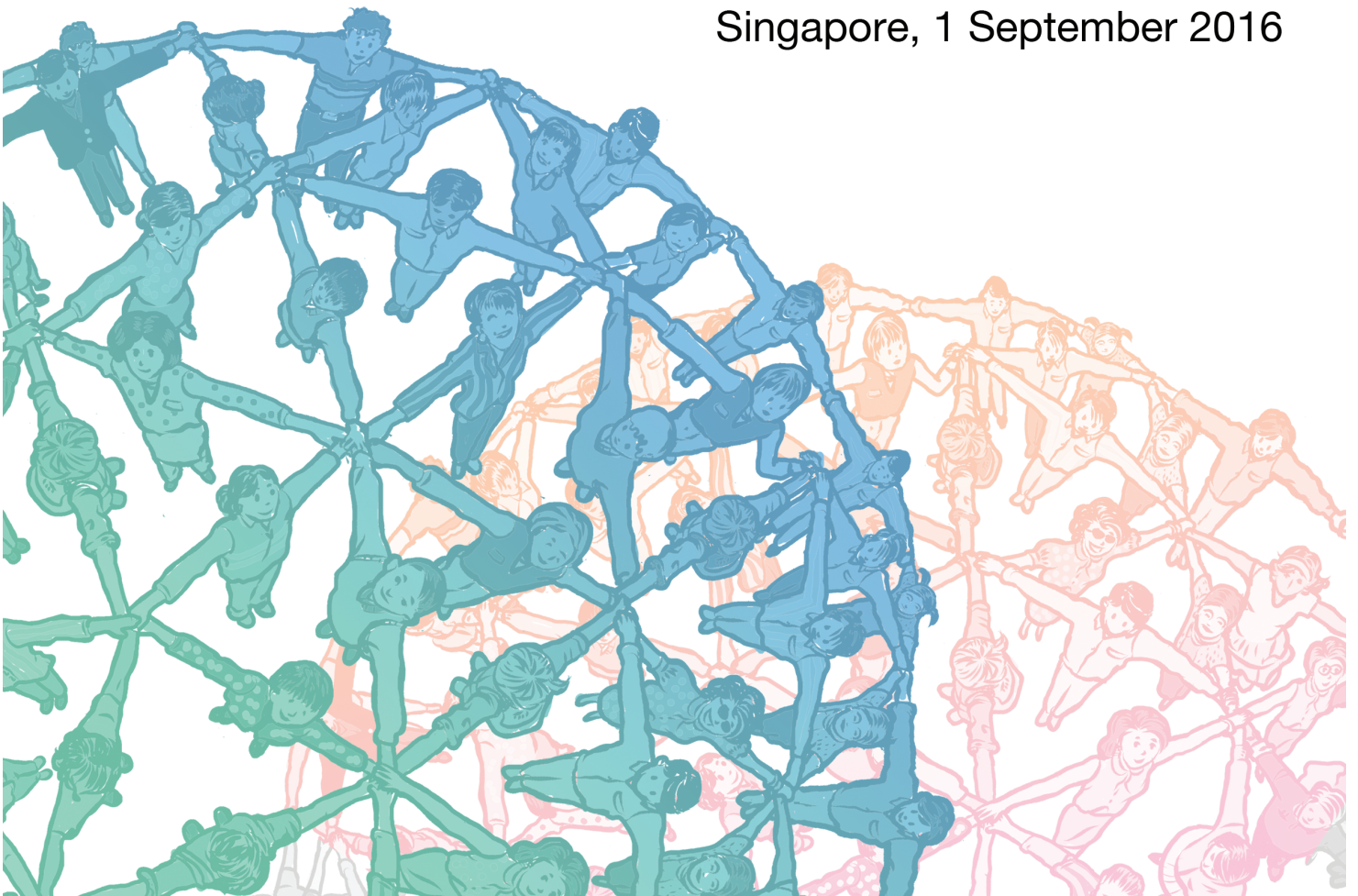




ASIA **P3** HUB

Market Research and Scoping Study

Singapore, 1 September 2016





ASIA P3 HUB

Hosted by

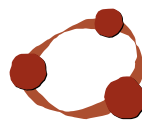
World Vision®



Market Research and Scoping Study

Singapore, 1 September 2016

Created by



the
partnering
initiative

crazy
about
water

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#AsiaP3Hub

ACKNOWLEDGMENTS

It is a great opportunity for **Crazy about Water Pte Ltd** and **The Partnering Initiative (TPI)** to have partnered on the Market Research and Scoping Study for the Asia P3 Hub. It felt like a good example of the Asia P3 Hub approach on how the two expertise's of 'water' and 'partnering' could be brokered - while working from different geographic locations.

This market research cannot be completed without the effort and co-operation from the Asia P3 Hub core team members, Anne Lochoff, Ruth Smith, Kiara Elliott, Ysel Fresnido, and thanks to Sriven Naidu (SMU). We also sincerely thank the group of Combinatorials (David Pong, Victoria Great, Wilson Tan, Jimmy Nadapdap) and Loring Harkness (Special Advisor to Asia P3 Hub) for their guidance and encouragement in finishing this research and also coaching us in this journey.

Very thankful are we for the valuable contributions of the participants of the three co-creation workshops (held June-August 2016); and willingness of the respondents of the survey to share their perspectives and time to fill in the questionnaires.

The openness and collaboration of the World Vision colleagues felt special, and we would like to thank Michael Poustie especially for sharing his knowledge on World Vision water related program expertise.

Last but not least, we would like to express our gratitude to Christy Davis for the leadership and trust in us.

Thank you.

Frodo van Oostveen

Todd Kirkbride

EXECUTIVE SUMMARY

Introduction

Over the past several months, a talented team of cross sector professionals have been heavily involved in the creation of the Asia P3 Incubation Hub ('Asia P3 Hub'). Crazy About Water and The Partnering Initiative (TPI) led the Market Research and Scoping Study for the Asia P3 Hub in order to set the strategic priorities on geographic focuses, technical water sectors, services offered and the recommended underlying operating model. This report will guide you through the Market Research outcomes in detail and provide more insights into the journey and strategic decision-making of the Asia P3 Hub team.

One crucial element that makes this Asia P3 Hub different from other Hubs and initiatives is: this Hub aspires to provide open collaboration across all sectors and espouses a core value of combinatorial innovation³ (*combine existing components to create a new solution*). The Asia P3 Hub connects the (existing) dots – avoiding re-inventing the wheel – and focuses on a business approach to make a sustainable impact for people in need of water throughout Asia Pacific.

Water Priority Sectors

The Asia Pacific region is home to over half the world's population and nearly two thirds of the world's hungry people (UN). Water plays an essential role in all aspects of development and impacts most of the 17 Sustainable Development Goals (SDGs). The World Economic Forum positioned 'water' for the second consecutive year as the number one global risk. Water is a global (public) good – and it's important for the Asia P3 Hub to be very specific on what priority water theme it will focus in the beginning. In Chapter 4, the four recommended water priority sectors are presented themes: Water Supply, Sanitation Management, Hygiene Behaviour and Environmental Water Services.

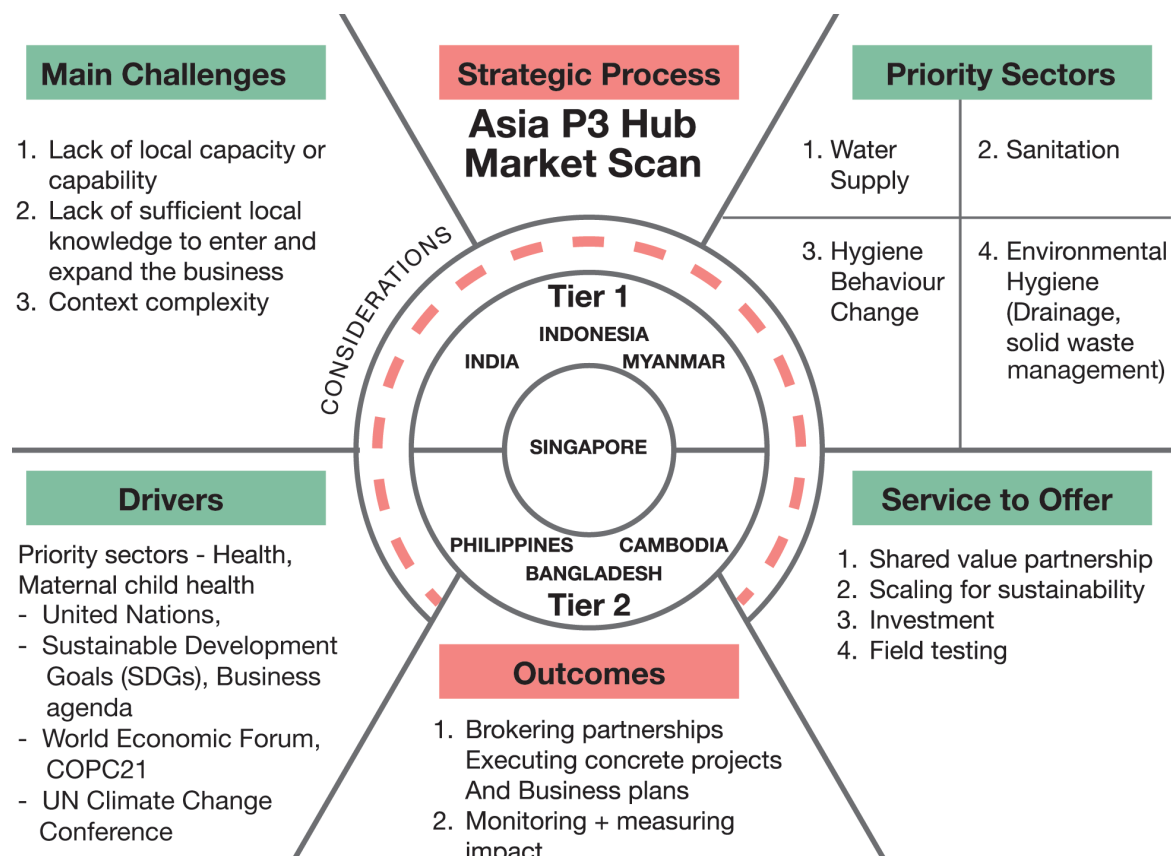
Market Research Outcomes

Based on the outcomes of the market research (surveys, interviews and secondary research), the Asia P3 Hub will - in the initial launch phase - be more focused on the social needs and market based solutions for **Water Supply (access, quality, reliability, security, affordability)** – in addition to the importance of the importance of Sanitation (access, sanitation management and business model), Hygiene behaviour change (including knowledge) and Environmental hygiene (drainage and solid waste management).

There is a common understanding that the water context is more complex than most people realize – and there is a **lack of local capacity or capabilities, lack of sufficient knowledge to enter / expand the business and lack of partnering knowledge and brokering capability**.

3 <http://web.pdx.edu/~rueterj/courses/objects/combinatorial-innovation.html>

The Asia P3 Hub will operate out of global hydrohub Singapore to build **shared value partnerships, cluster investments and provide scaling opportunities into the region for piloting (field-testing) solutions**. Based on the outcome of the market research, **Tier One** (India, Indonesia, Myanmar) and **Tier Two** (Bangladesh, Cambodia, Philippines) countries have been identified as strategic geographic priorities for the Asia P3 Hub in its initial three-year pilot period (September 2016 – June 2019). These points have been captured in the following infographic.



Visual overview of Market Research Outputs - Phase I <http://bit.ly/2caXdzI>

Operating Model

The Asia P3 Hub will initially focus on water – but will be opening up for different priority sectors e.g. – food, energy, health. The generic outcomes for the coming three years are to **build capacities** (on water), **develop minimum of three corporate partnerships producing concrete results, scale market driven solutions and monitor and measure the impact**; serve as a **magnet for multi- sector partners, projects, entrepreneurs, and water champions**. In addition, the Asia P3 Hub will build capacity in **partnership brokering** and will develop an **internship program** to integrate students into this exciting incubation process will be developed for sustainable impact.

A co-creation design process

To develop the Asia P3 Hub operational model, Asia P3 Hub hosted 3 facilitated co-creation workshops around the Business Model Canvas. It has been very valuable to go through these workshops via the ‘Lean-Startup’⁴ approach and learn how to broker new partnerships (and fail-fast). It’s interesting that the Asia P3 Hub has yet to be operational (beginning operations in September 2016), but already more than 400 organizations and individuals have been engaged in this process and want to remain in touch for the journey.

During the launch event at Singapore International Water Week in July, 2 active co-creation ‘Legacy’ and ‘Partnership’ sessions facilitated. There have been more than 30 very different (‘sensing’) initiatives developed for the ‘Trading Zone’⁵ that have good potential to be brokered into multi sector partnerships.

According to learned insights, it’s important to create a safe space (to succeed or fail). As the Asia P3 Hub is growing and recruiting qualified people with a combinatorial mind-set – that safe place is a must-have. It is also a prerequisite to ensure the Asia P3 Hub becomes a magnet for (brokering) partnerships.

The co-creation workshop formats will be transformed into ‘combinatorial innovation and design labs’ – in which the Asia P3 Hub will focus on generating new types of market-driven solutions and collaborations addressing real (in-country) problems. This will be a great opportunity to actively experience the short-listed services and operating model to challenge/support initiatives to become a Minimum Viable Product (Partnership!). The first Innovation Lab will be hosted in late October 2016 by a corporate partner and is focused on a real problem statement related to ‘water supply’. No time to waste.

4 <http://theleanstartup.com/> - It’s a movement that is transforming how new products are built and launched. Benefits of the Lean startup approach. Be more innovative. Stop wasting people’s time. Be more successful.

5 One of three zones in the Hub: the Trading Zone, the Hatchery, and the Brokerage.

ASIA P3 HUB

Hosted by:



Our Values

Combinatorial Innovation



is putting tried + tested ideas together in new ways

Safe Space



to spark fresh ideas and build new relationships

Success



is co-created, market-driven solutions for changed lives

Shared Excitement and Collaboration



400 organisations engaged
30 leads identified
3 co-creation design workshops convened

Target Countries

Bangladesh
Cambodia
India
Indonesia
Myanmar
Philippines
Singapore-Hub Location



1st Focus: Water



Value Proposition

Why Partnerships?



Collaborative, innovative, and shared-value solutions for transformational change

Why Water?



Water crises top global risks, \$30 million people in Asia do not have access to clean water

Why Singapore?



World class hydrohub of expert water resource management and R&D

Why World Vision?



Leading NGO provider of clean water globally and 60+ years working with communities governments, and local partners in 18 Asian countries

Water Sector Focus Areas

Water Supply



Sanitation



Environmental Hygiene



Hygiene Behaviour Change



Services

Shared Value Partnership



Scaling for Sustainability



Field Testing



Investment



Outcomes

Brokered partnerships executing concrete plan



Evidence-based stories of process and results



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“**Combinatorial Innovation** is
putting tried and tested ideas
together in new ways”

CHAPTER 1

INTRODUCTION

Background

- Over the past several years there have been many conversations about trisector collaborations. This incubation hub idea of bringing sectors together in Singapore for water began with Christy Davis⁶ during her Singapore Management University Masters of Trisector Collaboration program in 2015. World Vision International's South Asia & Pacific Office and the Singapore Economic Development Board provided guidance and a strongly held belief in the Asia P3 Hub model – and supported her vision to bring this to reality. Consultations with the Public Utility Board of Singapore (Singapore's water agency) also provided helpful context about Singapore's value added position for water resources and expertise. The Asia P3 Hub proudly launched during Singapore International Water Week (SIWW) in July of 2016.
- The purpose of the Asia P3 Hub is to create a safe space for **combinatorial innovation**⁷ between traditional and non-traditional partners to produce measurable, impactful actions that benefit development and humanitarian opportunities. From this new cross-sector model for collaboration, it is the goal to create an environment for these new relationships to form and for new ideas to sprout from them. The Asia P3 Hub will create a space for these academic ideas to be transformed into actions, opening up the environment and the resources to conduct research and development, including ethnographic marketing research, to participate in field testing, to experiment and prototype, to test and to fail ideas, and to ignite great solutions to deliver the Sustainable Development Goals (SDGs⁸).
 - o The SDGs are a set of universal goals for both developing and developed countries and organizations to collaboratively work to achieve. Different from its predecessor, the Millennium Development Goals (MDGs), the SDGs seeks to gather global resources and energy to maximize the impact on the roots of poverty and other injustices. One of these resources is the formation of partnerships between traditional development actors and the private sector (SDG17).
 - o Naturally, businesses will set their attention and resources to areas that are relevant to their sector which in turn will help drive growth.

