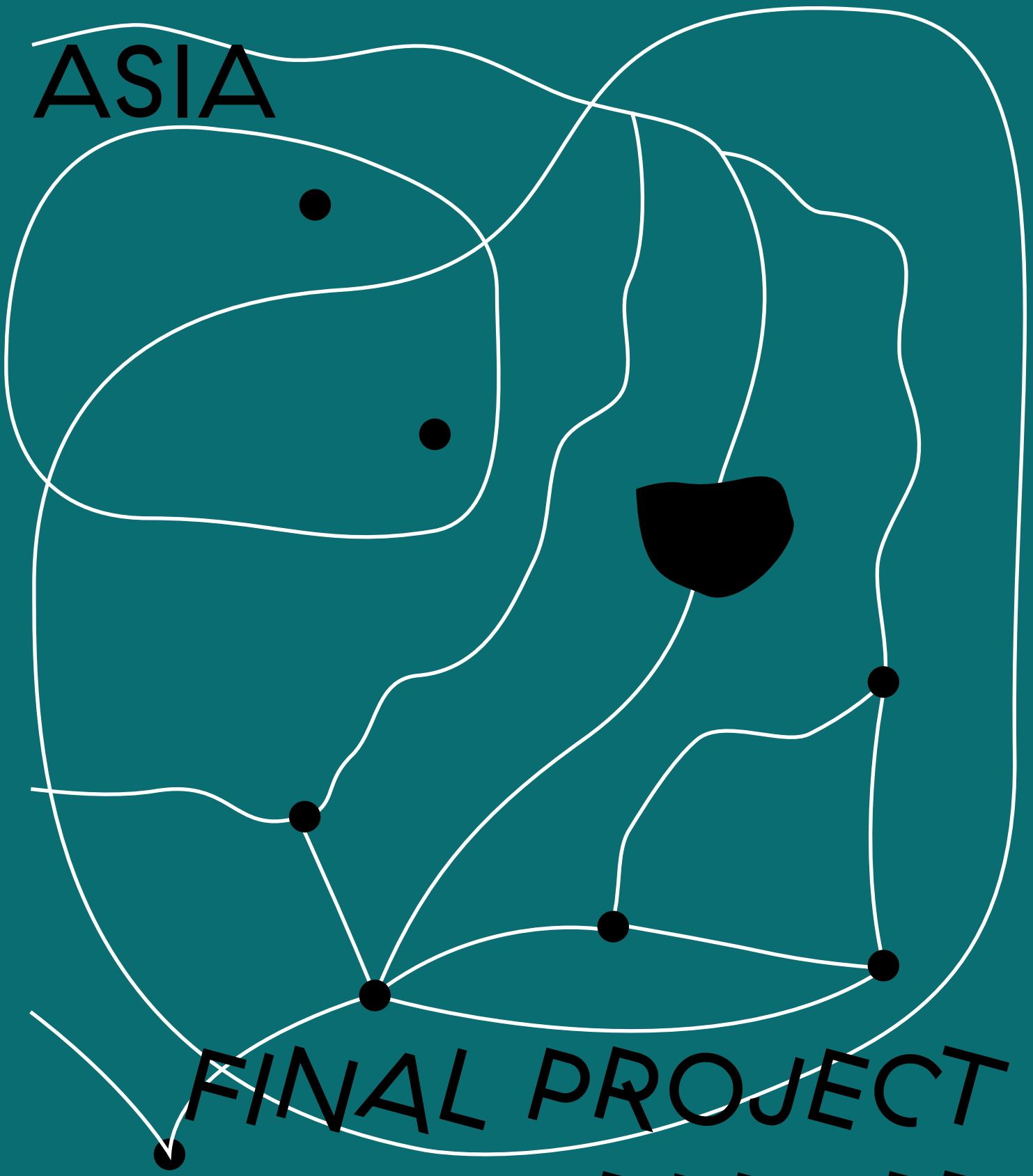
PBL SOUTH ASIA



FINAL PROJECT REPORT

PBL SOUTH ASIA 2022

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Aalto University
DBM
PBL South Asia
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ABSTRACT

When houses collapse in an earthquake, there rarely is one single culprit. The reasons behind poorly built homes point to homeowners, engineers, builders, and governments. But how to change the system that enables weak building practices in a country that lacks access to standard building education and practices? This is the wicked problem that the Aalto Global Impact South Asia 2022 team Nepal aims to solve.

Our multidisciplinary team of five students was given the assignment of creating a service management plan to promote earthquake-safe housing in Nepal by AGI in late 2021. We partnered with students at Sagarmatha Engineering College in Kathmandu and made a two-week trip to Nepal in spring 2022 to develop its solution based on design thinking approaches.

During the trip, we interviewed experts, tested several prototypes, and enhanced our understanding of the problem and the cultural context to further develop its idea in the right direction. After returning home to Finland, we drew from our knowledge of stakeholder motivations and limitations to map out the final proposal. On May 25, the Solid Neighbor Network, a community-driven approach to earthquake-safe housing in Nepal, was presented as part of the IDBM Impact Gala projects to guests, professors and students, gaining wide interest from participants.

1. INTRODUCTION

The Brief

The original brief provided by the Sagarmatha Engineering College in Kathmandu was quite broad, proposing that we should create a service management plan to address the problem of buildings that don't follow Nepal's construction code while popularizing the code among different stakeholders such as contractors and builders. We later sharpened the goal to create a solution to make earthquake-safe housing the default in Nepal.

The Problem

Even though the 2015 mega-earthquake shook parts of Nepal and more than 9,000 people were killed as many houses collapsed, unsafe houses are still built in the Asian country (World Vision, n.d.). The problem is linked to the new complicated building code, insufficient government inspection, substandard building materials, hasty construction, uneducated workers, and homeowners' tendency to cut corners in order to save money.

The Client

AGI is an arm of Aalto University that seeks to use the university's education and research resources to advance global impact.

Sagarmatha Engineering College, Department of Engineering, Lalitpur, Nepal. Founded in 2010, the institution is one of Nepal's leading private engineering colleges. SEC offers bachelor's degree education in civil, electrical, and computer engineering.

Problem-based learning (PBL)

Problem-based learning is a key concept in the project as both Aalto and SEC students are expected to learn by doing and collaborating, while applying their knowledge and new tools to solve real-life problems in teams.

II. DESIGN RESEARCH

A. Methods

The process of working with a wicked problem in a distant destination has not been easy. However, regular prototyping challenges along the road have pushed us forward in the right direction. Many different methods have been applied in a process that has been all but linear. We have learned something, ideated on that, tested it and been proven wrong. We have done more research, gained more insights and ideated on them, and repeated this over and over again.

In our process, we have been inspired by fields such and social and human-centered design, and utilized methods and advice for these, as the challenge we are tackling is both about social structures and human behavior. The human rights based approach by Unicef (Unicef Finland, 2015) has furthermore been a valuable resource with advice for how to work in developing countries. Lastly, as this project is a part of PBL South Asia, we have naturally used also methods from the problem-based learning approach, which not only guided the advancing of our project but also brought value to the partner university. Our collaboration and teamwork sessions introduced them to new ways of working and teaching.

Here follows a description of the most important methods that have guided our solution:

Desk research

We started our thorough research process early in November, which then continued throughout the whole project, alongside other methods. Through reading news and articles, we learned about the 2015 earthquake and its consequences. We read articles about the possible conditions that led to the damage, and we studied the situation in other countries prone to natural disasters. We furthermore familiarized ourselves with existing initiatives, both in Nepal and beyond, as well as studied existing building codes and practices. In addition, we stayed curious throughout the process, continuously looking to expand our toolkit and find new ways of approaching our case.

Interviews

We conducted many interviews with a variety of stakeholders, including e.g. experts, people working on the same issue, engineers and homeowners.

Purpose of the interviews:

- → Get an overview of the problem context
- → Learn more about the current building processes in Nepal
- → Hear about the existing initiatives and successful approaches
- → Learn about the Nepalese culture and the values of the Nepalese people
- → Validate ideas and insights, testing assumptions

The interviews were held either in person or online, through Zoom. We used the techniques of empathy interviews and in-depth interviews. Sometimes, interviews were combined with prototype testing or tools for co-creation.

Through interviewing a variety of stakeholders, we got a comprehensive overview and gathered multiple perspectives on the issue. We furthermore learned more about the needs and motivations of different stakeholders related to building safety in Nepal. Our main learnings are addressed further in the findings part.

II. DESIGN RESEARCH

Some of the Interviews we conducted:

Erik Salminen, field specialist, FCG Finnish Consulting Group

Erik Salminen is a Finn situated in Nepal where he works with providing rural villages with clean water. He was able to give us much insight into how the municipalities and villages are structured, give tips for when the government can be included and when not. He also gave us useful validation for our ideas.

Students at Sagarmatha Engineering College

We discussed with many students at our partner university, all happy to share their knowledge and ideas.

Homeowners and a builder in Shikharkot, Thaha municipality

We hade a valuable opportunity to visit a rural village and talk to the villagers. The people in the village had experienced the earthquake and its damages and some of them had been part of a retrofitting project. They gave us valuable insight into how the house building process looks in rural areas.

Lassi Tähtinen, research assistant, Department of Build Environment, Aalto University

Lassi Tähtinen was part of a PBL South Asia project himself a couple of years ago. After that, he has stayed active in the building field as well as engaged in the Nepalese culture.

Jagat Deuja, executive director, CSRC

CSRC is an NGO in Nepal working primarily with rural areas, using community-based approaches. Although their focus area is land rights, they were able to provide valuable information about how communities work in Nepal.

Utshav Bhattarai, IDBM student from Nepal

Utshav has functioned as our primary contact to Nepal, providing insight into the culture and the processes.

Paul Mesarcik, director, Lumkani

Lumkani has designed a system for detecting shack fires in South Africa. Paul shared his experience of working on social design in an underdeveloped place influenced by natural disasters.

Rabindra Raj Giri, associate professor and head of department, Dept. of Civil Engineering at Sagarmatha Engineering College

Rabindra was originally supposed to be one of the representatives from the client side in the project. Although he did not participate in the end, he was kind to share all his knowledge with us.
Sudeep Lamsal, senior lecturer and deputy head of department, Dept. of Civil Engineering at Sagarmatha Engineering College

Sudeep Lamsal, senior lecturer and deputy head of department, Dept. of Civil Engineering at Sagarmatha Engineering College

Our primary contact person at the partner university, was a valuable resource with his own contractor company besides the teaching.

Rajani Prajapati, senior structural engineer, NSET

NSET were able to give us insight into How the government has been working on promoting earthquake safety and how they e.g. through subsidies enabled retrofitting after the earthquake.

Nripal Adhikary, founder, Abari

Abari is an architect studio working primarily with natural materials such as bamboo. Abari also has initiatives for educating builders and homeowners, e.g. through learning homeowners to inspect and build themselves. In addition, Abari has designed interesting community based initiatives. The studio has furthermore developed open sources designs for safe houses.

Liva Shresta, engineer, Build Change

Build Change is an established NGO with experience of working with building safety in many countries. They have also compiled all their learnings in a comprehensive guidebook. In Nepal, they have experimented in many ways, and Liva shared their learnings with us.

II. DESIGN RESEARCH

Workshops & prototyping

Workshopping was another useful tool. Through workshops, we were able to gather knowledge in an efficient way. Together with participants, we visualized things, gathered our collective knowledge and brainstormed possible solutions.

Workshop with our partner team from Sagarmatha engineering college

We arranged a workshop with our sister team to get the most out of our collaboration as well as their knowledge. In the workshop, the students mapped all stakeholders and we learned about stakeholders we had missed. We furthermore mapped the house building process with post it notes, from both the homeowner's and the engineer's perspective. Although it turned out that the result of the journey mapping only was true for certain parts of Nepal, it was a very beneficial practice.

Sometimes, the workshops were a part of testing a prototype that we had developed. Throughout the project, prototyping has challenged us to transform our knowledge into something tangible, and then test it in order to get feedback and be able to further iterate.

At points, our testing was not successful in the sense that we would just have gotten confirmation. But understanding that our vision was faulty or that our idea would not work was very useful. And, at the same time, we got valuable input that we were able to incorporate in our final concept.

Field trip

Three team members traveled to Kathmandu, Nepal, at the end of February, and stayed for 15 days. The field trip turned out to be very valuable — it is difficult to design from a distance. This way, we sought to experience the society we were to design for. We experienced the environment, we met many people, and we saw locally built houses.

Through this, we noticed how diverse Nepal is in terms of development and living standards. The trip enhanced our ability to empathize with our stakeholders and enabled better collaboration with our partner student team.

Analysis

It was necessary to find methods for dealing with the big amount of data that our process resulted in. In order to manage the quantity of data, we gathered data from various sources into an affinity diagram. This led us to the first important insights which guided our first prototypes. Later on, we had multiple interviews, workshops and prototyping sessions within a short timeframe. This was made possible through a structured way of documenting, processing and analyzing the key insights from the different elements, and highlighting these on the team's workspace.

In the end, we gathered many more insights than those that were mapped in the initial affinity diagram. The most important things we learned eventually came to steer our final proposal. These things are described in the next section, where we introduce our key findings.

B. Findings

Problem context and stakeholders

The presented brief of popularization and service management plan of earthquake resistant building codes in Nepal lay the groundwork for the problem context. To understand the complex system of house building in Nepal, both desk research and interviews were needed. However, it was when we in our workshop with the sister team together mapped the stakeholders that we got a comprehensive overview of the stakeholders: house owners, builders, contractors, engineers, architects, inspectors, governmental institutions and rural municipalities. In addition, there are organizations such as NGOs working on developing the country, there are financial institutions, and there are the building codes and rules that should be followed.

The Problem context was and continues to be largely defined by many uncontrollable factors, especially environmental. These are the geographically earthquake prone location and the geographical location also meaning that the local aspects need to be accounted for and included to a large extent.

Insuffient Inspection Process

Early on in the process, we stumbled upon the issue of inspection. According to our desk research (Subedi & Chhetri, 2019) it seemed like this was one of the core reasons as to why safe houses are being built. From e.g. our interview with Utshav Bhattarai, we learned that because of no inspection, it would be possible for homeowners to volatile the design after the permit had been given through counseling with the builders, in order to save money. The engineering students furthermore taught us that timing is important in the building process, and that a structure becomes weak if the process is rushed. We thus thought that increased inspection could be something to explore further.

II. DESIGN RESEARCH

Prototype I

Testing what homeowners would be willing to pay for inspection

Why?
We wanted to test the value system of the Nepalese. We had learned that they tend to prioritize looks over safety, and wanted to see if they would be willing to pay for inspection. We also tested incentives, such as cheaper insurance.

How?
Interactive storyboard where the persons we tested on could choose between different outcomes of our proposed scenarios.

With whom?
Our partner team from Sagarmatha Engineering College helped us spread the prototype among their peers.

Result:
It seemed like inspection was indeed something that people would appreciate. Based on this we started ideation on an idea about a mobile inspection service, which we never came to test as we learned that an inspection process already exists in the urban areas of Nepal.

However, when we traveled to Nepal and met the people at the university, we instantly learned that there in fact is an inspection process conducted by the government. During our interview with them, NSET stated that the government is thinking about adding more inspections. In this interview, together with what we learned from other interviews, we found that the governmental inspection process already exists and works to a degree, in the urban areas.

In keeping with the contrast of the urban and rural areas, the inspection process varied and was especially insufficient in rural areas. Still, our ideas of making homeowners pay for inspection and creating a platform for engineers who could inspect did not seem to solve the whole problem.

Corruption – a solution cannot be reliant on the government

We had been informed from an early stage of the corrupt government in Nepal, this was also something which came up over and over again in interviews such as the one with Erik Salminen, yet in different forms and different experiences. Some suggested that the government could not be trusted at all, whilst others hinted at cooperation possibilities.

The corruption and mistrust were found to be two of the main things which limit their potential inclusion in a solution. It also turned out to be difficult to reach the government. When we were in Nepal, there were several attempts made to reach out to the government or governmental organizations yet no reply was received. To propose something for the government to implement or to rely completely on it was therefore out of question.

There are various options for building safe

In our brief, price was mentioned as an outstanding problem which needed to be addressed. Besides lack of awareness, price sensitivity can be one more option as to why homeowners and builders together volatile the designs. The same was highlighted in our preliminary interview with the representative of the client university Sudeep Lamsal. It was during our interview with NSET where we actually found out that building safely even in impoverished countries or places, isn't necessarily much more expensive than building poorly.

The general consensus was that it would only cost roughly 20% more to do so. Furthermore, this was also mentioned in the Interview with Abari who have a thesis that you can build safely with available, local materials, if only you apply adequate methods — according to him it is possible to build safely even with the soil underneath your house.

Lack of awareness and knowledge

A common theme in our desk research was the lack of awareness and knowledge that was said to be common among both homeowners and workforce (Ahmed et al., 2019). This was furthermore confirmed in our expert interviews. Although there are educated engineers, the people who actually build the houses might not be educated about proper processes. The building code is furthermore complex and can be difficult to understand (Fakunle et al. 2020)

Among homeowners, the lack of knowledge can result in making compromises regarding the design, ordering weak materials, rushing the process and not being able to overlook the building process. There also seems to be a widespread belief that building safely is too expensive, when in fact, there are more affordable options.

