



SRISTI Summer School 2021

Project Report

Planning affordable toilets for Agariya Community!

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Introduction

The Little Rann of Kutch is the Karma Bhoomi of the Agariya community in Gujarat, where the only source of their livelihood is Salt Making. Agariyas have been facing a lot of hardships for their work including lack of drinking water, improper housing infrastructure, inefficient transport facilities, electricity shortage, scorching heat, no school establishments, no healthcare service nearby etc. apart from these, their source of income 'Salt', causes them another problem, since they are standing continuously in salt fields, their feet do not burn easily at the funeral. Hence the feet of Agariya people are burnt separately.



Fig. Depicts the process of rotating the salt layers and also the Hard Work they do

Apart from all these serious issues, Lack of Sanitation and Toilet facilities is another big problem for them. Most of the village population do not have access to safe and reliable toilets. A good toilet, and the practice of good personal hygiene can do much to improve personal and family health and wellbeing. The toilet will boost their morale and help them feel respectable in the society because morale upliftment is also as important as economic development, as their inter-relation has been observed in various walks of life.

Hence there is an urgent need for the construction of simple, affordable, and accessible toilets that are easy to build and less hectic in maintenance.

Design Approach

Points Considered while toilet designing :-

- 1) Materials should be readily available.

We focused our approach on materials that are readily available in these particular areas for making the covering infrastructure, using saree or jute bags for the cover material, rejected or broken water tankers etc. as it would be easy for the Agaryias to adopt the toilet.

- 2) The toilet shouldn't look alien to them.

The toilet infrastructure shouldn't be completely alien looking to them as it would create aversion for them to easily adopt the setup in such an environment.

- 3) Try to use local material as much as possible.

- 4) Easy and Comfortable to adapt for them.

- 5) Special Focus on Damage of Infrastructure due to Wind.

Our main focus was upon creating a low cost, portable, minimum wind damageable, easy to adopt, local materials used toilet outer infrastructure.

- 6) Easily Replaceable.

The infrastructure should be made so that Agariyas can take the structure with them during the off-season and then can again re-setup the whole structure in the next season

- 7) Lower Maintenance.

Since the salt-extraction is a very tiresome work and hence agariyas won't feel it necessary to have a burden on their shoulders to constantly maintain the toilet.

- 8) Portable.