Combinatorial Innovation



⁶ Christy Davis - Regional Director, Partnership Development, World Vision International, Executive Director, Asia P3 Hub - <https://avpn.asia/author/christydavis/>

⁷ <http://web.pdx.edu/~rueterj/courses/objects/combinatorial-innovation.html>

⁸ Officially known as “Transforming our World: the 2030 Agenda for Sustainable Development”, adopted at the UN General Assembly in September 2015. <https://sustainabledevelopment.un.org/sdgs>

- This concept of shared value partnerships brings together private sector with more traditional development actors to meet their business goals while addressing social problems. When businesses focus on solving social issues that prove profitable, scalable solutions are crafted, solutions that can be further developed and practiced for a sustainable future, bringing in benefits to both themselves and society as a whole.
- It's important to understand that partnering with Asia P3 Hub means building a new operating model – based on combinatorial innovation⁹. The combinatorial innovation approach is based on existing components (private businesses, and NGOs) that must be able to come together in some new combination (partnership). Each individual component must have some “hook” (technology, process, R&D capability) that allows it to be used with other components to produce ground breaking results. Asia P3 Hub will broker these smart partnerships grounded in a shared value approach.



9 <http://web.pdx.edu/~rueterj/courses/objects/combinatorial-innovation.html>



“ Safe Space.
To spark fresh ideas and
build new relationships**”**

CHAPTER 2

MARKET RESEARCH AND SCOPING STUDY

2.1 PROCESS / APPROACH

Crazy about Water and **The Partnering Initiative (TPI)** conducted a Market Research and Scoping Study for the Asia P3 Hub to produce a strategic Water, Sanitation and Hygiene (WASH) opportunity map and drive the crafting of the Asia P3 Hub strategic priorities, operating model and business plan.

Matrix development

- The first step was to develop an internal matrix to map all ongoing water and hub activities throughout Asia. Secondly – the research provided a framework to analyse the current state of WASH, Hub partnerships and market/public priorities.
- The initial results were validated during personal conversations with key stakeholders (including the ‘Combinatorial’ team¹⁰), and served to confirm or adjust opportunities for the Asia P3 Hub (focus on organic growth; ‘go where the energy is’) – and to conclude its key focus countries, main challenges, water priorities and services to offer.
 - *List of people interviewed (primary research) are enclosed in Appendix 1.*

Online survey

- After defining the framework for the research, a detailed and inclusive survey was developed and distributed to over 100 stakeholders with 53 respondents. The data collected validated the key direction areas/needs that the Hub should address.
- In parallel, a number of one-on-one interviews with key stakeholders has been conducted to complement the outcomes of the online survey, the secondary research and the workshops.
 - *Final version of the survey format is enclosed in the Appendix 6.*

Facilitated workshops

- The initial results of the survey and interviews have been discussed (and validated) during three facilitated workshops (by Anne Lochoff)¹¹ around the operating model of the Asia P3 Hub which were designed to follow the Business Model Canvas approach.
 - *Key takeaways of workshops are enclosed in Chapter 3.2.*

July 2016 – Co-creation Launch at Singapore International Water Week

- During the launch 2 active co-creation - ‘Legacy’ and ‘Partnership’ – were facilitated.
 - *Key takeaways of workshops are enclosed in Chapter 3.2.*

¹⁰ The “Combinatorials” are: Wilson Tan, Hyflux; Victoria Great, P&G; David Pong, WateROAM; Frodo van Oostveen, Akvo.org / Crazy About Water; Jimmy Nadapdap, WVI; Christy Davis, WVI. This team was formed in October 2015 when coming together for a Sharing Value Asia event.

¹¹ Anne Lochoff: Hub Business Strategy Facilitator

2.2 NARRATIVE MARKET SCAN

The following building blocks present the high level outcomes of the Market Research. It's the starting point of an iterative process. The dynamics of the partnerships combined with the local needs and available resources will determine the priorities of the roadmap for the coming years. The Hub will need to be constantly scanning the landscape and be nimble to change course and adapt as needs may change.

Why water as a starting point?



Of the 7 billion people in the world, 1 billion, or 1 out of 7 people, do not have access to clean water. Of that number, 635 million, or just under two thirds of them live in Asia, with China and India leading at 120 and 100 million people respectively. Lack of access to water hurts everyone, but the impact is most devastating for the most vulnerable group society - children.

For example, a quarter of all under five-year-old deaths occurs in India, where 1.5 million children die every year from diarrhoea. 90% of these deaths are directly linked to these children not having a reliable source of clean water. That means five preventable deaths every minute in India alone.

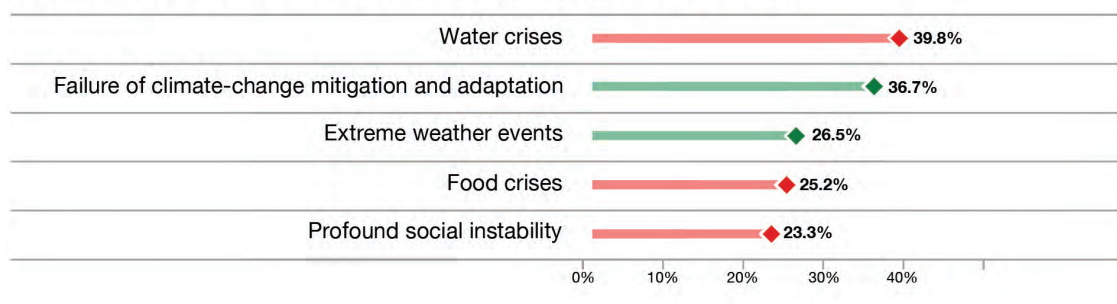
But the issue is not just India. Waterborne illnesses are a leading cause of death all across Asia. With an estimated population growth of 500 million in the next 10 years alone and with less freshwater per person than any other continent, stress on Asia's water resources will only intensify, leading to even more suffering and death.

Drivers

It's important to have a good understanding of (and to be aligned with) the following two global drivers. Asia P3 Hub used them as a global framework for its positioning:

- Water is for the second time on top of the [Global Risk Ranking](#) as **the most important global challenge for the next ten years**, according to the World Economic Forum (WEF). Water is the key driver for development.

Top five 'Global Risks' of highest concern for the next 10 years



- Sustainable Development Goals (SDGs): **Water plays an essential role in all aspects of development and impacts most of the 17 SDGs.** SDG 6 (Ensure access to water and sanitation for all) expands the MDG focus on drinking water and basic sanitation to now cover the entire water cycle, including the management of water, wastewater and ecosystem resources. With water

at the very core of sustainable development, SDG 6 not only has strong linkages to all other SDGs, it possesses the ability to underpin them: realizing SDG 6 would in fact go a long way towards achieving much of the 2030 Agenda.

Main challenges

The following challenges have been identified as the main challenges across the Asian market for the Asia P3 Hub to focus on:

- Lack of local capacity or capabilities
- Lack of sufficient knowledge to enter / expand the business
- Context complexity
- Lack of partnering knowledge and brokering capability across all stakeholder groups - business, civil society and government

Priority sectors

Water Supply



Hygiene Behaviour Change



Sanitation



Environmental Hygiene



The Market Research identified the following four water priorities:

1. Water supply (access, quality, reliability, security, affordability)
Increase exposure to waterborne diseases from contact with unsafe water sources.
2. Sanitation (access, sanitation management and business model)
High child mortality rate due to a lack of good hygiene. Access disparity due to class.
3. Hygiene behaviour change (including knowledge)
Lack of knowledge on importance of hygiene for health and a lack of behaviours that promote improved personal hygiene
4. Environmental hygiene (drainage and solid waste management)
Water supply contamination and spread of diseases due to a lack of efficient solid waste management.

Priority countries

Based on the conducted survey and interviews with stakeholders, the research suggested prioritizing all potential Asian countries into a Tier 1 and Tier 2 sets (most interest). Tier 1 countries have greater correlation between the related water challenges and the potential existing partnerships to be brokered (where the energy is) than with Tier 2 countries. There is a strong link – interdependence between the countries and Singapore as partnerships will be brokered and scaled via the Singapore base.

- Tier 1: India, Indonesia, Myanmar
- Tier 2: Cambodia, Bangladesh and Philippines
- Singapore plays a strategic role to operate as the knowledge exchange and safe matchmaking hydrohub for the region.
 - Combined Country analysis and Country statistics / Infographics are enclosed in Appendix 2 and 4.

Services to offer

The following services are short listed for collaboration between the Asia P3 Hub and its partners.

- Facilitated open space conversations for new ideas, new relationships and sparking of new shared value ideas
- Shared value partnership education and brokering
 - Partnerships fuelled by a set of fundamental beliefs, concepts, and/or principles, both explicit and implicitly, that guide the decisions and actions of the collaboration.
- Scaling for sustainability
 - With an open market in these new developing sectors, opportunities will emerge as increasing demands creates opportunity for growth.
 - Access to new markets and relationships
- Identifying investment and pooled resource (group resources to maximize advantage and/or minimize risk) opportunities
 - Fundamentally, an investment is the act of pouring your time and resources into a product to receive some form of a profit.
- Field testing / prototyping / piloting
 - Field testing grants access to conduct experiments, research, and/or trials under real conditions, outside of the controlled setting of a laboratory.
 - A prototype is a preproduction model of a specific product to be used for testing. From these results, adaptations and recommendations are made for the next prototype, a series of trial-and-error tests that lead to the creation of the final product.

Outcomes

The Asia P3 Hub will need to finalize its Theory of Change, build a set of holistic indicators that ensure that data-based evidence of the journey and outcomes is visible, and a scorecard which reports on both the success and the learnings. A goal must be to create lessons and models which can be replicated elsewhere. Indeed, building a sustainable model which can be contextualized and replicated is a goal of the Hub.

At a minimum, based on our research as well as agreements with initial stakeholder/donors, the Asia P3 Hub is required to generate the following minimum outcomes:

- Broker partnerships and execute concrete projects and business plans – *minimum 3 corporate partnerships within 3 years*
- Build capabilities – *in Singapore and around the region, e.g. - through partnering and internships*
- Create resources – *partner with universities and other organisations to produce case studies, good practices and “fail fast and correct” learning opportunities for others*
- Scale market driven solutions which generate shared value impact
- Evidence of impact – *a monitoring and evaluation process which illustrates performance against plan.*





“Success is
co-created, market-driven solutions
for changed lives”

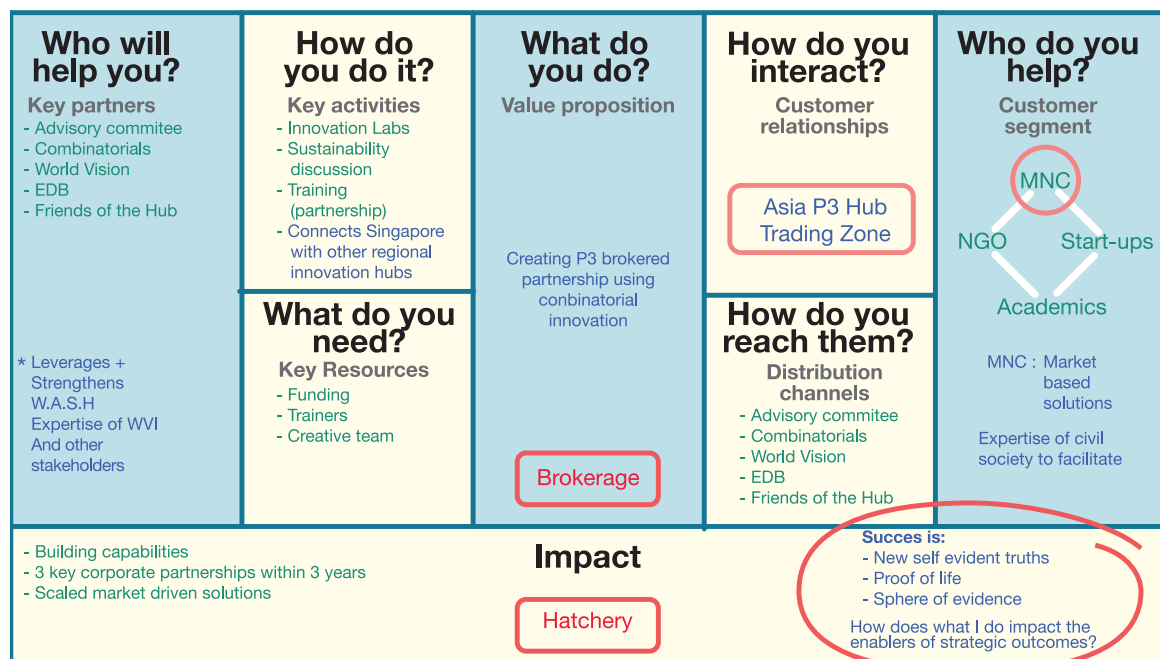
CHAPTER 3

WORKSHOPS AND BUSINESS MODEL CANVAS

3.1 PROCESS / APPROACH

In June, July and August 2016, Asia P3 Hub organized three facilitated workshops with key stakeholders who welcome the opportunity to share their ideas and contribute to the initial partnership strategy and beginnings of a business / operational model.

Anne Lochoff guided us through the following framework (based on the Business Model Canvas). The outcomes per workshop were shared amongst all participants and Asia P3 Hub stakeholder groups (more than 400). Each workshop was represented by around 25 people; 21 organizations across government, business, academia and NGOs joined together, contributing perspectives and experiences from a variety of vantage points.



Trading Zone (source): a safe space where multiple stakeholders from different sectors and vantage points can establish new relationships and source ideas

The Hatchery (seed): ideas are explored, developed and prototyped through research, development and field testing

The Brokerage (formerly Business Development) (scale): different business models and investment solutions to scale out proven innovations in multiple context are suggested here; including brokering of formal private-private partnerships for competitive advantage¹²

Visual overview of Market Research Outputs - Phase I <http://bit.ly/2caXdzI>

Besides focusing on the participants from multiple sectors – it was crucial for participants to share with the other participants what they can bring (resources) into the Asia P3 Hub. Solving the water related challenges doesn't only depend on implementing the right technology or bringing in new funding. The Asia P3 Hub contributes to a different approach: it builds shared value partnerships in which all stakeholders are willing to contribute and collaborate openly.

There is a strong belief to focus on a set of initiatives that need acceleration (it all depends on the right idea, people involved and timing). It is also necessary to provide authentic feedback (challenges) to partnerships that could lead to stop their initiative, advocating the fail fast approach.

3.2 TAKEAWAYS

Using the Business Model Canvas as a roadmap for the entire process, each of the three co-creation workshops and the Launch event (at Singapore International Water Week) itself had a theme and a specific objective.

Workshop I explored these three questions – the fundamentals of a new enterprise:

- How do we interact?
- How do we reach them?
- What do you need?

