Y.R. GAITONDE, CENTER FOR AIDS RESEARCH; B. AKERS

G. CAMPAIGN; J. ASHER

From left: Suniti Solomon, Renée Sharp, Suman Sahai and Jana Asher.

MAKING A DIFFERENCE

The demand for science skills in non-governmental organizations is rising. **Paroma Basu**, **Jane Qiu** and **Kendall Powell** report.

In the early 1980s, Arun Gupta, a doctor working in the north Indian state of Punjab, conducted a survey on Indian women's breastfeeding habits. Of the 100 women he questioned in his clinic, all had been given a tin of infant formula, even before their babies had been born. Using infant formula instead of breastfeeding, especially in places where clean water is not guaranteed, can have detrimental effects on babies. On further investigation, Gupta found that the practice was rampant: companies had major discount deals, sometimes offering ten free tins of formula for every ten bought. And they provided free samples to nursing homes and hospitals, which then passed them on to mothers, who could have difficulty trying to breastfeed later if their babies were used to bottles. Gupta had serious concerns that women were being diverted from breastfeeding by a marketing campaign.

So he and a few colleagues decided to act. In 1991, they pooled some money and started a formal organization advocating breastfeeding. They registered this non-governmental organization (NGO) in 1992, and called it the Breastfeeding Promotion Network of India. The organization teaches health-care workers how to introduce healthy breastfeeding practices to new mothers.

"NGOs can have a very significant role in a developing country such as India," says Asish Ghosh, director of the Centre for Environment and Development in Calcutta. "In a democracy we need to have a participatory management system and processes, we at least need to get all the stakeholders' opinions. NGOs can be very useful in enabling this."

India has thousands of NGOs, several of which have objectives related to science. As the role of NGOs in developing countries expands, new opportunities have been created for scientists to help their fellow citizens and their causes by taking on mammoth challenges, ranging from energy to environmental conservation to human-rights abuses. They are a popular vehicle for scientists fighting for principles that are affected by modernization and the rapid pace of development and population growth.

Healthy environment

Numbers of NGOs are increasing in countries such as China and India. Ghosh notes that in the environment sector, NGOs started burgeoning in the mid-1980s, followed by a burst in the 1990s. However, those focused on scientific research, rather than advocacy, are still a relatively small group. Suman Sahai, director of Gene Campaign in Delhi, cites a crucial need for science-based NGOs in an increasingly knowledge-based economy. "There are now immense technological inputs into the global economy, whether with water, agriculture or intellectual property," says Sahai, who helps local communities keep control over their genetic resources by, for example, fighting against seed patents. A science background lends both insight and credibility to your cause, argues Sahai, a PhD geneticist. "Many times, activists who are not well informed may end up hurting the policy issue," she says. "My being a professor gives me a tremendous advantage. I speak with authority, I am perceived as an expert and automatically sit on every panel."

Scientists from a variety of backgrounds are motivated by any number of reasons to work for NGOs — but 'making a difference' is a common thread. This is often a challenging prospect in developing nations, where rampant growth puts pressure on environment and agriculture, and raises pressing questions about

the impact of technology. Debal Deb, head of the Centre for Interdisciplinary Studies in Calcutta, was passionate about preserving rare varieties of native rice species by distributing a number of rice varieties for free. After establishing the first non-profit seed bank in India in 1996, he attended the University of California, Berkeley, on a fellowship. He saved money, returned to West Bengal, bought some land and started an organic rice farm, where he is growing 500 native varieties. "My only desire," Deb says, "was to save all these rice varieties to preserve and conserve all this genetic diversity that is getting lost."

Research skills needed

In China, devastating pollution led Ma Jun to found the Institute of Public and Environmental Affairs (IPEA) in 2006. Formerly an investigative journalist, Ma put his research skills to good use and is now an environmental consultant. His water-pollution map of China was followed by an air-pollution map this year: both document polluted areas and the purported sources of that pollution. The maps have identified thousands of companies, including hundreds of multinationals, whose pollution exceeds Chinese limits. Companies who clean up their acts have their names removed from the list. Based in Beijing, the IPEA is working on health and environment data as well as the pollution maps of supply chains.

