
2018

Community-level assessment of droughts in Odisha: Effects, resilience, and implications

Sangram Kishor Patel
Population Council

Follow this and additional works at: https://knowledgecommons.popcouncil.org/departments_sbsr-pgy



Part of the [Demography, Population, and Ecology Commons](#), [Environmental Public Health Commons](#), [Family, Life Course, and Society Commons](#), [International Public Health Commons](#), and the [Place and Environment Commons](#)

[How does access to this work benefit you? Click here to let us know!](#)

Recommended Citation

Patel, Sangram Kishor. 2018. "Community-level assessment of droughts in Odisha: Effects, resilience, and implications," research brief. New Delhi: Population Council.

This Brief is brought to you for free and open access by the Population Council.

COMMUNITY-LEVEL ASSESSMENT OF DROUGHTS IN ODISHA: IMPACT, RESILIENCE, AND IMPLICATIONS

Over the years, drought has been recognized as one of the most consequential of natural disasters, which has severe social, economic, and environmental impacts.

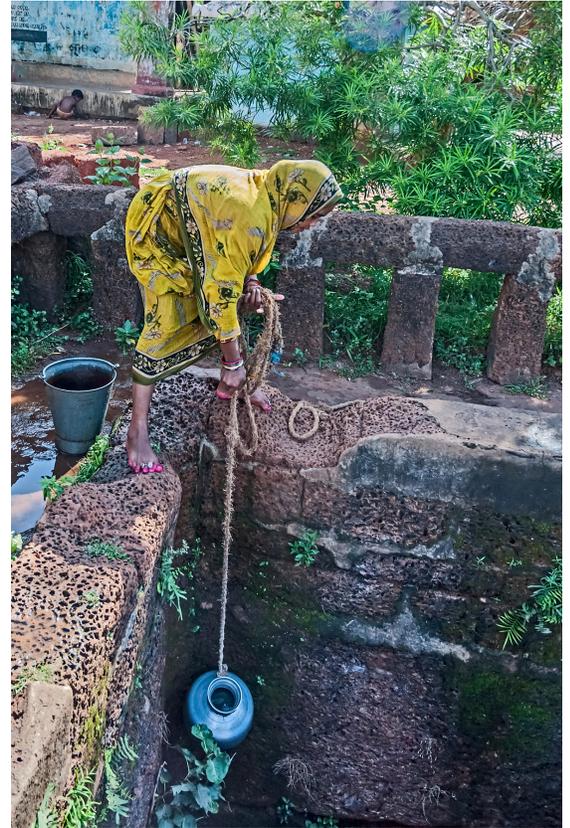
In 2015, 50 million people across the world were affected by droughts, creating serious challenges for people and governments (UNISDR 2016). India has been severely affected by drought — one third of the country is either drought-prone or classified as desert (Sonawane 2016). Analysis by Assocham India estimated that droughts in 2016 alone would cost India's economy at least \$100 billion and place inflationary pressure on the economy, infrastructure, food supplies, and health (Assocham India 2016).

The eastern region of India, including Odisha, has been adversely affected by drought. Odisha's geographic location makes it vulnerable to various natural disasters and climatic risks (Government of Orissa 2002; Ray-Bennett 2009; Patel 2016). Of the 30 Odisha districts, 26 were affected by drought in 2015–16 (Government of India 2016). Studies exploring how communities experience drought and show resilience in the face of drought are scarce in India and almost nonexistent in Odisha.

To fill this gap, the Population Council conducted a study to explore the impact of drought on people and their resilience, as well as examine the perceptions of state-level infrastructure and institutional initiatives to strengthen responses to droughts.