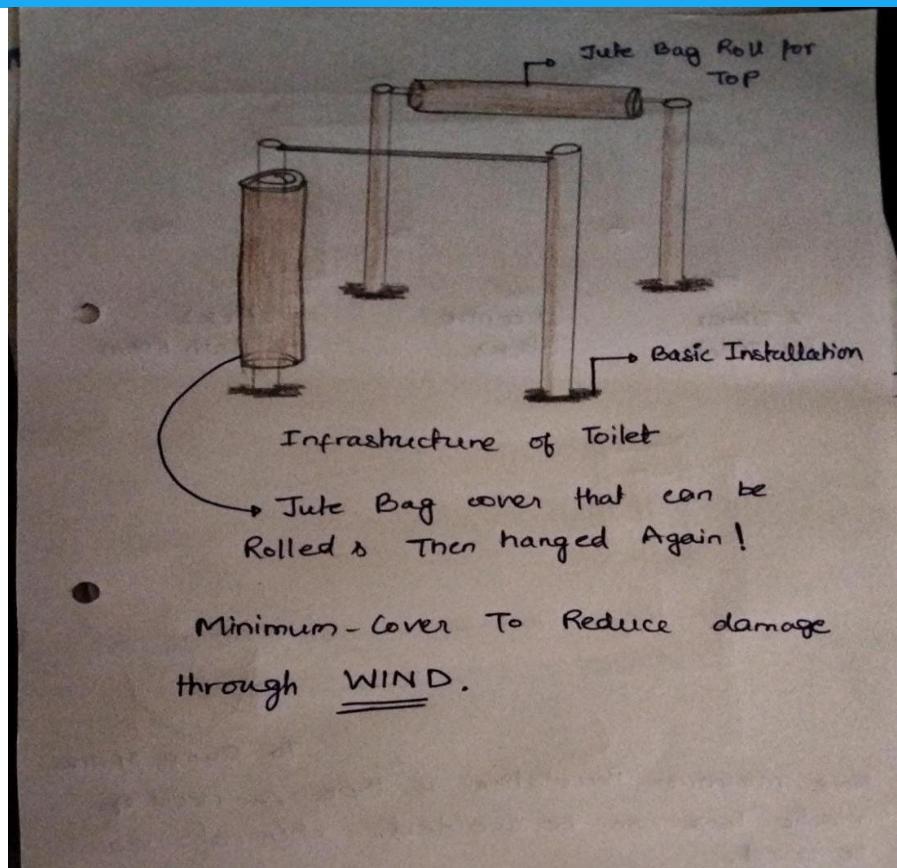


Figure depicts the basic drawing of the idea.

- 1) One pole has a cloth like saree, jute bag etc. wrapped around one of the poles, when the toilet is in constant usage people can just simply un-scroll and fix upon other poles and then again hook in the first pole.
- 2) This will reduce the chances of damage of the base of poles during high wind flow conditions .
- 3) Users can wrap up the cloth when not required, the structure is extremely easy to install and uproot, transport and then reinstall in the next season.
- 4) Since the structure bears very less load hence there is no need to dig very deep to set up the base or they don't have to provide a cement base which will further save their time and money.
- 5) Using a three pole structure will help it gain more resistance to wind damage.
- 6) Since there is very little scope of rain in this area, hence there is no requirement of a Roof, which makes it more easy to handle and easy to install.

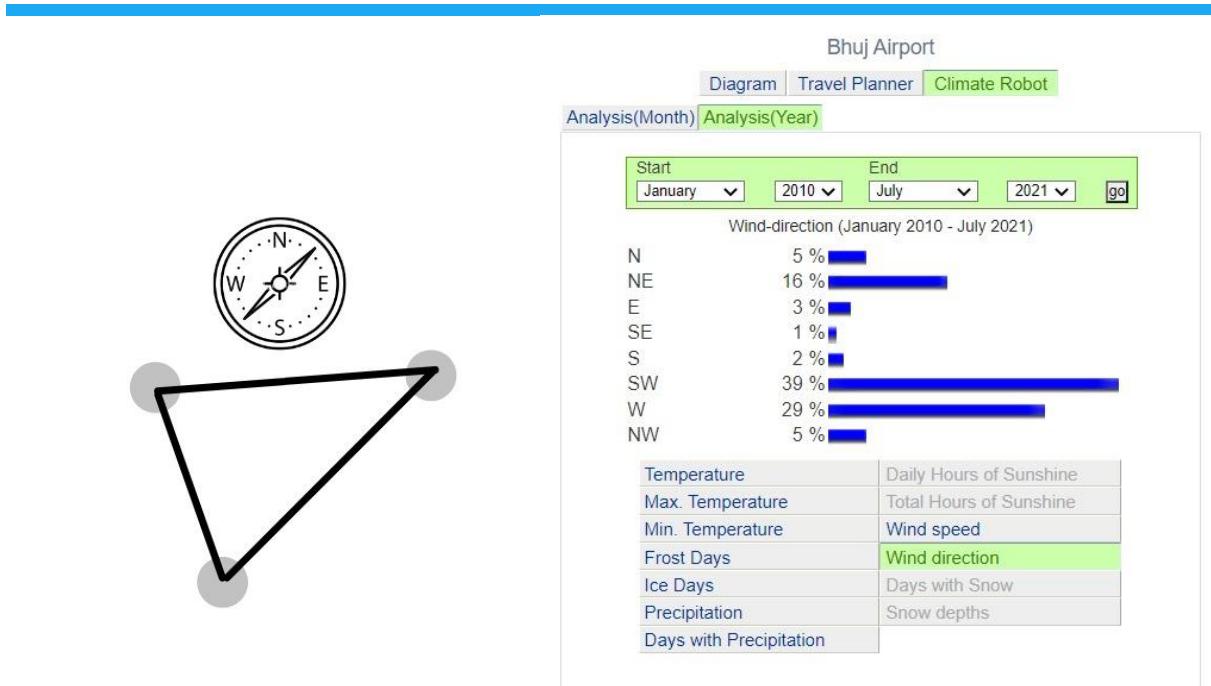


Figure shows the angular orientation of the poles. Fig. shows the data collected from Bhuj Airport.[1]

