

NEW TOOLS FOR TACKLING POVERTY

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*When spiders' webs unite,
they can tie up a lion.*

—Ethiopian Proverb

Very rarely, in the fight against global poverty, do we come across a game-changer. But we have one now.

The digital connectedness that has embraced our planet is already revolutionizing how we work to improve the lives of the poor. Access to the Internet and to mobile telephony is linking every corner of the globe, and the consequences are profound.

Global Solution Networks, enabled by these technologies, are one of the phenomena inciting this revolution. Networks from Kiva's crowd-funded microfinancing to Small World News broadcasts of citizen voices from conflict zones, are having major impacts on our collective ability to fight poverty.



Table of Contents

Introduction	1
More Mobile Phones than Toilets	1
GSNs Among the Poor and For the Poor	2
1. Increasing the Impact of Existing Policies and Programs	4
2. Expanding Global Resources to Fight Poverty	8
3. Improving the Impact of Policies on the Poor	11
4. Allowing the Voices of the Poor to be Heard	15
5. Transforming How We Measure Poverty	16
Addressing Challenges to Improve GSNs' Impact on Global Poverty	18
Endnotes	22
About the Author	26
Global Solution Networks	27



Introduction

No one really knows how many people go to bed hungry every night, but it is hundreds of millions. Among those without enough to eat in our world, 2.6 million children die annually because of malnutrition—that's about 300 children every hour.¹ The numbers are chilling across all aspects of global poverty. One fifth of our population does not have access to electricity, one in nine people on earth lives without clean drinking water, and more than half a billion women cannot read or write.^{2,3} These challenges will become even more formidable as the climate changes, our natural resource systems become strained, our population expands, and we begin to test the mettle of our global food system.

Very rarely, in the fight against poverty, do we come across a game-changer. But we have one now. The digital connectedness that has embraced our planet is already revolutionizing how we work to improve the lives of the poor. Access to Internet and mobile telephony is linking every corner of the earth, and the consequences are profound.

The widespread adoption of the mobile phone and its integration with web-based systems means that people everywhere have access to a dynamic set of new tools, often accessible right in the palm of their hand. In addition to the capabilities of any single handset, there are even larger opportunities to impact poverty that occur when multiple people and institutions are digitally networked. These networks are inspiring a new era of solutions. They allow us to have more impact with the programs and policies we use to fight poverty; they broaden the financial base that contributes to poverty alleviation globally; and they give us new ways to understand and measure poverty. From making water delivery more efficient in the slums of New Delhi to crowdfunding microfinance, to broadcasting voices from conflict zones around the world through citizen journalist networks, GSNs are having major impacts on our collective ability to fight poverty.

More Mobile Phones than Toilets

In the four plus decades since it was invented, the mobile phone has transformed our planet. More than any in our history, adoption for this technology has jumped economic, social and political borders. Even the lives of the very poor have been drastically changed by the mobile phone. In eight out of ten of the poorest countries on earth, the percentage of people with phones outnumbers those with access to toilets.⁴ That may sound like an incongruent mashup of statistics, but it is a telling one. In Africa, the number of mobile phones is predicted to break 1 billion by 2020, with countries like



Zimbabwe already boasting 97 mobile phone connections for every 100 people.⁵ Increasingly, mobile phones are reaching communities in which we have failed to deliver even basic services like clean water and sanitation.

Despite the numbers, gaps in access still exist. Tele-density numbers are skewed by people who own more than one SIM card (Saudi Arabia's mobile subscribers total a number that is nearly double the population of the country) and there are particularly stark contrasts between rural and urban areas. The poorest state in India, Bihar, currently has a density of mobile subscribers one fifth that of Delhi.⁶ Clearly, we still need to incentivize mobile network operators to reach further to serve the poor, especially in very rural parts of the world. But markets are growing fast and governments continue to implement policies that prioritize the social and economic benefits of access to mobile phones. The potential for engaging the poor via mobile phones has never been greater.

GSNs Among the Poor and For the Poor

Not all GSNs depend on these new means of connection to the poor. Many GSN organizations work on poverty, while others engage the poor directly, as members of a network. Some GSNs coordinate NGOs, governments, and multi-lateral agencies, like the UNIAP advocacy network designed to reduce human trafficking (see Box 1). The poor are beneficiaries of the network, but do not participate directly in it.

BOX 1: NETWORKING AGAINST CHILD SEX TRAFFICKING

UNICEF estimates 1 million children every year are forced to enter the commercial sex trade. By its nature, this business is international and fighting against it requires cross-border networked coordination.

The United Nations Inter-Agency Project on Human Trafficking (UNIAP) was created in the early 2000s to network among NGOs, Southeast Asian governments, and UN agencies. The network has been instrumental in policy and legislative improvements needing cross-country harmonization. But, as Deanna Davy writes, most importantly, this type of GSN policy network contributes to "a redistribution of knowledge, power, influence and material resources from the rich North to the core Southern actors working on the ground in local NGOs." Other networks in this area have addressed other sides of the problem, educating sex tourists and focusing on victim services.⁷

Year by year, the very poor are becoming increasingly active participants in digital networking. Their phones leapfrog difficult infrastructure problems like bad roads and lack of transportation, connecting them to others with previously unimagined ease. Many of the examples in this chapter consider the potential impacts on poverty where people in low-income communities all over the world are interacting through their phones.



Before launching into descriptions of successful networks, though, it is important to recognize the hurdles that face GSNs that seek to directly engage rural, often illiterate populations through very basic handsets.

