BETH - Blockchain for Sustainability

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NRGo: Collective Sustainability

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Abstract

With the rise of technologically-driven societies the necessity and importance of energy have been growing steadily and its effects on global warming today are more tangible than ever [1, 2]. Addressing the increase in demand for energy and the need for less non-renewable resources necessitates the design of more energy projects that incentivize sustainability going forward.

In this report, we present a concept and a simple prototype created as a part of the BETH Hackathon at ETH Zurich that tackles the challenge of minimizing individuals' energy consumption. We address the challenge of individual energy efficiency and sustainability using a gamification approach that aims to reduce the ecological footprint of households. We do that by engaging all generations in a video game, which raises users' awareness of their own energy impact.

This interactive game focuses on collecting different types of points gathered by participating in weekly energy-saving competitions. The competitive nature of the game aims to engage the users into sustainable practices and reward them accordingly. The game also features in-game item purchases whose earnings go towards local sustainable projects. For the purpose of transparency, this is achieved by decentralized blockchain technology. The impact of our approach on local communities is two-fold — it motivates people to reduce their energy consumption and enable them to participate in various sustainability projects.

1 Introduction

The initiation of project took place at BETH, a blockchain school of sustainability, which provided insights to the workings and usages of blockchain, IoT technologies and the connection between the two, as well as the hackathon organized to apply this knowledge in a hands-on real world challenge. The challenge that this project attempts to solve was set by SwissEnergy (EnergieSchweiz[1]). SwissEnergy encourages and enables households and companies to engage in voluntary actions in energy efficiency questions, to meet the energy goals of Switzerland. Our challenge was, in essence, to find a way to develop an energy efficiency solution encouraging the decrease of consumption of energy and the CO_2 emissions. This solution should benefit from the blockchain technology, averting risks of having to trust a third party. The goal of the challenge is to reduce emissions "twice", by reducing consumption in households and by reinvesting the saved funds into sustainable projects. We highlight in this report work that has been done in the areas of gamification of energy efficiency programs, the meaning and use of non-fungible assets, and how nudging can be used in combination with blockchain. We then detail the conceptual model that we are trying to implement, and show its realization achieved during the hackathon. Lastly, we evaluate our solution and give an outlook to further improvements and work that can be done.

2 Literature Review

In this section, we review existing work in the field of game-based incentives and in particular, how it relates to energy efficiency programs. We further explore the field of blockchain, non-fungible assets and their use in gamification.

2.1 Gamified Energy Efficiency Programs

There has been a lot of work on the use of gamification in changing human behaviour towards a more sustainable way of living. Endeavours to reduce energy usage, electricity, water, heating, etc. are explored in the report [3] of the American Council for an Energy-Efficient Economy (ACEEE) that analyzed 22 such game-based solutions aimed at gamifying and incentivizing the transition to a more energy efficient behaviour. The projects differ in terms of the targeted behaviours they try to invoke. Some of them only address respective issues in a short term — such as incentivizing students to camp in front of the campus for a week — in order to decrease the energy usage, while others aim

[1] `https://www.energieschweiz.ch`

for a more long-term effect in changing people's behaviour. The tasks users have to complete depend on the behaviour that is being targeted. There are also gamification methods that do not aim to have direct impact on real world actions, but have the aim to raise general awareness and lead to indirect improvement. The report found that an important aspect of the gamified solutions is that the play space has a real-world component. All of the analyzed solutions also have a component of interaction with other users, furthering the real-world aspect of the play space. In comparison to other video games, belonging to a 'team' or 'community' can be enhanced further by incorporating the sense of local neighbourhood. Another finding is, that instant feedback, that is always present in games, is also very important. It keeps users engaged and provides a faster reward than real life processes. For real-world actions, getting this immediate feedback data is harder. As the game space is not purely virtual and self contained, smart sensors can be used to achieve this. Electricity and water providers are implementing more of these, allowing the gap between the physical and game world to be bridged more easily. An important question that was analyzed within this framework is whether the users' motivation comes intrinsically or extrinsically. The report finds that in order for a long term effect to be achieved, intrinsic motivation is the main driver. Thus, the goal is not only to reward users extrinsically. Concluding, the analysis showed that a 3-6% energy saving is certainly achievable by such programs, some resulting in even higher savings.

