



WOMEN UNDER THE BLAZING SUN

Climate Change and Salt Farming in the Little Rann of Kutch

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About SEWA

The Self-Employed Women's Association (SEWA) is a national trade union of women workers in the informal economy, founded in 1972 by Ela Bhatt. With a membership of more than 3.78 million women across India, it is the country's largest central trade union of self-employed women workers. Guided by the goals of full employment and self-reliance, SEWA works to strengthen women's livelihoods through collective organizing, access to finance, social protection, capacity building, market linkages, and other integrated approaches that address poverty, vulnerability, and resilience.

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Executive Summary

Women salt workers in the Little Rann of Kutch (LRK) sustain both production systems and household survival within one of India's most climate-exposed and infrastructure-deficient landscapes. Between 2023 and 2025, International Center for Research on Women (ICRW), in partnership with SEWA (Self-Employed Women's Association), and supported by the Rockefeller Foundation, undertook collaborative research examining and documenting women-led climate action and the gendered dimensions of just transitions under SEWA's Cleaner Sky campaign. Drawing on the mixed-methods research conducted with 545 Agariya women, this brief examines how climate stress, informal labor systems, and recent shifts—particularly the transition to solar energy—are reshaping the work and everyday lives of these women.

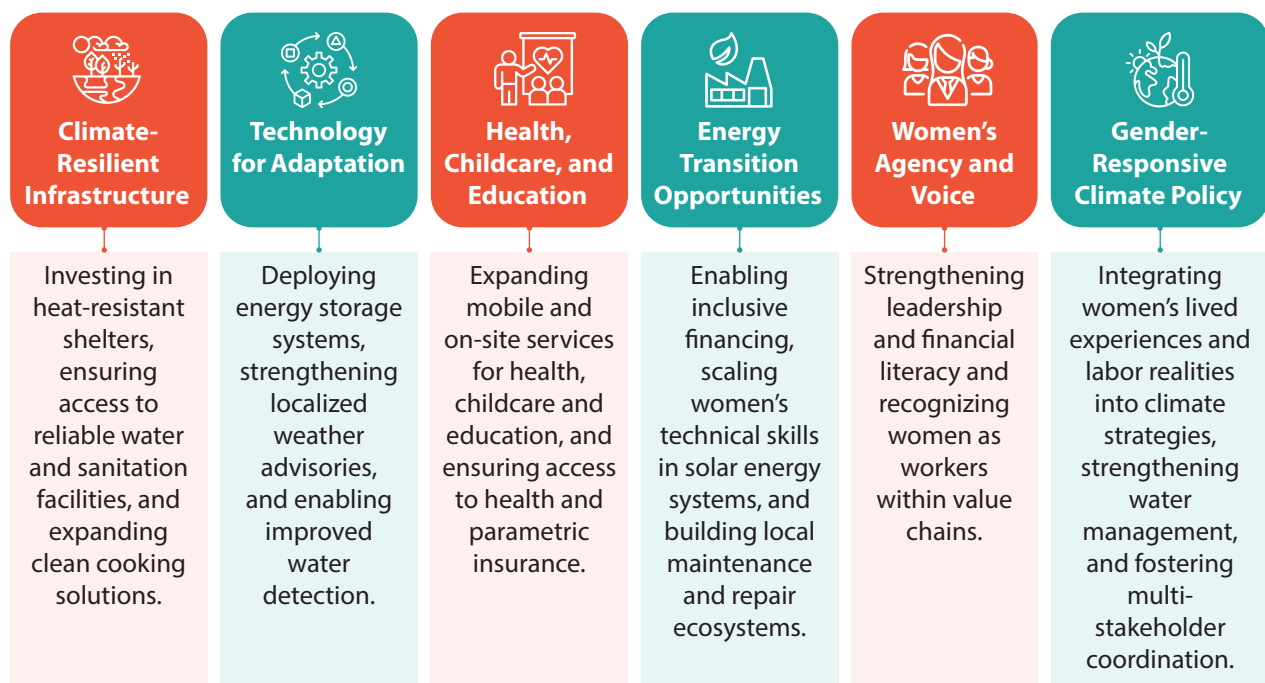
The findings highlight a dual reality. On one hand, **important shifts are underway** as the transition from diesel to solar pumps has reduced input costs, eased the physical effort required to operate pumps, and improved working conditions. Women's

involvement in operating these systems has also increased, enabling greater participation in day-to-day production.

