Can the Saubhagya scheme work?

The government's recently announced 100% household electrification scheme, Saubhagya, aims to tackle the next link for electrification, where until now most efforts focused at the village or hamlet level. The good news is that most villages are now connected to the grid, and remote locations far from the grid are slated for the creation of distributed (mostly renewable) generation. The bad news is that adding a wire to the home, as the scheme proposes, is only part of the puzzle. What one really needs is quality service (ideally 24x7) for meaningful electrification. This means we have to either strengthen or change the distribution companies (discoms) to ensure we meet this part of the social contract of electricity.

Why aren't all homes connected?

At the risk of oversimplifying, there were two main reasons utilities (discoms) have not connected every home. First, they didn't have enough power to meet the demand. For the first time in recent memory, shortfalls are very low to the extent that people talk of a power surplus, though some instantaneous or "peak" shortfalls may remain. Second, they didn't have the money. Wiring the last set of (mostly rural) consumers is expensive, and these users overwhelmingly have regulator-approved prices (tariffs) well below the true costs to serve.

Saubhagya provides capital support for wiring unconnected homes, a measurable fraction if not majority of costs for serving new users. Today, most tariffs for wiring a new home rarely cover the upfront infrastructure costs, which have to be socialized. Costs will vary based on how far the user is from the grid, and, unfortunately, the last to be connected are likely to be the farthest away and most sparsely populated. If one is further than an electric pole's span, then costs approach Rs2 lakh per km. Saubhagya averages at only about Rs4,000/home, inclusive of a metre and limited in-home wiring. In the absence of data, one can only guess that per home costs may end up far higher than sanctioned.

Equally challenging are usage or energy charges. For a new user consuming, say, 30 kilowatt-hours (kWh) per month (a possible threshold for a "lifeline user"), the full cost of service may be some Rs150-200/month, but the tariffs set by the regulators are often far lower for the first tier of residential users.

Mandating a metre is welcome and key—consumers are meant to pay notified tariffs, which is important even if the tariff is low and embeds a cross-subsidy by other users. This creates the mindset of paying, and also provides visibility to the utility on consumption. This can also help limit subsidized or free consumption to a lifeline level if so desired.

What else is needed?

The first need is obviously to execute the physical wire to the homes. Hopefully there are enough skilled contractors to handle the enormity of the task—India's 40 million unconnected homes is roughly triple the next two countries', Nigeria and Ethiopia. Insufficient capital outlay can be supplemented by state budgetary support or special Central grants. Thinking holistically, there is money available. Instead of subsidizing (oil company's under-recovery for) kerosene, the same money could progressively be re-allocated for rural electrification—a greater amount annually than the Saubhagya budget.

Discoms have historically been wary of adding "expensive" and non-remunerative consumers. Their worries can be addressed in several ways. Retail tariffs for residential users should be updated to meet the marginal costs of supply, to cover the incremental (mainly fuel) costs of

generation procured by discoms. Even with new coal-based plants, on average this would only be some Rs2.3-2.5/kWh, inclusive of technical losses. Assuming 30 kWh (units) per month lifeline supply, plus adding the typical capacity or fixed monthly charge, this would still be under Rs100/month—not unreasonable, and an amount many rural users are willing to pay for microgrids, that too for a lower number of units.

If even this is deemed too expensive, states are free to offer any usage subsidies above and beyond regulator-approved cross-subsidies. If other consumers (excluding agriculture and marginal households) had to cross-subsidize even all the 30 kWh/month for these 40 million homes, the burden would be under 2%. This is without any tariff increases, at an average subsidy of Rs4/kWh, a level that even covers the fixed costs of new generation capacity.

Importantly, will such consumers only use lifeline supply? Discoms are understandably wary of over-usage, especially at the peak. If we want to ensure that heavily subsidized or free household power is only for lifeline consumption, a metre helps, but manages energy only, not capacity. A smart metre can do far more, allowing for capped peak usage (say, limited to 300 watts), beyond which the consumer could either choose to be current-limited or pay a “higher” (rather, non-subsidized) tariff. Feeder separation helps improve supply but only at an aggregate level; smart systems can do so with far better granularity.

Under Saubhagya, microgrids are perhaps the biggest theoretical loser, but better coordination can reduce such conflicts. They can be complementary instead of competitive, especially for remote locations. This requires serious discussions on microgrid designs. For example, cheaper DC-based microgrids cannot synergize with an AC grid, due to which investments are viewed as short-term only.

Top-down pushes have been the norm for electrification, worldwide, since we cannot rely on the market to chase such consumers. Saubhagya addresses up-front costs, but we also cannot expect such users to immediately pay the full costs of service. We need new mechanisms and frameworks to also help ensure quality supply. Below-cost models of service provision, even for a public good, risk inefficient consumption, not to mention limit the provider’s ability or appetite to scale and sustain. Getting the wire to the home should only be a matter of time. It’s now time to tackle the other challenges in the ecosystem.

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