

Systems Model for Implementing Circular Sanitation in the Mount Arrowsmith Biosphere Region

Starting Points for Action (green)

The prompt for identifying Starting Points:
„If you had \$ 900,000, where would you invest it? Looking for the first step of action that we need to take in order to move the system towards the goal.“

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- Education and Awareness
- Demonstration Projects
- Research on Compost Safety

Identifying starting points for moving the system towards achieving the goal after everyone had become familiar with the model, the task was to find and decide on three variables that would yield a high return of investment by affecting the system in a way that would move the system towards the goal. You can find the list of the three starting points below. These points would address the main barriers of safety, economic, and regulatory aspects of access to information. They would create a solid, well-anchored support for back-up and require political decisions that foster more research and bring in the legislative level as a support and safety net. The general topic is technology through research and innovation to build on the overall socio-cultural acceptance of circular sanitation. Once this feedback loop is established, people may use composting toilet systems as just as normal as they use water-based toilets now.

The prompt for finding Starting Points was:

„If you had \$ 900,000 and you had to split it into three parts, where would you invest this money?“

The answers from the workshop read as follows:

- #1 | EDUCATION & AWARENESS (9 VOTES)
- It is essential the political drivers are more likely to be supported. The regulators are going to want to regulate the city and will also be directed towards the political and regulatory level. Education and awareness is essential, especially in a sector that is not very mature. It is vital to create the slow change and technology to provide information and develop awareness that gets in front of generative misconceptions. News and the factors that might be blocking people from accepting of this is a concern. Once public is

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maintain a composting toilet system. It was suggested that there should be course involvement by regulatory bodies, so that people who are operating the system are trained. This way education and research would bring confidence to the regulator that people can do it, and it can be done.

Funding for this could potentially come from entities in the system that support research and education. During the workshop the Tri-Agency Council was mentioned.

#2 | DEMONSTRATION PROJECTS - A two-year pilot project at neighborhood-scale (7 VOTES)

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On the other hand, a high profile project that comes with media coverage, regulatory system with clear and safe guidelines for practitioners based on research that has been proven to provide a clear pathway for stakeholders to engage and address concerns of the most conservative voices.

#3 | RESEARCH ON COMPOST SAFETY (6 END-USE) (5 VOTES)

In order to have buy-in from all stakeholders that needs to be carefully assessed the safety of the practice and the application of humanure compost as agricultural fertilizer.

A team of researchers could identify and approach actors who are interested in becoming part of this research, e.g. by providing a policy plan for composting humanure on a larger scale or following existing research and synthesis in the geographic and social system as well as of the area. Research by involving building sites for the agricultural use of recycled fertilizer would be to be an important and safety plan and help farmers, political leaders, regulators and consumers trust. Otherwise the finished compost might end up being applied to forests, as currently done with biochar.

A full system Considerations were brought up of deciding on the end-use for the composted humanure according to the source, e.g. which and which coming from hospitals or nursing homes that have higher amounts of pharmaceuticals. Results would go through a different treatment than those from residential areas. This precautionary system is even as a very decentralized setting not expensive to implement.