Workshop II focused on best methods for collaboration given the initial research findings which were presented in the form of a “Work in Progress” (refer to page 3 for the illustration). Drivers, challenges, priority sectors and countries, potential service offerings and desired outcomes were all unpacked and discussed. Participants explored what the Hub should specifically do, and how it should be done.

Workshop III reviewed the strategic process to date including the final market research recommendations; identified gaps and topics yet unexplored and discussed what success looks like for the Asia P3 Hub. In particular, the Hub's Theory of Change and measurement of impact were robustly discussed.

The **Asia P3 Hub Launch** was a vibrant event of about 120 people, and provided a great chance to encourage more co-creation. Two interactive sessions were facilitated, encouraging networking and discussion around partnering for shared value solutions, and the Hub legacy.

The following explanations detail the structure of each workshop.

Workshop I: 10 June 2016 – hosted by Hyflux Singapore

How do participants interact?

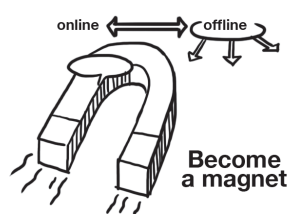
- Acknowledging and taking advantage of specific individual skills
- Promoting linkages

How do we reach them?

- Forming collaborations with outside sources
- Increase the level of community engagement with the project by creating a movement

What do you need?

- Setting boundaries for the project to best utilize the time of and the expertise of the individuals in the partnership
- Creating a sustainable plan with focused long term goals and profits to keep the momentum of the movement running successfully
- Having those that are interested commit to the partnership to ensure that ideas and conversations turn into actions
- Focus on the social good of the process as balanced with the need for profit measured by impact.
- Ensuring ability to foster innovation for all involved in the partnership through funding and partnering
- Involvement of the community as ambassadors
- Wide range of innovators and thinkers

**Workshop 2: 8 July 2016 – hosted by Singapore Management University (SMU) Singapore***“What do you do?” and “How do you do it?”*

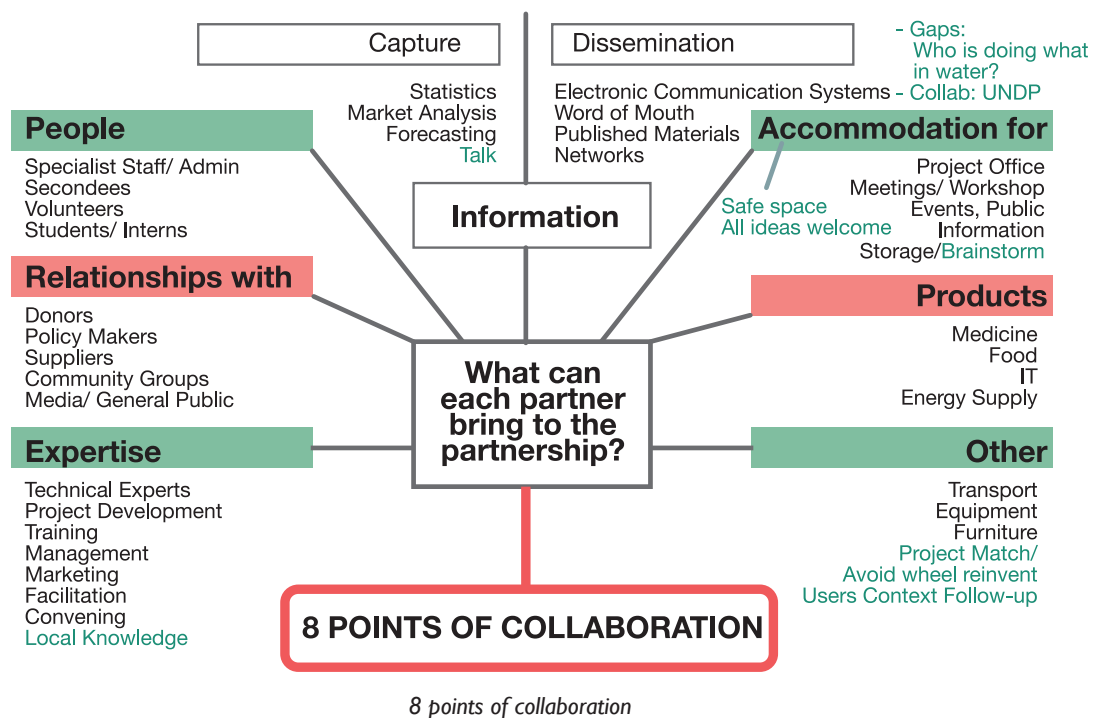
- The Asia P3 Hub must emphasize the need to fully utilize and leverage internal and external talents & resources to strengthen & overcome weaknesses to combat social injustices in target countries, maximizing impact and creating innovations for solutions to these problems.
- It is critical that most of Asia P3 Hub energy is concentrated on stakeholders, centering the Asia P3 Hub’s purpose mainly around creating a space where multi-sector collaborations can operate at optimal productivity. Along with this, defining and providing a Gold Standard to guide actions as well as decrease risk from the investor point of view will build Hub credibility and are essential for success.
- The most important action to combat the issues in each target country is to first work in parallel with each country’s main priorities and then to target the root causes of problems which drive/underpin them...while keeping in mind the key to combinatorial innovation to use strengths to highlight collective ideas to maximize our impact.

Launch Event: 10 July – Singapore International Water Week**- Legacy Session:** *Facilitated by Talent Leadership Crucible’s Ramesh Ramachandra and Poorani Thanusha*

- Guests were invited to answer this question: It is the year 2022. What is the headline of an unprecedented accomplishment of this partnership?
- Outputs could be categorized into these 5 areas:
 1. Water supply (access, quality, security, and affordability)
 2. Sanitation (access, sanitation management, and business models)
 3. Environmental hygiene (drainage and solid waste management)
 4. Poverty
 5. Partnerships/business models of many kinds

- **Partnership Session:** Facilitated by Anne Lochoff, Hub Business Strategy Facilitator, and Loring Harness, Hub Mentor

- Guests of the Asia P3 Hub launch event were asked to add information to the “8 Points of Collaboration” worksheet. “8 Points of Collaboration” illustration was scaled from just “how to collaborate” to answer the question “What can each partner bring to the partnership?”
- During the workshops the following 8 points of Collaboration were discussed: <http://bit.ly/2bZJuxV>



Workshop 3: 12 August – hosted by PUB, Singapore’s National Water Agency

What does success look like?

- Asia P3 Hub makes progress on Sustainable Development Goal 6 – Ensure availability and sustainable management of water and sanitation for all – through Asia P3 Hub
- Asia P3 Hub contributes to Sustainable Development Goal 6
- Asia P3 Hub reduces malnutrition rates in Indonesia through water projects

What gaps need to be addressed (Country specific context solutions)?

- Find funding to ensure solutions identified by NGOs are sustainable
- Poverty penalty (the relatively higher cost that poor people tend to pay to eat, buy and borrow than the rich, as cited by C.K. Prahalad in his 2005 book The Fortune at the Bottom of the Pyramid)
- Narrow the gap between supply and need, receiving and being able to deliver, and also in maintaining the infrastructure once built
- Water demand current exceeds rainfall based supply quantities
- Community responsibility for sustained quality of water after new techniques introduced

What methods, processes and systems are needed to achieve desired impact?

- Application of Theory of Change methodology for each project design
- Serving as a brokering platform to more of a matchmaking platform and strategic alliances
- Outcome incubation and acceleration of initiatives that are going to market with enormous impact
- Accelerating prototyping, scaling and developing a business style pitch to pique the interest of the caliber of stakeholders

What's next?

The workshops provided very valuable information on the ideas and contributions of the partnerships – and resulted in a good set of initial partnership strategies and pipelines of potential to be brokered partnerships. In the future, the workshop style will be transformed into creative innovation & design labs – in which the Asia P3 Hub will focus on real (in-country) problems. This will be a great opportunity to experience the short-listed services and operating model.





**“ Shared Excitement and
Collaboration.**
400 organisations engaged;
30 leads identified;
3 co-creation design
workshops convened **”**

CHAPTER 4

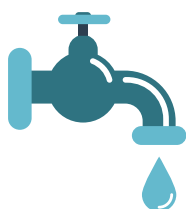
PRIORITY WATER SECTOR

4.1 WATER MARKET SCAN

At the beginning of the Market Research and Scoping Study the focus was on all relevant priority water sectors, and a shortlist of the four most important ones after market research, interviews and workshops was defined:

- Water supply (access, quality, reliability, security, affordability)
 - *Increase exposure to waterborne diseases from contact with unsafe water sources.*
- Sanitation (access, sanitation management and business model)
 - *High child mortality rate due to a lack of good hygiene. Access disparity due to class.*
- Hygiene behavior change (including knowledge)
 - *Lack of knowledge on importance of hygiene for health and a lack of behaviors that promote improved personal hygiene*
- Environmental hygiene (drainage and solid waste management)
 - *Water supply contamination and spread of diseases due to a lack of efficient solid waste management.*

Water Supply



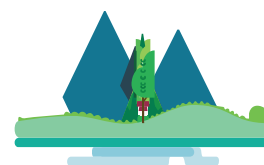
Sanitation



Hygiene Behaviour Change



Environmental Hygiene



(Appendix 4 provides one-pagers with more detailed information per priority water sector.)

4.2 WATER SUPPLY OPPORTUNITIES

The Asia P3 Hub will focus on Water supply (access, quality, reliability, security, affordability). The survey and stakeholder interviews confirmed the need of access to safe water in 6 countries (Tier 1 and Tier 2). The incubation side of the Hub will focus on the introduction of sustainable social and market-based enterprise models across all technical areas (where relevant).

- Summary of the shortlist of 7 problem statements for Water Supply: <http://bit.ly/2ce1ViY>

1 Water Supply Systems <ul style="list-style-type: none"> - Implementation - Urban + Rural Communities - Expansion Existing Water Supply 	Asia P3 Hub Problem Statements	2 Water Supply System Parts <ul style="list-style-type: none"> - Value chain of spare parts - Water kiosk private sector 	3 Water Treatment System <ul style="list-style-type: none"> - Local water treatment - Microfiltration
4 Water Quality Monitoring <ul style="list-style-type: none"> - Bring Lab to People - Capacity Development - Frameworks 	5 Water Supply Security <ul style="list-style-type: none"> - Awareness Demand Management - Data Quality + Quantity 	6 Water Supply Tariff Setting <ul style="list-style-type: none"> - Water Kiosk - Value Water - Data - Pre-paid Meters 	7 Water Supply Reducing-non-revenue water ratio <ul style="list-style-type: none"> - More reliable billable water - Leakage - Illegal tapping

Water supply (access, quality, reliability, security, affordability) was the top of the four areas, and so initial energies will be directed accordingly.

Over the coming months we will explore more in-depth tracks (opportunities) around the following water supply 'problem statements':

1. Urban/Rural/Communities Water Supply Systems

- Urban: improving water service delivery (pipe-systems) of utilities for universal access/for the last mile programming.
- Peri-Urban: expand the water provision from already existing water connections by exploring the potential of quasi-utility based decentralized systems where connection to central piped services are difficult.
- Rural: become a strategic broker between local communities (CBOs or WASH committees) and utilities.

2. Water Supply Systems Parts

- Development of water supply system parts ('supply chain of parts for water supply systems' to improve the linkages between universal access and pre-existing supply chains in country).

E.g. – Splash Nepal is utilizing the supply chain of micro-filtration units for hotels in Kathmandu to ensure access of filtration spare parts for their water quality treatment systems in schools in Kathmandu.

- ‘Greater involvement of the private sector via Water Marketing and viable Water Kiosk (business) models’ and explore high technology solutions that can become viable because of the willingness to pay for a quality service – e.g. – cross subsidies between wealthy and poor communities.

3. Water Treatment Systems

- The planning, construction and/or operation of water treatment systems for potable use – and business models for financial sustainability
- How to organize local water treatment (micro filtration) system (for around 1000 people)

4. Water Quality Monitoring

- Change the planning and execution of water quality monitoring programs into more bottom-up and utility / community driven. Instead of bringing samples to commercial laboratory, communities will be empowered to use mobile technology for water-quality testing and share the data back to utilities and government.
 - Mobilise easy to use faecal contamination analysis tools for community monitoring. See for example Aquagenx¹³
 - Faster, easier, on-the-spot water testing that’s far more transportable. See for example Akvo Caddisfly¹⁴
- Capacity development around institutional frameworks and alignment with reliable water quality standards (related to SDGs)

5. Water Supply Security

- Awareness on the demand management side of water in-differences. ‘Not to spill potable water during distribution’. Better insight in water availability for communities (data quantity and quality).
E.g. – aspects like fit-for-purpose water, water reclamation and reuse – rainwater/ storm water capture and storage for non-potable use etc. – all which have serious water security impacts

6. Water Supply Tariff Setting

- Important for utilities to continue to provide services, but mostly not possible due to lack of available data. Gather better information via water kiosk on water-quality and water-quantity. Experience with prepaid water meters. Explore interest / partnership with private sector.
E.g. – pre-paid water services, adequate tariffs for central systems, tariffs for decentralized systems, cross subsidizing, pro-poor tariff structures and equity

7. Water Supply - Reducing Non-Revenue Water (NRW) Ratios

- Share business models on more and reliable billable water by reducing illegal tapping of water and percentage of leakage.
E.g. – the importance of developing community – utility trust so that community members are more willing to pay billed quantity – in some cases when people feel that the service quality is poor they will refuse to pay bills which leads to increased NRW too.

¹³ <https://www.aquagenx.com/>

¹⁴ <http://akvo.org/akvo-caddisfly/>

4.3 OTHER WATER OPPORTUNITIES

Over the coming months we need to explore more in-depth tracks (opportunities) around:

SANITATION

1. Sanitation/wastewater supply chains
2. Community engagement
3. Establishing community wastewater or sanitation maintenance and operating procedures
4. Wastewater resources capture and reuse
5. Wastewater system financing and business model development
6. Sanitation and wastewater policy development

HYGIENE BEHAVIOUR CHANGE

1. Human Centered Design
2. Designing for Behaviour Change
3. Water, sanitation, hygiene, drainage or waste capacity development and training modules
4. Impact assessment of behaviour change interventions

ENVIRONMENTAL HYGIENE

1. Solid Waste Management implementation and monitoring
2. Solid waste resource recovery - financing and business development
3. Water for industry
4. Wastewater from industry



“ Why Partnerships?
Collaborative, innovative,
and shared-value solutions
for transformational change **”**

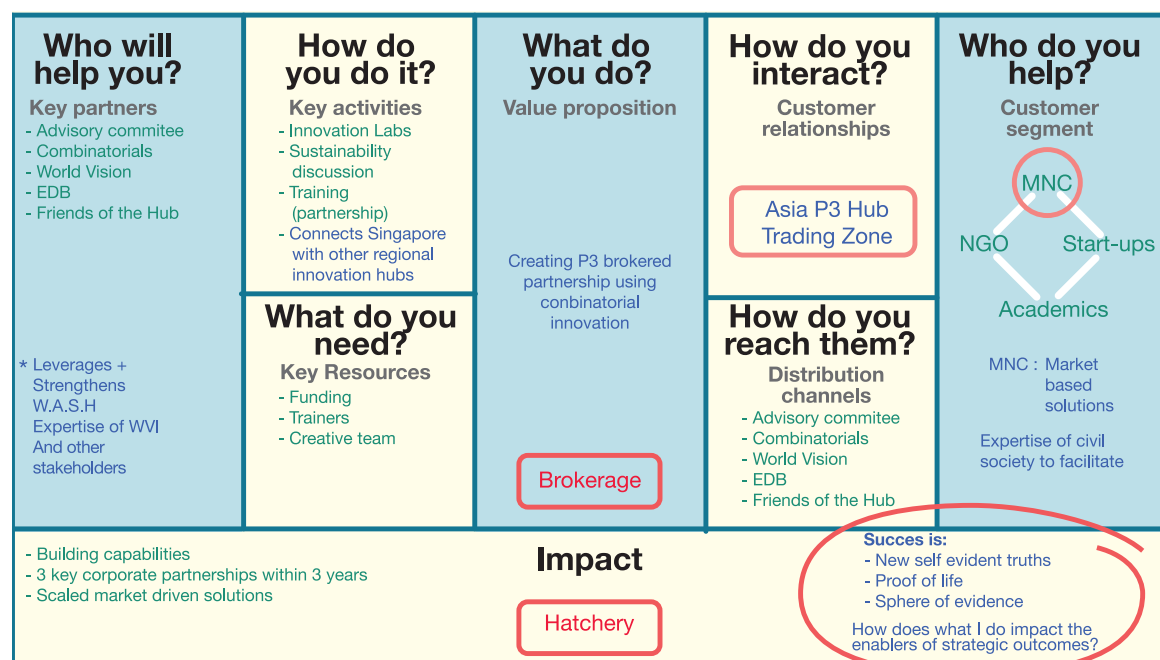
CHAPTER 5

OPERATING MODEL

5.1 PROCESS / APPROACH

The Asia P3 Hub is launched – and is open for business, while building a nimble operating model and developing a sustainable business model as the same time. It looks like the ‘Lean-Startup’¹⁵ approach – building and launching new propositions to learn quickly and be nimble in developing non-traditional and new types of partnerships. In addition, learning to fail fast and continually improve will be key. Strongly linked to the operating model is the Business Model Canvas that was used during the workshops to frame operations, impact and mapping of partnerships/services/resources. As mentioned in Chapter 4, Asia P3 Hub is working on a clear focus for its priority sectors and in the meanwhile mapping potential partnership brokering that can be impactful.