II. DESIGN RESEARCH

Homeowner-driven approaches

An important step in our process was when we found the Guide to Resilient Housing (Build Change, 2021). They had written an extensive report based on their research and intervention in multiple seismic countries. Although the guide is mostly focused on retrofitting, it provided valuable things for us to build upon. Build Change (2021) for example strongly proposes a homeowner-driven approach for sustainable change.

They believe that building safety starts with the homeowners and with giving them the tools, resources and understanding they need, so that they themselves can be drivers of change. Abari is another believer of the homeowner-driven approach.

Technological solutions for empowering homeowners

According to Build Change (2021), technology provides ways of empowering homeowners, e.g. through providing them with technological assistance. Build Change also themselves had developed a building safety app. However, when we discussed with Liva Shresta, the app had been no success.

We still saw potential in the digital solutions when we developed our next prototype, based on the idea of educating homeowners and builders on an online platform that would be community-driven and enable the homeowners to ask for advice.

Prototype II

Testing an idea for a knowledge–sharing platform

Why?
Our research had pointed our a widespread lack of knowledge, and we had learned that empowering homeowners to take ownership of their safe–ty could be a sustainable solution. We wanted to see whether an online community platform for building safety would have potential, and whether engineers would be willing to share knowledge on it. What if people who have the skills would be willing to voluntarily share their knowledge and help raise awareness?

How?
A low–fidelity paper wireframe of the service, showing the key functionali–ties and giving them A/B options. We walked the participants through the wireframe and asked them to elaborate on their choices, as well as answer a couple of open questions.

With whom?
We tested the prototype during an event at our partner university. 18 people tested our prototype and answered the questions. Both students and tea–chers were among the respondents.

Result:
The people we tested on showed great interest in our idea. They said that this is the online community we lack, and they also believed that people would be willing to share knowledge on the platform. It turned out that it would be important to have a mechanism for ensuring that the information shared on the platform would be valid.

Conditions in urban vs. rural areas of Nepal

From previous desk research and articles we knew that Nepal had specific areas which are more prone to earth–quakes and in higher risk areas than others (Subedi & Chhetri 2019, Cross, 2015).

Many of our findings also showed that the situation al–ready has improved quite a lot in urban areas, while it still persists in rural villages. In urban areas the builders who are recommended tend to be qualified and the people who hire them have more money than the ones in rural villages, which means they have more money to spend on safe housing. While in rural areas the inspection pro–cess is insufficient, people cannot afford engineers, and the lack of awareness is more apparent. We thus seeked to find a solution that would be applicable in the whole of Nepal.

II. DESIGN RESEARCH

Prototype III

Refining the knowledge-sharing platform

Why?
As the reception of our earlier paper prototype was so good, we thought we had found the right direction in an online community platform for building safety.

How?
Taking into account some of the ideas we had received, we developed the previous prototype further and made a digital interactive prototype of it to give a better picture of the functionalities, still maintaining a low level of fidelity. In the testing, we walked the persons through it and let them comment freely, while in the end asking a set of questions.

With whom?
We tested the prototype in two sessions: first with approximately ten engineering teachers, and later with a group of homeowners and one builder in a rural village in Taha municipality, 4 hours outside of Kathmandu.

Result:
While the teachers in the first testing session were positive toward our solution, they highlighted that internet connection might be an issue. We did not realize how severe of a downside this digital solution had until we tested with the villagers. Here, they saw no benefit of our solution as they would first need both internet connection and devices to use. We played with the idea of making a platform that would function partly offline but soon found an even better direction.

Offline solutions for targeting rural areas

However, we soon realized that tackling all of the country with the same approach was not very realistic. During our rural village visit, we discovered that the internet connection is unable to reliably maintain a connection and that the mindset and internet culture is not in a good enough state.

After these learnings this idea was totally invalidated and led to the following conclusions. Firstly it must target the remote areas where the risks are high and the help is needed, it cannot be offline as the connection isn't reliable enough. It must be built on trust because of its extreme importance and it must be facilitated by personal interactions, without governmental involvement.

The power of trust and word of mouth

In our interviews with Utshav Bhattarai, we learned about the culture in Nepal and especially the culture revolving around trust and tradition. We were informed of the fact that many people, in fact the majority, want to meet face to face at all occasions and that trust is established through interpersonal connections. This assumption was confirmed when conducting further interviews yet mostly during the travels. It was during our travels that we ourselves reached out and established person-to-person connections which showed the trust process and reaffirmed our assumptions. When we visited the rural village, we were also amazed of how tight the community seemed. Everyone knew each other, and they were like one big family.

We furthermore discovered that the hiring of the builders often are a direct consequence of trust and word-of-mouth marketing. This became evident when discussing with the local people and conducting workshops with the help of our local sister teams. Contractors, builders and engineers alike, tend to be hired by people to whom they've been recommended. The ones who recommend are usually friends or family members who spread the word and because of the inherent trust in this interaction, they choose the suggested individual — regardless of how well-educated the builder is.This means that even if we would provide a list of qualified builders and contractors, the homeowners would likely not use it. We therefore realized that the person who promotes safe choices needs to be someone whom they know and trust.

Benchmarking – successful approaches

Liva Shrestha, Build Change:

The preferred approach is homeowner-driven

Nripal Adhikary, Abari:

Using local materials is cheaper and a form of self-reliance amid external commercial interest to make people build their houses with concrete. Educating homeowners is key.

Jagat Deuja, CSRC:

Several NGOs organize trainings for builders so the need for more education is acknowledged. The CSRC has been able to help landless homeowners secure documentation by spreading knowledge of their rights

Erik Salminen:

Rural municipalities appear to be useful for grassroots-level impact as they are recently established and less corrupt than urban governements. The best appraoch is reaching communities directly and offering daily allowances for participants.

Rajani Prajapati at NSET:

Successful incentives make people feel like they are gaining no matter whether they had very little or more before: many of those who were given subsidies to retrofit after the 2015 earthquake would have wanted to build a totally new house instead so despite the good intentions the final outcome was not ideal

II. DESIGN RESEARCH

Combining insights into a network approach

Because of the importance of trust, we came up with the idea of community ambassadors, which came to be a cornerstone of our final solution.

In our interview with Erik Salminen, we presented the ambassador idea and were told that after years of work in Nepal, he and his team had concluded that a similar approach, and that ambassadors from the community indeed are a great way of accessing the community. This validated the concept and also showed the potential of implementation and function of the system in Nepal.

During a weekend industry project hackathon we developed a refined concept with all of these findings in mind. We created our network which ultimately came to be our final solution. We realized that there was unutilized potential in Nepal — there are already trainings and events related to earthquake safe housing arranged by both the government and NGOs but these have a limited range.

We furthermore came to think of what we had just in front of us: the university. In our collaboration with the students, we learned that students in Nepal are ambitious and career oriented. Certificates are important because they open up career opportunities. Yet, there are no extra-curricular activities. As for the teachers, the teaching methods are rather traditional, but there seems to be an interest for exploring new ways of working, as e.g. the participation in the PBL project shows. These two parties are also passionate about building safety, and they are likely to want to help develop communities such as the ones which their families are from. We thus combined these stakeholders — the communities who need the help, the community ambassadors, the students, the teachers and the NGOs into a network that would educate villagers and make them take ownership of their situation.

Before we pitched it and created the final product, there were some details which needed to be addressed. Firstly we had no proof of the value propositions nor validation of the idea, these were the main uncertainties. We tested the value propositions entailed in it, and based on the aforementioned interviews as well as the one with CSRC, found that the proposed value propositions were valid.

Prototype IV

Testing a vision of an ambassador network

Why?
When we realized that our online platform would not have an impact in the areas that would need help the most, we combined existing skills and resources in Nepal into a network that would provide communities with tailored training. The network would build on trust and on empowering the people in the villages. This would be enabled through an ambassador who would be a villager themself. In addition, students and teachers would be involved. We had a vision of how this would work and the impact it would have, but as it partly was a whole new direction, we needed to test it.

How?
We had made detailed maps of how our system would work but realized that people not familiar with network design would have a hard time understanding it. To get valuable feedback, we needed to make it understandable. We thus created a narrated, simple video that told the story of the network.

With whom?
The idea built on things we already had learned, so we were rather confident. However, we still wanted input from our clients to ensure that we were going in the right direction. We thus tested the prototype with both Aalto Global Impact and our Sudeep Lamsal from Sagarmatha Engineering College. In addition, we tested it with Lassi Tähtinen, a doctoral student with expertise in building related matters and experience from working in the Nepalese context.

Result:
All of the ones we tested with thought that we had found the right approach to the problem. We got some tips for how we could develop the concept further, such as ideas for who could fund and how we would ensure that the ambassador really stays active in the community.

Not relying on the government maintains the crucial aspect of trust. However, our prototype testing with Sudeep Lamsal made us realize that the government still potentially could provide funding in the network. We were told of the governmental subsidies individuals received after the earthquake to rebuild their homes. This was also confirmed via numerous sources who mentioned amounts close to between roughly $2,000 to $3,000. This meant that the government would have much to gain by creating safer housing. (Kamata, 2016, World bank group, 2020)

From our interview with Erik Salminen, we learned that the highest level of governmental institution that we could collaborate with would be the rural municipality. The rural municipalities have a certain level of self-governance, and if we would be able to convince them of the cost-benefit of investing in our proposed idea, they would be likely to fund. It would also be important to be transparent and inform the rural municipality of the interventions in the area, said Salminen.

C. Summary

By combining desk research, exploration, problem solving methods but above all, real life understanding and experience and taking the users pain points into consideration we were able to design a network and produce a solution which showed true potential. Understanding the pain points such as monetary assets, lack of knowledge and limited access to knowledge, gave us the opportunity to create a solution tailored for the locals, the country and the specific villages. By combining the stakeholder specific solutions and all our findings from all research and interviews as well as our experience and the experience of the Nepalese, we were able to design the Solid Neighbor Network.

III. SOLUTION

A. Introduction

All these mentioned findings encouraged us to align our design with our basic principles that would guide us in the further process of our work.

First, the solution should enable a consistent transfer of knowledge about safe and multi-layered building methods between different actors in and around communities. Second, it should raise awareness among homeowners about low-cost and readily available construction options and their often good cost-benefit ratio, as well as other benefits of safe housing.

Third, it should help find mechanisms of control and quality assurance at different levels and simplify the complex information structure of building regulations to a level that is easy enough to be carried on orally or by doing. Fourth and finally, our proposal should be strengthening the resilience of the beneficiary communities by creating ownership and empowering them to take building safety matters into their own hands.

B. The Solid Neighbor Network

The Solid Neighbor Network is a social framework that combines the knowledge, potential and motivation of students, teachers, non-governmental organisations and community ambassadors.

Several successful NGO approaches rely on local community representatives and transfer of knowledge. For us this is the preferred option as a way of giving local people more power over their own lives, which should enable the solution to have wider and more long-term impact.

Here are the Stakeholders:

Ambassadors:

They key stakeholder who lives in the community is chosen based on motivation and merits to join the program. The ambassador candidate will be trained in public speaking, cruising management, and building guidelines and then certified to promote building safety in the village. The trusted person can invite NGOs to come and organize trainings among homeowners and builders. The ambassador can present his or her work to peers at events organized by the SNN.

University teachers:

Teachers are asked to hire students to join the program. They may later be paid to organize trainings to villagers and ambassadors.

NGO Partner:

NGOs focusing on building or safety-related matters can team up with the "mother NGO" to arrange trainings for villagers and widen their access to communities.

Mother NGO:

The facilitator of the whole network.

Students:

University students are recruited to join the program and go to villages to hire ambassador candidates. The students can later help facilitate trainings in villages.

Connections can be powerful. These stakeholders already exist in Nepal but their potential is not used to the maximum when they are not talking. Students are eager to do good and advance their careers but they lack frameworks to do so. Individual NGOs do try and help impoverished communities but they could be stronger when collaborating. Villagers would like to improve their infrastructure but they are not accessing the proper, creditable, and understandable information.

Connections can be powerful. These stakeholders already exist in Nepal but their potential is not used to the maximum when they are not talking. Students are eager to do good and advance their careers but they lack frameworks to do so. Individual NGOs do try and help impoverished communities but they could be stronger when collaborating. Villagers would like to improve their infrastructure but they are not accessing the proper, creditable, and understandable information.

The value that the SNN creates is trust. It is the currency of the network. The ambassadors may not have a lot of money but the capital they have is the trust they enjoy in their communities. The SNN strengthens their status through education. People in villages are more likely to take advice and change their mindsets when the information is coming from someone they know, as we learned through interviews about the Nepalese culture and interpersonal communication. This way, house by house, the correct building practices become the default.

Whatsmore, the network is not a one-way street of information. It runs two ways. Through the ambassador, villagers finally have a channel to ask for trainings from NGOs. This is important as we learned from Erik Salminen that people in rural areas tend to feel the government has forgotten about them. So if the state doesn't take care that people have safe housing then people should have a way to ensure they can do it themselves. It is a question of basic needs. And when enabling this, villagers can have a say in determining their communities' pace of development.

III. SOLUTION

Solid Neighbor Network – Implementation Guide

In order to reach its full potential, the network needs to be properly implemented. Many steps are needed before the full network is established, and there are many things to take into account. Not all aspects of the network can be decided in detail at this stage, but they need to be designed as a part of the implementation process. To ensure that the Solid Neighbor Network is brought from idea to action, we created a handbook that instructs its implementation.

Target group

The intended users of the handbook are for example members of a team recruited by Aalto Global Impact, who would go to Nepal to establish the Solid Neighbor Network. We call the team “the mother NGO”, to separate the facilitators from the other NGOs in the network.

Content

The handbook contains everything the mother NGO would need to know in order to form partnerships, attract funding, instruct the stakeholders in the network of their roles, design parts that still need development and manage the network as it grows. The handbook addresses all parts of the network in detail, explaining the needs and motivations of the stakeholders as well as their roles in the network and the value they gain by joining. It furthermore contains a roadmap covering the key steps of three core phases: setting the foundation, pilot projects, and scaling of the network. In addition, the handbook mentions possible risks and provides guidelines for how to measure success. Lastly, we have gather our best tips and tools, including e.g. important things we have learned about working in the Nepalese culture, co-creation tools and resources that the mother NGO could benefit from.

The whole implementation guide is added as an appendix to this report.

IV. REFLECTIONS

A. Working in a different culture

Working in a team in a different continent comes with challenges. First, the obvious hinder was that the Aalto team had to navigate different time zones and make video calls with variable internet connections with students in Nepal.

But another bigger challenge was collaborating with people with different expectations and plans. Even so, the Aalto team was glad to notice that the SEC team was very helpful and eager to learn about the foreign students and their culture. Meanwhile, the team appreciated insights that the Nepalese team could present about the Nepalese culture and the local building practices.

The best part about the partnership was experienced by students who visited Nepal as we got to know the students a bit more as friends so the interactions were not as transactional as feared earlier due to the simple complexity of the problem and time pressures. However, it took some time before the atmosphere became more relaxed, and it required us to put in some work before the automatically formed hierarchy disappeared.

The hardest part about working in another culture was misaligned expectations. It was sometimes hard to stick to schedules and reach the right people at the right time as the local culture appeared more reliant on personal introductions and non-direct communication. While we in Finland are used to keeping set times, we noticed that this was not always as strict in Nepal, and both reminders and patience was needed. The difference made the Finnish team realize that it is useful to tell the Nepalese team beforehand how they are used to very direct and punctual communication but when something unexpected happened, try to be flexible, optimistic, and constructive even though things don't always work out as planned.

B. Working in a multi-disciplinary team

While working in a team with different backgrounds, we have noticed a few things that we consider significant. One of them being the correlation between the ease of project management and the level of agreement that exists in the team about priorities and the most important values.

Teamwork can be difficult if not every team member is clear about the value and benefits of design thinking. Any attempt of intensive collaboration can be undermined by the will to work alone and the opinion that everyone takes on a part of the project that they are good at anyway and that at the end of the project everything simply has to be put together by everyone. The attempt to incorporate research methods of design thinking can also be sabotaged by this unwillingness resulting from false values. Many of these methods rely on thorough and accurate handling and simply do not work if the value is not recognised.

Related to this is the observation of how challenging it is to break traditional roles of professional disciplines. Especially under time pressure and in a project with great uncertainties about the course and the result. When we were under pressure, we realized that we easily stuck to the traditional roles — the designer does the design and the business student the business model canvas. This had both positive and negative consequences. On the one hand, the efficiency and speed of this approach is a good thing. This is especially helpful in short projects where time is a scarce resource. It is also easier for the team to justify itself externally when stakeholders know that peo-ple with the respective profession and their expertise are the main contributors to certain parts of the project.

On the other hand, the low learning potential outside one's own comfort zone and area of expertise is a nega-tive factor. This mutual learning, however, should be one of the focal points of multidisciplinary work. As discussed above, this often results in a lack of mutual understanding and empathy. A negative example here is another team from Aalto Global Impact, whose internal problems came to our ears: The importance of an appropriate design of their project report by the designer was not valued in the group and she was therefore confronted in her group for taking too long for her work. It is therefore essential to constantly educate about the value of one's own methods and thereby build understanding and also to be open about the ways of working of members of the team.

