolkit can be used flexibly, based on the needs of the user.

Throughout the toolkit, an important focus is on **co-learning**: mutual knowledge exchange between local residents and those responsible for delivering infrastructure projects, to ensure that diverse individuals' voices are incorporated in the design process. The toolkit also emphasises **reflective practice**: the systematic, analytical reflection on one's own position and beliefs as a professional that are the starting point for meaningful co-design processes.

This toolkit is an output of research into practices in a specific context: the **Revitalising Informal Settlements and their Environments** (RISE) program. RISE is a transdisciplinary action research program that is trialling decentralised water and sanitation infrastructure solutions in informal settlements in Makassar, Indonesia and Suva, Fiji. It is important to acknowledge that this toolkit is shaped primarily by research and experiences within the RISE context. Those working in water and sanitation infrastructure in urban informal settlements can use it in other countries as well, and not only for decentralised infrastructure systems.

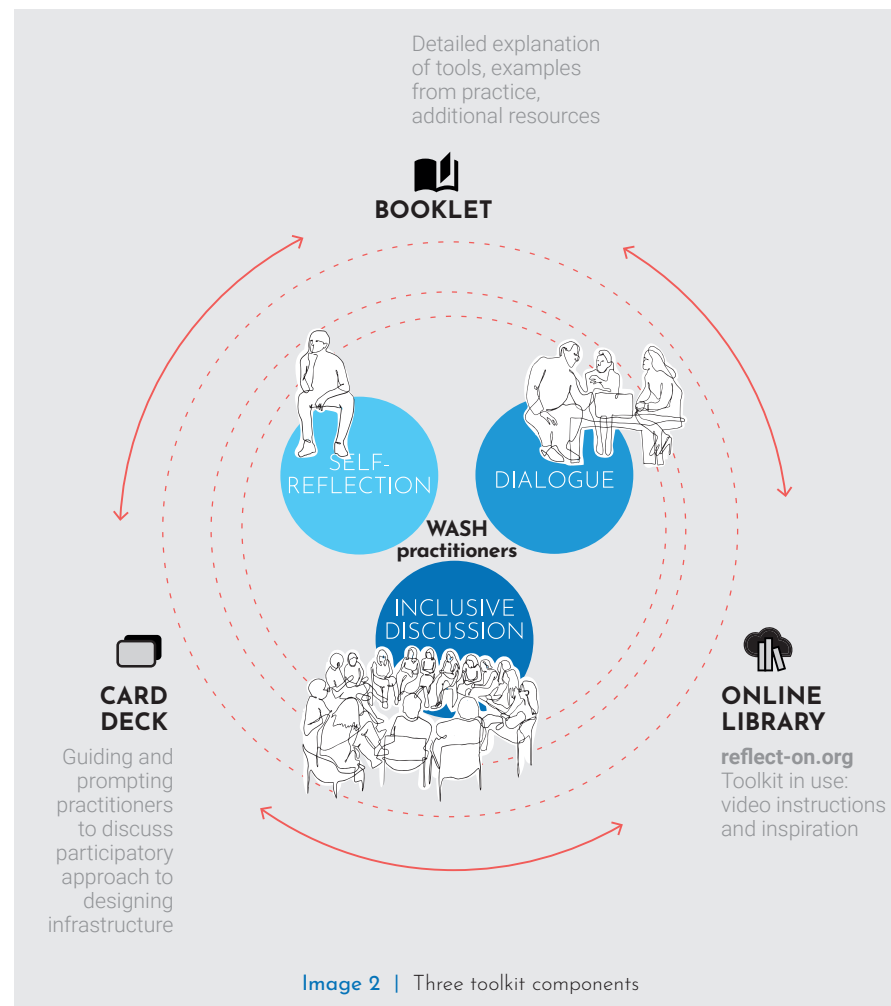


Image 2 | Three toolkit components

- 1 **Executive summary**
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary
- 6 Tools

KEYWORDS

water, sanitation, infrastructure, Indonesia, Fiji, urban informal settlements, urban, participatory design, gender and social inclusion, disability, diversity, reflective practice, designing, WASH practitioners



SDG SUSTAINABLE DEVELOPMENT GOALS

This toolkit contributes to Agenda 2030 by enabling those who design and implement water and sanitation infrastructure to do so in inclusive ways. It provides tools which allow local and national governments, the private sector, civil society organisations, communities and individuals to contribute to six separate social and environmental SDGs and their targets:

- SDG 4** - Quality Education (Target 4.7)
- SDG 5** - Gender Equality (Targets 5.4 and 5.5)
- SDG 6** - Clean Water and Sanitation (Targets 6.1; 6.2; 6.a and 6.b)
- SDG 10** - Reduced Inequalities (Targets 10.2 and 10.3)
- SDG 11** - Sustainable Cities and Communities (Targets 11.1 and 11.3)
- SDG 17** - Partnerships for the Goals (Targets 17.6, 17.7 and 17.16)

WHO IS THIS TOOLKIT FOR?

This toolkit is primarily for **WASH practitioners**, particularly those working in the context of urban informal settlements. “WASH practitioners” include individuals, organisations and institutions who play a central role in the planning, design, management, maintenance, operation and/or administration of water and sanitation infrastructure. WASH practitioners might be working in non-governmental organisations, civil society organisations, government, consultancies or companies. WASH teams are interdisciplinary, and often include experts in engineering, humanities and social sciences.

Throughout this booklet, practitioners are continuously invited to **re-view and re-do things differently**, to experiment, reflect, cultivate creativity, and define their ethical positioning. Apart from re-designing places and objects, practitioners are asked to re-design their own infrastructure implementation practices, as these processes are **reciprocal** and transformation can only be mutual. That is, to bring about inclusive change in the external world, for those who need better access to WASH, practitioners need to be open to changing their own practices.

This toolkit will also be useful for donors, funders, governments and policy-makers and residents of urban communities where a water and sanitation project is underway.

DONORS: DID YOU KNOW?

We have also developed a **policy brief** specifically for donors, funders, governments and policy-makers to enable them to commission participatory design of water and sanitation infrastructure, in an inclusive way:

Promoting Inclusive Participatory Design of Water and Sanitation Infrastructure in Urban Informal Settlements: 4 steps to improve project design and implementation.

WHY SHOULD I USE THIS TOOLKIT?

You can use this toolkit for different purposes, depending upon your role and knowledge.



Are you a WASH practitioner with **limited knowledge** of gender and social inclusion and/or participatory design?

You can use this toolkit to:

- learn some of the basics of how to use participatory design to be more gender and socially inclusive.
- get ideas for how to start making your project more inclusive by using participatory design tools and mindsets.



Are you a WASH practitioner who has **existing knowledge** or expertise in gender and social inclusion and/or participatory design?

You can use this toolkit to:

- help bring greater gender and social inclusion to your water and sanitation project design by using participatory design tools and mindsets.
- advance your knowledge of gender and social inclusion and/or participatory design.
- find ways to better understand the urban settlement(s) you are working in.
- understand the characteristics and skills of a team that can undertake inclusive work.
- encourage your team to engage more deeply with gender and socially inclusive ideas and participatory practices.



Are you a **donor or funder or policy-maker** for a water and sanitation project?

Although this toolkit is primarily targeted at WASH practitioners, you can 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 participatory design work in the water and sanitation context by funded organisations that impose gender and social inclusion targets or benchmarks.



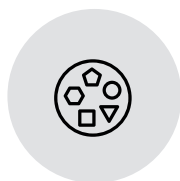
Are you the **resident** of an urban community where there is a water and sanitation project happening?

Community champions are considered an essential part of the WASH team. You can use this toolkit to:

- understand what those planning, designing, managing, maintaining, operating and/or administering water and sanitation infrastructure are trying to do when using participatory design.
- seek ideas for how water and sanitation projects might be done more inclusively.
- advocate for inclusive design of water and sanitation infrastructure.

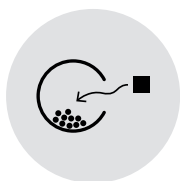
- 1 Executive summary
- 2 **Who is this toolkit for?**
- 3 Key messages
- 4 Introduction
- 5 Glossary
- 6 Tools

THE CORE PRINCIPLES OF INCLUSIVE WATER & SANITATION DESIGN



BE INCLUSIVE

In this booklet we refer to GESI, which is short for “gender equality and social inclusion”. Every person experiences the world in a unique way, based on their identity and circumstances. This toolkit acknowledges the great diversity of **lived experiences**, including living with disability – an ongoing (visible or invisible) condition of the body or mind that makes certain activities and interactions difficult. It also includes a person’s individual sense and experience of their gender (male, female or non-binary, etc.) and sexual orientation (bisexual, homosexual, heterosexual, queer), among a number of other types of lived experiences. In addition to this diversity, the toolkit is based on **intersectionality** – the understanding that inequalities and oppression are dependent on overlapping identities and experiences.



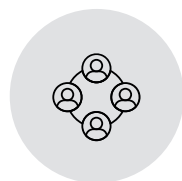
ADDRESS MARGINALISATION

When groups or individuals with certain identities or lived experiences are marginalised, they experience disproportionate difficulty in participating in society or accessing resources and opportunities, as compared to other groups. **Marginalisation** occurs both intentionally and unintentionally, and at multiple levels of society. In WASH it includes, for example, girls dropping out of school due to inadequate access to sanitation facilities for managing their menstrual cycles, sanitation facilities that are not disability-accessible barring people with disabilities from safe sanitation practices, or low-income neighbourhoods not having access to tap water. **Vulnerability** refers to characteristics or systems that put groups or individuals disproportionately at risk of harm. Marginalised groups are also often vulnerable to harm from disease, natural disasters, or social unrest/political instability.



TRANSFORMATION STARTS WITH OURSELVES

Practitioners need to reflect on their own – and their team’s – beliefs and ways of working; and they need to consider the consequences of their actions upon those around them. Much of the water and sanitation infrastructure or technology installed during “humanitarian” or “development” projects comes from high-resource settings and is often – mistakenly – seen by implementers as “neutral” or “apolitical”. But when individuals or groups with certain identities are left out of the design process, practitioners run the risk of designing “solutions” that don’t work for everyone and may actually cause harm. Gender and socially inclusive participatory design of WASH infrastructure helps practitioners identify their assumptions about what a community **needs**, prevents putting marginalised groups or individuals at increased **risk**, and ultimately improves project **outcomes** and sustainability through community engagement and ownership.



INVEST IN CO-LEARNING

Mutual knowledge exchange between local residents and those responsible for delivering water and sanitation infrastructure ensures that the infrastructure is fit for purpose and delivers value for money. Inclusion is sustainability; inclusive participatory design of water and sanitation infrastructure means that a broader cross-section of the community invests in using and maintaining the infrastructure over a longer time.



LEAVE NO ONE BEHIND

Safe and equitable access for all to water, sanitation and hygiene is considered an important right in itself. A “rights-based approach” to WASH incorporates key civil, political, economic, social and cultural human rights into provision of WASH services, including rights to non-discrimination, equality, water, sanitation, health, housing, Indigenous self-determination and meaningful participation. 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.



DO NO HARM

Supporting **meaningful participation** is critical to doing no harm. It refers to making a conscious effort to ensure that no negative consequences occur to anyone – including unintended consequences. Programs designed to transform social norms can foster backlash and violence directed at the very people the program intended to support. Do No Harm requires an organisational commitment and capacity to understand and respond to impacts of water and sanitation infrastructure design and implementation upon those affected. This includes reviews of approaches, tools, processes and systems, in order to minimise context-specific risks of harm and to promote GESI and monitoring and accountability mechanisms.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 **Key messages**
The core principles of inclusive water & sanitation design
Urban informal focus
Knowledge base
- 4 Introduction
- 5 Glossary
- 6 Tools

URBAN INFORMAL FOCUS



Image 3 | Discussions about the integration of the new and existing infra- and super- structures; left: Suva, Fiji, right: Makassar, Indonesia.

This toolkit focuses on water and sanitation infrastructure in an **urban informal context**. In urban areas, new infrastructure needs to integrate with already existing physical infra- and super-structures. It needs to integrate with existing social structures as well, both formal (such as the local government) and informal (such as neighbourhood groups, family relationships).

So, the design “problem” in urban areas is about reconnecting and reorganising a settlement through the design of infrastructure. This is a **socio-technical challenge**. The design process evolves within existing power structures, communication channels and ways of working/living together. These existing structures can be innovative, creative and inclusive. They can also be organised in ways that put power and privilege in the hands of a few, that restrict access to resources and that weaken people’s voice based on their gender, family and political status, age, ethnic origin, etc.

This booklet aims to provide guidance on some aspects of the design process for water and sanitation infrastructures that operate in these environments, so they are gender and socially inclusive – able to provide equal and equitable access to spaces and resources, representation and expression.

HOUSEHOLD AND COMMUNITY LEVEL SCALE

The guidance and design processes described here are best suited to projects that work at the household and community level, not at the city level. Larger water infrastructure projects could also benefit from the inclusive participatory design approach proposed in the toolkit; the scale of a project will affect the properties of a design process and the required resources.

DE-CENTRALISED, WATER-SENSITIVE CITIES APPROACH

This toolkit emerged from a research project that applied a de-centralised, water-sensitive cities approach to water and sanitation infrastructure. A water-sensitive city is one that is resilient, liveable, productive, and sustainable. The water-sensitive cities approach integrates different elements of water infrastructure – constructed wetlands, drainage, bio-filtration gardens, toilets and water harvesting – with existing local contexts, taking the **whole water cycle** into account. It is a **decentralised wastewater management system** in which water capture, (re)-use and treatment happen within the site. Through this approach, the water flows in the entire settlement/neighbourhood are reorganised. Projects are usually **smaller in scale**, focused on a single neighbourhood (10–150 houses).

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 **Key messages**
The core principles of inclusive water & sanitation design
Urban informal focus
Knowledge base
- 4 Introduction
- 5 Glossary
- 6 Tools

KNOWLEDGE BASE

This booklet is a result of the generous involvement of several thousand children and adults from Fiji, Indonesia and Australia, in designing a decentralised water-sensitive infrastructure system, as part of the Revitalising Informal Settlements and their Environments (RISE) Program. They shared their time, knowledge, fears, doubts, hopes and excitement with each other and with teams of researchers and practitioners. Without their thoughts, voices and actions, this booklet would not be in your hands.

Recommendations are based on quantitative and qualitative research focused on the implementation and impacts of inclusive participatory design activities in RISE. Methods included **ethnography and design research** undertaken during designing events, as well as **surveys and interviews with residents** in 12 urban informal settlements in Fiji and Indonesia, as well as with **staff members**. It was undertaken by RISE and Water for Women team after the design process was finished.

Analysing the design process, evaluating its inclusiveness, and distilling this knowledge into a toolkit was a collaborative process in itself. Experts in public health, gender, law, water-sensitive cities infrastructure, and participatory design took part in **11 workshops** from which the structure and content emerged. The team has learned a lot in this process, especially about the importance of enabling open, emergent processes to reveal the **plurality of views** and integrate them through design outputs. Rather than creating a fixed framework, the team envisaged this booklet as a starting point for explorations of diversity within and around themselves.

WATER FOR WOMEN FUND

The Australian Government's Water for Women Fund is supporting improved health, gender equality and wellbeing in Asian and Pacific communities through socially inclusive and sustainable water, sanitation and hygiene (WASH) projects. It enabled the creation of this toolkit, as a resource for stimulating more equitable and inclusive processes and outcomes in WASH.

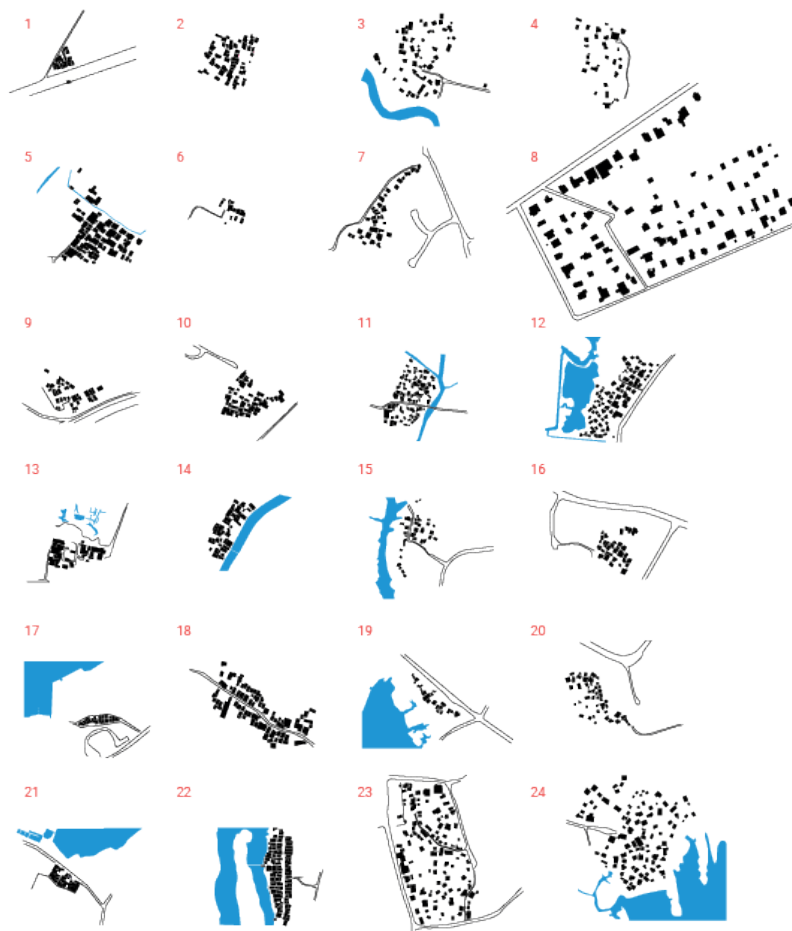


Image 4 | 24 settlements in Makassar and Suva where water and sanitation infrastructure was designed in a participatory way. They are different in size, position within water catchment, social and cultural characteristics, etc. The toolkit is developed through learning from this context.

REVITALISING INFORMAL SETTLEMENTS AND THEIR ENVIRONMENTS (RISE)

The toolkit 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 to water and sanitation management in 24 urban informal settlements in Makassar (Indonesia) and Suva (Fiji). Design of these systems resulted from a deliberate participatory approach, involving communities, governments, local leaders, partner institutions, scientists, engineers, product designers, and planners. The aspects of inclusive design were continuously challenged and reinvented in such a complex project. The toolkit, of which this booklet is a part, directly results from these learnings.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 **Key messages**
The core principles of inclusive water & sanitation design
Urban informal focus
Knowledge base
- 4 Introduction
- 5 Glossary
- 6 Tools



HOW SHOULD I USE IT?

This booklet is designed to be used **flexibly and creatively**. Its use will vary depending on the type of project, the socio-cultural and physical context, the timeframe, the reader's position in the project, etc. It provides principles, examples of good practice, and reflective questions to help practitioners understand their project from different perspectives. It can help readers gather ideas and adapt them according to specific needs and situations.

These tools are complementary; each unwraps an aspect of the participatory design process that impacts inclusion in water and sanitation projects. Therefore, they should be used **in combination** and **simultaneously**, and not in a specific order. Different parts of the booklet may be more relevant to the project than others.

Each tool is accompanied by:



REFLECTIVE QUESTIONS

The main “tool” of this toolkit, aiming to stimulate deep discussions about the specific aspect of inclusive participatory design processes. Designed to be used in all WASH projects.

All questions are equally important, but for practical purposes, we recommend starting with the question numbers with coloured background.

#

You can start with these questions first.

#

You should then explore this other group of questions.



EXAMPLES

Present concrete activities undertaken in the RISE Program that give practical examples of implementation of the tool.



THE FIRST STEP

Indicate possible starting points for practitioners, after using the reflective questions. They reference the existing methods, or introduce new tools.



EXPLORE FURTHER

Provide links to external websites for further detail.

All tools are organised in **four categories**:



UNDERSTANDING CONTEXT – tools that analyse how the specifics of a context (i.e., the project setting and the physical and social factors that make up that setting) influence participatory design approaches and water and sanitation infrastructure outcomes;



WATER AND SANITATION INFRASTRUCTURE – tools that examine the properties of water and sanitation systems; this analysis opens up the design process, allowing participants with diverse knowledges and experiences to take part in making design decisions;



DESIGN PROCESS – tools that guide through the specific components of the infrastructure design process, showing how to achieve better inclusivity;



TEAM COMPOSITION AND DYNAMICS – tools that explore inclusive and participatory strategies within the WASH design teams.

This booklet is accompanied by a **card deck** that can be printed and used in everyday discussions within the design team. The aim is to generate frequent conversations between team members with different knowledge, and enable them to learn from each other. These cards correspond to the REFLECTIVE QUESTIONS of each tool category. As with the questions, there are two card decks - one for the questions with the coloured layout, and the other one with outlined numbers. The team can use the first deck to start exploring the toolkit, and then add the second deck to dive deep into specific topics. The cards should be used as guides and prompts for discussing certain aspects of the project and participatory approaches to designing.

Finally, the toolkit website reflect-on.org contains a set of instructions, facilitation videos, and all of the above-mentioned material available to download.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 **Introduction**
Why a toolkit?
How should I use it?
Where to start?
Reflective practice
Is participatory design the right approach for this project?
- 5 Glossary
- 6 Tools



WHERE TO START?

There is no single answer to this question – it depends on what you are looking for. What do you want to achieve? What skills do you need? What is your context? **Write down your main intentions when picking up this toolkit – this will help define how the tools offered here may need to be modified.**

These are a few possible starting points, depending on your role and knowledge:



Are you a WASH practitioner with **limited knowledge** of gender and social inclusion and/or participatory design?

To start, you can:

- Look at the glossary for definitions of basic gender and social inclusion concepts.
- Skim through each category, and get the big picture of relevant topics and tools.
- Work through the checklist *Is participatory design the right approach for this project?* when already working on a specific project. This will help you identify the limitations and boundaries of a project, in order to understand the sequence and priority of actions towards more inclusive processes.
- Focus on the first set of REFLECTIVE QUESTIONS to help think about some first steps in inclusive participatory design for your water and sanitation project.
- Follow up with the additional resources for basic GESI concepts and the introduction to participatory design provided in the EXPLORE FURTHER text boxes.



Are you a WASH practitioner who has **existing knowledge** or expertise in gender and social inclusion and/or participatory design?

To start, you can:

- Focus on the second set of REFLECTIVE QUESTIONS to finesse your capacity and further advance your knowledge.
- Read the section on **Reflective Practice** to remind yourself of the importance of self-reflection in successful inclusion work.
- Go straight to the **Understanding context** category, when working in a settlement you are not very familiar with to assist with understanding

the community.

→ Go straight to the **Team composition and dynamics** category to help create a team who can do successful inclusion work.

→ With your team, focus on the first set of REFLECTIVE QUESTIONS to help you think about some first steps in inclusive participatory design for your water and sanitation project.