The creative outcomes of the Business Model Canvas are presented below: <http://bit.ly/2c3TzIR>



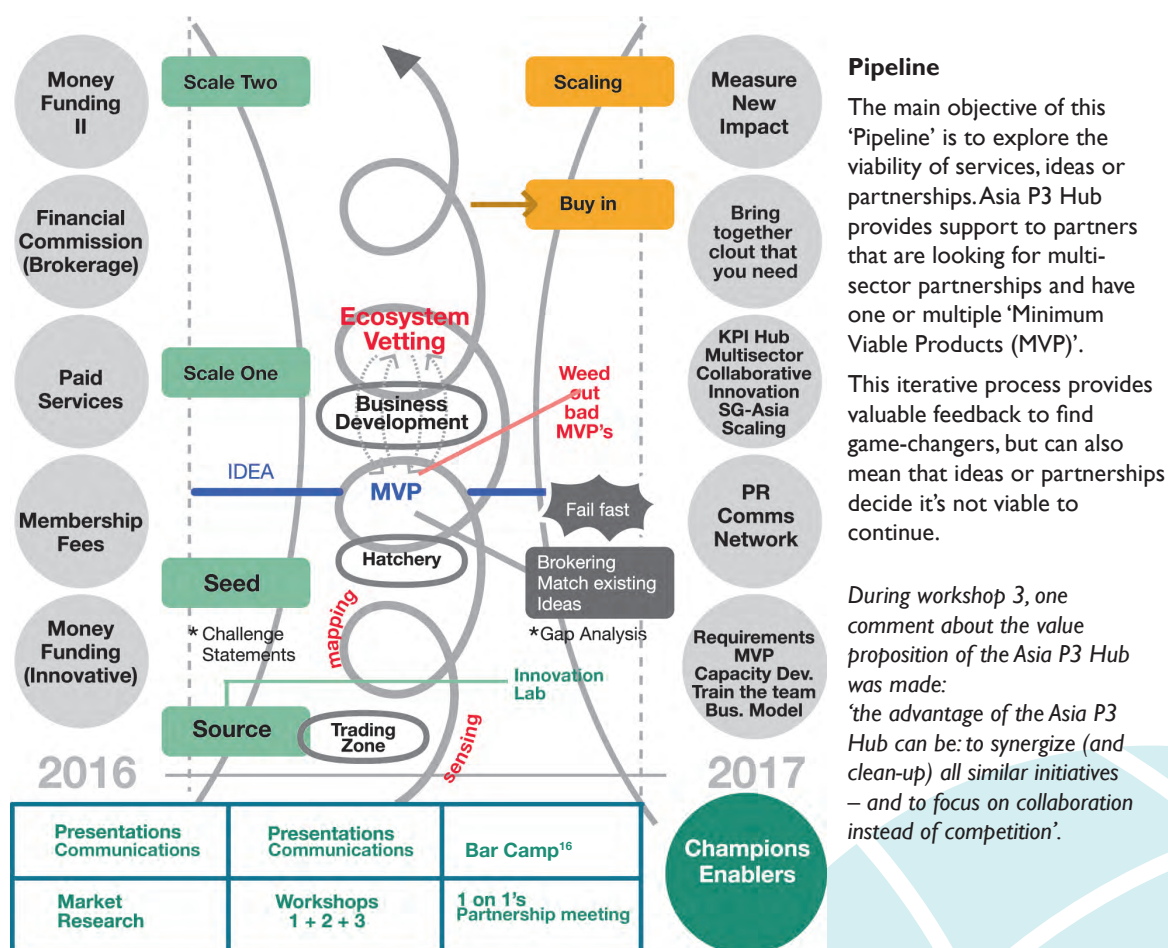
After scanning all priorities for the Asia P3 Hub and defining the Business Model (Canvas), it was time to start exploring the process flow (zones) for the Asia P3 Hub operations.

¹⁵ <http://theleanstartup.com/> - It's a movement that is transforming how new products are built and launched. Benefits of the Lean startup approach. Be more innovative. Stop wasting people's time. Be more successful.

So far, the Asia P3 Hub consists of the following three “zones”:

1. **Trading Zone (source):** a safe space where multiple stakeholders from different sectors and vantage points can establish new relationships and source ideas
2. **The Hatchery (seed):** ideas are explored, developed and prototyped through research, development and field testing
3. **The Brokerage (formerly Business Development) (scale):** different business models and investment solutions to scale out proven innovations in multiple context are suggested here; including brokering of formal private-private partnerships for competitive advantage

The following illustration is a first attempt to include, transform and visualize these zones into an Asia P3 Hub operating model. It captures the philosophy to approach the challenges bottom-up – and is focused on scaling solutions. <http://bit.ly/2c7GXPA>



Partnerships will take many shapes. It's interesting that the Asia P3 Hub hasn't yet become operational, but already more than 400 organizations and individuals are on our contact list.

5.2 TRADING ZONE LEADS

There have been 30 concrete leads identified in the Trading Zone and are under exploration. The ideas are structured around the Asia P3 Hub services. The upcoming Innovation Labs will be a good showcase to experience the viability of these initiatives into becoming a Minimum Viable Product (Partnership!). The first Innovation Lab will be hosted by a corporate partner and will be focused around the problem statement of 'water supply.' There is great interest and discussions underway about how to bring (broker) these ideas to the next level in a safe space (to succeed or fail) (more information about 'safe space' in appendix 5.1).

5.3 SAFE SPACE

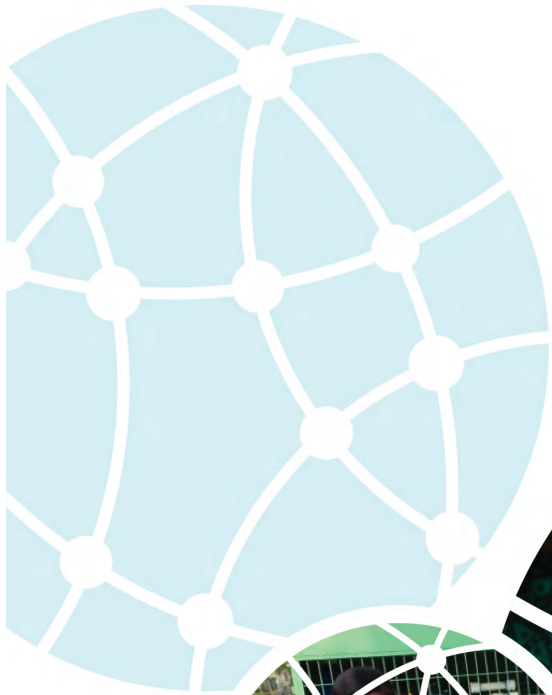
As mentioned, one of the key takeaways of the workshops is the need to create safe spaces not just to succeed or fail, but to also encourage authentic and bold brainstorming, conversation and idea across stakeholders who haven't sat at the same table before. It is a safe space to build new relationships. Emergent solutions to complex challenges will need to be revised/ reworked and some will fail but lessons can be learnt from each of them and that is still success.

As the Asia P3 Hub is growing and recruiting qualified people with a combinatorial mind-set, this safe space is a must-have and critically important element for the Hub to become a magnet for new partnerships, that a dynamic, safe physical space is needed to encourage and facilitate creating thinking and combinatorial innovation. Besides the (physical) location, it's important to sense a certain creative vibe of the space (design) itself. The other crucial element is the accessibility to the network (corporate – but also startups - government and civil society) the Asia P3 Hub is looking for. Finally, there are pros and cons to being connected to the water sector professionals as well. Asia P3 Hub will share reports about their 'safe space' journey – and is open for partnership offers.

5.4 NEXT STEPS – ROADMAP Q3-4 2016

- Launch Asia P3 Hub - Communication Strategy (Channels / Messaging / Stakeholders)
- 20-22 September BOP Convention - Mini-innovation Lab
- Implement Asia P3 Hub - Governance Structure / Advisory Committee
- October: Corporate Innovation Lab in Singapore (TBD)
- Share Asia P3 Hub - Theory of Change
- November - December: Host National Innovation Labs in priority markets to kick-start Asia P3 Hub projects
- November: Partnering Workshop (Capacity Building) (TBD)
- November: Impact measurement workshop (TBD)
- December: Public event highlighting activity to date





APPENDIX 1

PRIMARY RESEARCH

1.1 INTERVIEWS: PARTNERS

The following partners were interviewed and their insights are included in the Market Research and Scoping Study:

- David Pong – WateROAM <Singapore> - part of combinatorial group
- Loring Darkness – Ngwe.su <Myanmar> - Advisor to Asia P3 Hub
- Wilson Tan – Hyflux <Singapore> - part of combinatorial group
- Peter Goodfellow - Save The Children <Lao PDR>
- Marc van Loo – Loola Eco Resort <Indonesia>
- Victoria Great - Procter & Gamble <Singapore> - part of combinatorial group



1.2 INTERVIEWS: WORLD VISION COUNTRY OFFICES

The following World Vision persons were interviewed and their insights are included in the Market Research and Scoping Study:

- Mahesh Nathan – Head - Natural Resource Management, World Vision India
- Mita Sirait – Program Manager WASH, World Vision Indonesia
- Suresh Bartlett – National Director, World Vision Myanmar
- Sarah Carrie – Programme Quality & Development Director, World Vision Myanmar
- Heiko Knot – Corporate Engagement Office Cross-Sector Partnerships, World Vision Netherlands

APPENDIX 2

COUNTRY ANALYSIS

2.1 SURVEY OUTCOME for COMBINED COUNTRY ANALYSIS

The outcome of the survey provided a shortlist in the priorities countries of our stakeholders. Over time we were able to group the shortlisted 7 countries into TIER ONE and TIER TWO countries as listed below.

- Overview of TIER ONE countries:

	Top 3 Summary	Singapore	India	Indonesia	Myanmar
Priority Sector	1. Water Supply 2. Sanitation 3. Hygiene Bev Change	Water Supply Environmental Hygiene Hygiene Behaviour	Water Supply Hygiene Behaviour Change Sanitation Environmental Hygiene	Water Supply Sanitation Hygiene Bev Change	Water Supply Hygiene Behaviour Sanitation
Main Problems	1. Lack of capacity/ capability 2. Lack of sufficient local knowledge to enter and/ or expand the business 3. Context complexity	- Lack of capacity/ capability - Context complexity - Growing competition - Lack of good financing	- Lack of capacity/ capability - Context complexity - Bureaucracy/ regulatory - Requirements	- Bureaucracy/ regulations - Lack of sufficient local knowledge to enter and/ or expand the business - Lack of capacity/ capability	- Lack of capacity/capability - Lack of sufficient local knowledge to enter and/ or expand the business - Lack of quality partners - Bureaucracy/regulations
Opportunity for Collabora- tion	1. Multiple stakeholder partnerships can provide both business and societal benefits 2. Provides a complementary approach to understanding government priorities to provide shared value solutions 3. Field testing/ prototyping	- Provides a complementary approach to understanding government priorities to provide shared value solutions - Field testing/ prototyping - Multiple stakeholder partnerships can provide both business and societal benefits	- Multiple stakeholder partnerships can provide both business and societal benefits - Provides a complementary approach to understanding government priorities to provide shared value solutions - Field testing/ prototyping - Expansion and scale of products and services well suited to local markets	- Multiple stakeholder partnerships can provide both business and societal benefits - Provides a complementary approach to understanding government priorities to provide shared value solutions - Field testing/ prototyping - Expansion and scale of products and services well suited to local markets	- Multiple stakeholder partnerships can provide both business and societal benefits - Provides a complementary approach to understanding government priorities to provide shared value solutions - Field testing/ prototyping
Services to offer	1. SV partnership 2. Scaling for Sps 3. Investment 4. Field Testing 5. Inclusive Bus	1. Investment 2. Exchange of ideas in a safe space with new collaborators 3. Provides a creative thinking space “combinatorial innovation” 4. Field Testing 5. Shared value partnerships	1. Investment 2. Field Testing 3. Prototyping	1. Shared value partnerships 2. Opportunities to amplify new growth efforts 3. Inclusive Bus	1. Investment 2. Scaling for Sustainability 3. Field Testing/ Prototyping 4. Shared Value