2.2 Nudging

Am important aspect of the gamification of energy efficiency is providing immediate feedback. Immediate feedback is vital for addressing energy and environmental issues, in particular, due to the concept of delay of gratification [4]. Delay of gratification is an area of psychological research that deals with the problems arising when humans and society as whole need to act on long-term worthwhile intentions without short-term rewards to the beneficiaries. The issues related to delayed gratification in sustainability are exacerbated by the complexity of the matter and result in lack of substantial actions both on governmental and personal level.

The nudging theory introduced by James Wilk [5] and popularized by R.H. Thaler and C.R. Sunstein [6] is attempt to solve the delay of gratification problem by providing constant stream of small positive reinforcement to actions that lack short-term value. Nudging theory argues that instead of punishing bad behaviour it is more effective to provide small nudges — a prompt reward leading to the adoption of a desired behaviour. This reward does not necessarily need to be anything physical or monetary, it can also be purely motivational in form of a smiley face for example [7].

As demonstrated by National Geographic [2], a simple comparison of energy consumption across a neighbourhood can lead to a bigger environmental involvement. Therefore, we expect that the digital rewards that we plan to use as nudges in our application will be even more effective in incentifying sustainable action. We focus on digital nudges because they are more effective, as they spread quickly, can provide instant feedback, and can be customized to fit every user [7]. The digital nudge of our choice is the non-fungible token which we will discuss in the next section.

2.3 Non-fungible tokens

Non-fungible tokens (NFT) are a form of digital collectible items. They are pieces of digital content that are unique, whose value is driven by scarcity and which can be bought or traded [8]. NFTs popularity rose with the CryptoKitties[3] which were introduced in 2017. Since then, the concept was polished and an NFT standard was created — the ERC-721[4].

The power of NFTs comes from their scarcity and verifiability. On the one hand, their scarcity and uniqueness ensures their value and allows their token creator to incentify actions on the part of the token collectors. Their verifiability, on the other hand, allows for those tokens to be used as a proof of action. This allows for the creation of an economy in which sustainability practices can gain an immediate value in terms of the tokens obtained.

3 Challenge

During the hackathon challenge we tackled the problem of energy saving by employing the principles introduced in the related work section; blockchain, gamification, and nudging. The task was to propose an approach and implement a prototype that demonstrates how Blockchain technology can benefit climate twice; first, reducing household emission of CO_2; second, the reinvestment of saved costs in local sustainable projects.

The goal was using Blockchain technology as a medium to permanently store game relevant information that would make the game fully transparent. Therefore, the first challenge was to write a smart contract [9] that would enable us to efficiently use the Ethereum platform for this purpose. Further, to make it usable, this platform needs to be connected to a program that would manage transactions. Hence developing an app that would perform the logical actions according to the predefined rules was one of the main challenge during the Hackathon.

[2] https://news.nationalgeographic.com/news/2010/07/100715-energy-smart-meter-competition/
[3] https://www.cryptokitties.co/
[4] http://erc721.org/

Yet another problem associated with the generation of exchangeable digital tokens is their value. We do not want that collected tokens are undervalues, on the contrary, the goals is to use them as a medium to empower the users to be interactive. The currency that would facilitate distribution and sharing of rewards and benefits to all stakeholders. Thus, the challenge is to link the token production and the users' actions.

To create a successful game, however, it is required to carefully develop a plan that would motivate the users to play it and actively participate in real-world sustainability projects in their local communities. The challenge of making the game fun and engaging is approached by studying game theory principles, while encouragement of users to be engaged in the local sustainability projects requires a different strategy. Working out this strategy is yet another challenge that requires achieving a successful cooperation among organizations/individuals that would donate resources for the realization of the selected projects.

The final goal is to make the whole game sustainable by continuously changing the users' behavior. Hence nudging mechanism should be carefully developed, so that it transforms users' extrinsic motivation to long term intrinsic motivation.

4 Conceptual Model

The large consumption of finite non-renewable resources is a valid concern for their scarcity and exhaustion. Thus, environmental sustainability has become a central policy issue in the 21st century. A sustainable community is one which supports itself and its surroundings.

In its core, a sustainable ecosystem focuses on environmental protection and encouragement of its inhabitants to preserve it. Yet another part and parcel of what sustainability stands for is the well-being of humans and society. Ensuring that humans have access to basic resources, that their health is being protected, and that they enjoy a good quality of life within a sustainable environment is vital.[10]

People can contribute to sustainability only if they are educated about it, and if its overall importance is effectively communicated. Raising awareness on environmental sustainability is at the center of worldwide attention, and represents an important axis of the UN Sustainable Development Goals that are set to be reached by 2030 [10]. We propose a bottom up approach that targets children as the drivers of the change.