On that note, it is also worth highlighting how important it is to have a common and easily visible task and project plan that is being updated and checked regularly by all team members. Especially in multidisciplinary teams, working methods are often very different and personal preferences or shortcomings can strongly influence the good progress of a project. Here it has proven to be very impactful to create a visually congruent plan that not only addresses deadlines and assigns people, but also makes connections between parts of the project visible and explains them. This kind of project communication also helps to convince all team members of the meaning of their work and to align it with the big picture.

V. CONCLUSIONS

Discussion

The Solid Neighbor Network has the potential to change the earthquake–safety situation for communities living in the most vulnerable parts of Nepal.

The SNN is the widest multi–party idea that we have seen in this field in Nepal during its study of the problem over the past six months. It brings together stakehol–ders whose potential is currently untapped. But it also empowers homeowners in rural areas to reach out and get the help they need to advance development in their communities. This is an approach that could help the Asian country better equip its people for the next big earthquake.

After presenting the invention at the Impact Gala 2022, we have been gathering feedback about the solution and working toward wrapping up the project. With this, time has come to pass on the baton through the hopefully helpful advice found in the handbook.

Limitations

The work has been heavily influenced by our research, expert interviews, and brainstorming. These are subjecti–ve methods of gathering information and using it. Besides these factors, we have had to follow a certain schedule to finish the project, which has pushed us to deliver the solution in a timely manner.

Moreover, the solution itself has risks that are mostly related to its multi–party approach. In order to work, all parties need to remain engaged and maintain the network, which requires effective communication and momentum. The handbook includes more details about the risks related to funding and scaling.

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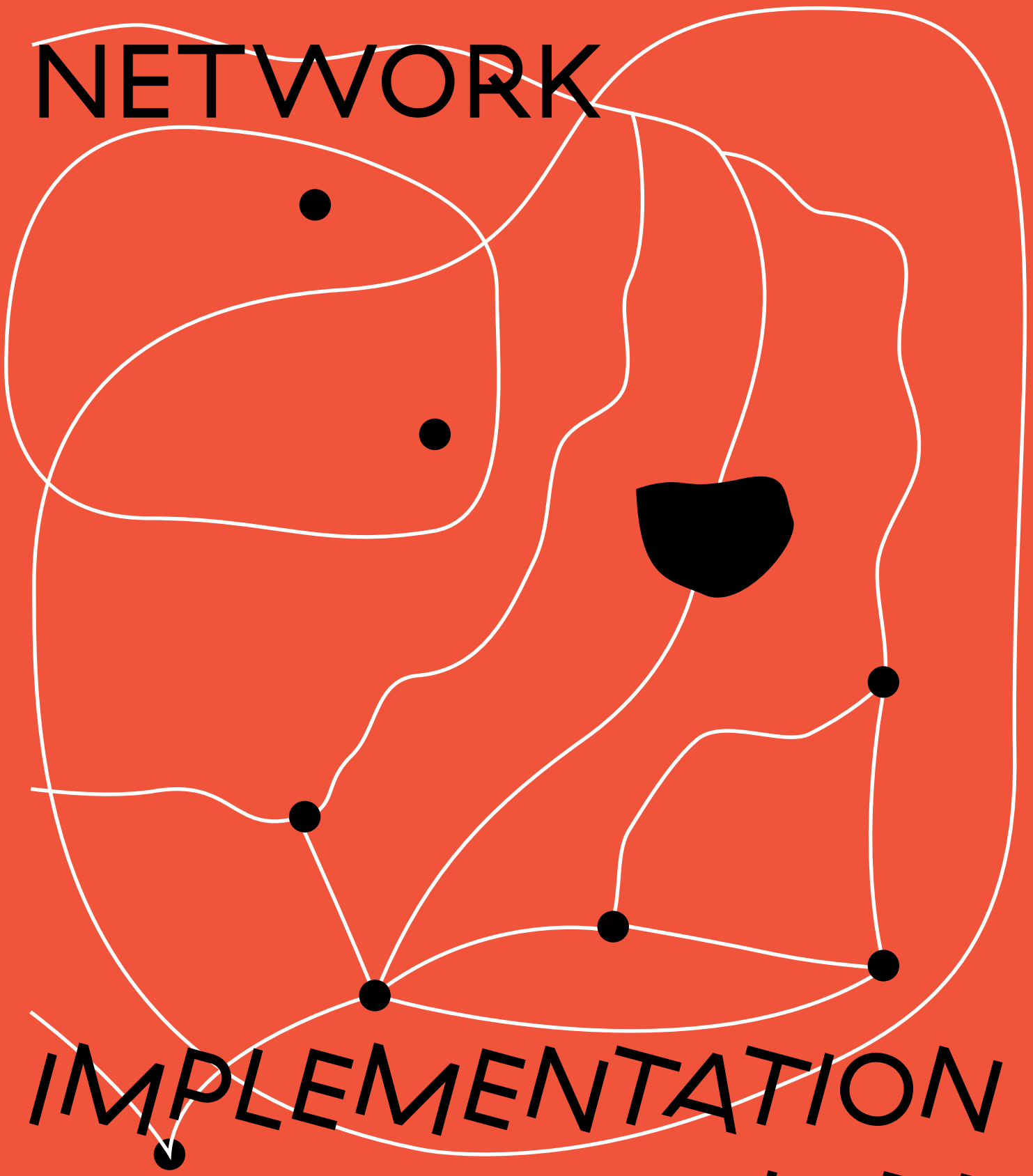
APPENDIX:

SOLID NEIGHBOR NETWORK



IMPLEMENTATION GUIDE

PBL SOUTH ASIA 2022

A COMMUNITY-BASED APPROACH TO EARTHQUAKE-SAFE HOUSING IN NEPAL

Emmi Laine
Cedric Ehrnrooth
Michael Buchta
Sofia Wasastjerna
Yuanzhe Zhang

In collaboration with students and teachers from Sagarmatha Engineering College, Kathmandu

Aalto University
DBM
South Asia
Co-funded by the Erasmus+ Programme of the European Union

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Foreword

Dear reader,

We hope this handbook finds you well and manages to inspire you to take action and start working on transforming Nepal — a vibrant and charming yet underdeveloped country — towards becoming more resistant to future earthquakes.

The concept presented in this handbook is very close to our hearts. We have worked on the project for six long months. We have studied the country and its functions thoroughly, we have learned about earthquake safety and we visited Nepal to learn about the people and the culture and co-created our way forth together with our partner team at Sagarmatha Engineering College in Kathmandu.

We have aimed to condense the most important parts of our work in this handbook while still making it as approachable and actionable as possible. We have included everything we think that you should know when kick-starting the project and managing the network as it grows.

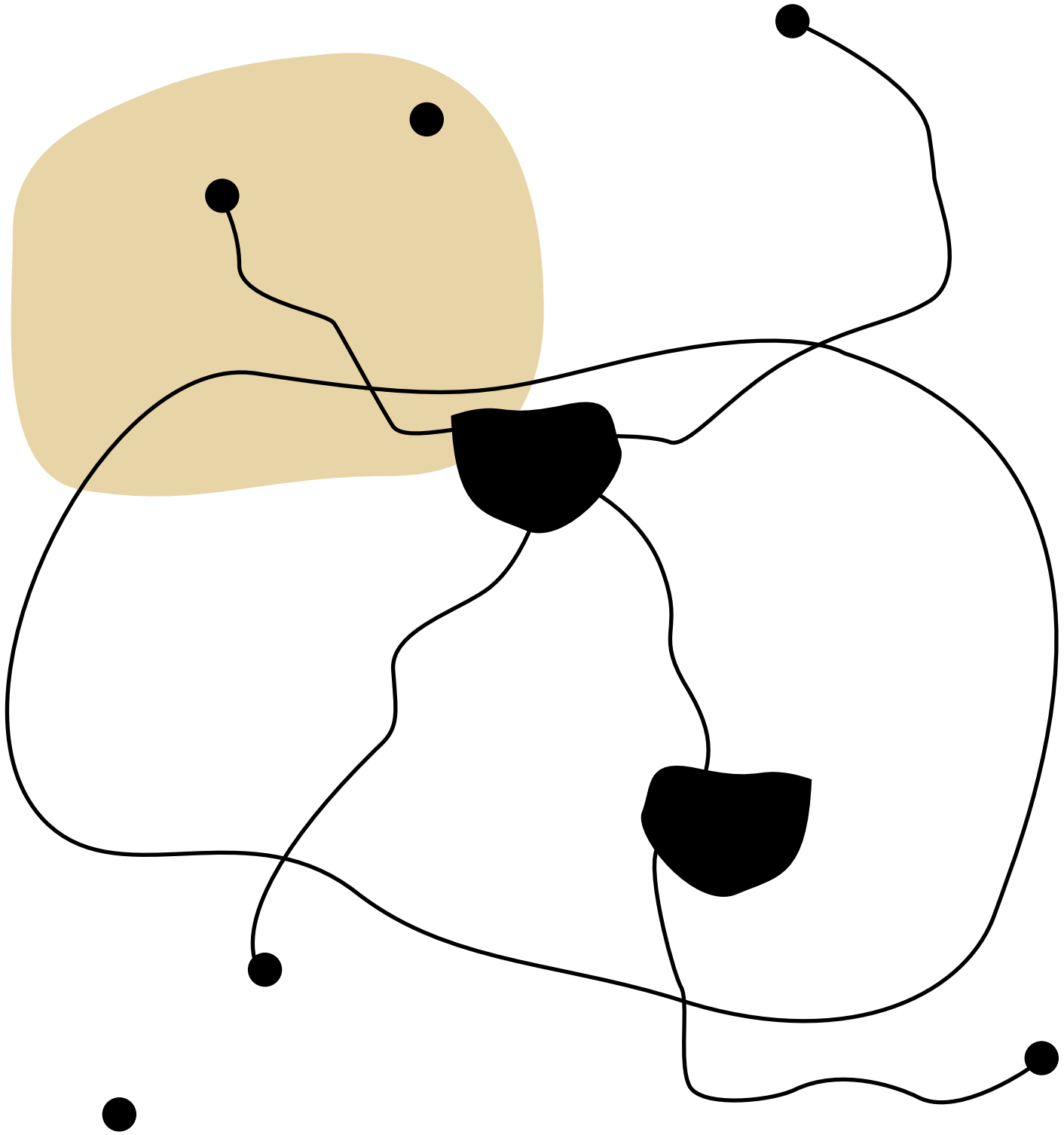
Your role as the mother NGO in the network is to be the facilitator — the party that has knowledge of all stakeholders, their strengths and needs, and brings them together into a movement with impact.

Disclaimer: six months is not enough to learn everything. That is why we have left the program that we propose open for iteration. We have not yet developed all parts of it, but we happily share how we would proceed if we were to develop them. We encourage you to be critical and apply your own knowledge to it, and iterate as you learn more.

Best,

PBL South Asia 2022

PART A



BACKGROUND

INTRODUCTION

Much has happened in Nepal after the 2015 earthquake. The disaster put pressure on the development of building standards and a new building code was drafted. Buildings have been rebuilt and retrofitted across the country, and NGOs have provided assistance and training in less prosperous areas.

But there is more to be done. Building codes as such are not enough — there is a lot of leeway in the system to get around them. The current inspection process is inadequate, and in some rural areas there is no inspection process at all.

Unfortunately, even today, safety is not the starting point everywhere in Nepal. More ways need to be found to publicise building codes and educate people about building safety, especially when the previous disaster is no longer so present in people's minds.

We envision a Nepal where people have the knowledge, resources, support and motivation to invest in strong houses. Even if they live in less developed areas of the country.

Our vision:

Safety becoming the standard in Nepalese villages

We envision a Nepal where safety is standard. All new houses are being built according to code so when the next earthquake strikes, they will remain standing.

We imagine that the huge gap of building safety between the urban and rural areas in Nepal will be diminished when it comes to knowledge level and living standard. Rural areas will have a more direct access to knowledge and assets, and safety will increasingly be valued in these communities.

We envision that the lack of knowledge is not an obstacle anymore. Besides educated workforce on all levels, the homeowners themselves will have the knowledge to supervise the process and the ability to find resources with good quality.

We do not believe that all new houses need to be made of reinforced concrete — but we imagine that there is awareness of different options of building safely, and that local materials and adequate methods will be used by people who are educated to build skillfully.

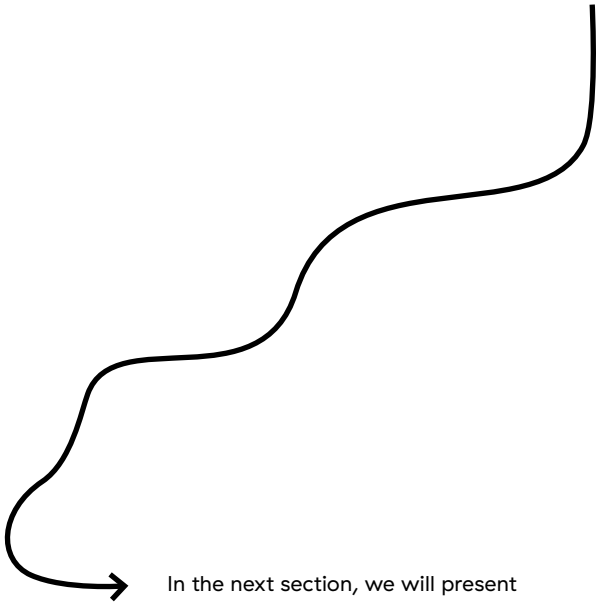
However, we believe that, when safety becomes deeply integrated in the mindsets of the Nepalese people, both individual people and institutions will see the value of investing a little more in building strong buildings now, instead of later paying for the consequences of not doing so.

How to get there?

We propose a community–based ambassador approach

To reach this imagined state, rules and governmental action are not enough, partly because of the inevitable corruption and the lack of trust in the government. Instead, we propose a bottom–up approach which puts the needs of the communities at the center and em–powers the residents to take ownership of their situations.

We have designed a network that combines the know–ledge, potential and motivations of students, teachers, NGOs and community ambassadors. The network creates opportunities for all of the stakeholders, and it takes advantage of the resources they have on offer. Bringing the parties together in working towards a mutual goal, it can accomplish a great difference widely in Nepal.



In the next section, we will present key findings from our research and explorations that substantiate the approach. Subsequently, we will introduce the network, its parties and their roles more in detail. Lastly, we provide you with a road–map that guides and supports you in implementing the idea.

KEY RESEARCH FINDINGS

Much has happened since the 2015 earthquake, yet more efforts are needed

The April 2015 earthquake in Nepal close to Kathmandu launched a chain of reconstruction as the world turned its eyes toward the South Asian developing country. After almost 9,000 people died in the Gorkha earthquake, the World Bank led a reconstruction program that tied funding to building standards, incentivizing residents to use their subsidies to build safe houses. Several NGOs started retrofitting partially damaged houses and offering design models to homeowners to promote stronger housing.

However, the problem of unsafe housing persists, particularly in rural areas that were not affected by the megaquake, as we learned in an interview with Liva Shrestha at Build Change. The main issue is about the lack of awareness among homeowners and builders, according to another interview with Rajani Prajapati at the National Society for Earthquake Technology.

