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# Script

Switzerland committed to reducing a lot of emissions, but we failed to get the required policies passed at the polls. So the only option for Switzerland to comply with the Paris Agreement now is to support more emission reductions abroad. Between now and 2030, approximately 1.5 billion Swiss Francs will be spent on such reductions.

As a former insider, I can tell you that this goal is out of reach, too: The current pipeline of projects only achieves about 10% of what is required. Under the current approach, it takes several years of lead-time between project identification and project start. Despite the long lead times, the programmes are consultant-driven and face little scrutiny from the public in Switzerland or local input from affected populations.

The administrative approach currently used to manage this process is build on a design going back to the 1990ies - a design that relies on a paradigm of sending paper letters back and forth. This creates a lot of centralization among bureaucrats as well as a lack of transparency and participation.

In turn, it is very difficult for developing country actors to access funding and the mechanism is not trusted by the Swiss population, either. This is where our prototype comes in.

Our solution establishes a direct channel between people actually doing work on the ground and Swiss citizens who care about climate issues, so that they can evaluate and approve or reject allocation of public money for climate impact to projects that apply for support. (swiss citizens who want to ensure their public money is spent on the right projects).

Our technical solution combined with our user experience design enables users to do 4 things:

1. Generate and review verifiable Video-Evidence rather than text based reporting ( We will use Media forensics experts to get the requirements right).
2. Directly ask and answer questions of each other
3. Get Automatic calculation of the climate impacts both for each individual project and action on the ground, as well as for the full programme.
4. Generate with one click reports that are easy to read, understand and verify for both private citizens and institutional staff responsible for allocating public money.

The user experience design we have come up with will save time, frustration and money for Swiss activists, people implementing projects on the ground and people in public administration.

How we will achieve real world impact:

1. Massively increase % of climate finance that goes to actual work on the ground as opposed to what is now spent on just paperwork.
2. Speed up the process for evaluating and getting promised money to people doing action on the ground from 3 years to 3 weeks.
3. Make climate finance accessible also to people who do not already have hundreds of thousands of Swiss francs in the bank to hire expensive consultants.

The Result: We will make emissions reduction happen 10 times faster than it is now to enable Switzerland to meet its climate commitments.

# User Experience

## What is the current User Experience?

1. Download 80 page pdf that explains all elements you have to put in application. *Its hard to find, hard to understand, and quite vague especially if you are not professional grant writer focused on carbon mechanisms: “I doubt even a swiss engineer with a phd can understand it”.*

2. Fill in a form. This will require you to hire a grant writer. Will cost you 100k-200K CHF

3. Send form to a validator. You have to pay the validator between 5K-20K CHF

4. Submit validated proposals to Swiss admin.

5. Repeat steps 1-4 for your local governments, who have different document you have to read and fill in (so more writing and no copy paste, double work). (Except step 3)

6. You still have not gotten any money yet and you have spent min 1 year and 150K CHF.

7. In parallel you have to find a loan. Because climate finance money is results based, to get so you have to have money to do the project.

8. But you will only be granted a loan afterr you do steps 1-5 and have gotten yes - which is not a given. So you are risking Losing 1 year and 150K CHF.

9. All of these steps are happening in different places, with different workflows using different software. Each with their own complexities.

10. The person evaluating whether money has been properly spent does: 1) Read piles of paperwork 2) Put an expensive consultant on a plane to visit the project 3) Has to find different experts in different places to answer domain questions. They still are dependent on what this one or two consultants tell them or documentation that can easily be manipulated. And they have no easy way to explain/justify to a citizen or journalist how money is spent.

## What User Experience do we offer?

We already have budget secured from governments (which they have to spend according to paris agreement). Once we have, this is the user experience:

**Perspective of Individual swiss citizens and people implementing projects on the ground:**

1. Film the current local situations land your proposed project to improve it
2. Upload using the app
3. Swiss citizens also using the app looks at video
4. Maybe asks you some questions directly via the app
5. Swiss citizens deliberate and then approve, rejects or suggests modifications with one click

6. If you are approved, money for first step is directly transferred to you
7. You Do the step and film process and results using the app
8. Swiss citizens review and ask questions, approve, reject or suggest modifications
9. If yes, you get another tranch of payment and so on.