Overview (architectural) of considerations for different settings

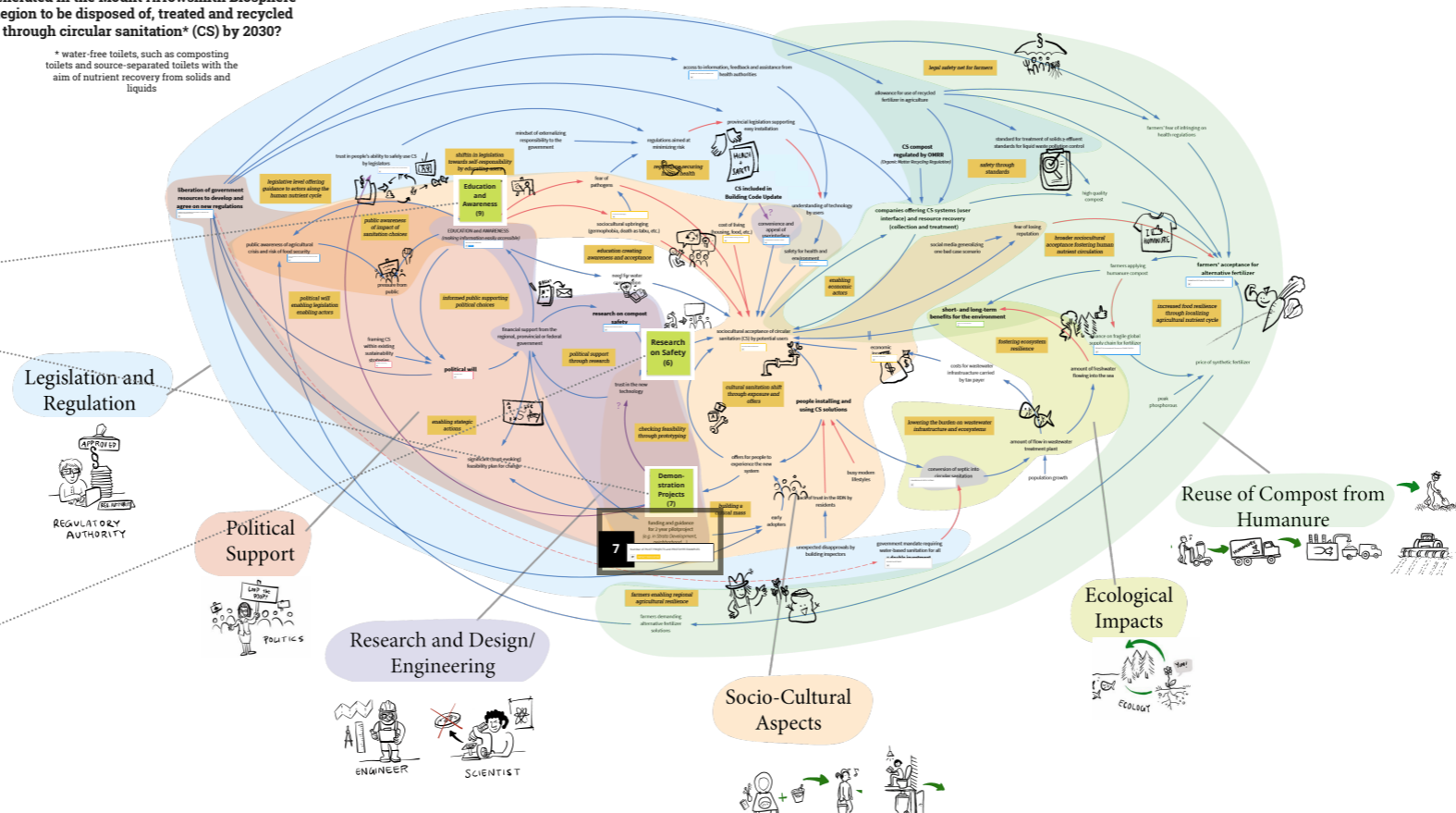


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Circular Sanitation in the MABR

What is needed for 20% of human "waste" generated in the Mount Arrowsmith Biosphere Region to be disposed of, treated and recycled through circular sanitation* (CS) by 2030?

* water-free toilets, such as composting toilets and source-separated toilets with the aim of nutrient recovery from solids and liquids



Legend

- A/A → B/B
- Blue/S = Same directional development; the more of variable A the more of variable B
- A → B
- Red/O = Opposite directional development; the more of variable A the less of variable B

- blue arrow shows a decreasing, down-regulating effect
- red arrow shows an increasing, enabling effect

Main Impact Indicator (black)

The prompt for identifying Impact Indicators:
In the year 2030 what variable(s) can tell us that we have come closer to the goal?

As suggested by Jenni:

#4 | Number of PILOT PROJECTS and PROTOTYPE EXAMPLES

IMPACT INDICATOR

Rationale:
 The presence of Pilot Projects (prototypes at different scales and environments) would be a significant first step towards implementing CS on a broader scale. It would imply the backing from across levels of decision-making: individual, communal, municipal, regional, provincial and possibly even federal. It would also mean a strong stepping stone for further developments in these directions will be laid, as it will increase exposure of the topic and enable collecting valuable feedback for users and sociocultural acceptance.

How to measure the actual impact of the projects:

- impact scale; number of people involved across all levels
- user surveys
- matrix for rating impact (power) of the outreach that each collaborator of the pilot projects has, e.g. is mayor was part of it, or journalist, or influencer etc.
- social media resonance of the projects?

Highland Park Example: