

COMMENT

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CHINA PHOTOS/GETTY



Farmers harvest wheat in Lantian county, Shaanxi province, China.

Revitalize the world's countryside

A rural revival is needed to counter urbanization across the globe, say **Yansui Liu** and **Yuheng Li**.

Urbanization gets a lot of attention. Most countries are expanding their cities to boost their economies and living standards¹. The proportion of people living in urban areas around the world rose from 33% in 1960 to 54% in 2016, with particular growth in Asia and Africa. But the attendant rural decline barely gets a mention. In most regions, countryside communities are becoming less viable, even when their populations are slowly rising, too.

In China, for example, these trends are writ large. Last year alone, nearly 170 million peasant workers — most of whom are young and fit — left their home villages and towns for cities. Work was the main reason: the number of jobs in rural China fell by more than 20% between 1990 and 2014. Urban occupations pay better: in 2015, migrant workers earned about 21% more in cities than their counterparts in the countryside.

The communities that rural job-seekers

leave behind are enfeebled. Fragmented families struggle to sustain small farms. In China, 2 million hectares of agricultural land fall out of production each year; in 2015, emigrants left behind 60 million children, 47 million women and 50 million elderly people in their home villages. More than two-thirds of China's rural primary schools have closed in the past 25 years. Suicide rates among older people in rural parts of the country (at 47 deaths per 100,000 people) are three times US rates².

Rural decline is a global issue (see 'World rural populations'). From the United States and Sweden to sub-Saharan Africa, the rural-urban divide is widening. Cities attract the lion's share of government funding, private investment and even research. For instance, since 1980, cities have received more than 70% of China's total public and private investments in fixed assets. The consequences are especially dire in poor nations, where migration is driven by survival rather than by opportunity. Slums in cities such as Port Harcourt in Nigeria, Mumbai in India and Mexico City are expanding as poor and uneducated rural workers move in to seek their fortunes.

For the past decade, we have been studying how land issues can be harnessed to improve rural lives and economies in China³ (see 'China's challenge'). For example, projects to enhance soil fertility and manage flooding have boosted agricultural yields and incomes in the western Loess Plateau areas. Our research and work by others suggest that it is possible to rebuild rural villages and towns by improving infrastructure, developing local resources and cultivating tourism, special products and crafts. Lessons can be learnt from some countries' policies that have bucked the trend.

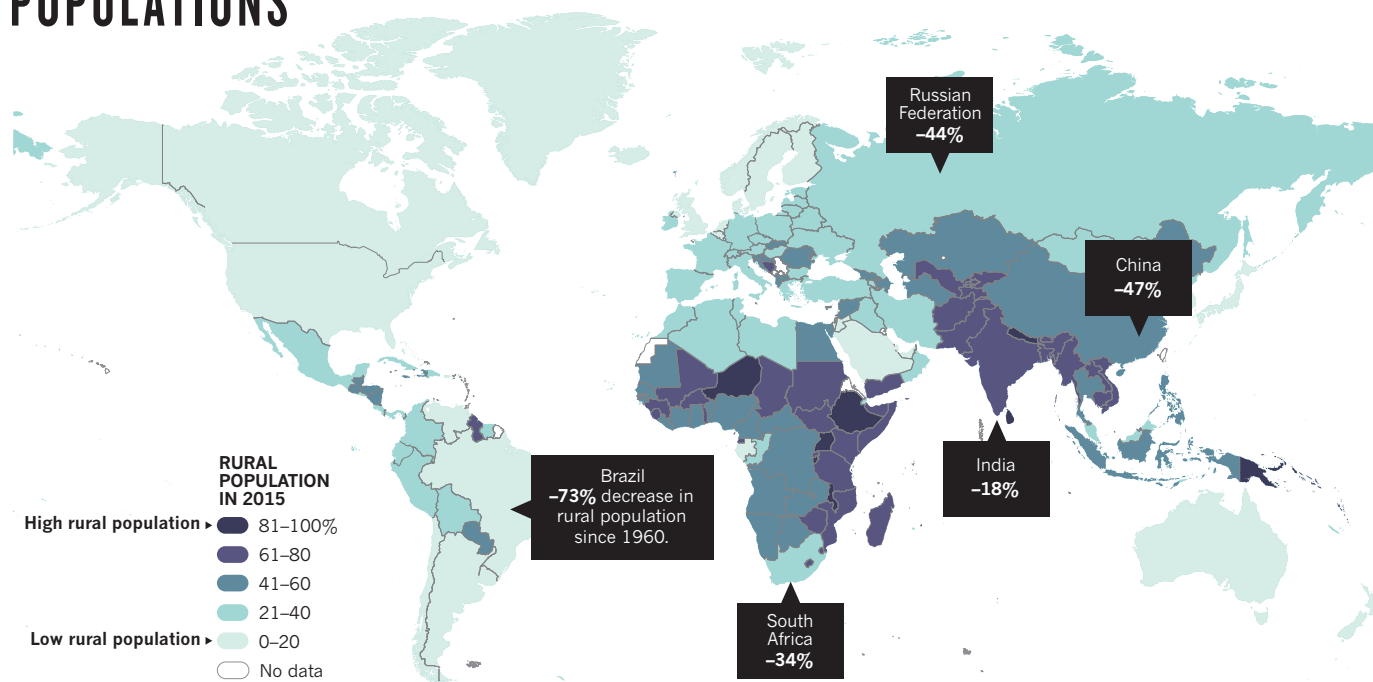
Policymakers and researchers must shift their attention and effort to rebalance policies that are biased towards cities. Scientific methods such as big-data surveillance and analysis are needed to monitor rural communities and environments, and to find solutions to local problems.