4.1 Interactive game as a solution

As mentioned in the previous section, the first challenge was to find a solution for the CO_2 reduction by harnessing Blockchain technology. As noted, one of the ways to do that is to promote activities that aim at more energy and resource savings.

To approach this issue, we create a benchmark of energy consumption for each household, given the building type and the number of family members, based on which the savings of this family would be measured. The initial idea was that users would decide how to distribute their saved money to sustainable projects, where the amount of saved money is the difference between the benchmark and a family's actual consumption. However, we believe that people would not be motivated enough to save energy if they were forced to spend their savings. Thus, we designed a separate money pool, which is completely based on users' item purchases and donations. Disposing of one's savings and eventually investing some of them in this pool willfully is a focal point to motivate users. Investing money in the game pool by buying special tokens would not only enable users contribute to foster sustainable projects but would also make them stronger in the game which is a stronger source of motivation.

To make the process transparent, we will present the monthly results of the users' efforts to save energy by providing them with a summary so that people can see how much money they saved according to their predefined energy type. They would be then prompted to use some of this money to upgrade their tokens if they want.

At the end, the money from this pool will be directly reinvested in local sustainable projects by the winners of a specially designed weekly competition; details are available in Game Description Section.

Therefore, we choose a different channel of addressing the issue of the fund reinvestment based on the active participation in the game, which is achieved through a blockchain system similar to CryptoKitties [3].

4.2 CO_2 reduction

Reducing CO_2 requires people to put some effort, and often to allocate some additional time and money in the initial phase of becoming energy efficient. People are often not ready to invest their resources in projects that are socially responsible but do not generate economic benefits in short term. However, if educated properly, children can, not only become the leaders of change of tomorrow, but also influence their parents to be more responsible if that would give them direct benefit in a gamified

world. Therefore, through two different channels, we target raising awareness and promotion of energy efficiency practices — both with children and adults.

NRGo aims at channeling children's attention to the important societal issues, raising their awareness of the environment, and educating them on the actions that they can take in their everyday life to support the environmental goals of the global society. This is done through an interactive game that motivates them through a fun an interactive way to take an active role in their community. However, the game is dedicated not only to children, but to all generations, starting at age 7, to take action in their community in order to address environmental issues. Through collecting points associated with four natural elements (water, air, fire, earth) and electricity, the users would be able to use them to vote for an investment that would alleviate or solve an environmental problem. Furthermore, in order to promote the importance of balanced resources, combining the Elements gives the user some special Elements that give bonus points. This special element is very hard to obtain, but can also be bought with real money that contributes to the pool of funds that are going to be reinvested in local projects.

4.3 Reinvestment in local sustainable projects

As it has already been discussed, an important question in this project was in what way the reinvestment of the saved costs by the households should be made attractive to users. In spirit of the decentralized and free aspects of DLTs, we wanted the user to be able to determine for themselves, which part is being reinvested, and that this is encouraged, but in the end still a voluntary option. Users who do not want to reinvest can still use the solution to accomplish the first part of the challenge, reducing their consumption in general. It was also important for us that children can also be involved with our solution. We think that they can be an important and useful motivator for adults, and even changing small behaviours and creating awareness now in children can have a long-lasting effect. Thus we were searching for a solution that engages both adults and children, without alienating either of the two. This lead us to the idea of collectibles, objects that are scarce and can be collected and traded. This scarcity can be achieved by using non-fungible assets, and a truly unique item can be created and easily verified with blockchain technology. We often came back to the real life card and sticker collecting and trading, which can be very popular, even when there is no other use than the enjoyment and competitive aspect of having all of the collectibles.

Figure 1: Overall design of the game

5 Description of the game

5.1 Elements

The overall design of the game is summarized in Figure 1. The main goal of the game is to collect Elements. Those Elements are items that correspond to the four elements (air, water, fire and earth) plus electricity and a sixth special category. Each Elements is unique and the more you upgrade in the level, the more the characteristics of the Elements become powerful and rare (it is similar to CryptoKitties). Combining Elements allows user to create those special Elements, which could have much more power than the normal one. As already noted, the other way to obtain the special element is by buying, and this concept will be further elaborated in the continuation of this report.

