



Strengthening the resilience rural practices and the villages for sustainable development in India

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Abstract

The COVID-19 pandemic exposed the vulnerabilities of urban infrastructure while highlighting the resilience of rural India in sustaining livelihoods, food security, and social cohesion. Rural communities leveraged subsistence farming, mutual support networks, low-cost technologies, and sustainable natural resource management to mitigate economic and social shocks. In contrast, urban centers experienced unprecedented strain due to reverse migration, loss of employment, and inadequate food and healthcare systems. This disparity underscores the critical role of rural areas in achieving Sustainable Development Goals (SDGs) related to hunger, health, economic growth, and sustainable communities. Strengthening rural economies through improved infrastructure, market access, mechanization, and digital connectivity is essential for integrated rural-urban development, equitable growth, and national resilience. Lessons from India's rural response to COVID-19, alongside international experiences, reinforce the need to prioritise rural development as a strategic imperative for sustainable and resilient growth.

Keywords: Rural resilience, sustainable development, food security, COVID-19 pandemic, reverse migration, rural-urban linkages, infrastructure development, inclusive growth

Introduction

In 2020, due to COVID-19, the world's gross domestic product (GDP) contracted by 3.4%, and global stock markets suffered dramatic losses, including a record single-day decline of nearly 3,000 points on March 16, 2020. 1 (World Bank, 2021) [4]. Various sectors, particularly tourism and travel, experienced severe setbacks due to border closures and restrictions on movement. 2 (UNWTO, 2020) [2]. Economic impacts were region-specific: The United Kingdom's GDP dropped by approximately 8%, while in Asia, growth ranged from a modest 0.2% in East Asia to a decline of 7.7% in South Asia. 3 (IMF, 2020) [1].

Beyond economic impacts, the pandemic intensified global food insecurity, disrupting supply chains and reducing household incomes. The World Bank estimated that around 71 million people could be pushed into extreme poverty due to COVID-19, while the World Food Programme projected that an additional 130 million people might become food insecure, adding to the 820 million already affected globally. 4 (World Bank, 2020; WFP, 2020) [3].

In India, the sudden nationwide lockdown announced on March 24, 2020, created immediate challenges for households, particularly in urban centers dependent on external systems. 5 (Government of India, 2020) [5, 11]. In contrast, rural communities exhibited adaptive resilience, leveraging local resources, community networks, and traditional practices to mitigate the crisis. Examples of these resilient rural practices include:

1. Community-based agriculture and food production:

Many villages relied on subsistence farming, kitchen gardens, and collective farming initiatives to ensure local food availability, reducing dependency on external supply chains. 6 (Kumar & Singh, 2021) [6, 37].

2. Mutual support networks:

Rural households mobilized informal support systems, including cooperative societies, local self-help groups, and Panchayati Raj institutions, to share essential goods and

provide financial assistance to vulnerable families. 7 (Sharma, 2021) [7, 19].

3. Adoption of low-cost technology and innovations:

Rural communities utilized mobile communication, social media, and localized digital platforms to access markets, share information, and maintain livelihood activities during restrictions. 8 (Rao, 2021) [8].

4. Sustainable natural resource management:

Practices such as rainwater harvesting, soil conservation, and use of organic inputs helped maintain agricultural productivity and environmental sustainability during periods of economic uncertainty. 9 (Chatterjee, 2020) [9].

These strategies not only helped rural communities withstand immediate disruptions but also contributed to long-term sustainable development by reinforcing local food security, social cohesion, and environmental stewardship. The COVID-19 crisis thus highlights the critical role of rural resilience in achieving sustainable development goals (SDGs), particularly in low-resource contexts where adaptive capacity and community-based solutions are vital. 10. (UNDP, 2020) [10].

COVID19 Lockdown and the Strain on Urban Infrastructure in India

In response to the rapidly spreading COVID-19 pandemic, the Prime Minister of India announced a nationwide lockdown, urging citizens to remain in their current locations. 11 (Government of India, 2020) [5, 11]. However, within a few days, major urban centers such as Mumbai, the financial capital of India, were unable to sustain the influx of residents who had lost their livelihoods.

According to the 2011 Census, six major districts—Mumbai Suburban, Surat, Thane, Pune, Bengaluru, and

Ahmedabad—each had over a million migrant workers who subsequently left their workplaces and returned to their native villages. 12 (Census of India, 2011; Srivastava, 2020) [12, 20].

