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American
Red Cross

FIRE SENSORS FOR SAFER URBAN COMMUNITIES



FIRE CLUB **BUSINESS PLAN**

This document is one of the outcomes of the Fire Sensors for Safer Urban Communities project (phase I).

Between August–December 2015, frog applied human centered design and market analysis to explore possible applications of the fire sensor technology in the informal settlements, and elaborated the following Fire Club Business Plan based on the insights that emerged from working with the communities of Khayelitsha and Mukuru, together with the South African Red Cross Society, the Kenyan Red Cross Society, and many other partners and local stakeholders.

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FIRE SENSORS FOR SAFER URBAN COMMUNITIES



FIRE CLUB **BUSINESS PLAN**

January 2016

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VOCABULARY



The following report will frequently use a few key terms referring to specific concepts which are unique to the context and setting in which this business plan takes place. They are defined below:

Informal Settlement – also known as shantytowns, favelas, and slums, informal settlements are densely populated collections of informal housing, characterized by insecure land tenure, lack of access to basic services and overall marginalisation from formal economies. “Informal settlements” and “slums” are used interchangeably in this report although not all slums are informal settlements.

Fire Sensor – a version of a smoke detector adapted for usage in the informal settlements. Fire sensors utilize a rate of heat rise detector, which is more precise in avoiding fires in informal settlements, since traditional smoke detectors are susceptible to false alarms from the abundant usage of smoke in everyday life.

Micropreneur – the owner and operator of a micro business. This prevailing form of business is small and informal, servicing the local community, employing various informal techniques such as savings groups and interpersonal loans to manage financial risk.

Humanitarian Organisation – the non-governmental organisation who is implementing the business plan that follows.

Community – A community is a self-organising group of neighboring residents who meet regularly to address issues facing people living in the area. They pool resources, enforce social dynamics and lead planning. They tackle issues that are often the result of the lack of public services that are normally provided by governments or efficient markets. They are the customers in this business plan. In Nairobi, they are known as clusters.

Community Leader – Within the aforementioned communities, community leaders are elected individuals who lead the groups and interface with local government officials assigned to managing the slum in which their community resides.



Problem area



The accelerating urbanisation of the developing world has resulted in 825 million people globally living in informal settlements within and surrounding today's cities. Within these settlements, the mixture of flammable structures, extreme density, and common use of open flames creates environments with high risk exposure to fires that spread rapidly, potentially destroying the livelihoods of thousands of families in a matter of minutes.

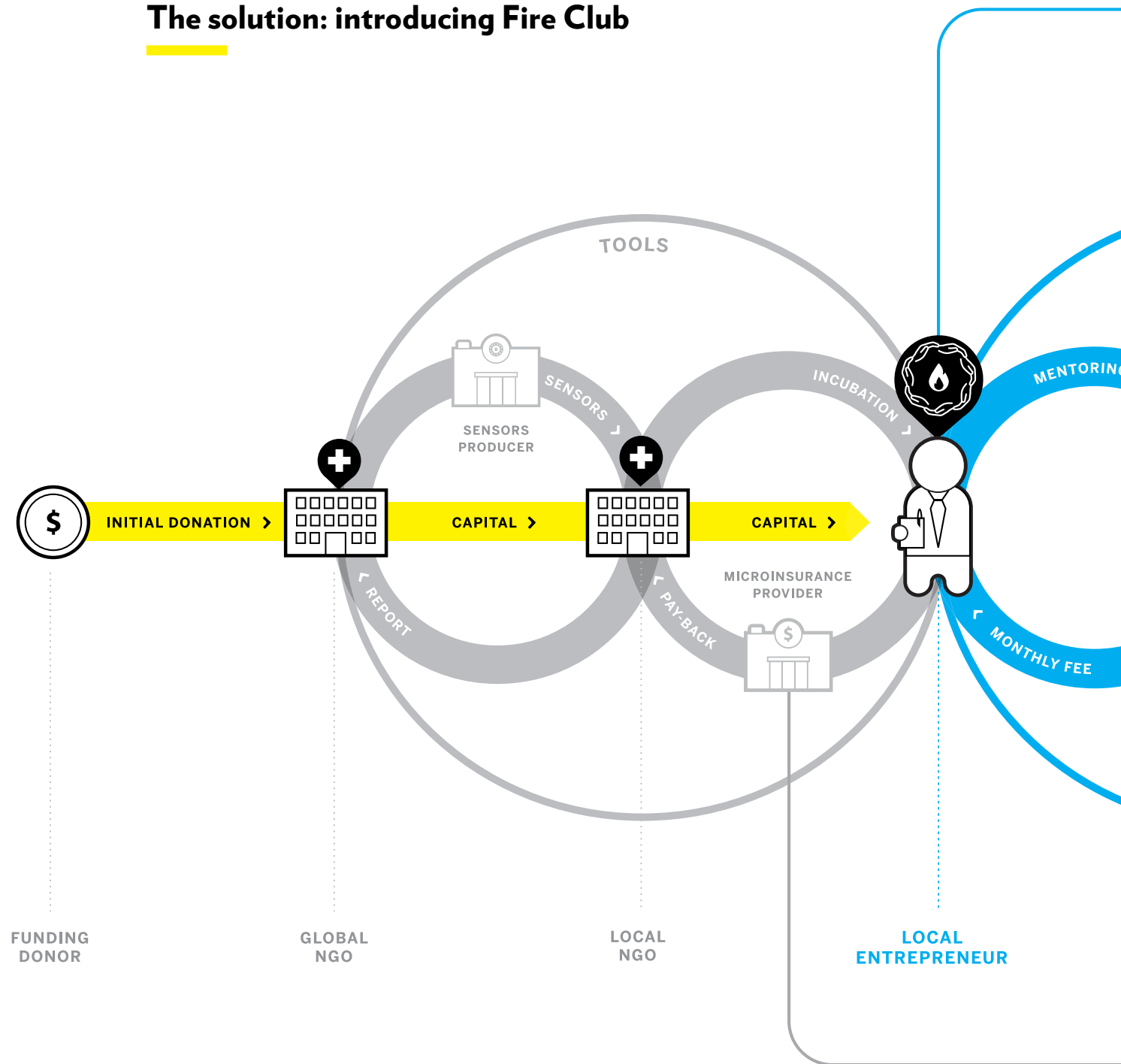
The population living in informal settlements is often 10x-20x more at risk of fire than households in the formal cities*, and yet have much less at their disposal to protect them from the risk.

Traditionally, this service is filled by public fire fighting services. In this context, however, they are ill-suited to effectively respond to the devastating speed of slum fires and they are commonly antagonized by communities inside the informal settlements. As a result, communities often bear the significant risk of losing their property to a fire.

*Analysis based on FEMA stats (<https://www.usfa.fema.gov/data/statistics/>) & Cape Town Informal Settlements Fire Reports

01. EXECUTIVE SUMMARY

The solution: introducing Fire Club



COMMUNITY

COMMUNITY FIRE WARDEN

RESPONSE VOLUNTEERS

COMMUNITY LEADER

FIRE & DISASTER SERVICES

EDUCATION

COMMUNITY FIRE RESPONSE

FIRE RESPONSE

INFORMATION

HELP

TRUST

MONTHLY FEE

SENSITIZATION

The solution: introducing Fire Club

The service provides essential tools in prevention, detection, response and rebuilding related to fire events.

At the center of the fire club service is the installation of a network of fire sensors that allow the entire community to be alerted of fire threats early enough to stop them. This is complemented by provision of response tools, and social education support, creating cohesion around an effective response.

The service is delivered to the slums at the margin of the cities by Humanitarian organisations, who incubate local entrepreneurs with skills and capital to distribute the service, while the humanitarian organisation can focus on nurturing partnerships and supporting the entrepreneur indirectly.

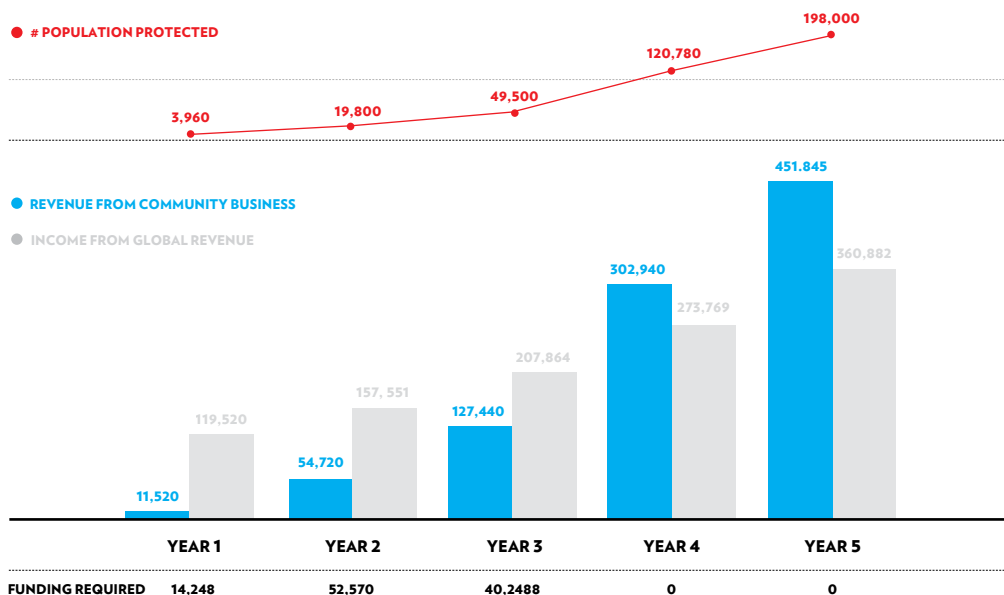
Fire Club business model is designed for base of the pyramid market, subsidizing the costs to provide value at a price that fits the lifestyle of the target consumer. This is accomplished through a network of partnerships & keeping operation costs low by distributing through community level franchisees/micropreneurs.

01. EXECUTIVE SUMMARY

Expected Outcomes and Strategic Fit

The fire club solution improves the safety and livelihood of urban communities such as informal settlements and fits into the UN Milenium Development Goal of achieving significant improvement in the lives of 100 million slum-dwellers across the globe.

A single organisation intending to implement this business plan has the opportunity to improve the livelihoods 850,000 households over a 10 year period. This plan assumes one organisation addresses 8 cities over a 10 year period. However, it is written as an open-source business plan that other organisations are encouraged to adopt so that the intervention can scale to all large metropolitan areas with significant informal settlement populations. With this level of collaboration, the fire club presents the opportunity to make the lives of up to 2-3 million people safer against the devastating impact of shack fires globally. The combination of community-level and global revenue streams provide a dynamic source of funding for growth while recovering initial capital donation and creating income for the micropreneurs distributing the service. The business will be run as non-profit, with all revenue in excess of cost going towards growth and micropreneur incentive. Expected outcomes and financial performance is summarized in the chart below:



Keys to success

The fire club service is a solution that can have a significant impact, however, in order to realise the full potential of the opportunity, the humanitarian organisation taking on this business plan will need to demonstrate excellence in the following keys to success: network of partnerships, development of local political support, and the incubation of local entrepreneurs to carry the operations over the long-run.

TOP-UP
DRY CLEANERS
MACHINE WASH
& IRONING

B/015



Fire Club



02

SERVICE DESCRIPTION



TRAINING



RESPONSE TEAM



FIRE SENSOR



FIGHTING TOOLS



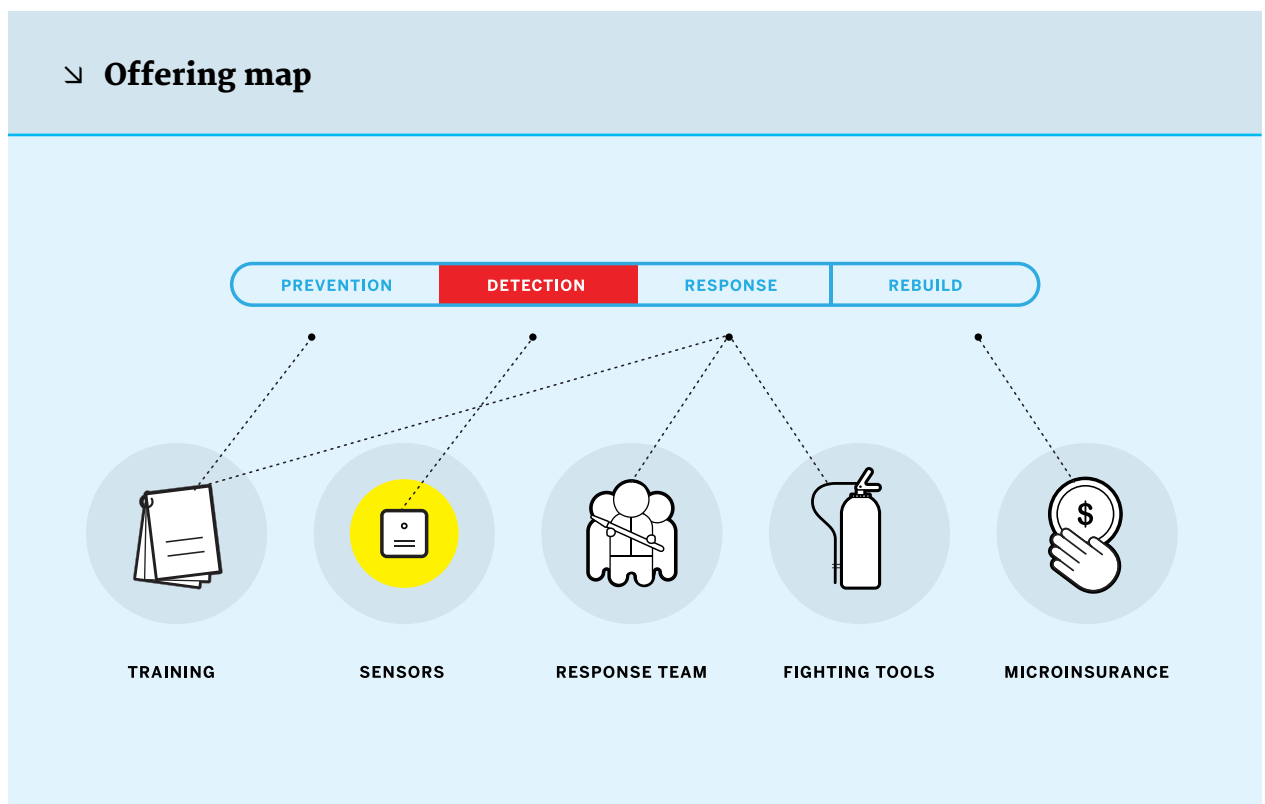
INSURANCE

02.1

Service model

Communities that subscribe to the Fire Club will receive a bundle of fire safety services designed to address fire prevention, fire detection, fire response and rebuilding capital in case of a destructive fire.