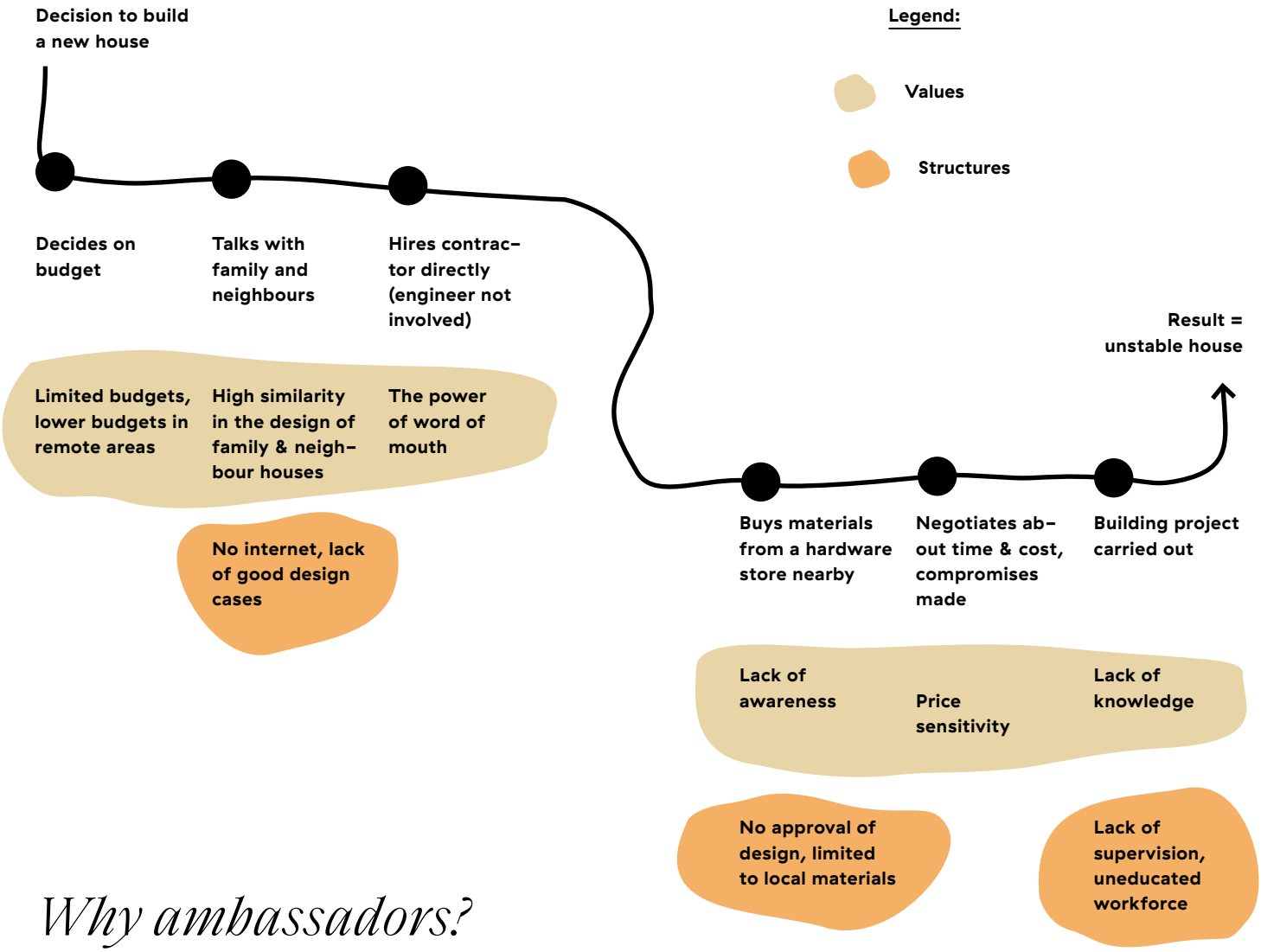
Inspection

Housing inspection exists but is not enough, as we learned through talks with students and experts from NGOs. Some rural municipalities may not have a sufficient amount of manpower to send inspectors to site to check new projects. Generally speaking, the government's involvement is limited and homeowners & builders lacking conventional education may have a hard time understanding the complex building code.

Local Conditions

What adds to the complexity is local conditions. Big cities, such as Kathmandu, have reinforced concrete buildings that are often well-built but also more expensive. Rural builders prefer cheaper local materials such as bricks and stone and mud that are also good as long as used properly, as we learned through talks with students at Sagarmatha Engineering College and experts at Build Change and at the National Society for Earthquake Technology Nepal.

So suggesting a certain type of house was not an option. Instead, the solution should focus on the awareness. An underlying problem throughout the process has been understanding of the ecomic situaton. The persisting problem is simply, money. Whilst it would theoretically be possible to build with the best materials at almost any location, the cost is too much. Money has come up many times as a crucial and limiting factor, which is why the solution could not be monetary.



Why ambassadors?

Several successful approaches from NGOs rely on local community representatives. Similar to those we also chose this approach for following clear reasons.

The Nepalese culture relies on personal communication and relationships, as we learned during our trip to the country. This is also key to our suggested solution. People tend to ask their relatives for advice on housing matters so these links of information sharing should be targeted, as our prototyping proves.

People are helpful, they like sharing and doing good but don't tend to try breaking certain social hierarchies. This is why it is key to engage highly trusted local people instead of experts coming from afar.

Why not an app?

From a digital solution, our idea developed into a social network, driving the change with communication between certain stakeholders. The reason is that in rural areas people may have limited internet connections, as we learned when visiting a village outside Kathmandu.

This is why the solution, as presented in this handbook, combines all the strenghts and needs of students, teachers, NGOs and homeowners to improve safe building awareness in Nepal.

Why we are not proposing governmental action

Residents in rural villages have a hard time trusting the government due to the existing shortcomings of infrastructure and corruption.

Summary:

- → Change is needed the most in rural and less developed areas.
- → People need to be targeted organically and offline: online will not serve its purpose here.
- → A homeowner-based approach will have the biggest impact.
- → Trust is key and word of mouth is powerful. The Nepalese trust people they know and there is a sense of distrust in the government.

The greatest pain points in the house building journey are:

Price sensitivity

Reliance on Word of Mouth

Uneducated workforce

Lack of awareness of available options

Insufficient inspection process

Why a homeowner-driven approach?

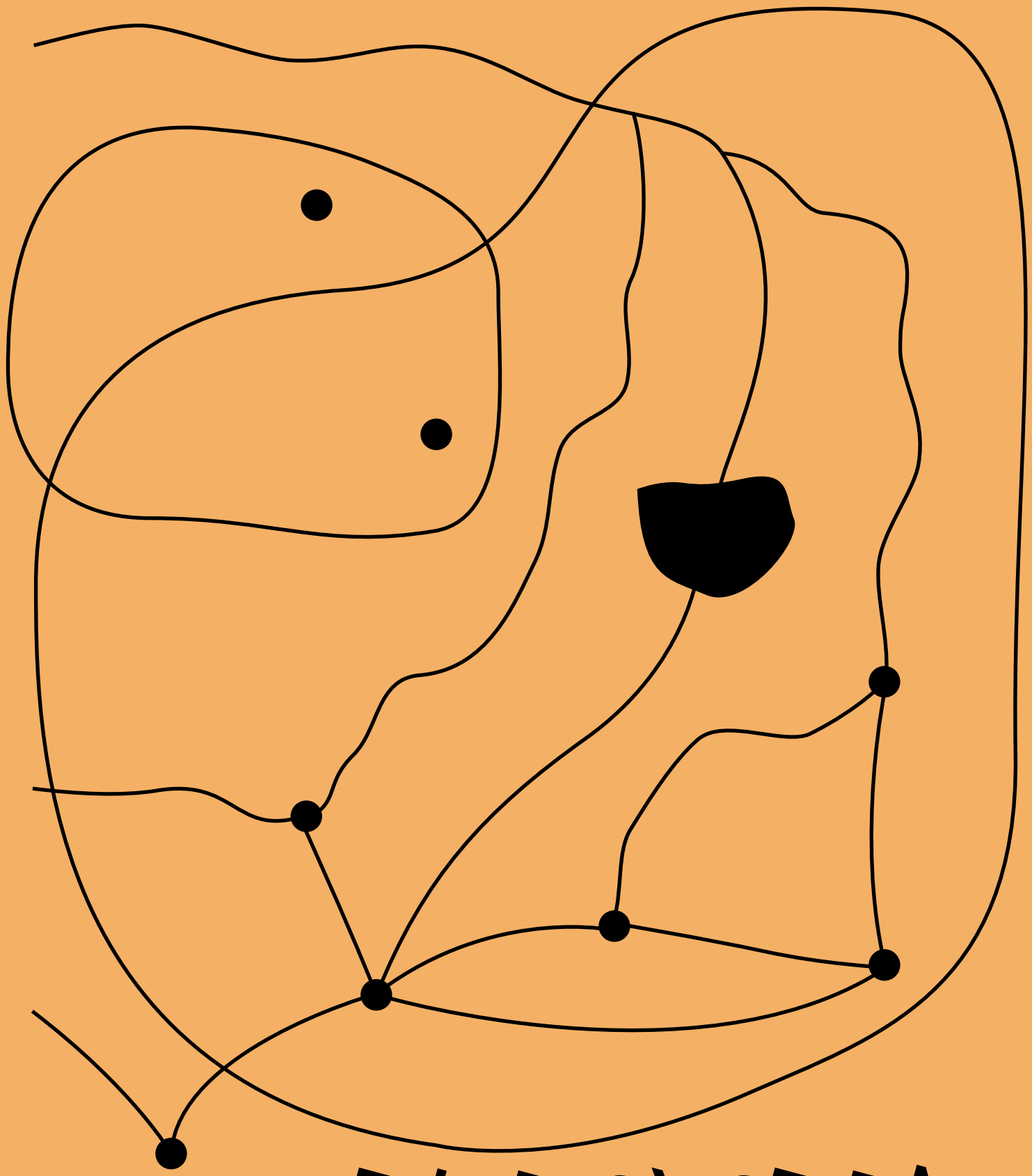
Solutions that place the power close to the homeowner are often more successful, according to a report by Build Change, a disaster-resistant housing NGO in Nepal.

Homeowners have a final say in how their houses will turn out as masons tend to follow their instructions. This is why it would be hard to make a difference by addressing only builders.

Moreover, targeting users directly is good as in this way they don't have to think whether the NGO is financed by hidden commercial interests such as a construction materials company, turning it biased.

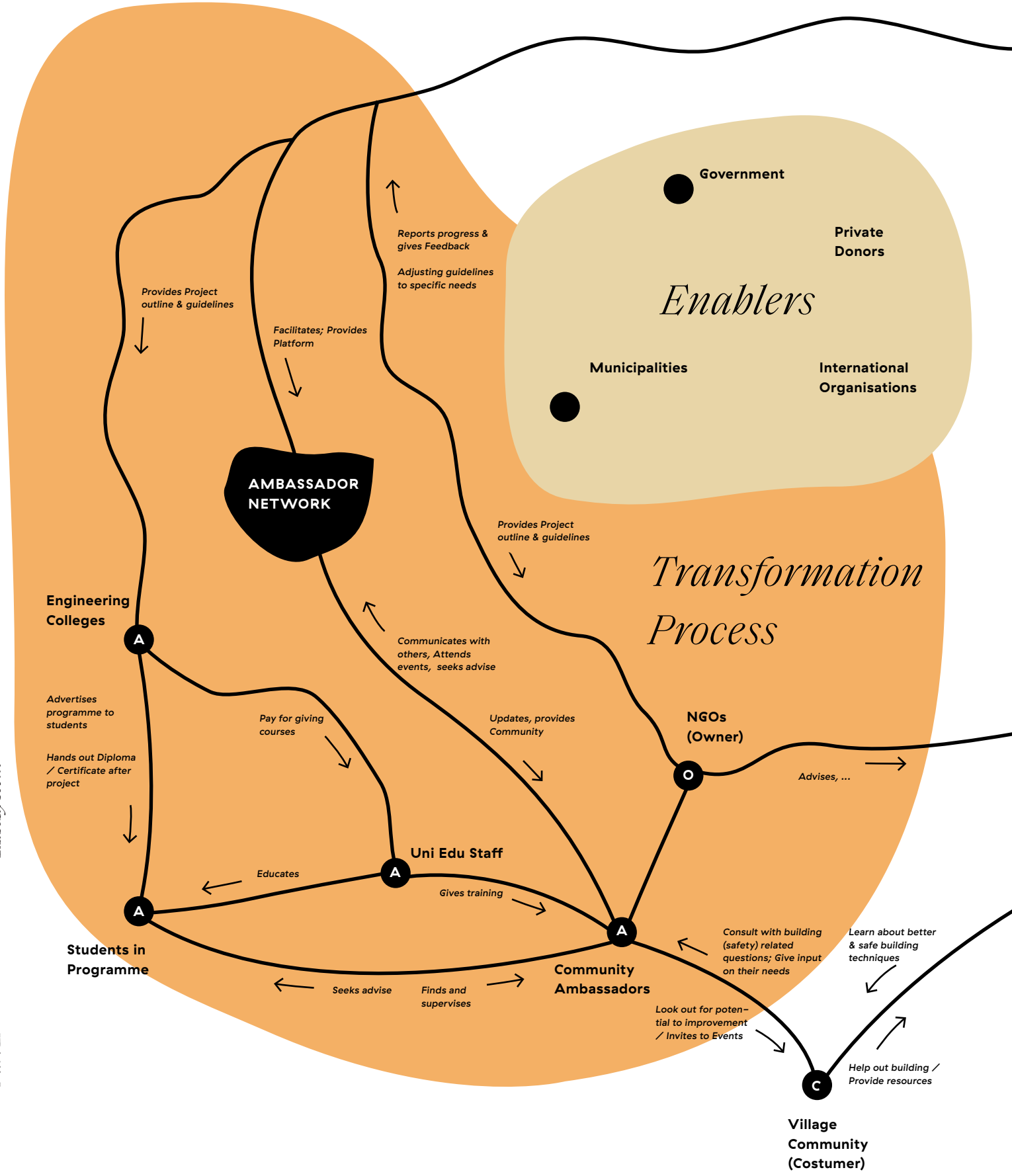
Through testing and talks with stakeholders, we chose a community-based approach to propose a better future of safe housing in Nepal.

PART B



THE SYSTEM

THE NETWORK


Government
Private Donors
Enablers
Municipalities
International Organisations
Reports progress & gives Feedback
Adjusting guidelines to specific needs
Provides Project outline & guidelines
Facilitates; Provides Platform
AMBASSADOR NETWORK
Provides Project outline & guidelines
Transformation Process
Engineering Colleges
A
Communicates with others, Attends events, seeks advise
Advertises programme to students
Hands out Diploma / Certificate after project
Pay for giving courses
Updates, provides Community
NGOs (Owner)
O
Advises, ...
Uni Edu Staff
A
Educates
Gives training
A
A
Students in Programme
Community Ambassadors
Consult with building (safety) related questions; Give input on their needs
Learn about better & safe building techniques
Seeks advise
Finds and supervises
Look out for poten-tial to improvement / Invites to Events
Help out building / Provide resources
C
Village Community (Costumer)

The Solid Neighbor Network combines existing knowledge and resources in Nepal into a network that works for a common purpose but still provides each stakeholder with added value. The network brings university students, teachers and NGOs together to transform rural communities — and all with the community ambassador as the ultimate driver of change.

Your „Mother“ Organisation

Input

We consider our organisation (the mother NGO) as an input to an existing system that is transformed by the effects by the input

Environmental Constraints

Villagers have other worries than earthquake safety

Living standards in villages at bare minimum

Villages are very secluded

Many Villagers don‘t use the internet often

Untrustworthy & Corrupt Government

Little to no Governmental Support

VILLAGE PROJECT

Output

We see as the output the benefits that our clients will obtain through our proposed system.

The two key outputs consist of a growing ambasssador network and village projects that all villagers can benefit from in the long term.

'Knowledge transfer about secure and multi-faced building styles

'Raises awareness of homeowner about cheap and easily available construction options and their cost-benefit

'Empowers village community through knowledge & connections

'Ensures long term community ownership

Legend:

A **Actors** are the ones responsible in doing the activities

C **Customers** are the beneficiaries of this activity

O **Owners** are the ones who could stop the activity

Enablers are parties without whose direct or indirect support or approval the system cannot function.

The **transformation process** is a blueprint of the ideal system that comes together with the help of our input. It shows the new stakeholder interactions as we envision them.

Environmental constraints are factors that directly limit or influence the shape of our system.

Weltanschauung (World View)
What makes this activity meaningful

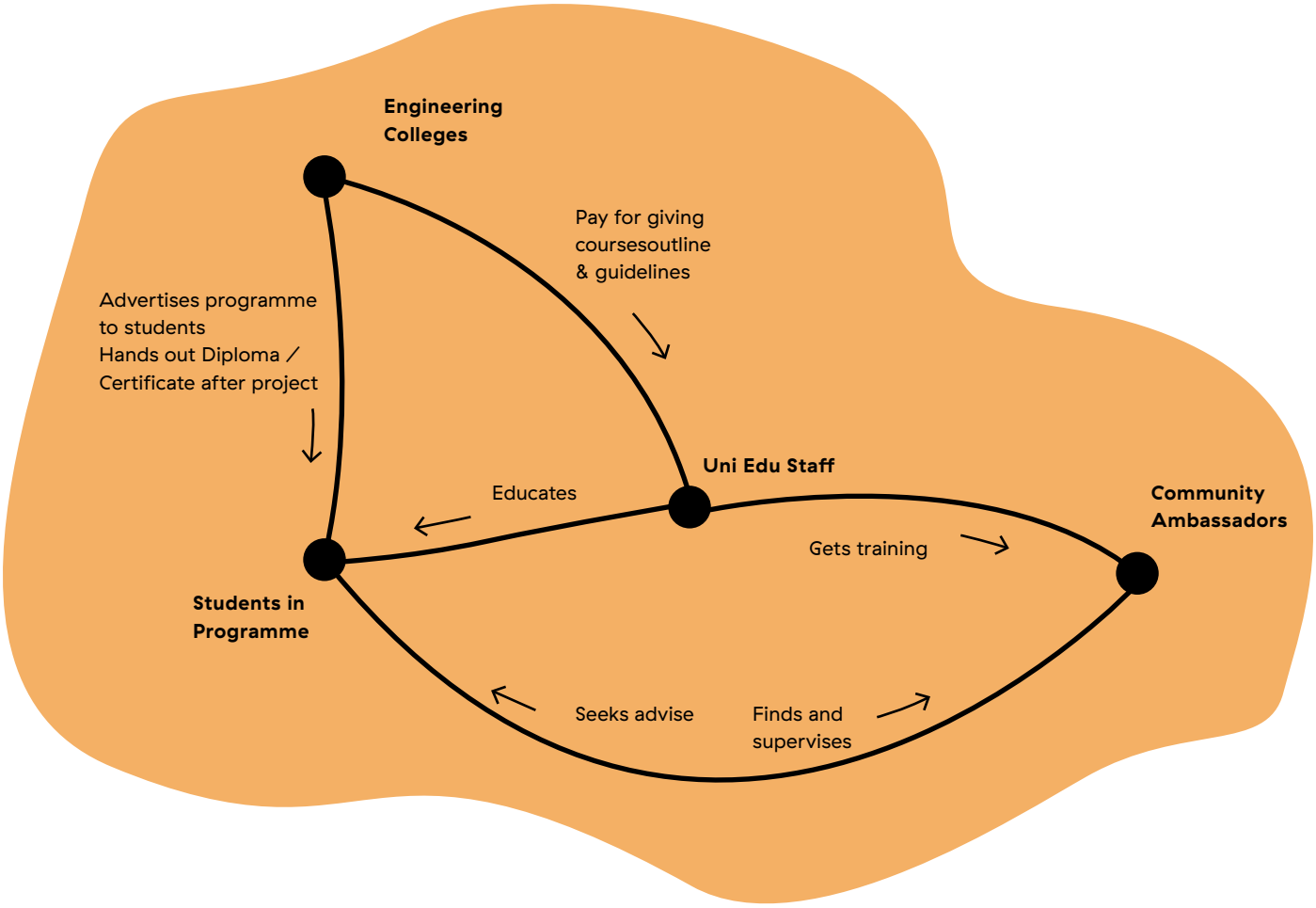
STAKEHOLDER 1

University Students

The engineering university student is a valuable part of the network as the participant kicks off the wheel of motion in the system. Students should be chosen based on their enthusiasm and capacity to share information and engage the people in their villages. The student should act fairly and be a role model of personal development. If preferable, the students can be grouped to go to villages together to share the responsibilities.