J. ASHER

Investigating humans-rights issues in war-torn countries.

As well as scientific knowledge and research skills, analytical expertise can be applied to good causes. Jana Asher, a statistician who consults for NGOs, has spent time in war-torn countries, monitoring and documenting human-rights abuses. Asher collects and analyses human-rights violations data, including mortality studies in Iraq and a survey of abuses after Sierra Leone's 11-year civil war. Her research involves designing new survey methods for populations, such as those displaced in Sierra Leone, for whom traditional surveys fail to collect the proper data. The work was not for the faint of heart. "You have to be prepared to get sick or be evacuated at a moment's notice," she says. "And you have to be honest with your family about what the risks are."

As in the developed world, the academic backgrounds of NGO scientists working in developing countries vary widely. Anumita Roychowdhury, associate director of research and advocacy at the Delhi-based Centre for Science and Environment (CSE), says most of her 100 colleagues "have not done anything consciously in terms of planning or training to work at an NGO". Work there, she says, combines the rigour of academic research and technical precision of science with the incisiveness of journalistic investigation, and action on policies. Scientific staff include engineers, physicians and PhDs in the sciences. The CSE also looks for passionate people. They should be a "little mad about things", says Roychowdhury.

Ghosh divides staff into two types: those fresh from university, usually with a master's degree, and more senior professionals with ties to a university or other organization. Colleagues' backgrounds range from agriculture to engineering to geology to forestry to life sciences, he says. In the Indian city of Chennai, the Y. R. Gaitonde Centre for AIDS Research encourages more specialization. It has 11 doctors, 15 or 16 nurses, plus counsellors with master's degrees in social work, MBAs, several people working on PhDs and, crucially, biostatisticians. "Without them we cannot publish papers," says founding director Suniti Solomon.

Attracting people with the right skills has been a challenge for Ma at the IPEA. He needs staff with academic training in environmental engineering, business management, data analysis and information technology, skill sets also hotly pursued by government and business. Language skills are also, not surprisingly, highly sought-after in places such as China and India.

Working for an NGO offers plenty of perks, as well as many potential drawbacks. Ideally, it means getting paid to work for a cause you are passionate about.

"It's the possibility of making a difference, and to change at least some parts of the world," says Andreas Wilkes, an expert on climate adaptation at the World Agroforestry Centre's Beijing office. Wilkes notes that in grassroots NGOs, researchers may have direct influence over a small number of people in a specific place. In a think tank, they could influence policies that affect much bigger populations. "When I came here 10 years ago, most Chinese people didn't know what NGOs were," he says. "There's much more awareness now." He lauds the rewards of "participatory research", in which the main stakeholders play a part, such as involving farmers in an agricultural study. It's aimed at solving practical problems, says Wilkes, "and the results are better assimilated by the community".

> **"Your personal work isn't going to save the world. It's a bazillion groups all working together in parallel messy ways."**
> — Renée Sharp

Rich rewards

NGO positions offer a sharp contrast to government jobs in developing countries. India's government, for example, is famously bureaucratic. "Compared with working in government, I have a lot of freedom," says Solomon. However, she emphasizes that her centre's HIV research activities still must be approved via clearance from the Indian Council of Medical Research, often making such tasks painstaking and arduous.

NGO work can be very consuming and, like academic research, the victories can be few and far between, cautions Renée Sharp, an ecologist and senior analyst with the Environmental Working Group in Oakland, California. She recommends taking a long-term view. "You and your personal work aren't going to save the world," says Sharp. "It's a bazillion groups all working together in parallel and messy ways." ■

Paroma Basu is based in Delhi, India; Jane Qiu in Beijing, China; and Kendall Powell in Broomfield, Colorado. All are freelance journalists.