Reaching out to poor households, on any large scale, so far has meant focusing primarily on voice or SMS. This inherently constrains GSNs. It's worthwhile thinking through some of the constraints so as to better understand how GSNs can better serve the poor through direct engagement. The models of mobile phones owned by poor households are almost exclusively very low-end, without access to data. There continues to be debate about whether the smartphone will follow to reach into poor communities. The cost of smartphones is dropping precipitously in most countries, with China sweeping the market. There is skepticism, however, as to whether the use of smartphones will penetrate very low-income communities. Nokia (currently leading in market share of mobile phones in Africa) had only 10% of its global sales in smartphones in 2012. Nokia also introduced an ultra-cheap model to India and Indonesia to revive sales in that critical low-end part of their market.⁸ There are considerations of value for money in the purchase of a smart phone in a market demographic where customers earn under US \$1.25 a day,* as well as concerns about accessible and affordable data service.

Other advances, though, are being made in technology that may address the digital divide in ways we had not anticipated. USAID's 2013 Technology Challenge for Atrocity Prevention contest has showcased the Serval Project working to improve applications of wireless mesh networks. Mesh networks allow people to be connected inside a closed loop, but outside the range of cellphone towers. The project's lead developer, Paul Gardner-Stephen, also notes work in low-cost solutions connecting mesh networks and mobile networks.⁹

In addition to this limitation of being constrained to voice and SMS, forming GSNs among the poor must manage the even greater hurdles of illiteracy and local languages. India is a good example. 30 different languages are spoken by more than a million people each and one quarter of Indians cannot read or write. Across the board, Indians use their phones more for speaking than for anything else. Half of smartphone users don't have a data plan. This is changing, of course, but among the populations of the poor voice is likely to remain dominant over even SMS for some time. Even in Hindi, the dominant official language, networking via text in Hindi currently provides challenges for non-smartphone users. With three-dozen consonants and 10 vowels, Hindi does not lend itself to a 12-button keypad.¹⁰ The economics of the market are such that new local language algorithms are coming up, and of course the advances in voice recognition software will be critical to engaging with illiterate populations. But, at least for some time to come, the distributed models that we associate with GSNs in many contexts, dependent on user-engagement through mobile- and web-interfaces, will need to be redesigned if the goal is to engage the poor as users. The smart-phone-toting, Facebook-

* Earning under US \$1.25 is a common definition of poverty from the World Bank.



networked population is still a vast economic distance from the millions of illiterate farmers in the world, struggling to feed their families.

The potential is there, then, for networks to form among the poor, but they are of a different model than GSNs serving the poor. Many networks among the poor do not live up to the “global” part of GSN. The challenges above make them very hard to scale. But both types of networks are included in this paper because they are critical to understanding the potential that GSNs hold for directly engaging, as well as serving, previously disenfranchised people.

1. Increasing the Impact of Existing Policies and Programs

Everyone working in international development can tell stories of programs gone awry and resources poorly managed. There are lots of deep-rooted reasons for the inefficiency of our aid budgets among national governments as well as at the international level that consistently prevent progress. In 2005 more than 100 donors and developing country governments created the Paris Declaration on Aid Effectiveness. They laid out thirteen targets for themselves to reach by 2010, including progress in harmonizing aid, managing for results, and accountability. Five years later, only one had been achieved.¹¹

Global Solution Networks are increasingly entering the landscape as a new tool. Sometimes a networked solution can help donors achieve efficiency by knowing how to better target resources. GSNs can also successfully provide services themselves, often in areas where traditional development models have failed. For example, UNICEF’s Ureport network in Uganda allowed for a very cheap and fast map of where a particularly important crop disease existed in the country (see Box 2). This GSN served both purposes. By targeting the disease, agencies providing services could better allocate resources to those areas. But the network was also used to disseminate SMS farming advice for how to manage your diseased banana crop. This advice was previously only possible in person, through expensive and mostly defunct networks of agricultural extension agents or by ‘farm radio.’ Farmers all over the world now get excellent information about crop management, weather and market prices through networking with their mobile phones.

There are hundreds of crowdmapping sites like Ureport, offering geographical insight into poverty issues. Some are platforms used to map feedback on diverse issues, from human rights to post-disaster relief to election violence. Crisis Mappers and Ushahidi are well-known examples of how building the platforms for GSNs can take down technical barriers and spread the models globally. Typically, these platforms work across mobile- and web-based applications, analyzing geo-referenced data. They network people as well as organizations. Just as these networks take off,



however, we are also seeing a healthy measure of caution surrounding the accuracy of data and its utility. In the Ushahidi Haiti project, Tufts researchers created a map for responders in the post-earthquake weeks using tweets, texts, and other sources of networked information. Post-disaster maps can be critical to first-responders in knowing where healthcare services are needed, where food aid should be routed, and more. The hypothesis was that a contextualized map, improved with on-the-ground information, would be valuable. The team of researchers followed their mapping project by studying whether it had been used. They found that, while the US Southern Command reported using some of their information, mostly it was impossible to document whether it had been helpful to the mobilized aid agencies and NGOs operating in the disaster zone.¹²

BOX 2: BANANAS

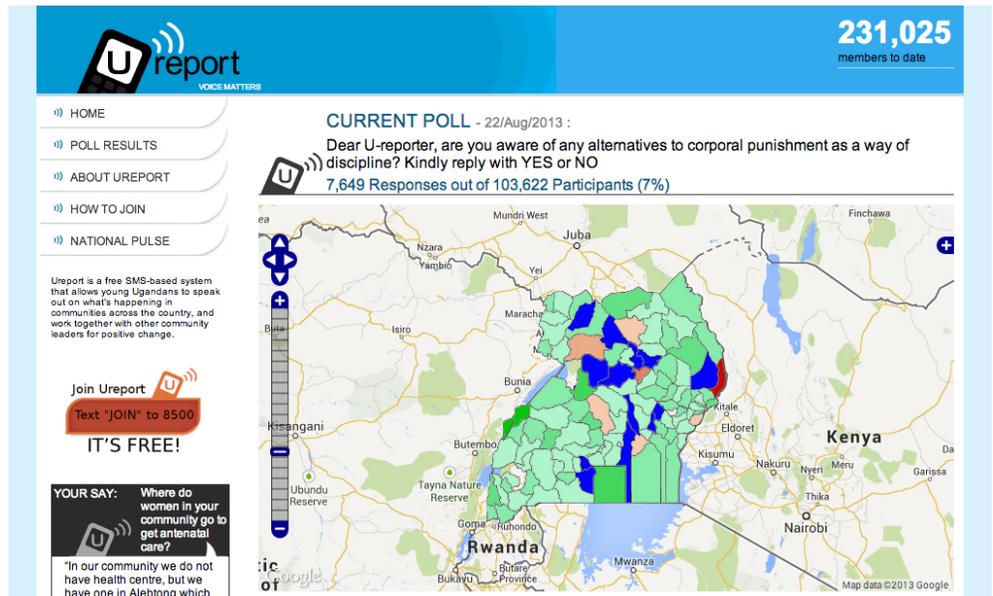
Ugandans eat more bananas than anyone on the planet. They are a staple crop on which the population depends. So when disease threatens the banana crop, it's serious business. Banana Bacterial Wilt is one of those diseases. It spreads fast and can cause total yield loss for a farmer within a year.

In March 2013, a UNICEF network of more than 195,000 volunteers across Uganda was sent a message on their mobile phones: "Do you know any farmers whose banana plantations or crops are infected with banana bacterial wilt disease? YES or NO." Twenty-four hours later, 35,000 responses from the Ureport network enabled a mapping of the area of the country impacted by disease. Those who responded positively were sent the critical piece of information for containing the disease: "To control, avoid moving infected plant, break male bud, cut infected plants, clean cutting tools using jik or flame. (1 JIK: in 5 water.) Tell someone you know."

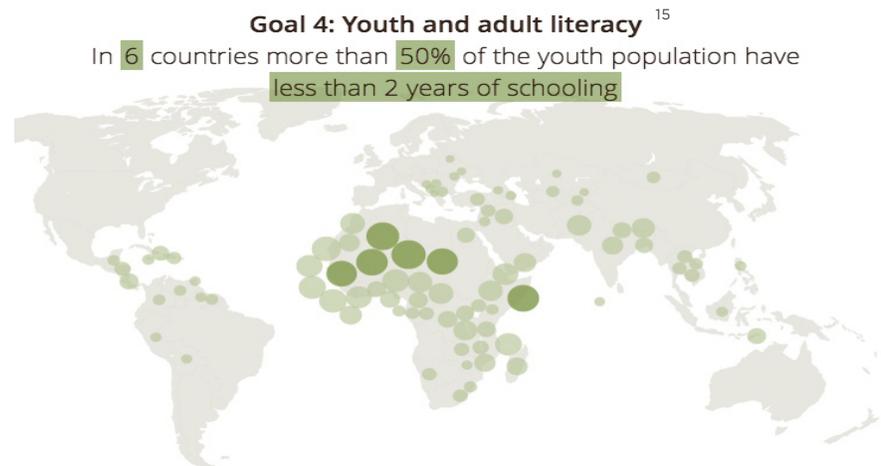
This network of crowdsourcing information and disseminating data cost 3 US cents per person. Lyudmila Bujoreanu at the World Bank notes: "What Ureport made possible was not only information dissemination or data gathering, but a nationwide conversation focused on a critical issue for Ugandans."

In addition to GSNs working to improve the allocation of resources, or amplifying the ability of existing organizations to have impact, GSNs can also replace previous models altogether. Education is an area where GSNs can provide cheaper and more effective services for the poor than we have been able to offer in traditional models. Worldwide, literacy rates are slowly falling, and the number of children attending primary school is rising, but progress is not fast enough to meet the Millennium Development Goals. In 2012 there were still 775 million adults on our planet without the ability to read or write. In four countries in the world, more than half the population of children has never attended primary school at all.¹³ In most very poor communities it is difficult to get teachers to come, or get them to stay. This World Bank map shows progress toward the Millennium Development Goal of universal primary education. The red countries have less than three quarters of their children attending primary school.¹⁶





An example of a crowdsourced map from Ureport.¹⁴



The need for networked solutions delivering high quality education is there, and the models are just beginning to be used. Digital Study Hall is a cross between a knowledge network and an operational and delivery network. This pioneering program is designed to educate disadvantaged girls in slums and rural villages in India on a model that had been called a cross between Netflix and Kazaa (before Kazaa’s demise). The program networks village-level untrained teachers to experienced teachers and digital peer-to-peer curriculum. Low-income communities receive a TV, a DVD player and a lead-acid battery (where there is no electricity). Communities have access to a library of lessons to mix-and-match, filmed using star teachers. Local teaching is done through ‘peer-mediation’ where the village-level teacher is



not required to know the material, but is trained in how to keep the class interacting with the DVD lesson. Digital Study Hall leverages the talent of a small number of trained teachers and provides networking, curriculum and training for an army of unskilled teachers, ultimately reaching girls in the poorest parts of India.¹⁶

BOX 3: GSNs AND WATER

“If I had had water, I could have grown anything except human beings, salt, and diesel.”

— Ayelech Fikre, Smallholder Farmer

Water lies at the heart of poverty, whether for drinking, sanitation, or irrigation. Not having access to clean water for drinking and washing is the fundamental underlying barrier to progress in sanitation and hygiene. Of all the Millennium Development Goals, the one that has fallen the furthest behind is sanitation;¹⁷ more than 2.5 billion people in our world do not have access to basic sanitation. Access to water for irrigating the land of poor farmers holds back our efforts to reduce hunger and leaves poor households especially vulnerable to the changing climate. Only four percent of African agriculture is irrigated and the majority of small farmers depend only on the rain. This has big implications for the choice of crops they grow, and for the risks they take every farming season.