The Students can gain from their participation. They can receive a certificate which can be a useful addition to their CVs. They can practise and hone their skills of taking initiative, communicating with multiple stakeholders, and facilitating workshops if needed. These are valuable skills in work life and are attractive to those taking leadership roles in their lives.

As the network grows, students can discover networking effects in the system. They can join meetings across different locations in Nepal and get to know other students and network participants. This adds some fun factor to the program.



Student profile

→ Students are enthusiastic and social and would like to improve their country and jump-start their careers

Motivation:

→ Career prospects
→ Networking
→ Doing good deeds

Needs:

→ Instructions
→ Transport allowance

Role

→ The student goes to the chosen village in order to recruit an ambassador
→ The students maintain contact with the ambassadors when they have been recruited.
→ Helps the teachers arrange the ambassador trainings & later on also the ambassador community meetups.
→ The student needs to set a good example in being an efficient communicator and a promoter of better safety in communities
→ The students needs instruction materials from the mother NGO, delivered by the teacher

Value Proposition

→ Students can advance their career prospects and increase their networks by joining the program

STAKEHOLDER II

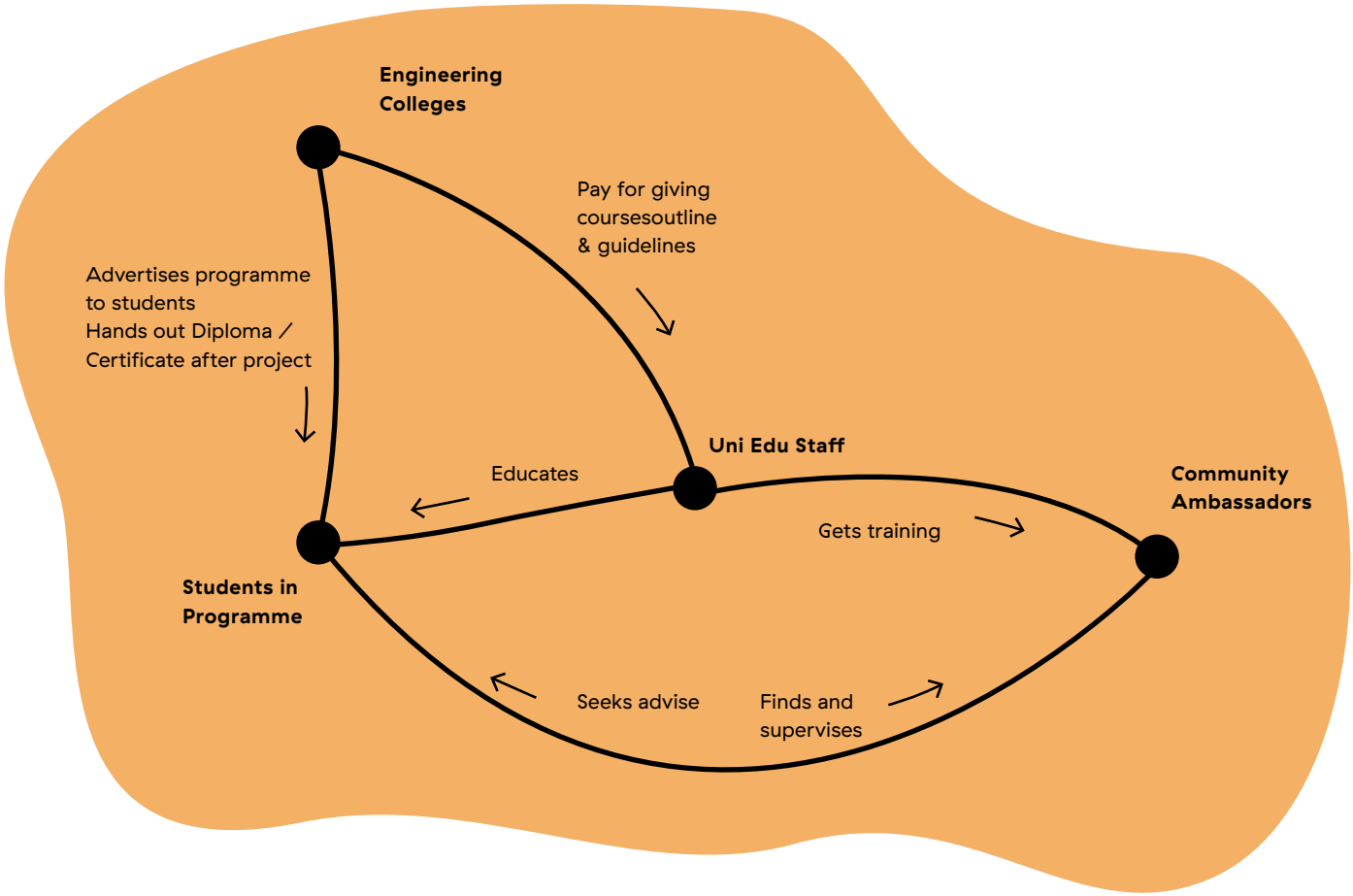
University Teachers

The university teacher who joins the network is a supporting pillar of the chain of action. Teachers are appreciated in the Nepalese culture, so the teacher lends their authority to the program, which should increase its creditability.

In practice, the teacher is influential in recruiting students and facilitating workshops. The person is an important link for the students who might have questions about their trips to the village. Meanwhile, villagers can rest assured that the information they receive is approved by engineering teachers.

Professors can help organize workshops mainly for ambassadors but at times, also for homeowners. Teachers know a lot about home building and safety and are skilled in presenting their knowledge. As teaching methods are rather conservative in Nepal there is need and motivation to explore new ways of learning.

However, the teachers are likely expecting to get paid from their efforts outside school time. This is a moderate cost borne by the mother NGO.



Teacher profile

→ The engineering university teacher is in contact with the student. Teachers know a lot
→ about housing and safety and can encourage students to go out into villages to do good.

Needs:

→ Information about the program
→ Pay for organized trainings

Motivation:

→ Additional pay
→ Doing good
→ Increasing networks
→ Exploring modern teaching methods

Role

→ The teacher receives material from the mother NGO to recruit students
→ The teacher also helps in arranging ambassador trainings teach parts of the ambassador training
→ The teacher needs to set a good example in being an efficient communicator and a promoter of better safety in communities
→ The teacher needs materials from the mother NGO

Value Proposition

→ Teachers can advance their career prospects and increase their networks by joining the program

STAKEHOLDER III

The Ambassador

The Community Ambassador is the cornerstone of the whole network and the link that brings the community and the other parts of the network together.

By choosing an ambassador who is known and trusted by the community residents, the attitudes towards ambassadors and projects are more likely to be better and projects to have an impact.

The goal is for the ambassador to be the first person in the community that residents turn to for any home construction or retrofit issues.

Follow-up mechanism

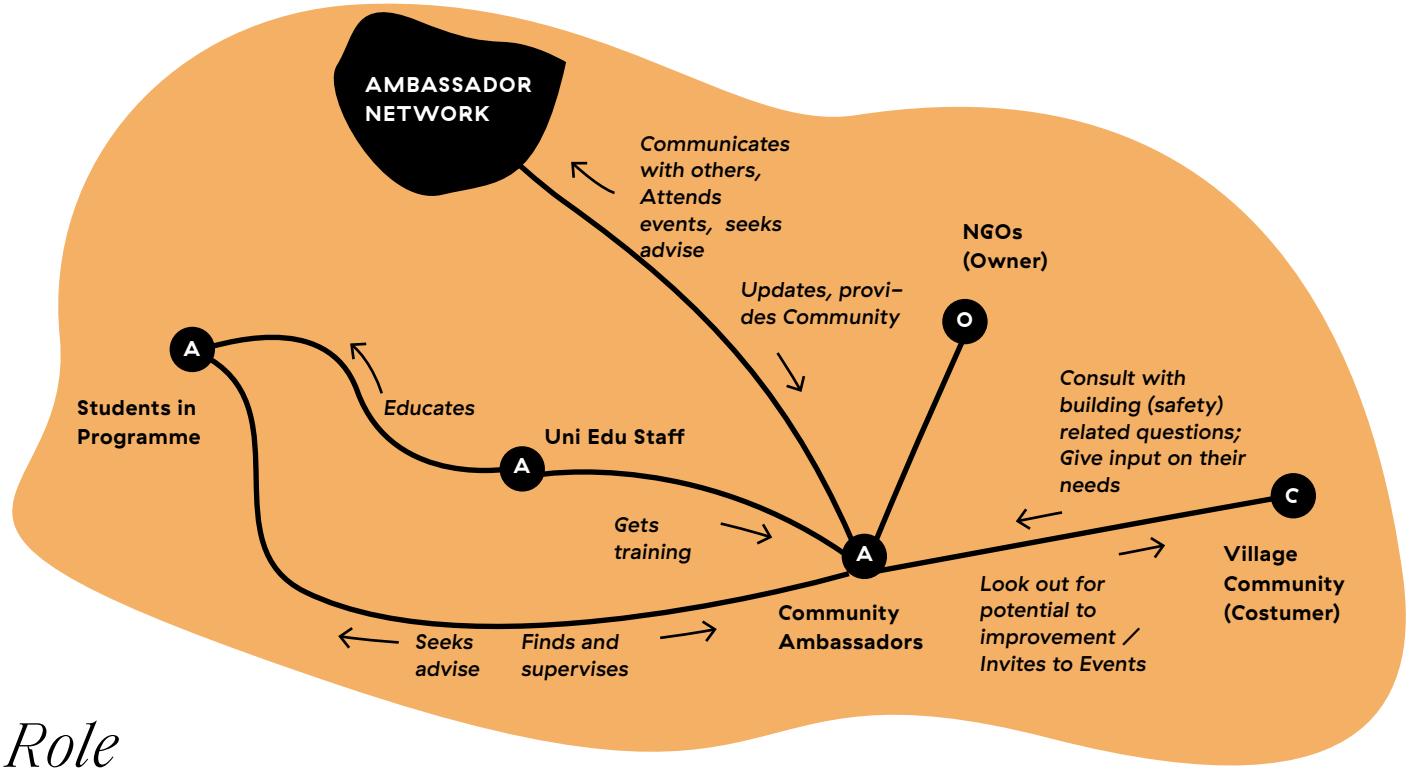
When the training is completed, it is important that the contact with the ambassador is maintained, primarily through the students, so that the ambassador has a low threshold to ask for help and support.

When the network has grown and ambassadors have been recruited in many villages, the ambassador community functions as a motivation for the ambassador to stay active. Regular meetings should be held, where the ambassadors get to share their progress in their irrespective communities. The ambassador meetings are also a chance for the ambassadors to ideate together.

The ambassador should be given clear goals and expectations for their work.

The ambassador is also a valuable resource in the network with deep insight into the community, the people and theirneeds. This will help NGOs to provide better services to the community.

As the ecosystem grows, a network of ambassadors is formed. This gives the ambassadors networking opportunities, support and motivation to stay active in their community.



Role

- → Coordinate with an NGO and students about the needs of the community
- → Help arrange trainings, events and projects Promote trainings and events to the members of the community
- → Function as a contact person and resource in the community when it comes to everything related to house building
- → Actively help in establishing a culture of safety Attend meetings with the ambassador net-work once it is formed

Value Proposition

Opportunity to develop one's community and work for a good cause, while developing skills and gaining career prospects and higher status in the community. In addition, the ambassador gets networking opportunities beyond their community.

How to become an ambassador?

To become an ambassador, the ambassador needs to show their interest and write a motivation letter or talk directly with the students. The students interview the ambassador to address their motivation and skills further. In addition, the applicant needs a reference from the community.

Ambassador Training

In order to become a certified ambassador, we need to ensure that the ambassador is introduced to their task, is inspired to perform it well, and has the needed knowled-ge to do so.

The ambassador gets to attend a training camp to learn both necessary things related to building safe and soft skills to be able to perform their role with empathy and professionalism.

The costs of the travel, accomodation and training are covered by the mother NGO.

All modules of the training should be completed, inclu-ding a test about the contents, before an ambassador certificate can be attained.

→ The ambassador training entails at least:

Crisis management

Post-disaster management

Development of personal skills

Meeting trau-matized people with empathy

Public speaking

Common problems with hasty & cheap buildings

Basics of safe building met-hods

Charismatic leadership

STAKEHOLDER IV

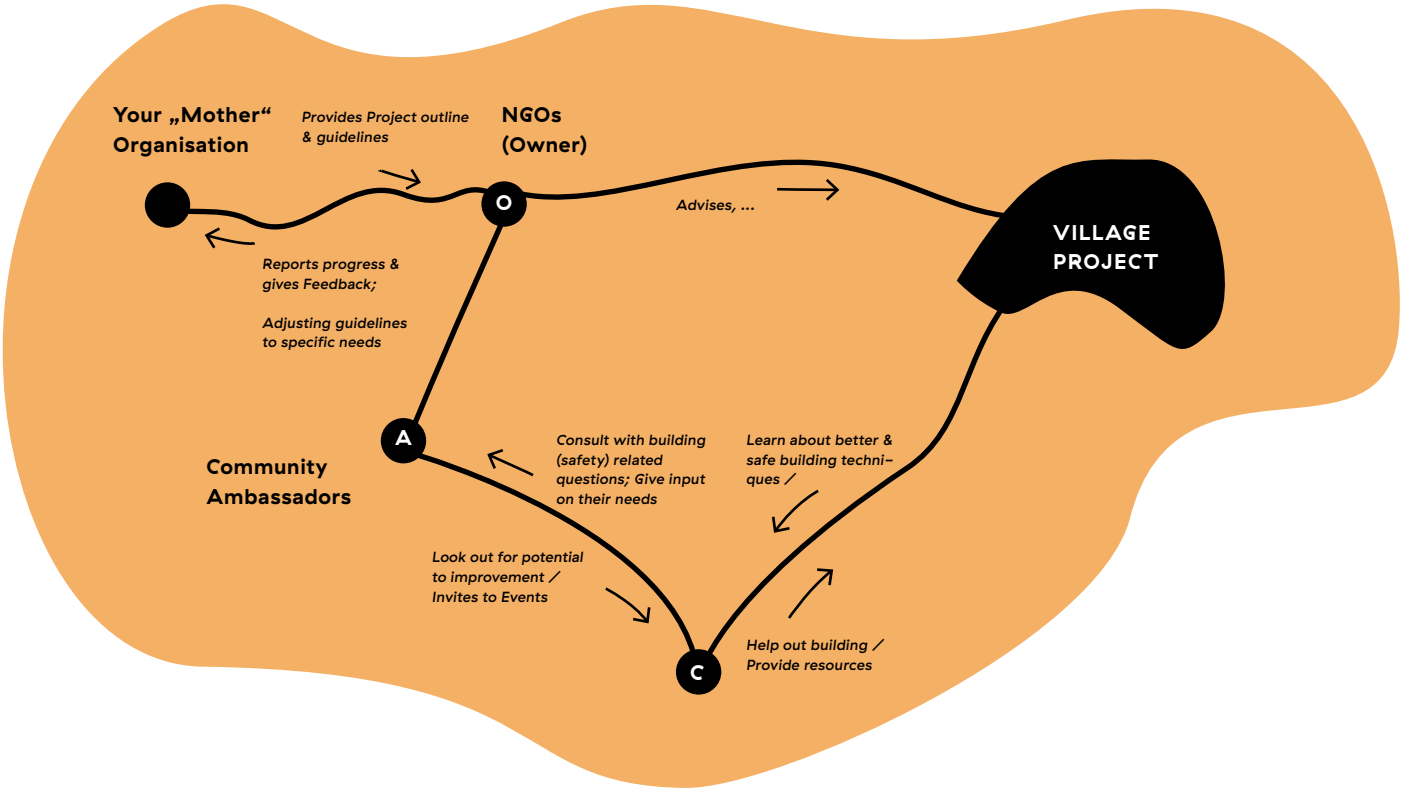
The partner NGO

The partner NGO will facilitate trainings and educational events due to its knowledge and accessible assets. The facilitating role of the NGO differs from that of the government as it will be involved from the early stages and play a vital part in the supply of resources for planning educational events. The NGO will give feedback and communicates with the mother NGO to allow the mother NGO to provide case-specific information, which helps in customizing guidelines and adjusting them for the specific needs of different communities.

