



*Vietnamese activists protest to urge Formosa Plastics Corporation to take responsibility for an environmental clean-up in Vietnam, Taipei, Taiwan, Aug. 10, 2016 (AP photo by Chiang Ying-ying).*

## Can 'Citizen Science' Save Vietnam's Environment From Unchecked Economic Growth?

James Borton | Tuesday, April 24, 2018

In early April 2016, fishermen in Vietnam began noticing something alarming: Dead fish were washing up on the shores of several provinces. Days turned into weeks, and the dead tuna and mackerel kept coming, joined by clams and even one whale.

It turned out to be the largest environmental disaster in Vietnam's history. Fishermen lost their livelihoods, and some people fell ill after eating fish that had apparently been poisoned. But at first the government kept quiet about the cause of the mass fish kill. Authorities limited coverage of it on state media and arrested hundreds of people who participated in protests.

Nearly three months later, Hanoi finally disclosed what had happened: A \$10.6 billion steel complex belonging to the Taiwan-owned Formosa Plastics Corporation—featuring a steel plant, a power plant and a deep-sea port—was found to have accidentally dumped toxic cyanide into the East Sea. The complex is located in Ha Tinh, one of Vietnam's poorest provinces.

The damage was considerable. Marine life weighing more than 100 tons had been wiped out along

more than 125 miles of coastline; Formosa would go on to pay \$500 million in compensation.

But the Formosa spill also had a silver lining. According to researchers and activists, it played a major role in galvanizing grassroots environmental activism in Vietnam, prompting ordinary citizens along the coast to use smartphones and social media to document the tragic impact of unchecked industrialization and development.

Their work dovetailed with a broader phenomenon that has slowly been gathering momentum in environmentally vulnerable areas across the country. From the iridescent green rice paddies of the Mekong Delta to the banks of the Red River in Hanoi, so-called citizen scientists are embracing environmental activism that makes use of newly available technology, including free data-collection and mapping apps like iNaturalist (<https://www.inaturalist.org/>), Fieldscope (<http://www.fieldscope.org/>) and Marine Debris Tracker (<http://www.marinedebris.engr.uga.edu/>). In addition to being useful to scientists, these platforms allow ordinary people to join community conservation efforts by uploading data and qualitative observations.

This type of engagement is increasingly possible for the masses. Like the rest of Southeast Asia, Vietnam is witnessing rapid growth in the use of digital technology, the effects of which are changing both individual lives and societies at large. Facebook now boasts about 64 million active users in the country, more than two-thirds of the total population. About half of those users are connected via smartphones. “Ordinary citizens’ growing access to the web is behind a rising tide of environmental activism,” says Tran Thi Thuy Binh, a 39-year-old member of the Vietnam Forum for Environmental Journalists in Hanoi, which was established two decades ago to bring together journalists interested in environmental issues.

There is no shortage of problems for them to document. After several decades of pursuing a strategy of economic growth at all costs, the government is facing pushback from citizens who resent the damage wrought by pollution-intensive industries. These same citizens are often also coping with rising air pollution, deforestation, coral reef destruction and rising water levels in the Mekong and Red Rivers.

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The big question facing those who have followed the rise of citizen science in Vietnam is whether it can actually lead to policy changes, or whether it will merely allow for the environment's deterioration to be documented in greater detail.

## What Is Citizen Science?

Citizen science is best described as the collaboration of scientists and volunteers to broaden the scope of research and enhance the compiling of scientific data. Approaches range from community-based monitoring to internet-driven crowdsourcing through photographic documentation and data collection.

At a meeting in Nairobi, Kenya, last December, prominent citizen scientists spearheaded the formation of the Citizen Science Global Partnership, or CSGP, an event timed to coincide with the U.N. Environment Assembly. According to its mission statement, the CSGP aims to connect existing citizen science networks with policymakers and business representatives, becoming “a network-of-networks that seeks to promote and advance citizen science for a sustainable world.”