While urban residents were confined to their homes and expected to follow social distancing measures, millions of labourers, children, and women were forced to undertake long and arduous journeys to reach their hometowns. Many traveled on foot, by bicycle, handcart, or even in containers and cement mixers. 13 (Kumar, 2020) [13].

The majority of migrants originated from Uttar Pradesh and Bihar, India's most populous states. People primarily moved due to food insecurity, loss of employment, and perceived threats from the virus in densely populated urban areas. In contrast, rural areas, with lower population density and natural environments, experienced comparatively lower exposure and risk from COVID-19. 14 (World Health Organization [WHO], 2022) [14, 23].

The WHO reported that India recorded approximately 4.7 million COVID-19-related deaths, with two-thirds occurring in urban districts, highlighting the disproportionate impact of the pandemic on cities. 15 (WHO, 2022). According to the National Statistical Office (NSO), the pandemic forced about 51.6% of men in urban India to migrate back to rural homes, marking the largest reverse migration in the country's history. 16 (NSO, 2021).

During the lockdown, the Public Distribution System (PDS) played a critical role in providing food grains when most retail markets were closed. However, even this intervention was insufficient to fully meet the needs of the roughly 800 million beneficiary's dependents on the PDS. 17 (Sharma & Singh, 2021) [7, 19]. The scale of urban infrastructure strain, combined with the challenges of reverse migration, underscored the vulnerability of Indian cities and highlighted the essential role of rural communities in providing safety nets during national crises.

Rural Resilience, Food Security, and Sustainable Development in India

The COVID-19 pandemic exposed the vulnerabilities of urban infrastructure while highlighting the resilience of rural India. Urban centers, heavily dependent on daily supplies and external resources, struggled to provide food security during the lockdown, whereas villages, home to 60–70% of India's population, were able to sustain themselves due to long-standing food storage practices and local production systems. 18 (Census of India, 2011; Kumar & Singh, 2021) [6, 12, 37].

In rural areas, households traditionally maintain food-grain reserves sufficient for annual consumption, stored in mud, clay, bamboo, or stilted granaries. This practice, passed down through generations, ensured local food security even during the nationwide lockdown. Moreover, the rural workforce, constituting about 93% of India's unorganized sector, remained active, supplying essential items such as vegetables, milk, and other kitchen necessities to urban populations despite market closures and transport restrictions. 19 (Sharma & Rao, 2021) [7, 8, 19]. The continuity of agricultural activities and daily wage work in villages provided livelihoods and mitigated the immediate economic shock of COVID-19.

The sudden lockdown forced millions of urban workers, particularly migrants from Uttar Pradesh and Bihar, to

return to their native villages due to job loss, food insecurity, and fear of infection. 20 (Srivastava, 2020) [20]. This reverse migration highlighted the vital role of rural areas as social and economic safety nets, where communities welcomed migrants and shared resources with solidarity and enthusiasm. Unlike cities, where people experienced isolation and fear, villages demonstrated humanitarian responses rooted in community cohesion.

India's urban infrastructure is heavily dependent on rural linkages. Daily supplies of food, labor, and raw materials originate primarily from rural areas. For instance, India is the world's largest milk producer, contributing approximately 24% of global production, and agriculture remains a significant source of food and employment. 21 (FAO, 2022). During the Green Revolution and beyond, villages transformed India from a food-deficit to a food-surplus nation, enabling exports of agricultural and processed products, which increased by 25% in 2022–23. 22 (Ministry of Agriculture, 2023) [22]. Yet, despite these contributions, policy emphasis continues to favour urban-centric growth, often neglecting the rural sector.

Urbanization presents multiple challenges. According to WHO (2022), over 55% of the global population lives in urban areas, projected to reach 68% by 2050. In India, half of the population is expected to reside in cities in the coming decades. However, urban living conditions exacerbate health risks, including heart disease, asthma, cancer, and diabetes, due to pollution, heat islands, inadequate green spaces, and poor sanitation. Alarming, nearly 40% of Indian urban residents lack safely managed sanitation, 91% breathe polluted air, and 39 of the 50 most polluted cities globally are in India. 23 (World Air Quality Report, 2022) [23]. Meanwhile, 75% of health infrastructure is concentrated in urban areas, serving only 27% of the population, leaving rural residents to travel long distances for basic healthcare services. 24 (NSO, 2020). Only 14.1% of rural Indians have health insurance, highlighting systemic exclusion. 25 (NSO, 2021).