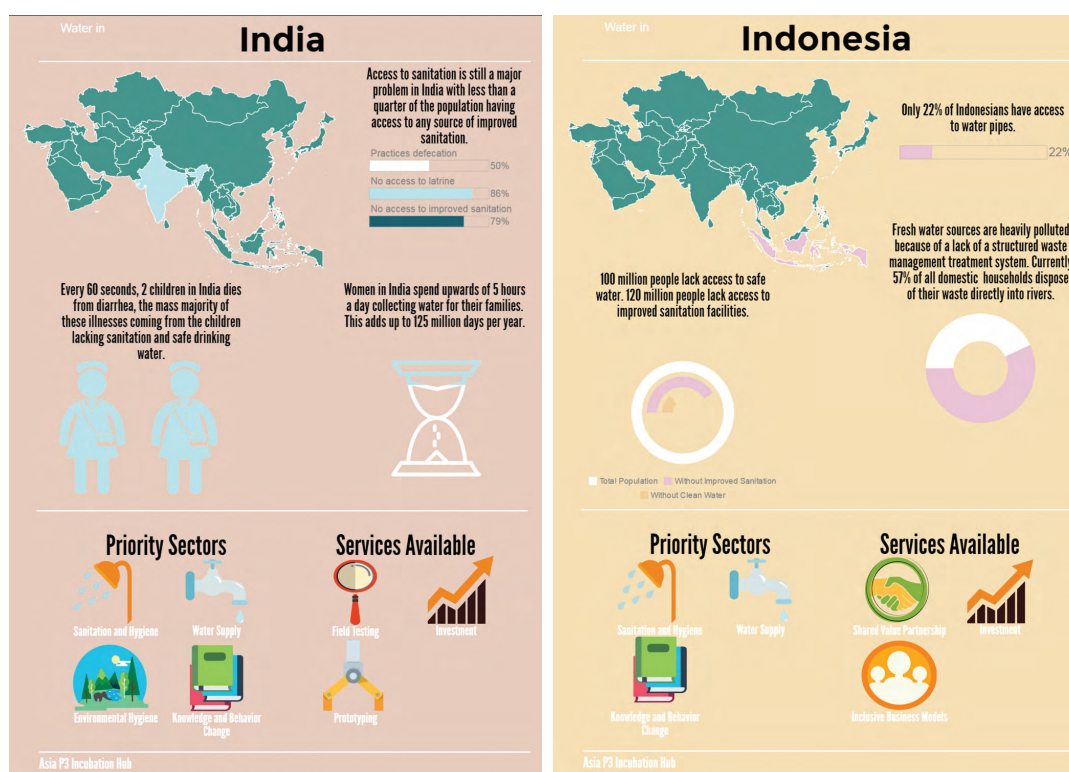
APPENDIX 2 - Country Analysis

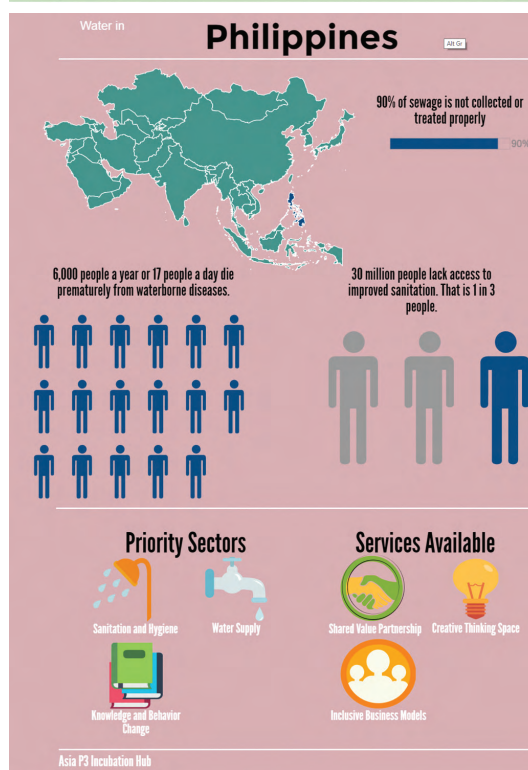
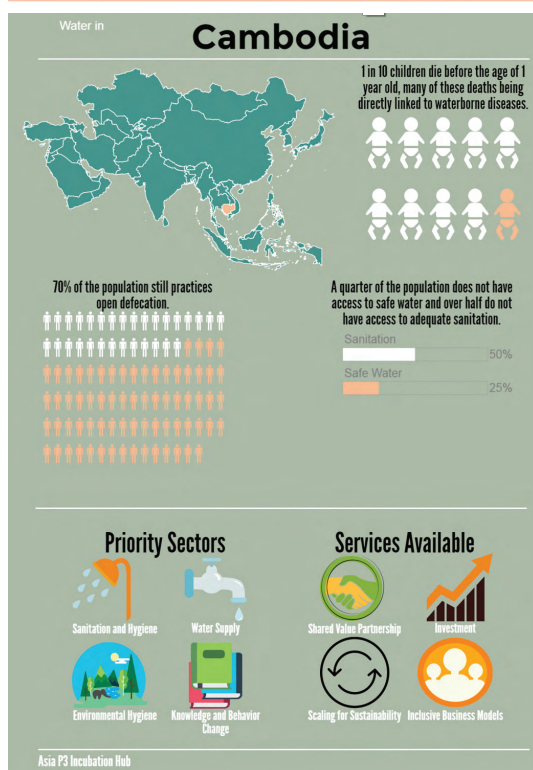
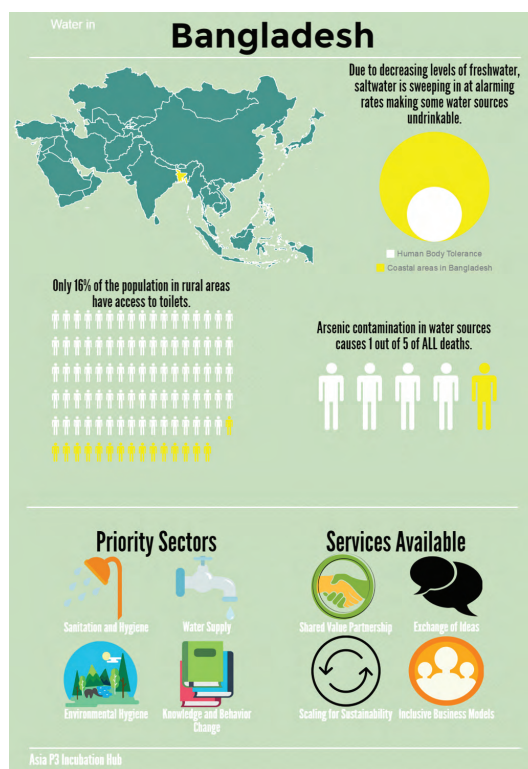
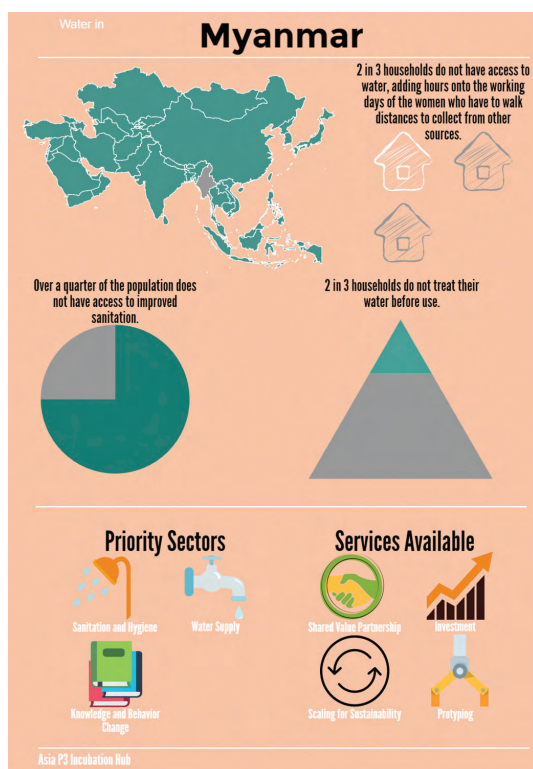
- Overview of TIER TWO countries:

	Bangladesh	Cambodia	Philippines
Priority Sector	Sanitation/ Hygiene Behaviour Change Water Supply Environmental Hygiene	Water Supply Hygiene Behaviour Sanitation	Water Supply Sanitation Hygiene Behaviour Change
Main Problems	<ul style="list-style-type: none"> - Lack of capacity/ capability - Context complexity - Lack of sufficient local knowledge to enter and/ or expand the business 	<ul style="list-style-type: none"> - Lack of capacity/capability - Lack of quality partners - Lack of sufficient local knowledge to enter and/ or expand the business - Market Intelligence 	<ul style="list-style-type: none"> - Bureaucracy/regulatory - Lack of market intel - Lack of quality partners
Opportunity for Collaboration	<ul style="list-style-type: none"> - Field testing/ prototype - Multiple stakeholder partnerships can provide both business and societal benefits - Expansion and scale of products and services well suited to local markets - SV approach 	<ul style="list-style-type: none"> - Multiple stakeholder partnerships can provide both business and societal benefits - Expansion and scale of products and services well suited to local markets - Provides a complementary approach to understanding government priorities to provide shared value solutions - Field testing/ prototyping 	<ul style="list-style-type: none"> - Multiple stakeholder partnerships can provide both business and societal benefits - Provides a complementary approach to understanding government priorities to provide shared value solutions - Expansion and scale of products and services well suited to local markets
Services to offer	<ol style="list-style-type: none"> 1. Scaling for Sustainability 2. Shared value partnerships (PPP, private sector partnerships, joint ventures) 3. Inclusive business models 4. Exchange ideas 	<ol style="list-style-type: none"> 1. SV partnerships 2. Field Testing 3. Scaling for sus 4. Investment 5. Inclusive Bus 	<ol style="list-style-type: none"> 1. SV partnership 2. Inclusive Bus 3. Provide Creative Thinking Space

2.1 COUNTRY STATISTICS

During the workshops we used the following country infographics to share basic WASH statistics of our priority countries. Most of the participants of the workshop weren't water professionals. For more details: <http://bit.ly/2bRzeY5>





India

- It is estimated that 21% of all communicable diseases in India are related directly to unsafe water.
- Diarrhea alone causes 1,600 deaths daily – the same as if eight 200-person jumbo-jets crashed to the ground every day. This is also the leading cause of death in children under 5, with 1.5 dying every year or 5 children per minute.
- In all of the primary schools in India, only half have safe drinking water and only 1 in 10 have sanitary facilities. The lack of sanitary facilities reduces the retention rate of girls attending school and increases disease spread among the most vulnerable group of people.
- 594 million people or half of the population defecates in the open. This is due mostly to only 14% of the population having access to a latrine and only 21% of the population having access to any improved sanitation facilities at all.
- Only 25% of the population has drinking water on their premise, resulting in women spending up to 5 hours per day collecting water from far distances. In India alone, it is estimated that women spend 150 million days per year collecting water, equivalent to a loss of income of over US\$148 million a year.
- By 2020, India is predicted to become a water stressed nation. With 85% of the population dependent on groundwater as their main source of water, it is a national problem with an estimated 70% of its surface water resources and a large growing percentage of its ground water being contaminated. Along with this, longer droughts are also drying out groundwater supplies. As India grows economically, the water demand for the industrial sector will continue to rise as well.
- Although India holds 16% of the world's population, it houses only 4% of its fresh water resources. And with India expecting to outnumber China in the upcoming years as having the largest population in the world at 1.6 billion people, the water resources will just continue to be thinned. An increased population will be quickly followed by a dramatic increase in water pollution from human and industrial waste. Also, with the majority of the growth occurring in the urban population, where there tends to be more water intensive live being led, the water crisis will only be further accelerated.
- The most concerning sector that will be heavily impacted by the water crisis will be the agricultural one. Currently, 90% of India's water resources are used for agriculture. At the current rate of water pollution and the over depletion of groundwater sources, food security will become an equally concerning problem.



***1 in 10 primary schools
have sanitation facilities.
1 in 2 people practice
open defecation.***

Indonesia

- Indonesia, containing 20% of Asia Pacific's water resources, while is not a water-scarce country, is negatively impacted by poor water management and limited infrastructure that cannot keep up with its rapid economic growth and, in some areas, has been driven to scarcity levels. For example, Java, which houses 60% of the population, holds less than 10% of the country's water while Kalimantan, which houses only 6% of the population, has 30% of the water resources. And with Indonesia's physical geography, redistributing water evenly is not possible.
- Like many of the countries surrounding Indonesia, it is a region that experiences both dry seasons and rain seasons. Though harvesting rainfall from the monsoons is becoming a more common action, it is still underdeveloped and is not a reliable source of water for the dry season.
- Despite the limited infrastructure development, Indonesia is undergoing rapid economic growth anyway, resulting in deforestation and the creation of extractive industries, both increasing the amount of pollution in nearby water sources. As Indonesia begins to use more of its resources on manufacturing and agriculture production, competition for water resources will begin between these two industries.
- Named the dirtiest river in the world, the Citarum River in West Java holds high levels of consumer and industrial waste and contains 4 times the recommended safe levels of mercury. Despite this, more than 35 million people rely on this water for domestic use and for drinking and supplies water to Jakarta, Bandung, the greater Jakarta region, and independently irrigates 5% of Indonesia's rice farms.
- Though there are regulations that forbid the dumping of effluent and waste into water sources, these regulations are loosely enforced. And because solid waste management has not kept up with the population growth in the past years, the landfill sites are becoming overwhelmed.
- Only 22% of Indonesians have access to water pipes.
- Fresh water delivery, while an option, is not affordable for many families. Since 1998, the average water tariff has increased by 240%, much more expensive than any of its neighbors including Singapore. There is current political decision about these private companies' exclusive rights to these major water sources (including rivers, springs, lakes, and swamps). If the water supply is returned to the public sector, the water tariff could lower, making the supply more affordable.
- Water shortages and pollution has had a major effect on Indonesia's industrial growth, with industries in the largest cities being forced to close due to droughts and fisheries being dramatically affected as the polluted waters damage fish stocks.



High tariffs on fresh water supplies force many communities to turn towards polluted water sources.

Myanmar

- With many families living in poverty on less than US\$2.50 a day, clean drinking water is not affordable for them, resulting in them being forced to turn to public water sources, most of which are not monitored according to national or international standards and are often contaminated with outside sources. Along with this, many of these communities do not even know the effects that contaminated water can have on their health.
- Although Myanmar has the second largest amount of renewable water sources per person in Southeast Asia, a lack of sanitation measures has led to these water sources to be contaminated with feces and bacteria. These water sources are further contaminated when floods during the 5-month rainy season carry sewage and fertilizer into them. Many of Myanmar's drinking water sources are also deeply contaminated with arsenic and after the 2008 cyclone Nargis, are also contaminated with high levels of saltwater.
- Although there is an increasing amount of access to improved sanitation facilities in Myanmar (85% access), although access to latrines at home does not necessarily mean that there is universal access. The mass majority of schools either do not have latrines at are or the latrines are kept in such a poor condition that they are deemed unsanitary or even unusable by children. Also, many workers are forced to resort to open defecation due to there are rarely being latrines on the fields and in some workspaces.
- Two thirds of all households do not have access to water, resulting in the need to travel long distances to collect water. And because of the lack of knowledge surrounding good hygiene practices, water fetching and storage are not safely managed,



2 in 3 people do not have a reliable source of clean water.

Most water sources have arsenic and saltwater contamination.

Bangladesh

- 20% of the population (28 million) are living in areas with harsh conditions where water access is a constant challenge.
- There are a number of refugees in Bangladesh as a result of the Bay of Bengal having high levels of arsenic contamination and there being an increasing need to dig deeper to access safe water.
- In northern Bangladesh, there are constant drought spells, resulting in the need to dig more than 350 meters underground to access safe water. This along with the region having record low amounts of rainfall is putting huge amounts of stress in these regions.
- In the past five years, rainfall amounts have more than halved and what rainfall is left is coming in at unpredictable rates. This on top of the excessive extraction of the ground water supplies to meet the growing needs of the country is quickly drying supplies.
- Seawater is beginning to seep into the underground aquifers as a result of the decreasing levels of fresh water. The human body tolerance level of saline water is 5 parts per thousand, but in the coastal areas, these levels have already reached as high as 20 parts per thousand, making the water undrinkable. If this trend continues, all across Bangladesh, the drinking water supplies will too become undrinkable.
- Many of the fresh water sources are highly contaminated with arsenic, which has been linked to long-term problems, most concerning with skin disorders and internal cancers. This contamination causes 1 out of 5 deaths in Bangladesh alone.
- Due to contamination that makes surface water undrinkable, communities are being forced to return to their traditional, unprotected sources of water, including ponds and ditches, or are forced to walk to distant wells to collect water. These water sources dramatically increase the risk of coming in contact with acute bacteriological contaminations, leading to greater and wider outbreaks of waterborne diseases.
- Availability of water greatly depends on the season, with warmer seasons bringing monsoon (and often floods with them) and the cooler seasons bringing droughts. Due to the state of many of the infrastructure, there are often no way to efficiently collect the water from the monsoon season to save for the drought months.
- Due to its location, many of the great rivers, including Brahmaputra, Meghna, and Ganges, originate in other countries who control their flow, resulting in the amount of water that does reach Bangladesh to be greatly limited.
- Only 16% of the population in rural areas has access to a toilet.
- As the urban population is increasing rapidly as the poor from the rural areas migrate to earn larger wages for their families, the slum communities grow. With such a large amount of people living in such close quarters, the people of these communities often have very poor health, with most of them living on less than US\$2 a day and many living on less than US\$1



Many of fresh water resource are highly contaminated with arsenic.