Global Solution Networks have a role to play in improving how well we use resources devoted to improving access to water. Imagine, for instance, a map of Africa’s water resources that could inform the decisions of policymakers and aid agencies, helping them decide where to invest and what needs to be done. We aren’t there yet, but these networks are working on a national scale and have the potential for aggregation. In Liberia, information about 7,000 water points was submitted from smart phones all over the country to create a map. Akvo FLOW¹⁸ is a networked map of water resources, combining on-the-ground data, geo-referenced, from people’s phones with remote sensing information.

GSNs are working to address water quality and water supply issues. In South Africa in 2013, IBM created a crowd-sourcing platform that allowed users to report problems with water pipes, leaks and generally comment on the delivery of water.¹⁹ In Berlin, WaterWatcher is a simple, cheap test of water quality that interfaces with your mobile phone.²⁰

In Indian slums, the poor have unpredictably long waits for water because piped water flows only intermittently with no warning of it coming. This means they can’t plan, and sometimes having to purchase from private sellers whose water isn’t always safe to drink. NextDrop is a platform enabling the valvemmen of the utility company to collectively report information about opening or closing valves and the repair of broken pipes. The information is processed and then relayed to customers through their own phones, providing updates about local water delivery specifically to their local valve.

A similar type of network is being developed in Nairobi, where poor people pay an estimated ten times more for their water than their wealthier neighbors because the system allows for corruption.²² M-Maji (mobile water in Swahili) is a pilot platform designed by Stanford University students to connect water vendors and water buyers, allowing the poor to find the cleanest, cheapest water in their area.²¹ MajiVoice²² is yet another network, this time pioneered by the Water Services Regulatory Board of Kenya to connect users and allow them to report service complaints.



2. Expanding Global Resources to Fight Poverty

Capital now moves across borders more fluidly than at any time in history. While most of the world's capital is moved by financial institutions, there is a growing number of opportunities where money from global networks of individuals is having an impact on developing and emerging markets. The impact of these GSNs could be huge as it has the potential to substantially expand the total resources available in the fight against poverty.

Crowdfunding has exploded in the United States ever since the Internet first started offering individuals the capacity to contribute small amounts to the cause of their choice. Sites like IndieGoGo and Kickstarter have been successful in raising capital across a distributed virtual network. Total transactions in 2013 for crowdfunding are estimated to be \$5.1 billion—almost twice the total for 2012.²³ As in most areas where financial Global Solution Networks are breaking ground, the regulations governing crowdfunding activities need updating. The US Congress recognized this in 2012 with a law requiring the Securities and Exchange Commission to develop new rules for crowdfunding equity investments.²⁴ Previously, the classification of investors in crowdfunding provided constraints for treating the investments as real equity investments. Donations could be made, or loans, but the new law opens the door for distributed equity investment opportunities. In 2013, for example, AngelList rolled out its long-awaited equity crowdfunding service.²⁵ As in other examples of Global Solution Networks, there are valid concerns about how these networks might be used for fraudulent purposes, and the new balance of freeing the flow of capital and protecting against fraud will take some time to achieve. But there is no doubt that the crowdfunding revolution holds great promise in providing alternative sources of funding for social and environmental programs.



BOX 4: CROWDSOURCING CLEAN ENERGY SOLUTIONS FOR OFF-GRID COMMUNITIES

Despite falling costs of components like solar panels, renewable off-grid energy supply to rural communities in developing and emerging market economies continues to be too expensive to push forward with a for-profit business model (i.e. without significant financial support from governments or other donors). It's not that low-income households don't pay for energy. Even with government subsidies on energy, kerosene to light homes, firewood, or liquid petroleum gas (LPG) can eat up significant amounts of the household budget.

The World Bank found that poor households in Thailand spent 10% of their budget on energy.²⁶ But the up-front costs to install solar, wind, hydro, or biofuel options are prohibitive. Kiva, the crowdfunded microfinance organization that pioneered peer-to-peer lending across a Global Solution Network made its name giving out small loans to microentrepreneurs. Over the years, however, Kiva has branched out, including partnerships with local renewable energy suppliers in developing countries like Tecnosol in Nicaragua. About three quarters of Nicaraguans live without access to electricity, and Tecnosol is in the business of installing decentralized renewable energy options (including wind, solar, hydro, and biogas).²⁷

Options for financing renewable energy in the United States are changing rapidly with the issuance of public bonds for solar energy investments (Warren Buffet's \$850 million solar farm bond offering), and new crowd-funding applications. In 2013, Mosaic introduced their crowd-funding platform allowing individuals to loan as little as \$25 to finance clean energy projects, making 4.5% interest. The projects were sold out within 24 hours. The application of these Global Solution Networks to developing country energy could transform the role of traditional donors so they no longer pay directly for energy installations, but instead play a facilitation role providing loan guarantees and regulatory structures to make the projects work.²⁸

Beyond crowdfunding, another type of Global Solution Network also holds promise for expanding the resources available in international development. Diaspora networks are mechanisms that connect emigrants living abroad, often mobilizing financial and in-kind investment back into the country they left. There is big money in diaspora networks. International remittances received by developing countries (the money that ex-pats send back to their home country) are estimated to have tripled in the last decade. These flows of money are impossible to track accurately, but the World Bank now believes they are three times greater than the official foreign aid budget and make up significant portions of various countries' GDP. For example, 31% of the GDP of Liberia in 2011 reportedly was due to remittances.²⁹

The African Development Bank estimates that the 140 million Africans living in other parts of the world save up to \$53 billion a year.³⁰ Some least-developed countries, like Haiti and Senegal, have ministerial positions focused entirely on diaspora issues.³¹ Networking among diaspora can aggregate new sources of money through both governmental and non-governmental channels. The Rwandan government set up a fund called Agaciro in 2012 (meaning "dignity" in Kinyarwanda) with a Twitter feed recording the pledges. Another, more structured financial network among expats is the diaspora bond. Although these bonds have been in use in India and Israel for decades, Internet platforms are bringing new opportunities to apply this tool in developing and emerging economies. These bonds build on distributed networks of diaspora, marketing specifically tailored financial vehicles. India raised \$32 billion, and Israel \$11.3 billion in diaspora bonds.³² In 2009, an Ethiopian diaspora bond was launched to finance a new hydroelectric dam. A second bond was launched in 2011, with new features designed to address issues that were



seen to dampen demand for the first issue.³³ Although we have seen some diaspora bonds' success in the past, others have run into problems, and the jury is still out on how to structure a bond that best capitalizes on the diaspora network, balancing patriotic sentiment and financial risk.