Are you a **donor** or **funder** or **policy-maker** for a water and sanitation project?

To start, you can:

- Skim through the tools, focusing on the examples from the RISE Program, to understand the resources needed and outcomes achieved in other urban water and sanitation projects which have used participatory design to engender more inclusive outcomes.
- Read the Policy Brief to better understand what you need to know, what you need to do and what you should avoid in order to successfully commission gender and socially inclusive water and sanitation infrastructure.



Are you the **resident** of an urban community where there is a water and sanitation project happening?

To start, you can:

- Skim through the tools, focusing on the examples from the RISE Program, to understand the processes used and outcomes achieved in other urban water and sanitation projects which have used participatory design to engender more inclusive outcomes.
- Go straight to the **Understanding context** category, to assist WASH practitioners who are new to your environment to suggest ways of sharing perspectives and knowledges through discussions and design.
- Look at the glossary for definitions of basic gender and social inclusion concepts.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 **Introduction**
 - Why a toolkit?
 - How should I use it?
 - Where to start?**
 - Reflective practice
 - Is participatory design the right approach for this project?
- 5 Glossary
- 6 Tools

REFLECTIVE PRACTICE



Transformation starts with ourselves. This toolkit is designed to encourage a culture of reflective practice amongst those involved in delivering water and sanitation infrastructure.

Reflective practice, or reflexivity, is the systematic, analytical reflection on one's own position and beliefs as a practitioner. It also asks practitioners to consider the consequences of interaction with those one works with, including co-workers, other professionals, funders, stakeholders and community. Reflective practice developed in social work¹, education² and medicine³ as a way to systematically improve the practice of those fields. Professionals from these fields routinely think about encounters with their clients, students and patients, reflecting on what worked in their approach (and what didn't) and what lessons they can take away. A reflective approach allows practitioners to be more flexible and responsive to challenges as they arise.

Reflective practice is an important starting point for successful GESI work. Feminists have long used reflective practice to consider how power and privilege work, including assessing their own power and privilege and the impact on those around them. At the heart of good GESI practice is understanding how power is socially constructed. Every society places greater obstacles in the way of those who are marginalised because of their gender, race, impairment, family status, education, age or social position. Reflective practice enables practitioners to observe and respond to these power relations through their own work. By first examining their own assumptions, prejudices and vulnerabilities, practitioners are better equipped to respond to the assumptions, prejudices and vulnerabilities of the communities they work with.

While reflective practice is standard in some professions, it is new to many practitioners. For example, reflective practice is increasingly being used to train engineers⁴, but it is not a traditional part of engineering professional practice⁵.

At first, reflective practice can be quite confronting behaviour. It is important to remember that it is challenging for almost everybody and there is no one "right" way of doing it. A lot will depend on a person's individual circumstances. The important part of reflective practice is learning from these personal experiences, considering one's role, assumptions and position, and then endeavouring to do better. Throughout this, self-awareness is critical.

This toolkit is designed to help all those involved in delivering water and sanitation infrastructure, whatever their level and regardless of their training, to create and contribute to a culture of reflective practice.

¹ Ovaska, Claire. "Library Guides: Social Work and Human Services Guide: Reflective Practice." Accessed December 20, 2021. <https://libguides.jcu.edu.au/socialwork/help-with/reflective-practice>.

² Cambridge Assessment International Education. "Getting Started with Reflective Practice." Accessed December 20, 2021. <https://www.cambridge-community.org.uk/professional-development/gswrp/index.html>.

³ GMC-UK. "The Reflective Practitioner – Guidance for Doctors and Medical Students." Accessed December 20, 2021. <https://www.gmc-uk.org/education/standards-guidance-and-curricula/guidance/reflective-practice/the-reflective-practitioner---guidance-for-doctors-and-medical-students>.

⁴ McMaster University. "Instructor Reflection Toolkit: Faculty of Engineering." Accessed January 11, 2022. <https://www.eng.mcmaster.ca/resources/instructor-reflection-toolkit>.

⁵ Hicks, Nathan M, Amy Elizabeth Bumbaco, and Elliot P Douglas. "Critical Thinking, Reflective Practice, and Adaptive Expertise in Engineering," 24–342, 2014.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 **Introduction**
 - Why a toolkit?
 - How should I use it?
 - Where to start?
 - Reflective practice**
 - Is participatory design the right approach for this project?
- 5 Glossary
- 6 Tools

IS PARTICIPATORY DESIGN THE RIGHT APPROACH FOR THIS PROJECT?

Before starting to plan for the design and implementation of water and sanitation infrastructure systems, it is important to determine whether the right 'enabling conditions' for participatory approach are in place. If not, the project may be implemented through a series of consultations instead; or further work to project conditions may be required to make a participatory approach possible.



1. Is it designing?

Participatory design with communities is not the socialisation of a predetermined design, but an approach to designing with various stakeholders. Is the infrastructure already designed? Even if components of the infrastructure are already designed, are there still some elements (or the way they connect in a system) that could be influenced? Consider different ways in which people can take part in making and designing products, services, research, places. It could be through sharing experiences and knowledge, learning about and defining problems together, exploring possible solutions, developing ideas, building prototypes, identifying maintenance schemes, and/or developing construction methods and materials.

2. Is the design problem already defined? By whom?



Defining the design problem is also part of creating together. If the goal is to build design outputs (solutions) that are inclusive, different perspectives and needs should be taken into account. If the design problem has been defined "from the outside" – by the project team, or through the initiative of a specific advisory group – it may exclude multiple interests and experiences. Designing involves identifying the problems together, prioritising, negotiating and making informed decisions about the range of challenges that can (and can't) be addressed through a specific project. Otherwise, the project is not participatory.

3. Is the design team ready to share power in making design decisions? How?



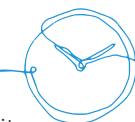
Are there mechanisms for participants to have a say in design decisions? It is not realistic to assume that everyone will be involved in all decision-making (especially when it comes to functional properties of infrastructure design), but some decisions can be participatory and open to everyone. It is important to think about what kinds of decisions participants are able to make and interested in making. Ideally, participants should be involved in identifying and making key design decisions. Different participants may have a different understanding of key design decisions, based on their interests and goals.

4. Do people want to participate?



Have the potential program participants expressed the need and/or desire to be part of this? Do you know in what ways they can participate? Can the project adapt to make their participation meaningful, for example, by paying them for their time, or adapting the timeline? Have you assumed that people want to participate without proper investigation? Participation takes considerable time and effort – from people who may already be busy, tired, stressed and disappointed with external organisations and others who try to 'help'. A participatory approach will not work without people willing and able to participate.

5. Are the necessary resources available: time, skills, funding?



All projects have constraints and limits on their resources. Time is crucial in building relationships with diverse participants, in safe spaces. Designing and facilitation skills are necessary for meaningful participation. Funds are important too.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 **Introduction**
 - Why a toolkit?
 - How should I use it?
 - Where to start?
 - Reflective practice
 - Is participatory design the right approach for this project?**
- 5 Glossary
- 6 Tools

6. Is there commitment to participatory design on different project levels?

Do project leaders and implementers share the participatory mindset? Are they aware of participatory design processes and committed to them? What creative approaches are practitioners willing to take to encourage participation?



7. Are people with lived experience present?

It may be necessary to make an extra effort to reach and include people with different lived experiences: different identities, such as age (including children and youth), gender, religion, ethnicity, living with disability; and different socio-political and economic status. How can you connect with them? Do they want to work with you?



8. Why are you doing this project?

What is the personal perspective that you bring? Why can't the existing communities do it themselves? Would things be better or develop positively if you were not involved?



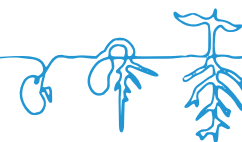
9. Why is a participatory design approach to infrastructure being considered?

How will the participatory approach benefit the design outcomes and the life of the system?



10. What is the impact that you would like to leave?

The participatory process can impact people in many ways. For instance, participation can inspire children to pursue a particular career path based on their participatory experiences, while for adults it can improve social cohesion. Participatory processes can also be damaging if not contextually and conditionally appropriate. The way that people are involved in participatory processes needs to be considered from an impact perspective.



- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 **Introduction**
 - Why a toolkit?
 - How should I use it?
 - Where to start?
 - Reflective practice
 - Is participatory design the right approach for this project?**
- 5 Glossary
- 6 Tools

EXPLORE FURTHER

 **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.

 **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.

GLOSSARY

Decentralised sanitation systems refer to wastewater systems that collect, treat, and reuse wastewater from small clusters of homes, low-density communities, individual dwellings, and other types of properties. The process of treatment, reuse, and disposal occurs relatively close to the source of wastewater generation, and can be considered an alternative to traditional urban sanitation systems when complex sewerage pipeline or water collection networks are not near or easily available.

Design in this toolkit is mainly used as a verb, and 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.

Design problem is an unsolved, challenging or troubling state or an issue that a system being designed needs to take into consideration. The ways that design problems are identified, defined, and presented directly influence design “solutions” and the activities that need to be undertaken to achieve them. In that sense, defining the design problem is the first step in designing the system.

Design workshop is any type of gathering aimed at untangling the problem in focus, by going through a series of activities designed to get to a specific outcome. It can serve different purposes, depending on the project. It can use divergent thinking (exploring possibilities, thinking broadly, keeping an open mind, considering anything and everything) and convergent thinking (thinking narrowly, making choices, identifying one or two key problems and solutions). A design workshop requires interaction, collaboration and sharing; it is different from a lecture or training.

Disabilities refer to physical or mental conditions that limit an individuals’ ability to fully participate

in the world around them or do certain activities. Examples of disabilities could be physical impairments such as blindness or not having full control over certain limbs, or mental impairments such as dementia or schizophrenia.

Do No Harm is a key part of the GESI approach to the design and implementation of water and sanitation infrastructure. Do No Harm means making a conscious effort to ensure that no negative consequences or harm occur to anyone, including unintended consequences.

Empowerment is a social process that supports people in gaining control over their own lives. It gives people the agency to make decisions for themselves and to participate more fully in society. There are many types of empowerment, including economic empowerment (empowering people through financial and economic means), gender empowerment (efforts to create equal power dynamics between and within gender identities), and educational empowerment (empowering people through access to education).

Equity vs. Equality: Equality means each individual or group of people is given the same resources or opportunities. Equity recognises that people’s needs and circumstances are different, so the resources or opportunities they need to have equal outcomes may be different.

Gender vs. Sex: In this toolkit, we refer to gender as a construct that is shaped by cultural, historical, and other social contexts. Gender is shaped by roles, behaviours, and individual identities, and may change depending on the context or the individual. Sex, on the other hand, refers to a category that is assigned based on biological attributes at birth.

GESI: Gender and social inclusion is the ongoing 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 that are traditionally underrepresented or marginalised, such as people with disabilities, women, or the elderly.

GESI mainstreaming is the intentional and ongoing process of making GESI a pivotal part of the design process. When GESI is successfully “mainstreamed”, it has become a core element of all programmatic decisions and actions. GESI mainstreaming goes beyond traditional binary gender mainstreaming to include the consideration of other social groups, such as people with disabilities or ethnic minorities.

Gatekeeper is an individual or entity who holds access to services or information. In the context of design and urban planning, they make be individuals whose approval or partnership is needed in order to move forward with the planning process.

Intersectionality is the concept that highlights the interconnected nature of social categorisations, (such as gender, race, age, class, etc.) and how it can create systems of discrimination and oppression. For example, a black woman may experience misogyny and racism, but she will experience misogyny differently from a white woman and racism differently from a black man.

Marginalisation is the treatment of an individual as “lesser than” or less deserving of certain freedoms, activities, or basic rights. Marginalisation can occur in many ways, including economic (less or limited access to economic goods), social (fewer opportunities to participate in social processes), or political (limited voice or power in democratic processes). Marginalised people often belong to groups with less power in society, such as those who have low income 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.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 **Glossary**
- 6 Tools

GLOSSARY

Power allows someone to have a say in or make decisions that impact others. Power can exist through both formal, appointed avenues (government leadership) and informal avenues (respected community member or household status).

Privilege refers to advantages and/or benefits an individual may have due to a characteristic they possess or the groups they are believed to be a part of (i.e. racial/ethnic groups or physical ability). Oftentimes, but not always, more privilege leads to more power.

Project is a sequence of tasks, carried out by a specific team, towards a certain outcome. The outcome could be a product (such as a new toilet), a service (such as a wastewater capture, treatment and reuse service in a community), or the achievement of a goal (such as the reduction of groundwater contamination in a settlement). Projects have different boundaries, such as the timeline, budget, goals, methods, etc.

Program is a group of related projects managed in a coordinated way to obtain greater benefits. They are usually long term, strategic, and focused on a greater issue or a specific context.

Reflexivity is the systematic analytical reflection on one's own position and beliefs. In the context of research and WASH practice, it asks individuals to consider the consequences of interaction with those one works or interacts with, including co-workers, other professionals, funders, stakeholders and communities.

Socio-technical systems consider human, social, organisational and technical factors in all phases of the project lifecycle (including design process). Technical and social aspects of a system and their interaction are considered together.

Stakeholder is an individual or entity that has an interest in or is impacted by a decision or activity. In the context of design, stakeholders are people who may affect or be affected by the design process in some way.

Systems thinking is an approach to understanding a system that examines the relationships and interactions between the elements that make a whole, rather than focusing on the elements themselves. It focuses on inter-relationships (context and connections), perspectives of different actors, and boundaries (scope, scale and features of an intervention).

Treatment train is a sequence of multiple wastewater and/or storm water treatments designed to meet the needs of a particular environment, in order to maximise results.

Urban informal settlements are residential areas where: (1) inhabitants have no security of tenure regarding the land or dwellings they inhabit, ranging from squatting to informal housing rental; (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 from environmental stressors, social, spatial and economic exclusion from broader urban environment, lack of services and governance framework.

Vulnerable An individual or group is considered vulnerable when they are at a heightened risk of exploitation, poor health, or other adverse social or physical outcomes. Factors that may make individuals vulnerable include, but are not limited to, low income status, age, gender, or chronic health conditions.

WASH is a sector that integrates a range of disciplines, including 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 1) to increase human health and wellbeing globally by decreasing exposure to unsafe water and foodborne pathogens and 2) to uphold human dignity by increasing access to quality infrastructure in communities and homes.

Water-sensitive city is an approach to planning and designing urban areas with attention to water in all its phases. It includes designing for water evaporation, soaking, infiltration, and other processes. It mimics the natural water cycle as much as possible, in different scales – property, street, precinct and region. It integrates urban design and urban water-cycle planning and management, focusing on supply security and diversity, public health, environment protection, flood protection and climate change resiliency. The approach consists of a range of urban design and engineering options, from green infrastructure – swales, wetlands, soaks, ponds, biofilter drainage – to “hard infrastructure” components, such as pipes, floodgates and raised walkways. The design solutions depend greatly on local challenges and the water catchment within which they are being implemented.

Water and sanitation infrastructure in this toolkit 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.

Water and sanitation management refers to an integrated approach in managing access to clean water, preservation of the quality of water in the environment, and safe collection and hygienic disposal of excreta and liquid wastes. Water and sanitation management needs to be observed as a system that coordinates intersecting interests across all levels of water use, involving all water users.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 **Glossary**
- 6 Tools

TOOLS



UNDERSTANDING
CONTEXT

TEAM COMPOSITION
& DYNAMICS



WATER & SANITATION
INFRASTRUCTURE

DESIGN PROCESS

UNDERSTANDING CONTEXT



KEY MESSAGES

In this category, you are invited to reflect on the social, cultural and physical contexts of the places in which you work. These might include the contexts of a design gathering (workshop); the contexts of a particular place, such as a settlement (neighbourhood) or a city; or the contexts of a community, such as a group of residents or experts.

The following tools invite you to reflect on how the specifics of a context (i.e. the project setting and the physical and social factors that make up that setting) influence participatory design approaches and water and sanitation infrastructure outcomes.

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration



1 RECOGNISE DIVERSITY

A key part of GESI is understanding who makes up a community, and what diverse groups exist within it. An individual can have a diversity of identities: their role in their family (i.e. a single parent, a child who is also a caregiver, the head of household), their employment status (i.e. formally employed, informally employed, unemployed), their physical ability, their relation to land (i.e. owner, renter, squatter), their gender, religion, ethnicity... just to name a few. Understanding the diversity of a community can help guide the process of inclusion – how many groups exist in this community and is there a plan to include them in the design process? How can those individuals who are part of several vulnerable groups at the same time (e.g. a single, unemployed mother with disability) be involved?

Diverse identities influence the design process and the design of the infrastructure in different ways. For example, people living with disabilities may have different infrastructural design needs. Adult women may interact with and see the infrastructure's primary purpose differently than their male counterparts due to gendered roles in the community. Recognising and mapping the diversity in the community leads to a more inclusive design process. This can be done through a variety of methods – field surveys, community workshops, stakeholder interviews, etc. Whether a method is appropriate will depend on factors such as the duration of the project, the available budget, the design team and the way people participate and communicate.



1 EXAMPLE DIVERSE NEIGHBOURHOODS IN MAKASSAR



In the RISE Program's Indonesian communities 70% of individuals identified as Makassarese, 20% as Bugis or Luwu, and 10% as a variety of other ethnic groups, including Toraja, Javanese, Mandar, and Manggarai. About 30% of the individuals had lived in their neighbourhood for less than ten years, while 24% had lived there their entire life. Although 96% of individuals within the communities identified as Muslim, other religions were also represented, including some Christian denominations. Just over 1% of individuals within these communities lived with some kind of disability. These diverse identities and groups have different ways to access and use water, and they attach different meanings and values to it. These differences significantly influenced the design decision-making about water and sanitation infrastructure.



2 EXAMPLE TENANTS AND OWNERS



Diversity is not something obvious, and it requires time and effort to understand and map it. In informal settlements in Makassar, there are many "boarding houses" where rooms are rented. Some people rent for a few months, but others stay for years. Some people will eventually buy their own house in that neighbourhood. Boarding houses are occupied by students, daily workers, and often entire families. Although tenants' involvement in neighbourhood decision-making is often limited, they can be greatly affected by water and sanitation infrastructure implementation. For example, after completion the property owner might increase the rent, or request additional payments for services. Design process and discussions in settlements with boarding houses should be planned differently from settlements with village or family-like structures. Tenants have a different sense of belonging and different interests and rights, so the success of the project will depend on the design team's ability to communicate relevant aspects of the project. It is the responsibility of the team to leave no one behind.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 **Recognise diversity**
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS



REFLECTIVE QUESTIONS

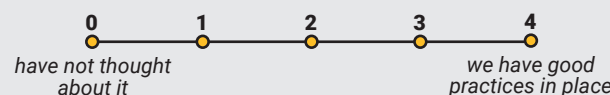
- 1 What are the different ways that people you work with identify themselves? How can you understand this?
- 2 How can you check if the way you identify people or groups is the way they would identify themselves? Do those you identify as poor or low-skilled agree with these labels?
- 3 How can you find out about groups or identities you have not considered? For example, caste or sub-caste, migrant status, indigenous?
- 4 How might people with different identities be able (or unable) to participate in the design process?
- 5 How many people that your project tries to reach live with a disability or a chronic health condition? How many of them belong to other vulnerable groups, such as women, children or migrants?



THE FIRST STEP

adapted from the WaterAid toolkit (see below), pp. 26-28

I Use the scale to rank the extent to which your team currently practises equality, non-discrimination and inclusion.



II Now use the same scale to rank to what extent you engage with each of the following groups of people in your WASH program and advocacy work:

- women ● men ● non-binary ● transgender
- people with disability (women, men, non-binary, transgender)
- people aged 60 years and over (across categories) ● children (girls, boys)
- people with chronic health conditions (across categories)

People often don't realise that they already have the skills to help tackle marginalisation. They simply lack experience and confidence. Here are some common reasons given as to why some groups of people feature less obviously than others:

- "We don't think there are many of them in our communities."
- "We find it hard to identify them in our communities."
- "We don't have the skills or experience to work with them."
- "We don't have the resources to meet the needs of such people."
- "We don't think they can make a valuable contribution."
- "Working with these people is very challenging, and we don't have the time or expertise to do it effectively."

Check the team's skills, refresh and increase them where necessary, and partner with representative organisations.



EXPLORE FURTHER

WATERAID: *Understanding and addressing equality, non-discrimination and inclusion in water, sanitation and hygiene (WASH) work* provides a great introduction to inclusion in WASH work. It includes: definitions for commonly marginalised groups (age, health status, and gender), guidelines for understanding marginalisation within the context of the community you're working in, and tools for baseline and situational analyses. Section one of the toolkit, "Get Informed", provides background on the importance of identifying diversity and examples of commonly marginalised groups in WASH settings.

WORLD VISION: *How to integrate gender equity and social inclusion in design, monitoring, and evaluation (DME)* (DME) is an extremely comprehensive toolkit. It provides many tools that can be used at multiple stages for GESI in the project DME process. Have a look at Module Two: Conducting a GESI analysis provides useful tools and guidelines that practitioners can use to identify diversity, as well as barriers to inclusion for diverse groups, in communities.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary
- 6 Tools



UNDERSTANDING CONTEXT

- 1 **Recognise diversity**
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
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WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS



See:
Start with internal diversity



2 UNDERSTAND MARGINALISATION

One of the first steps towards inclusive processes is identifying who in the community or project site is marginalised and vulnerable. This can be challenging for several reasons: labelling someone as marginalised can be seen as taboo, and can potentially harm that person (i.e. by drawing attention to their circumstance), or some members of the community may not want you to know about marginalised people (because of shame, or even to protect those people). Sometimes it is hard to identify who is marginalised because those people are not well known to other members of the community, or are invisible because of existing power dynamics. Therefore, finding out who in the community is marginalised should be done strategically and tactfully, which may be different for each community. It is recommended to begin by asking the community to share what circumstances they would describe as marginalisation, and then to identify who belongs to those categories.



REFLECTIVE QUESTIONS

- 1 Who is marginalised in your community and how do you know? How might you check your assumption that someone is marginalised or excluded? You might first create a long list of people who might be marginalised, but you will then need to confirm these circumstances with those individuals.
- 2 What strengths are there (including personal strengths and social and community networks) through which you can engage people and promote participation? With marginalised groups, ask what is strong, rather than what is wrong.
- 3 What extra steps might be necessary to include those who are harder to reach (allowing more time, speaking another language, a mediator, etc.)? Do you have the resources to carry out these extra steps?
- 4 Can you distinguish different types of marginalisation within the group you work with? Some people might experience marginalisation on multiple levels; for example, because they are female AND live with a disability.