On the other hand, these gains remain **partial and uneven**. Women continue to shoulder heavy labor burdens across production and care, with limited access to basic services such as water, sanitation, healthcare, and childcare. Climate change is intensifying these pressures by increasing labor demands, production risks, and uncertainty. Despite their central role, women's contributions are not fully reflected in decision-making power or control over resources.

The evidence suggests that while technological and institutional interventions have begun to shift aspects of women's work, **substantial structural gaps remain**. Addressing these gaps requires integrated gender-responsive approaches that combine infrastructure, services, and institutional reform, as mentioned below:

Recommendations



Context of Salt Farming in the Little Rann of Kutch

Global climate discourse has increasingly prioritized renewable energy transitions and low-carbon development pathways. However, the lived realities of women working in informal, climate-exposed economies remain largely overlooked (UNFCCC, 2022). This gap is particularly evident in the Little Rann of Kutch (LRK), a saline desert ecosystem in Gujarat to which thousands of Agariya families migrate seasonally for 8–9 months (from October/November to April/May) to produce salt. While the LRK contributes significantly to India's inland salt economy, this livelihood is sustained under extreme environmental conditions marked by intense heat, water scarcity, isolation, and limited access to basic services (Salt Department, Government of India, 2021–2022; NRDC & SEWA, 2018).

Women are central to both production and household survival, participating across the salt value chain while also managing domestic and care responsibilities. Despite their indispensable contributions, women's labor remains largely unrecognized within informal production systems (Patel, 2025).

These challenges are further compounded by their precarious living conditions. Families reside in temporary settlements with inadequate access to basic amenities. Entrenched gender norms place a disproportionate burden on the women to absorb the physical and social costs of these conditions (Elias et al., 2024; Rao et al., 2019). Climate change has intensified this precarity, with rising temperatures, erratic rainfall, declining groundwater, and frequent extreme weather events increasing labor demands,

production costs, and health risks. As parts of Gujarat emerge as climate “hotspots” (Government of Gujarat, 2021), these pressures are expected to grow.

Drawing on primary research, this brief applies a **gendered labor and climate lens** to examine how women's lives are shaped by the intersection of informality, environmental stress, and social norms. At the same time, it recognizes that the LRK is undergoing gradual transformation. The spread of solar energy technologies and engagement with collective institutions are beginning to reshape aspects of work and livelihoods. In this context, the central question explored, therefore, is: **how are the changes unfolding, shaping and being shaped by women, and where do the constraints persist?**

Methods

This brief draws on mixed-methods research with Agariya women salt workers in the LRK. It included a socio-economic survey with 545 Agariya women involved in salt production, and qualitative insights from 14 in-depth interviews and five focus group discussions (Misra et al. 2025). A participatory approach was used, involving trained local women as enumerators, ensuring that the findings reflected the lived experiences of work, care, and adaptation of Agariya women in a climate-exposed setting.

Women are central to both salt production and household survival. Yet their labor remains largely unrecognized within the systems they hold up.

Women's Labor in the Salt Value Chain

Women are engaged across the full cycle of salt production, with over 90% participating in core activities such as preparing the saltpans, digging wells, and raking salt. Around two-thirds of the surveyed women reported that their involvement is high, while the rest reported moderate or low involvement. In the absence of any technological support, the Agariyas have to intuitively dig multiple wells, often manually, to get the desired quantity of brine throughout the season. These tasks require prolonged physical exertion under direct sunlight, often on highly reflective salt surfaces that intensify their exposure to heat.

"Women have to undertake raking work in harsh sunlight...it is extremely hot. The heat causes dizzy spells. We also don't have access to cool water for drinking as there is limited availability of drinking water in the Rann."
(Woman saltpan worker in her thirties)

While women's participation is high in core production tasks, their involvement varies across different stages of the value chain. Their engagement is relatively low in certain post-harvest activities, such as heaping the salt (65%) and loading the salt (44%). Importantly, differences emerge between SEWA members and those who are not. SEWA members were consistently more likely to report participation in key activities. Nearly 71% of SEWA members reported involvement in heaping salt, compared to 52% of non-SEWA members. Further, 49% of SEWA members reported involvement in loading salt for transportation, compared to 35% of non-SEWA members.