Diaspora GSNs are arguably even more powerful when they through non-governmental channels. These can fund the work of non-profit organizations delivery goods and services locally to low-income communities. Beyond the collection of money, these types of GSNs also create ways for people to coordinate contributions of skills and expertise that are of critical importance to developing and emerging market economies. The 2012 United Nations Conference on Trade and Development Report on Least Developed Countries focused particularly on opportunities for Global Solution Networks of diaspora to use knowledge to improve their home countries. The report cites successes like a medical diaspora network to engage Bangladeshi physicians in North America. The network coordinates training, technology transfer, visits by medical teams and donations of books, journals, and computers.³⁴ In another example involving Senegalese immigrants in France, the Local Collective Development Projects (PAISD) network provided a platform for diaspora to use their skills and private investments to support a wide range of development projects in their home country (including education, water, sanitation, and agriculture projects).³⁵

“Impact Sourcing” is yet another type of GSN poised to have substantial impact in developing countries. This model networks companies to provide distributed digital work for low-income communities around the world (see Box 5). There are key problems historically with the platforms on which impact sourcing initiatives have been built. It can be hard to get the prices right, matching the payment offered for tasks across international populations of workers in very different economic contexts. There can also be inaccuracies created when the tasks are not specified well or the specification fails to translate well into local languages for workers to understand. Mobile-Works is one example of a network pushing forward with increasingly advanced platforms that can scale the ability to employ marginalized populations across the globe.³⁶

The impact of Global Solution Networks in providing new resources is welcome. Foreign aid budgets fell in 2011 and 2012, and they are always tied to national priorities rather than strategically focusing on global priorities. The prevalence of Global Solution Networks in international development, though, is a harbinger of enormous change. New roles may emerge for the old actors, where they work to foster better GSNs and leverage the impact of GSNs. For example, loan guarantees from a multilateral organization could reduce risk and drive crowdfunding of larger social and environmental projects that benefit poor countries (see Box 4). We are leaving an age in which an antiquated system of public sector organizations financed projects in poor countries, and instead entering a future where institutions collaborate with networked individuals, and for-profit models mix with non-profit models to find ways to mobilize more resources in the fight against poverty.





A well-used mobile charging station in Uganda.³⁷

BOX 5: IMPACT SOURCING

Impact sourcing has captured the imaginations of international development donors (Rockefeller Foundation announced a \$100 million grant in 2013)³⁸ and businesses alike (including LinkedIn and Google). The idea is to break off small chunks of projects that involve digital work, spread them around the world through the network, and get them completed by trained workers in developing countries.

Think, for example, of data processing projects that could cost 30–40% less if with a network of microwork centers.³⁹ Companies like Samasource, CloudFactory, and Digital Divide Data have pioneered the idea of what has come to be known as 'impact sourcing.' The beneficiaries have been under-educated people in low-income communities around the world, raising incomes by 40–200%.⁴⁰ The African Digital Jobs Initiative, supported by the Rockefeller Foundation initiative, has a goal of networking one million African youths in six countries to provide digital jobs with a living wage.

3. Improving the Impact of Policies on the Poor

Sustained and large-scale transformation of economies climbing out of poverty can only be achieved when it is backstopped by good policies and a framework of functioning institutions to implement those policies. Global Solution Networks are having profound effects on the poor by changing the way we make policies worldwide. These policymaking effects fall into several major categories.



First, GSNs are enabling the voice of disenfranchised populations to be heard in the halls of government. Whether democratic or not, policymaking processes are inherently political and responsive to pressures from groups. Ethnic minorities, women and low-income populations whose voices were previously relatively easy to ignore are increasingly able to speak collectively about important issues.

In order to play this role successfully, GSNs need to be designed for delivering coherent policy messages publicly. One program in the Democratic Republic of Congo asked 4 million people to send their thoughts and their hopes for a better Congo.⁴¹ Wandering through the more than 140,000 SMS messages collected makes rich and important reading, but this GSN method would have limited power to change policy.

Another initiative is likely to be more successful in ensuring the voice of the poor enters into global policymaking. My World is an on-line and off-line United Nations poll asking people for their priorities among the Millennium Development Goals (MDGs). Two months after launch in 2013, half a million people had responded from all over the world. In this network, participants are asked to rank six out of sixteen choices as their global priorities, the results are displayed in real-time on the web, and the analytics allow identification of priorities across country, gender and age. Already you can see that low-income communities differ from wealthier countries, ranking environmental issues as less important than sanitation, job opportunities and food. When 2015 comes, and we examine progress on the MDGs, the number



A mobile phone advertisement in Uganda.⁴²



of priorities, and the diversity of priorities across various groups will be there for all to see.

Direct feedback from the people a policy is intended to reach is an area where GSNs also offer critical insights. These GSNs give policymakers information on how well a policy is working, or how it might need to be changed. Health policies of developing and emerging economy countries often grapple with fights against diseases that take a major toll on the poor (e.g. HIV, malaria and tuberculosis). In Ethiopia, President Obama's Malaria Initiative works with the Ethiopian government on a mobile phone network connecting community health workers so they can easily document new cases of the disease, as well as report where and when stocks of medicine run short. The network provides invaluable information to the government in understanding how to better manage its fight against malaria. Dr. Joshua Yukich notes a problem with this initiative that is common to many GSNs. "The biggest challenge is taking a rich source of data and translating it into something useful for community health workers and getting it back to them rapidly."⁴³ Moving from a network engaging medical professionals (community health workers, nurses and doctors) to one directly engaging patients has challenges related to privacy and the possible disclosure of status. Many phones owned by low-income households have a shared, not individual use and therefore the confidentiality between patient and healthcare provider is often not possible.