3 EXAMPLE A COMBINATION OF METHODS



In the RISE Program's activities in Fiji, the team used several methods to identify who was marginalised. One method was to identify people who had a disability by asking questions about functionality (difficulty seeing, hearing etc.) in a survey. Another method was to hold focus groups in each community, separated into male and female groupings. In these sessions, the team was careful not to ask directly "who has a disability or is marginalised", but instead asked questions to help them understand the community's perspective about the concept of marginalisation. In these two groups the team simply asked "which individuals needed support or were not part of the conversation". From this discussion, they then identified the disabled and the elderly in that particular community. Finally, in a separate activity, the team asked those who were identified in the discussion about whether they felt marginalised in their community.



THE FIRST STEP

The most important approach for understanding marginalisation is to use multiple tools, and not rely (only) on the words of others. For example, you might start with data made available by city authorities or civic and non-governmental organisations. In parallel, you could organise a private meeting with community leaders to hear their perspective. Invite the local health worker as well and organise a focus group with residents.



EXPLORE FURTHER

[FRONTIERS OF SANITATION: Equality and non-discrimination \(EQND\) in sanitation programmes at scale](#) has a suggestion for identifying those who might need extra support to be included - see page 11.

[WHAT DOES IT MEAN TO LEAVE NO ONE BEHIND?](#) See page 3-4 for a quick 5-step guide for identifying people who might be left behind.

[THE WASHINGTON GROUP Short Set on Functioning](#) is a measurement tool for disability. It was developed, tested and adopted by the Washington Group on Disability Statistics (WG). It is a set of six questions to gain information on difficulties a person may have undertaking basic functioning activities. They are universally applicable.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 **Understand marginalisation**
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS



Scales are different levels of socio-spatial organisation that exist in project site(s): person – household – street, or cluster of households – neighbourhood – city – region – country – planet. Each project will influence and be influenced across these scales in different ways. For example, if a household starts using a septic tank to manage their sewerage instead of defecating in the local river, this will have very little impact on the water quality of the whole river catchment but it will significantly impact that household's wellbeing. However, a project where every household in the river catchment ends up using a septic tank will impact the water quality of the whole river system. The different factors which impact a project also operate at different scales of influence. For example, if a septic tank is to be installed for a single household, the design will probably be impacted by that household's income and by the planning regulations of the city or municipality.

The way that infrastructure design decision-making occurs at different scales is connected to gender, disability, race, etc. Most public leaders in cities are men, and so regulations about city sanitation systems may ignore the needs of women. For example, there might not be any solid waste management system for disposal of menstrual hygiene products like pads or cloths. However, a female-headed household in that city would probably have an effective disposal system for menstrual hygiene products – for example, they might have a system for “hiding” the used menstrual pads in the hard waste bin so the waste collector does not refuse to take them.

It is important to reflect on the scales of influence of the infrastructure design project, the way design decisions are made within and between them, and how these decision-making processes include or exclude and impact diverse people.



4 EXAMPLE

FAMILY AS A “MANAGEMENT SYSTEM”



In the RISE Program the participatory design workshops revealed that the design of infrastructure is directly dependent on the family structure. In RISE communities, extended families (usually consisting of more than five households) preferred to manage and maintain their wastewater treatment units independently, rather than connecting to neighbours with whom they did not have familial ties. The image above shows such family group; the red circle is the agreed position of a wastewater pump.

This organisation was an expression of cultural norms around not sharing wastewater containing faeces beyond the family. This would allow them to coordinate funds for the electricity supply for wastewater pumps, and to organise semi-public, communal green spaces (wetlands and bio-filters) on their joint properties. Therefore, the wastewater treatment system was designed on the family scale, instead of on the neighbourhood scale. This meant that design decisions were made by representatives from each of the families. Within the relatively small scale of influence of a family, there are often gendered power imbalances and unequal decision-making roles. The RISE design team always tried to talk to both the women and the men in each household. The design outcomes were also influenced by the decisions on the settlement scale, and the scale of the whole project.



I did not participate in the activities in the tent because I had fallen. Until now my arm still hurts...

Interviewer: But did you hear anything from your husband after he came back from [design workshop]?

Oh no, he didn't share anything.

Interviewer: Didn't share any story with you?

Yeah, he got home then I asked him: what happened there?

And he just said "it's just about toilet issues, they will repair them" [...] But he forgot in the evening. Because he also... you know... he forgets things easily. Maybe because of his sickness.

Female resident, RISE Makassar intervention site

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 **Design across and within scales**
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



See:
Consider the life cycle of infrastructure



REFLECTIVE QUESTIONS

- 1 What impacts will your infrastructure design have within and across different scales? Think about the scale of a person, a household, a street, a neighbourhood, a city, a region, a country and the planet. Remember that there might be little or no influence at some of these scales. Try to understand how the scales of influence are defined by the people in your project site. For example, in some places, a "family" is made up of a man, woman and their children, but in other places a "family" includes grandparents, uncles and aunts etc.
- 2 How might the impact of your project on different scales change with time and through different project stages? Developing this long-term vision will increase the resilience of your project.
- 3 How are decisions made within and between the scales of your project? Who makes decisions and who is excluded from decision-making? How does this affect your project's design and engagement?



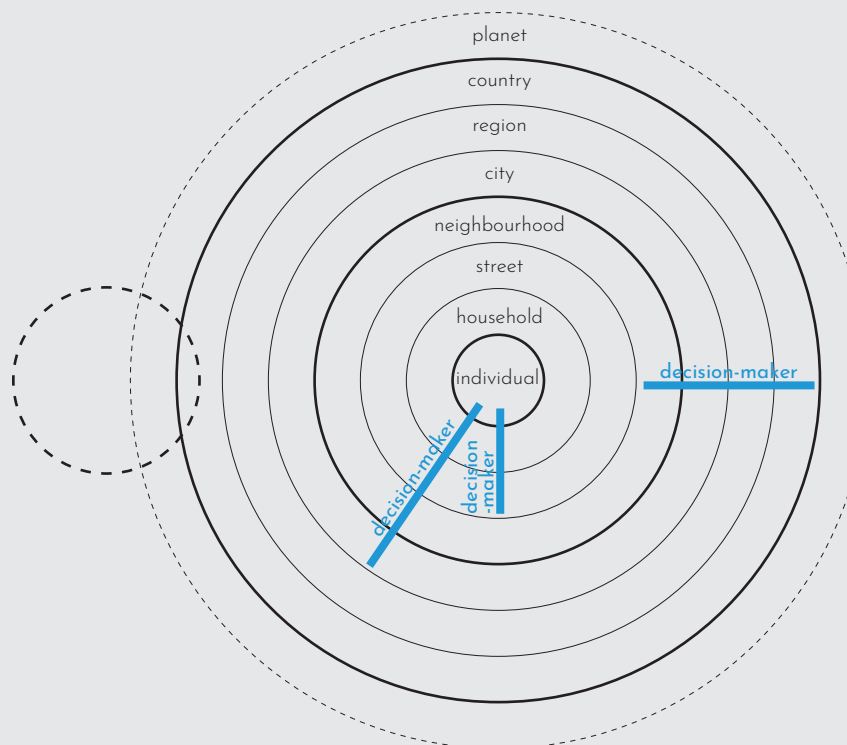
THE FIRST STEP

I Draw a circular diagram following the structure below. Some scales might not be relevant for your project, or you might add new ones. The adjacent circle could represent some additional project "arenas", such as international organisations and partnerships that influence certain scales on which the project operates.

II Discuss the impact your project might have in all these scales. You can write them on post-it notes and position them on your diagram.

III Looking at the predicted impacts in each scale, consider the diversity of gender, race and abilities. Are there impacts you could add? Are there possible harms your project might create that you had not thought about?

IV Consider who makes decisions across or within different scales (use a thick marker to add this, following the blue line example below). How does this influence inclusion and the long-term impacts of your project?



- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 **Design across and within scales**
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS



The infrastructures that are being designed will be integrated, intentionally or not, within thousands of years of heritage and existing practices. These practices are sometimes explicit and obvious (such as existing water capture places and drains), but they can also be invisible and not immediately apparent (such as religious and spiritual beliefs that are passed down by generations, rituals, or water practices). Ways of being, knowing and doing differ from community to community, and between individuals.

As the ones who usually have a lot of power to influence the design of participatory processes, practitioners often forget to look at what is already there. Listening may be more important than talking. There are different ways to practice listening in an active way. It involves developing trust, expecting that you will learn something new, asking the right, open-ended questions, practising curiosity and being genuinely interested and open towards different beliefs, customs, and ways of doing. In order to embrace existing knowledges, you must first have the mindset that you do NOT have all the answers and that you NEED to learn and understand existing knowledge in order to meet the goals of the project together.



REFLECTIVE QUESTIONS

- 1 Besides examining the physical context (e.g. survey, drone maps, water-level monitoring), how can you investigate the local understandings of the built environment and the water cycle?
- 2 Which methods for listening and observing, rather than talking and explaining, could you use in your project?
- 3 What are the existing processes, organisations, technology and knowledge that you could support and engage, rather than introducing your ways of working?

5 EXAMPLE
TRADITION, BELIEF AND PAMALI

In Indonesia, there are many beliefs and traditions related to water and sanitation, and to spatial planning in general. For example, water is used in different healing practices. It is believed that immersing eyes in water infused with the flowers of a specific plant will improve vision. Another example is about the Djinn Kingdom that exists parallel to the real world. This kingdom has its own inhabitants and sometimes it intersects with real places in the neighbourhood. It is believed that in places where a pathway exists in this parallel dimension, it is not appropriate to place massive structures. If the wrong design decision were made, people would be notified by unusual dreams or real embodiments of spirit. Another example is a particular taboo, or *pamali* in Makassarese, that a neighbours' wastewater pipes should not cross or discharge into your land, unless they are a close relative. Contact with the wastewater of someone that is not a close relative would bring bad luck, and be seen as an insult. While it might be more convenient to design infrastructure another way, people would almost certainly not use it if it does not respect this rule. Acknowledging, understanding and practising local knowledge related to water and space is crucial for reaching appropriate and sustainable design outcomes.



THE FIRST STEP

It is normal to be unable to immediately identify knowledges that are different from yours. The first step is to become aware of how others perceive the meanings and practices related to water and sanitation. Start with a plan for observing traces in the built environment. You could record this through drawings, photographs, annotated diagrams, counting. Look for *by-products of use* (e.g. grass trampled where people walk, buckets stored for water collection), *adaptations for use* (e.g. a dish rack next to a toilet seat), *displays of self* (e.g. the variety of plants in and around the house), and *public messages in space* (e.g. informal fences and gates). From here, you can organise informal and formal discussions with men, women, children and youth; transect walks; collective drawing activities, etc.



EXPLORE FURTHER



[UN Technical paper on best practices related to indigenous knowledge](#) (2013), describes best practices and available tools for the use of indigenous and traditional knowledge, practices for adaptation and the application of gender-sensitive approaches, and tools for understanding and assessing impacts, vulnerability and adaptation to climate change.



[8WAYS](#) is a pedagogical framework that allows teachers to include Aboriginal perspectives by using Aboriginal learning techniques. It is an example of finding the overlaps between different knowledges, in this case between Aboriginal and non-Aboriginal cultures.



[Inquiry by Design: Tools for Environment-Behavior Research](#) (Zeisel 1981) - Chapter 7 explains how to observe traces in the built environment.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 **Embrace the existing knowledges**
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration

WATER & SANITATION
INFRASTRUCTURE

DESIGN PROCESS

TEAM COMPOSITION &
DYNAMICS

See:
Interrogate your own position and privilege



5

CONSIDER MULTIPLE UNDERSTANDINGS OF SPACE AND TIME

Land regulation and ownership, and the meaning and measurement of time differ across locations and contexts. Land tenure can be individual or communal, private or public. Rules and practices related to land ownership can be formal or informal, complex or simple. It is important to consider all of the different types of rules and regulations that may affect an infrastructure project, including from the government, the funding agency, and the community. Some of these rules may be unwritten and known only to community members.

Just as the practices and meanings related to land should be considered, the same should be done for time. In many places around the world, people do not use clocks and calendars to organise their days. Sometimes, people who use clocks and calendars also organise their days according to other rhythms, cues, and systems. Even within the same community, some people may follow a clock (if needed for their employment), while others may follow sunlight, the rhythms of their family life, or religious rituals. Making assumptions about how people think about time can lead to misunderstandings and may affect who is able to participate in design activities.

Land and time should also be thought about together. This includes having an awareness of the history of the land, current uses and relationships with the land, and how residents envision the future of the land. There can be significant variation in how land and time are considered, not only between locations and settlements, but also between individuals living in the same neighbourhood. Understanding these differences is crucial for discussions about public and private land ownership in relation to the infrastructure project. In order to provide people with choice, policies and agreements relating to the infrastructure need to be reflective of the local context.



6 EXAMPLE

MANIFOLD LAND REGULATION SYSTEMS



In Indonesia, there are different land certification systems that work in parallel. This is a consequence of the lack of coordination and planning between residents, or changes in land certification between the colonial and post-colonial land laws. For example, *Rincik* is a traditional, informal type of documentation made by the local authorities in Makassar as proof of land ownership for the purpose of taxes.

The process of acquiring land can start when the land is cultivated by one family, for example as paddy fields or fishponds. Over time, as the family grows, the urban structure known as *kampung* is established. Land boundaries are progressively defined over generations. Land will be subdivided and passed down to descendants; parents will do the same for their children, and so on.

To formalise the ownership of land, the settler must provide proof of tax payment for 20 years (as mandated by the Agrarian Law). Only then can they proceed with the formal land certification process by the National Land Agency.

The way that land boundaries and certification are understood by the planning institution and the community might differ; this is a sensitive discussion topic that may not be revealed immediately and has significant impact on the infrastructure design.



7 EXAMPLE

LAND ARRANGEMENTS DIFFER BETWEEN NEIGHBOURHOODS

In Fiji, there are different land ownership arrangements: freehold land (9% of land, and it can be sold), state land (3% of land, and it is administered by the Department of Lands), and iTaukei land (88% of land; it is available for use or development through short- and long-term lease, and is managed by the iTaukei Land Trust Board, ITLTB). For example, Church-owned land may be leased out to settlements. Church members may decide who can live on the land, which has implications for building infrastructure, social organisation, power dynamics, etc. In some cases, iTaukei land-owning units have entered into agreements with individuals or groups outside the jurisdiction of ITLTB, this is termed as an arrangement *vakavanua*.

It takes time to understand complex and contextual arrangements relating to land, and time to understand how they may influence the design, operation and maintenance of the infrastructure.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 **Consider multiple understandings of space and time**
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



See:
Design the gathering space
Design gathering times



REFLECTIVE QUESTIONS

- 1 What are the existing rules, regulations, and practices related to the ownership and use of land on this territory? Who makes decisions about land ownership and use?
- 2 How well do you know the history of the land and people you are working with? Has this place and people been impacted by foreigners in the past? What steps will you take to gain that knowledge?
- 3 How is time measured and understood on this territory? How do people imagine and discuss time: do they use clocks and calendars, or do they use elements of their environment, or social cues, or something else? Do these understandings and practices differ among different types or groups of people?
- 4 How are different understandings of space and time related to water and sanitation infrastructure and practices on this territory?



8 EXAMPLE SPACES FOR PLAY



Land use and meaning should also be considered from the perspective of specific users. In Fiji, the design team observed that children use and occupy public and undeveloped land for recreation. In an iTaukei village, the village's open ground, *rara*, is defined as a customary space, but in informal settlements the provision of open spaces for children is not guaranteed. In informal settlements the availability of open spaces where children can play may depend on: (1) proximity of a formal subdivision with a planned open space; (2) establishment of an iTaukei *vakavanua* arrangement that includes the observance of iTaukei customs and traditional obligations such as the provision of an open space; (3) "meanwhile use" of land by children, for example, playing on roads when there are no cars. Inclusive infrastructure design should consider the needs of marginalised groups (such as children in informal settlements) and incorporate into the design land use changes that can benefit them.



THE FIRST STEP

Approaches to time allocation, measurement, land management and ownership might be defined differently, especially when considering informal practices.

- I Try identifying a number of approaches you have noticed or that you assume happen on the site.
- II Note them on a set of cards, using images, drawings, and as few words as possible.
- III Ask people in a small group to draw several cards each. They may recognise practices that are already happening or use them as inspiration to talk about different ones.
- IV Expand on each approach: ask about the necessary processes; about roles, gender and the networks of those involved; about benefits and issues.



EXPLORE FURTHER



LAND OWNERSHIP IN FIJI by the iTaukei Land Trust Board is a booklet that explains the complexity of land ownership and governance on this territory. It explains the historical development of land titles before, during and after the colonial period. Today's regulations are presented on page 6–9.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 **Consider multiple understandings of space and time**
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



In the case of water and sanitation infrastructure, it is not just a technical system that is being designed, but also interactions. People need water and sanitation to survive and to carry out everyday tasks, such as cooking, bathing and watering their gardens. At the same time, the water and sanitation system needs people to manage it, to protect it, to purify water, and more. In many places, women have the closest and most frequent interactions with water due to gendered expectations that they are responsible for ensuring that the household has the water it needs. In situations of scarcity, women spend extra effort to find, collect, and distribute water, often at great cost to their own wellbeing and health.

People also have social interactions related to water and sanitation infrastructure. For example, women may need to interact with others – members of their household, friends, and neighbours – whom they rely on to help them obtain water. In some cases, these interactions may involve negotiations, exchanges, and even conflicts. Problems with water can lead to disputes within and between households, but water can also provide opportunities for social connection. When water infrastructure is designed, these interactions are influenced directly and indirectly.



REFLECTIVE QUESTIONS

- 1 Who has the closest and most frequent interactions with water, at the individual, household, and community level? Do these differ depending on the season?
- 2 What are the different activities and practices connected with water and wastewater in the community that you are working with? Do different groups within the community have different water practices (e.g. Muslims and Christians, women and men)? How is the infrastructure design responding to these different behaviours and requirements?
- 3 What are different interactions that originate from water practices? Are there negotiations, exchanges, conflicts, dependencies? How might your infrastructure design affect this?

9 EXAMPLE
RESPONSIBILITIES AND CONFLICTS

Generally, the challenge of providing clean water in a community in Makassar is the responsibility of housewives and their children. A wife will reduce the time she spends sleeping, waking between midnight and early morning to fill the household water tank when the water from the water supply company is flowing.

Water can also be a source of conflict. In one of the RISE communities, women needed to walk or drive a motorbike several kilometres to collect water from a nearby development. However, access to water was later restricted. The community protested until the developer provided a new water source (a bore well) inside the settlement. But, the problems continued for the community, because managing a shared water resource is not easy. Delivering an equal amount of water for every household in the settlement became an everlasting challenge between residents. Finally, in some communities children may also be responsible for fetching and carrying water from a neighbour's house that has a bore well or another clean water source. Men are usually not very involved in water provision and storage matters. When planning design activities, it is important to see water and sanitation as both social and technical systems, and involve everyone who might be affected by design decisions.

10 EXAMPLE
TAKE TIME TO UNDERSTAND

"Before you marry, you should ask your husband about his water supply" – a young mother shared with the design team in confidence. She had recently married and moved into the house of her husband and his parents. However, the water in the new house was brownish; she didn't feel clean when she washed and didn't want to use it to brush her teeth. She kept going to her previous home to take showers in secret, to avoid offending her mother-in-law. When the baby came, things got more complicated. She could not complain about the water supply, and she was not allowed to buy water from another source. When her parents visit, they bring bottles of clean water as a present for the baby. It is important to bear in mind that some aspects of the socio-technical system will not be revealed publicly; understanding the design problem takes time and careful consideration of different perspectives and lived experiences.



EXPLORE FURTHER



[Toolkit for Mainstreaming Gender in Water Operations](#) (2016) by The World Bank, offers a list of eight key cross-cutting gender-based challenges related to water access that are important to have in mind – page ix.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 **Cultivate a socio-technical mindset**
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration

WATER & SANITATION
INFRASTRUCTURE

DESIGN PROCESS

TEAM COMPOSITION &
DYNAMICS

See:
Recognise diversity
Understand marginalisation



7

DISCOVER THE BEST COMMUNICATION MODEL

Designing is more than drawing, measuring and building. It is also about sharing concerns and dreams, experiences and desires. Effective communication is the central pillar of participation. To be able to share differences with others, to open up, question, and learn from each other, trust needs to be built amongst diverse groups of people. To do so, it is important to acknowledge that people communicate in different ways. Many things might hinder effective communication, such as being intimidated by technical knowledge, feeling insecure to speak with people who are more educated, fear of foreigners, not being able to speak up in front of senior residents, being afraid to say “we don’t understand”, speaking a different dialect or language, feeling obliged to accept what is offered without question, convincing people of one option instead of discussing various possibilities, etc.

People with communication and physical disabilities might face barriers that prevent them from understanding or being understood. It is important to consider effective communication methods, aids, supports, technology, time and opportunity that will enable people with disabilities to communicate their messages. It is important to keep in mind that communication barriers are not always obvious, and they usually vary between people and through time. Only through understanding these barriers, can a safe space for open design discussions be created.



11 EXAMPLE “SENAM BERSAMA”



In settlements in Makassar, RISE organised a *Senam bersama* (“healthy together”) activity every Sunday morning. This is a traditional, communal exercise dancing activity in which people of all ages gather and, following a leader, perform well-known choreographed dances from different parts of Indonesia. One of the foreign design facilitators learned some of the choreography and led these dances. Everyone took part: residents and stakeholders, as well as engineers and scientists. The community was interested and amused, it was a great start for a design workshop that followed. Seeing foreign facilitators embarrass themselves by doing something unfamiliar reduced the communication barrier between foreigners and locals, engineers and residents. Through this activity, the design team tried to show that we all have many roles, in which we feel more or less comfortable. After *Senam bersama*, residents (non-designers) felt much more comfortable to participate in design activities using a 3D model that was a new experience for them.



12 EXAMPLE LOCAL LANGUAGES

In Makassar, people speak different languages and dialects, mainly Indonesian, Makassarese and Buginese. Many residents can communicate in only one of them. Therefore, the project team learned some basic expressions and words in all local dialects. They found that people would be more accepting of them when they made an effort to communicate in their language. Moreover, speaking a simpler version of the language reduced the knowledge barrier between them, and residents felt more relaxed and confident to share their knowledge and opinions. Making mistakes while speaking helped in designing!



13 EXAMPLE STRATEGIC TRANSLATION



In Fiji, the majority of residents speak iTaukei, English or Hindi. The team did not have the capacity to organise separate design gatherings in different languages, and doing so could have created divisions in the community. Instead, the gatherings were led in iTaukei, while Hindi-speaking team members were strategically positioned around the room. This enabled them to translate or facilitate discussions in parallel, with people who could not understand iTaukei.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 **Discover the best communication model**
- 8 Lay the groundwork for collaboration



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



See:
Recognise diversity
Understand marginalisation
Start with internal diversity



REFLECTIVE QUESTIONS

- 1 What are the most effective ways of reaching different types or groups of people? What networks and groups already exist that could facilitate communication? How do different people prefer to communicate?
- 2 What are some aspects of the project that you want to be sure to communicate well to the community? Why? What might be the best ways to ensure that this communication is successful?
- 3 When you reach out to the entire community (e.g. women, informal workers, people living with disabilities in informal settlements) what do you see as the biggest communication barrier/inhibition/hesitation? Who might help you identify the communication barriers and facilitators?
- 4 How will you deal with communication barriers that you discover along the way?
- 5 What communication strategies need to be part of your participatory design budget (e.g. hiring translators, cultural training)?