**Perspective of citizen, watchdog, government official, or parlementarians who want to know what is happening with the money:**

1. Log in to app
2. Select program or project
3. With one click download a simple report that condenses large amounts of forum & video communications from the community implementing the project into a user-friendly 1-2 pages:

    - Number of Installations/ implementations (+ Map)
    - Total amount spent
    - Paragraph on activity last quarter
    - Paragraph on activity expected next quarter
    - Impact indicators proportional to number of installations (e.g. tCO2e, Nr. of People, etc.)
    - Programme Timeline (several years, state of programme), possibly with indicator-graphs.
    - Failures / Outstanding deliveries (up-front payment made, no video delivered)
    - If there is an audit you can download more detailed report and you can review each and every video and trail of decisions and transfers of money.

## What similar approaches already exist and what will your project do differently or better?

Our goal is to enable the UX of crowd platforms for distributing big pots of public money. Existing alternatives:

- **Private crowdfunding and microloan platforms** (Kiva, GoFundMe) that can work for small projects with a lot of marketing. They are smooth and fast and well established. Also, burden of making things “pretty” or “sexy”... Also they are not appropriate for allocation of public fund due to compliance and governance issues.

- **Official channels for public money** that require a lot of administrative effor, upfront payment of money, and even more patience. But these are only accessible to and legible by established institutions.

- **Approaches based on the RBF (Results-Based Finance) model under Article 6** of the Paris Agreement or even the international carbon markets. They are not accessible due to the bureaucratic and financial hurdles and thus for the majority of actors from developing countries. Through video documentation and evaluation, these barriers should be dissolved and market access should be made possible for local actors with minimal capacities.

# Impact for (Swiss) citizens of better user

## experience?

Right now, Swiss Green and climate people opposed to climate compensation mechanism because too corporate, hard to understand, and there is a lot of greenwashing. This offers them a  direct channel to influence what money is spent on.

1. Swiss experts like engineers, scientists etc have an easy and direct way to contribute to effective climate action beyond protesting
2. Serves as a model for making Swiss public money more accessible to individual citizens who should be getting resources for local social and environmental impact projects, but don't.
3. Makes one of the big climate commitments understandable and accountable to the general public (that are financing it through taxes).

## Climate/environment/social impact of better user experience?

The core of the project is the demonstration of Environmental and Social Impacts. The switch to video allows for a massive improvement. The technology itself is "light weight" and requires only a little power for the server and a cell phone on site.

The Result: We will make emissions reduction happen 10 times faster than it is now in an cost effective, accountable, equitable and sustainable  way aligned with environmental justice demands:

1. Massively increase % of climate finance that goes to actual effective work on the ground as opposed to what is now spent on just paperwork.
2. Speed up the process for evaluating and getting promised money to people doing action on the ground from 3 years to 3 weeks.
3. Make climate finance accessible also to people who do not already have hundreds of thousands of Swiss francs in the bank to hire expensive consultants.

When we have demoed it for Switzerland, we can do the same for all other countries that have climate finance commitments to deliver on.

# Technology

## What technology exactly will you build?

Integration of videos in Discourse mobile app via Nextcloud backend. The goal is to provide climate activists around the world with a user interface to document a climate-related issue via video and upload a proposal to solve it. The project will subsequently be evaluated by activists on other continents. If it contributes to climate justice and is priced appropriately, funding is provided. The implementation is documented by video over the entire period and verified again by international climate activists. With the help of “Semantic Social Network Analysis”, short and concise reports for (public) donors will be generated from thousands of such events.

The smartphone camera captures a video whose hash value with timestamp is immediately uploaded. Then the local video folder synchronizes with a Nextcloud instance, which subsequently creates a Discourse post with the link to the video. Integrating an embedded player into the Discourse UI would be desirable.

Isn’t the split into three pieces of software (Discourse, Nextcloud, OpenCamera) a bit too complex→ We will make sure this complexity is completely hidden from the end user. The end user will only download and use a single mobile app, everything else is considered as the administrative backend. The proposed architecture is also still not finalized – we are reviewing if Discourse is a good choice for a base technology.

## Why did you choose Discourse as a base software?

Two reasons:

(1) To reduce the overall system complexity by integrating the backend of the outward-facing software application with the central internal management and communication tool that Discourse already is (and is well suited for, see Edgeryders experience) and

(2) to utilize a piece of custom Discourse-based software that we are building since several years, which enables the semantic coding and analysis of online discussions.Technically, Discourse can work in this role because it can be extended with RAD (rapid application development) technology, here Ruby on Rails, and because it provides a solid, general data management and analysis interface (PostgreSQL plus Discourse Data Explorer plugin).*(Note that this answer is subject to change in case we decide to not build on Discourse in the end.)*

## How will you deal with mobile network reliability issues project sites?

On the tech side, the main adaptation is that users interact with a mobile app, not a website or progressive web application. That allows to create an offline-first UX: users do not need to be online to record a video, allowing them to also record at project sites that do not have mobile network coverage at all. Uploading is done at a later stage automatically when a reliable network is detected. Additionally, uploading of the (relatively large) video files is done on a chunk-by-chunk basis, not unlike how torrents are split and distributed in multiple parts. Ideally, we will split the videos between keyframes, which allows to use individual parts even if not all parts make it to the server, or if some parts arrive days or weeks later. Software

tools that can split on keyframes efficiently (that is, without needing to re-encode the video) are available, but we have to determine if and how these can be utilized under Android.Of course, minimizing the amount of data to transfer by choosing appropriate bitrate, compression and resolution settings is a first step to prevent data transmission issues. The videos dealt with here are of a technical character, so it is acceptable if some compression artifacts are noticeable.

## How do you deal with technical security of payment processing?

We will not make a digital wallet of any kind available in or via the smartphone application, so loss of the phone does not mean that funds are lost. Instead, access to funds will be tied to a personal identity (proven by an ID document). Various cash transfer and remittance services offer that kind of monetary transactions, and we will rely on their services (Wise etc.). The app will only include a payment tranche status (“sent”, “collected”), which can be fed in from a payment processor’s API or (if not otherwise possible) e-mail messages.

## How are progress reports for institutional funders created?

It’s important to automate this as much as possible. This is possible as validators are required to mark sections of video content (or of video transcripts) with ethnographic codes (“tags”) depending on their meaning, for example “location cross-verification” (with explanatory comment) or “20% installation milestone”. We have a custom software for that available, called Open Ethnographer. Reporting software then uses and reorders this input to tick boxes and fill form fields, resulting in PDF files with project and aggregate reports. Evidence from source videos can be automatically embedded into these PDF reports if required, as PDF allows to embed video snippets, but it is unclear at this point if this would be required or helpful to funders. Report PDFs can then be posted in a message to the project’s Discourse thread, which allows to see the whole messaging and reporting history in one thread of the Discourse-based backend. Note that activists and validators would have their own, simpler app-based interface and not see this Discourse thread directly.

## What are key technological milestones to be implemented during the grant period?

The implementation of the project requires the development of a smartphone app based on "Open Camera "*. This will generate hash values, upload them immediately and store the video (.mp4) in a folder that will eventually be synchronized with a Nextcloud instance. In addition, a Nextcloud app needs to be developed that creates a Discourse post with a link to the video, or a Discourse function that uses an embedded player to stream the video directly from the Nextcloud instance. * For Android only.

Key milestones to be implemented during the grant period:

1: User flow defined and alpha-tested with Vanessa.
2: Min. one application video from a host country published (beta-testing with partners in host country, reflection with donors & administration)
3: Prototype UI adapted to 1.0
4: Use prototype for on-site implementation (up to 3x), publish of the videos
5: Application for legal recognition Switzerland

Details in budget

# Prototyping.

## What do you want to learn from the prototyping phase?

- Can the approach also work for other technologies and countries in the mock-up?
- Can the bridge be built to Switzerland's official mechanisms?
- Can we easily and quickly generate administrative summary reports from the videos?

## How do you plan to implement your project?

1. Interviews stakeholders (donor + onsite), UI specified; Nadia.
2. Implement more clickable prototype; Owen
3. Go through the whole project cycle from proposal to funding for the
4. Go through energy retrofit of another school kitchen in Uganda; Vanessa, Tim, Nadia
5. Using the revised prototype, implement up to three small projects (up to 15'000 CHF) in up to three partner countries of Switzerland.
6. Present the finished video proofs of the three projects to the administration (and other donors).
7. Adapt the proof method and format 1x more.
8. Implement the projects
9. Submit projects officially for scaling in Switzerland
10. Recommendation from programmers and sysadmins: focus on UX.

**Technically we have done so far:**

Single sign-in
Integration Videos Discourse

# MVP?

(a) video sharing application (ala TikTok - Peertube - Nextcloud).
b) structured discussion platform (where the videos are posted) are posted)
c) Money channel
d) A way to process the videos in a management compliant way.

## For people doing projects on the ground and for swiss citizens who care about climate issues:

1) App for video recording integraded into a (discourse) forum based community
2) Personal interaction with existing community members
3) Bridge to various payment tools

## For Funders

Compliance-grade reports from large amounts of forum & video communications from the community implementing the project.

Typical minimal compliance report:

- Number of Installations (+ Map)
- Total amount spent
- Paragraph on activity last quarter
- Paragraph on activity expected next quarter
- Impact indicators proportional to number of installations (e.g. tCO2e, Nr. of People, etc.)
- Programme Timeline (several years, state of programme), possibly with indicator-graphs.
- Failures / Outstanding deliveries (up-front payment made, no video delivered)
-

### Backend

1) Well structured file database, everything easy to find
2) Security Features (Hash to be send at moment of recording to timestamp video files)

## USPs of the MVP:

- Hyper-Transparency: All relevant project related interactions are public and auditable. All implementation steps are recorded on video.
- Hyper-Accessibility: Zero paperwork required for joining

## Limitations of the MVP:

- Funder requirements can make the video-forum-archive → report function complicated and expensive
- Tool designed for programmes with many small interventions and thus many small gigs

# Adoption

# Target audience & how to reach/engage them?

Users: Climate activists and technical experts from Switzerland and our our partner countries. Contacts already exist. The prototype will be one to three concrete project proposals. We provide private fast-start funding for the implementation of up to three projects. Financing of up to 45’000 CHF for the implementation of up to three projects, and up to 30’000 CHF for the official validation by technical experts in Switzerland.

Target group administration: The FOEN itself is not able to develop software as a prototype. However, there is interest in a demonstration by the Climate Division / Compensation Section. Likewise there is confirmed interest from the current implementation partner of the Federal Government (UNDP) as well as the administration in at least four host countries. (Dominica, Vanuatu, Georgia, and Ghana have already confirmed) and two other donors (Sweden, Global Environmental Facility). (Full transparency: one of the applicants was, until March 1, 2022, in the FOEN’s Climate Division responsible for offsetting abroad and is now privately here.)

# How to ensure prototype design meets target audience needs?

In our experience it is better to ask people to test something that exists, rather than ask them what they would like.

So we take an Iterative design - where we send user something that they then give us feedback on at every stage of development from concept, early mockups, clickable alpha and final output.

(User Testing)

# Risks

## Fraud

Scams and Cheaters overwhelm the platform, stealing the “initial trust seed” needed to get new projects off the ground. Or Activists Fundraise e.g. on GoFundMe and get 2x money for the same projects without being transparent about it…

**Design based on Game Theory as deterrent:**

Traditional funding usually requires huge chunks to be approved at once at the government level. And that means you’re playing a single top trust game, where, for the person who receives the initial trust, cheating is the rational choice. We are changing that by going to a series of small stakes trust games, where you get approved for a tiny amount of money, you deliver video, you get approved for the next tiny amount, you get your deliver video, and you’re doing that back and forth, back and forth, back and forth, changing a single shot game to a repeated game. In repeated trust games, the rational solution is a cooperative tit-for-tat strategy.

**Process for rolling it out:**

- We start with an initial set of trustworthy individuals within the climate activism community. And we are spreading through their social network first.
- A slow onboarding process, where new users need to engage virtually for while, making cheating more costly.