A second way in which Global Solution Networks are improving policymaking is in their ability to foster transparency, ease of reporting and public accountability. All over the world "I paid a bribe" networks have popped up allowing the anonymous documentation of corruption (see Box 6). From getting out of parking tickets, to ensuring children's entrance into school, what was common, but private knowledge, is now becoming public. Most agree that transparency in areas like bribery can foster overall growth in the rule of law that has profound impacts for the robustness of institutions over time. Some, however, counter that it has a comparatively small impact on poverty. Chris Blattman, an economist at Columbia University in New York calls this kind of corruption "an Anglo-American fetish" and cites numerous studies in which economists have failed to find sound links between corruption and poverty reduction.⁴⁴

Transparency in other policy areas has inarguable impacts on the lives of the poor, however. From documentation of rape to election fraud, serious crimes and human rights violations are being crowdmapped via social media, and greater effectiveness of policies is the result. Many sites are not yet 'global' in nature, but provide national crowdmapping. Women Under Siege documents sexualized violence in Syria.⁴⁵ KOFIV and Digital Democracy crowdmapped rape in Haiti after the earthquake. These sites create important pressures on national and international governance structures and can redefine agendas for work inside a country. While the tools are available, we still have important work to do in the challenging area of aggregating crowdmapped data internationally to form truly global networks.



BOX 6: I PAID A BRIBE...

All over the world, networks have popped up allowing people to anonymously document the details of bribery. Most of these networks include people admitting to taking bribes as well as accounts of payments, like this post from Zimbabwe⁴⁶:

hi, my wife was involved in a commuter bus accident near rusape on her way to mutare from harare on 24/08/2012 @ 15.00hrs, she had a broken arm, deep cuts on the head and elbows. police arrived at the scene and went through her handbag. they took abt \$300, mobile phone, wedding rings, camera from her handbag, all gone. the people who are meant to enforce the law dipped their hands into her handbag. thank GOD my wife is alive and recovering well.

Swati Ramanathan and her husband Ramesh are credited with starting the first of these sites in India in 2010. They refer to the types of reports collected here as “retail corruption”—the typical business lubricant found in most countries in the world. The real question, though, is whether these sites can catalyze change. Antony Ragui who built Kenya’s I Paid a Bribe⁴⁷ site notes: “My real goal is to change just one government department and how it does business.” There are a few examples of change and more are likely to come. The state of Karnataka in India, for instance, moved its application for driving licenses online in response to information on this network, and implemented ethics counseling for some senior officers.⁴⁸

Lastly, GSNs can impact the policy framework by actually bypassing it altogether. In some cases, Global Solution Networks are providing cheaper and more direct ways of achieving policy results. For example, developing countries bear a disproportionate burden when it comes to counterfeit medicines. While wealthier countries capture almost all counterfeit drugs at the border, low-income countries have neither the policies nor the resources to seal their borders. Some estimate, for instance, that more than a third of antimalarial sales in Africa and Asia are counterfeit.⁴⁹ Imagine the savings if, instead of stopping the drugs at the border, you destroy the demand for them by allowing customers to find out which are real and which are fake. Box 7 discusses SMS networking platforms that are making this possible.

BOX 7: COUNTERFEIT DRUGS AFFECT THE POOR DISPROPORTIONATELY

Policies, regulations and the sheer manpower needed to stop counterfeit drugs crossing borders are absent in many developing countries. Global trade in counterfeit medicine is estimated at \$75 billion annually.⁵⁰ Of the 191 member states of the World Health Organization, 80% do not have well developed drug regulation, and 30% have no drug regulation at all.⁵¹

This failure in international governance is now being addressed by networks of individual customers using cheap mobile phones. Sproxil⁵² in Nigeria and mPedigree⁵³ in Ghana are two organizations that have successfully pioneered a coded labeling system integrated with SMS verification service. Consumers text a code printed on the packaging of their prescriptions to a free number and immediately receive return verification as to whether the drug is counterfeit.

This type of mobile verification service doesn’t need a smart-phone; virtually anyone, anywhere can use it. In fact, it is being replicated across the globe and offers interesting possibilities for other applications in anti-counterfeiting operations. A simple, inexpensive innovation has enabled a network of consumers to rival governments’ role in tackling counterfeit drug trade internationally

4. Allowing the Voices of the Poor to be Heard

Above we discussed networks that allow the voices of the poor to be heard in the corridors of power, in policymaking. On numerous other topics also, we have illustrated how GSNs enable the voices of the poor to be amplified far beyond their local influence. Several more examples are considered in this section.

‘Citizen journalism,’ in which the voices of the poor literally echo around the world, has skyrocketed in importance as we have become a world connected by the Internet and mobile phones. Networked individuals, sometimes partnering with trained journalists or NGOs that make connections to media outlets, are allowing unprecedented insight into the lives of the poor. IndiaUnheard,⁵⁴ for example, is a network of 45 “community correspondents” across 27 Indian states representing ethnic, religious, linguistic and sexual minorities. Through video, social networking and SMS, stories are shared online and in a weekly news program, and the world has access to stories from Indian urban slums to its poverty-stricken rural villages.