THE FIRST STEP

Start by mapping the existing communication channels.

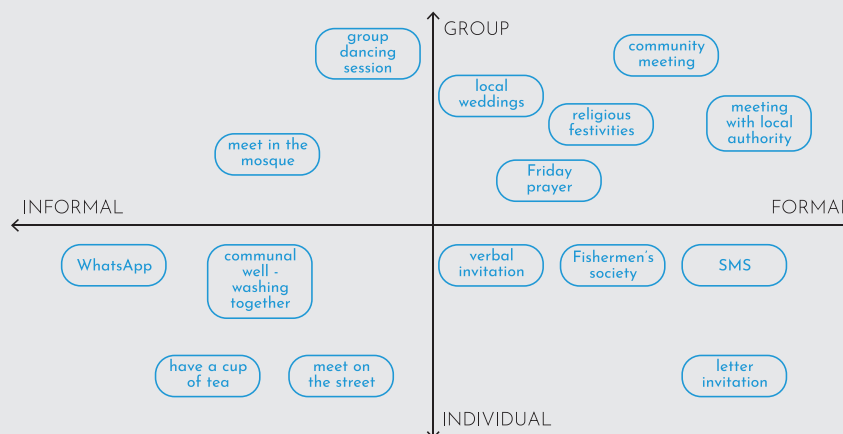
I Draw a matrix as in the diagram below – individual and group methods on the vertical axis, informal and formal methods on the horizontal axis.

II Discuss this within your team first, then involve the wider group of stakeholders and participants. The opinions and preferred communication modes will differ among groups.

III Map the existing communication channels. The blue boxes below are only an illustration of possible options.

IV Write down the main objective and key messages you want to communicate. Which of the existing communication methods could you use? Are there some methods you could expand or transform into design activities?

V Who is using the communication channels that you identified? Are there some groups or individuals that are being left out?



“For me, there aren't [weaknesses in designing activities in RISE], Ma'am. Because all of your team are friendly, they're friendly, nice, and the way they talk is understandable, even to the elderly. They spoke simply to us. So I think, there are no weaknesses, Ma'am.

Female resident, RISE Makassar site

“It is simple for us to understand since there are all different departments available to simplify things out for us if we needed things to be clarified. For instance if a family is not receiving clean water or have no water at all they are there to give out the forms for the families to fill. [...] They were able to clarify most of the doubts and the questions we have regarding accessibility to water and electricity. Question like applying for a new water meter, those who are wanting transfer of water meter and the process that must be followed they were able to articulate this to the whole community.

Female resident, RISE Suva site

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 **Discover the best communication model**
- 8 Lay the groundwork for collaboration



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



LAY THE GROUNDWORK FOR COLLABORATION

Everything that happens in the design gathering is a result of preparatory processes. Before you start planning, reach out to key stakeholders and gatekeepers (people whose permission or approval is needed to access certain information or resources). These organisations and leaders (government and community) will provide information about how decisions are made in the community, existing norms and other protocols. This is a prerequisite for being respectful of the social, cultural and physical space you are entering. Ask about their previous involvement in infrastructure or upgrading projects and schemes, and the positive and negative aspects of those experiences. This may reveal a lot about the ways that communication occurs.

Think about how to make the initial contact, and prepare participants for the project investigations and activities. This could be done through paper invitations, booklets, posters, videos. The design and content of this material will have a big influence on who will show up from the start of the project. Think about how the materials can be adapted for specific groups: women, men, children, youth, elderly, people with disabilities. This initial contact will set the mood and expectations of the design team, the process and the design outcomes. Dedicate time and resources to laying the groundwork for collaboration.



REFLECTIVE QUESTIONS

- 1 How have other organisations and projects communicated with the community in the past? How might that impact the way the community and leaders respond to your project?
- 2 How might your language, communication style and format, timing, identity, tone, energy and behaviour influence whether people will gather around the project?
- 3 Be respectful of the space you are entering – have you invited yourself there, or has the community reached out to you?



14 EXAMPLE INTRODUCTIONS

When starting the project, after receiving the approval of the Mayor of Makassar, the RISE team approached local government leaders such as the district head (*Camat*) and *Lurah* along with *Kelurahan* officials such as community empowerment institutions. From the *Lurah*, the team obtained contact persons for community leaders (from the neighbourhood, *Rukun Tetangga*, and sub-district, *Rukun Warga*). After the RISE team had completed introductions at the *Kecamatan* and *Kelurahan* levels, they approached and introduced themselves and the project to community figures such as community leaders, neighbourhood associations and health groups, and other respected community members such as elders (*tokoh-tokoh*), and religious leaders. It is important to allow enough time for these introductory processes.



15 EXAMPLE INFORMING KEY STAKEHOLDERS



Before holding big gatherings with residents, it was important to have private meetings with community leaders, religious leaders, and elders so they can understand the program in advance: its objectives, how it will be carried out, implemented, and other important information. This is important to avoid rumours and other misinformation that can spread quickly. These key stakeholders can also assist the team in providing information and achieving understanding between residents.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary
- 6 Tools



UNDERSTANDING CONTEXT

- 1 Recognise diversity
- 2 Understand marginalisation
- 3 Design across and within scales
- 4 Embrace the existing knowledges
- 5 Consider multiple understandings of space and time
- 6 Cultivate a socio-technical mindset
- 7 Discover the best communication model
- 8 Lay the groundwork for collaboration



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



See:
Recognise diversity
Understand marginalisation
Diversify gatherings
Develop the “constellation” of design activities

WATER AND SANITATION INFRASTRUCTURE



KEY MESSAGES

The tools in this category are designed to help you examine the multiple socio-technical connections within the design of an infrastructure system, and their flexibility. These dimensions might not be immediately obvious. The ability to identify and understand the impact your project might have on various stakeholders is key to inclusion and participation. So too are the opportunities for interdisciplinary input into the various stages of design.

The following tools also examine the properties of water and sanitation infrastructure; this analysis will allow your team to identify opportunities for participatory approaches, enabling participants with diverse knowledges and experiences to take part in decision-making.

- 1 Co-define the design problem
- 2 Examine physical (re)connections
- 3 Examine social (re)connections
- 4 Define fixed and flexible
- 5 Consider the life cycle of infrastructure
- 6 Talk about the infrastructure

1 CO-DEFINE THE DESIGN PROBLEM

If you have picked up this toolkit, it is likely that you have identified a problem related to water and sanitation that needs to be addressed; or you might already have a solution in mind, whether it's a specific piece of infrastructure or an approach to designing. It is crucial to bear in mind that the definition of a design problem is part of the designing process. For an inclusive design process, we need to think about where we are looking, who we are asking, and what we are taking into consideration as we arrive at the "problem" and its "solution". For example, if you involved someone else (with different technical expertise or different lived experiences) in the decision-making process, would your perspective on the problem or the design change? Might the scope of what you are designing have narrowed or widened?

REFLECTIVE QUESTIONS

- 1 How are you defining WHAT is the infrastructure system that you will design?
- 2 What type of expertise do you have in mind when inviting people to take part in defining the design problem? Technical expertise? Lived experience? Expertise at which scale(s)? What type of expertise or perspective might you be missing?
- 3 Who is involved in the definition of a design problem?
- 4 Make a list of all the assumptions (things accepted as true without proof) you have made when choosing the "right" technological approach. How could you test/check them?
- 5 What is the infrastructure that you are proposing? Is it for water, sanitation or both? Is it for provision, capture and/or treatment? What did you base these initial decisions on?
- 6 What is your assumption about the appropriate behaviours necessary for using and maintaining the infrastructure? How do these compare to current practices in the community? If they are different, how will these behaviours be supported throughout the project?

16 EXAMPLE TOILET PROTOTYPE



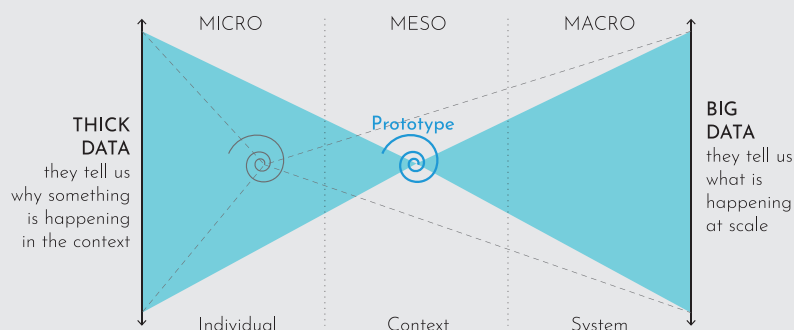
In the initial design phase in RISE, the team had to make a preliminary calculation of costs for new toilets in one of the settlements. The toilet layout was designed based on the 'view from above': designing the modular toilet types that would "fit" in the empty spaces between already built houses. But after the initial participatory design workshops, this typology was completely discarded! The team assumed that toilet size and layout were defined by the available space on the map. However, there were many more things to consider, some very important for residents. For example, a toilet cannot face Mecca, as this is an unacceptable water practice for Islam. The design team started over, designing toilets according to context-relevant, specifically developed sets of criteria.



THE FIRST STEP

Policy Lab (2020), Model for Combining Big Data and Thick Data

Both evidence-based ("big") and practice-based ("thick") data are necessary to identify and define the design problem. This is at the core of "designing with" rather than "designing for" participants. For example, big data involves large, quantitative datasets from which we understand patterns, whereas thick data involves small, qualitative datasets going deeper into behaviours, motivations and underlying causes. List your data sources in the diagram below, according to scale and type. Which data are you relying on more? Whose views and needs are prioritised, and whose might be excluded? What are some different prototypes and tests that you might do to define your approach? Which scales could they explore: individual, contextual, systemic?



EXPLORE FURTHER

Understanding and addressing equality, non-discrimination and inclusion in water, sanitation and hygiene (WASH) work – see "Tools for use in baseline and situational analyses for planning".

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE

- 1 Co-define the design problem
- 2 Examine physical (re)connections
- 3 Examine social (re)connections
- 4 Define fixed and flexible
- 5 Consider the life cycle of infrastructure
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DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



See:
Design for feedback
Establish inclusive evaluation

2 EXAMINE PHYSICAL (RE)CONNECTIONS

A community or settlement is a physical system. There are roads and pathways that connect houses and businesses in different parts of the community, as well as spaces where people gather. There are also fences or other barriers that prevent connections between houses or sections of the community. Roads and fences are forms of infrastructure that determine how the community is connected.

When water and sanitation infrastructure is built, it sometimes only affects individual households. For example, a household might install a tank to collect and store rainwater for their own use, or they might install a septic tank for their own household. In these cases, the new infrastructure might change practices and behaviours within the household, but might not have a big effect on the rest of the community. In other cases, the infrastructure might affect the whole community, and might create new connections (or barriers) that didn't exist before.

When designing infrastructure, it is important to think about how it will change the physical system and behaviours that already exist in the community, and whether these changes will affect different people in different ways. Otherwise, the new infrastructure could benefit some people more than others, and could even make inequities in the community worse.



REFLECTIVE QUESTIONS

- 1 How might the infrastructure connect parts of a house in new ways? What kinds of impacts might this have on diverse residents (e.g. did you consider menstrual hygiene practices)?
- 2 How might this infrastructure connect different houses in new ways?
- 3 How might this infrastructure change the street/ walkway patterns or their use? How might this influence different groups within the community (e.g. people with disability)?
- 4 How might this infrastructure connect different areas in new ways?
- 5 How might your discharge points influence the neighbouring areas? Could there be any other influences on the neighbouring areas?



17 EXAMPLE ACCESSIBILITY



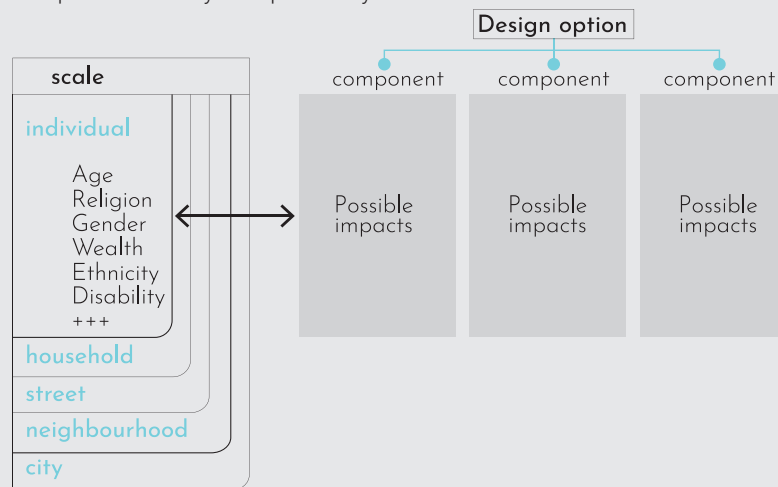
In Makassar, the RISE system was welcomed by residents more for its potential to re-connect parts of the settlement than its ability to treat wastewater. Pipe and wetland networks could create new streets, make the existing walkways more accessible (for example, by enabling their use during flooding periods), or re-arrange the access networks to make the overall circulation in the neighbourhood more efficient. The design of this system had to satisfy two sets of criteria: (1) a functional wastewater treatment train, and (2) a functional socio-technical arrangement of the existing neighbourhood networks.



THE FIRST STEP

Make a sketch of each design/engineering concept that you are discussing, (e.g. a new rainwater collection and treatment system, biofilter, sustainable drainage network for the entire neighbourhood, etc.)

I Break this system into physical components/parts. For example, a rainwater collection system could have the following components: roof + pipes + taps + tank.
II For each component, write a list of physical and spatial impacts it could have on scales. For each scale, consider the diverse characteristics of groups you are working with. In the example of a rainwater collection system, taps would impact people of different ages and abilities depending on how high they are. None of the components is likely to impact a city.



- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary
- 6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE

- 1 Co-define the design problem
- 2 **Examine physical (re)connections**
- 3 Examine social (re)connections
- 4 Define fixed and flexible
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- 6 Talk about the infrastructure



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



See:
Recognise diversity
Consider multiple
understandings of space and
time



Infrastructure is a key part of social change and development. From transportation systems to internet services, the way infrastructure is built has often defined who has access to certain services and opportunities. In some cases, this may cause underlying tensions within communities, particularly when infrastructural advances for one group may disadvantage other groups. In other cases, infrastructure can help a community's development and prosperity and ultimately bring groups together for a common goal (maintaining safe community water and sanitation). Understanding the social climate regarding (existing and future) infrastructure in the community can allow you to capitalise on pre-existing social ties that can help to advance your design goals.



REFLECTIVE QUESTIONS

- 1 How do people already work together in relation to water, sanitation, and resource allocation (e.g. sharing water or service costs, cleaning or repairing shared sanitation facilities)?
- 2 What conflicts already exist in the community regarding water, sanitation, and resource allocation? How did you get this information?
- 3 How is infrastructure going to be managed in the community after it is built? Who will decide this? How might this impact relationships in the community?

18 EXAMPLE
FAMILY FOCUS

The final RISE infrastructure concept and plans in Makassar were directly influenced by the social system in these settlements. Every infrastructure “cluster” – a system of components for wastewater treatment – was designed for an extended family. This resulted from the participatory process. Participants preferred that their waste did not mix with that of strangers, and they wanted to organise the cost, operation and maintenance in the same way they organise other livelihood matters. They also saw benefit in using the green infrastructure to form semi-public and public places within their family's land.

19 EXAMPLE
WASTEWATER CONFLICT

In one of the settlements, sanitation problems have caused social tensions between households. The settlement is positioned on a hill, with the “front” part of the settlement on top of the hill and the “back” at the bottom of the hill. Wastewater flows from the front to the back of the settlement, so those living in the back receive the waste of those at the front. During the rainy season, flooding causes additional health concerns for the residents in the back who are worried about exposure to the wastewater. Although they complain about this to the “front” residents, they feel as if their concerns are being ignored. This has caused tension between the two groups. This long-standing conflict has been important for all design discussions and decisions.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

WATER & SANITATION
INFRASTRUCTURE

- 1 Co-define the design problem
- 2 Examine physical (re)connections
- 3 **Examine social (re)connections**
- 4 Define fixed and flexible
- 5 Consider the life cycle of infrastructure
- 6 Talk about the infrastructure



DESIGN PROCESS

TEAM COMPOSITION &
DYNAMICS

See:
Grow participation expertise

An important part of the participatory process will be to communicate what about the infrastructure design is “fixed” and what is “flexible”. For example, the type of water system infrastructure used, such as gravitational versus pumped, will be restricted by the topography of the land (e.g. a low-lying area would require a pumped water system). This is therefore a “fixed” design feature. Even if a community preferred a water system that was based on gravity, it would not be functionally possible in this context. However, there might be creative ways to make other design features “adaptable”, such as times when the pump will operate, who will be responsible for the maintenance, and where the pipes and the discharge point will be positioned.

Think about how to communicate “fixed” and “adaptable” aspects of the infrastructure design. Being open to unconventional options, and ready to change and challenge our initial ideas and plans are the most important principles of this strategy. The more “adaptable” water infrastructure is the more participatory the design process can be – and the better it will integrate with the existing physical and social systems.



REFLECTIVE QUESTIONS

- 1 What are the properties of each infrastructure element that must be fixed (that are pre-designed/unchangeable/non-negotiable) so the infrastructure can function?
- 2 What are the properties of each infrastructure element that are flexible and can be changed by other participants in the design process: residents, local authorities, other design teams?
- 3 How might you communicate or categorise the “fixed” and “flexible” parts of the infrastructure design? Think about activities, visuals, and words you could use.
- 4 Whilst considering what is “fixed” and what is “flexible”, think of the needs of specific groups, e.g. what are fixed aspects of the design that will ensure that people with disability can use it?
- 5 Imagine your infrastructure as a PERSON participating in a discussion. How active is it? Is it able to negotiate? If not, revisit the introduction to this booklet.

20 EXAMPLE
“THE FLEXIBILITY TABLE”

In the RISE program in Indonesia, the design was fixed/adaptable at different levels. Before the participatory design activities, a team of water-sensitive cities infrastructure experts gathered in a set of workshops to define the flexibility of the proposed infrastructure concept. This was based on the performance targets set for the system – what needed to be “fixed” (non-negotiable), so the system would purify the wastewater to the desirable quality? We determined this for each component of the treatment train separately and for the system as a whole. For example, the most “flexible” features of a wastewater pump are the exact number and grouping of households that connect to it, and its exact position – as long as it is within the accessible public piece of land (in relation to maintenance requirements) and within the range of a 40m-long toilet connection pipe. However, its shape, size, material, fragmentation, and so on, are “fixed” as it is an already-designed product. We did the same for a toilet, surface and subsurface wetland, storm water and rainwater bio-filter, drain, septic tank, and rainwater tank. Understanding the engineering concept for the infrastructure to this degree helped the design team to connect the technical components with more social, contextual aspects of the settlement and community. Later on, the flexibility requirements changed, based on the knowledge and perspectives of the residents.



THE FIRST STEP

Below is the segment of the “Flexibility table” developed in RISE. Explore flexibility in the engineering concept you are developing: define specific components and design relevant questions.

	Is the location of the element variable?	Are the connections of the element flexible?	Is the shape of the element variable?	Is the size of the element variable?	Is the number of elements variable?	Can one unit of the element be fragmented?	Is the material of the element variable?	Is the construction method of the element variable?	Is the element robust?
Sub-surface wetland	☐	☐	☐	☐	☐	☐	☐	☐	☐
Surface wetland	☐	☐	☐	☐	☐	☐	☐	☐	☐

☒ yes
☐ no

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT

WATER & SANITATION
INFRASTRUCTURE

- 1 Co-define the design problem
- 2 Examine physical (re)connections
- 3 Examine social (re)connections
- 4 **Define fixed and flexible**
- 5 Consider the life cycle of infrastructure
- 6 Talk about the infrastructure



DESIGN PROCESS

TEAM COMPOSITION &
DYNAMICS

» See:
**Is participatory design
the right approach for this
project?**

5 CONSIDER THE LIFE CYCLE OF INFRASTRUCTURE

In every stage of the design process, it is important to consider the entire lifecycle of the proposed infrastructure. The lifecycle of the infrastructure includes: design, procurement of materials, construction, testing, commissioning, operation, maintenance, repair and disposal. At each of these stages in the life cycle, there will be impacts upon diverse people as well as opportunities for participation by diverse people.

If some people are excluded or ignored during any stage of the infrastructure life cycle, there is a risk that the infrastructure will fail to perform properly. On the other hand, if everyone is included somehow, this builds support for and feelings of ownership of the infrastructure, which means that it is more likely to be maintained and looked after (and not vandalised). For example, including children in the design of a wetland could mean that they will stop others from throwing rubbish in it. Another example: in places where young men often leave for months at a time for work, training women to fix taps and pipe leakages means that water systems continue to function all year round.



REFLECTIVE QUESTIONS

- 1 Think about which groups of people can be involved at each stage of the infrastructure life cycle. Which groups of people cannot be involved? Why? Take care to note down any assumptions you are making whilst answering this question.
- 2 Thinking long into the future, how will those who are not very "technical" learn about and understand how to operate, maintain and repair the system? How might this knowledge be transferred to new residents?
- 3 How could parts of the infrastructure life cycle be adapted so that as many people as possible can be involved if they want to? Think about participants' physical capabilities and motivation, as well as governance mechanisms.



21 EXAMPLE FUTURE CUSTODIANS



In Fiji, children were recognised as future custodians of the infrastructure and their participation in its development was considered important for long-term functionality. Children also demonstrated that they were able to quickly understand the complex technical elements of the infrastructure and relay this information to other family members.



THE FIRST STEP

What are the ways in which diverse groups can (or cannot) be involved at each stage of the infrastructure life cycle?

Participant group	Design	Procurement	Construction	Testing	Commissioning	Operation	Maintenance	Repair	Disposal
1									
2									
+++									



EXPLORE FURTHER

[WASH: A Guidance Note for Leaving No One Behind \(LNOB\)](#) – see pages 66–71 for more information about ways to include diverse groups in the various stages of WASH projects.

[LEAVE NO-ONE BEHIND](#): infrastructure and inclusion for introductory guidance on infrastructure life cycle analysis – see pages 14–15.

- 4 Could your proposed infrastructure be operated and maintained by local people with local materials? If not, how can you adapt the design so that this is possible? What additional skills and training can you provide to ensure that there are multiple people who could do the operations and maintenance (rather than relying on one or two people who might move away or not be available all the time)?
- 5 How can you engage with and work with local organisations and stakeholders to develop expertise to operate and maintain the infrastructure system, including amongst different types and groups of people who might not typically have this expertise?

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE

- 1 Co-define the design problem
- 2 Examine physical (re)connections
- 3 Examine social (re)connections
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DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS

Infrastructures are mostly invisible and often considered private (taboo). When we do talk about them, they are explained with a lot of technical jargon. People interact with the parts of the infrastructure that are visible, like the toilet or the tap, but are unaware or less interested in the parts that are hidden from view, like a septic tank. However, when people are knowledgeable about the infrastructure in their home and their community, they may feel more ownership and confidence to make decisions about it, both individually and collectively. They will also be able to communicate about it with each other and to authorities. Ensuring that all community members have the opportunity to learn about infrastructure can shift power relations within households and communities and promote equality in infrastructure decision-making.

Still, talking about infrastructure can be challenging, especially when we are trying to be inclusive. For example, women and girls may not feel comfortable talking about their infrastructure needs with a man. Similarly, people with different types of physical challenges (including the elderly and people with disabilities) may feel uncomfortable discussing their infrastructure needs. Finding ways to talk about infrastructure with a wide range of people is important so that we can learn about diverse people's needs and ensure that they have the language to advocate for themselves.



22 EXAMPLE TOILET PERFORMANCE



"Toilet performance" is a designing activity that was used to design typical components of the RISE toilet. It is not easy to speak about activities in the toilet; some of them are taboo, and many are done as a habit, without rational awareness. When asked, people tend to refer to urinating and defecating only, without much detail about the actual practice. In the settlement, we made a "toilet area" with the help of objects that people brought from their toilets: buckets, brushes, water cups and bowls. We asked participants to perform different activities they do there, in as many details they could remember. We discovered more than 30 activities that take place in a toilet, including smoking in private, talking on the phone in private, drying women's underwear that cannot be hung outdoors, children playing with buckets, washing vegetables and fish, washing shoes, performing ablutions, etc.



23 EXAMPLE TREATMENT THEATRE



To demonstrate how the wastewater treatment train works, the purpose and features of every infrastructure component were introduced in the form of a theatre play. Each infrastructure component was represented as a large photo-poster, held by a child. In the theatre, the design team would introduce components, and children would interpret their movements and function. They were proud to take this role of active learning. Parents, by taking photos of their children, would also take photos of the treatment train function. It was a way to make the treatment train symbols on the model "alive", following the local tradition of oral and performative ways of learning.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE

- 1 Co-define the design problem
- 2 Examine physical (re)connections
- 3 Examine social (re)connections
- 4 Define fixed and flexible
- 5 Consider the life cycle of infrastructure

6 Talk about the infrastructure



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS



REFLECTIVE QUESTIONS

- 1 What are some infrastructure-relevant topics that diverse individuals or groups might feel uncomfortable talking about (e.g. menstruation and disposal of menstrual materials)?
- 2 How might you discuss the invisible objects and processes (e.g. wastewater treatment that happens in subsurface wetlands, pumps that are buried under roads)?
- 3 How will you access the knowledges that neither you nor your respondents are aware of? For example, some might only be realised through observation, such as water practices you are not familiar with.
- 4 What are the different ways you will discuss the infrastructure? Make a list of activities that involve: speaking, making, walking, observing, doing, performing, or a combination of all.
- 5 How might you discuss the technical function and infrastructure lifecycle in a way that your diverse participants can engage with?
- 6 How might you discuss physical and social connections (systems)?



24 EXAMPLE 1:1 PROTOTYPING



"1:1 prototyping" was an activity that we used for understanding the real scale and form of infrastructure in the actual space. By using lightweight objects and spray paint, we together decided on and marked possible locations for the infrastructure system, in its real scale. This opened questions about land use, neighbours' relationships, maintenance, and costs. By visualising the elements in the real space, they also became real, motivating everyone to think about the upcoming changes.



25 EXAMPLE A SONG ABOUT A WASTEWATER PUMP



In Fiji, people wrote a song about a wastewater pump! Children studied the workbook and then developed an informed and funny skit that they performed in a community workshop. Their performance demonstrated their ability to grasp technical concepts but also presented the use of the systems in a fun and less confronting way.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE

- 1 Co-define the design problem
- 2 Examine physical (re)connections
- 3 Examine social (re)connections
- 4 Define fixed and flexible
- 5 Consider the life cycle of infrastructure

6 Talk about the infrastructure



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS

DESIGN PROCESS



KEY MESSAGES

This category of tools identifies critical aspects of water and sanitation infrastructure design processes, helping you to reflect on the approaches that enable participation and inclusion.

Every design process is different; it depends on the context you are working in, the design problem, the time available, the design team, etc. However, there are some common essential questions highlighted by these tools; they can help you to focus on the main GESI and participatory design principles.

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the “constellation” of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the “voice” of design materials
- 11 Diversify resources and benefits

1 DIVERSIFY GATHERINGS

Design gatherings differ in type, duration, time and place where they are scheduled. They come in many forms: informative, social, ceremonial, practical (making prototypes and plans), ideational (imagining the future, sharing ideas), organisational. They are all important, because in order to build infrastructure, you also need to build trust in the community.

Consider purposefully organising gatherings with different groups and subgroups within the community. One-on-one meetings will be necessary to understand the perspectives of people who cannot leave their house – for example, some people with physical disabilities. Or to meet with persons who do not share the majority opinion but cannot raise their opinions publicly. Or to meet those who are shy or are not invited to join some conversations, such as daughters-in-law who have moved to their husband's family house. Or to meet people who are too busy to attend the group gatherings. Family and smaller gatherings are important for making detailed infrastructure plans and designs. Smaller gatherings can also be organised in relation to specific components, such as the group of residents who will be responsible for operating the wastewater pump. They can also be organised according to the subgroups within the community: children, the elderly, men, women, and ethnic groups. Finally, bigger gatherings could involve the whole community, bring multiple communities together, or bring government or other officials into the community so they can see community needs and discuss plans. These are important for establishing common ground: sharing understanding, establishing the aims and goals of the project, celebrating successes, and creating a sense of community and participation.

In addition to recognising the diversity of gatherings, it is important to recognise diversity within a gathering. For example, some communities are not comfortable having men and women intermingled within the same area, and prefer separation. In other scenarios, parents may need to tend to children during the time of the gathering, thus it might be useful to have a facilitator that plays with children so their parents can participate in the workshop.

26 EXAMPLE INTERVIEW-IN-CONTEXT



One of the design activities in Makassar was the “interview-in-context”. It was organised with two women (mothers with children) in each settlement. It was between two and eight hours long: we would spend an extended period of time with the female participant, in her house. We were asking questions about water and sanitation, but we were also participating in all her water-related chores: from the early morning, until it felt comfortable for them to have us around. This was a very valuable activity, because it enabled the team to observe and notice water-related practices that we would miss otherwise. It also made more sensitive and private discussions possible, including the perspective of mothers who live in rented rooms with their babies, of daughters-in-law and grandmothers who take care of grandchildren while their daughters work full time.

27 EXAMPLE HOUSEHOLD VISITS



Household visits – during which RISE team met with each household/family one at a time – were vitally important in Makassar. These smaller group settings allowed the RISE team to capture more detailed information about their unique needs as well as to capture perspectives of individuals who were unable to attend larger community workshops. These household visits also appeared to signal to the community that RISE was serious about making changes and incorporating the residents’ feedback.

28 EXAMPLE FOOD AND GATHERINGS



In Fiji, the team recognised that providing food encouraged whole households to attend design gatherings in the evenings; this encouraged greater participation and reflected cultural practices of sharing food. However, cooking food for design workshops is a complex undertaking that needs to be carefully considered. Women can also feel “taken out” of community discussions in order to cook the food and prepare the meals, so this activity might reinforce gender stereotypes. For example, in another community, the facilitation team brought food to the design workshop so that women could participate – but community leaders expressed their frustration at this, as it took away a potential source of income for the women (i.e. they could have been paid for this service). The right approach will depend on the context, and it is extremely important to be aware of this dilemma, so that a sensitive and appropriate solution can be found.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 **Diversify gatherings**
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
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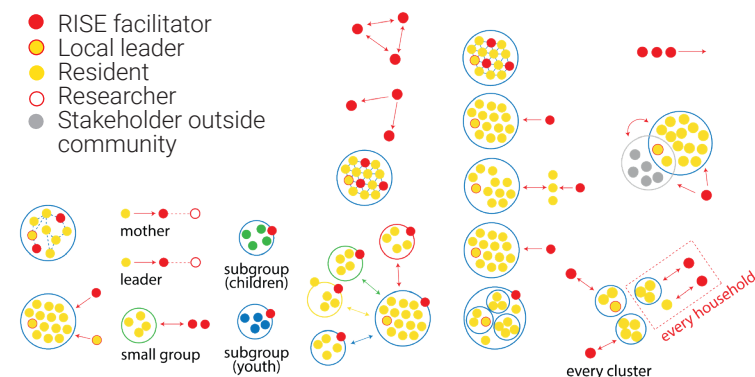
TEAM COMPOSITION &
DYNAMICS

» See:
Recognise diversity
Develop the “constellation” of
design activities

- 1 What are all possible group arrangements for discussing different aspects of water and sanitation infrastructure design, construction, operation and maintenance?
- 2 Are you open to feedback from participants about meeting styles and times? Recognise your own barriers to listening to these requirements.
- 3 For each proposed way of participating, identify who can participate and who cannot. For those who cannot, is there another way for them to participate? Can you consult with different types or groups of people about their availability for meetings?
- 4 Can you adapt to existing community meeting structures? (e.g. by being aware of who is not participating and suggesting other ways for them to participate)
- 5 Have you reserved time in the project for additional gatherings that may be necessary along the way?

 THE FIRST STEP

The diagram below represents some gathering arrangements from the RISE participatory design process in Makassar. How could you sketch the diversity of gatherings in your design process? Think about different roles, activities, interactions, groups and sub-groups.



 29 EXAMPLE VISITING THE DEMONSTRATION SITE



Organising bus trips with each community to the demonstration site in Makassar proved a successful strategy for gaining community trust in the new wastewater treatment technology. They could see how the project would look when implemented and they got a chance to talk with the demonstration-site community directly. They were able to share their worries, doubts and questions while experiencing aspects of project implementation and operation.

“It’s good to visit the houses of the people like me because I can only go to the meeting place when I feel healthy.

Male resident living with a disability, RISE Makassar site

“Interviewer: So, if RISE needs you to participate in an event, how can we get you?

For me... because I can’t sit for too long because of my legs. If I hang my feet, they will stiffen. So when I sit down, I usually lift up my leg to the chair, so if for example I attend an event like that and I lift my legs people will say I’m being rude.

Female resident, RISE Makassar site

“Yes, [RISE Program will succeed] because they really want to improve the facilities here because they can work and visit other people’s homes. So they really want to fix our houses. We are also sure because they directly saw people’s houses. So we also can’t lie when they ask about our house, our life because they have seen it first-hand.

Interviewer: They directly visited your house?

Yes they came in and saw everything. They could stay for hours and checked every corner of the house. Yes, because they’ve checked the house thoroughly to the toilet, they want to fix the pipes. [...] RISE is different from other organizations that only come to the [Site] to check the condition but they don’t repair the facilities.

Female resident, RISE Makassar site

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools

 UNDERSTANDING CONTEXT

 WATER & SANITATION INFRASTRUCTURE

 DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
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- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the “voice” of design materials
- 11 Diversify resources and benefits

 TEAM COMPOSITION & DYNAMICS

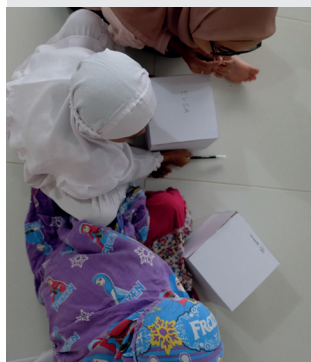
We don't all share the same understanding of what it means to participate, to design, or to share knowledge. Democratic, participatory design practices of the Global North are different from collaborative decision-making approaches in other contexts, such as the tradition of *ubuntu* in Africa, *hui* in Aotearoa (New Zealand), *talanoa* in Fiji and the Pacific, or *musyawarah-mufakat* in Indonesia. Therefore, the participatory approach that you are designing needs to adapt and align with the local culture(s), through its aims, tools (methods), analysis and outputs. For example, large gatherings are not always a place for discussing controversial topics; in some places, decisions are made in smaller discussions beforehand, and large gatherings have a ceremonial character. In this case, how would you make sure that more vulnerable and silent voices are included in the designing process? The informal activities and conversations might be much more important than the official "designing event". Or, in societies where public speaking is strongly influenced by hierarchy, it might be necessary to organise design discussions in different groups: men, women, youth (girls/young women and boys/young men) and elderly. The approach to designing water and sanitation infrastructure will differ in each group, based on their skills, knowledge, interests, communication style and culture. Explore the range of interactions clustered under the meaning of "designing", including those you would not normally include. Think about food making and sharing, singing, performing, dancing, cleaning, building, drawing, making, whispering, walking, mapping, showing, smelling, feeling, looking.

30 EXAMPLE COMMUNITY PRAYER



Small and informal moments and activities played a crucial role for designing water-sensitive infrastructure in Makassar. Community prayers were a form of design idea creation – the infrastructure design team and diverse community member imagining a better future together, sharing our hopes in a way that builds trust, bringing us closer to the identification of values we share. Here, people do this in prayers rather than through planning documents and action plans.

31 EXAMPLE WORKSHOP TEST



Before running the design activities in Makassar, the design team tested some interactions with smaller groups. One of them was with a children's group in a local mosque. It was a fun activity that taught the participatory design team a lot about comprehension of the materials they intended to use; it also helped them clarify the questions about infrastructure and urban space they wanted to ask. Designing with children, as with any other group, requires a specific approach: introducing the activity, asking the right questions about the space, and developing a strategy to interpret children's answers and translate them into design concepts. Testing an activity or a question even with only a few participants, could teach you a lot about the way they understand design.

32 EXAMPLE SOCIAL NORMS AND DESIGNING



One of the main principles in *kampung* (the form of urban settlements in Indonesia) has to do with social harmony – *rukun*. People adhere to norms so they can live *rukun* together. Their behaviour and actions should always strive not to disturb the harmony, which often means trying not to upset others, and avoiding controversy in public. This is why diverse opinions and ideas were never discussed in large "design workshops" – that is, in public forums. They were used to provide explanations and bring people together, but the main design decisions were made in smaller groups, where *curhat* (confiding, pouring out someone's heart) could happen. During the big events, while the main facilitator was explaining an engineering concept, other design team members would sit in different parts of the room where the community members could ask questions and express their points of view, privately and confidentially. Additionally, in the Makassar culture, people have a *siri'* – a shyness or reluctance to act in public either individually or as a group. They do not want to appear as weak, being stigmatised or pitied. *Siri'* makes people (mostly men) stay silent, to cover their weakness or that of their family or community.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 **Diversify interactions**
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the "constellation" of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the "voice" of design materials
- 11 Diversify resources and benefits



TEAM COMPOSITION &
DYNAMICS

» See:
Embrace the existing knowledges
Discover the best communication model
Talk about the infrastructure
Grow participation expertise



REFLECTIVE QUESTIONS

1	What kind of activities do your (diverse) participants do together? How do they understand and practice participatory (collaborative) design? Are they talking, making, performing, listening, watching – or a combination of these?
2	How will you explore, test, prototype and pilot your intended participation methods, so they are relevant for the context and participants (e.g. their culture, religion, age)?
3	What are the norms and traditions of decision-making processes in this context? How are big decisions normally made?
4	What are the “invisible engagements” that you might have missed? Who could help you discover them?
5	Is your design process and budget responsive to diverse ways that knowledge is shared locally?
6	Are there aspects of the design process that might not be relevant but that you have included through “habit”? What could you exclude?



THE FIRST STEP

Kelly Ann McKercher (2020), *Beyond Sticky Notes*, p. 129-130.

Read about the difference between transactional and transformational convening in co-design processes. Are you able to identify patterns in your practice that are aligned with what is described in the transformational convening column? And in the transactional column?

Transactional convening	Transformational convening
• focusing on getting through a list and pre-planned tasks • being anxious about time, taking a parental tone and telling people off for going too slowly • moving on from an activity when time runs out, whether people and groups are ready or not • accepting power differences (<i>‘That’s just the way things are’</i>) • avoiding conflict that might derail the agenda and activities • operating solely in a cerebral and intellectual space • presenting and relaying information, under the illusion of effective teaching, learning or collaborating • relying on authority and a loud voice to ensure people follow tasks and pay attention • focusing on setting up physical space (e.g. presentations or chairs) while neglecting emotional safety and relationships	• focusing on progress, being flexible and collaborative with how to get there • slowing down to support the conversations that need to be had, whether planned or unplanned • checking in with people about what they need to make quality decisions, delaying decisions where necessary • challenging power differentials and harmful behaviours • seeing conflict as necessary and generative once trust is established; sensitively and courageously exploring where tensions and disagreements exist • using the intellect, heart and gut to connect with people and sense where the energy of the team is leading • building ‘connective tissue’ between people to work as a team • engaging people in their discovery • sharing power, earning trust through consent • promoting social, cultural and psychological safety



EXPLORE FURTHER



MĀORI CO-DESIGN ETHICS HUI Summary Report (2020) is a document that establishes Māori values, voices and practices in relation to co-design, acknowledging long-lasting traditions of collaborative design on this territory.



From ‘Thinging’ to ‘Musyawarahing’ and beyond is an academic article by Tanja Rosenqvist (2020) that explains the importance of understanding different forms of participation.



HOFSTEDE’S 6-D MODEL OF NATIONAL CULTURE is a framework for thinking about how people might interact differently in different cultures and contexts. One of the six dimensions – the concept of “Power Distance” – might be particularly important to consider when planning gatherings and design meetings, but all could be useful at different stages of the design process.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 **Diversify interactions**
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the “constellation” of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the “voice” of design materials
- 11 Diversify resources and benefits



TEAM COMPOSITION & DYNAMICS

3 DESIGN THE GATHERING SPACE

The place for design activities within the neighbourhood, as well as the design of the setting itself, influences the inclusion of diverse participants in designing. When planning the place for design gatherings, think about the physical and socio-cultural barriers to participation. The gathering space needs to be easily accessible and visible: not too far from homes, accessible to people with disabilities, easily noticeable so it is clear when the sessions are happening. As much as possible, it needs to be on a politically “neutral” ground – not taking sides in the potential conflicts or alliances within the community. Holding design gatherings in political settings may exclude some groups of participants from the entire project. One way to explore this is through discussion with community leaders and/or elders.

The organisation of the space itself will have a significant influence on the types of interactions that may happen during design gatherings. Is it big enough to gather everyone you want to invite? Does it provide good space for facilitation – can participants see and be in contact with the main facilitator? Does it allow for division into smaller groups? The physical characteristics of the space will also influence design activities – lighting, noise, ventilation, shade. The space can also “help” with facilitating: its vertical surfaces can be used for displaying informational material, prototypes, workshop outcomes, interim plans, or final decisions.

REFLECTIVE QUESTIONS

- 1 How will you decide about a place for the design gatherings? Are there any groups or individuals who might not feel comfortable coming there?
- 2 How will the designing space be organised or arranged? How might it spark curiosity? How could it provide additional information about the project (between activities)? How might it help with facilitation?
- 3 How can the place be accessible to people of all abilities, ages, cultural and other identities? How long does everyone need to travel to get there?

33 EXAMPLE THE TENT



The main place for big design gatherings in Makassar was a portable tent. Tents are a common way to gather the whole community; they are often used for weddings or elections. The project team installed chicken wire around the tent structure posts (so the light and air could get in), and used the entire “wall space” for displaying images, maps, charts, and other visual information about the infrastructure. These were printed on normal paper and glued to recycled card, to keep the cost minimal. The tent was placed in the settlement for the duration of the design process, so participants could come and see/read the displayed information at their own pace. Building the tent together with the community was the starting activity of every participatory design process in Makassar. It proved to be an important engagement strategy; by building the designing place with the team, the community felt closer and more familiar with the space, and started to understand the design material and the purpose of the gathering. Participants would bring their tools to help the team clean the area for the tent, arrange its position, and put up the design material (posters, pipe and gravel samples, the 3D model of the settlement). The placing of the tent in a settlement was carefully considered. It was always erected in a public, open space and as centrally as possible: on the road or on unoccupied land. In one settlement, where Muslim and Christian groups live together, additional challenges were faced. Not only was it important to find a place where both groups would feel welcome (on the land boundary shared by two major families belonging to each group), but also where they would feel safe to spend an extensive period of time. The Christian area of the settlement is inhabited by dogs; they are beloved pets and companions. However, dog’s saliva is considered impure to Muslims, who do not feel safe and comfortable sitting among them. A compromise was found, with the tent being built in an area rarely frequented by dogs.

34 EXAMPLE TIKAR MATS

The main set of design activities in Makassar involved a big 3D model of settlement. The model was not only used to display information, but as a tool for designing: the participants were asked to move symbols, objects and houses on it. This is why it was important to eliminate chairs from the space. If people were sitting on chairs, they would be more passive, listening rather than acting. Conversations would be led by the few with the strongest voice. Instead, *tikar* mats were used - these are traditional mats made by weaving the leaves of wetland plants, the same that will be planted in the RISE infrastructure. Sitting on the floor enabled immediate access to the 3D model, active participation and movement around the space. And more participants could be accommodated without chairs.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 **Design the gathering space**
- 4 Design gathering times
- 5 Develop the “constellation” of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the “voice” of design materials
- 11 Diversify resources and benefits



TEAM COMPOSITION &
DYNAMICS

See:
Diversify interactions
Develop designing roles

4 DESIGN GATHERING TIMES

Gatherings should be scheduled not just at the time that suits the greatest number of people, but at a variety of times to capture diverse perspectives. Different “types” or groups of people will be available to participate in meetings/gatherings at different times of day or on different days of the week. In certain settings, women may be more likely to be available during the day while men are at work. People with certain livelihoods may be unavailable in the mornings (e.g., people who fish or farm) or only available on certain days. Jobs, chores, and schooling may also change seasonally. Consider holidays, prayer times, and meal times, and work with your established local partners to identify other things to consider when scheduling. Meaningful collaboration requires not just physical availability (i.e., being at home at the time of the meeting). You also need to consider the best times for participants to give their full attention (e.g., when they are not supervising small children or have just finished a long day of work).

We don't necessarily need to schedule designing activities outside all other existing community activities. If it is acceptable to residents and leaders, the design team could leverage gatherings or activities already happening in the community to reduce the time burden on residents.