Offering map



Fire prevention: a community fire warden will be established in subscribing communities. The warden receives a stipend to provide periodic fire safety education and house inspections to better avoid fire before it happens.

Fire detection: the sensor system will be installed for the whole community, with the process led by the fire warden, who can then manage maintenance with the fire club manager moving forward.

Fire response: the subscription will also provide access to fire fighting tools, and in some cases, a community fire station, sponsored by partners of the initiative. The Fire Warden will protect access to and organize use of resources in case of fire.

Fire rebuild: Through a partnership with local microinsurance company, subscribers will have access to funds equal to 100 USD if their assets are destroyed in a fire.

The service delivery is coordinated by two key figures: the fire club manager and the fire warden (ref. chapter 4 – Operations). In general, the Fire Club manager oversees all accounts and local partnerships while the Warden is empowered to organize fire assets and response on the community level.

02.2

Value proposition

The Fire Club reduces the risk and impact of slum fires for entire communities by combining a community-level sensor system with education, tools and microinsurance services, designed and priced specifically for communities in the informal settlements.

Fires in the informal settlements are subject to a set of risk factors unique to their position such as the quick spread of flames due to housing density and higher incidence of fire due to the common use of open flames. Additionally, municipal fire departments are ineffective in protecting these communities due to their structural characteristics (no roads, no access to water supply). Since the fire departments cannot address these locations, Fire Club allows communities to build this capacity internally, reducing the incidence of a large-scale slum fire, improving community response, and lessening the impact, should a fire event occur.

By protecting against all stages of fire events: prevention, detection, response and rebuilding, the Fire Club is a complete offering against the fire risk, covering the breadth of the customer need, currently unmet in the informal settlement context.

In particular, we can distinguish two main values communities and individuals derive from the Fire Club service. On one hand Fire Club socially raises awareness of the problem of fire within the communities, triggering conversations around it, and making each individual responsible to change the overall situation. In this sense the Fire Club can be seen as a driver for behavior change at a community level. On the other hand, the application of the sensors, together with the fighting tools and skills acquired by the community members, and the microinsurance offering, will reduce the overall impact of fire in terms of number of households affected and personal losses.

02.3

Role of humanitarian organizations

Humanitarian organizations are uniquely positioned to facilitate this value proposition through their capability of developing a channel to market without the pressure of financial profitability.

Formal organizations struggle addressing the informal economy, however humanitarian organizations such as the Red Cross have an advantage in developing trust with local stakeholders such as political leaders, community groups and other NGOs. With the lack of formal channels to market, these relationships become essential in interacting with potential customers in the informal settlements.

Beyond community-level relationships, addressing this market requires partnerships with formal companies. Since this intervention relies on non-profit behavior of a network of partners, humanitarian organisations have the ethos to direct and assemble this network.

Given these conditions, humanitarian organisations are unlikely to be at risk from competition from private companies. Firms who provide similar services to adjacent lower-middle income markets (such as KK security in Nairobi) are unable to serve this market because their assets are designed for formal settlements as well as the pressure to achieve and sustain financial profitability, which is only possible under rare conditions, which do not exist in this market scenario.

However, humanitarian organisations are limited in commercial operations they are able to pursue in communities they are aiding. Therefore, this business plan focuses on applying their channel advantage to facilitate and complement a franchised business for local entrepreneurs to manage the commercial operations.

02.4

Distribution model

The Fire Club service will be distributed through a franchising agreement between the humanitarian organisation and a local entrepreneur who is interested in starting his/her own business.

The local entrepreneur will become a Fire Club Manager, a figure who receives start up capital from the humanitarian organisation, and support in terms of materials and training to pitch the service to various communities. They will lead the marketing process and account management process moving forward, slowly paying back a portion of the start up capital over time (ref. section 5.2).

02.5

Revenue model

The Revenue model is split into two parts: a subscription at the community level, and a buy one give one partnership at the global level with a formal private company.

The revenue model exists for two reasons: 1, to help support the costs of the service for improved sustainability and scalability and 2. to ensure a dynamic source of funding required to maintain ICT interventions (computer for every child case).

Base of Pyramid Community Level Subscription

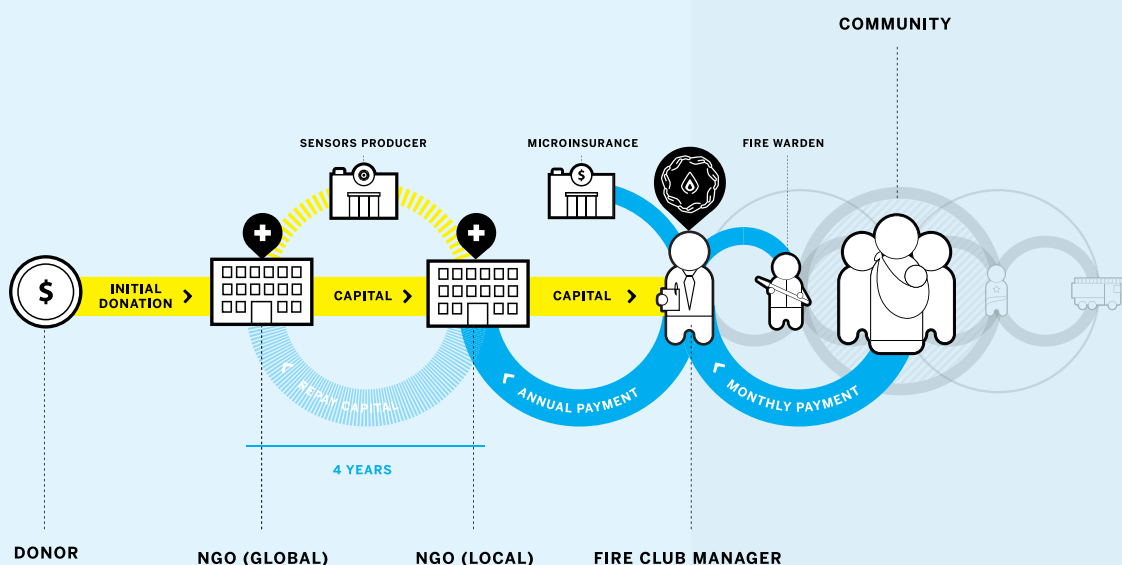
The service will be provided to communities within the informal settlements who subscribe for a small monthly payment made as a group, collected from each household. The fire club manager will own this aspect as their own business, collecting subscription fees and managing local budget, repaying the Red Cross for initial capital annually based on sales for that year. In the process, the fire club manager will retain net income to incentivize the growth of the business.

Buy 1 Give 1 Cross Subsidisation

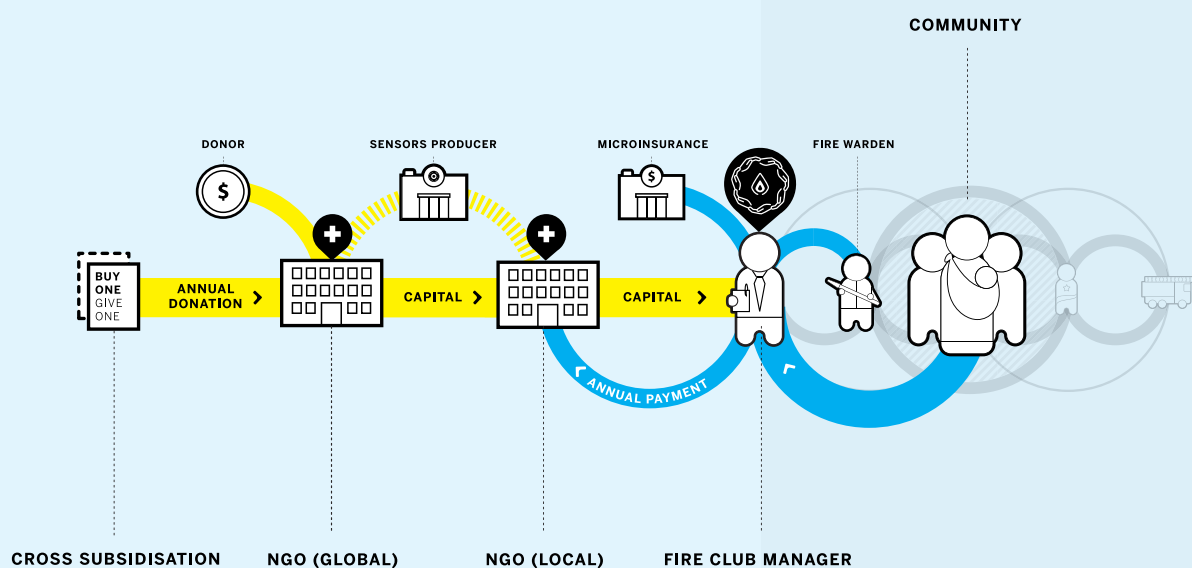
The subscription revenue model will be complemented by a subsidisation partnership that provides revenue through a buy 1, give 1 business model directed at formal economies in developed countries. The buy 1 give 1 partner will donate a small percentage of the sale of an existing product to the fire club project. For example, a partnership with Halo would see a small percentage (,1%) of each smart thermostat sold donated to the fire club. This revenue will reduce pressure on community subscriptions while providing a stronger engine for growth and scale.

The balance of these two revenue generating activities will be adjusted depending on market reception in each situation. An active subscription market in the informal settlements will reduce need for cross-subsidisation while a strong partnership with a buy 1 give 1 partner can significantly reduce price on the community level.

Base of pyramid community level subscription



Buy 1 Give 1 cross subsidisation



02.6

Costs of the service

Some aspects of the service will be financed by the fire club and paid off as part of the community-level business, while other costs will be absorbed and provided by service-level partners.

Sensor systems will be purchased from Lumkani. As of December 2015, the quoted price of the sensor system per unit is about 11 USD for an outright purchase (including the motherboards needed for each installation). The fire sensor systems will be owned by the humanitarian organisation, leased to communities, and depreciated as a cost over a useful life of 5 years.

Microinsurance will be provided by a company active in the settlements. The cost per year is estimated at 2 USD / household or 100 USD / community. The policy will pay out \$100 USD per household in the event of a fire that destroys the shack.

Fire fighting tools will be provided at no financial cost through a partnership within each active city. Partners will become associated with the fire club project and will have the option to brand the tools being provided (logo placed on fire extinguisher, or on community fire station)

Fire education of the fire warden will be provided by the Red Cross and local NGOs/fire education partners. Costs will be included in the operational costs of each organisation and should be kept low through partnerships with NGOs and local fire departments.

The activities of the **Fire Warden** will be rewarded with a small stipend from the community-level business model. They will receive \$75 annually for their activities. The activities should take no more than 2 working days per month.



COMMUNITY



COMMUNITY



COMMUNITY

VILLAGE

03

MARKET RESEARCH & MARKETING STRATEGY



COMMUNITY

VILLAGE



COMMUNITY

03.1

The need for fire safety services

Given the high risk for catastrophic fire events, the market for fire safety services is underserved.

The typical public service does not suit the demand. Even in situations where formal fire services attempt to serve informal settlements, they struggle due to their location, access to the fire, location of the fire as well as the characteristics of their fire fighting assets. Trucks are too large, with few sources of water to fight fires. As a result, formal fire services can become easily antagonized in attempting to serve the informal settlements, leading to a wider gap in safety services.

The urban populations living in informal settlements is set to grow consistently in the next decades. This sets the stage for a significant opportunity for micropreneurs to fill this gap with an offering tailored to the dynamics of the informal settlements.

03.2

Historical background

Although fire safety services are generally regarded as a public good, periods of urbanization throughout history have seen the emergence of private fire services as cities were slow to develop public services (*Nairobi Fire Brigade pre-1905, Hand in Hand Fire & Life Company - London 18th century, Informal organisations- Colonial America 18th century*).

The scenarios faced in the informal settlements are distant in terms of time from these cases, however, they share certain key characteristics, namely, the usage of open flames in everyday life, the flammability of housing, lack of education regarding fire risk/response, and narrow roads unserviceable by fire fighting vehicles. Additionally, these private companies have often emerged alongside the birth of fire insurance companies (US & UK) to protect the assets covered from extensive fires.

Contemporary case studies can also be found in cities where fire services are inefficient such as present day Nairobi. For example, security companies (such as KK Security) are providing fire protection services with investments in innovative fire fighting vehicles and other technology.

03.3

Market size

The serviceable market focuses on cities with enough informal settlement density to support a reasonable customer base, assuming a slow growth rate due to the novelty of the offering.

This intervention and business model is designed specifically for informal settlements characterized by a high concentration of shacks that are at risk of quickly spreading fires. The technology itself has been engineered to address the dynamics of fire unique to this type of environment. The UN estimates that 825 million people live in this type of environment globally.

Addressing base of the pyramid markets such as informal settlements requires a high volume of customers since margins will be under pressure of low prices. Since only one subscription can be bought per household, the total addressable market focuses on cities with enough informal settlement density to support a reasonable customer base, assuming a slow growth rate due to the novelty of the offering.