Through the data collected from the Bhuj Airport, which is the nearest airport to the Kharaghoda district, we came to know that the main wind flow direction in these areas is in the Western and South-Western Directions only.

So through this data we planned to make the toilet structure triangular in shape so that the angular structure can divide the wind more easily than rectangular shape, and hence the damage through the wind is reduced significantly.

Agariyas can take three poles of wood or steel and install it wherever needed and one pole has a cloth rolled upon it.



Further the cloth will have wind slits so that damage due wind on infrastructure is reduced further.

Hence with the angular structure and wind slit add-on, the toilet structure is very low-cost, minimal use of material and portability makes the design much more effective.

Other Design Thoughts

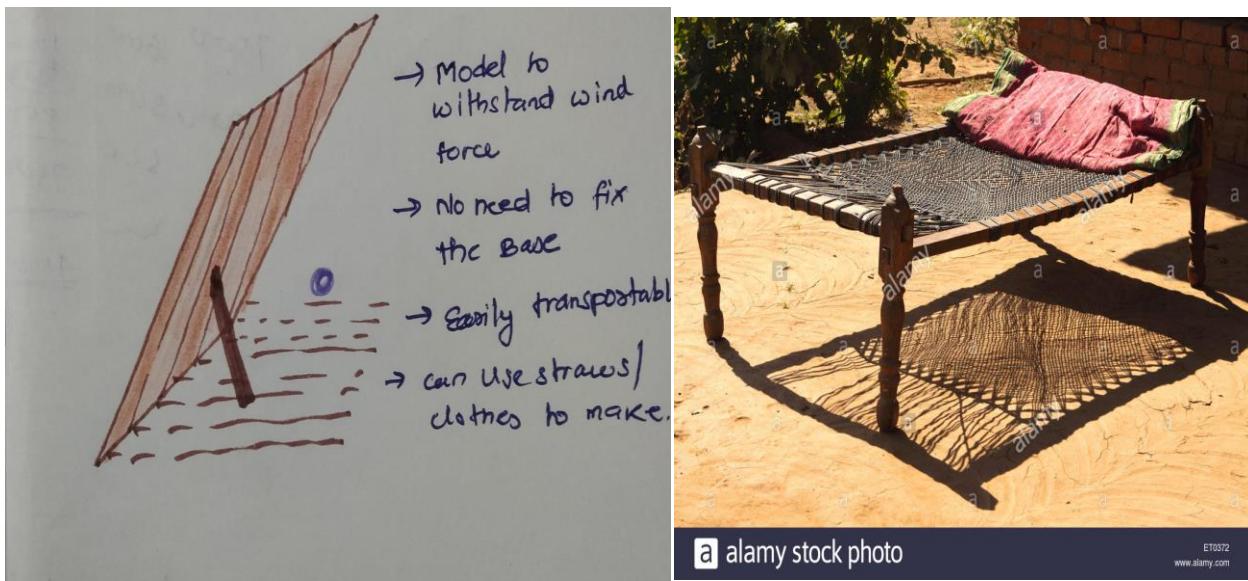


Fig. Shows example of the Cover proposal

Fig. Khatiya(bed) they use now as cover

Since Agariya Women have to wait till dawn to go for toilet purposes and if they want to go in the daylight, they take their Khatiya and hang some cloth upon it. So meanwhile we thought to at least solve this issue by making a frame and stand using clothes and wooden sticks to help them easily take it in use.