REFLECTIVE QUESTIONS

- 1 Look at your schedule for gatherings: who would be excluded simply by not being available when you have events planned? Think about gender, age, livelihood, disability, religion, etc.
- 2 Could you describe different participation options to the community: from one-off meetings, to regular intensive participation? Total that different participants can give to your project might vary, so it is a good strategy to offer different options.
- 3 How can you involve participants in scheduling in a way that is inclusive (i.e., without asking “representatives” to speak on behalf of large groups)?
- 4 How can you plan gatherings in relation to different time scales: seasons, public holidays, days of the week, and times of the day? Consider the duration of individual gatherings in a whole project.
- 5 How might you participate in what is already happening in communities? Consider what gatherings and activities communities are already undertaking, and if you could attach the project's activities to them.

35 EXAMPLE “BAD TIMING”

In the demonstration site in Makassar, residents were invited to join a variety of participatory design activities. In interviews conducted after the infrastructure was built, residents provided a variety of reasons for not being able to attend certain RISE activities. Many of these reasons had to do with timing. Some men said that they were out of town or working during RISE participatory design activities. Some women reported being busy with work, busy with children or out of town, which kept them from being able to participate fully in activities.

“I seldom joined as I was working and came home later... the meetings were usually during the afternoon, or morning. My wife joined the meetings. She was more often involved. [...] I was involved at some point, at that time we were shown some maps, and had to put our signature, I was involved. [...] I was involved in the foundation building, to build the boundaries of the land.

Male resident, RISE Makassar Demonstration site

36 EXAMPLE BE FLEXIBLE AND IMPROVISE



In each settlement in Makassar, there were around two weeks to design the infrastructure draft plans. This tight schedule was influenced by other research activities in the project and the general timelines for the project completion. To be able to organise big gatherings and prototype the infrastructure in the real space of the settlement, the team also had to avoid the rainy season and Ramadan, which was happening at the start of the dry season. This meant that most of the gatherings took place in the hottest and driest periods of the year. Due to the tight schedule, activities were planned with different groups throughout the day. This negatively influenced participation, because sometimes it was just too hot to think about designing! The big gatherings were mostly organised in the evenings, when the temperature drops, and most of the residents were at home. But the low light made the documentation of maps and drawings difficult. One of the team members constructed a lighting system for the workshops, connecting light bulbs to cables so they could be moved around the space. Working around the schedules of individuals and groups, and within the project structure was neither simple nor perfect. It was crucial to be flexible, to improvise and adjust.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary
- 6 Tools
 - UNDERSTANDING CONTEXT
 - WATER & SANITATION INFRASTRUCTURE
 - DESIGN PROCESS
 - 1 Diversify gatherings
 - 2 Diversify interactions
 - 3 Design the gathering space
 - 4 **Design gathering times**
 - 5 Develop the “constellation” of design activities
 - 6 Plan for flexibility
 - 7 Explore participation levels
 - 8 Design for feedback
 - 9 Establish inclusive evaluation
 - 10 Question the “voice” of design materials
 - 11 Diversify resources and benefits
 - TEAM COMPOSITION & DYNAMICS

» See:
Consider multiple understandings of space and time
Grow participation expertise

5 DEVELOP THE “CONSTELLATION” OF DESIGN ACTIVITIES

Participatory design and “engagement” do not happen in communities alone. We collaborate within our own team and with other teams, organisations, and institutions. In order to meaningfully engage with participants with diverse knowledges and lived experiences (such as engineers with technical knowledge, or sex workers living in the settlement), the design team should engage with them separately, and in joint groups. This is because people might not feel comfortable expressing contrasting opinions about water and waste, or sharing their knowledge in an open manner.

Therefore, the infrastructure design process can be represented as a “constellation”: a process that includes many design activities across time and locations. Each design activity produces knowledge that needs to be combined and put in context with others. This is very different to thinking about design as a single workshop or event in which proposed design options are being evaluated. The “constellation” model takes time, it is iterative and emerging, and it enables better management of power and knowledge imbalances. However, it also puts a lot of decision-making power into the hands of the infrastructure design team, which is responsible for combining these inputs.

37 EXAMPLE DEBRIEFING



The design office in RISE was where the design team would have debrief sessions after each designing activity or situation, including informal encounters. These discussions were documented in the form of maps, sketches, drawings, mind-maps, or bullet-points. Diversity in the team members ensured the capture of diverse knowledges (in different languages, from different cultures and professional disciplines) in these sessions. Each session was 3–15 hours long, so it was important to incorporate them into the project timeline. They were crucial for making design decisions in an ethical, sensitive and holistic manner.

38 EXAMPLE INVOLVING THE LOCAL GOVERNMENT



Government partners were critically important to the success of the RISE design process. Government stakeholders were invited to RISE settlements for large workshops presenting the design (which incorporated the wants and needs voiced at prior co-design workshops with residents). In this way, they could see and listen to the community's problems directly. However, government engagement went far beyond activities like this. RISE staff got input, approvals, and information from the government at multiple levels during formal meetings and informal discussions throughout the design process. Sometimes “engagement” with government partners looked a bit different. Building strong relationships with the city sewerage agency meant getting them a speedy response when they asked for tests of treated black water. In this way, RISE could count on them for a speedy response when staff needed national standard guidelines for the designs. Sharing data – for example, topographical maps – with the River Basin Agency in Makassar was yet another way to build positive relationships with government stakeholders.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 **Develop the “constellation” of design activities**
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the “voice” of design materials
- 11 Diversify resources and benefits



TEAM COMPOSITION &
DYNAMICS

>> See:
Diversify gatherings

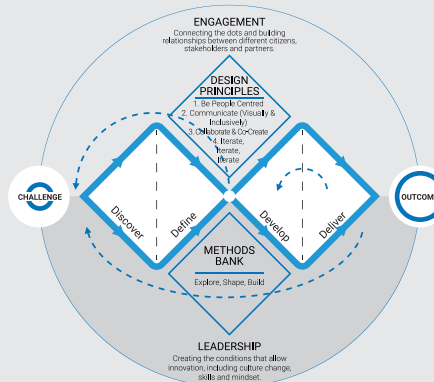
REFLECTIVE QUESTIONS

- 1 Which design activities should be organised with participants with different knowledges, and which ones with participants with similar knowledges?
- 2 How will you update different participant groups on the design progress, and demonstrate the way their knowledge (input) was taken into account?
- 3 Which groups or individuals might have unique expertise/perspectives on design?
- 4 Have you mapped the “constellation” of design activities on a timeline? How did you decide on the sequence of events – was there something you needed to know first?
- 5 Have you clearly defined the objective of each design activity within the “constellation” model?
- 6 How will you document the outputs of each designing activity, so they can be analysed together?
- 7 What strategies are you using to make sure that diverse knowledges are not excluded in the analysis conducted by the design team?
- 8 What strategies are you using to prioritise diversity in design possibilities, rather than retreating towards conventional design solutions?
- 9 How will you ensure consistency in understanding design inputs across the “constellation”? For example, which of your team members could be present in all designing activities (in different locations, and in the long run)?
- 10 How are you able to hear, document, cross-communicate and analyse knowledges that are different from yours?

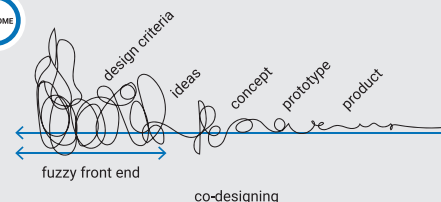


THE FIRST STEP

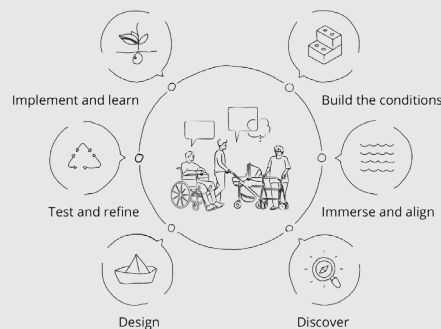
There are many design process diagrams across disciplines and projects. Have a look at the three selected below (or research more in the literature) and start drafting one that is specific to your project. Think about where you are in the design process and about your aims. After drafting the general phases, make a list of design activities. Whom will you involve in designing this process?



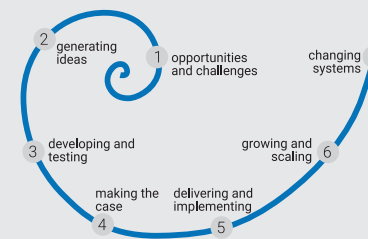
*Design Council UK (2019),
The Framework for Innovation*



*Sanders and Stappers (2007),
Co-designing*



*Kelly Ann McKercher (2020),
The Co-Design process*



*Young Foundation (2010),
The Process of Social Innovation*



EXPLORE FURTHER

POWER ANALYSIS TOOLS for WASH governance – check out a variety of approaches to “power analysis” in this toolkit.

POWER CUBE – a website with conceptual and practical tools for understanding and transforming power relations in efforts to bring about social change.

CHANGE BY DESIGN Nairobi (2011) by Architecture Sans Frontières UK offers tools for a community-led approach that can be used for slum upgrading projects. It illustrates the “ecosystem” of actors that is necessary for tackling these complex challenges, page 24–25.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 **Develop the “constellation” of design activities**
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the “voice” of design materials
- 11 Diversify resources and benefits



TEAM COMPOSITION &
DYNAMICS

The design process is more than just a series of workshops. It is an ongoing, iterative and reflective process that should take place across longer time periods. Participatory design usually takes longer to do than “traditional” or “top-down” design because it involves planning to learn as you go and design and redesign based on the needs and perspectives of all users. No matter how thoughtfully a project is designed, there is a high likelihood that changes or unforeseen circumstances will occur along the way. Be prepared for staff members to come and go, for funding regulations to change, for community members to move from the settlement half-way through a project, for parts of the design not to go as planned – for a global pandemic to happen! You have to be ready (and willing!) to pivot and adapt in the moment.

It is critical to be mindful about how to make sure inclusivity is the least disrupted factor – that the most vulnerable populations are the least compromised by a project plan change. Unfortunately, all too often when an adjustment is required, it is the most marginalised or vulnerable who may bear the most visceral brunt of a change. To remain inclusive, the design process needs to be able to adapt to the changing circumstances, both internal and external, without sacrificing consideration for those who need it most. This flexibility needs to be part of the plan; it will not happen spontaneously.

39 EXAMPLE BEYOND PANRITA



PANRITA was a 2-week process of intensive participatory design with each community in Makassar. However, the “design process” started much earlier than PANRITA and continued after it. A great deal of time had been spent before these activities building relationships with leaders in the communities, discussing the design scope with funders and possible engineering concepts with experts in the water-sensitive cities approach. The PANRITA ended with a community design plan that could be approved by community representatives, but engineers then took more time to create detailed engineering drawings to be approved by external stakeholders.

40 EXAMPLE WORKSHOP DESIGN CHANGE



In one Fijian settlement, the project team set out to run the co-design workshops with a representative from each household; however, they quickly learned that there were five distinct clan groups in this particular settlement with very different needs and ways of working. It would have been a very long and complicated process to try to get all five clans to work together at the same co-design workshop, and some of the clan groups might have missed out on meaningful participation. In response to this cultural boundary, the team adapted: they ran five separate workshops so that each clan could work independently and comfortably share their needs and priorities with the project team.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the “constellation” of design activities
- 6 Plan for flexibility**
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the “voice” of design materials
- 11 Diversify resources and benefits



TEAM COMPOSITION &
DYNAMICS



REFLECTIVE QUESTIONS

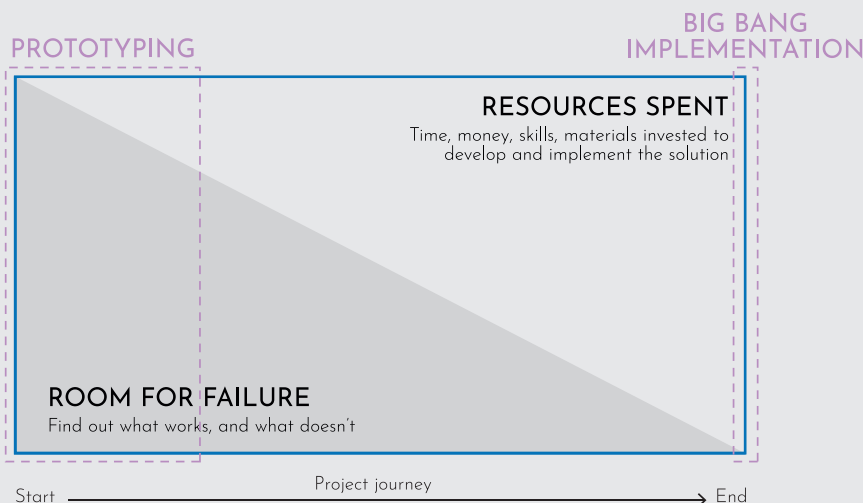
- 1 Is your designing process iterative (e.g. are you coming back to re-examine the design problems after learning more about places and communities)? Did you reserve time and other resources that will enable you to change the project plan (e.g. add more design workshops)?
- 2 How does your plan consider the needs of diverse participants? Think about different groups of people and how the plan might seem to them. Is it too fast? Too slow?
- 3 What might you test during the process? Could you test the participatory methods, visual communication materials, draft plans, construction plans, maintenance options, monitoring schemes...?
- 4 What are the important deadlines to be met? How might this influence your ability to include diverse participants in the design? How might you negotiate this tension?
- 5 How do you check your own understanding of the way the project is progressing and the need for adjustments? Is the whole (internal and external) team involved in these decisions?
- 6 How will the design process be wrapped up? How will you maintain the relationships, and future communication, after the project has finished?



THE FIRST STEP

Nesta (2018), Prototyping vs big bang implementation (2020), Collective Intelligence Design Playbook

One type of flexibility in a project is the ability to prototype and test new ideas. The 'big bang' solutions happen when ideas are directly translated into plans that are then fully implemented. They are often based on assumptions — and they offer little room for failure since all resources have been spent. They are also probably not able to address diverse needs and views. Looking at the diagram below, how much time and other resources have you reserved for prototyping?



Prototyping serves to test our thinking, gain feedback and make collaborative decisions. Everything can be prototyped, for example:

- I Physical components of the WASH system
 - Scale modelling: different 3D models of products or entire neighbourhoods
 - Simulations: toilet layout in which people can simulate activities
- II Components of the WASH services
 - Storyboarding: describing the service through a comic book story
 - Paper prototyping: creating paper mock-ups of how information is organised
- III Interactions
 - Physically testing future situations
 - Role play: testing possible scenarios.



EXPLORE FURTHER



[Gender-Responsive Water, Sanitation and Hygiene: Key elements for effective WASH Programming](#) is UNICEF's guide to implementing a WASH program while keeping gender equity in mind. The section on strategic planning (pages 3–5) outlines key consideration for gender inclusivity early in the planning process.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the "constellation" of design activities
- 6 Plan for flexibility**
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
- 10 Question the "voice" of design materials
- 11 Diversify resources and benefits



TEAM COMPOSITION & DYNAMICS

7 EXPLORE PARTICIPATION LEVELS

There will be different boundaries to your project. They will include financial, cultural, temporal (time), policy, technological and geographical boundaries. Even the weather and the climate will define the level of participation in certain ways! It is important to know what these boundaries are – they help you to (1) decide what the priorities are within the project and (2) how the project might impact others and the environment. For example, the project team might not be able to speak all of the local languages, which will mean that some participants will need other ways to participate, such as bringing a friend or family member to translate. Understanding these boundaries will help to identify who can participate, how they can participate and who might be left out if you don't make some adaptations. Boundaries do not need to be seen as limitations; rather, knowing what is within and beyond the scope of your project can help you focus your time, energy, and resources on reaching your (specific!) goals. Without knowing our boundaries, we cannot improvise and adjust our processes.



REFLECTIVE QUESTIONS

- 1 What aspects of the project set-up have an impact on the levels of participation? Which of these impacts could change to enable higher levels of participation? Consider the impact of reporting processes, technical requirements, funds, communication channels, methodologies, local weather and climate, cultural events, elections, etc.
- 2 How are levels of participation different for diverse participants? For example, can people living with disability co-design in the same way as people living without disability?
- 3 How could you measure the involvement of diverse groups in the design process, taking into account the different definitions of "designing" and "participating"?



41 EXAMPLE INTERDISCIPLINARITY AND PARTICIPATION

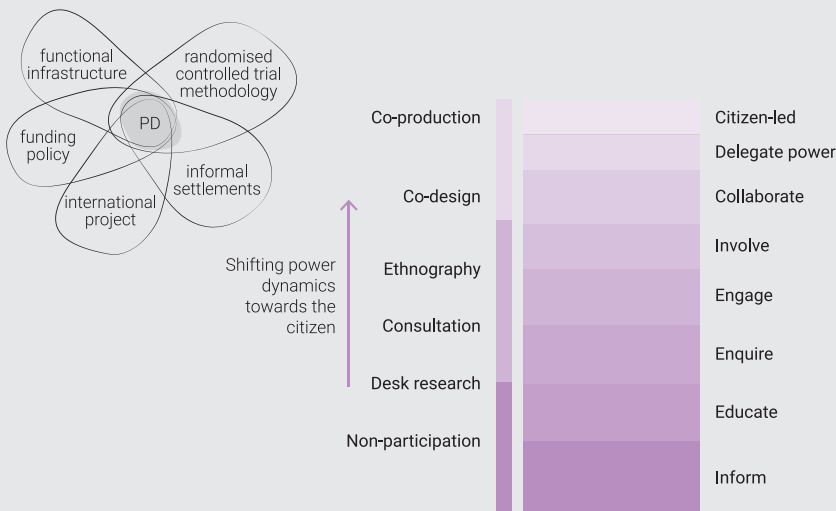


The RISE Program is a randomised controlled trial, which means that it uses scientific methods to investigate if water-sensitive cities infrastructure has the potential to improve the health of people and environments. To be able to find scientific proof for this, many procedures, measurements and investigations have to be organised in a precise way. This made the time available for participatory design very limited, and the design team had to work within the scientific schedule. Moreover, all the project activities significantly increased the community burden – there was always someone going to the settlement, to ask for something or to give information. This was another important boundary: connecting design activities with information that the community already had – and making it short, clear and interesting so we could get the community on board.



THE FIRST STEP

- I Make a list of which project aspects can influence how the participatory design approach is conceived and implemented. Below are examples of aspects of the RISE Program that have influenced levels of participation.
- II Use the spectrum of participation to think about your general approach. Bear in mind that this is only a broad indication; different participation roles, as well as specific activities and methods, can fall at any point on a spectrum.



- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the "constellation" of design activities
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- 11 Diversify resources and benefits



TEAM COMPOSITION & DYNAMICS

See:
**Is participatory design
the right approach for this
project?**
Define fixed and flexible

It is important that participants can provide feedback, ask questions, voice complaints or request changes both during the design phase and after the infrastructure has been built and handed over to the residents.

Getting participants' feedback is important for several reasons. They are the ones who will live with the infrastructure being built, and everyone deserves to have infrastructure that meets their needs. Participants' opinions and perspectives also have instrumental value – their input can help a project achieve its goals and objectives. Specifically, research has shown that having diverse community members (including women) involved in the design, planning, and implementation of a WASH infrastructure project, is important for project success. Community members who are involved in the design phase may also feel a stronger sense of ownership of the infrastructure, and may be more likely to participate in management of the infrastructure (including operation, maintenance, repairs, and upgrades) after the project is complete.

Even if everyone agrees that it is important to hear participants' feedback, practical questions arise. What is the best way for participants to share their feedback? How often, and through how many feedback mechanisms? It is important to understand diverse community members' preferred communication styles (formal or informal, direct or indirect, written or verbal, as a group or one-on-one) and then think about which mechanisms are feasible for your project, with the available time and resources.

REFLECTIVE QUESTIONS

- 1 In what ways might participants prefer to provide feedback? Do these differ according to their gender, level of education, disability status, etc.? For example, some people prefer to talk, others prefer to write, some like to be identified, some prefer to be anonymous. How might your project accommodate these different preferences?
- 2 Whom do different participants trust to talk with? Is there someone else they can communicate with, besides the facilitation/design team? Is there an indirect and/or anonymous way to provide feedback?
- 3 What will the team do with the feedback? What are the important points in the project when participant feedback would be most valuable, and how will the team use this feedback?

42 EXAMPLE THE HEIGHT OF THE ROAD



Flooding was a major issue in the demonstration site in Makassar, so RISE incorporated an elevated accessway or road into the design for this community. When the team had to decide how high to build the road, they ran flood models. In interviews conducted after the construction was finished, many of the residents said that although flooding occurred less often and was not as bad, it did still flood. One resident explained that he knew the road would still flood if RISE built it where they had planned and that he communicated this to RISE staff. This example demonstrates a missed opportunity to learn from the residents and incorporate their feedback into design – perhaps if these one-on-one conversations had occurred before the build was finalised, the RISE team could have used the feedback below to improve the design.

I suggested that the road was built slightly higher, because it will be under water. I think it's a pity... the RISE efforts on behalf of the community have been great, but I'm not satisfied because it is still inundated when it rains, about 0.5m from the paving block. [...] I suggested it last time but it was lowered down by... who was it at that time... It was [RISE staff] from [University] that made the decision.
Male resident, RISE Makassar Demonstration site

43 EXAMPLE LOCAL FEEDBACK PRACTICES

In Fiji, the team used a few local practices to gather feedback. One was the use of an "anonymous box" placed in the gathering space so anyone could express their thoughts and opinions, in writing, without directly communicating with the team. In addition to this, the team usually stayed long after the formal meeting and continued with an informal discussion, sometimes over tea and juice and other times through a kava session. In iTaukei tradition and practice, a kava drinking session is the traditional way of discussing any relevant topic. The design team got more questions and comments about the project during these informal sessions.

44 EXAMPLE "MY PALMS WERE SWEATING"

In Makassar, the RISE team conducted a number of design activities. Many of them were about socio-technical aspects of the new water and sanitation system and others were complex discussions about the emerging design solutions. However, some of them were more technical, such as household visits to record the exact position of the outlet pipes of the existing toilet facilities. It is important that the purpose of every visit, even a technical one, is clear. The following excerpt from an interview with a female resident illustrates how uncomfortable it is when people are not offered the opportunity to ask questions and provide feedback.

They stayed for long. Took photos. I was uncomfortable because the toilet is really bad. They usually suddenly come. A lot of laundry inside. I was drying the laundry including the underwear. I even asked the person accompanying the foreigners 'are the underwears in the photos?' They said no... It was quite uncomfortable
Interviewer: Did they tell you why they took photos?
Respondent: Because they wanted to fix them. I didn't know what they wanted to fix. I was completely nervous, my palms were sweating.
Female resident, RISE Makassar site

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools

UNDERSTANDING CONTEXT

WATER & SANITATION INFRASTRUCTURE

DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the "constellation" of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 **Design for feedback**
- 9 Establish inclusive evaluation
- 10 Question the "voice" of design materials
- 11 Diversify resources and benefits

TEAM COMPOSITION & DYNAMICS

See:
Discover the best communication model
Diversify interactions

9 ESTABLISH INCLUSIVE EVALUATION

Usually in an evaluation, we want to see if our project was “successful” or “effective”. How we define these terms will determine the types of measurements we need to take in order to assess whether we’re successful. For example, a design project that defines effectiveness as “getting clean water to the highest number of households possible” might measure the number of households served by the infrastructure. But this could overlook important differences within the households – for example, how are women experiencing these “improvements”? Does the clean water source meet the needs of people with disabilities? Whatever the overall goal of the design project, it is important to be inclusive in our definition of success.