Methodology

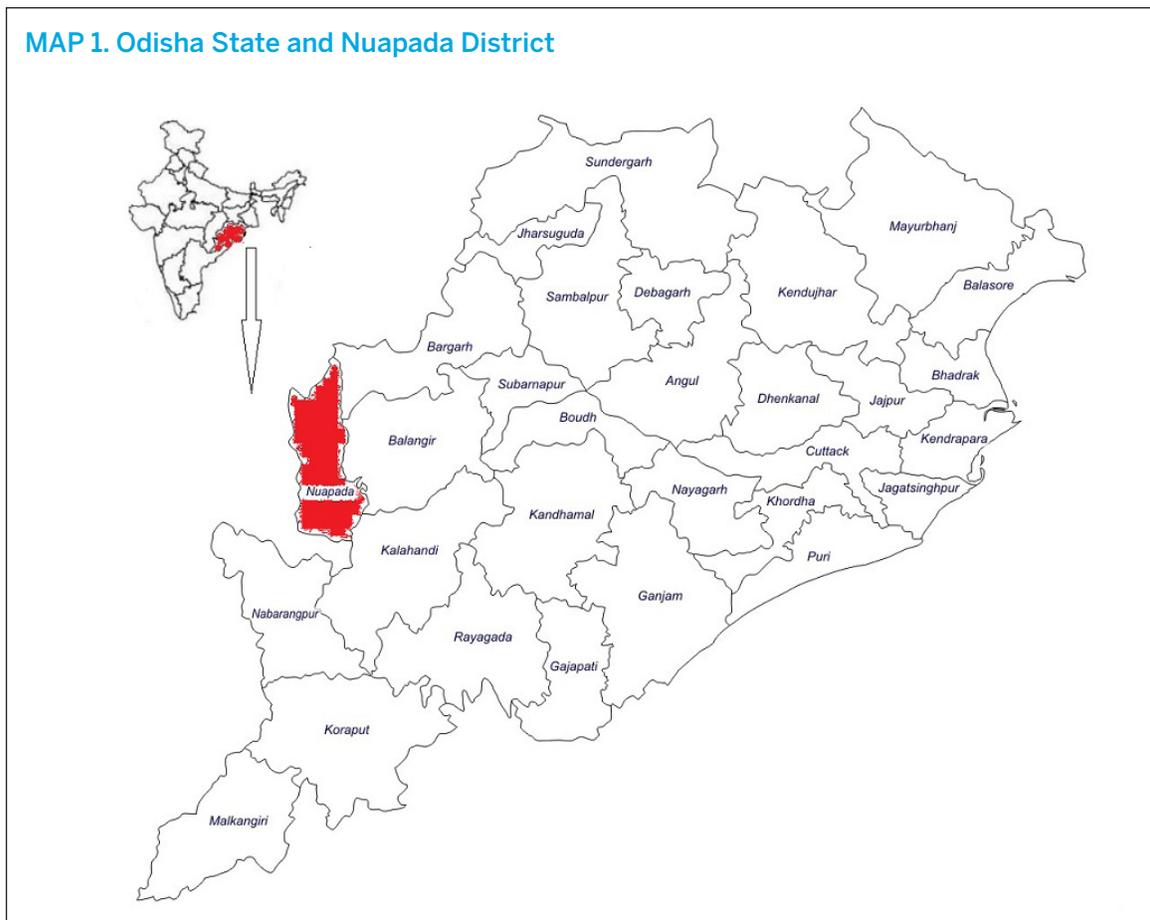
Data for this brief are drawn from a qualitative study conducted between April and June 2017 in a rural setting in the Nuapada district of Odisha that is highly vulnerable to drought (Map 1). Information was collected from a range of stakeholders through 23 in-depth interviews (IDI) and two focus-group discussions (FGD) from the panchayat, block, district, and state levels. The FGDs were conducted separately for women and men in the community. Community members, including farmers, laborers, women with children, young women without children, and the elderly and disabled, were included in the study.



A woman collects water from an open well, Odisha

Drought results from long continued dry weather and/or insufficient rainfall, usually a season or more, resulting in a water shortage causing adverse effects on vegetation, people and animals.

MAP 1. Odisha State and Nuapada District



Findings

Climate change and drought: Perceptions of causes and experiences

Most people interviewed were aware of climate change and drought. Participants said they believed there was climate change and they noted the high uncertainty of seasons, which they said had changed drastically over the years. They believed factors such as deforestation, forest fires, fewer wetlands, increasing urbanization, and environmental pollution were the key reasons for climate change, and linked those to actions of humans. Government stakeholders believe that climate change is having serious consequences in the area. People considered drought the most consequential natural disaster in the Nuapada district, as well as in the state of Odisha, and believed drought had become more intense in recent years because of the increasing occurrence of extreme temperatures in the area and because the region is situated in the highlands.

Impact of droughts on the population

The farmers, laborers, and others interviewed reported multifaceted physical, social, health, economic, and environmental concerns related to drought.

Farmers, labourers and the poor are severely affected physically, financially and psychologically due to consecutive droughts that have affected agriculture and livelihoods.

Effects of drought on livelihood, livestock, and other socio-economic conditions. Smallholder and marginal farmers, agricultural laborers, sharecroppers, and the poor reported being badly affected by droughts as they are dependent on scarce and unreliable rainfall for cultivation. The scarcity of water has affected their cultivation and has reduced the productivity of paddy, pulses, and vegetables in the last few years. With decreasing agricultural productivity, farmers faced significant financial hardship. Some farmers said they took loans from formal and informal sources but were not able to repay the loans due to crop loss, leading banks to refuse additional loans. These factors increasingly rendered the farming community vulnerable. Participants reported being unable to meet basic family needs, including food, education, and health care. Livestock were also reported to suffer from scarcity of water and food, deleteriously affecting the



Shrinking and increasingly unhygienic water in the pond during droughts, Nuapada

assets of farmers and further eroding their socioeconomic position.

“Farmers are largely affected by drought. As there is no agriculture and production, we don’t have any earning. Because of this we are not able to send our children to school, and always encounter problems in feeding our family and providing clothes to family members. We are not even able to provide treatment when our children have any diseases or health problems such as fever, cold, cough, and diarrhea. There is no money with us for our sorrow and happy time, and for treatment of any disease. Usually, food and work is available when paddy is harvested. If there is no rain, then there is no paddy and no work is available in our area. Due to this, older people like us face more problems.” (FGD participant, Nuapada)

Effects of drought on water availability and sanitation.

Participants reported that repeated droughts had affected the supply of water for drinking, bathing, sanitation, daily household uses, irrigation, and cultivation. Water levels of tube wells had gone down as the drilling of bore wells had reduced water availability in tube wells, forcing the digging of new bore wells. Many women reporting having to travel far to fetch water and waiting time at tube wells had increased up to half an hour per day. Low rainfall, a poor canal irrigation system, depletion of groundwater, and drying up of ponds affected agricultural production, which in turn has affected the livelihoods of farmers, as well as their livestock.

“Water scarcity leads to low productivity in land, and livestock do not get sufficient water. We are always facing problems for bathing, washing, and drinking water.” (FGD participant, Nuapada)



A woman bringing water from a distance, Nuapada

Effects of drought on food security. Participants also described the changes that have taken place in food security concerns over the decades. Some of the elderly remembered the drought in 1980 when thousands died of starvation. Participants said that the government response to drought is far better now. However, they also said that food security continued to be a serious concern due to the loss of livelihoods and income, leading to the accumulation of debt.

“When there is food at home and children ask for it, I give them food. Now, when there is no food at home and children ask for it, what can I give them? Sometimes, I try to convince them [there is no food at home and very soon food will be available to them], otherwise forcefully keep them silent. What can I do? This is happening in most of the households.” (Housewife, 27 years, IDI)

Effects of drought on health. Participants described suffering from an increase in ailments such as anemia, malnutrition, diarrhea, and weakness during drought periods. Participants have also reported ailments like blood cancer, kidney failure, jaundice, skin diseases, and acidity, among others, although these were not always directly linked to drought. People considered most of the health problems to be caused by the use of contaminated water, the high fluoride content in water, and insufficient food intake. Participants also said that health was adversely affected by migration for work. As per the participants, malaria was highly prevalent in the area, and nearly 30 patients from the area were usually admitted to hospitals every month. Most participants said they sought treatment in government hospitals. Although they received free medicines from the hospital for small ailments, in many cases they said they had no option but to purchase other medicines from private pharmacies.

Summary of views from the participants about enablers and continuing challenges related to drought situation

Enablers

- **PDS food grains** are beneficial in ensuring minimum food security and avoiding deaths due to starvation.
- **SRCCs** have proved beneficial in helping the children of migrants continue their education.
- **Migration is one of the important coping mechanisms** adopted by the community in response to the impact of droughts.

Challenges

- **Debt, mortgage, food insecurity, unavailability of work, and low-wage work** during drought years are continuing to increase the economic burden on families.
- **Irrigation in the area is almost nonexistent** because there is less or no water in traditional water bodies/ watersheds.
- **Crop insurance schemes** are not sufficient to compensate for the losses incurred as a result of drought.
- **Promotion** of drought-tolerant crops is lacking at the community level, resulting in lack of awareness.
- **Limited awareness** regarding where to access information on weather forecasting, how to apply for compensation due to crop loss.
- **Lack of proper implementation** of migration policy for the migrants as a result of disasters, particularly droughts.
- **SHGs formed by the government are of limited help** because of members' lack of savings and increased expenditure as a result of drought.

The burden of drought exacerbated their debt, and out-of-pocket expenditures worsened their financial position. Furthermore, participants said that drought had not only affected people physically, but its impact on basic needs of life had psychological consequences.

"We are not able to understand why people get psychological problems. This may be due to the drought. Today we are sitting here and discussing about this and able to understand the different aspects of drought. Earlier we could never think that due to drought a person can suffer mentally or die. Nowadays, this is happening very frequently." (FGD participant, Nuapada)

Resilience to drought

Coping and adaptation as reported by the community.

Participants recalled that in the past they stored surplus food grains to cope with drought. Now, due to continuous drought-induced loss of crops and livelihood these surplus

These days, people tackle hunger resulting from drought by borrowing or taking food on credit, accepting PDS food grains from the government, and by migrating.

food grains are not sufficient, so people are changing jobs, taking on daily-wage non-agricultural labor, and selling firewood, in addition to migrating for work. People also borrowed from moneylenders, relatives, and neighbors, took food on credit from shops, and repaid their debts after they had earnings from migration. Sometimes people bought rice from shopkeepers by exchanging some forest products or millet. Participants said that Public Distribution System (PDS) rice from the government was useful as people at least had something to eat during the time of drought. Participants said that *Anganwadi* centers, maintained through the government's Integrated Child Development Services program to combat child hunger and malnutrition, were beneficial for providing nutritional food to children and lactating mothers.

"When there is no food, I borrow from our neighbors and manage. But I manage with great difficulty. Even sometimes, I exchanged grains like paddy, green gram, or any forest products for rice in the village shop." (Male farmer, 25 years, IDI)

With consecutive droughts and crop loss, frequent and seasonal migration was a common coping strategy, particularly among landless farmers and agricultural laborers. Some go to nearby towns to take up daily-wage labor. For others, seasonal work, for example at brick kilns

and construction sites, typically involves migrating out of Odisha for six to eight months. The main destination states included Andhra Pradesh, Chhattisgarh, Tamil Nadu, Delhi, Maharashtra, and Goa.

Migration had repercussions for people and their families. In accordance with the *Pathuria* or *Dadan* system (bonded laborers), contractors gave advance money to the migrants. Participants said that often migrants were unable to repay the debt. They told stories of men who migrated for work who took their family members, including children, with them, which resulted in children dropping out of school. Some participants mentioned the prevalence of child labor in the brick kiln sector. Participants highlighted the exploitative conditions at work, which ranged from long working hours (up to 18 hours every day) to staying in makeshift huts lacking toilet facilities. In some instances, migrants' names were dropped from ration cards and other government schemes back in their home villages during the migration period. In many occasions, due to high temporary out-migration, houses were either locked or only had older residents, posing a security threat for the elderly.

“Due to no rain, there is no crop production. In our area there are mostly small and marginal farmers, and due to crop loss we are migrating to other places and some even outside the state for jobs. Drought has a serious impact on our livelihoods. There is no government program on livelihoods in our area; round the year people of our area are migrating outside and maintaining their families. I continuously work outside for six to eight months and after that I return to our village. Due to migration, the schooling of my children is largely affected.” (Male farmer, 38 years, IDI)

Participants said that even people with large farm lands were affected by droughts and sometimes had to take up alternate employment.

Measures taken by the government to combat drought situations

Participants noted that one of the key measures the government has taken to support drought-affected migrants is the establishment of Seasonal Residential Care Centers (SRCC). For example, since 2004-05, children forced to migrate due to drought are able to continue their studies at SRCCs. Another reported measure taken by the government was the promotion of Self Help Groups (SHGs). The government stakeholders interviewed explained that SHGs were linked with banks for loans at lower rates of interest (7%) and subsidy (3%) for farming

Due to livelihood loss, debt and food insecurity people resort to migration for work.



Drought affected agricultural land, Nuapada



SRCC center at Brahmaniguda village, Nuapada

tools, and training was imparted to SHGs for vegetable cultivation, fisheries, mushroom cultivation, and other small-scale industries.

Yet participants expressed some dissatisfaction with the performance of SHGs. They said that many of the SHGs were not active beyond a few activities, for instance, engaging women in vegetable cultivation, pulses processing, or leaf-plate preparation. They also said the contribution of SHGs was limited when the money provided for income-generating activities was not utilized properly, for example because they were not able to sell the products or because the cost of production was higher than they could sell products for on the local market. Community members and village leaders said that the government could be doing more. Not all farmers

Interpretative recommendations

A list of recommendations is outlined below to meet the needs of the population as indicated by the findings.

- **Encourage alternate employment opportunities and skill development:**

Options for generating sustainable livelihoods should be given priority in drought-prone areas. First, promoting and strengthening women's SHGs can be a beneficial measure targeted at drought mitigation. They could be involved in small-scale industries and running small shops. Second, engagement of people outside the agricultural sectors and other government-sponsored employment programs, skill development, and vocational training programs can be beneficial during drought situations by offering an alternate source of income (particularly among farmers). Under the MGNREGA scheme, wages need to be revised in accordance with local wage rates, and the wages should be directly transferred to the beneficiary's bank account.

- **Raise community awareness of drought-tolerant crops and insurance policies; improve dissemination of weather information:**

Promotion and awareness of drought-tolerant crop varieties (e.g., maize, millets) and the availability of crop insurance schemes and subsidies must be increased to help people cope with droughts. Drought-risk insurance can be beneficial in bringing down the costs of agricultural loss caused by drought. The government needs to make greater efforts to disseminate information on weather, drought, and the appropriate time for sowing seeds, particularly at the village level. This can be done in person by recruiting village-level volunteers to spread information, via SMS, or even via app-based solutions with radio and TV. The SMS and app-based solutions have been successful in India in providing the public health-based services and creating knowledge and awareness (e.g., Mobile Vaani in Bihar). The same approach can be adopted here for providing information on weather, drought, and other disaster-related situations and services for rural people and drought-affected people.

- **Sufficient provision of food grains under PDS during drought:**

Since the demand for food grains increases during droughts, the government should amend drought policy to provide additional supplies to hard-hit communities.

- **Strengthen the migration policy and scale up SRCC:**

Proper migration policy and planning should be in place so that the migrants' integrity, livelihoods, health, income, safety, and security can be protected and sustained. The Inter-State Migrant Workmen Act needs to be implemented effectively so that workers get minimum wage and are paid regularly. Additionally, the SRCCs need to be scaled up and strengthened, and awareness needs to be generated among migrants so that their children can join these hostels when they migrate and school dropouts can be reduced. In addition, with improved oversight, potential risks such as child labor can be prevented.

were reported to receive fertilizers and seeds distributed through government programs. They also noted that awareness-raising by village-level workers on drought and cultivation was sporadic and limited; for instance, information is not provided at the right time for starting cultivation or sowing of seeds.

“The government department is not playing a major role in digging ponds, installation of tube wells, supply of seeds and mini kits. There are also no irrigation facilities in this area. Water is the lifeline of our agriculture, and we are depending upon rainfall only during the kharif season.” (Village head, 32 years, IDI)

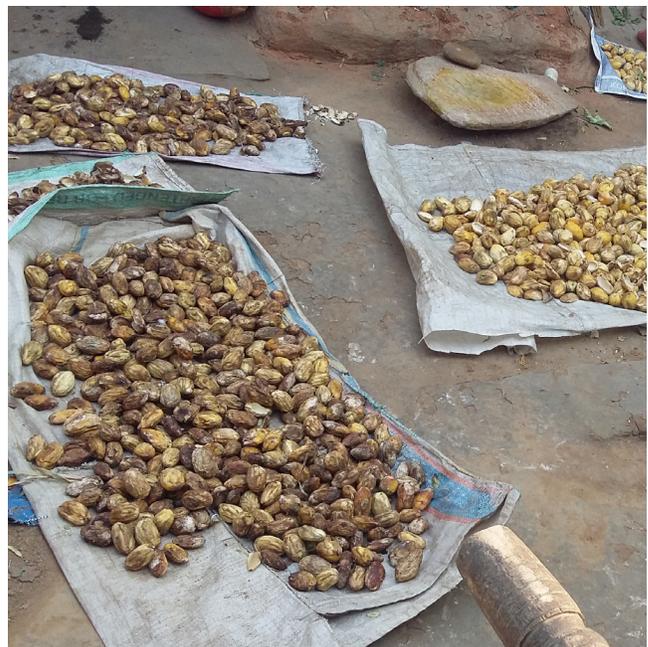
Participants were of the opinion that there were no major government schemes for long-term employment. They said, for example, that the *Mahatma Gandhi National Rural Employment Guarantee Act* (MGNREGA¹) scheme lacked proper implementation. According to one participant, out of the 400 families in one village, only 30–35 families received employment under this scheme, and just 15–20 days of work was available. Wages provided under the MGNREGA scheme were reportedly lower than the prevailing wage rate and irregular, and the local contractors did not disburse the entire amount of the beneficiaries' payments.

