A perfect fit:Building new infrastructure in slums is arduous. It needs strong support from municipal authorities and space to make basic improvements.SPECIAL ARRANGEMENT

Yasin Shaikh runs a small tailoring shop in Balajinagar, a slum area near the Maharashtra Industrial Development Complex in Pimpri-Chinchwad, Pune's satellite city. Like many structures in the area, his residence is his workplace, and it has grown and morphed over time. His family used to live in a small room at the back; now it has shifted up to a new room on the first floor and rented it out.

The room at the back is small — barely 7 ft x15 ft — but miraculously, adjacent to one wall is a new addition: its own toilet. It's just big enough for an Indian-style commode, bucket and tap, but in pristine condition, with a proper door and blue tiling running half-way up the walls.

If you had told Mr. Shaikh two or three years ago that this room could hold an individual toilet, he would have scoffed, and not just because of the size constraints.

"There were no sewer lines here," he says. "We thought the only option was to use the public toilet blocks." Or, like many in the area tired of queueing up and the sub-standard sanitation of these blocks, simply defecate in the open.

Mr. Shaikh could be speaking for the residents of any of the 1,500 homes in Balajinagar — mostly all as small or smaller, and equally haphazardly built — which now have toilets in what would have seemed to be impossibly restricted spaces.

Additional investments

Each one seems like a highly innovative use of space, and like it could only fit that one home.

Not surprising: most of them were designed and constructed by local masons who know the lay of the houses and have a sense of where each one would best fit.

The initiative has been facilitated by Pune-based Shelter Associates, which gets the process started by providing residents with the basic materials, from cement and tiling to the door; As their part of the partnership, the residents take care of the rest.

"We've noted that over 50% of the beneficiaries have made additional investments, aside from the basic material that we provide," says Pratima Joshi, founder and Executive Director of Shelter.

Ms. Joshi founded Shelter in 1993, originally working on both housing and sanitation, but focussing on the latter in the last few years. Aside from the Pune area, it has implemented projects in cities across Maharashtra. The project funding now comes from corporate CSR.

The NGO starts each project by getting the lay of the land. This may not sound unique, but what makes it different is the extensive use of Geographical Information Systems (GIS) mapping.

Ms Joshi and her co-founders, all architects, found that much of the data on slums available with the local bodies was second-hand, and often entered manually on extensive spreadsheets, making it hard to understand and access.

In 1997-98, they started using GIS software, then used mostly by the Department of Defence and

Department of Forests, and began tweaking it to map poverty and public infrastructure. Next come household surveys, to understand how infrastructure connected homes and families.

Then, all the findings are integrated on to a GIS platform overlaid on a Google Earth map. (In 2009, Shelter was featured as a Google Earth Hero, an organisation that had made innovative use of the platform for urban development.)

"Once we finish the GIS mapping," Ms. Joshi says, "we take this data to the government and to make a case for what needs to be done in terms of improving infrastructure."

Building new infrastructure in slums is often arduous, needing huge support from the municipal authorities, and the space to make basic improvements. Shelter works with both elected municipal representatives and engineers from the municipal corporation to see where and how new lines can be laid.

The actual installation can take time, but once it's done, the process speeds up. "Once materials are delivered to their doorsteps, the toilets usually get built in 10 days," Ms. Joshi says.

When Shelter started working in Pimpri-Chinchwad, only 30% of its slums had sewerage infrastructure; now that is over 50%.

Shelter has recently begun to work with the Thane and Navi Mumbai municipal corporations, after officials, having seen its results, invited it to implement pilot projects.