5.2 Competitions

To involve as many people as possible, we invent the concept of competition. The idea is that we released a new competition weekly which is based on the Elements and their power. Depending on the competition, the users will compete based on their elements, alone or in a team — like a neighborhood, for example. The winner of the competition will then be able to set up a project (in their neighborhood if we continue with the same example) with all the money that we get from the sale of the Elements (see *5.3.6 Collecting Elements by buying them*). Thus, users receive also a reward in the real life. That will make the game more attractive and involve more people. In order to win a competition, one will have to present a best collection of Elements compared to all

other opponents. To have such a good collection, it is necessary to realize some good action for the environment (as elaborated in the next point). Therefore, by improving one's footprint, the users also participate in the realization of some sustainable project.

5.3 Collecting Elements

5.3.1 Completing quests

One way of getting Elements is completing some quests that are provided in the app. These quests are ordered in three levels (easy, middle and hard) and will give users Elements accordingly.

Level	**Number of elements**
easy	1 to 10
middle	11 to 100
hard	101 to infinity

- The **easy quests** could be very simple task such as "turn off the unused lights in people's house". They are here to get users into the game, to get some Elements quite quickly and they work in a educational way as well (they should tell or remind you that turning off the lights is something good for the environment). The easy quests are so simple that they don't even need to be proven, that is also why they don't give a lot of points.

- The **middle quests** are either more difficult to realize or have a greater impact on the environment, that is the reason they give more Elements. An example could be "plant a tree in your neighborhood" or "use the train instead of the plane to go in an other country". Those quests have more weight in the game and must therefore be proven by sending a picture of the accomplishment.

- The **hard quests** are hard to realize but have also a big impact on one's footprint. Therefore, users who fulfill them will receive much more Elements than the others. Those quests could be "install solar (or thermal) panels" and must of course be proven.

5.3.2 Collecting data

In order to always improve yourself, it would be better if people could compare you to your neighbor or at least see your continuous improvement. The best way to do so is to collect all kind of data in the house with some sensors (like in a smart house). The sensor are then connected to the app via the blockchain and the data will then be analyzed by the application which will tell how much

energy (of all types) the household is consuming. For all data provided, users get some Elements. In the long term, this is the best way to improve the collection of Elements.

5.3.3 Improving your footprint

This point is only for those who provide data. If users are providing data, the app will monthly calculate their footprint and redefined their baseline. If they improve their footprint by changing their habits (which is the goal at the end), the app will then reward them by offering new Elements. Collecting data and improving the footprint is therefore the faster way for becoming a master of Elements.

5.3.4 Spreading the word

By involving friends in the promoted sustainable habits, users can multiply their gain and get more Elements. For example, if a person plants a tree with a group of friends, each participant of this action will receive more Elements than if they have done it alone.

5.3.5 Trading them

As the Elements are unique, it makes sense to trade them. It is thus possible to exchange the Elements with other users. In that way, user can also try to find the Elements that they miss, in order to combine them and get those special Elements with most power.

5.3.6 Buying them

In the same way as trading the Elements, users can also buy them. That means that some Elements will only be accessible for buying with actual money. Those Elements will be daily released and the whole thing will work as an auction system. All the money collected by selling Elements will be reinvest in local and sustainable projects.

The winners will have to choose such a sustainable project form a list of provided sustainable project. Users can also decide to start a new project and invest in it as well. This approach increases a users motivation to play the game since winning a competition entails not only a sociological motivation but the winners will also get some power benefits and in the same time can contribute to society.

6 Technical details

The technical details of our implementation of the game concept described so far are presented in detail in this section. In particular, we have split the section in two parts — description of the technologies used in the demo application created during the BETH hackaton and description of its overall software design.

6.1 Technologies

In the following two subsections we present the technologies for our prototype and describe the reasons why we chose to use them.

6.1.1 Android

Android is a mobile operating system, designed mainly for mobile devices such as smartphones and tablets [11]. Applications for Android are often written using the Android software development kit (SDK) and the Java programming language. Our team decided to create an Android application because of the potential of Android to reach the young generation through its widespread use in mobile phones, as well as, to engage people more through a constant interaction with them and the use of the wide variety of sensors mobile devices offer. Additionally, it comes with a large set of development tools and detailed documentation. Last but not least, we had people on the team that had worked with Android and Java before.