We estimate that cities with an informal settlement population of at least 257,000 people should be targeted in order to earn enough to pay back the initial capital and allow the micropreneur to benefit. This analysis contains the assumption that we should not expect a penetration rate of more than 5% in any given market. In addition, only settlements with average earnings equal to or above \$1.50/day should be considered as those in extreme poverty will not be in a position to adopt the technology through the business model. We estimate there to be 65–80

million people globally living in the addressable market.

Within the addressable market, serviceable markets must also meet three other criteria: There must be the presence of a large NGO (not necessarily the Red Cross) working on the ground in the slums, a precedence of fire issues in the community, and sufficient political stability that allows residents to consider second tier safety issues such as fire safety.

When considering this criteria, we arrive at a serviceable market of about 40–50 million globally. Based on UN estimates, Informal settlements are growing at a rate of 3%, so the market is set to grow to 60 million in the next ten years.

➤ Market size

TOTAL URBAN INFORMAL SETTLEMENTS

825 MILLION

SETTLEMENTS
DENSE ENOUGH

Non dense enough

SETTLEMENTS AVERAGE EARNINGS
> USD 1.5 PER DAY

< 1.5\$ per day

TOTAL ADDRESSABLE MARKET

65-80 MILLION

PRESENCE OF LARGE
HUMANITARIAN ORGANIZATIONS

No NGO/Red Cross chapter

PRESENCE OF
FIRE ISSUES

No fire episodes reported in recent history

POLITICAL
STABILITY

Unstable political situation

SERVICEABLE MARKET

40-50 MILLION

03.4

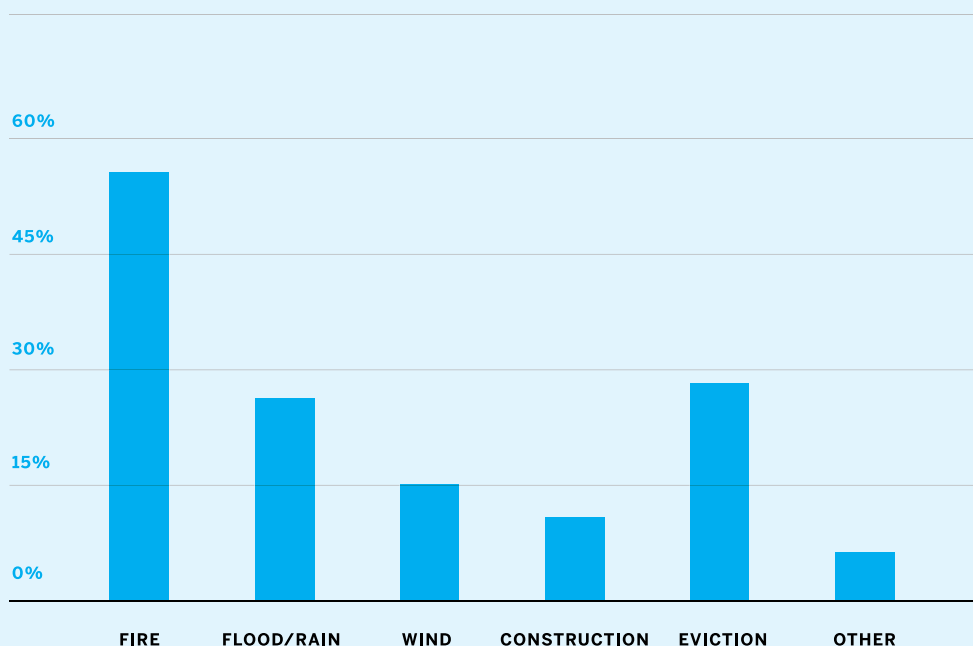
Consumer insights

To define the marketing strategy, in-field user research was conducted in informal settlements in Nairobi and Cape Town. The following customer profiling provides background for the marketing strategy that follows in section 3.5.

The graph below shows distribution of perceived risks to property in an informal settlement.

Fire is perceived as the biggest risk to overall property owned (it's infrequent but devastating)

▾ Distribution of perceived risks to property in an informal settlement



Source: FSDK household survey in Kenya 2013

➤ Financial fire risk profile of average household (informal settlement)

Khayelitsha + Mukuru

	MEDIAN	RANGE
TOTAL ASSETS (including housing structure)	\$250	\$100 - 500
DAILY INCOME	\$2.00	\$1 - \$25
RISK OF FIRE STARTING IN THEIR HOUSE THIS YEAR	.6%	.5% - 2%
RISK OF FIRE SPREADING TO THEIR HOUSE THIS YEAR	2%	2%
RISK OF BEING AFFECTED BY FIRE IN NEXT 10 YEARS	18 years	18 years
LENLGT OF STAY IN THE HOUSE	9 years	1-37 years

Sources: FSDK risk assessment, APA Insurance Company, Cape Town Fire Department, frog analysis & quant survey

Ethnographic research studies such as in-depth interviews and community workshops provided additional consumer insights:

- anxiety/fear about fire tends to be higher than the actual risk estimated by frog research as well as secondary research from private companies and government;
- perceived Value of Total Assets varies significantly towards both undervaluation and overvaluation. This is driven by emotional attitudes towards housing and assets;
- protecting property at a low monthly price could drive demand in the settlements;
- community leadership can provide pressure in the social setting to drive adoption across the entire neighborhood.
- preference for mobile / electronic payment is very strong >90% across both geographies (survey);
- fire fighting tools have been shown to be the most commonly desired aspect of the service offering across both locations;The addition of microinsurance positively affected

willingness to pay research in quantitative surveys (Cape Town) and on-site visits (Nairobi);

- personal safety is strong desire across all threats from robbery to violence to fire and strategies that cover more of the threats will be more appealing
- awareness about fire detection technology is close to zero. Much effort will be needed to inform communities about potential benefits. Adoption will be slow.

These consumer insights suggest that financial behaviors and end-user perceptions of fire risk could create demand for the fire club service with the appropriate marketing strategy. However, the difficulty of selling fire safety products and the barrier of creating consensus for the whole community demand a conservative market penetration rate. Analysis of private fire services in domestic and international markets estimates a 5% penetration rate for similar products and services.

Marketing strategy

The following guidelines reflect the consumer insights and market research to form the marketing strategy behind the Fire Club service:

The customer is the community. Treating the community as a customer is a way to cover a geographical area (enhancing the chances to prevent the spread of a fire). Other benefits include the aggregation of many transactions into one transaction and an easier adoption process that leverages the peer group dynamics. Creating a peer group has also shown to make new product adoption easier. Consensus must be reached on the community level to begin the subscription.

Pricing strategy is a monthly subscription paid off over time reflect the volatile cash flow and generally low income. To calculate price point, this report employed a “cost-plus” method, first calculating costs of the service, and then factoring the smallest margin possible to cover operating expenses and create financial incentive for the entrepreneur.

The financial indications in this business plan are based on a **price point of \$1 per month per household**. Given purchasing power in the informal settlements, this is still relatively high, and price lowering initiatives, such as a strong buy 1 give 1 partnership, could help reducing the price further, making the service more accessible to more communities. Furthermore, an 80% payment rate per community has been used to account for months in which the full subscription payment cannot be made.

Establishing a distribution channel for this service will be a joint effort of a network of partnerships to get the franchised entrepreneur in touch with community leaders, who can then mobilise community members to potentially drive consensus on subscribing. This will require NGO partners establishing (or who have historically established) trust with political leadership to set the path for the local entrepreneurs’ corresponding distribution activities.

The service will be promoted as a all-in-one fire protection for communities interested in protecting themselves. The humanitarian organisation leading the initiative can provide marketing materials for the fire club manager to utilise. The fire club manager will be responsible for promotion decisions, with the support of the humanitarian organisation. This allows the person on the ground to best read the environment and plan promotional activities as they see fit.

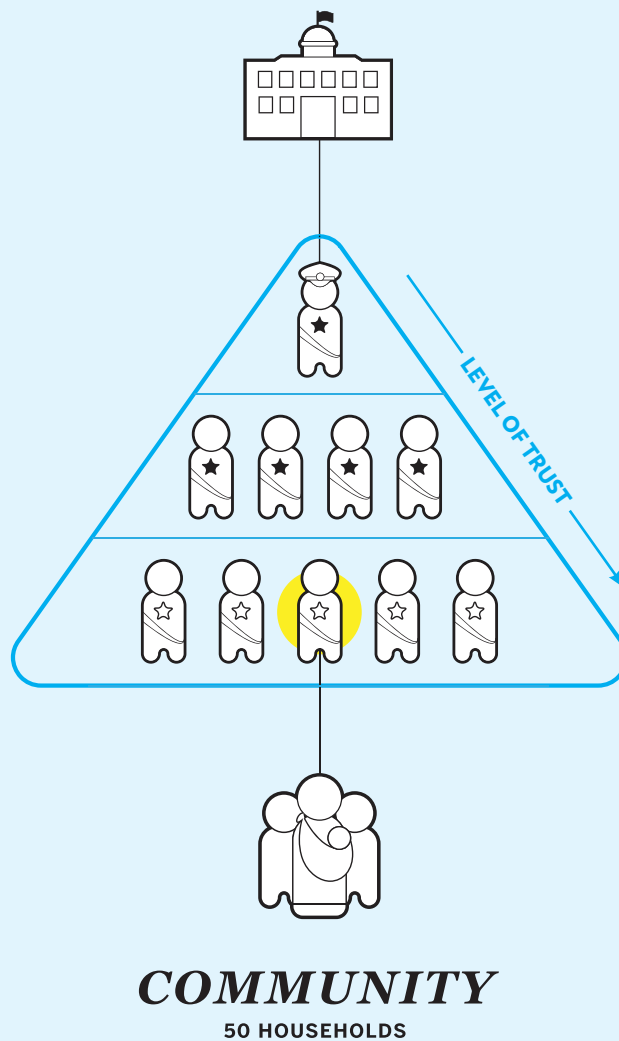
Recommended promotional activities based on research insights include:

1) Fire emblem – The fire club emblem could be applied on the outside of subscribing houses to visually communicate to the rest of the community that this house is “protected.” This will spark curiosity from potential new communities and also serve as a form of peer pressure to subscribe to the service.

2) Radio advertisements – Radios are more widely used than computers and televisions (SOURCE). Residents of informal settlements often learn about products from the media, and having an advertisement is a quick way to “legitimize” a new product. Throughout the research conducted, the question often arose, “if this thing is so good, then why isn’t it on the radio or television?”.

➤ Anatomy of a community

Kenyan model



COUNTY GOVERNMENT

No physical presence in the informal settlements, but appoints the chief as a proxy.

CHIEF

Representative of the county government at the location level, for many different communities.

"VILLAGE" ELDERS

Community leaders who are responsible for multiple clusters.

COMMUNITY LEADERS

Cluster heads, representing the voice of their community.

COMMUNITY

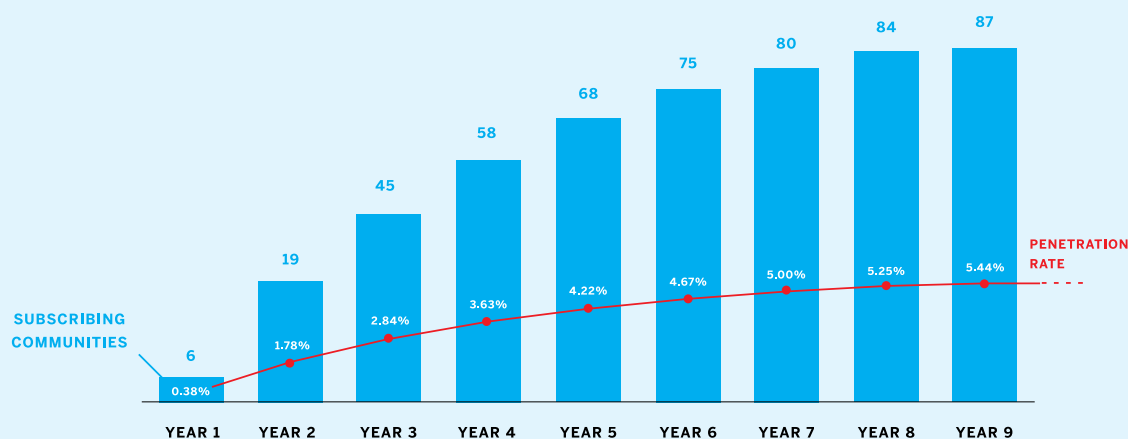
Households that are part of the same physical cluster. Collective needs are addressed during the community meetings.

03.6

Sales target

In the absence of precedent market, and public data on similar cases, sales goals are identified based on the minimum necessary to sustain the business while achieving a conservative penetration rate.

Penetration rate



*Estimation of penetration rate is based on slum population of 257K with about 1500 active communities (3.3 people per household, 50 households per community=1600 communities)

**Assumes 25% of customers drop off every year

Due to necessary education and process of consensus building within the peer group, lead time for sales will be two weeks at a minimum, and potentially months. Therefore, in year 1, we can expect 1 sale every 2 months. During the pilot in Cape Town, demand was seen to increase significantly once initial communities were active, to the point where the local NGO was receiving requests for demos from other groups. After the first year, sales estimates increase to 2 communities/month considering greater awareness and the development of a customer pipeline.

In the lack of fire events, some customers will perceive the subscription as ineffective. A churn rate of 25% has been factored into the calculation of subscription revenue. The 25% is connected to the average number of deactivated smoke alarms in developed economies.