One central feature of citizen science has been a shift in the way scientific concepts and information are communicated to non-experts. It's a shift not just in how the media is being used but also in the actual content, with hard data being supplemented by anecdote and narrative—for example, in the form of blog posts. “Citizen scientists collect more than data. They gather meaning,” writes Richard Louv in his 2011 book “The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder.”



*Citizen science volunteers interview a forest ranger about environmental threats to Xuan Thuy National Park, Vietnam, Undated (Photo courtesy of Do Hai Linh/Pan Nature).*

In nondemocratic countries like Vietnam, the rise of citizen science also helps ensure that state actors no longer have a monopoly on the dissemination of environmental news and information. Stephan Ortmann, a research fellow and assistant professor of comparative politics at the City University of Hong Kong, has documented in his 2017 book “Environmental Governance in Vietnam (<https://www.palgrave.com/gp/book/9783319497594>)” how the Vietnamese government has previously blocked citizen participation in formulating environmental policy. The creation of official environmental entities, especially the Ministry of Natural Resources and Environment in 2002, was primarily done to serve the interests of the Communist Party of Vietnam. This partly explains why policies to respond to climate change and promote green energy have more often than not fallen short in ensuring the meaningful protection of land, water and mineral resources.

The emergence of environment-focused NGOs, however, provides a foundation for grassroots environmental activism. These include groups like People and Nature Reconciliation, or Pan Nature, a conservation and protection NGO; the Center for Water Resources and Development, or WARECOD, which supports sustainable water use and gender equality in access to resources; and Green Innovation and Development, or Green ID, which promotes sustainable development. To date, this

nascent movement hasn't been given the opportunity to substantively shape environmental policy, but there are increasing signs of its impact.

Last year, for example, farmers and fishers in the Lower Mekong Delta successfully pushed for the temporary suspension of a paper and pulp mill run by Vietnam Lee & Man, a Chinese-owned firm, forcing it to make changes to wastewater discharges and address foul smells emanating from the plant. Officials and scientists from Can Tho University, a leading agricultural research center in the Mekong Delta boasting nine colleges, two research institutes and more than 45,000 students, advised that the six water monitor stations along the Hau River needed to be fully operational so that nearby farms would not be adversely affected by the plant's discharges. In response, Environment Minister Tran Hong, accompanied by other scientists, visited the site and authorized the resumption of the monitor stations' operations.

### The State's Response

The government has shown some interest in citizen science. In Hanoi, the local authority on urban management has created a Facebook community fan page (<https://facebook.com/groups/dothidanang/>), suggesting authorities are at least somewhat curious about getting citizens' feedback on their initiatives and environmental problems generally.

*Hanoi still often falls back on vague and arbitrary invocations of national security concerns to criminalize speech.*

Of course, there remains an inherent tension between grassroots organizations and a government that has historically placed strict controls on information and reacted harshly to criticism. The Communist Party has controlled the media since North and South Vietnam were unified in 1975. And in recent years, the government has enacted new decrees and laws prohibiting internet users from publishing content that is deemed a threat to national security. A measure known as Decree 174, passed in 2014, levies steep fines for social media posts criticizing the government. Circular 09, issued in October 2014, requires website owners to immediately take down content at the request of authorities, resulting in increased self-censorship.

Human rights organizations have also documented periodic shutdowns of Facebook and YouTube to remove what the government deems "toxic content." In May 2016, Facebook and Instagram were

briefly blocked in response to protests over the Formosa spill.

Hanoi often falls back on vague and arbitrary invocations of national security concerns to criminalize speech. In June 2017, Nguyen Ngoc Nhu Quynh, a 37-year-old blogger and environmentalist known as “Mother Mushroom,” was sentenced to 10 years in prison after being found guilty of committing national security offenses and spreading “anti-state propaganda.” And last November, Nguyen Van Hoa, a 22-year-old independent journalist and blogger, was sentenced to seven years in prison for “disseminating propaganda against the state” in a case built on his coverage of the Formosa disaster.