In addition to using GSNs to get their stories heard on a larger stage, we are beginning to see some networks enabling sharing of information among the poor. This is particularly challenging due to the lack of web access. Although videos are often the easiest way to convey information in communities with high illiteracy, networks involving low-income communities’ access to video often do not last over time because they take resources beyond the users to continue. Some, however, are working well. Digital Green⁵⁵ creates a networked sharing of agricultural practices in rural India. By videoing local farmers who have innovative technologies or ways of farming, and screening those videos in surrounding villages, Digital Green stretches the bounds of usual information exchange and enables good ideas to have a much broader impact.



A volunteer ‘community correspondent’ with IndiaUnheard⁵⁶



We are also making interesting advances in improving how we listen to the voices of the poor as customers. Market information is an industry unto itself in developed economies, but in very low-income markets we have an unfortunate history of creating products and services in a vacuum. Particularly where innovations are intended to have an impact on poverty, design and development take place without good feedback from the users themselves. Historically, it has been expensive to engage the poor in product design. Thomas Miethbauer, for instance, calculated the cost of involving low-income farmers in breeding new varieties of crops for their fields. “Participatory variety selection” trials in Peru cost an average of \$725 per farmer participant.⁵⁷ But there is a new breed of market research company like mSurvey⁵⁸ in Kenya, pioneering cost-effective mobile-web survey interfaces and data collection to allow the voices of millions of low-income customers to inform better decision-making in the creation of their products and services.

5. Transforming How We Measure Poverty

Available data on poverty is appallingly bad. If you were to look at time series GDP numbers for African countries, for example, you would have to recognize that in 2010 Ghana revised the way it measured GDP, which resulted in a 62% jump to that number, and its movement from a World Bank-classified ‘low-income country’ to a ‘middle-income country.’⁵⁹ Given the power of these numbers, the poor quality of the statistics can be dangerous. A country’s Gross National Income, for instance, legally determines whether it is eligible to borrow from certain World Bank loan programs.⁶⁰

Beyond their legal importance, measurements of poverty determine how we allocate our resources both among different poverty alleviation programs and among other world issues like climate change and environmental degradation. International indices, like the Human Development Index (HDI), are often how we measure countries’ progress and allocate resources for poverty alleviation. Yet, in 2010, researchers studying the HDI showed that if you took into account biases and data errors, up to 34% of the countries were misclassified.⁶¹ The HDI has since been revised to address these criticisms, but the fact remains that bad data is pervasive across many aspects of international development.⁶²

We depend on measurements as an accountability tool, letting us see whether our programs are having the intended impacts, and they also serve as an explanatory tool, helping us understand the interrelated complexities of poverty, getting closer to root causes. In short, our ability to fight poverty on a limited budget depends on good data. Global Solution Networks in



combination with remote sensing, wireless sensor networks, crowdsourcing and other tools are poised to bring enormous positive changes in our ability to measure.

But there are certainly clear cautions to be heeded as we push forward.

Widespread adoption of Global Solution Networks in the measurement space and elsewhere will also be constrained by a kind of conservatism arising from different levels of risk in the international development community. Country governments engaging in poverty alleviation are ultimately tethered to political risk, which makes their decision-making calculus more conservative than a company or NGO working with operational risk and weighing the potential gains of reaching for new ground.

If governments supporting the fight against poverty make investments in programs that go publicly wrong, they risk serious political consequences. You can imagine there may be some unspoken comfort in opaque statistics and a reticence to employ new models of data generation that may threaten existing programs with greater transparency. But Global Solution Networks generating data for measurement purposes are themselves risky endeavors, open to criticism. We know the systems can be ‘gamed’ and we know there are huge challenges in accuracy and verification of data. In the private sector, crowdsourcing of data is having a disruptive influence on market research. We may see advances in Global Solution Networks used for measurement first honed by companies where the risk-reward balance is different and there is somewhat greater maneuverability in managing reputational concerns.

BOX 8: A NEW WAY TO MEASURE POVERTY: VOICES OF THE HUNGRY

In 2013 the United Nations Food and Agriculture Organization announced plans for a new annual survey in which 160,000 people under the poverty line, from 150 countries, will be asked the following eight questions:⁶³

During the last 12 months was there a time when:

- 1. You were worried you would run out of food?*
- 2. You were unable to eat healthy and nutritious food?*
- 3. You ate only a few kinds of foods?*
- 4. You had to skip a meal?*
- 5. You ate less than you thought you should?*
- 6. Your household ran out of food?*
- 7. You were hungry but did not eat?*
- 8. You went without eating for a whole day?*

Rather than wait years, these results will be available in days and provide critical insights. These questions have a proven track record in the United States where they were used to identify families that required food assistance from the government and in Brazil to target its *Bolsa Familia* program.

Addressing Challenges to Improve GSNs' Impact on Global Poverty

We can improve the impact GSNs have on poverty by recognizing key challenges and working to address them. Some of these challenges are common across many GSNs and discussed in depth elsewhere. Legitimacy difficulties, for example, are as present in crowdmapping projects related to poverty as they are elsewhere; data submitted to form a map of banana disease in Uganda has the same issues of data accuracy and verification that any other crowdmapping project has. Governance challenges, also, are shared more generally across GSNs. The internal structures that govern the networks are critical in all of the examples presented in this chapter. As with other Global Solution Networks, many can be manipulated to misrepresent the network and alter the products or services delivered by the network to benefit an intended party. But GSNs that work to alleviate poverty also have some unique challenges.

Establishing trust. Trust takes on a new meaning when considering networks designed to impact the lives of the poor. Suppose, for instance, that a network allows information flow advising a farmer to plant one variety of seed when, in fact, that seed in her particular agro-ecological zone will not thrive. The cost to her family of a failed harvest may be permanent indebtedness, loss of her only assets or long-term hunger. The downside potential for Global Solution Networks delivering products and services to the poor should be carefully considered. In this context, GSNs may evolve differently, finding ways build trust. These networks should be viewed with a recognition that their users may be, quite rationally, slow to trust new sources of information.