Despite extensive engagement during initial stage of salt production, women's engagement with market actors and involvement in price negotiations

remains limited. Only about one-third of women reported any involvement in negotiating salt prices with traders. Among SEWA members, 6% reported being involved to a 'great extent' and 31% to 'some extent', while among non-SEWA members, only 1% reported being involved to a 'great extent' and 19% to 'some extent'. This highlights women's continued exclusion from key economic decision-making spaces. The difference between SEWA and non-SEWA members also indicates that while collective institutions have improved women's participation, substantial gaps still prevent them from leading or contributing effectively to the decision-making processes.

Together, these patterns highlight a clear disconnect between women's central role in production and their limited participation in higher-value, decision-making aspects within the value chain, particularly in market engagement and price setting.

Finally, in the absence of formal occupational safety systems, workers rely on collective labor practices to manage risks, ensuring that no one works alone and that others remain close by in case of accidents.

"Everyone lives together... when someone has to go down into the well for about 20 feet, then someone has to sit there to listen... one man had died in such a well... Everyone has to work together, and no one works alone."
(Woman saltpan worker in her fifties)

Collective action matters. Women's presence thins after the harvest, but collectives are slowly shifting that boundary...

Energy Transition and Women's Work



Solar technology transforming salt farming for women in LRK

Energy use is central to women's work in the LRK, shaping both production and household economies. The transition from diesel to solar pumps has marked a significant shift, primarily through **reductions in cost, ease of operation, and improved working conditions.**

Adoption of solar technology has been driven overwhelmingly by economic considerations, with 98% of women citing savings on diesel as the primary motivation. Before shifting to solar energy, they had to spend a considerable amount on diesel to run water pumps. However, the pathways through which women access and adopt solar technology differ significantly. Women associated

with SEWA are far more likely to be actively involved in decision-making around solar adoption, with around 62% reporting participation in household discussions, compared to only about 25% non-SEWA women, thereby indicating a stronger voice and influence in technological choices among SEWA members.

These differences are closely linked to access to information and institutional support. While all SEWA women in the sample reported learning about solar energy through SEWA's platforms and meetings, non-SEWA women relied more on informal networks, such as neighbors (61%), traders (46%), and family members (41%).

Access to financing further differentiates these experiences. All SEWA women in the sample reported that they accessed loans for solar adoption, compared to only about 21% of non-SEWA women. This reflects the critical role that collective institutions play in enabling access to credit and facilitating the transition to clean energy. Prior to this transition, the cost of purchasing diesel placed a significant burden on household incomes:

*“Whatever we earned used to be spent on diesel or repairs... nothing was good.”
(Woman saltpan worker in her thirties)*

The shift to solar has resulted in clear economic gains. Around 93% of women reported increased savings, and 68% reported reduced input costs, with over half (53%) reporting higher salt production levels. For many households, these gains have been translated into tangible improvements in their living conditions:

*“After we got the solar panels, we built a toilet, bathroom, veranda, and fitted a water tank.”
(Woman saltpan worker in her thirties)*

Solar pumps have also improved the ease of working. Women reported reduced exposure to diesel fumes and a decrease in associated health problems alongside a significantly easier operation of the motors, compared to diesel systems. This has enabled

greater day-to-day independence in managing water pumping activities. Women associated with SEWA were also more likely to report that operating solar pump systems is “very easy” (around 80% compared to 58% non-SEWA women), indicating greater familiarity and confidence in using the technology.

*“Even if the men are not around, we can start the motor ourselves.”
(Woman saltpan worker in her forties)*

Nearly half the women reported high involvement in operating or monitoring solar pumps, with additional engagement in equipment upkeep. These shifts point to an important transition in women’s roles—from intensive tasks of running diesel pumps, to increased participation in managing productive assets. However, these gains remain partial as technical repair continues to depend on external support, and the absence of energy storage limits use of these pumps to daylight hours. In addition, these systems remain vulnerable to climatic disruptions such as dust storms and unseasonal rainfall.

Together, these findings suggest that while energy transitions can reduce drudgery and expand women’s participation in productive roles, their impact on deeper dimensions of agency depends on access to institutional support, training, and resources, without which the gains remain uneven.