At the same time, an increasing number of Vietnam’s technocrats and policymakers recognize the potential benefits of greater connectivity to promote openness and transparency, broadly speaking. Hanoi appears to have given a green light to environmental organizations looking to educate and inform the public about the impact of industrial pollution along the coast and in the Mekong Delta. “I see a steady rise in social protests among citizens against environmental pollution and other harmful actions,” says La Thang Tung, a journalist and member of the Vietnam Writers’ Association, adding that “there are an increasing number of political leaders who want to repair the lines of communications.”

Moreover, there seem to be more efforts to educate and train young people to engage in citizen science. Several universities, like the Hanoi University of Natural Resources and Environment, are incorporating citizen science as part of their curricula, in some cases with state involvement and support.

### Citizen Science in Action

It’s no secret that, to date, government efforts to enforce environmental protection measures have been weak, leading to a litany of problems. Vietnam has lost 50 percent of its original primary forests in the past half century. Vietnam has the world’s sixth-largest export trade in wood—worth over \$7 billion annually—and the consequences of deforestation are significant

(<https://news.mongabay.com/2016/12/vietnams-forests-on-the-upswing-after-years-of-recovery/>), threatening biodiversity and triggering the release of an immense store of carbon dioxide.

Air pollution is increasing due to the growing number of motorbikes, especially in Ho Chi Minh City, which has more than 8 million of them—not to mention sprawling industrial parks and seemingly endless construction. In the central province of Nghe An, meanwhile, garbage and untreated wastewater pollution from nearby factories pour daily into the Lam River and its tributaries.



*A flower vendor wheels her bicycle through traffic in Hanoi's Old Quarter, Vietnam, Dec. 1, 2016  
(AP photo by Tran Van Minh).*

Scientists are trying to take action on these issues, and they are being aided more and more by citizen volunteers. For example, Thi Van Le Khoa, a lecturer on water issues at Hanoi University of Natural Resources and Environment, is focused on ways to address decreasing water levels in the Red River Delta in northern Vietnam, the country's richest rice-growing region. In 2017, Khoa helped organize the university's Red River Delta Wing, a network of institutions to study environmental issues north of Hanoi. Through their fieldwork, the network's members quickly arrived at an explanation for the water level problem: Illegal sand-mining, combined with dams and reservoirs, had restricted the suspended sediment critical to the stability of the riverbed.

Elsewhere, citizen scientists have taken advantage of the proliferation of scientific information available online, as well as tools that can be used to organize citizens, to mobilize around causes that spark public interest. In April 2015, residents of Hanoi staged protests against the government's decision to cut down more than 6,000 trees. The "Trees Movement," as it came to be known, was not organized by any single leader or institution. Rather, it grew out of a widely shared sense of alarm over what the government was doing. "Many of the campaigners grew up in Hanoi and fought for the city, and throughout time the old trees became their companions," Ngoc Anh Vu, a research professor at

the University of Bath in the United Kingdom, has written (<https://link.springer.com/article/10.1007/s11266-017-9829-1>). Eventually, the authorities in Hanoi backed down.

A year later, citizen scientists and environmental activists in Ho Chi Minh City launched a similar campaign to save trees along the Saigon River that had been marked for destruction as part of a development plan. Once again, city officials changed course.

### A Perfect Storm in the Mekong Delta

The Mekong Delta is composed of 12 rice-growing provinces and the province-level municipality of Can Tho in southwestern Vietnam, where the Mekong River approaches and empties into the sea via a dense network of tributaries. It's home to more than 20 million people and is commonly referred to as Vietnam's rice bowl, since it accounts for more than half of the nation's rice and fruit production.

For generations, rice farmers harvesting their emerald paddies have relied on the Lower Mekong River's thousands of tributaries to water their crops. However, an array of problems—from rising sea levels to industrial pollution and saltwater intrusion—are converging to threaten their livelihoods.