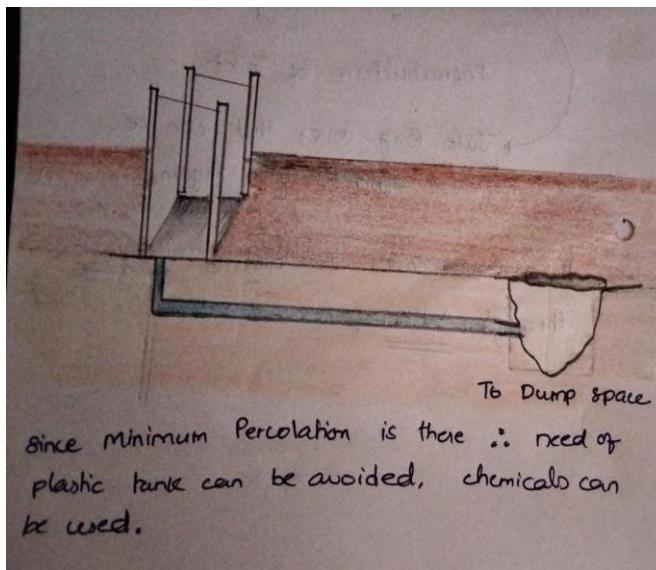
Fig. Water tank in Kharaghoda

Fig. water pumping using solar energy

Agariyas use plastic water tanks for water storage and we also considered that some partially cracked or waste water tank materials can also be used as a possible infrastructure for the toilets.



pouch



pipeline

The focus was also laid upon the requirement of a light source during night time in the washroom, due to easy accessibility of smartphones and flashlights being in them.

The idea of a hanging transparent pouch is developed; the pouch can simply be a polythene bag.

It will reduce the additional cost of having a light bulb or an oil lamp.

The important aspect is that it's DIY friendly as the Agariyas can themselves make such pouches with the help of a polythene bag and normal cloth or jute rope to hang the device from the top of the structure.

Fig. Illustration of a transparent mobile holding

An important feature about the Rann of Kutch is that the soil has very less Percolation and hence water seepage into the ground is negligible.

That's the reason why no cementing is required on the floor for holding water for evaporation. Hence we felt the need of a separate tank for holding waste, as the pit can itself act as a storage tank. Further research is required for this aspect.