SPIRAL OF DECLINE

Rural areas are abandoned for reasons that include mobility and technology, poverty, biased policy and inadequate land management. As early as the eighteenth century, Europe's Industrial Revolution saw villages ▶

WORLD RURAL POPULATIONS

Asian and African nations have the most citizens living outside cities, but they also face rapid urbanization growth rates. Decreases in the proportion of people living in the countryside mean that villages and farms around the world are declining as workers and the young migrate to urban areas.



► shrivel as towns and cities became packed. The trend of rural depopulation spread to North America in the twentieth century, particularly after the Second World War.

Small towns in the United States have been in decline since the 1960s. When mechanization, paved roads and cars arrived, farmers drove to cities instead of to nearby market towns to buy a wider range of supplies. Agricultural technology and fertilizers freed rural labourers to take lucrative industrial and service jobs in cities. Between 1980 and 2000, more than 700 rural counties in the middle United States lost 10% or more of their populations⁴. Iowa, for example, lost 30,000 manufacturing jobs between 2000 and 2003, more than 10% of the state's total⁵.

In developing countries, millions of subsistence farmers seek work in cities such as Delhi and Lagos in Nigeria each year, as climate change and agribusiness drive livelihoods to the brink. When rural populations wither, villages see labour shortages, recession and social degradation. Local markets shrink and workshops and small businesses close.

The young and educated are especially likely to leave. In China's rural areas in 2016, more than half of people in their 20s and 30s and some 30% of those with a high-school education and above moved to cities to better their prospects. Such educational segregation makes it harder to replace local doctors, business owners and teachers when they retire. Decline spirals.

Government policies and private investments have long favoured cities. For example, when Latin American countries boosted their

economies in the 1950s and 1960s by manufacturing goods that they used to import, industrialized urban areas benefited most. From the 1950s to the 1990s, China extracted rural capital, labourers and raw materials such as grain to fuel its industrialization.

TURNING THE TIDE

But other governments had pro-rural policies. From the 1950s, Taiwan and South Korea redistributed land from the state and landlords to peasant farmers and reduced land rents to promote agricultural development. Malaysia, the Philippines and Thailand invested in public health and education for the rural poor, improving life expectancy and infant survival rates⁶.

From the mid-1970s to the early 2000s, some African countries, such as Mozambique and Kenya, tried to rectify their urban biases by switching from taxing farmers to supporting them. Egypt shifted its agricultural sector from being centrally planned to a fairly open, free-market economy. Crop prices, quotas and marketing controls were partially liberalized and the private sector was brought in. Farmers became more independent and increased their incomes.

Some governments, including those in the United States, United Kingdom, Australia, New Zealand, Sweden and Spain, have used planning, investment and subsidy strategies to encourage rural development. Since the

1980s, Swedish rural municipalities have campaigned to attract people to move to the countryside, by relaxing planning regulations for building along lakes, for example. Other regions offer subsidies for setting up or relocating industries and workplaces.

But top-down policies often fail. People have moved mainly to suburban towns, not remote villages, to combine the advantages of rural life with the security of city jobs. In the United States, for example, population growth in suburbs has exceeded that in the downtown areas of cities such as New York, Boston and Philadelphia since 1930.

Government-led initiatives do not fully consider the peculiarities of each rural community. Central bodies can coordinate work and mobilize land, labourers and capital. But crumbling communities often lack a strong village committee or agricultural cooperative, and might not have enough educated and skilled people to mobilize. If people's voices are not heard, they will not cooperate.