6.1.2 Blockchain

A blockchain is a distributed and public ledger that keeps immutable records in decentralized way. Immutability and decentralization are important properties of blockchain technology because they allow a trust to be build in all parties that information stored in a blockchain is correct. We chose to use blockchain in our application to allow for accountability of the money invested into the game, as well as to allow the creation of a non-fungible token currency in the form of the Elements described in Section 5 that creates artificial demand and incentive for sustainable actions as described in Section 2.3.

6.2 Hackathon prototype

This section describes the software created at the BETH hackaton event and its overall architecture. Since our hackaton team was predominantly non-technical, only 3 people in the team contributed

to the code written during the hackaton. That limited the scope of the implementation to include only the functionality required for a fully functioning demo. In particular, the demo focused on implementing the main UI screens and functionality, creating a rudimentary login and database system that stores user's achievements and connecting the application to a functioning blockchain that generates some version of the non-fungible tokens. Next few sections describe the progress made for each of those components.

6.2.1 Data and user management

We implemented a registration and a login form that stores users information in a local SQLite database inside the application. The database is also used throughout the game as a way to locally store the user's progress in terms of collectibles obtained from quests when the application is offline. In the future, we envision such a database to be stored in the cloud or distributed file system such as HDFS[5] and to integrate it more with the blockchain to allow for more transparency in the users' data handling.

6.2.2 Connecting to the Blockchain

The integration of the blockchain technology with the Android application was achieved through web3j[6] — a lightweight Java library for smart contracts. The connection between the application and the blockchain was established via ngork[7], an open source project for allowing public access to a local host machine, where the blockchain was simulated by Ganache[8].

The smart contract [9] was written in the solidity programming language and is hosted on the Ethereum platform that uses Ether for gas. Each of the collectible resource used in our game — water, fire, earth, air, electricity and the special one — is represented as an object in the smart contract. Additionally, Element tokens are generated based on the users' level according to a pre-specified equation. Their DNA is stored on the blockchain and the Elements themselves are displayed in the application. We used a static set of pictures for the Elements' appearance in the game. The assets were hand-drawn by one of our team members during the hackaton. Some of them are shown in Appendix A.

[5] https://hadoop.apache.org/docs/r1.2.1/hdfs_user_guide.html
[6] https://web3j.io/
[7] https://ngrok.com/
[8] https://truffleframework.com/ganache

6.2.3 User Interface

Appendix A shows images of the different application screens implemented during the hackaton. Those include a login screen, a main screen that shows the player's progress, a screen showing off the Elements collected by the player and quest list and description screens. The quest screens displays several mock-up quests designed by the rest of the team that show what possible quests we envision can be put into the game. During the hackaton we also started implementing an activity verification screen which was abandoned due to lack of time. While a lot of future work needs to go into those screens we think they serve as display of what game like ours requires at the bare minimum to function.

7 Evaluation

7.1 Children

As already noted, a very important target group of our game are children, because they are easy to enthuse and have a big influence on their parents. This raises the question whether the app is also suitable for children. A first challenge is the creation of an account. However, if the child is able to download this application, the creation of an account will not be a problem or these steps are already taken by one of the parents. In addition, it is essential to excite the children as quickly as possible and to keep them excited for a longer period of time. Basically, the collection of cute elements is a very suitable option, as the experience with children shows. However, good advertising would be required to get this far.

7.2 Parents and Adults

While adults can also be influenced directly through the game, children are also foreseen as an indirect influence to their parents do something active for the environment. Many adults today are positively disposed towards climate-conscious behaviour. However, few are prepared to put something back in their own household to be more climate-friendly. For children, though, they are often willing to make big changes in their lifestyles or generally spend large sums of money. So this two aspects work well together.

On the other hand, it is also very likely for adults to get in the hype. Pokemon-go game was originally developed for children, but it is today by adults too. Another example, which is closer to our blockchain, are the CryptoKitties, which were not designed as a child's game, but nevertheless

take up a lot of characteristics of it and thus could also cause a hype among adults.

7.3 Verification

Another critical point is the verification of the sustainable actions. The simplest method is to measure data, but this presupposes that processes are monitored throughout the house and that every heater or tap is an IoT-device. But this is yet not feasible. Even when the heating costs or water consumption are invoiced, it is impossible to deduce the consumption of the individuals in a newly built building/house. Even if everything is recorded, how can it be verified whether the one lamp in the household is necessarily switched on or whether it uses electricity unnecessarily? Monitoring at this level will maybe be addressed in the future. However, for know, these tasks verification rely on trust. The idea of verifying larger tasks with proofs such as pictures is time-consuming and also has clear security gaps. Therefore, the verification remains a point, which is not completely covered by the concept of this application.