Only 1 out of 6 people in rural areas has access to a toilet.

Cambodia

- 3.8 million or just over 25% of the population do not have access to safe water while over 9 million or just over 50% don't have access to adequate sanitation. Over 380 Cambodian child deaths every year from diarrheal diseases are a direct result of not having access to safe drinking water and to having poor sanitation
- In the region, Cambodia has the lowest sanitation coverage and the second lowest water supply coverage with over 70% of its population living in rural areas.
- Diarrhea is the leading cause of death in children under 5 years old, accounting for 1 out of five of these deaths alone. It accounts for 10,000 overall deaths annually, largely due to families having poor hygiene practices and a lack of sanitation and safe water. Vitamins and mineral deficiencies due to diarrhea result in an annual loss of US\$146 million to Cambodia's GDP.
- 40% of primary schools and 35% of health centers do not have safe drinking water facilities, resulting in low school attendance rate for girls and negative health outcomes in these facilities.
- Many ground water sources are deemed undrinkable due to arsenic contamination. Because it has no taste or smell, it can be hard to detect and results in a series of irreversible health complications. Over 1,600 villages in Cambodia have already been identified as being at risk of arsenic contamination in their water supplies. Because of this, many are turning instead to surface sources. Surface water sources are more likely to have high amounts of TTC, a bacterial indicator of waterborne fecal contamination. This leads to higher risks of diarrheal diseases.
- In rural areas, only 5% of the population has piped water services.
- 10% of Cambodian children die before they are a year old, many of these deaths being the result of waterborne or mosquito carried diseases due to the nation's poor or lack of adequate sanitation facilities.
- In place of sanitation facilities, many rural communities use rice paddies, banana groves, and other water sources to dispose of their waste, polluting their own water sources.
- Of the population in Cambodia, nearly 70% still practice open defecation as their main sanitation option.
- There are great disparities in access to sanitation and water between rural and urban areas, between different wealth groups, and across and within provinces. People in urban areas have three times more access to sanitation than those living in rural areas, the wealthiest have 22 times more access to piped water than the poorest, and diarrhea is 5 times more prevalent in some regions than in others.



Has the lowest sanitation coverage in the region.

7 in 10 people practice open defecation.

Singapore

Note: Singapore is not in the same category as the other six Tier 1 and 2 countries. Singapore is the knowledge & resource hub for our operation.

- Singapore has come a long way in the last 40 years, transforming from being vulnerable in its supply and resources of water to becoming a center of water excellence and a global Hydrohub.
- Singapore is now home to over 180 water companies and 28 private and public research centers, with National University of Singapore and Nanyang Technology University ranking #1 and 2 respectively for water research.
- Today, Singapore's water supply comes from the four national taps: imported water; local catchment water; desalinated water; and NEWater.
- Despite this, Singapore is not immune to the spread of the water crisis across the Asia Pacific region. About 40% of its water needs are supplied from the Johor River in Malaysia¹⁷. However, like many of the countries in the region, Malaysia's water sources are beginning to dry up, results of longer dry seasons and more violent climate cycles. There is current advancement being made to eliminate entirely Singapore's dependency on Malaysia for imported water by increasing efforts and energy into the other three taps.



40% of Singapore's water supply is imported from Malaysia, which is now experiencing prolonged dry spells.

17 https://en.wikipedia.org/wiki/Water_supply_and_sanitation_in_Singapore

APPENDIX 3

BASIC WATER FACTS

3.1 WHY WATER?

<Facts and Figures – Sustainable Development Goals – Water and Sanitation>

- 2.6 billion people have gained access to improved drinking water sources since 1990, but 663 million people are still without
- At least 1.8 billion people globally use a source of drinking water that is fecally contaminated
- Between 1990 and 2015, the proportion of the global population using an improved drinking water source has increased from 76 per cent to 91 per cent
- But water scarcity affects more than 40 per cent of the global population and is projected to rise. Over 1.7 billion people are currently living in river basins where water use exceeds recharge
- 2.4 billion people lack access to basic sanitation services, such as toilets or latrines
- More than 80 per cent of wastewater resulting from human activities is discharged into rivers or sea without any pollution removal
- Each day, nearly 1,000 children die due to preventable water and sanitation-related diarrhoeal diseases
- Hydropower is the most important and widely-used renewable source of energy and as of 2011, represented 16 per cent of total electricity production worldwide
- Approximately 70 per cent of all water abstracted from rivers, lakes and aquifers is used for irrigation
- Floods and other water-related disasters account for 70 per cent of all deaths related to natural disasters
- “Sometimes we focus so much on the big numbers, that we fail to see the human tragedies that underlie each statistic,” says Sanjay Wijesekera, global head of UNICEF’s water, sanitation and hygiene program. If 90 school buses filled with kindergartners were to crash every day, with no survivors, the world would take notice. But this is precisely what happens every single day because of poor water, sanitation and hygiene.”
- Almost two in three people lacking access to clean water survive on less than \$2 a day, with one in three living on less than \$1 a day (Global Issues)
- More than 660 million people without sanitation live on less than \$2 a day, and more than 385 million on less than \$1 a day (Global Issues)
- Every minute a newborn baby dies from infection caused by a lack of safe water and an unclean environment (WaterAid)

- Half the hospital beds in developing countries are filled with people suffering from diseases caused by poor water, sanitation and hygiene (WaterAid)
- According to the World Bank, 88% of disease in the developing world is caused by unsafe drinking water. Diseases from microbial pollution may be the result of the contamination of drinking water by: (HaloSource)
 - o Human or animal feces containing pathogenic bacteria and viruses that may cause cholera amoebic and bacillary dysentery and other diarrheal diseases
 - o Parasites, such as *Dracunculus medinensis*, in organisms living in the water
- A decline in access to safe drinking water has a negative impact on education: (HaloSource)
 - o Illness related to drinking water and the time spent collecting water can, in some cases, prevent children from attending school. In Tanzania, for example, school attendance levels are 12% higher for girls who live within 15 minutes of a source than for girls who live an hour away. It is estimated that a lack of safe drinking water costs 443 million school days a year throughout the world
 - o The children who do attend school are believed to have a reduced learning potential as a result of parasitic infection, which, according to the 2006 Human Development Report, affects 150 children throughout the world each year

3.2 Why Water? Asia Specific Statistics

- Asia is home to half of the world's poorest people. Water for agriculture continues to consume 80% of water resources.
- A staggering 1.7 billion people lack access to basic sanitation. With a predicted population of 5.2 billion by 2050 and 22 megacities by 2030, the region's finite water resources will be under enormous pressure—especially with increasing climate variability. Recent estimates indicate up to 3.4 billion people could be living in water-stressed areas of Asia by 2050 (IIASA).
- Dengue fever, a water related health challenge, led to 10s of thousands of people falling ill and 100s of deaths throughout Southeast Asia in 2007 (NBR)
- In Indonesia, diarrhea is still a major cause of death amongst children under the age of five. Riskesdas 2007 reports diarrhea as the cause of 31 per cent of deaths between the ages of 1 month to a year, and 25 per cent of deaths between the ages of one to four years old. Compared to children from households using piped water, diarrhea rates are higher by 34 per cent amongst young children from households using an open well for drinking water. Moreover, diarrhea rates are higher by 66 per cent in young children from families practicing open defecation in rivers or streams than those in households with a private toilet facility and septic tank (UNICEF article)
- Poor sanitation and hygiene cause 50,000 deaths annually in Indonesia, with untreated sewage resulting in over six million tons of human waste being released into inland water bodies, according to an ongoing study by the World Bank (IRIN)
 - o “Even the water suppliers in Jakarta don’t use the water here because it is so polluted,” he said. “Instead, they use water from the Citarum River, which is also heavily polluted. Even after this water is treated it’s still unsafe to drink.” The Citarum flows north from Bandung, the capital of West Java, for approximately 300km to the Java Sea.

- Safe water alternatives for poor communities are “few and far between” Sahib noted. “Many will turn to use ground water, but due to a poor sewage system and open defecation, 90 percent of ground water in Jakarta is contaminated by E.coli bacteria. Many infant deaths are caused by this bacteria - E.coli is the main threat to human life from these rivers.”
- The World Health Organization (WHO) estimates that nationwide more than 20,000 children in this age group (under 5) die every year from diarrhea.
- Dengue fever and malaria, both spread by mosquitoes that thrive in stagnant water, account for an additional 3 percent of overall child deaths, according to Carwardine, who said more focus is needed to end the widespread practice of defecating in the open.

3.3 Why Water? Economic Statistics

Water scarcity leads to estimated annual economic losses of up to 7% of GDP in some countries (World Bank)

- For every \$1 invested in water and sanitation, an average of at least \$4 is returned in increased productivity (WaterAid)
- Throughout the world there is a strong correlation between access to safe drinking water and economic growth. That correlation may be explained in three ways: (HaloSource)
 - Higher levels of access to safe drinking water are likely to increase the rate of economic growth by improving the health and education of a population and minimizing the costs of unsafe drinking water
 - Economic growth and access to safe drinking water both depend on the same factors, such as socioeconomic stability
 - Economic growth results in higher levels of access to safe drinking water because governments may increase spending on water infrastructure
- The cost burden of ill health on the economy is twofold: (HaloSource)
 - Lost economic contribution of the sick or prematurely deceased
 - Lower productivity resulting from sick and less educated workers
- A study conducted by the Self Employed Women's Association (SEWA) in India found that reducing water collection by one hour a day would enable a woman to earn up to \$100 more a year, depending on her enterprise. Money and time that could be spent on economic activity (HaloSource)
- A case study of California demonstrates how the impact of the decline in access to safe drinking water in the developed world could be compounded by the decline of the emerging economies. Growth in the developed world may there also suffer from: (HaloSource)
 - The loss of export markets in the emerging and developing world
 - Rising labor costs in agriculture and industry
 - Lower productivity due to an increased health burden

- Case studies of China and India demonstrate how a lack of access to safe drinking water might prevent the emerging economies from sustaining the record growth rated predicted by analysts. Instead of high growth and prosperity, these regions may see: (HaloSource)
 - o Rising labor costs fueled by a rise in drinking water prices
 - o Lower productivity; the higher incidence of disease may lower productivity in the short run and undermine expenditures on education in the long run
 - o Greater investment risk; a lack of safe drinking water could ignite ethnic and regional tensions

3.4 Why Water? Singapore Statistics

- Water research heavily supported by the Singapore government (EDB)
 - o S\$470 million allocated to grow Singapore into a Global Hydrohub with an additional S\$1.7 billion to GDP and a creation of 11,000 jobs in water industry
 - o Nanyang Technological University and National University of Singapore ranked #1 and #2 respectively among world's top universities in water research
 - o Five of the top 30 global thought leaders in water research are based in Singapore
- “A new technology developed by American company Evoqua, with funding from Singapore’s agency PUB and the Economic Development Board, is paving the way for a more cost-effective desalination process. The discovery – from a three year pilot project started in 2010 at the PUB Variable Salinity Plant in Pasir Ris – uses half the amount of electricity required by conventional seawater reverse osmosis” (The Straits Times)

3.5 Why Water? Future Impact Statistics

- There is predicted to be a 40% shortfall between demand and supply of water by 2030 (World Bank)
- By 2025, there is expected to be over 1.8 billion people living in regions or countries with extreme water scarcity (World Bank)
- To feed the 9 billion estimated population by 2050, there will need to be an 15% increase in water withdrawals (World Bank)
- Although Asia is home to more than half of the world’s population, it has less freshwater—3,920 cubic meters per person per year—than any continent other than Antarctica. Almost two-thirds of global population growth is occurring in Asia, where the population is expected to increase by nearly 500 million people within the next 10 years. Asia’s rural population will remain almost the same between now and 2025, but the urban population is likely to increase by a staggering 60% (Asia Society)
- As population growth and urbanization rates in Asia rise rapidly, stress on the region’s water resources is intensifying. Climate change is expected to worsen the situation significantly. Experts agree that reduced access to freshwater will lead to a cascading set of consequences, including impaired food production, the loss of livelihood security, large-scale migration within and across borders, and increased economic and geopolitical tensions and instabilities. Over time, these effects will have a profound impact on security throughout the region (Asia Society)

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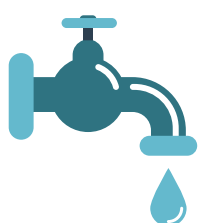
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APPENDIX 4

PRIORITY WATER SECTORS

4.1 DEFINITIONS

Water supply (access, quality, reliability, security, affordability)



We have a rising need for fresh water supply with 1 out of 10 people, 70% of which live in Asia, not having access to clean water. With the rapid increase in the world's population in the next 10 years, the increasing dry seasons, and the effects of climate change, water will become even scarcer, with an estimated 40% of the world population looking to live in a water scarce region by 2025. Lack of water access is directly related to poverty with people living in rural areas, making up 50% of the population, representing 7 out of 8 people in Asia without access to water. Lack of access to safe water increases exposure to and the number of fatalities caused by waterborne diseases (which is a leading cause of death in Asia, particularly in children) and decreases productivity (women and children spend upwards of 200 million hours a year collecting fresh water from distant locations). Freshwater consumption demand is rising at a rate that outruns the freshwater reserves and aquifers that we have now. Along with this shortage, there is even further stress as water quality is measured. Most Asian cities do not have effective wastewater treatment system, resulting in many of the region's rivers and other water sources to be highly polluted. Many of Asia's rivers contain up to 3 times the world average of human waste derived bacteria and this number is only predicted to increase as urban centers grow. Industrial production waste is also a major source of water contamination.

- Most of the major cities across Asia are lacking an effective wastewater treatment system: in Indonesia, only 14% of wastewater is treated. This percent dwindles down to 10% in the Philippines, 9% in India, and only 4% in Vietnam.
- Over 450 million people in Asia live on under \$1.90 a day. This makes water supply networks impossible for these families to purchase, leaving them to turn to unsafe water supplies.
- Due to a lack of access to sanitation infrastructures, the rivers in Asia are highly polluted with domestic waste, containing upwards of 3 times the world average of human waste derived bacteria. It is estimated that 1.8 billion people in the world use a source of water that is contaminated with feces.
- Along with waste pollution, the groundwater in many South Asian sites are contaminated with high levels of arsenic, with long-term exposure leading to cognitive impairment, cardiovascular diseases, and cancer. Some water sources have as high as 70 times higher concentrations than the national drinking water standard, with a large percentage of South Asian rural communities being at high risks of exposure to this toxin and a reported 20,000 deaths in Bangladesh alone per year.
- India alone accounts for 25% of all under 5-year-old deaths, with the leading cause of death being from diarrhea. Every year, 1.5 million children die in India from diarrhea, 90% of these deaths being directly linked to these children not having a reliable source of clean water. That is 5 preventable deaths per minute in India alone. Diarrhea is a leading cause of death in children for most Asian countries.