The value gained by an NGO involved arises from multiple sources. Primarily participating in reconstruction, education and building safety programs will offer great opportunities to increase the base of operations and also serves as a base for implementing and experimenting with new knowledge and techniques. It also helps the organization in increasing its reputation among the key stakeholders.

The NGO can develop relationships, which can be valuable in future endeavors. Providing training will come at some cost but the network created can also be a great base for the NGO to expand. Its involvement in the system would also make it more creditable, upgrading its brand identity and outreach.

The network is dependent on partner NGOs which could be described as secondary facilitators. The mother NGO is the primary facilitator. Nevertheless, once the network widens, the partner NGO can share the workload with other NGOs and collaborate with them to gain other networking benefits.



NGO profile

→ The NGO operates in a building-related field and may have ongoing projects in rural villages. The NGO is vested in the problem and has the resources to work in their role. The NGO is a facilitator, creating trainings for ambassadors, reporting to the mother NGO, and advising on village projects.

Motivations:

→ Gaining deep insights about communities' Expansion opportunities
→ Future employee acquisition
→ Improvement of knowledge and project experience

Needs:

→ Guidance and project outlines
→ Clear expectations on what exactly is needed from them
→ Active ambassador participation in training
→ Consultation on their village projects when it is necessary
→ Continued operational support

Value Proposition

→ By connecting with locals, the mother NGO and ambassador network, the NGO:s have an optimal opportunity to gain a gateway into rural communities where they may need one. Moreover, they can acquire new talent from other parts of the network as well as expand and improve their own knowledge and functions.

Role

→ Provides trainings to communities and starts projects in them

→ Collaborates with the ambassador in providing customized help

→ NGO reports progress and feedback to mother NGO, and advises on local projects

→ Contributes to the training of community ambassadors

→ Training, time and expertise needed to ensure smooth functions

STAKEHOLDER V

The Government

The role of the government is kept minimal in the initial network to avoid over-reliance on it. However, it is important that the program serves also the greater need of municipalities, and that the network remains on good terms with them. Here, transparency is key.

The role of the government is relevant in the latter stages of the implementation. In this case, the rural municipalities, provide economical sustainability and long-term funding.

For the government, safer structures will give increased safety to the citizens, which will reduce the risk of structural damage for which the RM would have to pay in order to reconstruct. This would present clear cost saving as there would be a lesser need for government grants to rebuild broken or damaged structures, as was the case in 2015.

Value Proposition

→ The government can attain increased safety of buildings and citizens as well as potentially crucial data collection in risky areas regarding building types and social needs. That causes savings in the future due to now earthquake-resistant houses.

Government profile

→ The government is the rural municipality and is the lowest, most accessible governmental party which can be partnered with. It's main role of the RM is striving to gain long-term economic stability by offering funding for the respective program.

Role:

→ Providing funding
→ Providing necessary resources in some cases

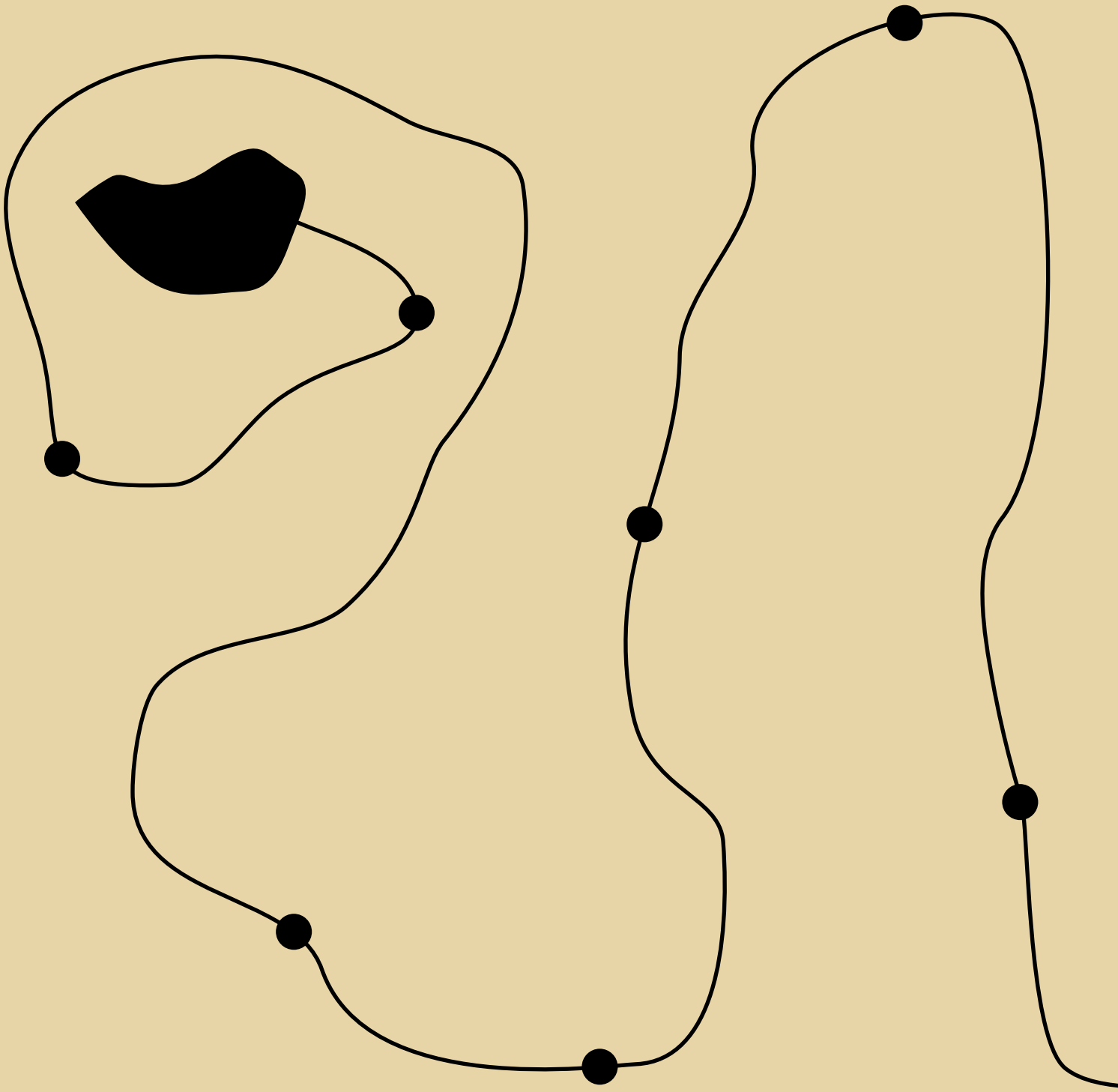
Motivations:

→ Benefits of safer, more durable buildings
→ Reduced risk and need for reconstruction funding
→ Ensured safety of citizens
→ Higher level of education and awareness among residents

Needs:

→ Functional network
→ Proof of concept
→ Cost-benefit analysis or a clear value proposition

PART C



IMPLEMENTATION

ROADMAP I

Welcome to the most important part of this handbook. This is where the Solid Neighbor Network is taken from idea stage to action. With the help of some important things to keep in mind and a tangible roadmap, as well as a review of the most important risks and costs, we hope to provide a good foundation for getting started — and for maintaining the network as it grows.

Some of the stages require collaborative methods. In the last part of the guide (part D) we share our best tips for how the workshops could be conducted, as well as a list of other resources you might find useful.

Phase I: Setting the foundation

FUNDING

Apply for initial funding.

Where to apply from?
E.g. European Commission & World Bank.

DEVELOPMENT OF INITIAL MARKETING MATERIALS

The mother NGO develops marketing materials to deliver to the first potential universities that could join the program.

ESTABLISH PARTNERSHIP WITH UNI

Enter a partnership with the first university or college (our suggestion: Sagarmatha Engineering College) Collaborate with the university to design the details of the teacher & student program.

ESTABLISH PARTNERSHIP WITH NGO

Identify potential partner NGOs and form the first partnerships. It is important that the first NGO possesses enough skills and resources as they will co-create parts of the program and contribute to training the first ambassadors.

Details and requirements for the partnership should be decided together with the partner NGO.

COST BENEFIT ANALYSIS FOR ATTRACTING MUNICIPALITY INVESTMENT

Find statistics on how much the last earthquake costs affected rural municipalities and make a cost-benefit analysis of how much they would save when investing in interventions.

Develop exact measurements for measuring the impact of the network and the interventions in the communities.

This can be done in collaboration with engineering teachers and experts from NGOs

DETERMINE EXACT MEASUREMENTS FOR SUCCESS

MAPPING OF VILLAGES

Identify and map communities to target.

Our suggestion: Communities that have not yet been affected but are in high-risk areas.

Target one rural municipality and access many villages within that municipality.

Who? You, Uni and NGOs.

DEVELOPMENT OF AMBASSADOR TRAINING

The details of the ambassador training need to be developed.

Who can function as teachers and plan the content of the modules in detail? What teaching methods should be applied? What are the practical arrangements?

Who? In collaboration with uni teachers & NGO.

Tips: Use the co-creation tools in Part D.

Your Role as a Facilitator

- Establish platform foundation of operation
- Manage ambassador network
- Handle funding
- Maintain relations with partners/ parts of the network
- Attract new partners
- Ensure that the collaborations within the network function as they should
- Provide needed support to any stakeholder
- Handle external communication about the Network

ROADMAP II

Milestone Phase I

– The first partnerships have been forms and the stakeholders commit to the program
– The ambassador training is ready to be tested with the ambassadors from the first village communities
– The teachers are ready to start recruiting students
– A plan for which communities to tackle is made
– The idea has received funding of at least EUR 15.000, equal to an annual salary of three university teachers in Nepal, planned to be enough to cover marketing materials, one full–time employee's pay, workshop fees, and ambassadors' travel allowances
– Clear measurements have been developed

RECRUITMENT OF AMBASSA–DOR

Send the students to the villages to find ambassador applicants.

Vet the applications based on motivation and trust among villagers.

Introduce the successful candidates to the program.

RUN–IN OF STUDENTS

Recruit students to join the program.

The teacher introduces the program to the students and trains them to talk to villagers .

The teacher shows the students which village to go to.

PHASE II: Pilot project(s)

DETERMINE DESTINATION FOR PILOT PROJECT

The ideal destination is in an earthquake–risk area that has not been affected recently. It can for example be a rural municipality with different villages to target.

Milestone Phase II

– An ambassador has been recruited and certified after attending the training
– The ambassador has arranged community meetings with many attendants
– The ambassador has reported on the needs of the community
– The NGO has provided at least one longer training for builders and one for homeowners
– There is awareness of the ambassador among the people in the communities and villagers have approached the ambassadors in housing questions
– Various parts of the program have been analyzed so that improvements can be made before more communities are targeted

AMBASSADOR TRAINING

Invites the ambassadors to a series of trainings, ideally three or four and lasting for approximately a month.

Pay the ambassadors a daily allowance to cover the person's transport and the accommodation costs during the trainings.

Inspire the ambassadors to become influential in driving the change.

ASSESSMENT OF COMMUNITY NEEDS

Ask the ambassador to talk with villagers to find out what training needs does the village have.

Address whether a training could be given simultaneously as building something that the community needs (e.g. community center) (this one depends also on the NGOs capacity and availability).

TRAININGS & PROJECTS IN THE COMMUNITY

Plan trainings based on the village's needs and resources.

Arrange for partner NGO to go to the villages to organize targeted trainings with homeowners and builders.

The ambassadors promotes the events to the villagers.

AMBASSADOR REPORTING

Ask the ambassador to list and explain the local needs.

The ambassador should report on the progress in the community.

EVALUATION & ITERATION

Reflect on how well the first chapter of the program is advancing: Could certain parts be improved?

ROADMAP III

PHASE III: Ensuring scalability

DEVELOPMENT OF INSTRUCTION MATERIALS

Now is the time to use the information gained in the pilot project for developing and refining uniform inst-ruction materials that can be used as more universities, NGOs and ambassadors join the network.

SET THE BASE FOR NETWORK MANAGEMENT

Hire an emloyee to take care of stakeholder coordination and marketing.

Plan activities to keep the network active.

Create communication channels with stakeholders Start using a platform for network management.

BRAND BUILDING → ATTRACT MORE PARTNERS

Focus on establishing the network in the country.

Connect with more potential partner NGOs.

Share stories about success-ful trainings and projects to legitimise the program and partners.

BANK FOR PROJECT OPPORTUNITIES

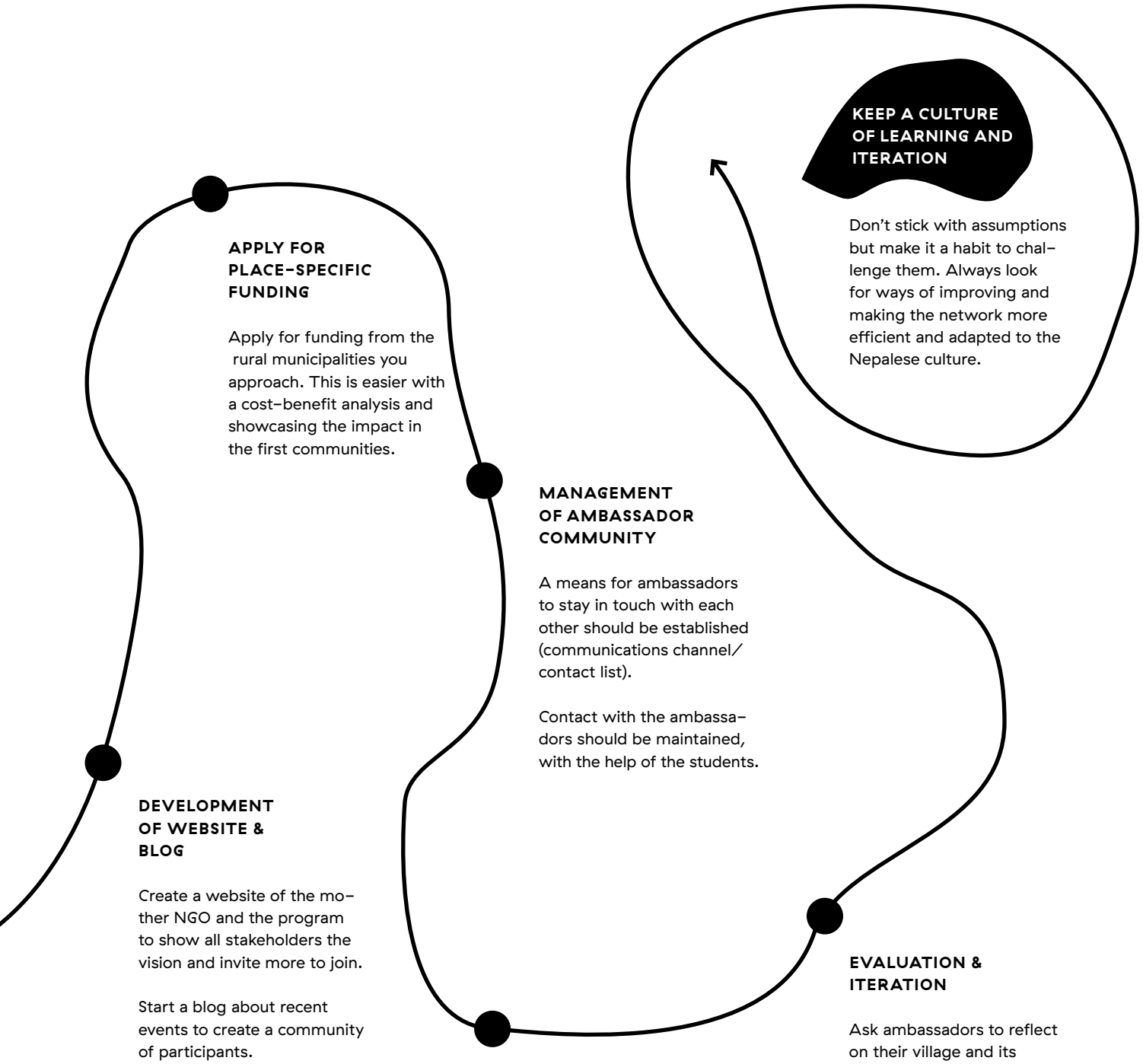
Enable continuous matching of community needs with NGOs.