For Agariya women, the case for adopting solar was simple — it costs less, saves more, and offers new possibilities.

Everyday Life and Care Responsibilities

Women's labor extends beyond production into sustaining everyday life. Responsibilities of cooking, water collection, childcare, and household maintenance remain overwhelmingly feminized, with harsh living conditions further intensifying this burden.

Women and their families reside in temporary shelters—temporary huts (85%) or tarpaulin tents (15%)—with limited protection from intense daytime heat and cold desert nights. These shelters are rebuilt each season, often using borrowed money, reinforcing both physical vulnerability and financial precarity.

In the LRK, water scarcity is severe. Water is insufficient not only for drinking but also for bathing, cleaning, and other household needs. While almost all households carry drinking water from their villages for the initial months, two-thirds rely on government supplied water from tankers during later months. 60% of women reported difficulty in accessing drinking water and 98% of women stated that the quantity of water is inadequate.

"It is very comfortable in the village as we have access to vegetables, milk, buttermilk etc., but nothing is available in the desert... just rotlo (chappati) and vegetables... many times the vegetables get spoilt because of the extreme heat. In the village, we cook on the LPG stove, whereas in the desert, it is on the chulha (firewood stove)."

(Woman saltpan worker in her forties)

Women experience these infrastructural deficits deeply. With limited privacy and scarce water, many construct makeshift toilets using bedsheets and upturned cots, often timing their toilet use around men's work schedules. Menstrual hygiene presents an additional challenge, with women frequently rationing water while continuing their physically demanding work.

"There is no bathroom [in the Rann]. Toilets are in the open. The government tankers come every 15 days to supply water in our tanks... During menstruation, we save one drum of water [to clean ourselves]. We have to continue working in salt pans even during menses."

(Woman saltpan worker in her forties)

In these harsh living conditions, women continue to bear primary responsibility for household and unpaid care work, with limited support from men. Nearly one-fifth (20%) of women reported no male participation in domestic work, while 78% mentioned that men are involved to some extent. In the absence of childcare facilities, only

9% reported access to an anganwadi or childcare center. Women, therefore, manage children alongside their salt work or rely on older siblings or relatives in the village.

Despite their significant contributions to both household and economic activities, women's control over resources and decision-making remains limited. While many report some involvement in financial decisions, only a small proportion (15%) reported having a strong or independent say.

These conditions illustrate how women's responsibilities span productive labor, unpaid domestic work, and caregiving, creating a "triple burden" that is further intensified by seasonal migration and climate-exposed livelihoods.

Water is scarce and sanitation is unreliable in the Rann. For women, getting through the day requires planning that goes far beyond the work itself...

Health and Well-being

Access to healthcare remains severely constrained in the LRK. Women's health reflects cumulative exposure to extreme heat, water stress, and physically demanding labor, with limited access to basic services. Nearly all the women reported working under intense heat. However, when asked about specific health problems, only 28% reported problems—such as joint pain, migraines, and inflammation of the soles—that required treatment. Among those seeking treatment, about half (52%) relied on government health facilities outside the LRK, while 42% accessed private providers, often involving additional travel time and cost. In contrast, only a small proportion (3–4%) reported accessing mobile

health services within the LRK, which only operate intermittently.

Discussions with women revealed that many of their health issues that stem from heat stress—chronic pain, weakness, strain on eyesight, sores and blisters—have become normalized as part of their everyday work and must be endured.

“Yes, we face difficulties... yesterday, I could not walk as I did not have the energy. Right now, I have my periods, and when I work, I get abrasions on my inner thighs... women are always fighting for more facilities...”

(Woman saltpan worker in her thirties)



Agariya women manage with scarce fuel and food in the Rann

"The body ache is always there... we are always working but we don't pay much attention to it and keep on doing our work."

(Woman saltpan worker in her twenties)

Even when protective equipment is available, its use remains limited due to issues of fit and comfort. A large proportion of women (86%) reported that the available gear does not fit them properly or is inconvenient to use, leading to continued exposure to salt, brine, and external heat.

Menstrual hygiene presents an additional layer of challenge. With limited water and privacy, nearly 69% women reported being unable to maintain adequate hygiene during menstruation, while 60% faced difficulties washing reusable materials. Around 40% of women reported difficulty continuing work during menstruation.