▾ Income statement for community level revenue model

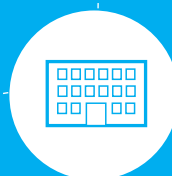
	YEAR 1	YEAR 2	YEAR 3
NUMBER OF COMMUNITIES	6	29	45
# TOTAL REGISTRATION	300	1,425	2,269
NET SALES REVENUE	\$2,880	\$13,680	\$21,780
SENSOR SYSTEM COST	\$680	\$3,232	\$5,146
TELCOM COST	\$0	\$0	\$0
BATTERIES COST	\$0	\$0	\$75
FIRE FIGHTING TOOLS COST	\$0	\$0	\$0
FIRE WARDENS COST	\$450	\$2,138	\$3,403
MICROINSURANCE PREMIUMS	\$600	\$2,850	\$4,538
SALES & ADMIN EXPENSES	\$160	\$385	\$554
NET INCOME	\$1,090	\$5,176	\$8,165

04

SERVICE OPERATIONS



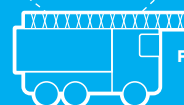
GLOBAL NGO



LOCAL NGO



SENSOR PRODUCER



FIRE BRIGADES



FIRE CLUB MANAGER



FIRE WARDEN



MICROINSURANCE

04.1

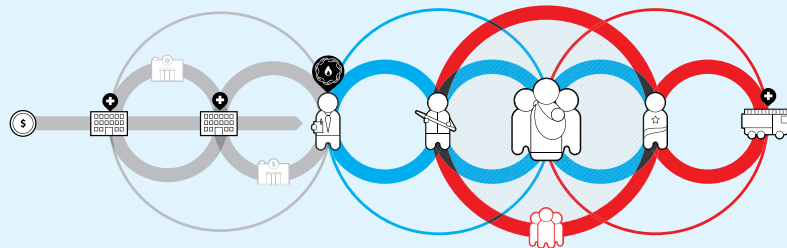
An open source business plan

Any of the following operational processes, reflecting the fire club business, can be adopted and executed by any other organisation who is interested in making an impact on fire safety in informal settlements.

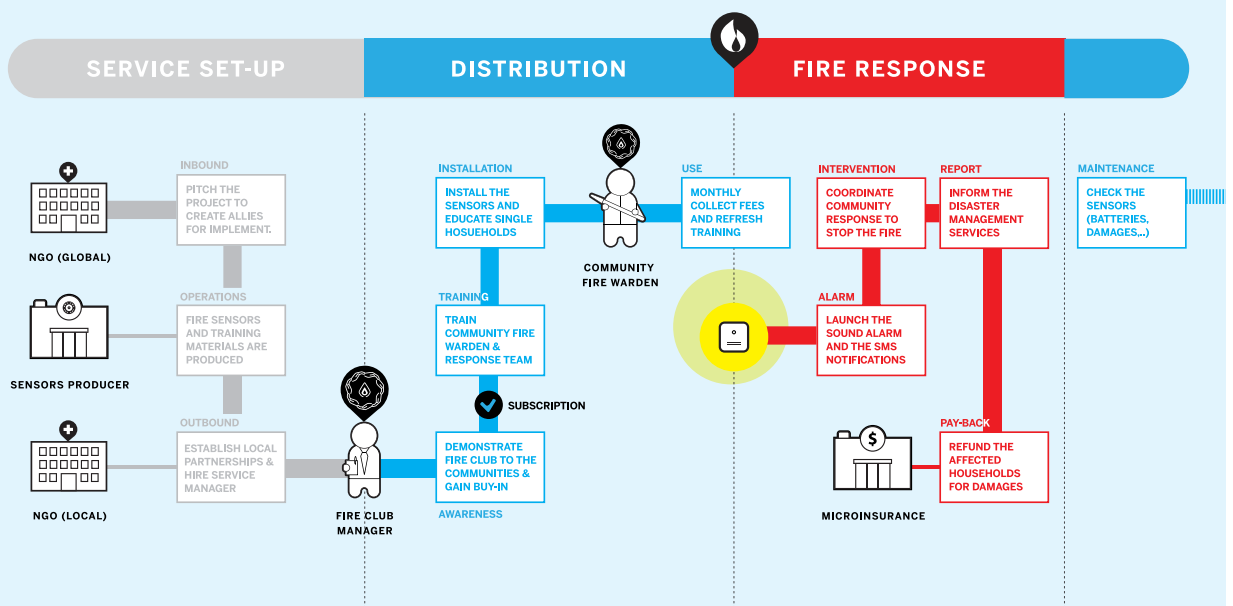
The Red Cross encourages other groups with similar goals to pick up the guidelines put forward in this plan to help address more settlements so that the maximum impact can be realised as soon as possible.

Service Delivery

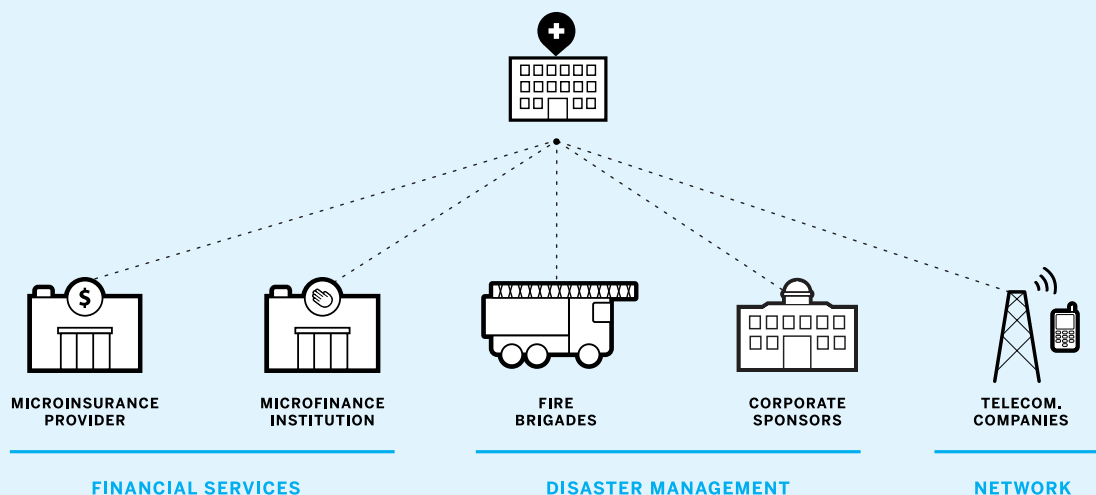
SERVICE MODEL & VALUES EXCHANGES



DELIVERY PROCESS



➤ Partnerships Model



Providing this enhanced service will require key partnerships to lower the costs of materials and operations involved in protecting the community from fire. The financial projections used in this business model rest on the idea that the costs of these aspects of the service will be subsidised through the following partnerships:

As a part of the fire club subscription, the **microinsurance partner** will provide a property insurance package, including fire protection, at a reduced price to reflect the reduction of risk from receiving the service. Benefits for the microinsurance partner would be: access to a new market, lower investment risk, ability to cross-sell, social impact differentiation and improved data collection.

As an option for payment, the **microfinance institution** will lend money to the community to pay the subscription to the Fire Club service every year; collect money back from the community every month. As result, the microfinance could prove to have improved livelihood in the community, acquire visibility and trust and have impact guarantee.

The **fire brigades** can donate old equipment for the community fire station; participate into training sessions and link their control center with fire sensors. Thanks to their engagement they will establish a better relationship with the community, increase brigade safety during the response and reduce frequency of intervention.

The **corporate sponsors** could donate the community fire station (e.g. AXA); donate the fire extinguishers (e.g., P&G) or donate the community hoses (e.g., GE) as part of their social responsibility initiatives.

A **telecommunication company** needs to donate the cost of the contract for the system communication in order to keep the system sustainable. The donation can be part of the company's social responsibilities and generate space for advertising in the informal settlement (e.g., customized cover of the motherboard).

04.2

How to scale the business

The business will be grown on the city-level by the local Fire Club manager.

In the first years of any city-level rollout, the number of fire club managers should be limited since demand is uncertain and additional fire club managers would over-saturate the marketplace at year 1. However, as demand is verified, and potentially grows, additional fire club managers should be added to deepen city-level penetration.

The number of managers for each city depends on the informal settlement population of that city. Smaller cities with a target population around 500K should be limited to two managers, whereas cities with more than >2 million can support many fire club managers. However, each fire club manager will require a population of 250K to break even and that limit should be considered in planning (see business model.xls for recommended manager growth plans).

Beyond the initial pilot cities, scaling internationally requires investing start-up capital into a local entrepreneur in the target cities. Growth funds for international expansion should be collected from the buy 1 give 1 partnership. Revenue from active communities should not *directly* go towards expansion. Community-level revenue streams are unlikely to be high enough in volume, and collecting additional franchising fees from the entrepreneur would put undue pressure on their potential profitability.

Before selecting a new city for expansion, it is recommended the organisation should compare the city against the market sizing framework to ensure that the target location is fundamentally appropriate for the fire club.

Before operationalising, a local partner should test to see if the sensors are functional at a basic level in that environment. For example, "do the materials used in constructing houses obstruct the radio waves of the sensor network?" If the technology is technically sound, the process detailed in the business plan road map should be started in order to become operational within the year.

Once appropriate stakeholders and partners have been onboarded, the identified entrepreneur can be given the capital to begin growing in that area. Initial capital should come from growth funds from the buy 1 give 1 subsidisation fund (ref. appendix buy 1 give 1 scenarios for further detail).

Operational budgets for the Fire Club manager: beyond the initial start-up capital provided in terms of technology, marketing materials and partnership support, the fire club manager will be provided with a budget for marketing and shipping. The money can be managed to pursue promotional strategies in chapter 3. In the income statement, they are filed under SGA costs. Further operational budgets on the city level will be managed at the micropreneur's expense.

Operational budgets for the humanitarian organisation: costs of the Red Cross personnel should be billed to the employee's salary, not exceeding 33% of 1 FTE weekly time. This is meant for two employees to spend some days working on the project some weeks, and then working very lightly in weeks following. These operational costs will be funded by the buy 1 give 1 subsidisation as the costs put too much pressure on the community level business model.

04.3

Cross-subsidization

The Buy 1 Give 1 cross-subsidization is a key part of sustaining and scaling the Fire Club.

The Buy 1 Give 1 cross-subsidisation is a key part of sustaining and scaling the Fire Club. The partnership serves as a rolling donation that benefits the fire club as well as the partner company. The proposed partnership structure is designed to minimize additional operating costs.

A producer of smart sensor devices should be targeted as the primary partner as the similar use of sensing technology

represents a strong and authentic connection to Fire Club project narrative. Smart sensors also have product and market characteristics well-positioned for a "Buy 1 ,Give 1 cross-subsidisation. For example, they have a high margin and are set to grow in sales volume over the next ten years while also selling at high volumes currently*. Since many companies are competing in this sector for growing market, one of the main players could be interested in a social impact advantage.

Smart sensors players

COMPANY	SALES 2014
GOOGLE NEST THERMOSTAT	100,000 per month**
HONEYWELL LYRIC THERMOSTAT	> 100,000 per month****
ECOBEE	70,000 per month***

*<http://mobilemarketingmagazine.com/smart-thermostat-sales-double-in-a-year/>

**<http://www.businessinsider.com/nest-revenue-2014-1>

***<http://www.forbes.com/sites/aarontilley/2015/09/28/thermostat-wars-with-help-from-apple-ecobee-takes-number-two-place-behind-nest/>

****<http://www.parksassociates.com/blog/article/six-percent-of-households-will-have-a-smart-home-controller-by-2015>

Due to the complexity of implementing sensors in the informal settlements, and the business model built around the distribution, a literal "Buy 1, give 1" partnership is not ideal. Instead, the partnership should focus on channeling funds from sales of smart devices to a fund that can be used to subsidise fire club operations freely.

For example if the humanitarian organization is to partner with Google, the subsidization should be structured in a way that Every Nest that is purchased, a certain percentage of the revenue will be put in a fund that is then paid to the American Red Cross at the end of the year. Using Nest Thermostat calculations from 2014, we estimate putting 10 cents of every sale (.04% per unit revenue) could accumulate \$120,000 USD per year. In the current business plan, we propose that funds from the buy 1 give 1 should be used initially to relieve pressure on the fire

club manager to pay back 100% of the start-up capital. Instead, the funds raised from B1G1 over the first 3 years of the business, can be used so that the entrepreneur only has to pay back 50% of the initial capital. The remaining earnings from the partnership can be used as growth capital to scale the business to other cities (providing start-up capital to other entrepreneurs) while also paying off operational costs for the Red Cross employees.

In a best case scenario, the partnership will provide enough money to purchase the sensors for the entrepreneurs, and pricing at the community level can be concentrated around the other aspects of the offering such as the microinsurance (reducing monthly payment to 50 cents or lower per month) and education. Full breakdowns of different scenarios can be found in the appendix.