7.4 Blockchain and Energy consumption

The project addresses environmental protection and the saving of resources such as energy. The Blockchain technology is a technology which uses a lot of computing power and therefore a lot of energy. This raises another concern — isn't the use of blockchain in this case absurd? Blockchain offers many advantages such as security and transparency. However, generating elements and storing them on a public ledger requires pricey computational resources. Hence potential benefits of this technology should be compared to the energy consumption of running the blockchain. Question that is still to be answered is: Does the use of blockchain bring sufficient advantages?

7.5 Energy saving

In this section, we exemplify how energy could be saved if some of the simple quests are solved in the game. Therefore, we calculate the amount of energy that could be saved in a year with an example of a quest per level.

To begin, let us take the example of an easy quest which could be "Turn off all the unused lights of your house." Let us imagine then that 3 light bulbs of 40 W are switched off in a house during 1 hour each day of the year.

$$E_{saved} = 3 \cdot 0.04kW \cdot 1h \cdot 365 = 43.8kWh/year \approx 44kWh/year$$

If we then multiply the amount of saved energy by the number of users. We can observe that for only 500 users and for an easy quest, it is already possible to save more than 20 000 kWh per year, which is not negligible.

Now let's look at the impact that a middle quest can have on the environment. Let's take for example "Use the train instead of the plane to travel". Let's imagine you want to go from Zurich to Paris, which represents a distance of about 600 km. A train emits an average of 14 grams of CO_2 per kilometre per person, while an aircraft emits about 285 grams.[9]

$$m_{CO_2 plane} = 600km \cdot 0.285kg/km = 171kg$$
$$m_{CO_2 train} = 600km \cdot 0.014kg/km = 8.4kg$$
$$m_{CO_2 saved} = 171kg - 8.4kg = 162,6kg \approx 160kg$$

We can therefore see that if we use the train instead of the plane to travel from Zurich to Paris, we avoid emitting 160 kg of CO_2 in the atmosphere.

Finally, let us take "Choose a more sustainable fridge" as an example of the hard quest. Let us say you change then from a fridge with an energy label C which consumes 400 kWh per year to a fridge with an energy label A++ which consumes 140 kWh per year. It means that you can save up to 260 kWh per year by completing this quest.

8 Conclusion

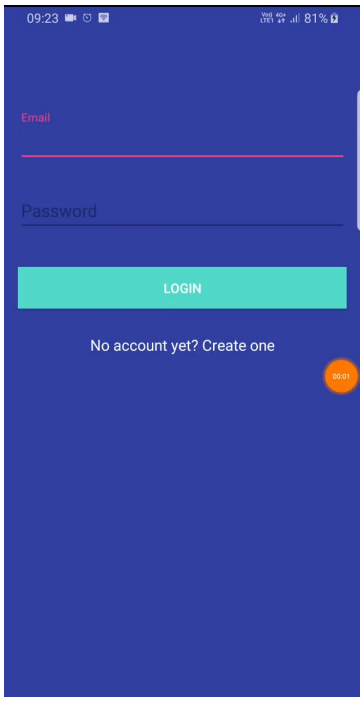
In this report, we demonstrate a concept and a simple prototype, created as a part of the BETH Hackathon at ETH Zurich, that aims to raise awareness about energy sustainability and to reduce the ecological footprint of households. The presented mobile application is designed as an interactive game targeted at users from all generations that intends to educate them to use energy wisely and to employ sustainable practices in their everyday life. The report motivates the design decisions we took through sociological and economic concepts and describes in detail how we incorporate them into the game. In the short technical description, we discuss our development progress during the hackathon and we conclude by evaluating our final concept.

