

# 5 Rebuilding

## Post-crisis services and development

The faster affected communities can move from emergency response to rebuilding, the better. Reconstruction is easier when suitable communications technologies and infrastructure are in place. This section focuses on the reconstruction phase, giving examples of existing services that already do or could have a valuable post-disaster role.

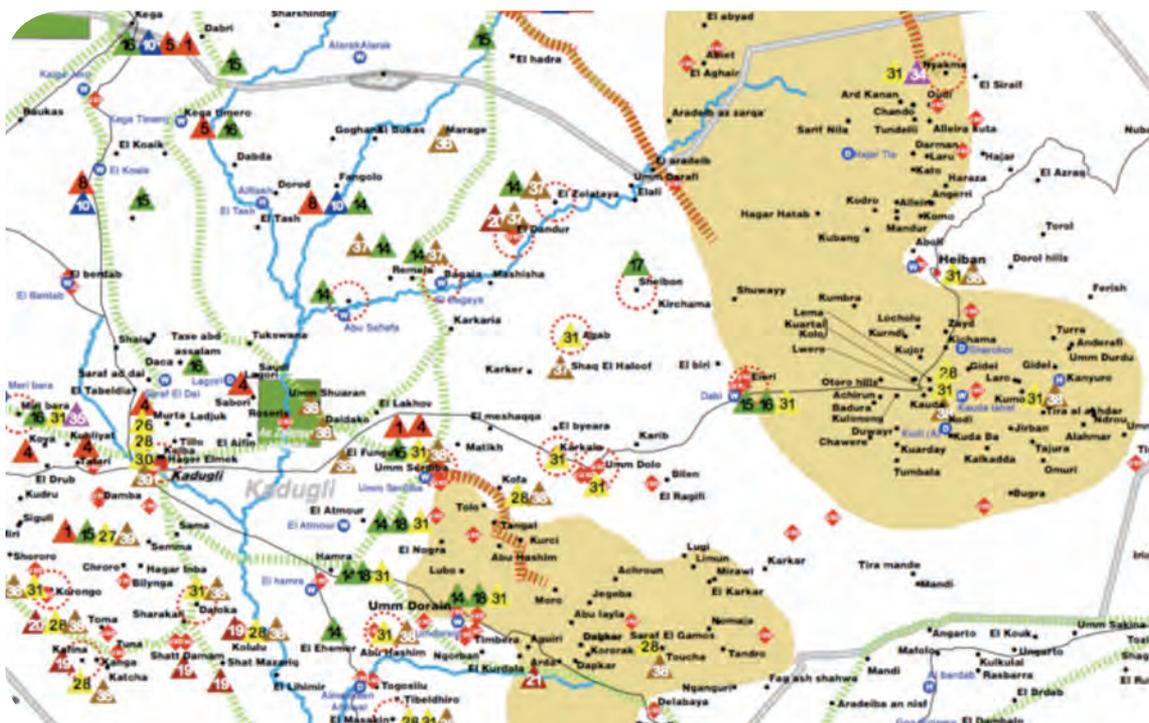
Some of these, such as mobile transactions and job matching services, are on the boundary between reconstruction and longer term economic development. But they are also key to enabling affected populations to help themselves in the aftermath of a crisis and to rebuild their livelihoods. *In the reconstruction phase, as in earlier phases, a people-centered approach is likely to be most effective.* The examples in this section look at initiatives for the post-crisis phase developed

by the global policy community, and at several post-crisis and developmental applications that NGOs are using and/or developing.

### The UNDP's Threat and Risk Mapping Analysis (TRMA)

Crisis mapping, which is essential in responding to the immediate aftermath of an emergency, and is making a

Example of a crisis map produced by TRMA



Source: UNDP Sudan

### Family dwelling units demarcated automatically



Source: European Commission Joint Research Centre/Geo-Spatial Information Analysis for Global Security and Stability (JRC/ISFEREA)

growing contribution to early warning, is also an important post-crisis or post-conflict tool. One example that demonstrates these multiple uses of mapping is the Threat and Risk Mapping Analysis (TRMA) program established by the United Nations Development Programme (UNDP) in Sudan to improve its effectiveness in immediate-post conflict environments. The dynamic mapping platform can visualize and analyze the micro-level conflict data collected by UNDP workers to inform their decisions. TRMA is operational in all the states of Eastern Sudan, the Transitional Areas, and Darfur and due to roll out to all states of Southern Sudan by the end of 2009.

TRMA is at the cutting edge of crisis mapping. It uses baseline data collected from the government, UN agencies, and NGOs. In addition, participatory mapping workshops at the local level allow communities to identify the most pressing crisis and risk factors in their area. In this way, rich local knowledge is geo-referenced and added to the map.

In response to the specific needs of partners, a set of four different user interfaces that are all compatible and based on the same GIS-enabled mapping display will soon be integrated with TRMA. These modules present the mapping data in a dynamic format that users can manipulate and populate. Each module has a data entry component, a dy-

namic visualization tool, and a reporting/statistical function, as well as—crucially—a simple export/import function that allows for internet-based sharing and updating of the user network. Users can switch from one module to the other and combine different datasets according to need.

One of the four interfaces is the 4Ws tool, standing for Who-does-What-Where-When. Users can input their own project-specific information into a database that allows for immediate visualization and reporting on project coverage, funding, targeting, and tracking. At present, data are available for all the states of Eastern Sudan, the Transitional Areas, and Darfur.

### Using Geospatial Technologies for the Post-Crisis Phase

Previous sections have described JRC innovations for the preparedness and emergency response stages of a crisis. JRC's Geo-Spatial Information Analysis for Global Security and Stability Program (ISFEREA) includes a number of cutting-edge projects that can also serve for post-crisis support and development. For example, using very high-resolution satellite imagery, the JRC has tested the automatic assessment of infrastructure damage after conflicts. Another project uses remote sensing to analyze different types of refugees

and internally displaced persons. JRC's applied research represents some of the most cutting-edge innovations in the use of technology in conflict and emergencies.

The rationale for this innovation is that the European Commission and member states routinely monitor the impact of international crises to provide humanitarian support and post-crisis development programs. Detailed damage assessment is required to work out what is needed and to monitor reconstruction, if the EU's support is to be effective. Satellite imagery can help make damage assessments. The JRC has recently carried out damage assessments for Lebanon, Georgia, and Gaza.

In another project, the JRC has started to use very high-resolution satellite imagery to locate refugees and internally displaced people, in order to support UN decisions and humanitarian agencies. Mathematical algorithms automatically detect camp boundaries. Satellite pictures can then be used to measure the size of camps and estimate their total population. Maps and analysis produced from these satellite images are then passed on to humanitarian agencies. The JRC is drawing on this approach to create the first dataset on the total world population of refugees.

**“Many NGOs are increasingly turning to mobile phones, particularly the use of SMS, to take advantage of the relative resilience of local mobile networks.”**

### **FrontlineSMS: mobile-enabled tools**

Internet-based communication, including innovative mapping tools, has become essential for NGOs, especially in conflict and post-conflict areas. However, online communication is difficult when the necessary communication channels are cut off. Many NGOs are increasingly turning to mobile phones, particularly the use of SMS, to take advantage of the relative resilience of local mobile networks.

Frontline SMS is one of the leading free software platforms for SMS communication; other examples include EpiSurveyor and RapidSMS. The World Food Programme is developing innovative SMS platforms for post-conflict use. As noted in Section 4, TSF is working with FrontlineSMS, which has been used in multiple conflict and post-conflict settings such as Afghanistan, Iraq, Kenya, Madagascar, Pakistan, and Zimbabwe.

FrontlineSMS was founded by Ken Banks, a social anthropologist and social entrepreneur. He says, “FrontlineSMS provides the tools necessary for people to create their own projects that make a difference. It empowers innovators and organizers in the developing world to achieve their full potential through their own ingenuity.” It allows users to send text messages to groups of people and to receive messages on their mobile phones and computers.<sup>77</sup> The platform does not require

**FrontlineSMS interface and set-up**



Source: Kiwanja.net



an internet connection and can work with any plan on all GSM phones, modems, and networks. It has been designed to operate from a laptop so that it can be used during power outages or while traveling. The software becomes a communications hub where the numbers of incoming or outgoing SMS messages are saved. The product is scalable and can be used to reach large groups. It can be used worldwide by switching the SIM card.

The tool has many applications. It can be used for human rights monitoring, emergency alerts, field data collection, healthcare information requests, and public surveys, among many others. In short, the software can be used for almost anything that requires two-way communication between two parties, or between a central party and a crowd.

Here are a few examples of its use, out of many applications around the world:

Media Support Partnership Afghanistan (MSPA) is currently using FrontlineSMS in a UK-funded radio program for young people. One of the elements is a national competition for young people to produce short videos on their mobile phones. FrontlineSMS works as a central hub where listeners' views on a variety of topics are collected, enabling

an active dialogue on a variety of issues ranging from the activities of North Atlantic Treaty Organization (NATO) forces in the country to health services.<sup>78</sup> Young people in the conflict-ridden south of the country often feel isolated and trapped, and are eager to hear programs on issues important to them, and to contribute to the debate. About 84% of households have radios and 38% have televisions, so the program presents a tremendous opportunity for participation when many development activities have been suspended because of the security problems.

The Network of Mobile Election Monitors (NMEM) used FrontlineSMS during the most recent Nigerian elections. Text messages were used to feed people's observations to a central computer hub in order to avoid fraud. The information collected was then passed to other monitoring groups and authorities including the European Union. Then, observations coming from more than one volunteer were verified in order to ensure their accuracy. In this case, FrontlineSMS facilitated the crowdsourcing of information, thus making the election process even more transparent.<sup>79</sup>

Zimbabwean NGO Kubatana has been using FrontlineSMS since 2005. This grassroots organization reaches

out to civil society and was very active during the 2008 elections. They sent out election updates via SMS. In April, in the midst of the campaign, they asked their subscribers to text in what a free Zimbabwe would look like. Replies included:

*I desire everything to be in order - no corruption*

*Want stable currency and return to real money - not bearer cheques*

*Mainly I am concerned with return of the environment of happiness we used to have*

*We want the new govt to free the airwaves*

FrontlineSMS served as a repository of all this information.<sup>80</sup>

### **Money on mobiles: fundraising and mobile transactions**

The possibility of making financial transactions by mobile phone holds out the promise of long-term economic benefits, as well as emergency relief of the kind envisaged by TSF and put into practice in Kenya's post-election violence.

The Indian Ocean tsunami was a trigger for the use of mobiles in the aftermath of a disaster, as indeed it was for so many other technological innovations. One noteworthy development in the response to the tsunami was the potential of mobiles for fundraising. For example, in the United Kingdom, the mobile operators (3, Fresh, O2, Orange, T-Mobile, Tesco Mobile, Virgin Mobile, and Vodafone) provided a single, no-fee text number to accept donations by SMS to the Disasters Emergency Committee (the umbrella body for NGOs). The amount raised reached £1 million in a month. A Spanish campaign organized by television station Antena 2 reported raising €4.5 million in just two days.<sup>81</sup>

The use of SMS as a means of fundraising by the voluntary sector and NGOs has become widespread since then. A recent example is the earthquake that struck the Italian town of Aquila on 6 April 2009. Mobile operators Wind, Tre, and Vodafone made a single number available for SMS donations to earthquake victims, which raised a reported €18 million.

### **M-PESA use during Kenya's post-election violence**

Safaricom's M-PESA money transfer system has grown rapidly since its commercial launch just over two years ago. By mid-2009, it had nearly 7 million registered customers and 10,000 agents (Kenya's population is nearly 32 million). Since its launch, customers have transferred 177 billion Kenyan shillings (US\$2.3 billion), and in mid-2008, transfers were running at about 93 million shillings per day.

During the violence that followed the December 2007 election, the Irish charity Concern partnered with Safaricom to use M-PESA to transfer cash to nearly 600 households in the Kerio Valley, rather than undertaking a conventional food distribution. Households presenting identity documents were issued with an M-PESA enabled SIM card (usually given to the woman). The pilot scheme also gave households in the district 45 handsets and 60 solar chargers.

Altogether 2.88 million Kenyan shillings were distributed on two dates one month apart. Safaricom agents travelled from nearby towns with cash to make the distribution.

An evaluation of the pilot scheme noted some disadvantages. In particular, the cost of the handsets and chargers raised the overall costs to Concern, although the cash transfer costs were well below those of shipping in food.<sup>82</sup>

However, there were significant advantages. Safaricom took responsibility for the cash distribution, and it was easier to conceal a large sum of cash (which fits in a suitcase) than to guard a large food convoy. Importantly, the scheme had a positive impact on local markets, whereas food handouts often have a negative impact.

The study's author, Mike Brewin, also noted "It appears the pilot had a strong impact on beneficiary empowerment and sense of dignity...Concern places great value on the extent to which dignity and choice is upheld."

Although the use of mobile money transfers had pros and cons, this evaluation concludes that it is an attractive option—for donors and recipients—when there are reasonably well functioning local food markets in which the cash can be spent. The wider the existing mobile phone ownership, the better the value for money.

Credit: ROSHAN



**“Although there are still obstacles to widespread use of mobile transactions, the potential benefit is greatest for people who have the least alternative access to formal finance.”**

Mobile phones have also become an important channel for migrant workers sending remittances home, and the existence of this channel in normal times makes it easier to send emergency funds as well. A recent World Bank assessment concluded that, “Remittances increase in the aftermath of natural disasters in countries that have a larger number of migrants abroad.”<sup>83</sup>

Remittances from diaspora communities are all the more important when a disaster or conflict occurs in a poor country where few people have bank accounts or savings. The lack of access to financial services is one of the main barriers to financial security for poor people. They are locked into the informal cash economy and cannot save safely.<sup>84</sup>

Although there are still obstacles to widespread use of mobile transactions, the potential benefit is greatest for people who have the least alternative access to formal finance. Mobile infrastructure, including agents who are the

points of contact for putting cash in and taking it out, is much more widespread than banking infrastructure in poor countries.<sup>85</sup>

The introduction of a mobile transactions scheme called M-Paisa in Afghanistan, although in its early days, demonstrates some of the potential benefits. The

scheme is similar to the successful M-PESA scheme run by Safaricom in Kenya, on whose experience it was based (see box on a page 49).

Afghanistan has a population of about 32 million, more than half of them living in poverty, and half under the age of 15. It is dangerous, with limited infrastructure—roads, power, fixed telecommunications—and only rudimentary banking. There is a small microfinance industry with about 400,000 clients.

However, Afghanistan has nearly 6 million mobile phone subscribers, with numbers growing by over 100,000 a month. Five operators cover over 50% of the population. Roshan, the operator that won the second GSM license in the country in 2003 and now has 2.4 million subscribers, in 2009 launched the M-Paisa mobile money transfer service in partnership with Vodafone. At this early stage, M-Paisa has 64,000 active customers and 569 agents.

The scheme consists of several applications: loan repayments, peer-to-peer money transfer, airtime purchases, and salary payments. In the future, utility payments and payment for goods will be included.

Security is an enormous benefit of the M-Paisa scheme. An estimated US\$30 million in cash in transit was lost to robberies in Kabul in three months of 2009 alone. The heroin trade means there are large illicit money flows. Travel around the country is often deadly.

For example, Roshan is working with the Afghan government to set up salary payments for the police through the M-Paisa service. At present, when policemen are paid they travel home to transfer their salaries back to their families. Not only is there personal danger involved, it means there was inadequate police cover in areas of the country due to this travel. Policemen can in future receive their pay by M-Paisa and send it directly to their family.

M-Paisa is also in partnership with a microfinance institution, First MicroFinance Bank. Customers can repay their loans with M-Paisa, which has allowed the bank to expand its reach to potential customers. The reduction in costs has also made possible a reduction in interest rates charged—rates are expected to fall by about one-fifth when the system reaches a larger scale.

### Job-matching schemes: Souktel in Gaza and LabourNet in Bangalore

After access to finance, the opportunity to build sustainable livelihoods is the key to reconstructing communities affected by disasters or conflicts. Two new technologies can combine to create the scope for matching people seeking work with employment opportunities: an internet database operated by an employment agency or NGO; and mobile phones accessed by individuals seeking work.

#### Souktel

Souktel is a mobile service that uses text messages for two purposes: to connect young people with job opportunities (*JobMatch*) and to connect humanitarian and aid agencies with people who need assistance (*AidLink*) and vice versa.<sup>86</sup> Created in 2005, it operates in the West Bank, Gaza, Somaliland, and Iraq. Souktel's bulk SMS services can be managed from the most basic handsets.

*AidLink* allows humanitarian and aid agencies to send SMS alerts to customized lists of individuals. People receive personalized messages about emergency aid and other services in their area. When the conflict in Gaza erupted in late December 2008, internet service providers as well as

#### Jobmatch Program

I'm a Job Seeker | I'm an Employer

### Step 1: Sign Up



Type "Register" and send by SMS to Souktel's sign-up phone number. Get added to the Souktel job database and start creating your mini-CV.

Welcome to JobMatch.  
You are now registered.  
Text "ok" to start uploading your mini-CV.

Step 1 | Step 2 | Step 3 | Step 4

I'm a Job Seeker | I'm an Employer

### Step 2: Create a Mini-CV



Through a series of question-and-answer messages, create a mini-CV that includes data on your age, location, skills, education level, and career interests.

Mini-CV

- Young Man seeks
- Farm job
- In Jenni
- Has High School Ed.
- Can work full time, all weekdays
- Skills in making machine operation.
- Call 0599404000 to hire me.

Step 1 | Step 2 | Step 3 | Step 4

I'm a Job Seeker | I'm an Employer

### Step 3: Get Matched with a Job



At any time, text "Match Me" to Souktel. Get an instant list of jobs that match your mini-CV data, with contact numbers.

Top 3 Jobs matching your mini-CV

- 1-0599400400
- 2-0599500500
- 3-0599600600

Call 0599400400: Employer seeks staff for farm job in Jenni, Need High School Ed. Skills in doing making machine operation. Work is full time, all weekdays.

Step 1 | Step 2 | Step 3 | Step 4

I'm a Job Seeker | I'm an Employer

### Step 4: Set Up an Interview



Contact Employer to set up a job interview, by calling the number listed in the match results.

Employer



Step 1 | Step 2 | Step 3 | Step 4

Source: Souktel JobMatch

landlines were down. Mobile telephony was the only medium that was somewhat reliable.<sup>87</sup>

Several relief agencies that were already partnering with SoukTel established mobile-based data collection and alert systems during the conflict. The Red Crescent created alert groups for each blood type and ran a blood registry.<sup>88</sup> Within 24 hours, Ushahidi and Al-Jazeera set up a system in which individuals, reporters, and relief workers could report incidents.<sup>89</sup> Ushahidi provided the geo-location/mapping portion of the system, and SoukTel provided the SMS gateway for people sending eyewitness accounts.<sup>90</sup> In other examples, MercyCorps used a polling mechanism to determine how much food remained in each home, and what was needed urgently, while CHF International organized the distribution of medical supplies via SMS.<sup>91</sup> Each SMS costs 8 cents (US) to send. Many agencies have set up reverse charges, and in other cases, users are reimbursed with airtime. However, in some cases individuals have had to pay the costs.<sup>92</sup>