Additionally, as per the government stakeholders, a skills development scheme under *Din Dayal Upadhyaya Gramin Kaushal Yojana* (DDUGKY²) has imparted skills to the youth.

Participants noted that the government-provided compensation on crop loss to drought-affected farmers (around 2,000 Indian rupees per acre) was insufficient to compensate for the loss. Many people who were not able to insure their crops because of their poor financial status were not compensated at all. Participants feel that the government needs to do more not only to improve drinking water facilities and irrigation, but to implement employment and livelihood programs and schemes and ensure that proper monitoring mechanisms are in place.



Migrants' children at SRCC, Nuapada



Fruits collected by a household for livelihood, Nuapada

¹ MGNREGA aims to enhance the livelihood security of people in rural areas by guaranteeing 100 days of wage-employment in a financial year to a rural household whose adult members volunteer to do unskilled manual work.

² DDUGKY is uniquely focused on rural youth between the ages of 15 and 35 years from poor families through the Skill India campaign and plays an instrumental role in supporting the social and economic programs of the government like the Make In India, Digital India, Smart Cities, and Start-Up India, Stand-Up India campaigns.

References

Assocham India. 2016. "Drought situation to cost Rs 6.5 lakh crore to economy: ASSOCHAM." May 11. Accessed 25 September 2017. <http://www.assochem.org/newsdetail.php?id=5678>

Government of Orissa. 2002. *Managing Disasters in Orissa: Background, Challenges and Perspectives*. Bhubaneswar: State Disaster Management Authority (OSDMA).

Government of India. 2016. Drought affected districts under MGNREGA during 2015-16. Open Government Data (OGD) Platform India. October 26, 2016. <https://community.data.gov.in>

Patel, S.K. 2016. "Climate change and climate-induced disasters in Odisha, Eastern India: Impacts, adaptation and future policy implications," *International Journal of Humanities and Social Science Invention* 5(8): 60–63.

Ray-Bennett, N.S. 2009. "Multiple disasters and policy responses in pre- and post-independence Orissa, India," *Disasters*, 33(2): 274–290. doi: 10.1111/j.1467-7717.2008.01074.x.

Sonawane, S.T. 2016. "Impact of Drought on Indian Agriculture & Economy". *International Journal of Innovative Research in Science, Engineering and Technology* 5(12): 21210-21213.

UNISDR. 2016. "The human cost of the hottest year on record. Climate Change and El Nino drove disasters worldwide in 2015." http://www.unisdr.org/files/47791_2016no5.pdf

Acknowledgments

This study was funded by the Peter J. Donaldson Fund of the Population Council. The author would like to gratefully acknowledge insightful comments from Dr. Karen Hardee, Dr. Jessie Pinchoff, Dr. Saggurti Niranjana, Dr. Paul Hewett, and other colleagues from the Population Council on the earlier version of this brief; Bincy Mathew and Biswajit Mohanty helped in the design and production of this brief. The author also gratefully acknowledges the support provided by Odisha State Disaster Management Authority (OSDMA), Government of Odisha, Regional Medical Research Centre (RMRC) (ICMR), National Disaster Management Authority (NDMA) and MRSSIndia in various stages of the study. The author is grateful to the participants in Odisha for sharing these experiences.

Suggested citation: Patel, Sangram Kishor. 2018. Community-Level Assessment of Droughts in Odisha: Effects, Resilience, and Implications, Research Brief. New Delhi: Population Council.

Population Council
Zone 5A, Ground Floor
India Habitat Centre, Lodhi Road
New Delhi, India 110 003
Phone: +91-11-2464 2901

For more information, contact:
Sangram Kishor Patel (skpatel@popcouncil.org)