CII-ITC Centre of Excellence
for Sustainable Development

Confederation of Indian Industry

# Leveraging Technology to Maximise CSR Impact

STEERING THE PLANET TO NET ZERO

**EKI Energy Services Limited**

## Innovative Cooking Solution

*Surya Nutan represents a transformative step toward cleaner cooking solutions and improved and enhanced public health, reducing environmental impact and boosting energy security while empowering communities across India. Our goal is to make clean cooking accessible and sustainable for all communities, driving both environmental and socio-economic benefits.*

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### Summary

The global challenge of achieving Net Zero emissions by 2050 remains daunting, particularly for South Asia, where severe air pollution and health issues persist. The Surya Nutan Indoor Solar Cooking System, developed by Indian Oil Corporation Limited (IOCL) and implemented by EKI Energy Services Limited (EKI), offers a solution for sustainable cooking. This patented technology aims to increase energy security, reduce air pollution and alleviate the drudgery of traditional cooking methods. This initiative seeks to improve public health, support economic development and address gender disparities.

### Problem the intervention seeks to address

In rural and semi-urban areas, traditional biomass cookstoves remain widely used, contributing significantly to indoor air pollution. These stoves rely on solid fuels like wood, coal and crop residues, emitting harmful pollutants that exacerbate health issues and environmental degradation. Despite government efforts and subsidies to promote cleaner cooking technologies, many households continue to rely on these traditional stoves due to high upfront costs and limited access to modern alternatives. This is further compounded by unsustainable operation costs associated with cleaner cooking solutions like Liquefied Petroleum Gas (LPG). Although government programmes such as the Pradhan Mantri Ujjwala Yojana (PMUY) aim to increase LPG access among low-income households, the high cost of refilling LPG cylinders remains a barrier for many families.

### Technology-enabled solution provided

In response to the critical challenges posed by air pollution and its detrimental effects on health and economic productivity, EKI along with IOCL has undertaken the Surya Nutan Indoor Solar Cooking System project for addressing both environmental and socio-economic issues related to traditional cooking methods.

By integrating PV (photovoltaic) technology with thermal storage, the system delivers a reliable, 24x7 cost-effective cooking solution. This approach not only harnesses solar energy but also includes auxiliary support from grid power, ensuring consistent operations in the absence of solar energy. The system is engineered to be user-friendly, minimising upfront investment in cookware, reducing extensive operation and maintenance services, which makes it beneficial for economically marginalised communities.

The technology comprises a stationary, rechargeable indoor solar cooker that converts solar energy into heat through a specially designed heating element. This heat is stored in a thermal battery, which then releases the stored energy for cooking purposes. The system is equipped with a detachable heat control assembly that allows for on-demand energy release, providing versatility for various cooking needs. This ensures minimal radiative and conductive heat loss, making it efficient and effective for all seasons, considering the diverse culinary needs of Indian households.

To facilitate widespread adoption and utilisation, a pilot programme was initiated in Dhar district, Madhya Pradesh in January 2024, targeting to distribute 1,000 solar cookers. This programme was supported by GHG Reduction Technologies Pvt. Ltd (a subsidiary of EKI) in collaboration with the Madhya Pradesh Urja Vikash Nigam (MPUVN) as well as local state administration.

## Challenges in implementing technology-enabled solutions

Implementing the programme in remote and underserved areas presents a range of challenges.

- Limited knowledge and awareness among villagers about the benefits of solar cooking technology. Many communities exhibited resistance to its adoption. This was addressed through various communication methods which included hands-on training and educational efforts for wider adoption, acceptance and building trust.
- The absence of reliable transportation routes to difficult terrains, remote locations complicate the distribution and installation of the systems and presents both logistical difficulties and increased costs.
- Existing traditional cooking methods are deeply entrenched in these communities and transitioning to solar cooking requires overcoming cultural resistance.

To tackle these challenges, the organisation employs innovative strategies. They adapt communication approaches to effectively convey the value of solar cooking technology and implement creative solutions to overcome logistical issues.

## Impact of the technology-enabled solutions

The system is expected to significantly improve public health by reducing indoor air pollution. Lower exposure to harmful pollutants will decrease the incidence of respiratory and cardiovascular diseases, reducing premature mortality. The reduction in biomass use also contributes to environmental benefits, such as decreased deforestation and lower greenhouse gas emissions. The indoor solar cooking system also generates carbon credits while contributing to community and sustainable development; this green revenue further supports its production, distribution, and adoption.

The initiative supports economic development by creating jobs related to installation, maintenance, and training. Improved health and reduced time spent on fuel collection and cooking enhance productivity and quality of life. The programme also contributes to energy security by reducing reliance on imported fuels and promoting the use of locally available solar energy.

The project aligns with multiple SDGs such as 1, 3, 7, 8, 13 & 15 and represents a significant step toward cleaner energy and enhanced quality of life.