More specific Water indicators on Water Supply

- Water Supply Systems for Urban/Rural/Communities / Supply Systems Parts / Water Treatment Systems / Water Quality Monitoring / Water Supply Security / Water Supply Tariff setting / Water Supply - Reducing Non-Revenue Water Ratios

Sanitation (access, sanitation management, business models)



33% of the world population and over 50% of the Southern Asian population do not have access to improved sanitation. The lack of access to such sanitation leads to the spread of more diseases (practice of good hygiene could save 1.5 million children a year, or one every 20 seconds), the practice of open defecation (1 billion people and 9 out of 10 people in rural areas practice this) which often contaminates drinking water that further goes to be left untreated, and the rapid decrease in the attendance rate of girls following pubescence. Despite these statistics, the issues following sanitation are often overseen as a water issue and

the consequences are much less known.

- An estimated 90% of wastewater is returned directly into water sources (rivers, lakes, or the ocean) either partially treated or not treated at all in developing countries.
- 2.4 billion or 1 out of 3 people do not have access to an improved sanitation facility, which is defined as having either a toilet or another covered latrine that successfully separate human excreta from human contact. In Southern Asia, over half of the population are still lacking access to these sanitation. 1 billion people (700,000 in Asia) still practice open defecation, with 9 out of 10 of this population living in rural areas.
- Access to sanitation is directly related to a child's survival rate. In fact, the transition from an unimproved to an improved sanitation source reduces the mortality rates in children by over a third. This along with the practice of good hygiene and a safe water supply can prevent 1.5 child deaths a year or one child every 20 seconds.
- Sanitation differences between class is most noticeable in large cities where the residential areas where the poor live are often polluted with sewage from wealthier households and waste removal and toilets are seen as a luxury.

Hygiene behavior change (including knowledge)



A lack of knowledge and awareness of health and environment-related issues creates a growing environment for disease and illness.

- With a combination of poverty, poor health, and a lack of hygiene, children who live in homes without sanitation facilities miss more school than those with these facilities. This lack of education and social development even further marginalizes these children and their families, lessening their future chances of self-improvement and continuing on the endless circle of poverty.
- A change in hygiene behavior could reduce deaths by diarrhea by up to 45% globally.

- The most directly impacted group in rural areas is also those that are most likely not to change their behavior and attitude towards hygiene.
- The level of hygiene knowledge in this region is directly related to educational levels, which heavily depends on the educational level and income of the parents before,

Environmental hygiene (drainage and solid waste management)



With the rapid increase of urbanization and economic development, many urban cities in Asia are facing new problems with the rapid increase of solid waste, having now reached 1 million tons per day in Asia alone. There is constant pollution of water resources and the air due to the vulnerable nonsystematic solid-waste management throughout the regions and a huge gap of resources available by the income of the cities – wealthier cities are more frequently able to sweep streets, which are often the dumping grounds of waste, and to collect household waste while poor communities are not provided with adequate collection systems to keep their environments clean. And even if solid waste is properly collected, in most Asian towns and cities only 10% of this waste ends up in properly engineered and management landfill sites. The 23% of the people in the Asia-Pacific region that practice open defecation leads to even more water and ground pollution. Despite the recent political pressure water resources in Asia have come under in the recent years, many of Asia's water sources are highly polluted with domestic, industrial, agricultural waste due partly because of inadequate access to sanitation infrastructure. There is a lack of regulation with industries, resulting in extreme industrial pollution levels and 50% of Asian water sources to be contaminated with exceedingly high levels of nutrients.

- With the rapid Asian population growth, water resources across the region are coming under intense strain. However, environmental hygiene methods are not keeping up with the population growth, even further limiting water resources. In urban areas across Asia, US\$25 billion is spent on solid waste management annually. In order to adjust in response to both the population growth and the growth of immigration into the large cities, this number will need to double in the next 10 years. However, in most of these cities, only 10% of solid waste ends up in properly engineered and managed landfill sites. Water source contamination and air pollution are the outcome of this nonsystematic solid-waste management.
- This lack of treatment is due mainly to resource constraints. With the main methods of waste disposal being in sanitary landfills and in open dumping sites, the environmental consequences are only half of the problem. Pathogens are easily spreadable in these untreated environments and when the pollution reaches the drinking water sources, endangering the surrounding communities.
- A community's wealth also plays a major role in the waste-management systems, with the wealthier cities in Asia having both a high frequency of waste collection as well as a larger area of coverage for adequate collection systems.
- With many industries and agriculture production sites having an absence of effective governance to enforce regulations, these businesses continue to run without much improved waste management. Without enforcement, such regulations are seen as an unnecessary expense. In Pakistan alone, only 5% of their national industries have provided environmental assessments.

Water for industry, agriculture, environmental services

As the global population increases, so will the need of agriculture. With 80% of Asia's freshwater being used to irrigate crops and agriculture needing to produce 60% more food globally (100% in developing countries) in the next 15 years to feed the population, the stress of Asia's water sources will only increase drastically as food shortages follow. Along with a shortage of water, food scarcity is a real possibility as climate change impacts agriculture as well, increasing the severity of droughts, elevating temperatures, flooding crops, and salinizing groundwater in coastal aquifers. An increase in the income levels globally have also resulted in an increase of water-intensive goods, both stressing global freshwater resources and resulting in half a billion tons of waste to accumulate each year, in which most gets into the freshwater supply. In some developing countries, more than 70% of these wastes are dumped, untreated, into fresh water sources, polluting drinking water for their communities.

- Currently, agriculture uses a global average of 70% of all water withdrawals. In order to keep up with the global rise in population, agriculture will need to produce 60% more food globally and 100% more in developing countries in the next ten years. This will need a 14% increase in our water withdrawals being used for agriculture. With the rise of economies and therefore industries, the industrial water use will also see a predicted 65% use of water and with an increase of domestic water use by 30% by 2030, water shortages will soon become a global threat.
- With an increase in agricultural production along with unregulated waste treatment plans, freshwater pollution is also predicted to be on the rise. Today, high levels of nutrients are found in 50% of Asian rivers and moderate levels in 25%.
- Despite the recent pesticide ban in China, it is still a major problem across the region. India also has had a 750% increase in pesticide use in the past century and leakage of pesticides into freshwater sources has been detected across Asia, most collected in areas where regulation is more loose.
- With the impacts of climate change resulting in more unpredictable weather patterns, the frequency and severity of droughts, unpredictable rainfall, elevated temperatures, salination of fresh ground water from natural disasters, and flooding, water resources will take a direct hit.
- With a global increase in incomes, a higher demand for water-intensive goods such as manufactured materials, meat, and dairy products will soon follow, stressing freshwater resources even more.
- High levels of saline in ground and surface water due to poor agricultural drainage systems has led to many water sources being deemed undrinkable by their surrounding communities.

APPENDIX 5

PARTNERSHIPS

5.1 A SAMPLING OF EXISTING WATER PARTNERSHIPS / HUBS OVERVIEWS

INDIA

Partnership with Panasonic

- Non-electric water purifier segment to tap rural and urban households looking for an affordable clean drinking water source
- Initiative that contributes to the Clean India Mission by providing safe and hygienic drinking water to all in urban India as well as in hinterland.
- http://www.moneycontrol.com/news/business/panasonic-enters-non-electric-water-purifier-segment_2855901.html

Partnership with One Health Hub India

- A process of consultation has been initiated regarding an appropriate organizational structure for a One Health Hub in India to support inter-sectoral activities involving both the human and animal health sectors, working with government engagement One Health initiatives.
- Includes people working in national organizations within government sector who are involved in surveillance and control of emerging and re-emerging infectious diseases affecting humans and animals, and people in non-government organizations, research institutes, universities, and training institutes involved in One Health activities in Bangladesh.
- <http://www.onehealthnetwork.asia/node/69>

Swachh Bharat Mission Support Operation Project

- The World Bank today approved a US\$1.5 billion loan for the Swachh Bharat Mission (SBM) Support Operation Project to support the Government of India in its efforts to ensure all citizens in rural areas have access to improved sanitation – such as a toilet or latrine with a focus on changing behaviors – in ending the practice of open defecation by 2019.
- Specifically, this project will support the rural component, known as SBM – Gramin (SBM-G), over a five-year period using a new performance-based program which links funds directly to results, ensuring that benefits are delivered to the people in need – more than 60 percent of India's rural population.
- <http://www.worldbank.org/en/news/press-release/2015/12/15/world-bank-approves-usd-1point5-billion-support-india-universal-sanitation-initiatives>

PepsiCo India

- PepsiCo India has pioneered several major initiatives to replenish water in communities. Their goal is to conserve, replenish and thus offset the water used in our manufacturing process through community water recharge projects and water conservation projects in agriculture.
- The project created the potential to recharge around 2 billion liters of water. It benefits nearly 12,000 community members through improved access to water; additional crops, increase in yield of rain-fed crops and the opportunity for a second cultivation cycle during the Rabi season due to improved availability of water. Water levels have visibly risen after implementation; old dry wells now have water and farmers' incomes have improved by Rs. 20,000/acre. PepsiCo has also provided safe drinking water to Nagnath Vidyalaya, Wahegaon, by laying an underground pipeline, an overhead tank and taps. Village community's capacities are being continuously built around diverse livelihoods issues creating sustainable livelihoods environment in the area.
- <http://www.pepsicoindia.co.in/purpose/environmental-sustainability/replenishing-water.html>

Swajadhara and Total Sanitation Campaign

- <http://www.unep.org/gc/gc23/documents/India.pdf>

INDONESIA

Indonesia Initiative (also known as the Asia West Pacific Initiative of Friends Peace Teams)

- Indonesia Initiative is a local organization consisting members of World Economic Forum's Young Global Leaders (YGL) and Global Shapers (GS) from Indonesia. Indonesia Initiative's main goal is to enhance Indonesia's capacity building initiatives. Indonesia Initiative will provide support and assistance to existing programs and initiatives that have the same mission and values. Indonesia Initiative's first project is to build Indonesia Impact Investment Fund, a fund dedicated to financing social entrepreneurs.
- <http://www.indonesia-itiative.com/member/>

Micronutrient Initiative

- MI Indonesia works to improve health and well-being across Indonesia, as the country aims to meet health challenges and opportunities.
- <http://www.micronutrient.org/mi-in-the-world/asia/indonesia/>

Knowledge Sector Initiative

- The Knowledge Sector Initiative (KSI) is a joint program between the governments of Indonesia and Australia that seeks to improve the lives of the Indonesian people through better quality public policies that make better use of research, analysis, and evidence.
- One of the areas that KSI is supporting is the development of a thriving knowledge sector. This is achieved by identifying and mitigating systemic barriers that limit interaction between knowledge production, intermediation, demand, and use. This includes supporting assessments of Indonesia's knowledge needs, advocating for the introduction or review of policies to promote knowledge-to-policy transfer, and fostering private sector participation in research.
- <http://www.ksi-indonesia.org/index.php/about-2/>

Indonesia Health Initiative

- The mission of the Indonesian Health Initiative is to provide primary health care, early interventions, and health education to the people of North Sulawesi who are unable to travel or to pay for healthcare. A secondary programmatic goal is to inspire and create a learning environment for international healthcare workers so they may bring their experiences of Indonesia back to their country of origin and colleagues while working alongside local Indonesian doctors and nurses.
- <http://learntoliveglobal.org/health-projects/indonesian-health-initiative/>

AidHub

- AidHub is an Australian based nonprofit organization with operations in Indonesia. It is a new paradigm in human and environmental advancement which provides a common global technology platform for managing all Governments (Aid), Companies (CSR), and Nonprofit Organizations (NGOs) to improve all program initiative outcomes globally.
- <http://aidhub.org/about-us/>

MYANMAR

Phandeeyar

- Myanmar Innovation Lab - Phandeeyar is an ICT hub that is designed to support social innovation, civic-tech and ICT4D/M4D in Myanmar. Phandeeyar brings the tech community together with others who are moving Myanmar forward – such as civil society organizations, social enterprises and independent media – to build the digital tools, platforms and content to accelerate change and development.
- phandeeyar.org

Social Impact Myanmar (SIM)

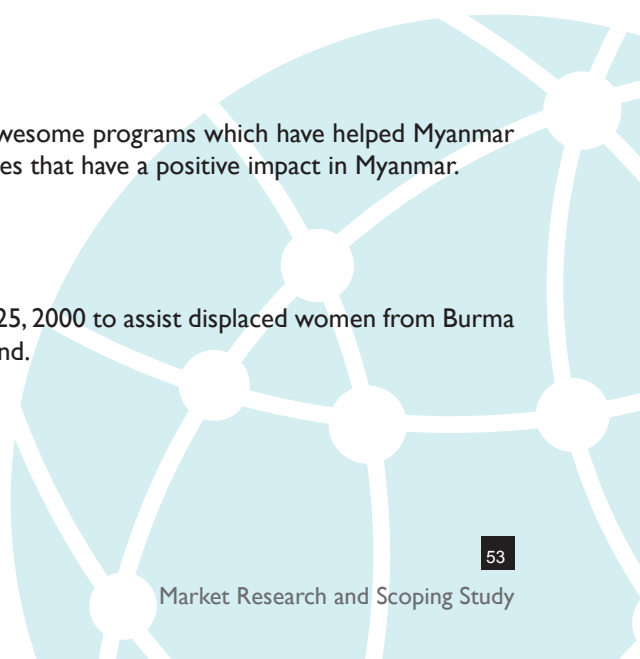
- A sustainable Myanmar build by social enterprises. Our aim is to develop Myanmar into a country that is a role model for the quality of living in Southeast Asia and the world. What we envision is a Myanmar that is making the best possible use of all its resources - natural and human. We believe that the way to achieve this is by supporting the development of a strong social enterprise ecosystem. We create a community of impact that drives social change and progress.
- <http://www.socialimpactmyanmar.org/>

Project Hub Yangon (PHY)

- PHY was Myanmar's first start-up incubator, running awesome programs which have helped Myanmar entrepreneurs launch scalable and sustainable businesses that have a positive impact in Myanmar.
- <http://www.projecthubyangon.com/about-us.html/>

Social Action for Women (SAW)

- Social Action for Women (SAW) was founded on June 25, 2000 to assist displaced women from Burma who were in crisis situations after having fled to Thailand.