"When we need to wash ourselves, we go to the forest sometimes, otherwise we have to go home, which is 14 kilometers away... we take turns like that."

(Woman saltpan worker in her fifties)

Despite these conditions, most women (75%) continued to work throughout their pregnancies. Encouragingly, 92% also reported accessing antenatal care, albeit from facilities outside the Rann. But this access comes with additional logistical and financial burdens.

Health risks are thus built into women's daily work, such that physical pain and poor health have become normalized. Because these risks are seen as 'part of the job' women often don't realize that they need external facilities and avoid accessing them at all due to limited availability of healthcare in the LRK. This limits both the recognition of the "need" for, and "access" to, timely healthcare.

In the Rann, pain is normalized and healthcare is distant. For women, the two reinforce each other to create significant barriers to health and wellbeing.



Temporary makeshift settlement of the Agariyas in the LRK

Education and Alternate Livelihood Opportunities

Seasonal migration to the LRK for 7–8 months each year significantly disrupts children’s education and shapes long-term livelihood pathways for Agariya families. These disruptions are reflected in the women’s educational profiles, with nearly half of the women reporting no formal schooling and only a small proportion studying beyond the primary level. Limited educational attainment not only constrains opportunities for livelihood diversification but also reinforces long-term dependence on salt farming as the sole livelihood, which is both physically demanding and highly vulnerable to climate risks.

Only 36% of households are engaged in agricultural labor when they are not engaged in salt production (Jun – Oct), where work is intermittent and wages are low. Women typically earn INR 180–200 per day—consistently lower than male wages—highlighting persistent gender disparities in income opportunities.

“If daily wage work is available, we do that, otherwise we sit at home... we get work when it is cotton-picking season and when cumin is ready.”

(Woman saltpan worker in her forties)

“Beyond the salt season, we do work in farms... and for that we get 200 rupees as daily wage.”

(Woman saltpan worker in her twenties)

Only 37% of households reported the availability of a primary school in the LRK. As access to education remains a major hurdle, families adopt coping strategies that often compromise their children’s continuity in education. Some leave children in the villages with their relatives or send them to a boarding school, while others take them to the Rann, where schooling is irregular or unavailable. As one woman said,

“... children cannot go to school... in the 7–8 months we are in the desert, there is no studies for them.”

(Woman saltpan worker in her forties)

In response, some temporary schooling initiatives, such as makeshift classrooms in buses, have emerged. However, these remain limited in reach and inconsistent in quality, often constrained by water scarcity and the extreme heat.

Together, these patterns illustrate how seasonal migration not only disrupts education in the short term but also limits livelihood diversification; reinforcing intergenerational dependence on salt farming and contributing to long-term economic precarity for Agariya women and their families.

In the Rann, the salt season does not just disrupt education. It shapes what the next generation can become...

Climate Change and Environmental Stress

Salt farming in the LRK is increasingly shaped by climatic variability and environmental stress, with direct consequences for production systems, labor demands, and household security. Women consistently reported changes in temperature patterns, rainfall variability, groundwater availability, and the frequency of extreme weather events. These shifts are not only environmental but are experienced through rising production costs, heavier workloads, and growing uncertainty in salt yields.

Declining groundwater levels have emerged as a critical challenge for salt production. In the absence of reliable methods to locate water, households dig multiple deep wells each season and operate additional motors to sustain brine extraction—significantly increasing both physical effort and financial costs. As one woman explained,

“First thing we have to do is keep digging in search of water ... earlier the water pressure used to be high but now it comes with very less force.”
(Woman saltpan worker in her thirties)

At the same time, extreme and unpredictable weather events are disrupting production cycles. Frequent dust storms, cyclones, and unseasonal rainfall damage saltpans and equipment, shorten effective working periods, and increase maintenance requirements.

“[Frequent] cyclones and dust storms spoil the salt production... now we have to dig many wells and run 3–5 motors for one pan, while earlier it was 1 or 2 at most.”
(FGD with non-SEWA members)

“Nowadays there is rainy season throughout the year that damages the motor and VFD (variable frequency drive) [of the solar pumps].”
(FGD with SEWA members)

For women, these environmental changes translate to intensified labor and heightened precarity. Longer working hours, repeated well-digging, and increased exposure to extreme conditions add to physical strain, while fluctuations in production affect income stability. These pressures are layered onto their existing responsibilities of household and care work, which remain unchanged.