The definition of “success” may also change as we learn more about the people, communities, or context we are working with. We want our evaluation to be able to accommodate these changes and be inclusive of new perspectives as they come up during the design process. For this reason, we should allow our evaluation framework to be a bit flexible. See the resource on “Developmental Evaluation” below for one option of how to build flexibility into an evaluation framework.



REFLECTIVE QUESTIONS

- 1 What is the project’s definition of success? How might this definition be hiding differences within the community, between groups, or within households? How can you revise the project’s definition of success to focus on diverse needs and perspectives?
- 2 How can you build in some flexibility to your definition of success? How might you be able to hold yourself accountable? For example, check that the contributions of diverse groups are, in fact, influencing your definition of success.
- 3 How could you assess whether the design solutions meet the needs and preferences of diverse men and women in the community?



45 EXAMPLE BEYOND THE NUMBER OF ATTENDEES

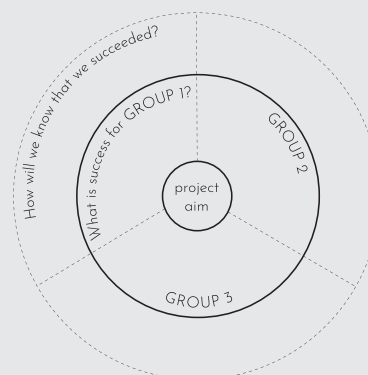


The ultimate goal of the RISE Program was to decrease exposure to environmental faecal contamination in RISE communities, but several smaller successes are needed in order to make this goal achievable. The goal of PANRITA – the community participatory design workshops in Indonesia – was mainly for RISE staff to better understand the physical and social context of each settlement with the explicit purpose of using this information to tailor the infrastructure and implementation plan to each settlement context. Defining “success” meant that each PANRITA activity could be designed with the aim of having meaningful conversations with residents to elicit their needs and wants, as opposed to simply counting the number of attendees at each activity.



THE FIRST STEP

- I Draw the template below on a large piece of paper. Write the main project aim in the centre.
- II Can you assume what diverse groups you work with would see as the project’s success? You can use post-it notes to add ideas to the diagram.
- III How will different groups know if the project was successful? Whose definition of success are you measuring?
- IV Keep track of your assumptions and use this as a starting point for discussions with different participants. How can the project aim change to take into account different definitions of success?



Key assumptions / GROUP 1

Key assumptions / GROUP 2

Key assumptions / GROUP 3



EXPLORE FURTHER

[A DEVELOPMENTAL EVALUATION PRIMER](#) – read more on Developmental Evaluation.

[Toolkit for Integrating GESI in Design, Monitoring, and Evaluation](#) – check out the WASH Indicators for GESI in this toolkit from World Vision.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the “constellation” of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
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TEAM COMPOSITION &
DYNAMICS



Design materials are things that help us in designing activities: maps, charts, models, prototypes, symbols, costumes, photographs, cards, posters, objects, technology and digital tools. They are not neutral: based on our choices and design of these materials, we may allow or prevent certain forms of participation and types of participants. They should be designed with care, and challenge the environmental, institutional and attitudinal barriers to inclusion. For example, designing against environmental barriers requires careful consideration of the physical properties of our design material (e.g. its weight and shape) so it can be used by men, women, children, elderly, people with disabilities, etc. Designing against institutional barriers could relate to designing material for participation so it connects local planning policies about technical project documentation, on the one hand, and the everyday, lay person's understanding of infrastructure and space on the other hand. Designing against attitudinal barriers refers to thinking about prejudices and social and cultural norms that we might unintentionally build into our design material. For example, if all figures of people we are using in the settlement 3D model are represented as white, able male bodies, what is the message we will send about the infrastructure users? It is crucial that all visual representations and the language we use be gender-sensitive and inclusive. Cultural sensitivity about materials refers to being aware of sacred and valued symbols that may not be appropriate (e.g. a picture of a deceased person, or a totem that should not be used in a certain manner), or challenging inequities provoked by stereotypes and taboos through the design of materials.

Most importantly, make sure to do no harm through the design of activity/explanation material. Harm could be done by displaying or making public sensitive, identifiable, personal or confidential information that could be misused or misinterpreted. To avoid this, always ask for consent, and give participants the chance to interpret and evaluate the materials and representations before, during and/or after the activities.



46 EXAMPLE EXPOSING INFORMATION



One of the settlements in Makassar was under a lot of pressure from a private land developer; they were pushing residents to move out (for low compensation) so they could build a new housing complex on the site. This pressure was often violent, both verbally and through actions (e.g. forced demolitions, building walls to intimidate and exclude residents from road access). The design team organised a meeting with this land developer, as they were an important stakeholder. At the start of the meeting, the developer shared a detailed settlement map of the area with the team – which was actually the design material that the team had produced! Unintentionally, by mapping the settlement to build infrastructure, the project team had exposed valuable information the developer used to put more pressure on the individual residents. It is crucial to think about the design material that is produced and who might get access to it.



47 EXAMPLE GENDER AND PLAYFUL OBJECTS



The 3D model of each settlement was designed to represent the whole area: the scale on which the infrastructural system operates, the drainage and flood solutions, the black and grey water filtration for each house. Participants could use 16 additional symbols to mark important aspects of their settlement; these were designed in different colours, to be able to document a wide array of information in a 3D model. Despite their functionality, the bright colours and playful shapes hindered participation – they introduced gender bias. The model was used by women, youth and children, but it did not manage to capture men's perspectives. The men found the process to be inadequate and not serious enough. It was not compatible with the formal municipal planning meetings they were used to.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the “constellation” of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
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TEAM COMPOSITION &
DYNAMICS



REFLECTIVE QUESTIONS

- 1 Are you using the appropriate, inclusive and respectful language and visuals?
- 2 How might your design materials (e.g. maps) harm your diverse participants? Are you using sensitive, identifiable, personal or confidential information?
- 3 Have you provided an opportunity for participants to evaluate, review and interpret the materials and representations that you are using?
- 4 Did you seek permission to use specific materials in workshops or other gatherings? These could be cultural, institutional, or personal.



48 EXAMPLE INCLUSIVE WETLAND MARKERS



One of the design activities was marking the actual size and position of all wetlands in the real space, together with residents. In designing the material for wetland prototyping, we considered a few options: (1) casting concrete posts, with vertical metal bars that could be tied with rope; (2) wooden stakes painted in bright colours; or (3) small objects that could be connected with a plastic tape, to form the shape of a wetland. The first two options could only be used by men: they require force and strength to be positioned. This is why we decided to fill small plastic containers with gravel. They are sturdy enough to stay in place for a few hours, but light enough to be carried around by anyone!



THE FIRST STEP

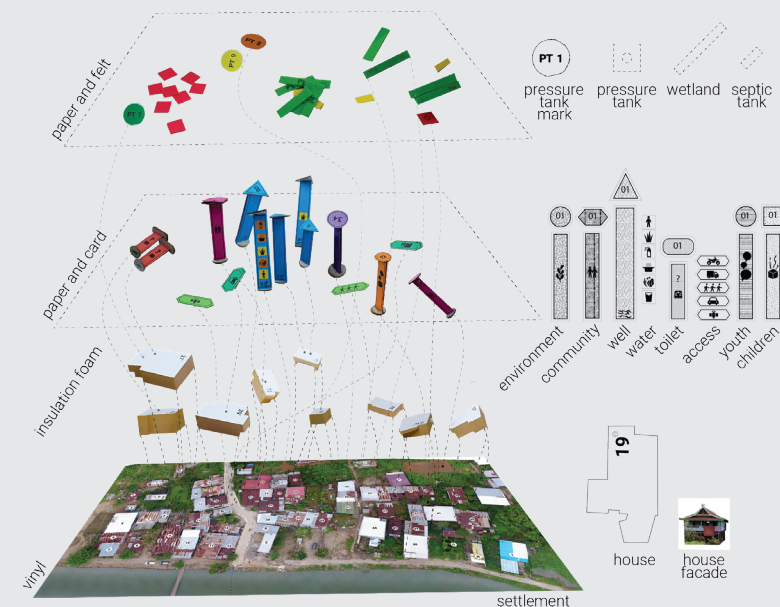
To examine the effectiveness of the design materials, it is best to test them early and repeatedly. You can make quick and low-cost prototypes and discuss them with various groups or individuals. You will probably be surprised by how different people interpret them, especially if they represent infrastructure drawings and neighbourhood master plans.



EXPLORE FURTHER

[Understanding and Addressing Equality, Non-Discrimination and Inclusion in WASH Work](#) – in this toolkit, you can find more about barriers to inclusion, pages 56–63.

[The PANRITA Model](#) – more information about the 3D model used for designing RISE infrastructure in Makassar.



- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the "constellation" of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
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- 9 Establish inclusive evaluation
- 10 Question the "voice" of design materials**
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TEAM COMPOSITION & DYNAMICS

11 DIVERSIFY RESOURCES AND BENEFITS

There are many types of resources. Material resources include money as well as supplies and equipment: for doing your work, for holding workshops, for constructing the infrastructure, and more. Human resources include the time, knowledge, and skills of different team members and community members. Social resources include the connections and relationships that we have with others, which help us in our work. When thinking about a participatory approach, you should consider the material, human, and social resources available to your team. How might this influence your plans?

When securing the funds for your project, you may need to advocate for a participatory approach to designing being included in the budget. Even though it may seem unnecessary at first, research and practice show that participatory design significantly contributes to the uptake and sustainability of infrastructure design outcomes. You might need to communicate the benefits of participatory processes, or highlight the future costs that may occur if the infrastructure is not designed in a participatory way.

REFLECTIVE QUESTIONS

- 1 What are the different resources that the participatory design process you are planning requires, not only financial resources but also human and social resources? How can you ensure that you will have the necessary resources to carry out the different activities?
- 2 What kinds of future costs are you eliminating by designing a strong participatory design process now?
- 3 When thinking about your resources and costs, what are the "necessary" costs that you need to consider? Who or what are they necessary for? Why?

49 EXAMPLE EACH AND EVERY HOUSE



The scale and scope of RISE allowed for household visitations to every single household in the intervention and control settlements in Indonesia. Every household was given the opportunity to participate in surveys and in the design activities. RISE had sufficient financial resources (available from the donor), sufficient human resources (through their community engagement committees and RISE staff/partners), and sufficient social resources (i.e. government and community organizations), gained through the planning, preparation, and stakeholder engagement process. This situation was unique to RISE; it may not hold true for other types of projects in other contexts. For example, in a larger scale infrastructure project, you may not have the time or capacity to do visitations or engagement of every household in the communities. It is important to consider these limitations and plan engagement and activities accordingly.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS

- 1 Diversify gatherings
- 2 Diversify interactions
- 3 Design the gathering space
- 4 Design gathering times
- 5 Develop the "constellation" of design activities
- 6 Plan for flexibility
- 7 Explore participation levels
- 8 Design for feedback
- 9 Establish inclusive evaluation
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TEAM COMPOSITION &
DYNAMICS

- 4 Between you and participants, who shares more, who is paid more, who risks more? For each activity that you are organising, think about the distribution of benefits and harm.

- 5 What is a "cost" of participation from the point of view of diverse participants? Think about opportunity and emotional cost, for example, and not just financial cost. Think about the participation of a single mother, a teenager with learning disabilities, a survivor of a violent harm, a man who provides for a family of eight. What are they not doing, or risking, or missing out on because they have chosen to participate? How can you reduce or balance some costs to make it easier for different types or groups of people to participate?

➤ See:
**Is participatory design
the right approach for this
project?**

TEAM COMPOSITION AND DYNAMICS



KEY MESSAGES

This group of tools aims to support the core project team, as well as the bigger “design team”, including those who take part in activities across the participatory design process.

The tools explore inclusive and participatory strategies for WASH design teams. They include a range of roles for individuals involved in water and sanitation infrastructure projects and interdisciplinary communication practices. Self-reflection is an essential practice for designing with others in a meaningful and inclusive way.

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

1 INTERROGATE YOUR OWN POSITION AND PRIVILEGE

Everyone has a multitude of identities: gender, religious, socio-economic, racial, cultural, et cetera. Our identities come with different lived experiences, and they may give us more or less power than other team members and participants with whom the infrastructure is being designed. The act of reflexivity – examining one's own beliefs, judgments, and practises – during the design process can be uncomfortable, but it is vital for understanding the way your identity, experiences, and power have unforeseen or unintentional impacts on participatory design outcomes.

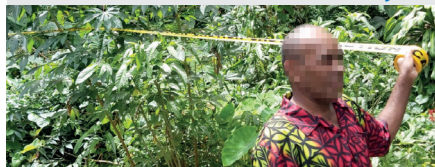
REFLECTIVE QUESTIONS

- 1 How might your background, identities, and/or lived experiences influence the way you approach participatory design?
- 2 How might your background, identities, and/or lived experiences influence how you define and understand gender and social inclusion?
- 3 What aspects of your identity have the strongest effect on how participants might perceive you? How might that influence the way they interact with you?
- 4 How do the participants' values, goals, intentions, objectives, or expectations conflict with your own? How will you address situations where your views conflict?
- 5 What parts of your identity are you sharing with your participants? What do you wish to disclose? What are the potential outcomes of this?
- 6 How much power can you give away and still be effective in your work?
- 7 How will you engage with people outside of formal participatory activities, such as out in the community or in the field?

50 EXAMPLE SENSITISATION AND IMPLICIT BIAS TRAINING

In both Indonesia and Fiji, the assessment teams underwent sensitisation and implicit bias training. The training involved activities that put design team members in the minds of people with different "points of view" – perhaps sexual minorities or people living with disabilities. This training was facilitated by an expert from local organisations in each country. Having an "outsider" facilitate this type of training can be beneficial because these can be difficult conversations to have, and your team will naturally have blind spots that are difficult to identify from the inside.

51 EXAMPLE BEYOND THE PROJECT



In Fiji, children showed curiosity and interest when encountering design members in the field or in workshops. Some children expressed interest in pursuing a career in water infrastructure as a result of these interactions. The design team provided children with encouragement and suggested pathways of study. These interactions helped build trust in the communities. Your identity as a practitioner, researcher or a facilitator can have a very positive impact on the participants and events, beyond the project timeline.



THE FIRST STEP *Hajira Qazi (2018), What do I know about myself? (p. 22, see the link below)*

EXPERTISE

- What types of knowledge do I most value?
- Whom do I consider an expert?

CONTROL

- Am I willing to be flexible if the design goes in a direction I had not anticipated?
- Am I willing to accept a new or different way of understanding the world and how to operate within it?
- Am I willing to have my assumptions challenged?
- Am I willing to share power and agency with someone I do not yet know?
- Am I willing to yield my voice, opinions, and values to those of the participants?



EXPLORE FURTHER

[POWER & PARTICIPATION: A Guidebook To Shift Unequal Power Dynamics In Participatory Design Practice](#) (2018) by Hajira Qazi.

[DESIGN EDUCATION'S BIG GAP: Understanding the Role of Power](#) (2017) by George Aye.

[Toolkit for Integrating Gender Equality and Social Inclusion in Design, Monitoring, and Evaluation](#) by Works Vision has a GESI-responsive individual assessment checklist (pages 13–15) which allows organisations and individuals to assess their own ability to address gender equality and social inclusion. While it is written for World Vision practitioners, the questions can be modified to fit the context for other organisations.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS

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- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

Participatory design of water and sanitation infrastructure requires a team effort because the design process will most likely be complex and long, and involve a variety of participants. There needs to be someone who oversees the whole process, and combines the knowledge and insights gathered across the various meetings, gatherings, and interviews occurring in different places at different times. Knowledge will likely also need to be combined across levels or scales. The design team will learn from individual residents and households and from city or even national government and funders. Members of the larger design team may come from various national and technical backgrounds. The participatory design team should also include local people able to understand and interpret water practices situated in specific territories and cultures. Some team members need to have knowledge about participatory methods and principles, and experience with facilitating design processes with diverse participants.

REFLECTIVE QUESTIONS

- 1 Who in your team has experience with designing and facilitating participatory design activities? Have they also worked on water and sanitation infrastructure design projects? If your team does not have a lot of experience in participatory design, consider checking your planned activities with an expert.
- 2 Who in the team has skills necessary for the effective facilitation of workshops about water and sanitation infrastructure? These include attuning to the local setting (listening and reacting to sensorial, emotional and explicit situations and triggers), facilitation, the ability to observe behaviours, the ability to design together with non-designers, the confident use of architectural tools for spatial discussions (e.g. maps, 3-D models), an ethical approach to practice, and the ability to acknowledge diversity at any point of the process. If you are not confident with facilitating design activities, consider getting in touch with local organisations who can help you develop these skills, or become part of your team.



52 EXAMPLE DIFFERENT PARTICIPATORY SKILLS



In RISE, the participatory design team was made of local experts with diverse experience. For example, one team member was very experienced in mediating projects with city and national authorities, another one was very skilled in working with children from urban informal settlements, the third one had immense experience in community engagement methods in Indonesia, etc. Therefore, the team as a whole had the strength and skills to apply a participatory approach to designing water infrastructures. We all learned from each other.



EXPLORE FURTHER

[Gender Equality and Social Inclusion Self-Assessment Tool](#) (2021) published by the Water for Women Fund and the Sanitation Learning Hub, provides the opportunity to discuss and reflect on current strengths and how to improve processes that drive positive change in GESI through your projects and organisation.

- 3 Who in your team has knowledge about local participatory design practices? If you don't know a lot about this, consider reaching out to local community design organisations and experts.
- 4 How will the core team member(s) take part in all designing activities within the "constellation" (that is, with diverse participant groups across scales)? How will they communicate the emerging design aspects with the larger team?
- 5 Who in your team has skills for project mediation on a governance scale: communication across multiple stakeholder networks, access to regulatory institutions and support from the local authorities?
- 6 Does the team have strong GESI capacity/competence? If not, consider engaging with rights holder organisations with lived experience or who represent those with lived experience. This is an important strategy for the Do No Harm principle.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS

- 1 Interrogate your own position and privilege
- 2 **Grow participation expertise**
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- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

Having diversity within your project team has many benefits. Firstly, people with different backgrounds, languages, abilities and experiences bring different perspectives; this means that the expertise in your team is broader and deeper than if your team members all had similar backgrounds and experiences. Secondly, having some diversity in your team means that team members might feel more comfortable sharing their individual (and varied) experiences with the group. Thirdly, having a diverse project team makes it easier to engage a diverse range of participants. Most people become more interested when they see someone they can identify with on the organising team. Many people also find it easier to share their ideas and perspectives with someone who is similar to them. For example, a resident who is blind might be more willing to meet a project team member who is also blind to discuss the project design because they feel that their experiences will be properly understood and are more likely to be taken seriously.

It can be challenging if your team includes mostly people of a similar characteristic(s) with one or two people who are different (e.g. 12 women and one man). This can make working in the team feel lonely or even uncomfortable for whoever is in the minority. Try to make sure that identities and diversity in the team are as balanced as possible.

It is impossible (and unnecessary) to have every aspect of diversity that exists in the community you are working with represented by your team. Sometimes it is more appropriate to partner with organisations who represent the diversity in the community. For example, you might not be able recruit a wheelchair user AND a blind person AND a trans-woman onto your team, but you can partner with the local Disabled Person's Organisation (DPO) and local trans/non-binary group to help you with your project. It will be important to consider the level of effort (including the amount of time and money) it may require to recruit team members and/or identify, build relationships with, and properly compensate partner organisations. Where resources are limited, the team will need to be realistic and honest about these limitations on inclusion, and the impact they may have on design outcomes.

53 EXAMPLE IN PAIRS



When visiting households, the RISE team would always go in pairs made of a female and a male team member. This would make both female- and male-headed households comfortable to open their door and welcome their questions. Female residents would feel intimidated to open the door to two men; it would feel dangerous. Similarly, a male resident might feel awkward in the company of two female designers – who might feel uncomfortable themselves entering the house of a man.

54 EXAMPLE WORKING WITH OTHERS



The Water for Women project organised a capacity-building session with the RISE team in Indonesia. It was about working with people with disabilities and was conducted with PerDIK Foundation, the Indonesian Disabled Movement Organization for Equality.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 **Start with internal diversity**
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent



REFLECTIVE QUESTIONS

- 1 How balanced is the diversity in your team? Do you think anyone/people in your team might feel isolated or uncomfortable because of their identity? How could they feel less isolated? (This question might be more comfortable to respond to anonymously because this discussion could make those who are isolated or lonely feel very exposed.)
- 2 How will individual team members, smaller team groups, and the team as a whole influence each of your planned activities? Will some participants feel more welcome than others?
- 3 If your team is not as diverse as it could be, how might you address this? What are some ways to add or increase diversity within a team even after the project has started? Are there local organisations you could engage to help you with this?
- 4 Is your team composed only of local experts, only of outside experts, or a mix of both? What are the benefits and drawbacks of this, in relation to your project and participation?
- 5 Which other relevant organisations are operating in your project site region, but might not have a relationship with the community you are working with?
- 6 Do you have scope to form partnerships with other relevant organisations and experts early in the project? (The earlier the better.)



55 EXAMPLE THE MISSING SKILLS



In one settlement in Makassar, many elderly residents communicated in the local, Makassarese language. However, the design workshops were mostly in Indonesian, with some translations to Makassarese. This resulted in a lack of trust from the elderly population, as they could not understand complex discussions in Indonesian about water technologies and land regulation. This lack of consideration for those outside the reach of the design team escalated further. Elders are the ones who are entitled to land, and their families could not make any design decisions without their consent. In response, the team invited a senior facilitator from another branch of the RISE Programme to join the community workshops. He spoke Makassarese. The workshops would start after the evening prayer in the mosque, where he was allowed to use the microphone to invite everyone to join the workshops. All introductions and explanations were made in Makassarese, and the project continued.



THE FIRST STEP

Team A is made of people from engineering backgrounds; they are all from the same country and graduated from the same university, around the same time. They are all heterosexual, and mostly men. Team B is interdisciplinary — two engineers, one designer and three social scientists. They come from four different countries. The eldest team member did not go to university but grew their expertise through informal learning and practice. Another one is a student-intern, and the rest of the team is in their 30s and 40s. There is an equal distribution of all genders.

I Which team are you closer to?