Progress in establishing trust could be made by getting more authentic voices of the poor involved in promoting anti-poverty solutions. FAO's new annual survey and the UN's MyWorld survey represent steps forward in enabling poor communities to influence policy. Crowdmapping sites provide a means for individuals to independently document issues that affect them, from rape to election fraud to serious crimes and human rights violations. Digital Green provides an example of how GSNs may need to take on different forms to be able to engage the poor directly in spreading knowledge, whether it pertains to innovative technologies for water quality management or new techniques for farming. Here, the GSN is taking traditional information channels (farmers looking to their neighbors for advice) and amplifying them. With access to videos, farmers can benefit from 'neighbors' that are now many miles away.

Engaging poor communities. Difficulties in engaging the intended beneficiaries—the poor themselves—in networks have been discussed above. Illiteracy, local language and technical limitations are sometimes addressed



by using facilitators or intermediaries. In the example given above, Digital Green is a facilitator. Without that active coordination, the network would not work. Impact sourcing and microwork networks are also examples where facilitators are critical; they would not work without the likes of Samasource and Cloudfactory. Intermediaries offer yet another way for GSNs to engage poor communities. These local individuals or organizations are, in a sense, translation points for information and services from the community to the network and vice versa and networking them is one of the most powerful impacts of GSNs among the poor. Community health workers can be networked to interface between a GSN and the health needs of poor households. Local NGOs can be networked to improve the flow of information from and to the poor. The distinction is important where Global Solution Networks work for the poor and where they work among the poor. Reaching the poor directly with networks will improve in time, but we should not hold our breath. Instead, there are important investments to be made in models that build on the intermediary relationship, while continuing to test the intermediaries to ensure the translation from and to the household level is working.

Providing access to technology. Even when we are not seeking to engage the poor directly in networks, GSNs working to alleviate poverty will be constrained by the limitations of working through mobile phones. The intermediaries we note above, like community health workers, or local NGOs in many communities may not have regular access to computers and the web and many GSNs working on poverty have members interacting with only cheap mobile handsets. GSNs will have greater impact as they improve that interface from web to mobile. For now, these limitations will slow the growth of GSNs benefiting the poor and also keep many networks from jumping borders to move from “solution networks” to Global Solution Networks.

Replicating and scaling successful networks. The jump in scale from local to global is important in the context of fighting poverty. As with other problems addressed by GSNs, the problems of poverty inherently cross borders. Malaria, counterfeit drugs and the shortage of teachers in slums, are all international problems. Why, then, are many of the networks working to solve them so slow to scale or replicate across borders? The answer has to do, in part, with sources of funding. Local or national donors are less interested in seeing poverty reduced outside their own country and even international sources of aid money often are earmarked by their donor countries for particular geographical destinations. But there are other constraints. It takes significant investment to replicate networks in different languages. To expand the Digital Study Hall network from India to Africa, for example, would require finding new local teachers and creating a new library of DVDs before the network could start having the same impact.

There are, however, enormous missed opportunities in the replication of models and the aggregation of information from networks across countries. Just as Ushahidi has provided a platform to be replicated for use in any number national programs and the Serval Project is working on extending mesh networks, so too could many other solution networks that currently are successfully impacting the poor. Aggregating information could be



powerful, too. Imagine the benefits of a meta-network that globally links national-level crowdmapping of violence against women. These aggregations and replications, pushing toward truly Global Solution Networks, represent important investments for donors in the coming decade.

Improving the resources available to global solution networks. Lastly, Global Solution Networks impacting poverty are constrained by a lack of resources. Paradoxically, this is both a challenge and an opportunity for progress. Fighting global poverty has always involved working on a shoestring. In 2012, developed countries have allotted US \$125.6 billion to poor countries in international aid, representing less than one third of one percent of their combined gross national income.⁶⁴ The perennially constrained budget for international development work has turned out to be a catalyst to the acceptance and use of Global Solution Networks because they offer inexpensive ways to improve the impact we can create with that limited budget and exceptional opportunities to expand the amount of resources available for poverty reduction programs.

Two aforementioned examples stand out as promising solutions for increasing the resources available to GSNs. Diaspora GSNs, which channel financial and in-kind investments from emigrants living abroad back into the country they left, could be leveraged to support promising anti-poverty initiatives. Success with diaspora bonds suggest one way for GSNs to capitalize on these networks, but GSNs that develop among diaspora communities working through non-governmental channels hold perhaps even greater promise. In some cases these are aggregating funds to support non-profit organizations working locally in their birth-country, in others, like the Bangladeshi experience with tapping medical expertise in North America, they are valuable conduits for critical knowledge and skills. Secondly, with total transactions for crowdfunding reaching \$5.1 billion in 2013, there is an opportunity for GSNs to crowdfund financial support for their initiatives. Microfinance sites such as Kiva.org have demonstrated that there is an active community interested in supporting development initiatives that could be tapped. Success in crowdfunding renewable energy projects suggests that GSNs could make more imaginative use of thriving crowdfunding platforms such as Kickstarter and Indiegogo to obtain support for a broad range of innovative projects.

All of these challenges, and more, must be recognized as we move forward with Global Solution Networks. By collecting and analyzing examples of GSNs and their potential for impacting poverty, we can learn what needs to be done next. Donors, policymakers and practitioners in international development should be thinking about how to catalyze more GSNs, how to scale GSNs, how to increase their direct engagement with the poor and how to ultimately improve their impact on poverty. We already have important insights about where we can begin to push for more progress. Critical technology constraints can be resolved to improve the feasibility of GSNs among the poor. Models of GSN facilitation and the networking of intermediaries can be applied more broadly. Crowd-mapping information can be integrated more centrally to inform decision-making in international development. These, and many more opportunities exist as important next



steps as we seek to make better use of these powerful tools that are already reshaping our ability to fight global poverty.



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Ten types of Global Solution Networks