Cross-subsidization scenarios

Optimistic case: partnership with leading smart home product* used in this plan

	YEAR 1-3	RESULT
UNIT SALES	1-2 million/year	50% fire club manager debt subsidisation American Red Cross OpEx Recovered 65K annually available for growth Subscription Price = 50 cents/month Additional SGA Budget per city
PERCENTAGE OF EACH SALE FOR FUND	.04% (10 cents/unit)	
ANNUAL DONATION	\$120,000-200,000	

Moderate case: partnership with challenging smart home product

	YEAR 1-3	RESULT
UNIT SALES	800k-1.4 million/year	50% micropreneur debt subsidisation American Red Cross OpEx Recovered 20K annually available for growth Subscription Price = 75 cents/month Additional SGA Budget per city
PERCENTAGE OF EACH SALE FOR FUND	.04% (10 cents/unit)	
ANNUAL DONATION	\$60,000-120,000	

Conservative case: partnership with start-up smart home product

	YEAR 1-3	RESULT
UNIT SALES	25k-50k/year	Small Growth Fund available Subscription Price = \$1.00 /month Slower Growth 5 cities year 3
PERCENTAGE OF EACH SALE FOR FUND	.5% (26 cents/unit)	
ANNUAL DONATION	\$15,000-30,000	



FIRE CLUB MANAGER

05

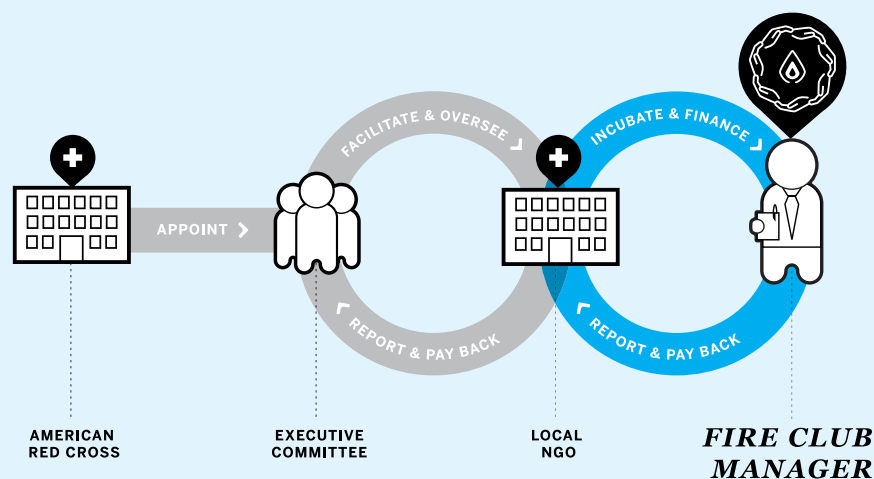
MANAGEMENT & STAKEHOLDERS

05.1

Organizational structure

A global organizer will coordinate high-level strategy and oversee results of the initiative while the local NGOs – such as the local Red Cross chapters – play a key role in the franchise structure, incubating and financing the Fire Club managers in each city.

Franchisor organization



American Red Cross will establish an **Executive Committee** at a global level, constituted by representatives from each NGO and tech partner participating in the Fire Club initiative. The Executive Committee is responsible for strategic planning at the beginning of the entire process, including the identification of local NGOs, locations and milestones for the implementation. The Executive Committee periodically gathers to oversee results of the project, with higher engagement in the initial stages, and reducing monitoring to quarterly check-ins in 2017 when the project ramps up. (ref. Implementation Roadmap – section 9.1).

The **local NGO** coordinating city-level implementation could be a local Red Cross chapter or any other country-office of a humanitarian organization that decides to participate into the Fire Club initiative. The local NGO is responsible for the identification and incubation of the micropreneurs (the Fire Club managers), facilitating the initial capital needed to start

their business, the tools, political support and expertise required to market the service and engage communities. Further, they establish and maintain relationships with external stakeholders such as government offices, fire departments, local corporates, and financing partners. They may receive support from global coordinators in negotiating contracts and establishing initial agreements.

The **Fire Club manager** retains control of on-the-ground operations at frontend of the Fire Club service at the informal settlement level: after the initial financial support received by the local NGO, they own marketing activities and account management, building a revenue base over time to pay back the initial capital while keeping some income as a personal stipend. They regularly report directly to the local NGO office.

05.2

Fire Club manager

The Fire Club managers take a leading hands-on role in advocacy, creating demand for Fire Club business from ground.

The Fire Club Managers are individuals incubated by the Red Cross to own the Fire Club business in their city. They are experts in navigating informal settlements, entrepreneurial, and motivated to grow the business in the long-run. They conduct the operations, including:

- conducting the sales visits to the local communities to perform demonstrations of the service and subscribe new communities;
- tracking the after-sales services and relevant maintenance;
- account management of subscribing communities collecting payments from communities and coordinating distribution of payments to relevant partners such as microfinance and microinsurance companies;
- managing relationship with Fire Wardens of subscribing communities;
- coordinating and planning with the service level partners (Telco, Political, Microinsurance, etc.) for products and service installation;
- managing inventory of sensors systems and other assets.

Red Cross local chapter will support the entrepreneurs to start the local business in terms of local political relationship building, access to community leadership, demonstration materials, process development and strategic partnership initialization.

05.3

Fire Club warden

The Fire Club wardens are the go-to individuals within local communities and help maintain the Fire Club solutions from the ground up.

The Fire Club warden is a selected member of the subscribing community, trained to become a fire expert, responsible for managing the sensor system, fire fighting tools, and coordinating fire response procedures. Other responsibilities include:

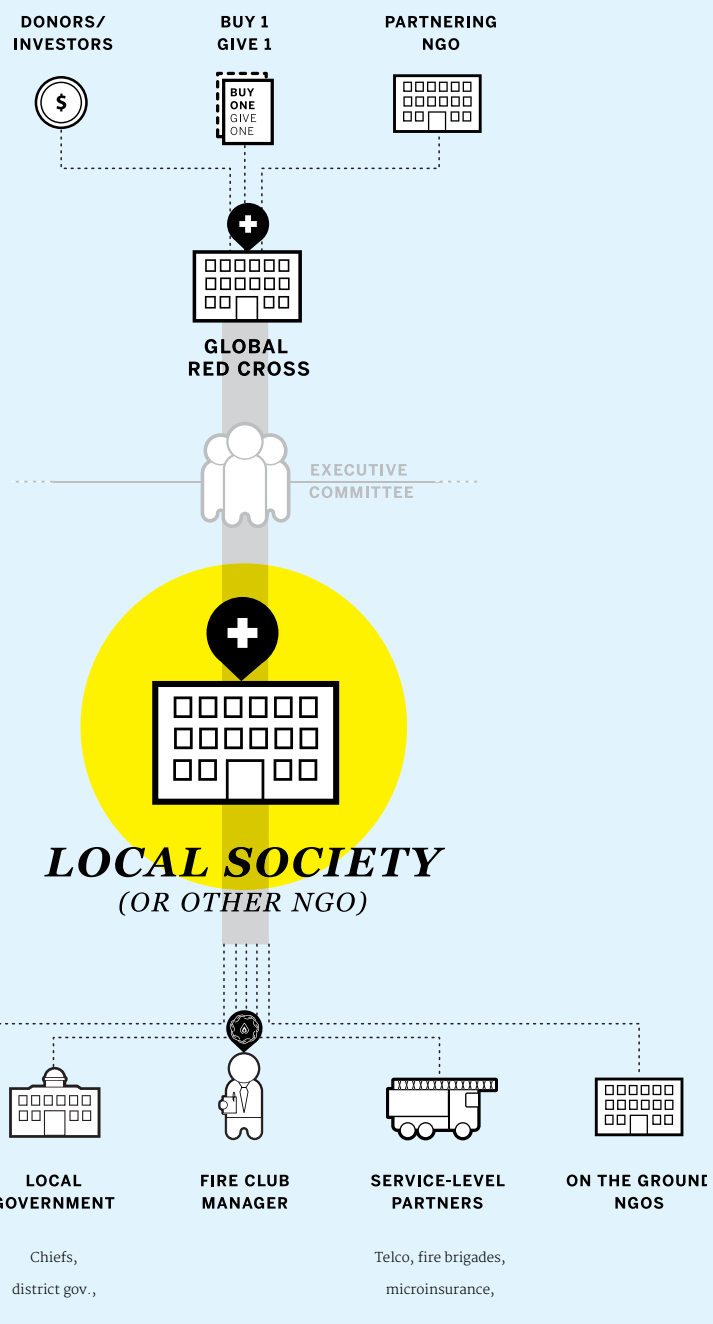
- conducting the door-to door fire safety education and mobilization;
- gathering the monthly subscription fee from community;
- maintaining the fire fighting tools;
- planning and executing the fire response simulations every year;
- collaborating with Fire Club managers and directing community in fire response events;
- tracking the Fire Club service usage and providing feedback for the administrations.

The Fire Club manager and community leader will be responsible to recruit and select the Fire Club warden. In return for their effort, Fire Club wardens will be paid a monthly stipend of \$75. The work should occupy no more than two full working days of the month.

05.4

External stakeholders

Stakeholders Map





ENTREPRENEURS SUPPORTED



INCOME GENERATED

06



SOCIAL OUTCOMES



FIRE SENSORS INSTALLED



POPULATION TRAINED



FIRE WARDEN TRAINED

06.1

Social outcomes

Social returns on the Fire Club business plan will be realised over time, from short-term outcomes to long-term impact. Short term refers to outcomes possible with one organisation addressing 8 cities. Long-term outcomes assume other organisations join to address 22 cities.

Social impact logic model				
FIRE SENSOR PROJECT		SHORT-TERM (0-3 YEARS)	INTERMEDIATE (3-5 YEARS)	LONG-TERM* (5-10 YEARS)
	→ FIRE SENSORS INSTALLED	15,000	60,000	→ DECREASED INCIDENCE OF WIDE- SPREAD DAMAGE FROM SLUM FIRES
	→ POPULATION TRAINED	50,000	200,000	
	→ FIRE WARDEN TRAINED	300	1200	
	→ ENTREPRENEURS SUPPORTED	14	24	→ 2- 3 mln POPULATION PROTECTED FROM FIRE
	→ INCOME GENERATED	\$70,000	\$290,000	

* assumption: in long term, with more humanitarian organizations participating in the Fire Club project we achieve 5% of total serviceable market.

There are two categories of social impact: **fire related and economic.**

In the short to intermediate term, the fire-related impact will be measured in the volume of sensors and equipment installed, as well as the number of wardens and communities trained on increased fire safety. While in the long-term, reduction in property damage from fires can be measured as the customer base grows, and instances of fire response are recorded.

On the economic side, the community-level business model will create income for the fire club manager in the intermediate run,

with the chance to create further wealth through employment as the business grows in the long-run.

Realising the long-term outcomes cannot be achieved by one organisation. Informal settlements are spread across many cities across the world, and it will require a consortium of organisations to establish fire club operations to address the entire serviceable market. This social impact model assumes that the Red Cross implements in 8 cities, and that in the long-run other organisations will join the fire club initiative, bringing total cities addressed towards the 22 listed in the market sizing.



07

OPPORTUNITIES & RISKS



07.1

Opportunities

Existing urban resilience projects can create an initial customer pipeline

Organisations willing to explore this business plan can build upon similar projects in an existing urban resilience portfolio. With urban populations in the developing world set to grow consistently in the decades to come, this will be a continuous issue that will expand in need.

{Rockefeller}

Communities take initiative to improve their neighborhood

In the absence of secure channels to market for home safety products, the community leadership serves as an opportunity to bring such products to many homes in one distribution motion. Communities who take initiative to improve scenarios of the settlement will be first targets for the fire club service since they are predisposed to the risk reduction action inherent to a fire safety service.

Create income for local entrepreneurs

The use of a franchise model allows local micropreneurs to generate income while outsourcing the operations of selling, implementing and maintaining the subscription to these same micropreneurs reduces the efforts and cost of the Red Cross labor.

07.2

Risks

Willingness to pay needs to be verified

General willingness to pay was assessed during community workshops. However, in the absence of a pre-existing market, the willingness to pay on the community level in a real pitch is not validated. A pilot of the business model must be conducted to test the willingness to pay for the service.

Unstable relationship with entrepreneurs might cause agency costs

Employing a franchise model to distribute/market the fire club service allows Red Cross to reduce operational burden of manually rolling out the system. However, the relationship with the entrepreneur is at risk of creating extra costs in the case of disappearance, community manipulation, political alignment and/or graft.

Volatility of income of target market would impact payment rates

Due to volatility of income in the target market, individuals will not be able to consistently pay a subscription fee in the long-run. Aggregating individuals into one community as the customer unit aims to ameliorate individual volatility by leveraging group dynamics to reinforce weak points when necessary. However, we still include a 80% payment rate per community with the assumption that occasionally a community will fall significantly short of monthly fee for the service.

Community dynamics impact the implementation process

Unanticipated community leadership shifts can disrupt the subscription period and create additional hurdles in the implementation process. Leadership structures of communities are subject to change frequently. Significant efforts by the fire club manager will be necessary to manage their accounts through political transition.