Fig. illustration of pit connected with a short

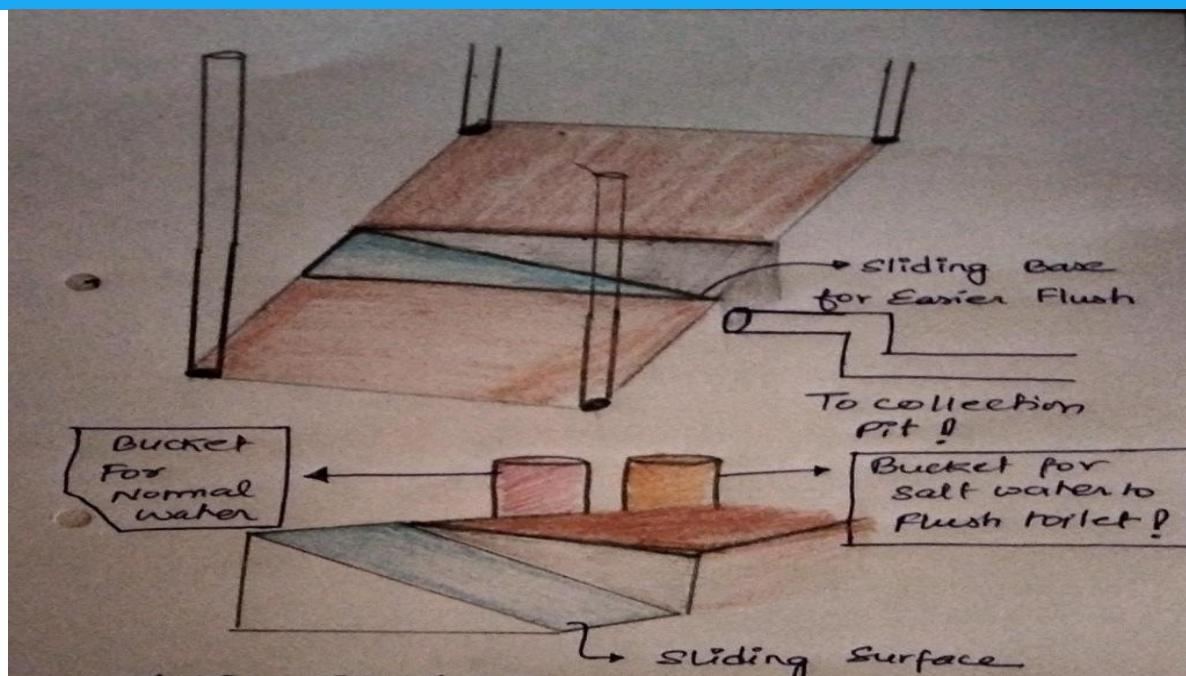


Fig. illustrates the Mud Dug toilet seat and sliding surface

The toilet base can be dug inside the mud, the base can be made slant for easy sliding of waste into the pit or to the pipeline connected pit at a distance. The pit can either be made directly under the structure or away from it connected with a pipeline, it will depend upon whether we want to make it a dry toilet or we may want to use salt water to flush the waste.

Miscellaneous points needed to be considered in further Research:-

- 1) How the cooperative system works in the district :-

After discussion with NGO we came to know that there are 3 ways in which salt production is managed and the situation and financial condition of agariyas vary in different ways.

- 2) How the money lending system works in the location :-

Since a lot of Agariya rely upon taking loans to produce salt during the season hence, it's also very important to learn how they do the production cycle as it will help us analyze their problems much better.

- 3) Why a well established psu Hindustan Salt Limited stopped its work there:-

Hindustan Salt Limited was set up to organise salt production in the district but

soon it came to a closure. We need to analyze what were the constraints that made such a well established company stop its production.

- 4) How Verghese Kurien, the architect of White Revolution who successfully set up Banas Dairy in the Banaskantha district of Gujarat nearby Kharaghoda wasn't able to write the same success story in Kharaghoda gujarat, although he wanted to organise the salt production also?
- 5) How Agariyas used to arrange water in ancient times?

As in ancient times salt production was also continuing and maybe our ancestors may have a way of availing water or any better facility. We should read about the history of the place and have a better understanding.

- 6) How did Agariyas manage water facilities during the British Raj?

With Discussion from NGOs we came to know that during the British Raj, British government arranged the water through a canal system from a source and water used to be accessible even in the remote corners of the area. So during the 19th century if they had such arrangements then with current technological advancements we can have much more efficient ways to improve their lives.

Conclusion

Our major focus was upon making the infrastructure of the toilet with the materials already available to them, also our concept was to make a toilet that completely adapts to their environment and doesn't look as an alien structure to them, also we proposed a transparent pouch to hang smartphone what we have made are the basic conceptions revolving around these thought process in future we would work upon more implementation based approach and test our prototype directly on the field.

References

[1] Wind Direction data of Bhuj Airport {shorturl.at/qtuL2}

[2] Solar pump helping Agariyas {<https://youtu.be/AXRmYpREEOA>}

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- [3] Salt Making Process {<https://youtu.be/gmqiFRNcx3>}
 - [4] Agariya Community LifeStyle {<https://youtu.be/LIxuCH4g0Jg>}
 - [5] My Name is Salt Movie {<https://www.imdb.com/title/tt3276852/>}
 - [6] Contact No. of NGO {9925291048}
 - [7] list of NGOs in Kharaghoda {<https://rb.gy/gzlyev>}
 - [8] Hardships of Kharaghoda {<https://youtu.be/OCanCqB5TnE>}



Thank You!