SoukTel's *JobMatch* allows young people to create an SMS mini-curriculum vitae (CV). The CV is sent from a mobile phone to a central database. Employers can also design SMS job advertisements. The matching occurs automatically once information is uploaded into the system's main database. Once a match is found, the system sends alerts to either party and if employers are interested, job seekers will receive an SMS requesting them to attend an interview. SoukTel launched this service in the West Bank in 2005 and subsequently in Somaliland.<sup>93</sup>

With about 82% of West Bank residents using mobile phones, this seemed an obvious way to increase access to job information.<sup>94</sup> *JobMatch* started with a focus on recent college graduates and employers seeking skilled people, using existing university databases of job seekers, but it will scale up to the much larger potential market for unskilled work in the near future.

Between 40 and 60 people currently find jobs each month, at an average salary of US\$500 a month. Employ-



ers claim that their hiring time has been cut in half. The individuals who subscribe to *JobMatch* report that, on average, they find jobs within one to two weeks. About 9 out of 10 applicants accept the jobs they are offered through the service. There are currently (mid-2009) 4,234 job seekers using the service.

### LabourNet, Bangalore

Bangalore's information technology boom has led to a construction boom, with a large and mainly unregulated and exploitative labor market for unskilled workers. In most construction projects, a Maistri (a small subcontractor or independent foreman) brings together the team of workers.

The LabourNet initiative was started in 2004 by MAYA (Movement for Alternatives and Youth Awareness), a non-profit agency based in Bangalore. It has created a network of previously informal workers for the construction, housekeeping, gardening, and transportation sectors.

Potential clients call LabourNet's call center where staff can use the database to match clients needs with workers with appropriate skills and agree upon fees. Clients can access the worker's individual history and employment record.

All workers registering with LabourNet require a mobile phone that they can be reached with if there is work for them. As they typically live in the urban slums, they cannot be reached in any other way. Workers get a formal identity card they can use in many other situations. The tracking of their performance can help them negotiate higher pay over time. In addition, registered workers can open their own bank accounts, usually an extremely difficult task for laborers of this kind. All registered workers get accident insurance and can opt to buy health insurance—a substantial source of security in the vulnerable world that most informal workers inhabit.

The number of LabourNet registrations has more than doubled each year since the initiative started in 2004, reaching 5,452 in 2008.<sup>95</sup>

In both examples, Souktel's *JobMatch* and LabourNet, improved information flows are improving people's living standards during and after times of conflict. Technology enables development and reconstruction by stimulating the economy through job creation and through quick and transparent communication. It acts as a gateway between crisis and development, becoming a powerful tool for reconstruction.

### Conclusions

*The need for access to communications and information does not end when the immediate aftermath of a crisis gives way to the long-term challenge of reconstruction. On the contrary, information is so essential to economic development that innovations in technologies used at earlier stages can and should be leveraged to serve these longer-term purposes. Agencies developing tools for use in disaster preparedness and emergency relief should include consideration of their potential for communities' post-disaster or post-conflict needs.*

**“ Investment in communications for developmental purposes, including access to radios, mobile phones, and the internet, will pay dividends in post-crisis reconstruction—just as it helps in terms of preparedness for emergencies. ”**

The opportunities for doing so are greater the more the necessary communications infrastructure is in place before disaster strikes. There is a growing body of evidence on the favorable impacts of communication technologies on economic development. Investment in communications for developmental purposes, including access to radios, mobile phones, and the internet, will pay dividends in post-crisis reconstruction—just as it helps in terms of preparedness for emergencies.

For developing country governments and aid donors, the challenge is to ensure that communications infrastructure and access is enhanced, among all the competing demands for funds. Communications is not a luxury that can be postponed, but an essential tool for individuals and organizations.

As with the issue of preparedness, more progress is needed to ensure vulnerable communities can access the communications and the information they need. *NGOs and humanitarian agencies should include as part of their programs the use of traditional and new media to communicate with the communities they serve.*

There is also much potential for new development tools. Emerging technologies and applications offer the potential for greater effectiveness in development assistance programs.