**Technical means**

- geolocation tags
- Automatic Hashing & uploading of Hash at the moment of recording
- A randomly generated phrases shared by SMS when on site and repeated on the recording
- Manual, human peer-to-peer validation of all videos
- Work with media forensics experts to ensure video recording, uploading and evaluation process makes fraud very difficult
- AI detection of duplicate images/videos

## Technical security of payment processing?

- We will not make a digital wallet of any kind available in or via the smartphone application, so loss of the phone does not mean that funds are lost.
- Instead, access to funds will be tied to a personal identity (proven by an ID document).
- Various cash transfer and remittance services offer that kind of monetary transactions, and we will rely on their services (Wise etc.).
- The app will only include a payment tranche status (“sent”, “collected”), which can be fed in from a payment processor’s API or (if not otherwise possible) e-mail messages.

### GDPR/ Privacy/ Data security issues?

Depending on the type of project, private data, such as geolocations of schools and faces of the people implementing the projects. It is certain that these will become public, as they must be validated by private validated by private third parties, so consent for publication is publication is necessary.

We will mitigate this by:

1. Openness by default.
2. Instructions & process include reqiuirement that everyone in video confirms verbally that they understand it is going to be made publicly available on the internet and that they consent to this.
3. Licensing: Users agree to grant a non-exclusive, irrevocable, royalty-free license to the rest of the world for their submissions under a Creative Commons Attribution 3.0 Unported License .

# Progress so far?

The project is an integral part of Climate Gains, which enables P2P evaluations and funding decisions for climate projects in developing countries even when local partners do not have the resources to fill out complicated forms. The bureaucracy and associated costs of accessing international climate funds are critical barriers to decarbonization in most developing countries. Unlike traditional text-based processes, videos are much easier to generate while making it more difficult to free-form claims. In particular, small and very small projects do not have access to international climate finance due to the above-mentioned hurdles, even though it is precisely these initiatives that can contribute massively to sustainable development at extremely low costs. (Background paper: Peer to Peer Climate Finance. This experimental paper lays out a path… | by Tim Reutemann | Medium)

A first trial model with prioritized software and a lot of manual data processing was developed together with Vanessa Nakate and the energy retrofit of 17 schools in Uganda so far was documented by video. To replicate and eventually scale the project, these steps need to be automated and a backend based on FOSS needs to be converted.

More specifically:

- Process test is already running on Web2.0 and will be further implemented https://twitter.com/edwinNamakanga/status/1518511776631074817
- Discourse instance as platform for structuring video exchange https://climategains.community/
- k8nets - Nextcloud instance running https://cloud.climate.university
- We have tested that the approach already works at small scale with our own money.: But mostly through time-consuming manual data editing.  Currently, videos are initially shared via Whatsapp or Twitter ( informal P2P- evaluation ) and funding is triggered manually after review of the videos by experts. We see the massive impact potential of scaling through automation of these steps.
- We have a (non-clickable) mockup of the first UX design for the new prototype that we are already spreading around for feedback
- We have a team and solid workflow
- We are already in contact with the major donor organisations, political representatives and prominent climate activists networks (Vash green schools)
- We have experience in building active learning and evaluation communities  of domain experts and engaged citizens from every discipline and sector.

# Sustainability

## How could you or others continue and/or improve your project after the end of the funding period?

- We expect a reduction in transaction costs and lead times of modular climate projects by up to 90%.
- This is true both for foreign compensation in Switzerland, but also for other donors.
- We are also in contact with UNDP, the GEF and Sweden. The “handholding” part of the budget can be taken over by other climate activists (crowd instead of our own core teaùm).
- The translation into Formats acceptable to donors will be partially automatic.
- The overhead costs do not scale with the size and number of projects.

## What roles would be needed to make the solution successful, scalabale and sustainable?

### Community Roles:

- Activists (who actually do the work. The vast majority of people will be in this role, have a payment channel set up)
- Observers (Journalists, non-activist community members, cannot receive money, no KYC)
- Validators (from observer community (tbd if volunteers is viable, else paid)
- Community Management (Languages, communicators, regional context, ability to produce quality summaries for reporting . about 1 per 200 community members.)

### Central Roles:

- Oversight community managers
- Summary-of-summaries from community managers (Ethnographer)
- Acquisition Donors
- Key Account Managers (per revenue stream, e.g. UNDP, GEF, SEA, IKI, etc.) Need to know Donor/Buyer processes and formats)
- Procurement Projects
- Tech Support
- Media & Comms (whole project)
- Frontend
- Backend
- Sysadmin