Lack of Data related to incidence and predictability of fires

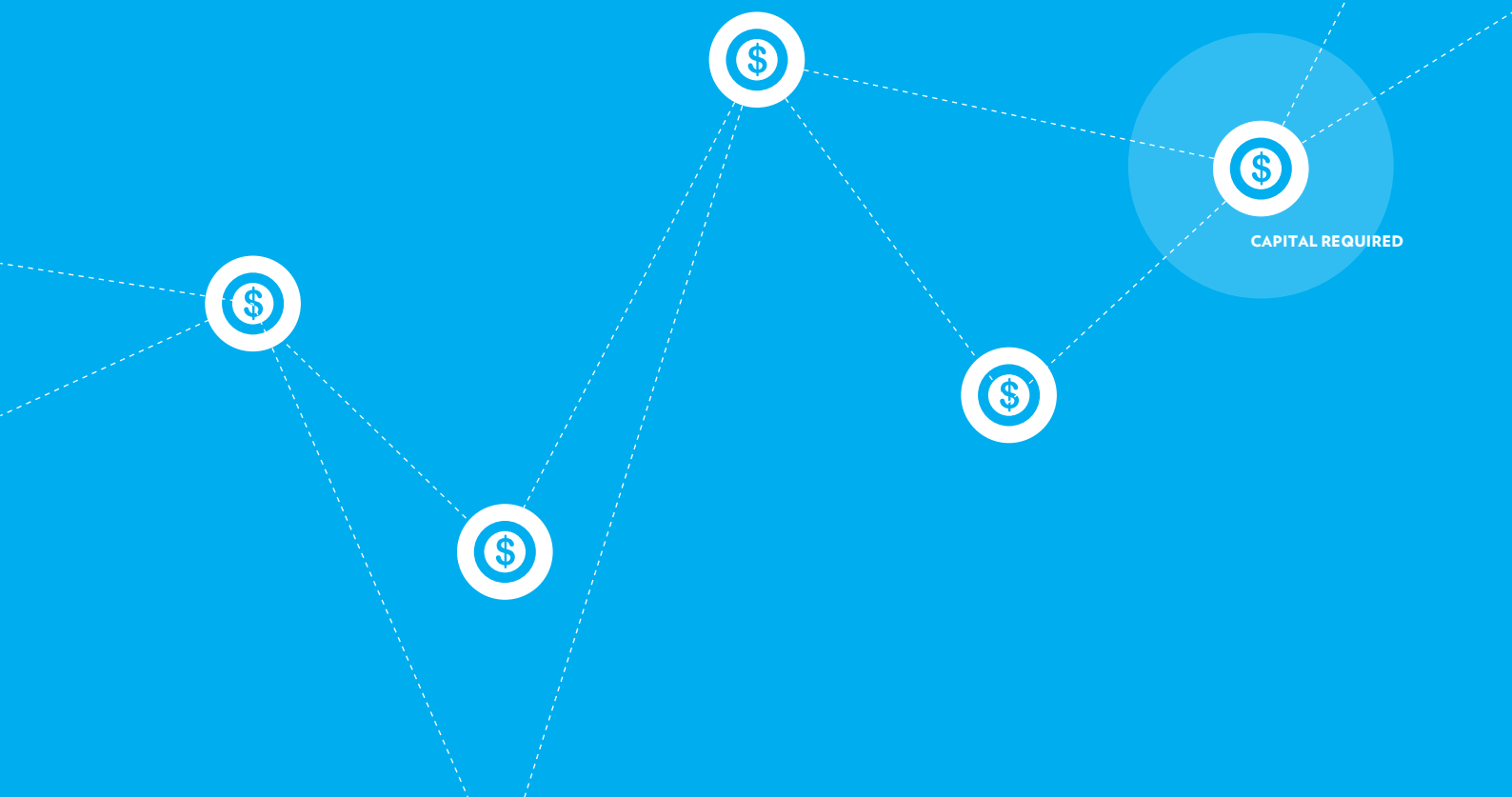
Fires happen every day in the slums, but given size of informal settlements, they affect only a small percentage of the population every year. An intervention with a business model will only cover certain communities, it is possible that fires will not happen in serviced communities. As a result, efficacy of the solution may be difficult to prove, and there is the risk of subscription abandonment on the community level, and a lack of commitment from participating partners due to lack of “results.” At the same time, a lack of fire may be the best indication of efficacy, however, evidence is likely to remain anecdotal and inconsistent.

Long-term commitment needed from partners and investors

The intervention takes time to reach scale, and it may be longer until a fire is dealt with in a way. Seeing the impact of the investment could take 5-10 years. Partners and investors who have a shorter time horizon for their project may struggle with the long time period associated with distribution of the service to realized benefit. It is statistically probable that the impact of the fire club services will not be felt in the first year of subscription.

08

FINANCIAL SUSTAINABILITY



08.1

Funding requirements

We estimate that each fire club manager would need about \$26,500 over the first three years of operations in order to start up their business.

This applies to the first two cities before the buy 1 give 1 cross-subsidisation provides the growth funds to kick-start future fire club managers. In each of the first three years, funding would be given out in the beginning of each year depending on the amount of supplies associated with expected sales.

▾ Funding required per period/fire club manager

	YEAR 1	YEAR 2	YEAR 3
ESTIMATED NEW CUSTOMERS (NET OF CHURN)	6	23	17
CAPITAL REQUIRED	\$3,462	\$13,043	\$10,022

Initial capital for the first city will need to come from a donor and/or International Red Cross Societies who would like to provide seed capital. In the proposed model, the donor will not receive a repayment financially, but the repayment will be automatically reinvested into scaling the business. Although they do not profit from their financial investment, or recover cash value of donation, this may be appealing to the donating party as the money is used to make a much larger impact in the long-run. Total initial capital for two pilot cities is equal to 100,000 USD over the course of three years.

However, there is significant risk being the donor of the initial capital. Since this is a new model, and there is a lack of solid data, investments cannot be guaranteed and will carry a higher than average level of risk.

What is the return for the investors?

If the business gathers momentum, the initial investor will see most of their money reinvested in year 4 while having made a social return described in section 6.

How does the business carry on after first period?

The operations of the fire club stand to return 50% of the original

capital investment. The ongoing buy 1 give 1 plus revenue generated from community subscriptions will cover the other 50%, and funds generated in excess will be put towards a growth fund and further subsidisation.

We expect that in year 3 of operations, the donating party will have reinvested most of their investment and the growth fund should be in a position to fund the expansion of further fire club managers at the city and international levels.

08.2

Annual cash budget

The following model provides insight in how the cash will be handled between initial donation, the two revenue models and the cash outflows to support the micropreneur and cover operational expenses, from the perspective of the humanitarian organization.

Annual cash budget for humanitarian org					
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Cash inflows					
DONATION INFLOW	\$14,248	\$52,570	\$40,488	\$0	\$0
CROSS SUBSIDISATION REVENUE	\$119,520	\$157,551	\$207,684	\$273,769	\$360,882
CAPITAL REPAYMENT FROM COMM BM	\$0	\$16,705	\$18,120	\$76,586	\$63,421
TOTAL INFLOW	\$133,768	\$226,826	\$266,292	\$350,335	\$424,303
Cash outflows					
PAYMENT OF SENSOR SUPPLIER	-\$13,608	-\$51,030	-\$85,901	-\$178,605	-\$154,366
CASH TO FIRE CLUB MANAGER	-\$640	-\$1540	-\$4,455	-\$5,390	-\$8,713
OPERATIONAL EXPENSES	-\$48,790	-\$48,790	-\$98,760	-\$117,160	-\$117,160
REPAYMENT OF DONOR	\$0	\$0	\$0	\$0	\$0
50% PRICE SUBSIDISATION	-\$5,760	-\$27,360	-\$63,720	-\$151,470	-\$225,923
TOTAL OUTFLOW	-\$68,798	-\$128,720	-\$252,836	-\$452,625	-\$506,161
CASH BALANCE FOR YEAR	\$64,970	\$98,105	\$13,456	-\$102,269	-\$81,857
CUMULATIVE CASH BALANCE	\$64,970	\$163,075	\$176,532	\$74,262	\$-7,595*

****Negative cash balance turns positive at year 6. Year 4 and 5 represent strongest expansion investments to reach scale in the long-run. See appendix for details**



PRE-PILOT

09

IMPLEMENTATION ROADMAP



PILOT



ROLL OUT

Implementation roadmap

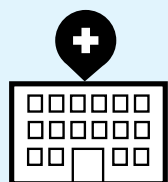
PHASE

Pre-pilot

Q1 2016

Q2 2016

ACTIVITY



**AMERICAN
RED CROSS**

01



**OTHER
NGOS**



DONORS



**SENSOR
PRODUCER**

Explore "Buy 1, give 1" partnerships

Partnership finalization and marketing preparation

Define market strategy for the pilot

On-going discussion with interesting local chapters

Pitch the project to potential implementers



**EXECUTIVE
COMMITTEE**

Project oversight

Pitch the project to donors



**INITIAL
INVESTMENT**

Capital administration

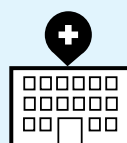
Discuss with a sensor producer



**PRODUCER
AGREEMENT**

Product adjustments

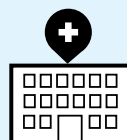
02



**LOCAL
SOCIETY**

Reach out to local stakeholders

Recruit a Fire Club manager

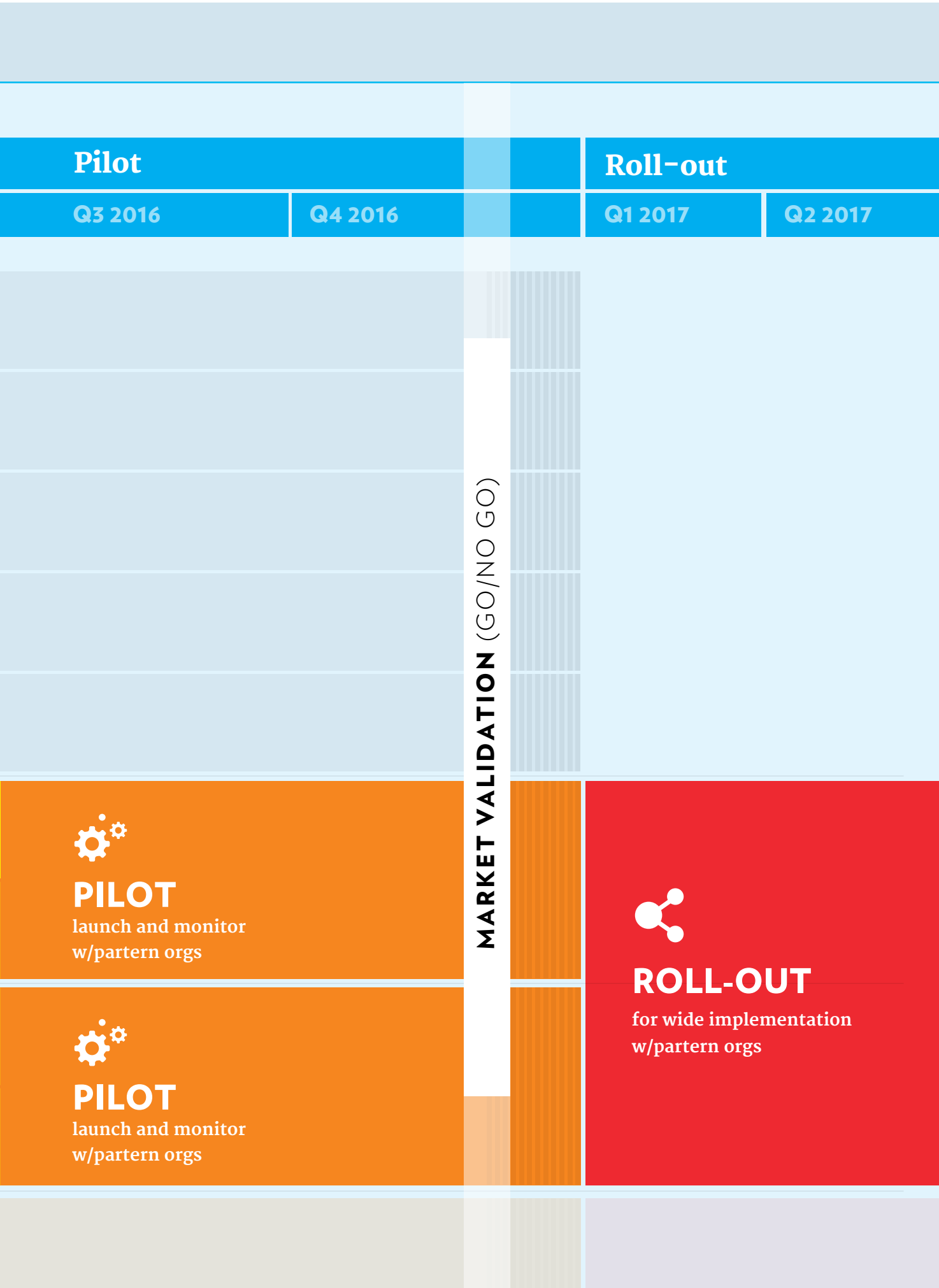


**LOCAL
SOCIETY**

Reach out to local stakeholders

Recruit a Fire Club manager

...







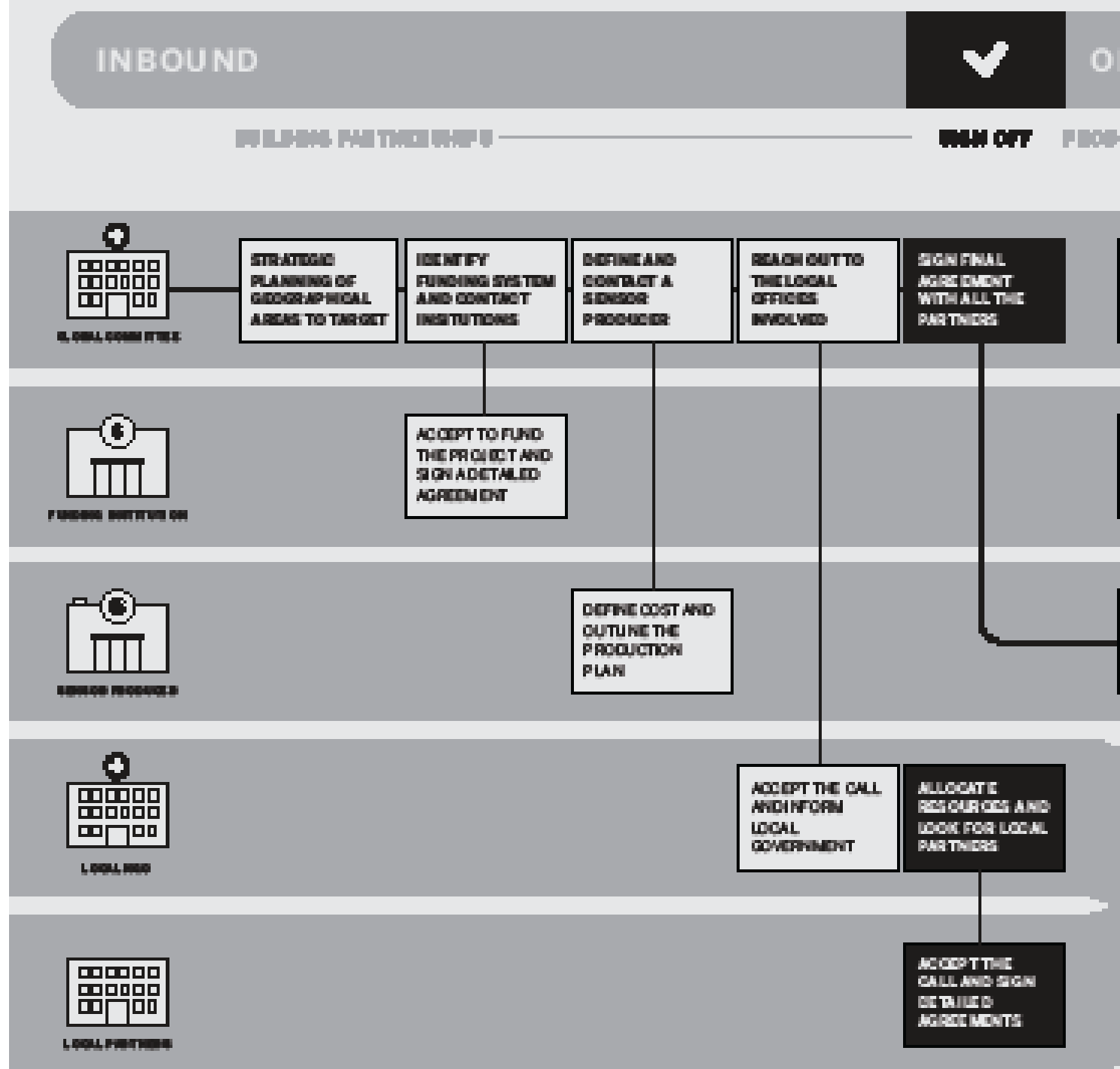
10

APPENDIX

10.1

Service blueprints

➤ 10.1 Service blueprint - Set-up process



PERATIONS

OUTBOUND

ATION

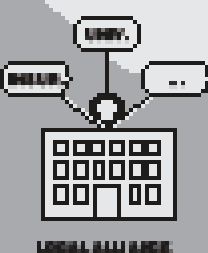
DELIVERY

DISTRIBUTION STRATEGY

PREPARE THE
SERVICE
IMPLEMENTATION
KIT

MAKE INITIAL
PROJECT FUNDING
AVAILABLE TO
START

PRODUCE
FIRE SENSORS
AND
MOTHERBOARDS



IDENTIFY AND
CONTRACT A
LOCAL FIRE CLUB
MANAGER

OVERVIEW

DELIVER THE KIT
TO LOCAL TEAMS
AND FIRE CLUB
MANAGERS

DELIVER
HARDWARE TO
THE LOCAL
TEAM

INTERVIEW AS
FIRE CLUB
MANAGER + SIGN
THE CONTRACT

LEARN ABOUT THE
TOOLS FOR
PROJECT
IMPLEMENTATION

OPTIMIZE
CERTAIN TOOLS
FOR LOCAL
CONTEXT

STOCK THE FIRE
SENSORS AND
MOTHERBOARDS
IN A WAREHOUSE

DEFINE AN
EFFECTIVE
GO-TO-MARKET
STRATEGY

READY!



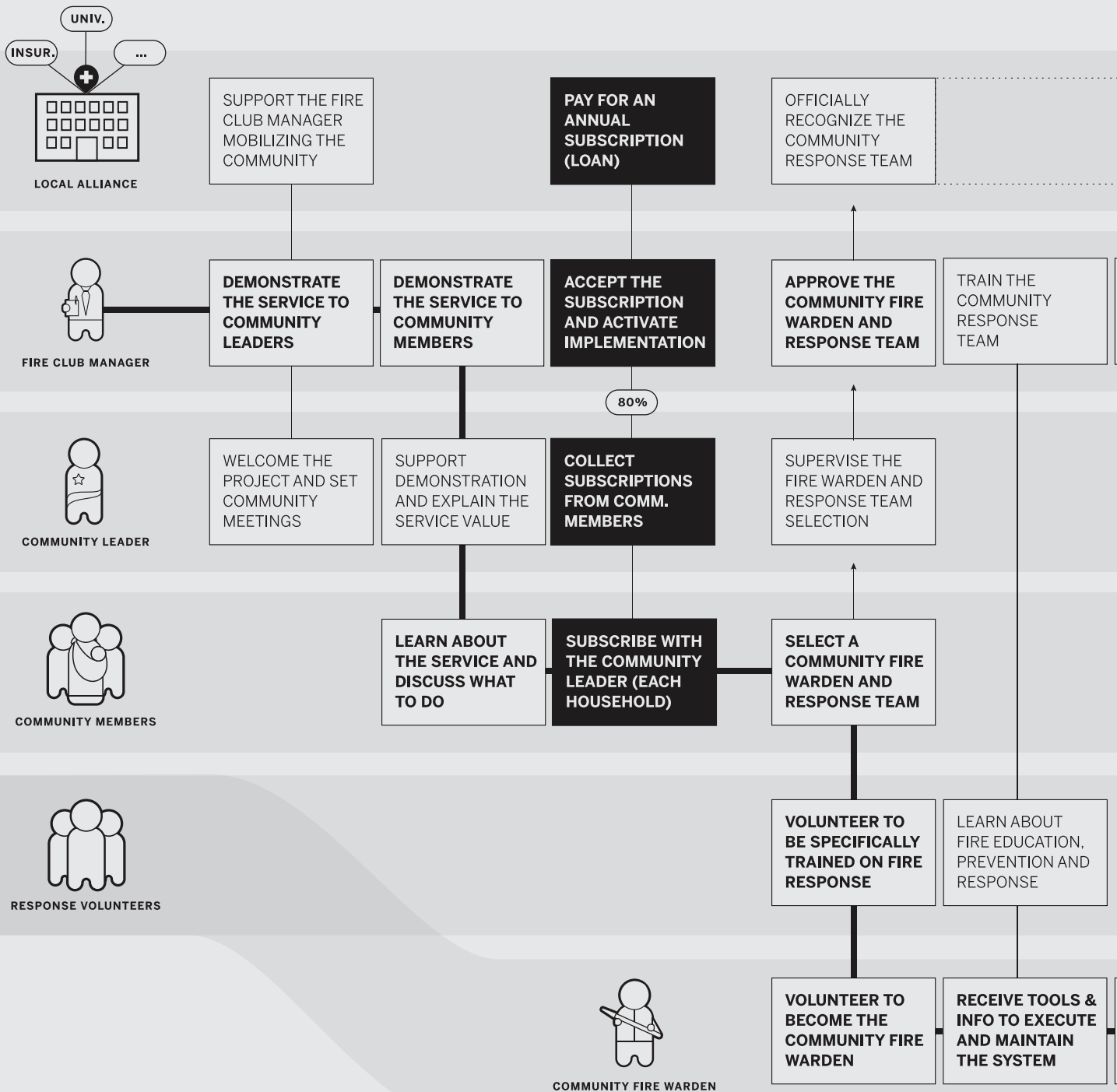
➤ 10.1 Service blueprint - Distribution process

