Module 01:
Identifying RRR Business Opportunities

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IWMI
International
Water Management
Institute

Week 01:
Identify challenges in your local sanitation & waste management

Resource Recovery and Reuse
(RRR) Entrepreneurship

Week 1 module 1: Identify challenges in your local sanitation & waste management

“Welcome to week 1 of module 1.

I have already mentioned some of the challenges that are present worldwide regarding the way we manage sanitation and waste. And I believe that you are familiar with the environmental problems that this causes as well as the social and economic problems. To be able to solve these problems we have to look at the underlying causes.

So what are the underlying causes? I see 3 main causes for this: we are wearing blinkers, we are short-sighted and we believe in magic-holes.

1. We wear blinkers and usually only really look at problems from our own perspective without considering or talking to others. So organisations that are responsible for managing water supplies don’t necessarily work with the ones that are responsible for agriculture and the ones that are responsible for energy don’t work with the ones that are responsible for solid waste...and so on and on. The consequence is that a toilet will be built without thinking about what happens with the wastewater. Food will be provided without thinking about recycling the organic waste.
2. We are short-sighted because we invest in treatment plants and other fancy technology systems for providing water and sanitation but we don’t factor in the costs of energy, staff and spare parts that these will require in the future for operating and maintaining them and neither who will pay for it. The water tariffs won’t because they are too low in most countries. We don’t equip our staff with the skills they need to manage, operate and maintain these systems. And we do not build systems that allow us to recycle nutrients and water - resources that will become or that are already scarce. So this is the consequence of our short-sightedness. And this. And this.
3. We believe in magic holes. Because we dump all our waste into these magic holes. Many people still act as if we lived on a flat world, where we grow or buy our food, we cook and eat it, we take a crap and then we just dump it into the magic hole.

   In the case of flush-toilets, one person flushes a mix of faecal matter, urine and freshwater down the magic hole. Per year this amounts to about 50 kg of faecal matter, 500 L of urine and 20’000 L of freshwater. Once it is flushed down the magic hole, it ends up in a pipe - yes, the magic hole actually doesn’t end here! - and is further mixed with grey water from washing, storm water from the rain and with industry wastewater from factories. What happens at the end of this pipe, no one seems to care about. But let me tell you, 80% of these pipes end up in rivers, lakes, the ocean or in non-functional treatment plants – the ones you saw before.

Not only are we causing immense environmental, social and economic problems by doing this, we are also mixing what shouldn't be mixed (20'000 litres of freshwater with faecal matter) and flushing valuable resources down the magic hole – which as you have seen by now, is not that magical after all.

Resources that are increasingly scarce or expensive to get access to:

- Only 3% of global water is freshwater, the rest is salt water. 2.5% is locked up in glaciers and permanent snow cover and only 0.5% is easily accessible for use. Its availability differs hugely in different parts of the world and varies widely in seasonal and annual rainfall in many places.
- The three most commonly used nutrients in chemical fertilizer are nitrogen, phosphorus and potassium. Phosphorus is a non-renewable resource and there are only 5 countries in the world with phosphorus reserves and these are diminishing dramatically. Although nitrogen is widely available in the air we breathe, extracting it is very expensive and energy intensive.
- You are not only flushing resources down the magic hole but also potential energy. Waste – be it wastewater, faecal sludge, or organic waste – carries high potential for producing heat or electricity. So energy that could potentially replace fossil fuels and other greenhouse gas emitting energy sources.

So to summarise, we believe that we live on a flat world with a magic hole (wearing blinkers and short-sighted). But after all, the world is round – this was discovered more than 2000 years ago - and it works in cycles. Water travels the earth in a cycle: water condensates or evaporates thanks to the sun, it precipitates as rain or snow and percolates or transpires back into the cycle. So do nutrients: they are absorbed by plants to grow, these are eaten by humans and animals or fall to the ground. The excreta and fallen plants transform into soil and the contained nutrients are broken down by bacteria and given back to the cycle.

We should follow this example and make sure that the nutrients and water we consume are brought back into the cycle and not flushed down a magic hole and creating problems at the end of the pipe. RRR businesses are an opportunity to do just that. Not only do these business allow us to close the cycle. They also force us to take off our blinkers and allow us to create implementation models that generate the necessary income to sustainably operate and maintain water, sanitation and waste technology in the long-run. In the following modules we will show you how to do just that.

But before you can go ahead and start building your business, you should pinpoint the exact sanitation and waste management challenges in your area. For this you are going to draw a locality map. The aim of a locality map is for you to understand your local sanitation and waste management system by visualizing the current water, nutrient and energy flows and identify challenges.

The first step in making a locality map is drawing a map of your area by including water sources; distribution and collection systems; domestic, industrial and agricultural water users and waste producers; treatment plants and other landmarks relevant for visualising the water, energy and nutrient flows in your area. You may use the guidelines and templates from the publication “SDG 6 along the Water and Nutrient Cycles” below to design your locality map. I suggest that you do a locality map of a typical town and its surroundings; even if your target area, so the area where you want to sell your product, is bigger. The challenges probably resemble each other. Then you note the sanitation and waste management challenges where they arise. You might also want to highlight any hot spots, so areas where the challenges are concentrated. Also indicate who is responsible for these challenges: so who is responsible for the waste in the streets and who is responsible for the faecal sludge being dumped into the river. As a last step, think about if and how these challenges are connected with each other.

So to get started, just take a big piece of paper, print and cut out the puzzle pieces from the publication, grab some colour pens and get creative.

I will see you in week 2!”

List of Reference:

Graph sources:

- Unless otherwise noted, all graphics and case studies from OTOO, M. (Editor), DRECHSEL, P. (Editor) (2018): *Resource Recovery from Waste. Business Models for Energy, Nutrient and Water Reuse in Low- and Middle-Income Countries.* International Water Management Institute (IWMI). Routledge.
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Image sources:

- Unless otherwise noted, all images from IWMI flickr library www.flickr.com/photos/iwmi/
- Page 4:
  Blinkers: Horse in blinkers: Photo by Alex Blăjan on Unsplash [Accessed March 2019].
  Short-Sighted: Photo by Nonsap Visuals on Unsplash [Accessed March 2019]
  Magic holes: Hole cc Petras Gagilas (Flickr) [Accessed March 2019]
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  Toilet: Photo: Luc Forsyth for Dollar Street (CC BY 4.0): LINK [Accessed March 2019].
  Wastewater: Seecon: L. Barreto Dillon
- Page 8: Organic Waste: Flickr: Compost by Lorenzo Tlacaelel: LINK [Accessed March 2019].
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- Page 29: Pexels: LINK [Accessed March 2019].
- Page 33: Photo by Eberhard Grossgasteiger from Pexels [Accessed March 2019].
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In such a case we apologize and kindly ask for feedback to correct them.