II Group your team members based on their age, gender, profession, position, ethnicity, socio-economic status, and any other relevant category you can think of (it might be most appropriate to think about this on your own first rather than with the whole group). Are there some groups that are not represented within your team? How will that influence your (design) interactions with diverse participants?



EXPLORE FURTHER



Inclusive WASH Workplaces is a one-stop-shop with tools to support your team to become more inclusive.



TOWARDS INCLUSION – “Tool 5” will assist in identifying local organisations and stakeholders you could work with to do more inclusive work.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 **Start with internal diversity**
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

4 BUILD A SUPPORT SYSTEM

Intensive and long-term participatory design processes are usually exhausting for the design team. If the project is being implemented on a bigger scale (e.g. internationally, or in several locations at the same time), the increased number of participants usually requires a higher number of interactions, communication challenges, design problems, and prolonged contact with communities. These challenges may be overlooked if we don't include time and strategy to work with them. Therefore, it is necessary to build an internal support system, within the design team, so members care for each other and have access to different types of support. This support is not only for professional matters, such as technical knowledge. It is also emotional and psychological support, including the freedom to express frustrations, to confide, to relax, and feel safe.



REFLECTIVE QUESTIONS

- 1 What systems have you created to ensure that team members feel supported in their work and to feel like they can overcome challenges to be successful in their tasks? How will you identify team members who might feel isolated in their activities/responsibilities?
- 2 How can you create time between workshops to debrief and reflect on everyone's experiences, including frustrations, dilemmas, insecurities, fears, uncomfortable situations?
- 3 How will you discuss the things team members are and are not comfortable doing?
- 4 How are you celebrating successes and achievements within the team? Plan for building relationships and promoting positive interactions for the team's overall wellbeing.
- 5 How can you promote reflection within the team? Would team members be open to spending a few minutes writing in a journal, or perhaps doing a walking reflection?



56 EXAMPLE ISOLATION AND RESPONSIBILITY



In one of the RISE teams, only one team member could converse in one of the local dialects. Therefore, in several households, elders could only converse with him. These discussions were some of the most complex and uncomfortable ones, since elders tended to be suspicious towards the project. They required repeated visits, and very long conversations in which the respondents would change their minds several times; this is a traditional way of building trust and reaching a common understanding. However, the one team member had to take this communication burden on himself, and the team were slow to realise that he started feeling isolated and hopeless in these multiple, slow, serious and mostly negative discussions. The isolated team member felt that he had a lot of responsibility and that he was not doing his job well, which only added to the stressful situation.



THE FIRST STEP

Kelly Ann McKercher (2020), Model of Care for co-design (p. 90, see the source below)

How could you adapt the table below to fit the context of your team and project?

Before bringing the co-design team together	• Assess the fit • Establish a support team • Build relationships • Offer genuine invitations • Widen inclusion
Keeping the team together	• Connect co-designers • Seek ongoing feedback • Have courageous conversations • Seek ongoing relationships • Care for each other
Working safely within your support team and with co-designers	• Develop frameworks for safety, e.g. frameworks for serious disclosure, safe disclosure, a duty of care, the rights and responsibilities of co-designers, frameworks for recognition, attribution and payment



EXPLORE FURTHER



ON CO-CREATION (2021) is Community Architect Network's handbook offering a set of questions on topics that are not usually discussed in the team meetings. You may use these questions to start discovering our team in a new way.



BEYOND STICKY NOTES (2020) by Kelly Ann McKercher offers a detailed explanation of a Model of Care for Co-design, p. 90.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system**
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

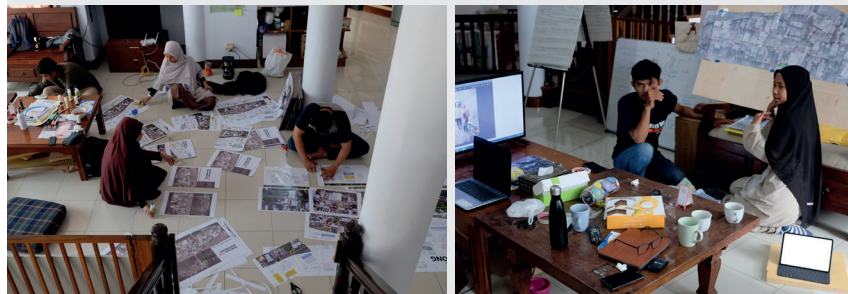
5 NURTURE COLLECTIVE SENSE-MAKING

When we deal with complex design problems (such as the water challenges in urban informal settlements), we are faced with many contradictory demands and rules or beliefs that we may not understand. This is very frustrating, but it is also an opportunity for innovation and the discovery of solutions that would be difficult to imagine from outside that chaos. In these moments, the most important thing is to engage the “collective mind” of the team – the collaborative effort in making sense of the information. Through talking, drawing, moving, making, and sensing things together, the team will find the way forward. However, “collective sense-making” will not happen naturally. We need to make sure to create time for these team sessions (usually between designing activities with other actors in the project), and to find the best tools and mediums for sharing our understandings, ideas, experiences and knowledge. This might be bullet-points of insights on a flip chart, or a shared Google Document, or a map of the settlement on which we will share our stories, or a comic book with the most difficult design situations we faced that day. This is something that needs to be actively planned for.

REFLECTIVE QUESTIONS

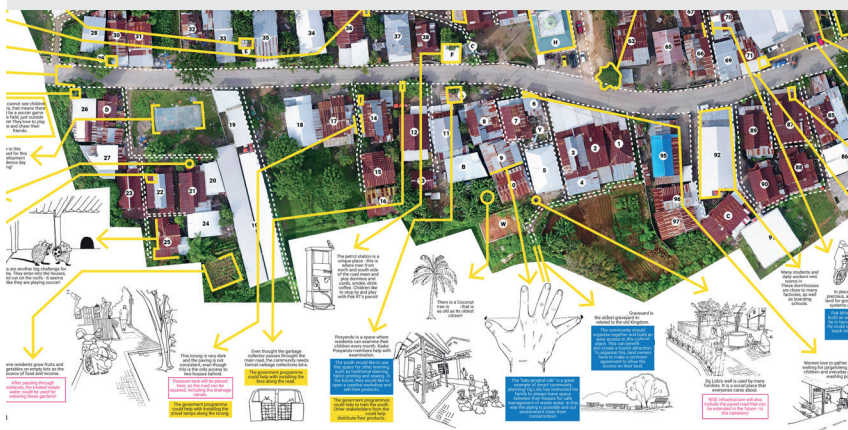
- 1 What collective designing systems have you created to enable team members from different disciplines to share their knowledge and experience? Some of them might rely on numerical information and calculations, some on qualitative data, some might be talking through visuals and 3D models, some through storytelling. How will you combine these different aspects so they all contribute towards the design solution? (A team member might take a lead role in facilitating and organising these internal discussions.)
- 2 How are you documenting diverse knowledges of different team members? Which formats could support this (e.g. a spatial map)?
- 3 How much time between the design workshops do you need for sharing, collective interpretation and analysis of diverse data with your team members? Don't forget to build that in the work plan.

57 EXAMPLE INTERNAL DESIGN MEETINGS



After each of the large design gatherings, or after a few days spent in smaller design meetings, we would gather as a team to share our experiences and ideas. These meetings would vary in duration, from a couple of hours, to the whole day. They would not always end with concrete outcomes or solutions, but they were one of the most important activities towards inclusive design outcomes. Here, we discussed the perspectives and needs of diverse residents and our communication strategies and challenges. We also proposed design solutions and new designing activities that we should organise.

58 EXAMPLE COMMUNITY MAPS



Community Maps were one of the two main outputs of the participatory design workshops in Makassar (complementing the infrastructure plans). They are a record of what residents shared: a representation of physical and nonphysical aspects of the settlement that were important for them, and that influenced the infrastructure design. Richly illustrated, they were meant to be read and shared with families and neighbours. Each element on the Map was connected with a box: (1) elements that RISE can respond to; (2) elements that the community could mend themselves; and (3) elements that local stakeholders should get involved in. For the design team, the Community Maps were a tool for analysis and sense-making of the enormous amount of information received in 1:1 prototyping and 3D model sessions. We would discuss together the content for each map, and spend hours illustrating it and drawing connections between its elements and actors. Community Maps were a way to define what the infrastructure (the design outcomes) might do within the complex range of problems and opportunities in urban informal settlements.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools

- UNDERSTANDING CONTEXT
- WATER & SANITATION INFRASTRUCTURE
- DESIGN PROCESS
- TEAM COMPOSITION & DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system
- 5 **Nurture collective sense-making**
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

6 FOSTER INCLUSIVE TEAM PRACTICES

A diverse team only works to do no harm if everyone is able to contribute to the participatory design to their fullest extent. This means that everyone can share their varied perspectives and experiences, even if they are different from others, without being afraid of being ignored, ridiculed, insulted or criticised. It can be surprisingly challenging to create a workplace culture where ideas can be shared and debated without making anyone feel left out or deeply uncomfortable. The “rules” or cultural norms about how to do this will vary from place to place, so this will look different in every project. For example, in the Netherlands it is quite common for a student to publicly, but politely, disagree with their professor in front of a whole room full of people. In other places, people would feel uncomfortable with a disagreement in front of a group of people, but they could write an email to express their different views.

Whatever the “rules” and “norms” of the context of our project team, it is important to consider how the varied perspectives of the different people in our team can be included in a safe and productive way for everyone. One thing is almost universal, though: inclusive team practices take time, so don’t expect this process to be done quickly!



REFLECTIVE QUESTIONS

- 1 Within the team who tends to speak more? The local experts or outside experts? Women or men? The senior or junior members of the team? Are there certain individuals who tend to be heard the least? Why might that be? How could they be better included?
- 2 How might you celebrate differences, take time to acknowledge and respond to them, and recognise the benefits that varied approaches bring to your work?
- 3 How might we include enough time in our project planning to ensure that more voices are heard?
- 4 Who can help your team towards more inclusive team practices? Do you need a facilitator to help you work through specific issues or additional training?



59 EXAMPLE SMALL CHANGES



Some of the inclusive team practices that took place in the RISE Program were:

- rotating the chairperson and note taker roles so that it wasn’t always “leadership” steering project meetings;
- encouraging different staff to write sections of the newsletters (internal and external);
- as much as possible, translating internal documents into the various languages spoken among the staff;
- planning activities around the religious, and cultural practices of the staff so they could participate fully;
- finding ways to make sure that different staff (not just lead researchers) meaningfully contributed to the research outputs of the RISE Program. Some people felt comfortable writing articles, but others contributed through small group discussions.



EXPLORE FURTHER



[Inclusive water, sanitation and hygiene \(WASH\) workplaces](#) – Parts IV and V include useful tips for inclusive team practices, especially how to retain the members of your team.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices**
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

7 DEVELOP GOVERNANCE ROLES

There are many governance roles in water and sanitation infrastructure design processes, such as the role of Resident, Community Leader, District Leader, City Planner, Funding Agent, Safeguard Specialist, etc. Persons in these roles usually represent specific groups and/or institutions. It is important always to have in mind that representation is a variable term: it can range from symbolic (tokenistic) to instrumental (strong support and advocacy). Some leaders – even those in formal or elected governance roles – may not prioritise the best interests of residents or may be unaware of some of the needs of more marginalised groups in the community. It can happen that some groups or individuals are outside the domain of existing roles, which is why it is important to plan for them and work towards their effective inclusion. Governance roles can also be formally and informally appointed and work in formal and informal ways.

REFLECTIVE QUESTIONS

- 1 What are the formally and informally appointed governance roles that are relevant for your project and context?
- 2 Would your project benefit from forming a specific governance committee? How could this be done in an inclusive way? How would you define its purpose?
- 3 What costs are different people bearing to participate in the project governance? Are people volunteering their time? What would they gain by taking these roles?
- 4 How (and to what extent) are different voices represented in the project governance levels? For example, think about women's and children's perspectives in regulatory frameworks, about renters' rights and squatters' perspectives. Are there representatives of the elderly, different genders, different disabilities, different racial and ethnic identities?
- 5 If you notice that some groups within the community are not formally represented, how will you make sure their perspective and rights are raised and heard? To what extent can the design team influence and be influenced by the existing governance roles? What effect might this have on the design outcomes?

60 EXAMPLE RT LEADERS

RT (*Rukun Tetangga*) leaders in Indonesia are volunteers appointed by the community, based on their social merit. They come from different professional backgrounds and represent different styles of leadership and different levels of trust placed in them by the community. In one settlement in Makassar, the RT leader was highly respected, and this made the designing process much more effective and productive. However, in another one, the RT leader did not represent the interest of the entire community, but was only focused on the benefit of their extended family. This completely excluded three other large family clusters, and generated mistrust in the project. It appeared as if the project was organised by the RT leader, and as such it was automatically refused by the other parts of the community. The infrastructure design did not continue in this settlement.

61 EXAMPLE COMMUNITY-BASED COMMITTEES



RISE appointed community-based committees in each settlement. They were formed as a communication link between the community and the project management team: keeping the community up to date, introducing the newly arrived residents to the project, and informing the RISE Program about changes and problems in the settlements. This is particularly important in the dynamic environments of urban informal settlements. They know the environmental, economic and social conditions of the community, and are aware of the existing conflicts. The committee members have been through different training sessions about leadership and engagement, as well as water, sanitation and hygiene aspects of the project. The team put a lot of effort into inclusive strategies for appointing the community members: asking the community or local leader, discussing it with the community, targeting community champions.

EXPLORE FURTHER

[INTERSECTIONALITY TOOLKIT](#) (2014) by iglyo – see the intersectionality checklist on page 16.

[STAKEHOLDER ANALYSIS TOOL](#) by Christian Nielsen from Live & Learn can be a good start for mapping and analysing all roles beyond the core project team.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 **Develop governance roles**
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

See:
Design across and within scales
Develop the “constellation” of design activities

8 DEVELOP DESIGNING ROLES

Each participant could take a range of different designing roles in different workshops throughout the process, such as the Information Provider, Evaluator of Ideas, Creative Mind, Silent Observer, Pessimist Reviewer. The designing role that someone might take depends on many intersecting factors: their professional and educational background, experience, learning capacity, socio-cultural background, confidence, previous participation in similar projects, and even the power hierarchy within the group. These are further influenced by the person's identity and the time they can dedicate to participation.

As designers by profession, we need to make sure that we have enabled the conditions for diverse participants to take on a range of designing roles. This could be done through introductory training activities, preparatory material such as booklets and other prompts, and through the design of activities and facilitation. Have in mind that diverse groups will need different explanations and introductions to designing; take into consideration the different capacities they might have for participation.



REFLECTIVE QUESTIONS

- 1 How have you enabled your participants to take on their designing roles? (You could consider specific training or structured facilitation.)
- 2 Which designing roles is your participatory design process enabling? Which ones are excluded?
- 3 Can some designing roles only be taken by specific participants? For example, can a child take the role of a Creative Mind in this project? Can a resident be an Evaluator of Ideas?



62 EXAMPLE

CHILDREN DESIGNING WASH INFRASTRUCTURE



The involvement of children in the design of water and sanitation infrastructure required a specific and sensitive approach. One activity aimed at gathering information about where and how they spend their time in the settlement. To encourage their interest in drawing, we introduced a special character: the Traveller Cube. They could only tell the Traveller about their activities by drawing on its sides – that was the Traveller's language. They took the Traveller around the settlement and told him their stories. In this way, we learned out about the main child exposure pathways to environmental contamination, and the places that needed to be preserved as open and unoccupied by hard infrastructure. The challenge was in documenting and interpreting children's drawings and stories in the right way; this requires special training for facilitators.



EXPLORE FURTHER

[AGRILAB PROJECT HANDBOOK: Creative Capacity Building and Co-design](#) (2019) by Drain et al., is a handbook that offers various activities to introduce the concept and process of collaborative design, page 9–24. It is intended to be used as a reference to assist facilitators in undertaking participatory design with people with disability.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION & DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles**
- 9 Develop technical roles
- 10 Cultivate inclusive consent

9 DEVELOP TECHNICAL ROLES

There are many “technical” roles in the water and sanitation infrastructure design processes, such as Engineer, Contractor, Procurer of Materials, Builder, Community Fieldworker, Surveyor, Estimator, Supervisor. The ability to take up any of these roles depends mostly on a person’s skills and training. However, we might not be aware of people’s full potential and possibilities, especially when it comes to people with disabilities and vulnerable groups. Additionally, our bias might prevent us from working with them more in this aspect of a project. Better inclusion of people with disabilities could be achieved by working with expert organisations and having set processes related to capacity building and skills evaluation. We should advocate for inclusive and local procurement of material and construction services, as well as the employment of local workers. The designing process should be flexible enough to accept the new “technical” roles, as well as construction techniques and materials that might not have been known from the start of the project. Finally, the “technical” roles should be considered and discussed beyond the commonly assumed categories and tasks. For example, women in the settlement might take the role of Cook, providing food for the daily workers. This will generate additional income, as well as the feeling of ownership and stronger connection to the whole project. But we need to acknowledge that a Cook is an important intervention role, pay for it, and not use it as an excuse to exclude women from other intervention roles – for example, deciding where toilets go, being paid to move sand, or learning how to fix a tap.

REFLECTIVE QUESTIONS

- 1 What are the “technical” roles that are specific for your project?
- 2 How might you be able to include diverse participants when appointing these “technical” roles? For example, are women, children and people with disability from the settlements able to take some of these roles and benefit from any income/opportunities that arise from them?
- 3 Are there any conflicts of interest in the intersection of the “technical” with other roles and identities participants might have?

63 EXAMPLE CITIZEN SCIENCE



In RISE, residents in informal settlements in Fiji and Indonesia have been involved in the flood monitoring (citizen science) project to document floods in the most flood-prone sites (seven settlements in Suva and six in Makassar). This was the key to informing the design of RISE’s infrastructure, as some critical elements need to be protected from cross-contamination and damage caused by floods. This approach considers communities as central agents in flood risk identification, monitoring and communication – so communities have a more accurate understanding of how water levels fluctuate. This also produced crucial data for the intervention design, since this information was not available for the informal contexts.

” RISE will succeed if the residents help out, Ma’am. That’s what I think. Even though the RISE team wants to succeed, but the residents do not want to do anything, that will be impossible.

Female resident, RISE Makassar site

64 EXAMPLE CHILDREN SCIENTISTS



In Fiji, children recorded flood data on their social media during periods of flooding when RISE people were unable to attend the sites to collect data. This demonstrates that children potentially have a key role in data collection through citizen science methods.

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 **Develop technical roles**
- 10 Cultivate inclusive consent

>> See:
Consider the life cycle of infrastructure
Start with internal diversity

Every participant must always have a choice to accept or refuse a role, on every project level and in every project stage. This principle contains three important tools: (1) the process for informed consent, (2) ongoing, “dynamic” consent, and (3) the adaptability of the consent to participants.

Consent can be formal (e.g. a signed form), or informal (e.g. a verbal agreement). In both cases, it is important to explain the reasons for involving/consulting that specific participant, the characteristics of their role, potential benefits and harm that involvement might have on the participant, and the available support and point of contact. The most important aspect is to make sure to communicate the voluntary nature of the involvement – minimise the possibility of coercion (intimidation) or undue influence on participants. Do not rush; provide enough time for participants to make a decision at their own pace. People’s circumstances and understanding change over time; make sure to constantly check in about consent. It is not a one-time sign-off event; we need to acknowledge changes, especially in the long-term projects like the water and infrastructure design, construction, operation and maintenance.

Consent should not be formulated according to the project’s description and aims, but in relation to each participant. Think about their identity, the language they will understand, the aspects of the project that are relevant for them or crucial for their understanding of the role. For example, parents need to give their consent for the involvement of their child in the project, but a child should also give their assent – how might you explain to them about the project and the specificities of their role in it? You might use illustrations, videos, charts, games and/or performance. Do not assume that a child wants to participate only because their parents have said so. Or, in some cases, you may need to ask for consent from caretakers of people with disabilities. You will then have to adjust the consenting process to the needs of that specific person and the way they communicate. Organisations that work with people with specific disabilities might lead you through the ethical practice for each specific case.

Finally, take into account the cultural aspects of decision-making processes in the place where you are working. People may rely on the support and opinion of others when making their own decisions. For example, you may want to consult community leaders, elders, or other respected members (e.g. an engineer in a community) first.

65 EXAMPLE A MISUNDERSTANDING



In Makassar, we followed Monash University ethical procedures for gaining consent from people taking part in research. We were asking them to take the role of Research Participant. However, we made the mistake of not adapting the consenting procedure to the local language and practices. This caused significant misunderstanding at first; for example, a word for “researcher” does not even exist in a local dialect. Residents in one informal settlement were particularly suspicious; they understood that we were asking them to consent to giving their land to the project! The procedure was too formal and official, it involved signing a paper with a lot of text about the research. Many people could not read, and they felt intimidated by this process. It took a long time to explain what we meant, and to reach a common understanding of aspects of the research, on one hand, and the infrastructure construction requirements, on the other. This could have been avoided if from the start we had thought about adjusting the consent processes to the local context and to the requirements of specific participants. Starting in 2021, the consent process has changed somewhat; it now includes a series of explanatory videos in the local language, which can be shared on WhatsApp – a platform most residents use.

“As I observe, the RISE team is nice. They talked politely. If they have something to be arranged, they came to ask permission. It depends on the residents, whether they agree or not: the team said that they couldn’t force us. It’s okay if we agree or disagree.

Female resident, RISE Makassar site

REFLECTIVE QUESTIONS

- 1 How did you decide on the process of assigning roles related to your project? Who was part of making these decisions?
- 2 How will you explain different project roles? How will you manage the expectations, responsibilities and support for these roles?
- 3 Have you developed specific consent forms and processes for different aspects of your projects? How are people informed of the benefits and risks of the roles they might be undertaking?
- 4 Have you thought about specific consent processes for people with disabilities and for children?

- 1 Executive summary
- 2 Who is this toolkit for?
- 3 Key messages
- 4 Introduction
- 5 Glossary

6 Tools



UNDERSTANDING CONTEXT



WATER & SANITATION
INFRASTRUCTURE



DESIGN PROCESS



TEAM COMPOSITION &
DYNAMICS

- 1 Interrogate your own position and privilege
- 2 Grow participation expertise
- 3 Start with internal diversity
- 4 Build a support system
- 5 Nurture collective sense-making
- 6 Foster inclusive team practices
- 7 Develop governance roles
- 8 Develop designing roles
- 9 Develop technical roles
- 10 Cultivate inclusive consent

GET INVOLVED!

This is not the end but only the first version of the **Reflecting on Water and Sanitation Infrastructure** toolkit! We would love your feedback, comments and suggestions on how to make it better. Send us examples of **other tools** you would like to add, tell us how you **adapted the activities** to your contexts, **other reflective questions** that were important for you. We would also love to hear about other **exemplary projects** of gender and socially inclusive, participatory design approach to design of infrastructure in urban informal settlements.

To contribute, send your suggestions to

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