AWARENESS



TRAINING

COMMUNITY ENGAGEMENT — SUBSCRIPTION — BUILDING THE RESPONSE TEAM —



INSTALLATION

USE

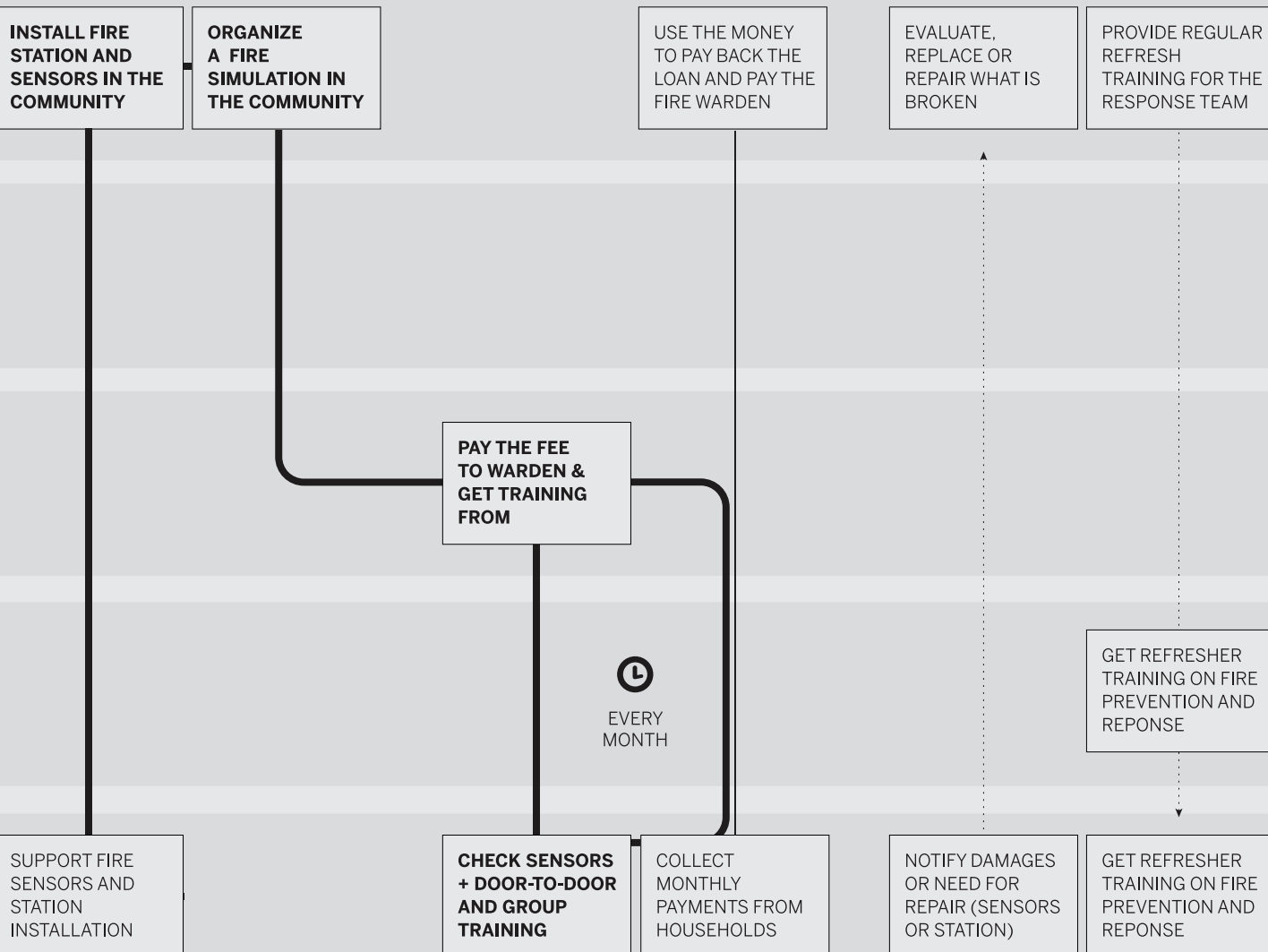


MAINTENANCE

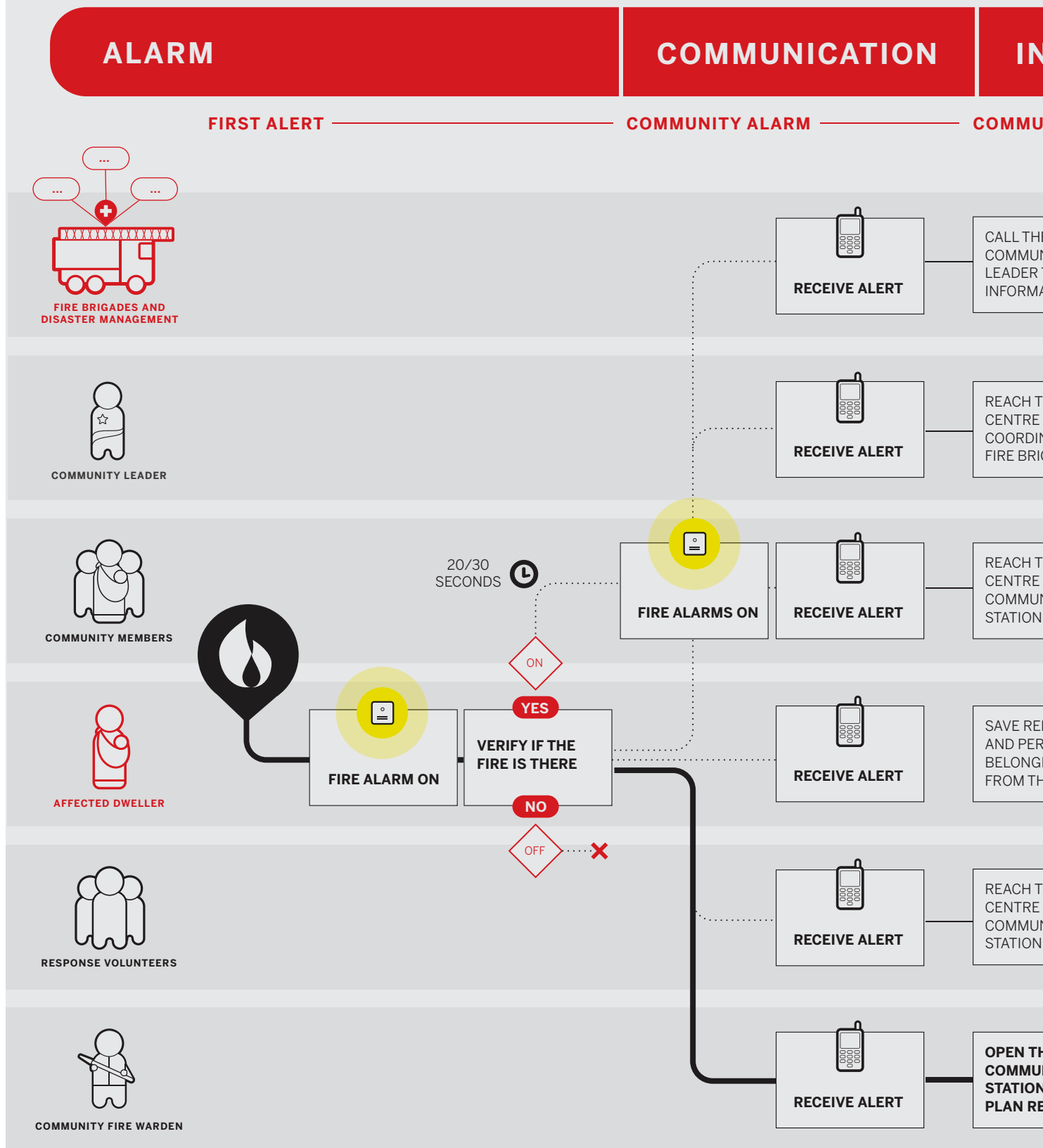
SERVICE ACTIVATION

PAYMENT AND SERVICE BENEFIT

OVERVIEW



10.1 Service blueprint - Fire response journey

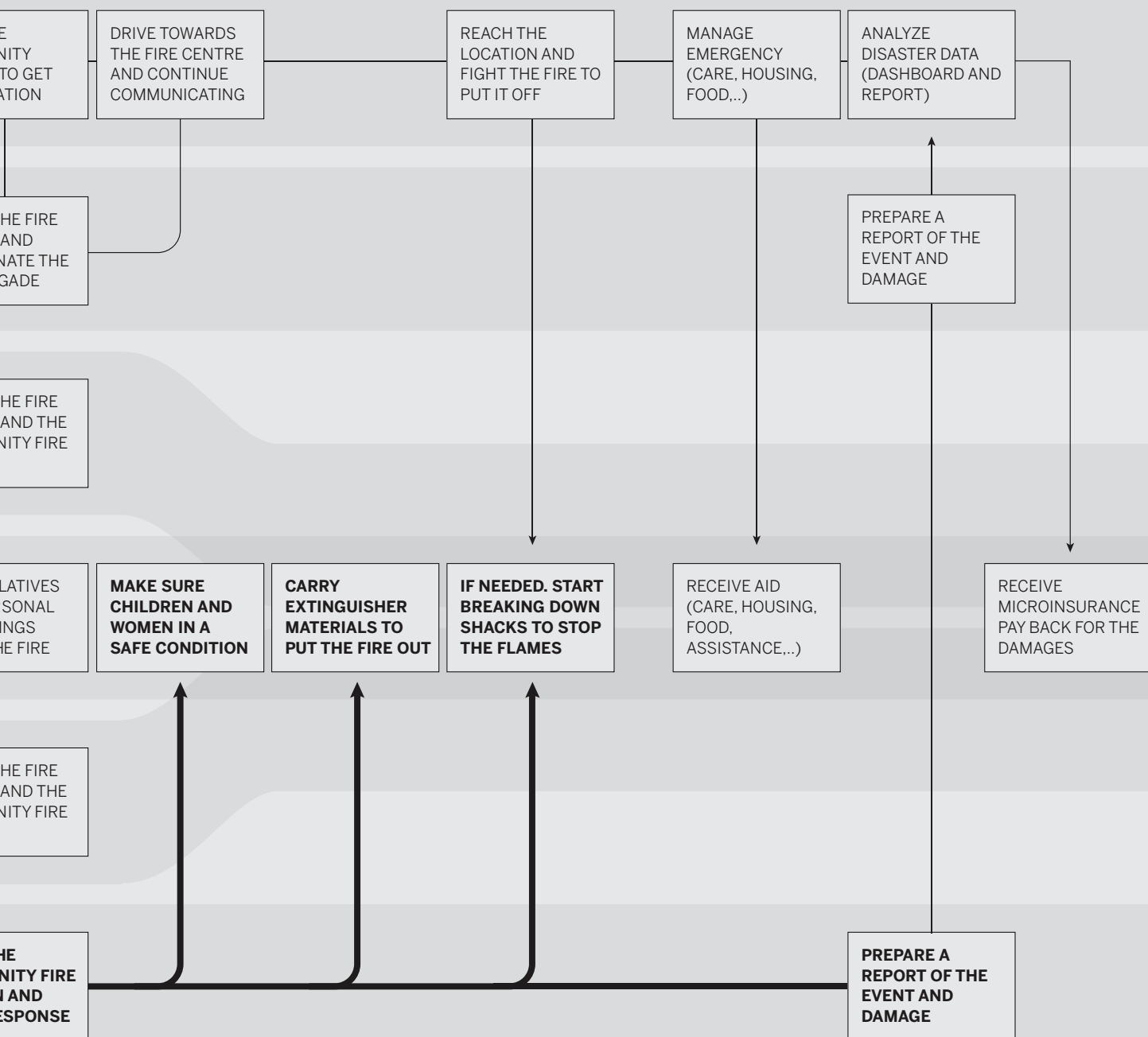


INTERVENTION



REBUILDING

COMMUNITY RESPONSE — OFFICIAL RESPONSE — FIRE OUT — AID — REPORT



10.2



Detailed social impact logic model

▾ 10.2 Detailed social impact logic model

RESOURCES	ACTIVITIES	OUTCOMES*	LONG-TERM IMPACT
<ul style="list-style-type: none"> Investment from internal funding or cross-subsidization Open source program exposure Local Red Cross Chapters American Red Cross RC and NGO resources and network Existing partnerships Local political support 	STRATEGIC INITIATIVES <ul style="list-style-type: none"> Recruit Fire Club Managers Mobilize the programs with cross-subsidies Initiate the collaboration with the strategic partners (banks, telco, etc.) Develop the training materials for the roll-out 	The program is targeting to reach the following outcomes:	IN 5-10 YEARS**: <ul style="list-style-type: none"> Decreased incidence of widespread damage from slum fires 2-3 million population protected from slum fire 800,000 bop households in 22 cities improved the housing safety Entrepreneurships built up and boosting the economics growth in bop economies
		INITIAL (0-3 YEARS) <ul style="list-style-type: none"> 15,000 households installed with the fire safety infrastructure 50,000 population from informal settlements got educated on the fire safety themes 	
	PRODUCT AND SERVICE <ul style="list-style-type: none"> Inbound the products Demonstrate the fire club services to local communities Conduct the training to trainers/ fire club managers Outbound and install the fire club products 	<ul style="list-style-type: none"> 300 fire wardens from bop got trained 18 entrepreneurs from the bottom of pyramid engaged in the fire club business and earned ttl \$70,000 income 	
		INTERMEDIATE (3-5 YEARS) <ul style="list-style-type: none"> 60,000 households installed fire safety infrastructure 	
	OPERATIONAL <ul style="list-style-type: none"> Financial management Other operational activities 	<ul style="list-style-type: none"> 200,000 population from informal settlements got educated on the fire safety themes 1200 fire wardens from bop got trained 24 fire club managers from bop economies earned \$155,000 income 	

* assumptions:

Starting with 2 cities (1 large, 1 small) as pilot and if the business is validated, the program can be scaled to 6 more cities (3 large, 3 small) starting in year 3.

The population is based on the assumption of 3.3 people per household, 50 households per community.

**Long term assumptions assume other organisations also roll out the business plan to cover more of the entire SAM (beyond the 10 cities in this model) ▸

10.3

Detailed cross-subsidization model

▾ 10.3 Detailed cross-subsidization model

Aggressive case – partnership with Nest/Honeywell

	YEAR 1	YEAR 2	YEAR 3
# OF ACTIVE CITIES	2	2	10
UNIT SALES OF NEST ANNUALLY	1,200,000	1,581,840	2,085,181
PRICE	\$249	\$249	\$249
TOTAL NEST REVENUE	\$298,800,000	\$393,878,160	\$519,210,191
REVENUE FROM BUY 1 GIVE 1 (.04% FROM EACH SALE)	\$119,520	\$157,551	\$207,684
HUMANITARIAN ORGANISATION OPEX	\$48,790	\$48,790	\$98,760
CASH AVAILABLE FOR GROWTH + FURTHER SUBSIDISATION	\$70,730	\$108,761	\$108,924
GROWTH RESERVE ACCOUNT	-\$65,000	-\$65,000	-\$65,000
CASH AVAILABLE FOR FURTHER SUBSIDISATION	\$5,730	\$43,761	\$43,924
50% SUBSIDISATION OF PRICE	-\$5,760	-\$27,360	-\$63,720
RETAINED EARNINGS	-\$30	\$16,371	\$3,424

RESULTS

50% fire club manager debt subsidisation
 American Red Cross OpEx Recovered
 50K annually available for growth
 Subscription Price = 25 cents/month
 Communities given fire fighting equip = \$50
 Covers Cost of Telco Contracts (no need for partner)
 Additional Mktg budget of \$500/year/city

10.3 Detailed cross-subsidization model

Moderate case - partnership with Ecobee/Trane or similar challenger

	YEAR 1	YEAR 2	YEAR 3
# OF ACTIVE CITIES	2	2	10
UNIT SALES OF ECOBEE ANNUALLY	840,000	1,107,288	1,459,627
PRICE	\$179	\$179	\$179
TOTAL ECOBEE REVENUE	\$150,360,000	\$198,204,552	\$261,273,240
REVENUE FROM BUY 1 GIVE 1 (.04% FROM EACH SALE)	\$60,144	\$79,282	\$104,509
HUMANITARIAN ORGANISATION OPEX	\$48,790	\$48,790	\$98,760
CASH AVAILABLE FOR GROWTH + FURTHER SUBSIDISATION	\$11,354	\$30,492	\$5,749
GROWTH RESERVE ACCOUNT	-\$20,000	-\$20,000	-\$20,000
CASH AVAILABLE FOR FURTHER SUBSIDISATION	-\$8,646	\$10,492	-\$14,251
50% SUBSIDISATION OF PRICE	-\$2,880	-\$13,680	-\$108,900
RETAINED EARNINGS	-\$11,526	-\$14,714	-\$60,824

RESULTS

- 50% micropreneur debt subsidisation
- American Red Cross OpEx Recovered
- 11K annually available for growth
- Subscription Price = 50 cents/month
- Additional Mktg budget of \$500/year/city

This scenario needs to be re-considered to work with new high growth expansion plan

▾ 10.3 Detailed cross-subsidization model

Conservative case – partnership with Halo or similar small tech company

	YEAR 1	YEAR 2	YEAR 3
# OF ACTIVE CITIES	2	2	10
UNIT SALES OF HALO ANNUALLY	25,200	33,219	43,789
PRICE	\$129	\$129	\$129
TOTAL HALO REVENUE	\$3,250,800	\$4,285,205	\$5,648,757
REVENUE FROM BUY 1 GIVE 1 (.05% FROM EACH SALE)	\$16,254	\$21,426	\$28,244
HUMANITARIAN ORGANISATION OPEX	\$48,790	\$48,790	\$48,790
CASH AVAILABLE FOR GROWTH + FURTHER SUBSIDISATION	X	X	X
GROWTH RESERVE ACCOUNT	X	X	X
CASH AVAILABLE FOR FURTHER SUBSIDISATION	0	0	0
75% SUBSIDISATION OF PRICE	0	0	0
COST OF FIRE FIGHTING TOOLS	0	0	0
COST OF TELCO	0	0	0
FUNDS OF ADDITIONAL OPEX/MKTG	0	0	0
RETAINED EARNINGS Y-1	0	0	0
RETAINED EARNINGS	0	0	0

RESULTS

50% micropreneur debt subsidisation
 American Red Cross OpEx Recovered
 5K for growth year 1 (+1 city), increases 2x-3x annually thereafter
 Subscription Price = \$1.00 /month
 Slower Growth 5 cities year 3

This scenario is not
 compatible with a high
 growth expansion plan

10.4



Annual cash budget for humanitarian org

Annual cash budget for humanitarian org

	YEAR 1	YEAR 2	YEAR 3
Cash inflows			
DONATION INFLOW	\$14,248	\$52,570	\$40,488
CROSS SUBSIDISATION REVENUE	\$119,520	\$157,551	\$207,684
CAPITAL REPAYMENT FROM COMM BM	\$0	\$16,705	\$18,120
TOTAL INFLOW	\$133,768	\$226,826	\$266,292
Cash outflows			
PAYMENT OF SENSOR SUPPLIER	-\$13,608	-\$51,030	-\$85,901
CASH TO FIRE CLUB MANAGER	-\$640	-\$1540	-\$4,455
OPERATIONAL EXPENSES	-\$48,790	-\$48,790	-\$98,760
REPAYMENT OF DONOR	\$0	\$0	\$0
50% PRICE SUBSIDISATION	-\$5,760	-\$27,360	-\$63,720
TOTAL INFLOW	-\$68,798	-\$128,720	\$252,836
CASH BALANCE FOR YEAR	\$64,970	\$98,105	\$13,456
CUMULATIVE CASH BALANCE	\$64,970	\$163,075	\$175,532

YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$273,769	\$360,882	\$475,715	\$627,088	\$826,627	\$1,089,660	\$1,436,390
\$76,586	\$63,421	\$88,477	\$43,885	\$45,301	\$68,234	\$54,361
\$350,355	\$424,303	\$564,193	\$670,973	\$871,928	\$1,157,894	\$1,490,751
-\$178,605	-\$154,366	-\$90,153	-\$108,439	-\$79,097	-\$153,090	-\$114,818
-\$5,390	-\$8,713	-\$2,950	-\$4,863	-\$4,135	-\$4,620	-\$6,645
-\$117,160	-\$117,160	-\$117,160	-\$117,160	-\$117,160	-\$117,160	-\$117,160
\$0	\$0	\$0	\$0	\$0	\$0	\$0
-\$151,470	-\$225,923	-\$306,608	-\$396,391	-\$471,987	-\$587,273	-\$670,855
-\$452,625	-\$506,161	-\$516,871	-\$626,823	-\$672,378	-\$862,143	-\$909,477
-\$102,269	-\$81,857	\$47,322	\$44,150	\$199,549	\$295,750	\$581,273
\$74,262	-\$7,595	\$39,726	\$83,876	\$283,426	\$579,176	\$1,160,450