*At the very least, Vietnamese farmers are putting the government on notice that they will not blindly acquiesce to harmful policies.*

“Climate change is an increasingly serious problem for the farmers,” says Ly Van Loi, a student at Can Tho University and a member of the Mekong Delta Youth Network (<http://www.mekongcommons.org/mekong-delta-youth-network-climate-change/>), or MDY, a group of students in the region who have conducted research to raise awareness about the impacts of hydropower dams on the Mekong Delta, among other issues. “The construction of upstream dams and the rising sea will impact biodiversity, and we will have to adapt new species of crops to grow.”

While the problems facing the region are daunting, the Mekong Delta is well positioned to harness the power of citizen science to address them. Hardscrabble farmers who live along the river have valuable knowledge to share about how conditions are changing, and citizen scientists have increasingly been reaching out to try to learn from them. Scientists and their students at Can Tho University, including members of MDY, have conducted multiple field trips to the area.

“I strongly believe that MDY has been successful in mobilizing young Vietnamese towards informed environmentalism,” says Nguyen Khiem, MDY’s founder. “It helps that we are all born in the delta and understand our homeland.”

For inspiration, Khiem draws upon the so-called Thai Baan organizing model, which was developed in Thailand to chart conservation efforts and tap into local knowledge to preserve natural resources. This model was implemented initially as a protest against the Pak Mun Dam, which was built in 1994 in eastern Thailand without any consultation from local citizens. Though the protest effort was unsuccessful, the model—which involves research initiatives led by farmers rather than scientists—is an effective form of citizen science, says Tun Myint, a political science professor at Carleton College in Minnesota. Local villagers become the community’s researchers, especially women, who are trained in photography and other storytelling techniques.

Specifically, MDY advocates for policies to address water pollution, saltwater intrusion and biodiversity protection. Though Khiem is optimistic that the organization’s efforts will be successful, encouraging citizens to mobilize is not without its challenges, not least of which being the Mekong Delta’s widespread poverty. As Khiem says, “In the delta, we had to put a lot of effort into our project to encourage participation since these farmers are primarily concerned about their daily subsistence.”

### Citizen Science and Empowerment

In many ways, the Mekong Delta is a perfect setting to demonstrate the power of citizen science. After all, the average size of a Mekong rice paddy is only 1.2 hectares, or about 3 acres. And while access to a smartphone is beyond the reach of many farmers, it only takes one citizen scientist to empower a community with knowledge and a platform. By sharing information and joining forces, Vietnamese farmers have been able to exert some influence over the environment they depend on for their livelihoods. At the very least, they are putting the government on notice that they will not blindly acquiesce to harmful policies.

With rising seas and other features of a changing climate touching the daily lives of the more than 60 million people living in the Lower Mekong Basin, it is perhaps no surprise that interest in environmental issues is expanding well beyond isolated bands of conservationists. Despite government-imposed restrictions, the internet—and social media especially—is offering young people in the region a bullhorn. With it, they are using data to campaign against the destruction of the region’s natural beauty and sustainability.

Yet there is no guarantee they’ll be able to convince the government to completely abandon policies that have already proven destructive. After decades spent pursuing economic growth no matter the

costs, the question now is whether Vietnam can pivot to sustainable development and “green growth,” and whether it is willing to accept lower short-term GDP growth rates in the process. Moreover, even if the state were to adopt more stringent environmental regulations, these would need to be enforced at the local level to make any difference, requiring a level of compliance on the part of local officials that has so far been lacking.

These challenges aside, advocates of citizen science believe they are witnessing a fundamental shift that is enabling ordinary Vietnamese, for the first time, to substantively shape policies that affect their land and climate. It’s a phenomenon that is perhaps best captured by a Vietnamese proverb: “The law of the king,” it says, “ends at the gates of the village.”

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