Poor land management exacerbates poverty, hunger and food shortages. For example, Zimbabwe's agricultural economy was stable before 2000, when the state forcibly acquired farmland from European immigrants and redistributed it to rural households. Because the new owners knew little about farming or how to operate the land, agricultural production plummeted. The economy was shocked and, accelerated by international sanctions, inflation skyrocketed to reach the highest rate in the world in 2008.

Market fluctuations and rural workers' limited knowledge of business also add to

SOURCE: WORLD BANK OPEN DATA

the chance of failure: people who have little education and few skills find it hard to compete with urban firms. Even when they move to cities, many rural workers undertake informal, low-paid manual jobs such as cleaning, security and construction work.

Engaging locals is key to success. Bottom-up initiatives act as 'social glue', encouraging people to work together⁷. For example, in 2012, the Xiaoguan village committee in China's northern Hebei province set up a share-based cooperative for breeding sheep and cultivating vegetables. Participants pooled money, land, labourers and machinery. In just five years, the two businesses increased residents' per capita net income by 200%.

Land engineering can improve farming conditions and yields. For example, in the dry Loess Plateau of Shaanxi province, China, we helped to create farmland in valleys near Yan'an city. The gully floors, the most fertile areas, were not being used because they were prone to flooding. So we reconfigured the water catchment: workers filled and flattened ditches, reinforced slopes and constructed dams, flood channels and irrigation facilities. This helped to manage flood water and improved soils such that they could store more water and nutrients. Between 2013 and 2017, the Chinese government expanded this land-consolidation project. The gullies of Yan'an now produce three times more maize (corn) than on the hilltops and five times that on the slopes. Silage made from maize straw and grass is fed to cows and sheep.

In another example, Bavaria in Germany has been improving agriculture and forestry conditions since the 1960s, and has implemented development and land-planning projects to reinvigorate rural villages.

Yet countryside issues are much less studied than urban ones. Cities attract scholars because these areas have more money and are viewed as more central to development than rural regions. Academic fields focusing on rural issues such as resilience, land consolidation, preservation of cultural heritage and alleviation of poverty and disaster need more research and input.

Scientific methods and technologies are needed to suggest the best strategies for improving conditions in a particular area. For example, remote sensing can be used to monitor rural land use, infrastructure conditions and farming patterns. Big-data analyses can investigate which markets, industries or economic strategies are most profitable.

FOUR RURAL PRIORITIES

First and foremost, governments need to promote ruralization alongside urbanization. Both village- and city-dwellers should have equal rights to resources, public services and social welfare.

Rural inhabitants need platforms where they can work or set up their own businesses

while taking care of families and farms. Small cities and towns could act as bridges, bringing education, health, information and administrative services to remote villages⁸.

Local governments must develop strategies for attracting businesses — with tax concessions, low land prices and even free land. For example, the One Village One Product movement — which began in Oita, Japan, in 1979 and now extends to countries including China, Thailand, Malawi and South Africa — identifies local resources, such as fertile land, clean water, special agricultural products and scenic spots, and develops them into industries to help the local economy to flourish. Giving industry owners and managers the rights to set prices encourages villagers to develop their skills and to follow changes in markets and consumer preferences.

Second, bottom-up initiatives must be encouraged. Rural development requires a far-sighted and dedicated group of local stakeholders, including entrepreneurs, workshop owners and farmers, who are willing to work together unselfishly. Equity must be respected. Villages must be developed for locals, not investors.

Third, it must be accepted that some villages situated in places unsuitable for living will have to be relocated, as China is doing as part of its national strategy to alleviate poverty. Villages in deep valleys

or mountainous areas with poor roads, unstable water supplies, infertile land and atrocious natural conditions (such as China's Qinba Mountains in the northwest and the Karst areas in the southwest of the country) will always be economically fragile.

Their populations could join nearby rural communities that have better transport, land and convenient access to public services. Care must be taken when relocating the poor — peoples' wills should be respected. Citizens should make their own decisions about where to move, with advice and funds from local government. Housing, health care, education, employment and entrepreneurship should be provided at the same time.

Fourth, a scientific plan is needed to guide the revitalizing process. Researchers must understand the forces that drive rural decline and rural responses to globalization and climate change. Big-data analyses and simulations are required for monitoring rural development. And the effectiveness of different forms of land consolidation needs to be understood.

Ministries, institutes and enterprises should promote multidisciplinary research involving planning, management and engineering. The goals should include testing policies and demonstrating technologies that improve agricultural production and rural livelihoods. Initiating a global rural plan that brings the world's rural scholars together would promote cross-national collaborations. The United Nations should consider setting up such a scheme, and give rural development as much importance as poverty alleviation, climate change and peace.

Cities and villages are an organic whole. Both must be developed sustainably to support each other. ■

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