Create a bank where needs in the communities are announced and NGOs can find project opportunities.

The opportunities should be approved by the mother NGO before being posted.

Milestone Phase III

– Stakeholders who join the network
stay in the network
More parties join the network
– Trainings are given and projects are started in all communities where an ambassador has been recruited
– The ambassadors stay active in their roles and report on their progress frequently
– Municipalities show interest in funding safety investments in their area
– Stakeholder content is high



APPLY FOR PLACE-SPECIFIC FUNDING

Apply for funding from the rural municipalities you approach. This is easier with a cost-benefit analysis and showcasing the impact in the first communities.

MANAGEMENT OF AMBASSADOR COMMUNITY

A means for ambassadors to stay in touch with each other should be established (communications channel/ contact list).

Contact with the ambassadors should be maintained, with the help of the students.

KEEP A CULTURE OF LEARNING AND ITERATION

Don't stick with assumptions but make it a habit to challenge them. Always look for ways of improving and making the network more efficient and adapted to the Nepalese culture.

DEVELOPMENT OF WEBSITE & BLOG

Create a website of the mother NGO and the program to show all stakeholders the vision and invite more to join.

Start a blog about recent events to create a community of participants.

AMBASSADOR MEETUPS

Arrange regular big meetings with all participants to share their achievements and get to know one another.

Consider awarding most productive ambassadors.

EVALUATION & ITERATION

Ask ambassadors to reflect on their village and its development in comparison to other villages: what is needed?

Ask all stakeholders to give feedback to improve the system.

RESOURCES

The Solid Neighbour Network requires reasonable investment but the scale doesn't need to be very high considering the low income levels of Nepal and synergies created by social innovation.

Initial Stage

First, your organisation needs a few workers to contact possible partner NGOs and university teachers. You should develop an outline of training material that would be given to students, teachers and ambassadors.

The final ambassador training material can be co-created with a partnering NGO. The NGO and a university teacher may facilitate the workshops with ambassadors and later with homeowners. Both of the workshop organisers will be paid by the mother NGO.

Funding

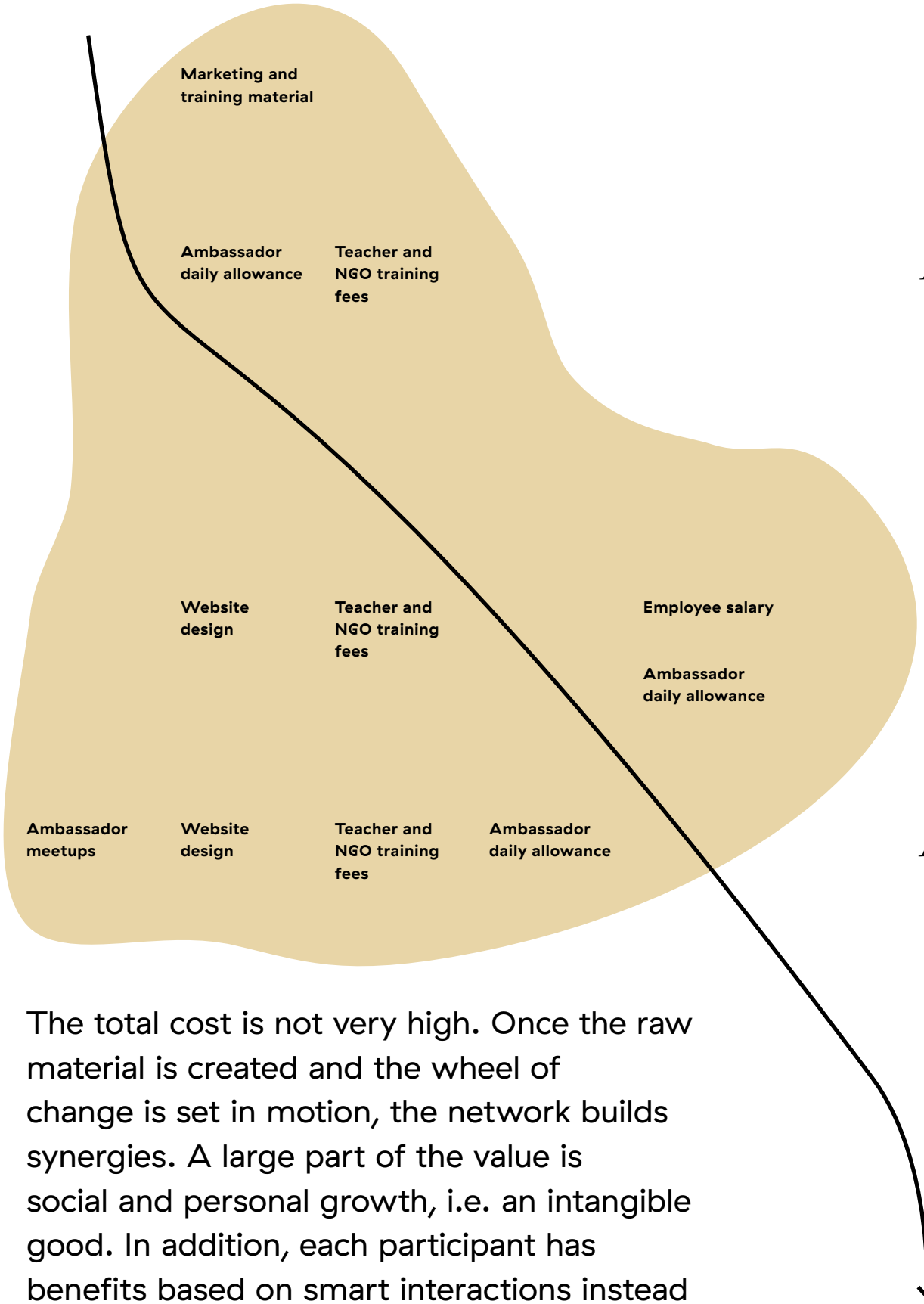
The mother NGO needs initial funding from donors or investors. But that may not be the case forever. Eventually, once the municipal government realises the value of the network, it may offer its helping hand and fund the program.

Moreover, participating NGOs may want to become increasingly active and take ownership of the program once they see that it is working and has a wide user base that can serve their other demands. This transfer of ownership may be one outcome a few years down the line.

Ambassadors' Daily Allowance

Moreover, each ambassador needing to leave their villages to attend a training perhaps in Kathmandu together with other ambassador candidates will be compensated for their efforts with a allowance that covers transport and accommodation. These costs should not be too high for Nepal being a lower-income country.

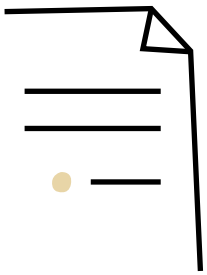
COSTS



The total cost is not very high. Once the raw material is created and the wheel of change is set in motion, the network builds synergies. A large part of the value is social and personal growth, i.e. an intangible good. In addition, each participant has benefits based on smart interactions instead of monetary payments.

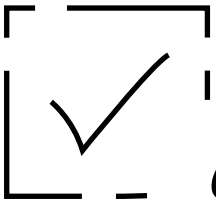
MEASURING SUCCESS

Success needs to be measured. Without proper gauges, you are unable to truthfully assess how well the plan is advancing.



Training Materials

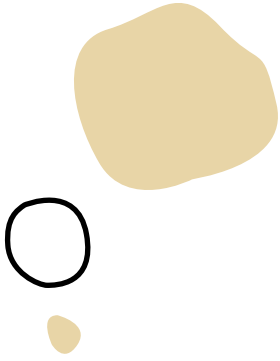
First, you need to set a certification plan in place. All the training materials should contain quizzes and exams so that participants understand that the knowledge they are learning is important to get right. Only qualified ambassadors should be certified so that villages receive proper support.



Checking on Ambassadors' Work

Second, you should keep checking on the quality of trainings and ambassadors' work. You could make random visits to trainings and villages to do so. Moreover, ambassadors should be encouraged to showcase their work — which should evoke a source of pride in them.

One natural way to do that would be presentations among other ambassadors in other villages. Each representative could show what they have done over the past year, focusing on the impact on the village.

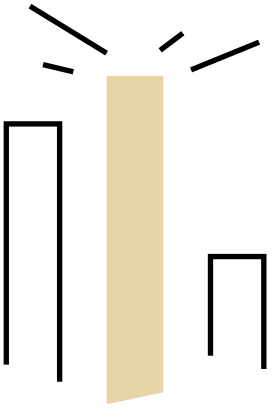


Self-Reflection

We encourage you to engage in self-reflection. Is the current direction correct? Is the organization serving the community in the most efficient way? The direction should be changed and optimised whenever some chances of improvement appear.

Feedback from Homeowners

Moreover, you should reach out to villagers. It could mean conducting surveys to figure out if homeowners have some ideas and feedback for the mother NGO so that it could adjust the program to fit homeowners' needs. This impact among the villagers is key to the wider and long-term impact of the program.



Measuring Impact

What ultimately determines success is how well the purpose of the network is fulfilled. This might require working together with the teachers and NGO to come up with exact measurements that could show actual effect of the interventions in the communities.
One possible way of measuring this can be to determine the standard of the houses before the projects in the village start and then, after some time in the network, evaluate the standard again. We also recommend finding ways of measuring knowledge level and attitude among the villagers.

SCALING

The impact of the network should be expanded with additional universities, villages, ambassadors and partner NGOs.

First Villages

The first step is reaching a few villages to get the first circle of influence in motion. This is also a good moment to get feedback from the ambassadors, students, and homeowners to see whether the program needs to be adjusted before larger scaling.

Transition

At this point, you can start planning a transition. The mother NGO may ask the municipal government whether it could fund the program that is doing good to communities. Moreover, you could check if a partnering NGO would be interested in taking ownership of the network.

Most likely a local enterprise would be best equipped to deal with the stakeholders and guide the future direction of the network. The reasoning is about ethics and motivation: the ideal solution serves the community as it is shaped by it.

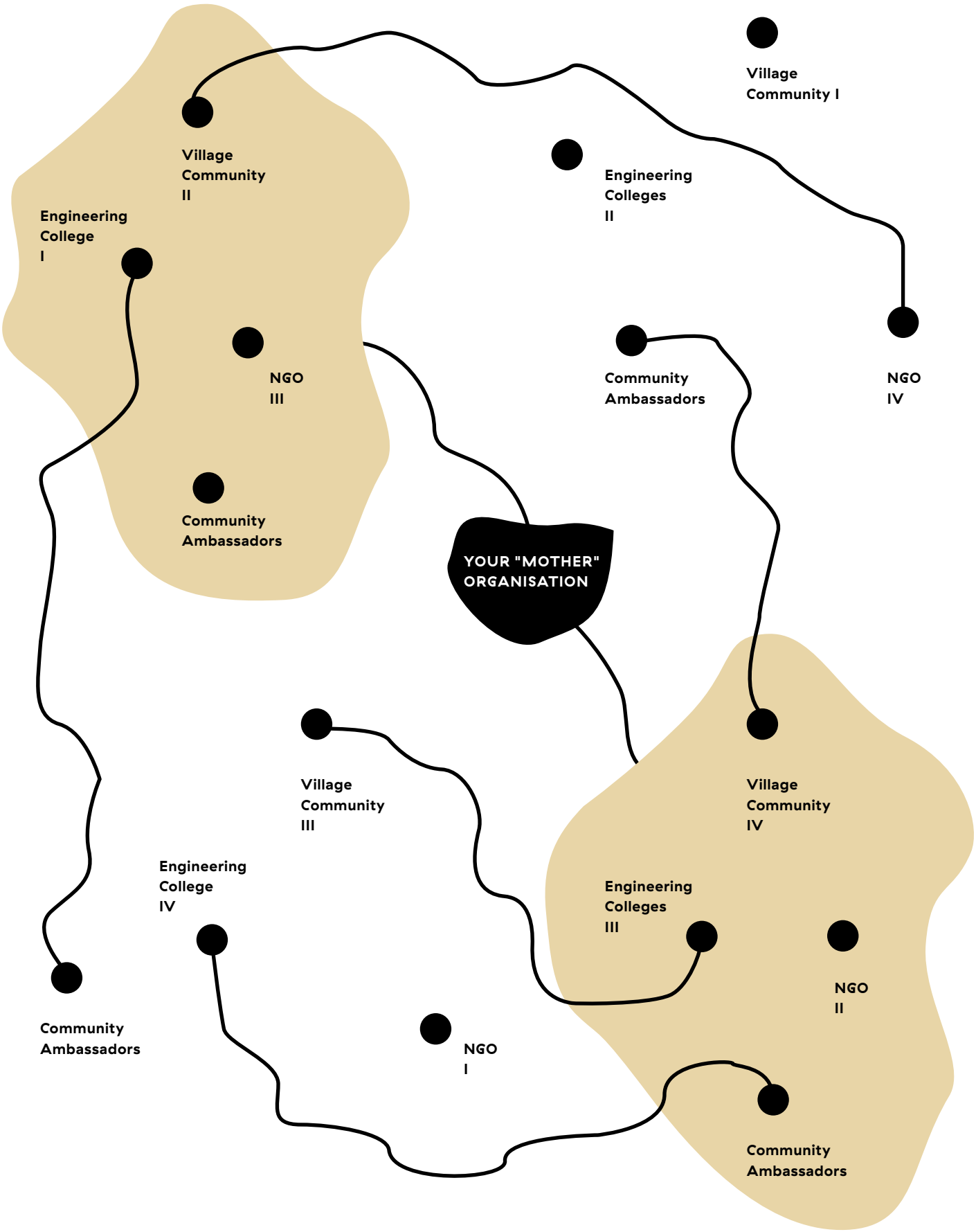
Networking

After a group of a few ambassadors is formed, you can start planning networking effects. The ambassadors can meet to present their work, a source of pride and inspiration. Moreover, students who have been to different villages can gather to learn about each others' experiences and share knowlege. Meanwhile, you should keep all the participants engaged via trainings and events for a long-term impact.

Structure

As more participants join, the network becomes more known across Nepal. This is a good thing as popularity would mean more potential ambassadors can get interested in joining and consequently more homeowners can be reached.

The network can be structured so that ambassadors can apply to become coordinators in a certain region, climbing the ladder to gain more status and having more responsibilites to report to you about the region's developments.


Village Community I
Village Community II
Engineering Colleges II
Engineering College I
NGO III
Community Ambassadors
NGO IV
Community Ambassadors
YOUR "MOTHER" ORGANISATION
Village Community III
Village Community IV
Engineering College IV
Engineering Colleges III
NGO II
Community Ambassadors
NGO I
Community Ambassadors

RISKS

Stakeholder Disconnection

Moreover, the network relies on proper efforts from each of the stakeholder. Even if the mother NGO helps create the initial materials, it may not mean that the whole system runs smoothly after that. Thus, the facilitator needs to keep all parties engaged with the use of frequent and inspiring communication.

Externalities

Besides the internal concerns, the network is affected by the environment. Despite the benefits the networks give to the stakeholders, it still requires efforts from them, and it is possible that students or ambassadors or NGOs don't want to join the network. Also, it is possible that the municipal government makes the implementation plan slow. The plan requires prompt efforts from all participants to succeed. The mother NGO needs to respond to external problems promptly.

Communication Issues

This is why checks and balances must be considered. You need to be vigilant and keep an open channel of communication with all the participants. Our prototyping has proven that the stakeholders are motivated to participate in the network but through time, their needs might change. The ideal situation is that participants take ownership of the program and make it their own. That would also ensure the long-term continuation of the program.