All in all, we address the sustainability challenge as part of the BETH hackathon by developing an interactive game that employs the decentralized blockchain technology to achieve transparency for all its transactions. Our project presents a two-fold solution to this challenge: saving energy and other resources, and investing in local sustainability projects. We believe that our gamification approach

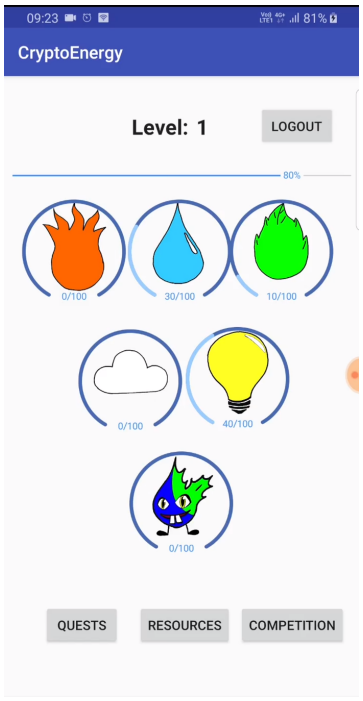
[9] `https://www.eea.europa.eu/media/infographics/co2-emissions-from-passenger-transport/view`

towards energy efficiency can contribute to the construction of more sustainable and energy-aware habits and thus, can have an impact on global climate change and sustainability.

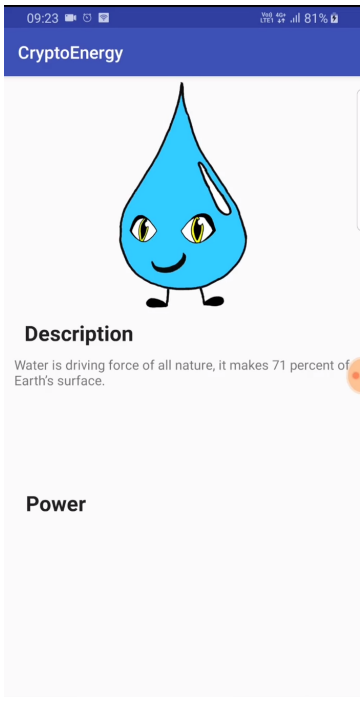
A Images of the hackathon prototype Android application



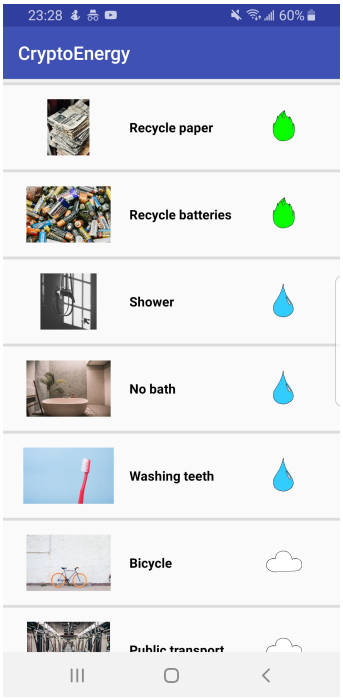
Login menu to enter the game



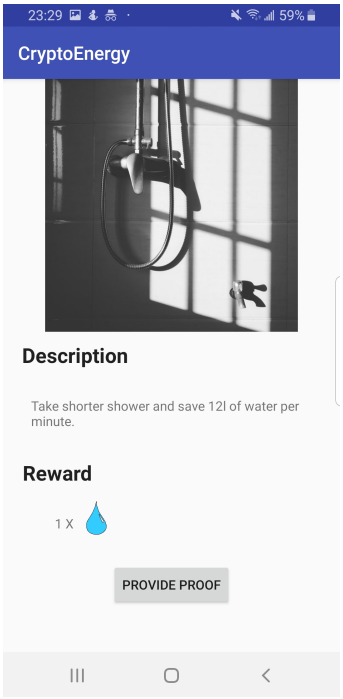
Main screen to overview current progress



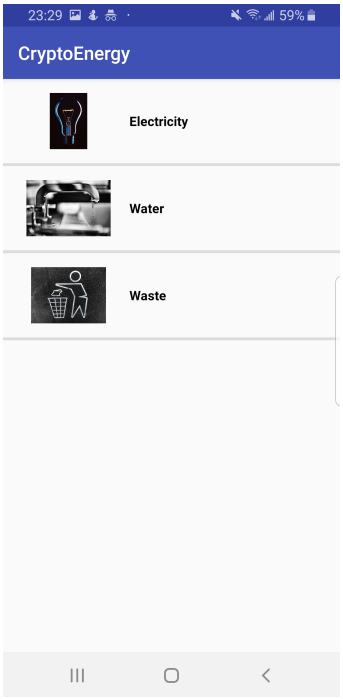
Short description of a token



Example quests for a given level



A quest description



Possible resources

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