The pandemic and these structural disparities underscore that India cannot achieve Sustainable Development Goals (SDGs) without prioritizing rural development. SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-being), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 11 (Sustainable Cities and Communities) are all linked to the vitality of rural communities. 26 (United Nations, 2021) [26].

Prominent leaders and thinkers have long advocated for rural-based development. Many scholars have emphasized that India's 6,40,000 villages, home to 70% of the population, must receive mechanized farming support, agro-product marketing facilities, and urban amenities for sustainable growth. 27 (Kalam, 2012) [27]. Mahatma Gandhi warned that the decline of villages would herald the decline of India itself. 28 (Gandhi, 1942) [28]. Similarly, it has been argued against over concentration in big cities, advocating for strengthened rural economies to prevent disasters and epidemics. 29 (Upadhyay, 1978) [29]. The COVID-19 crisis reaffirmed these insights, revealing the enduring resilience and relevance of rural India in sustaining national well-being, food security, and economic stability.

Debate of Integrating Rural Development with Urbanisation: Towards Sustainable and Resilient Growth

Urbanisation without concurrent rural development is inherently unsustainable. In India, promoting an integrated rural-urban development model is critical for long-term economic resilience and food security. Strengthening rural economies, preserving indigenous livelihoods, and enhancing local infrastructure are essential steps in achieving this goal. Lessons from the COVID-19 pandemic demonstrated that even countries with advanced urban infrastructure struggled to maintain food security, highlighting the importance of a robust agricultural sector. 30 (FAO, 2022). For instance, the UK government in May 2023 emphasized the central role of farmers in national welfare, noting that “farming is not just a job, but a way of life passed down the generations...we need food security, and our success depends on the success of farmers” 31 (UK Government, 2023) ^[31, 32].

Urbanisation often attracts people due to higher incomes, better infrastructure, and greater market access. However, in India, a predominantly rural country, significant income disparities exist between rural and urban areas. Per capita Net Value Added (NVA) in 2011–12 was Rs. 40,925 in rural areas versus Rs. 98,435 in urban areas. While India’s per capita Net National Income (NNI) increased from Rs. 86,647 in 2014–15 to Rs. 1,72,000 in 2022–23, the benefits remain skewed toward urban populations. 32 (Government of India, 2023) ^[32].

Farmers frequently face challenges in securing fair prices due to market intermediaries who purchase produce at low prices, store them, and sell later at higher rates. Minimum Support Prices (MSP) are intended to protect farmers, yet practical implementation often falls short. For example, in March 2023, thousands of onion farmers in Maharashtra protested price crashes, some resorting to burning crops in desperation. Similarly, sunflower farmers in Haryana demanded MSP for sunflower seeds at Rs. 6,400 per quintal, while market prices had dropped to nearly Rs. 4,000. 33 (The Hindu, 2023) ^[33]. These instances echo the larger farmers’ protests in Delhi from November 2020 to 2021, which resulted in over 700 reported deaths and led to the repeal of three contentious farm laws. 34 (Ministry of Agriculture, 2021) ^[34].

Agriculture is not only critical for food security but also for inclusive growth alongside urbanisation. Countries such as Japan and South Korea, which underwent rapid urbanisation, implemented major agricultural reforms to complement industrial growth. Mechanisation increased labor productivity, while rural infrastructure development ensured food sufficiency and equitable growth. 35 (OECD, 2020). The Russia-Ukraine conflict further highlighted global vulnerabilities in food supply chains, prompting European nations to strengthen their agricultural sectors. 36 (FAO, 2023).

India’s rural infrastructure—including irrigation, roads, electricity, agro-processing facilities, and digital connectivity—requires urgent attention. Improved rural connectivity enhances access to markets, education, healthcare, credit, and logistics, contributing to ease of living and doing business in rural areas. Strengthening these linkages will not only boost rural prosperity but also increase the resilience of urban areas during crises, as exposed during the COVID-19 pandemic. 37 (Kumar & Singh, 2021) ^[6, 37].

Conclusion

India’s experience during COVID-19 underscores that agriculture-based urbanization and rural development are central to sustainable growth. The indigenous practices of food storage, climate-resilient farming techniques, and community-based livelihoods in villages provide models for achieving the UN Sustainable Development Goals (SDGs), including SDG 2 (Zero Hunger), SDG 8 (Decent Work and Economic Growth), and SDG 11 (Sustainable Cities and Communities) (United Nations, 2021) ^[26]. By integrating rural development with urbanization, India can create a balanced, resilient, and sustainable growth trajectory that benefits both rural and urban populations.

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