- Currently, SAW has over 20 growing programs aimed at caring for and educating Burmese migrants and refugees in the Mae Sot and Phop Phra districts. SAW has been partnered with GlobeMed at the University of Cincinnati for the past three years to address community health issues and provide sustainable community health education.
- <http://globemed.org/impact/cincinnati/>

BANGLADESH

Partnership with the Appropriate Scale Mechanization Consortium (ASMC) led by the University of Illinois at Urbana-Champaign

- Innovation hub to improve cropping systems in Cambodia and Bangladesh
- Established at Bangladesh Agricultural University with the mechanization of transplanting rice seedling and harvesting rice being identified as focus areas.
- <https://intlprograms.aces.illinois.edu/content/asmc-launches-innovation-hubs-improve-cropping-systems-cambodia-and-bangladesh>

Partnership with One Health Hub Bangladesh

- Serves as a networking and coordination hub connecting people, organizations, and groups involved in One Health activities in Bangladesh.
- Includes people working in national organizations within government sector who are involved in surveillance and control of emerging and re-emerging infectious diseases affecting humans and animals, and people in non-government organizations, research institutes, universities, and training institutes involved in One Health activities in Bangladesh.
- <http://www.onehealthnetwork.asia/node/95>

Global Platform Bangladesh

- At the Global Platform in Dhaka, Bangladesh, dynamic young people from Bangladesh, South Asia, and the Global Activists are trained in youth Leadership, Governance, Campaigning, and Activism. Their aim is to equip youths from around the world with knowledge, skills, and attitude to facilitate social change and throw off poverty and injustice.
- Their focus is on empowering youth from disadvantaged backgrounds across Bangladesh to become drivers of social change towards a poverty free planet. They build their capacity to advocate for a more democratic and sustainable planet.
- <http://www.globalplatforms.org/bangladesh>

Canadian Coalition for Global Health Research

- The mission of the Indonesian Health Initiative is to provide primary health care, early interventions, and health education to the people of North Sulawesi who are unable to travel or to pay for healthcare. A secondary programmatic goal is to inspire and create a learning environment for international healthcare workers so they may bring their experiences of Indonesia back to their country of origin and colleagues while working alongside local Indonesian doctors and nurses.
- <http://learntoliveglobal.org/health-projects/indonesian-health-initiative/>

CAMBODIA

- Partnership with the Appropriate Scale Mechanization Consortium (ASMC) led by the University of Illinois at Urbana-Champaign
- Innovation hub to improve cropping systems in Cambodia and Bangladesh
- Established at Royal University of Agriculture focusing in developing implements to plant cover crops after the rice and then to use the cover crops as mulch for the vegetables so that they would need less irrigation.
- <https://intlprograms.aces.illinois.edu/content/asmc-launches-innovation-hubs-improve-cropping-systems-cambodia-and-bangladesh>

PHILIPPINES

Impact Hub Philippines

- Impact Hub Manila is a co-working & events space for a membership community of entrepreneurs, activists, creatives, and professionals taking action to drive positive social and environmental change.
- <http://www.impacthub.ph/>

Knowledge Hubs

- APWF's network of regional water knowledge hubs. Each hub is a center of excellence committed to improving water security in the Asia-Pacific region by promoting knowledge sharing and championing feasible solutions for its priority water topic.
- <http://www.apwf-knowledgehubs.net>

SINGAPORE

Singapore Water Association (SWA)

- The Singapore Water Association aspires to play a role in efforts to profile and promote Singapore as a one-stop centre for all water-related services and water technology hub. This Association will bring together local companies for the mutual benefit of developing a vibrant and dynamic local water industry.
- swa.org.sg

Singapore International Water Week

- The Singapore International Water Week (SIWW) is the global platform to share and co-create innovative water solutions. The biennial event gathers stakeholders from the global water industry to share best practices, showcase the latest technologies and tap business opportunities. SIWW is part of the strategic program of the Singapore Government to grow the water industry and develop water technologies.
- siww.com.sg



The Impact Hub

- Build ecosystems that bridge your journey from an early-stage startup to a mature venture. The Impact Hub knows what it takes to be an entrepreneur – to tackle problems worth solving and industries ripe for disruption. The Impact Hub understands that pursuing life on your own terms is not an easy journey. It is in fact, a lonely one. **YOU FOCUS ON GROWTH. WE FOCUS ON YOU.**
- This is why The Impact Hub have built Singapore's largest community of problem-solvers and their supporters so that our members can find co-conspirators, mentors, investors, co-founders, and allies: 500 entrepreneurs, professionals, freelancers ready for collaboration / 50 corporate, university and government partners / 10 VC funds and investors-in-residence / 10 media partners / A regional and global network
- <http://singapore.impacthub.net/homepage>

Collision8

- Collision8 brings innovators together to ignite ideas, form alliances and shape the business world of tomorrow. Collision 8 offers membership to a community of ambitious innovators. Engineering serendipity through member curation and personalized introductions, we foster high value connections between our members. Our exceptional workspaces inspire, energize and bring ideas to life.
- Collision8 believes in the power of collisions to trigger new ideas and opportunities. This in turns drives collaborative partnerships that spark innovation. Collision8 believes that innovation will disrupt every industry and is key to building the next generation of successful businesses.
- collision8.com

WaterHub PUB, Singapore National Water Agency

- WaterHub supports Singapore's efforts to become a dynamic global Hydrohub, a strategic platform for PUB and the Singapore water industry to leverage on the development of water technologies, learning and networking. WaterHub is the Centre for Water Excellence for both local and international water companies keen to capitalize on the business and R&D opportunities in Singapore's water industry and the region.
- The Centre's three key strategic thrusts are:
 - An institute of advanced learning for water professionals (Academy@WaterHub)
 - A vibrant water R&D incubator centre (R&D@WaterHub)
 - A global water knowledge and networking hub (Connect@WaterHub)
- <https://www.pub.gov.sg/waterhub>

BLK71

- •Blk71 likes to get creative with our spaces. Like how start-ups love using the kopitiam-themed pantry in NUS Enterprise@Blk71 for business huddles. Or how a simple lobby wall has been transformed into a colorful canvas of entrepreneurial visions and art.
- <http://www2.blk71.com/>

5.2 CREATIVE WORKSPACES

“A creative workspace is somewhere that strays away from typical office conventions and aims to cater to individuals rather than the corporate, traditionally business-focused offices” (Ward).

“Providing a creative workspace heightens senses and encourages right brain thinking. The use of specific colors is known to affect mood. Our calming color scheme of blues and greens gives a calming space to our employees. This was particularly important with so many deadlines to meet. Open spaces encourage collaboration between team members and remove the emotional silos created by the more traditional internal dividing walls. Creating these innovative workspaces is cost-effective, flexible and are easy to maintain. The end goal of a creative workspace is to provide an environment where employees can thrive and produce their best work” (Ward)

“Selling the concept of a creative workspace to a board can be intimidating and sometimes challenging, particularly in industries where a creative workspace might not be expected or considered to be not needed. However, it’s crucial to highlight that there is direct correlation between workspace, employee engagement and productivity which will help support business objectives. Your case to the board can be proven by drawing on one of many studies conducted on how creative workspaces benefit overall employee wellbeing and productivity” (Ward).

“As our understanding of creativity develops, so does our appreciation that an individual’s skills, talents, and knowledge are not the only factors that influence their ability to think and work creatively. The physical, social, and cognitive, or intellectual, environments in which we work are also significant to our levels of creativity. This means that your ability to develop and use creativity is influenced by a combination of individual and environmental factors. Some of these factors can stimulate creativity. Others can inhibit it” (Anders)

“It is confirmed that there are positive correlations between performance and information sharing. The process of creation is built on knowledge and does, therefore, require an open community of collaboration where people are given the opportunity to elaborate and evaluate each other’s’ ideas. The access to human capital and knowledge-transfers within differentiated groups provides us with the ability to utilize networks, knowledge, and experience to a greater extent than before” (Muhrbeck).

“The idea behind co-working is that it provides people with a combination of a workplace and a social meeting place without the boundaries of a ‘9 to 5 job’. A co-working space holds all the equipment and materials found at a regular office without being classified as one. Similar to a gym membership, a co-working office is accessible at any time for an indefinite period. Co-working is a phenomenon that has urbanized from the demand of people in need of a new modern and flexible work environment, who are missing social interactions. It is created for individuals who are satisfied with their current workspace and has understood the benefits of a community with a valuable network of knowledge. Co-working, therefore, attracts people who currently are working in a secluded, uninspiring and/or inefficient environment, into a collective workspace. Collectively does not necessarily mean working with the same tasks. Nevertheless, it can lead to unpredicted collaborations or guidance, since it involves the process of unforced meeting and discussions. Different people with different backgrounds have the opportunity to meet, interact, and share knowledge. Co-working could serve as a tool for gathering, exchanging, and sharing this knowledge between groups and individuals. It also allows a chance for serendipity to take place” (Muhrbeck).

“The work environment is an important factor which includes several dimensions which can affect the creative result. We believe that it is crucial to determine how the work environment should be structured

to increase creativity. Amabile, Conti, Coon, Lazenby, and Herron states, that creativity can be improved by cognitively and perceptually stimulating the physical work environment. This is also confirmed by Haner who says, that a physical work environment that people perceive as attractive can have an inspirational and motivational effect, which in turn can symbolize innovation and creativity. Furthermore, many scholars agree that creativity is best served in environments that are open and supporting to new ideas” (Muhrbeck)

“According to Amabile’s model, The Three Components of Creativity states that every individual has three components of creativity within themselves. These components are expertise, creating thinking skills, and motivation. Expertise can in its core be described as the knowledge and expertise a person possesses. The creative thinking skills determine how people approach different problems in terms of flexibility and imagination, whereas motivation can be described as the inner passion a person has to solve a problem. All three components of creativity can be influenced by the environment, proving that creativity can be stimulated by changes in the work environment” (Muhrbeck)

“Studying 45 co-working spaces around the world, Jennifer Magnolfi, discovered that people had chosen them because they believed that their performance would improve more rapidly in such spaces than in an office building or at home. A 2011, Deskmag survey of more than 1,500 co-workers in 52 countries supported her findings:

- 75% reported an increase in productivity since joining their space
- 80% reported an increase in the size of their business network
- 92% reported an increase in the size of their social circle
- 86% reported a decrease in their sense of isolation
- 83% reported that they trusted others in their co-working space (Waber)

“Space is something to think of as an instrument for innovation and collaboration. It’s not something that should be accepted as-is. Space is a valuable tool that can help you create deep and meaningful collaborations in your work and life”.

Examples: Google workplaces

<https://www.youtube.com/watch?v=Wzb4TP3nb-s>

<https://www.youtube.com/watch?v=gqG0O6debQM>

The Makers Space in Seattle

<https://www.youtube.com/watch?v=4xBuFo7IXjk>

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APPENDIX 6

SURVEY QUESTIONS

6.1 ASIA P3 INCUBATION HUB SURVEY QUESTIONS

via Survey Monkey

1. Organization Name (open ended)		
2. Organization type: (select one of the following) <ul style="list-style-type: none"> • Large business- Small/medium enterprise (company's annual sales turnover of not more than S\$100 million OR employment size < 200 workers) • NGO\ • Government • Donor organization\Academia • Other (list) 		
3. Name (open ended)		
4. Position & Role in relationship to water initiatives/potential engagement with the Asia P3 Hub (open ended)		
5. What are your top 3 priority countries in Asia Pacific concerning water (select one for each column)?		
<ul style="list-style-type: none"> • Bangladesh • Cambodia • China • India • Indonesia • Lao PDR • Malaysia • Mongolia • Myanmar • Nepal • Philippines • Singapore • Sri Lanka • Thailand • Timor Leste • Vietnam • Other _____ 	<ul style="list-style-type: none"> • Bangladesh • Cambodia • China • India • Indonesia • Lao PDR • Malaysia • Mongolia • Myanmar • Nepal • Philippines • Singapore • Sri Lanka • Thailand • Timor Leste • Vietnam • Other _____ 	<ul style="list-style-type: none"> • Bangladesh • Cambodia • China • India • Indonesia • Lao PDR • Malaysia • Mongolia • Myanmar • Nepal • Philippines • Singapore • Sri Lanka • Thailand • Timor Leste • Vietnam • Other _____
6. What primary technical areas are you focused on in each of these countries? (select all areas that apply)		

<ul style="list-style-type: none"> • Water supply (access, quality, security, affordability) • Sanitation (access, sanitation management and business models) • Hygiene behaviour change (including knowledge) • Environmental hygiene (drainage and solid waste management) • Water for industry, agriculture, environmental services 	<ul style="list-style-type: none"> • Water supply (access, quality, security, affordability) • Sanitation (access, sanitation management and business models) • Hygiene behaviour change (including knowledge) • Environmental hygiene (drainage and solid waste management) • Water for industry, agriculture, environmental services 	<ul style="list-style-type: none"> • Water supply (access, quality, security, affordability) • Sanitation (access, sanitation management and business models) • Hygiene behaviour change (including knowledge) • Environmental hygiene (drainage and solid waste management) • Water for industry, agriculture, environmental services
<p>6. What are the greatest challenges you face in each market? (open ended) Give some choices, e.g.:</p> <ul style="list-style-type: none"> • Corruption • Bureaucracy/regulatory requirements • Lack of local capacity/capability • Lack of sufficient local knowledge to enter and/or expand the business • Lack of market intelligence/don't know the landscape well enough • Lack of quality partners (site what kind of partner): _____ • Context complexity • Our own internal systems & processes are limiting • Other/s _____ 		
<p>7. What are the greatest challenges you face in each market? (open ended) Give some choices, e.g.:</p> <ul style="list-style-type: none"> • Multi-stakeholder partnerships can provide both business and societal benefits • Provides a complementary approach to understanding government priorities while tapping local development organizations to provide community landscape (shared-value solutions) • Market research • Field testing/prototyping • Expansion and scale of products and services that are well-suited for the local markets • Other/s _____ 		
<p>8. From the following list please rank order the importance of these services to your organization in each market (scale 1-5)</p> <ul style="list-style-type: none"> • Trading Zone (source): a safe space where multiple stakeholders from different sectors and vantage points can establish new relationships and source ideas • The Hatchery (seed): ideas are explored, developed and prototyped through research, development and field testing • Business Development (scale): different business models and investment solutions to scale out proven innovations in multiple context are suggested here; including brokering of formal private-private partnerships for competitive advantage 		

<p>Trading Zone</p> <ul style="list-style-type: none"> • Exchange ideas in a safe space with new collaborators • Opportunity for non-traditional partnerships to emerge • Provides a dynamic, creative thinking space with few distractions – encourages “combinatorial innovation” • Translates academic ideas into action <p>The Hatchery</p> <ul style="list-style-type: none"> • Research & development • Ethnographic market research • Field testing • Prototyping <p>Business Development</p> <ul style="list-style-type: none"> • Opportunities to amplify new growth efforts • Inclusive business models • Shared value partnerships (PPP, private-sector partnerships, joint ventures) • Scaling for sustainability • Investment 	<p>Trading Zone</p> <ul style="list-style-type: none"> • Exchange ideas in a safe space with new collaborators • Opportunity for non-traditional partnerships to emerge • Provides a dynamic, creative thinking space with few distractions – encourages “combinatorial innovation” • Translates academic ideas into action <p>The Hatchery</p> <ul style="list-style-type: none"> • Research & development • Ethnographic market research • Field testing • Prototyping <p>Business Development</p> <ul style="list-style-type: none"> • Opportunities to amplify new growth efforts • Inclusive business models • Shared value partnerships (PPP, private-sector partnerships, joint ventures) • Scaling for sustainability • Investment 	<p>Trading Zone</p> <ul style="list-style-type: none"> • Exchange ideas in a safe space with new collaborators • Opportunity for non-traditional partnerships to emerge • Provides a dynamic, creative thinking space with few distractions – encourages “combinatorial innovation” • Translates academic ideas into action <p>The Hatchery</p> <ul style="list-style-type: none"> • Research & development • Ethnographic market research • Field testing • Prototyping <p>Business Development</p> <ul style="list-style-type: none"> • Opportunities to amplify new growth efforts • Inclusive business models • Shared value partnerships (PPP, private-sector partnerships, joint ventures) • Scaling for sustainability • Investment
<p>10. Are there any existing EVENTS in Asia Pacific that you participate in and believe they provide added value to the partnerships and water sector? (open ended)</p>		
<p>11. Have you participated in any multi- sector water initiatives (working groups, partnerships, alliances, coalitions, incubation centres, innovation labs, etc.)? (Y/N)</p> <p>a. If so, which ones/where/when (open ended)</p> <p>b. Did your participation accomplish its goals? (Y/N)</p> <p>c. If no, why not? (open ended)</p>		
<p>12. What are your organization’s greatest strengths/assets that you would be willing to consider contributing towards programs and partnerships related to water? (open ended in each category)</p> <p>a. Information (capture and dissemination)</p> <p>b. Accommodation/ venues (space)</p> <p>c. Products (including distribution/supply networks)</p> <p>d. Expertise (technical)</p> <p>e. Relationships & networks (key organizations connected with)</p> <p>f. People (staff support)</p> <p>g. Other (transport, equipment, etc.)</p>		
<p>13. Are there any other organizations in your network who should know about the Asia P3 Hub? Please provide contact details. (open ended)</p>		

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