



Adkhadak is a village like most other Indian villages. Largely ignored by successive governments this lazy hamlet about 140 km from Mumbai has a socio-economic standing that is not much to speak of. Low literacy levels paired with high unemployment plague the 400 strong village on a regular basis. However, the spirit of these villagers in taking matters in their own hands, especially where it concerns their progress, is unparalleled. They usually get together to identify the issues that need attention and discuss possible solutions to their existing problems.

Chief among these is the problem of water. Being located in a hilly terrain, the groundwater flows away towards lower lying areas. Therefore, despite receiving torrential rainfall, the existing well and hand pump in the village run dry soon after the monsoon. One solution already initiated by the village folk is to build a check dam to contain the flowing water. This has helped in part to increase the availability of water by a few months and villagers are able to draw water from the well and hand pump for longer periods.

However this still does not solve the problem of transport. The main cluster of houses is about half a kilometer away from the well and women make up to three trips a day to collect water. This is done in containers traditionally known as 'matkas' which the women stack on their head, up to three at a time. As a result of this frequent loading, they complain about chronic back and neck pain, although it is sometimes accepted as a necessary social evil.

Therefore, to mitigate these ills of carrying water over the head, our team came up with an innovative concept. After the initial survey, it was found that the women would prefer if they could push or pull the load on the way to and from the well. In other words, they were open to the idea of a trolley-like mechanism that would not only ease the daily grind but would also be easy to maneuver across the hilly terrain. This led to the conceptualisation of our new product, the '**Wheeler Pro**'

Some of the highlights of the Wheeler Pro are:

- It has a light, durable and rugged design, intended to be used on poor roads.
- The **Wheeler Pro** comes equipped with a drum of 30 litres capacity. This amount is ideal for women to carry home in a single trip without having to strain themselves.
- The drum is placed on a rigid base and secured with a belt to prevent spillage.
- The handle of the doubles up as a support. When loading or unloading the **Wheeler Pro** the handle is simple folded down to rest on the ground and it serves as a kind of stand.
- The wheels are large in diameter and on independent axes. This allows freedom of movement while providing the **Wheeler Pro** with the necessary clearance to maneuver rocky terrain.
- In extreme cases where a wheeled mechanism may not be desirable (such as through fields or while climbing up a hill), the **Wheeler Pro** comes equipped with back straps. The user can simply

lift it up and carry it on the back like a bag pack, saving herself the trouble of dragging it along the way.

- The **Wheeler Pro** is designed considering ergonomics related to the user. Therefore it has been made to be easy to use, lightweight and simplistic in design bearing in mind its rural usage. It can be pushed or pulled; as the user finds convenient. The handle is long enough so that the base is well away from the legs while walking. At the same time it is not so long that it would cause the **Wheeler Pro** to tilt over while in motion. The **Wheeler Pro** comes with suitable grips and widely spaced handles to accommodate for all user groups.

The **Wheeler Pro** was tested in Adkhadak in its initial phase. We asked the women to hold it themselves and maneuver it around to get the feel of using it. Initially apprehensive, the women started warming up to the idea when they realized how much easier it was than carrying pails of water on their heads. As more women in the group tried their hands at it we began to get suggestions from them, a blessing in itself for the designers. Some felt that it could have been lighter, while some thought that the height could be reduced. A few women even gave the feedback that it would be much easier to use if they didn't have to unload the drum to fill it. They gave us comparisons of water quantities with respect to their matkas, helping us establish the right amount that the drum should be designed for. Our team has now incorporated most of these suggestions into the **Wheeler Pro** and is making further efforts at weight reduction by changing the material and enhancing the design.

We entered the **Wheeler Pro** in VISAI 2017, the National Project Competition held by the Veltech University in February 2017. It is an annual event held at the Veltech campus in Chennai where 136 teams took part. Under the category of transportation, the **Wheeler Pro** was showcased as a medium of self propelled development for the women folk or rural India. By means of a presentation and demonstration the team exhibited the usefulness and ingenuity of our design while laying out plans for further improvement. Our team won the First Prize under the designated category and was proud to receive accolades and special mentions by the judges.

We aim to not only improve the design but also carry it forward and establish a well connected network for its manufacturing and distribution at the local level to further reduce costs to the end user. Overall, the **Wheeler Pro** is designed to be the instrument of user driven change that most rural women shall be proud to be part of.



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