“There are many difficulties in the Rann—heat and cold make it difficult for health.”
A young woman in her twenties noted

Adaptation in this context remains largely reactive and household-led. Families respond by increasing labor inputs, investing in additional motors, and absorbing higher risks and costs. Women, positioned at the intersection of production and care, bear a disproportionate share of this adjustment burden.

Climate change is not a distant threat for Agariya women. It arrives in the form of deeper wells, heavier workloads, and harsher seasons.

Conclusion and Way Forward

Women's lives in the LRK reflect a dual reality of meaningful progress alongside persistent structural inequality. Recent shifts—and particularly the transition to solar energy—have reduced drudgery, improved economic stability, and enabled greater participation in production; demonstrating the potential of targeted interventions to improve women's everyday work and livelihoods. At the same time, these gains remain partial and uneven. Women navigate the demanding work of salt production alongside persistent deficits in water, housing, sanitation, healthcare, and education, while also bearing a disproportionate burden of unpaid care work. Their central role in production is not matched by equivalent control over resources or participation in key decision-making spaces, particularly in relation to markets and pricing.

The findings highlight that the transition to clean energy is a pathway to climate mitigation and adaptation; in the context of the Agariyas and

LRK, it also functions as a pathway for livelihood stabilization and poverty reduction. These objectives are closely intertwined, yet neither can be fully achieved without addressing underlying structural constraints.

Moving forward, there is a need to shift from the narrow focus on technological solutions towards more integrated, gender-responsive approaches to climate resilience and livelihood security. Without parallel investments in infrastructure, social services, and the redistribution of unpaid work, the burden of adaptation will continue to be disproportionately absorbed by women. Strengthening the resilience and dignity of Agariya women workers therefore depends on recognizing their central role in sustaining both salt production and household life, and supporting them through coordinated investments in basic services, inclusive institutions, and equitable market systems.



Declining groundwater and extreme weather events have rendered salt farming precarious in recent years

Recommendations

The following priority areas outline actionable pathways:



References

- Elias, M., Zaremba, H., Tavenner, K., Ragasa, C., Paez Valencia, A.M., Choudhury, A., & de Haan, N. (2024). Towards gender equality in forestry, livestock, fisheries and aquaculture. *Global Food Security*, 41, 100761. <https://doi.org/10.1016/j.gfs.2024.100761>
- Government of Gujarat. (2021). *Gujarat State Action Plan on Climate Change*.
- Misra, D., Gautam, A., Desai, M., Dave, H., Verma, R., & Achyut, P. (2025). *Powering Change: Women, Clean Technology & Climate Resilience in Gujarat's Saltpans*. New Delhi: International Center for Research on Women (ICRW)-Asia and Self Employed Women's Association (SEWA).
- Natural Resources Defense Council (NRDC) & Self Employed Women's Association (SEWA). (2018). *Worth Their Salt: Improving livelihoods of women salt farmers through clean energy in the salt pans of Gujarat*. https://www.nrdc.org/sites/default/files/worth-their-salt-improving-livelihoods-of-women-salt-farmers-through-clean-energy-in-the-salt-pans-of-gujarat_2018-09-10.pdf
- Patel, R. (2025). Salt 'Farming': Gendered Labour and Ecologies of migrant workers in Little Rann of Kutch. *Berkeley Journal of Sociology*. <https://berkeleyjournal.org/2025/06/11/salt-farming/>
- Rao, N., Lawson, E. T., Raditloaneng, W. N., Solomon, D., & Angula, M. N. (2019). Gendered vulnerabilities to climate change: Insights from the semi-arid regions of Africa and Asia. *Climate and Development*, 11(1), 14–26. <https://www.tandfonline.com/doi/full/10.1080/17565529.2017.1372266>
- Salt Department, Ministry of Commerce & Industry, Government of India. (2021–2022). *Annual Report*. https://saltcomindia.gov.in/AnnualReports_2021.aspx
- UNFCCC. (2022). *Dimensions and examples of the gender-differentiated impacts of climate change, the role of women as agents of change and opportunities for women*. https://unfccc.int/sites/default/files/resource/sbi2022_07.pdf



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