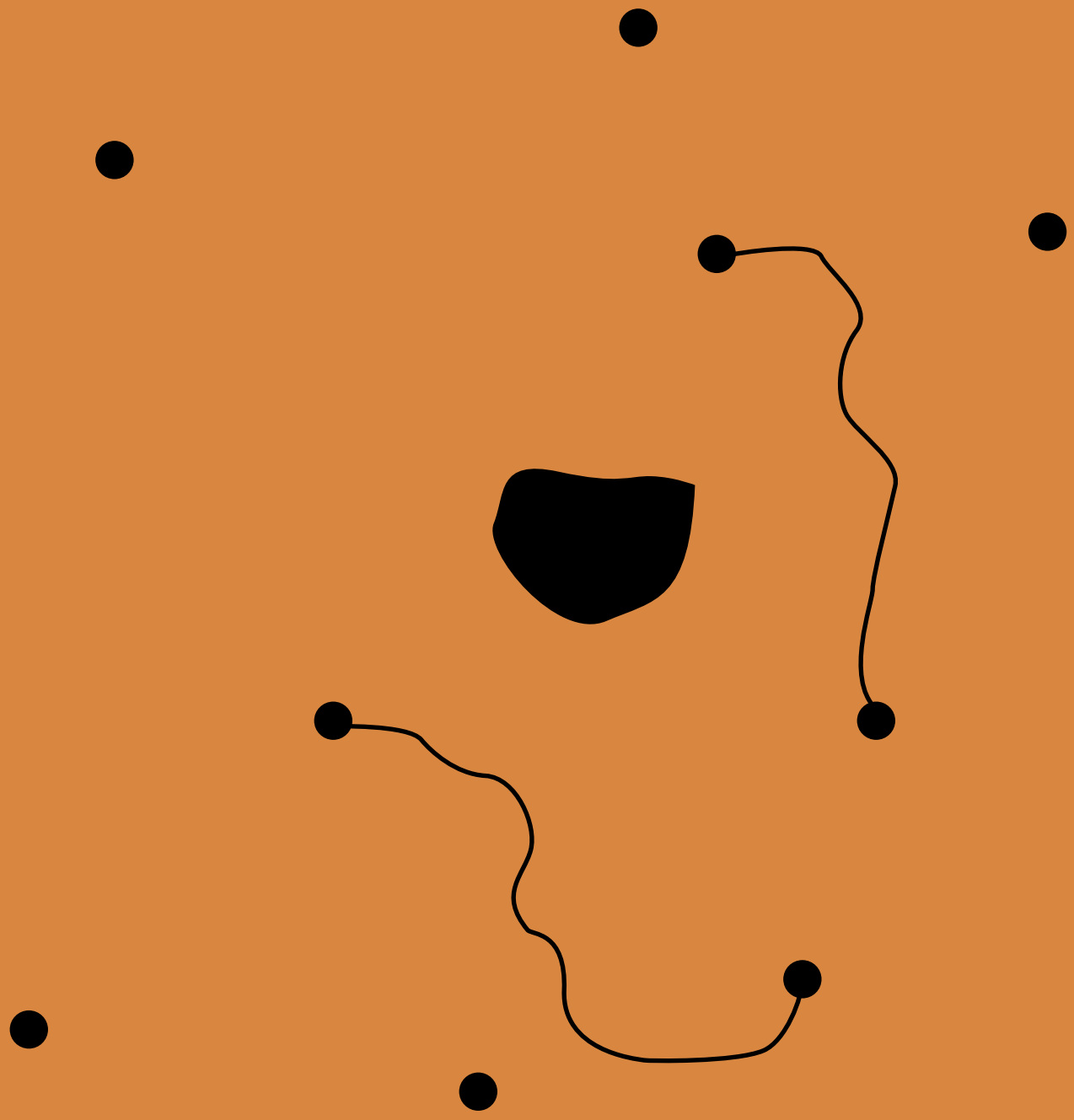
System Irregularities

The first concern is caused by the nature of the social system. It contains several stakeholders and each of them have an important role so if one goes missing, the whole network needs to re-adjust to find a replacement. This is why it is good to make contact with multiple universities, NGOs, and villages.

Funding Issues

The program requires reasonable funding which could be granted by institutional or individual donors. Even though the scale is not high, some costs need to be covered to run the network. The mother NGO needs to seek funding in time to make sure money doesn't run out.

PART D



HELPFUL ADVICE

TOOLS & METHODS

Here we have gathered some tools and tips that might come in handy when beginning the work with the partners in order to co-create for example the details of the ambassador training and tailor the student program together with the first university. We also propose things to keep in mind when working with the Nepalese in order to establish a good work environment and to get the most out of the collaboration.

Forming partnerships

The partnerships should ideally be tailored. We suggest that you approach the partners with the purpose of fulfilling the purpose of the network, but still being open to co-creating parts of the network with the stakeholders. With the first universities and NGOs, arrange initial workshops for addressing the details of the collaboration and ensuring that everyone's expectations can be met. Find the right persons persons in the stakeholder organizations and map their strengths to build the team.

No fancy equipment needed. Post-its, paper and pens will take you far. Use materials that your participants are familiar with.

Co-creation & brainstorming

Take advantage of the stakeholders and their knowledge and co-create together with them. Here are some techniques that we recommend.

BRAINSTORMING

Individually, write down all your ideas to generate quantity. Then build on each other's ideas.

TIP FOR BUILDING UPON EACH OTHERS' IDEAS:

Work on separate papers/ workspaces on a wall. Then rotate so that one person starts ideating based on the ideas in the next spot.

Brainstorming is made easier if you give the participants an exact question to ideate upon.

PRIORITIZATION

When you have generated a volume of ideas, cluster them to find patterns and use a voting system for sorting out the best ideas

REACHING COMMON UNDERSTANDING

Storytelling, drawing, journeys, scenarios & role playing can be means of communicating ideas and reaching a shared understanding with all the participating stakeholders

Developing exact indicators of success

The stakeholders might have valuable insights on what could determine success for the different parties of the network (idea: invite also funding parties). We suggest a workshop where you can ideate on the success of each part of the network and use post-its so that all participants can make their voices heard.

For developing exact indicators of success, we suggest a tool derived from Human-Centered Design Resources' Indicator Mad Libs.

The Design Kit by IDEO has many more tools to explore.

PROCESS INDICATORS

# of _____ that have been _____ during _____ .

(Example)	Number	Ambassadors	trained	the last year
		trainings	held in the community	in one year

OUTCOME INDICATORS

# of _____ reached by _____ who _____ .

(Example)	Percentage	villagers	customised trainings	demonstrate increased knowledge about building safety

Gathering feedback

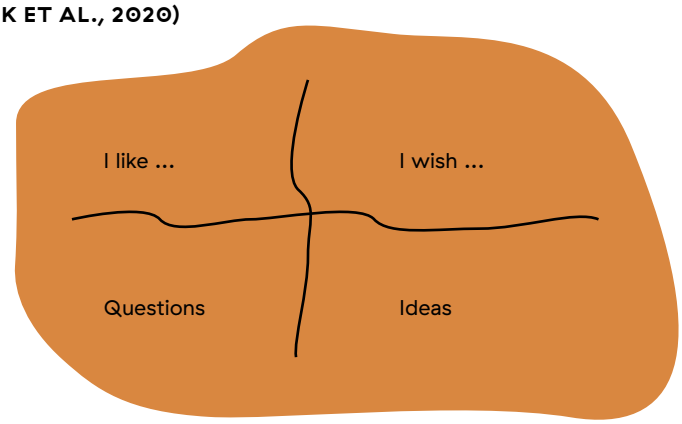
INTERVIEWS

Interviews are a good method for gathering feedback about experiences and feelings. We promote real connections and dialogue to maintain the level of trust in the network.

OBSERVATIONS

Observations are another way of gathering feedback, especially regarding what happens in the villages.

FEEDBACK CAPTURE GRID (LEWRICK ET AL., 2020)



HELPFUL TIPS

Nepal's culture is deeply steeped in tradition and religion. The People generally value interpersonal relation-ships and have high respect for the elderly. Nepal has various ethnic groups and diverse celebrations regarding different religions, inlcuding Hindu and Buddhism, and people seem to maintain harmony through mutual respect.

Show respect for religions and traditions

Verbalise expectations and cultural differences

Find commonalities and commu-nications channels that suit all parties

Call people — and call again if they don't answer

Visitors may notice that Nepalese people are very friendly toward foreigners and would like to avoid any conflict. Based on our trip, it is useful to explain cultural differences in terms of work: people in Finland prefer very direct and punctual communication styles and are not afraid of talking about problems. This is also something we would expect from our partners.

Students in Nepal were very interested in the Finnish culture and it became clear that we should present them some beatiful and fun aspects of our traditions and heritage. In order to strive for an equal relationship, we tried to look for commonalities, mutual conversation topics and casual gatherings in local restaurants to esta-blish trust with the students. The preferred digital communication channel was Whatsapp but we also arranged Zoom calls which were slightly more challenging due to choppy internet connections.

One thing that we have noticed when contacting people in Nepal is that it is always better to call and ask for a face-to-face meeting or phone call instead of sending email to people. People can be surprisingly friendly but busy so it is good to contact them many times if no response the first time.

Warming up / ice breakers

Nepal is rather hierachial and it can sometimes be a chal-lenge to create a climate where people do not hesisate to share their ideas and thoughts. We therefore want to emphasize the importance of getting to know each other through some ice breaking activities before starting the actual work.

IF YOU WERE A HOUSE, WHAT KIND OF HOUSE WOULD YOU BE?

TALL TALE CO-CREATED STORY

TALK ABOUT EXPECTATIONS, WISHES & FEARS FOR THE SESSION

FOUR QUADRANTS (SEE REFERENCE LIST STEVENS (N.D.))

TALK ABOUT EXPECTATIONS, WISHES & FEARS FOR THE SESSION

FIND TWO PEOPLE WHO...

TWO TRUTHS, ONE LIE

During six months of work, we stumbled upon a lot of good resources. Here, we list a few which we think you could benefit from knowing about.

For inspiration

NGOs with social outreach and volunteers

Canopy Nepal

Volunteers teach kids in more interactive learning methods.

Chhimeki

Women volunteers share knowledge to others about kids' nutrition and organize vocational training.

Community-based Forestry Supporter's Network

Facilitators teach user groups forestry skills across Nepal.

Dalit NGO Federation

An umbrella organization for untouchables' rights trains regional organizations and drives the abolishment of the caste system in Nepal.

Federation of Sexual and Gender Minorities

This NGO trains community chapters to address local LGBTQ needs involving health and human rights.

Potential Collaboration Partners:

Build Change

An international disaster-resistant housing NGO with many resources in Nepal.

Abari

A design and construction company with deep knowledge, explorative methods and interest in educating people.

National Society for Earthquake Technology, Nepal

An NGO for quake-safe housing.

Community Self Reliance Center

An NGO for land rights.

Readings on social design in general and in Nepal

Build Change Guide to Resilient Housing

A thorough guide about how to approach the issue of earthquake safey. Here, you will find motivation for why a homeowner-driven approach is preferred as well as detailed tips for what to take into account when starting safety-related projects in the country of Nepal.

An Introduction to the Human Rights Based Approach, a Guide for Finnish NGOs and Their Partners

A guide developed by Unicef which includes many important aspects to take into account when working with social design in developed countries.

Resources for cost-benefit analysis

A reading about the benefit of investing now instead of paying for the consequences later: The wicked problem of earthquake hazard in developing countries (Steckler et al., 2018).

Statistics on the cost of the 2015 earthquake: Nepal: first came the earthquake then came the debt (Starr, 2018).

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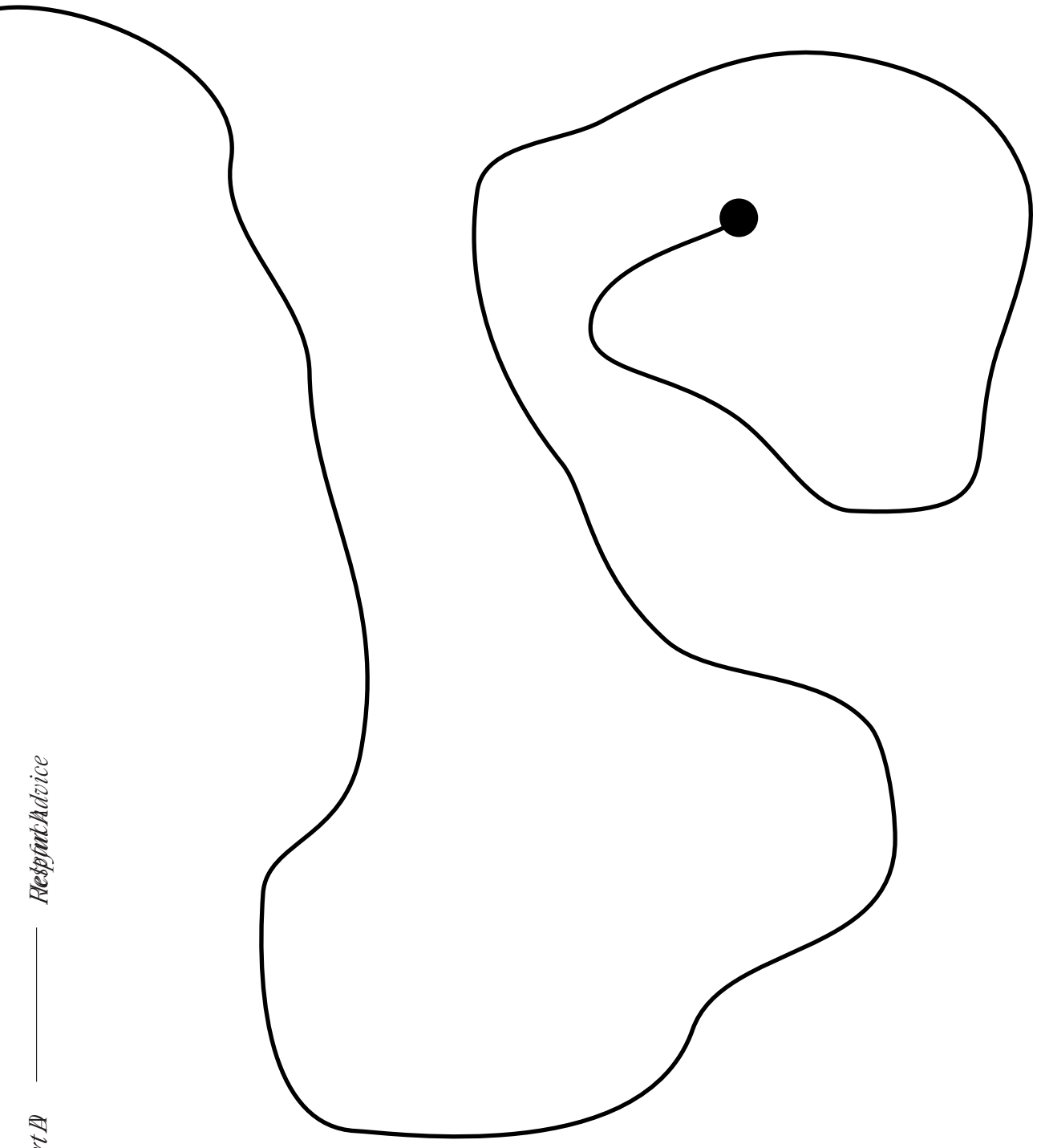

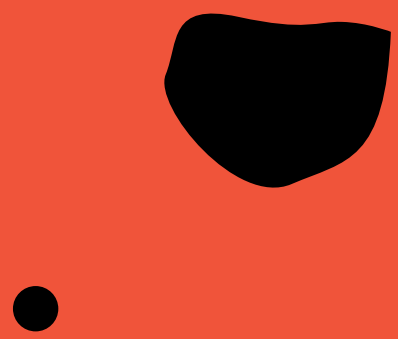

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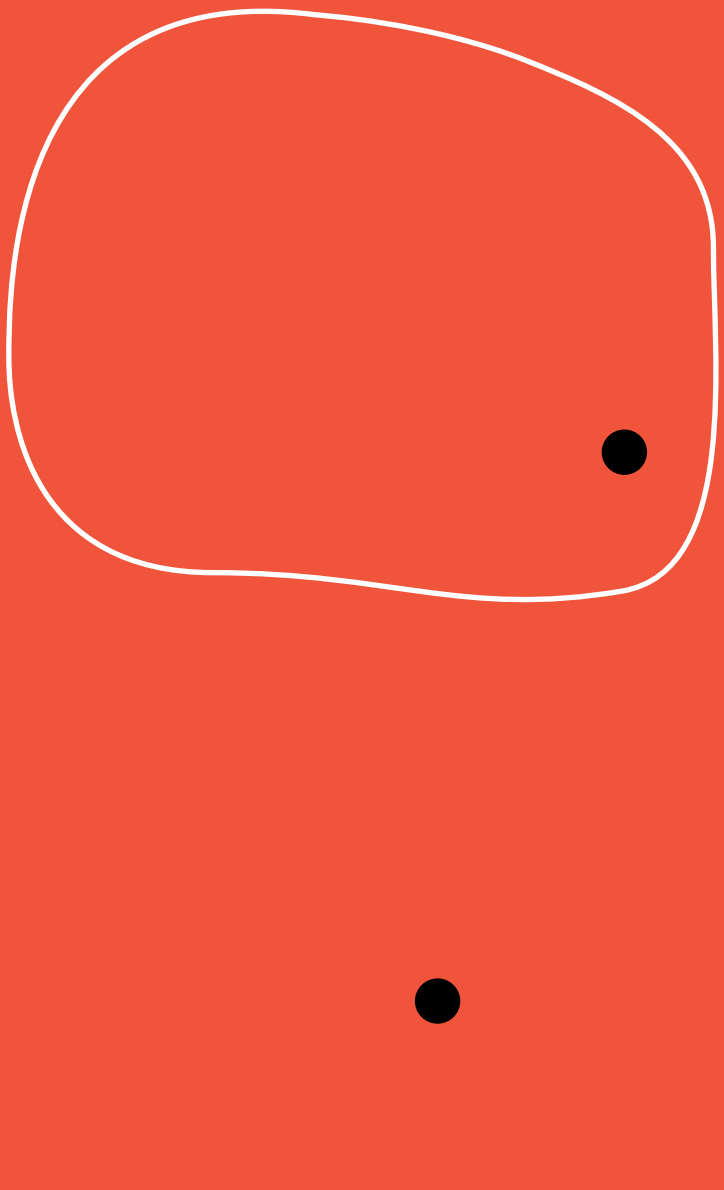

We envision a Nepal where people have the knowledge, resources, support and motivation to invest in strong houses. Even if they live in less developed areas of the country.

Aalto University