Peer2Panel: Democratizing Renewable Energy Investment With Liquid and Verifiable Tokenized Solar Panels

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Abstract

With an expected investment cost of ∼$100 trillion within the next decades, renewable energy is at the heart of the United Nation's transition to net-zero emissions by 2050. Unfortunately, there are several challenges associated to these investments, such as the low exit liquidity and the hassles of going through centralized agencies. Investments in renewable energy is thus currently mostly limited to governments, corporate, and wealthy individuals.

At Peer2Panel (P2P), we address these issues by tokenizing solar panels into unique SolarT NFTs on the Ethereum blockchain, where we function as an intermediary between a token-owning individual and a physical solar panel. Apart from panels installation and maintenance, our role is to redistribute the profits from the generated energy to the SolarTs holders, thus making investments in SolarTs transparent, democratic, and liquid. In fact, ownership of a SolarT token gives a direct ownership interest in the solar panels owned by P2P, which can then be exchanged freely on-chain and thus remove most of the hassles of the traditional energy market. In addition, P2P leverages the most recent innovations from the decentralized finance (Defi) ecosystem to propose SolarTs-collateralized loans, instant liquidity and multi-chain interoperability to its investors.

This document is work-in-progress and may be updated without announcement.
None of the information contained within is financial advice.

Contents

1 Motivations

We live in a fast-changing world. In the last decades, the explosion of smartphones, internet and social medias (Web 2.0) has completely metamorphosed our society. At the same time, the humanity's impact on the environment have been enormous and climate change is now at the center of political debates worldwide. With these in mind, we make three important considerations.

(i) In the context of the recent events, such as the Covid pandemic and the Russian invasion, inflation has reached record highs in developed countries. This devaluation of fiat currencies affects mostly the less affluent parts of society since they have a higher share of their wealth in cash or bank deposits, while the wealthy primarily invest in stocks, real estate, and private companies which are more robust to inflation. These types of investment are less accessible to the middle-class, as they often involve complex regulations and high transaction costs. Investments in renewable energy are particularly inaccessible due to their low exit liquidity, making them impractical for an average person who may depend on his funds for unexpected expenses. While it is common for wealthy individuals to obtain collateralized loans against their illiquid assets, it has so far been an arduous process for middle-class investors. Instead, they have to go through specialized investment agencies, which poses significant risks regarding the project execution, with the possibility of going bankrupt due to mismanagement or corruption.

(ii) In order to mitigate the effects of climate change and comply with the United Nation's transition plan to net-zero emissions by 2050, many countries have set ambitious goals on renewable energy production. Also, recent events have emphasized the urgency to reduce the energy dependence on foreign countries with a monopoly on fossil fuels such as Russia, Venezuela and Iran. In this context, the investment necessary for this transition was estimated to $125 trillion [1], meaning that this transition could benefit greatly if investment in renewable energy was made more attractive to a wide range of private investors, bringing in more cash.

(iii) Blockchain technology (sometimes referred to as Web 3.0), and more recently decentralized finance (Defi), have revolutionized the way we trade, invest and transfer assets. At the center of this revolution is the Ethereum blockchain [2], which through its smart contracts, unlocked countless possibilities it the finance, art and gaming industry. Nevertheless, while information is always verifiable and immutable on the Ethereum blockchain, it becomes more challenging when it involves *connecting the physical world* to the blockchain (Oracle problem [3]). Hence, the digitalization, or tokenization of real-world assets into a blockchain compatible token usually goes through a centralized agency. We can cite as example fiat currencies (Tether, USDC) [4], gold (PAXG) [5], stocks (Bitpanda), and real estate (RealT [6]). These protocols are crucial to the democratization of the blockchain technology into the world, which would otherwise stay limited to digital only assets.

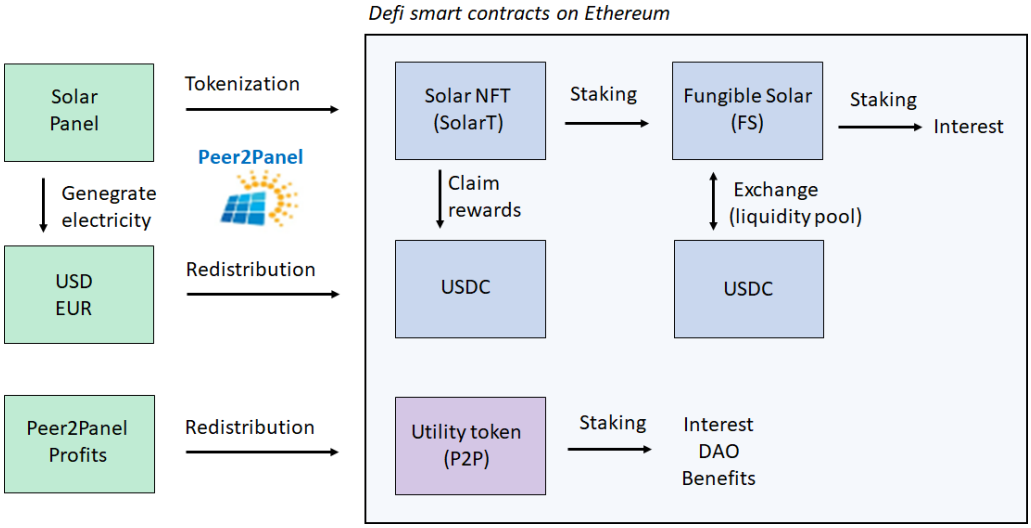
In the light of the three points raised above, we funded Peer2Panel, striving to be an independent third party institution certifying and tokenizing photovoltaic panels into an Ethereum compatible digital asset. In fact, solar energy provides a promising alternative to cash in the context of inflation, as electricity is and will always be in demand worldwide. By providing to its token owner direct ownership of the tokenized panels and redistributing the revenues from the generated electricity, we aim at functioning as an intermediary between a token-owning individual and a physical solar panel. With this new possibility, we hope to make profitable investment in renewable accessible for everyone, and in the process crowdfunding the energy

transition, thus contributing to the current renewable energy funding gap. Through our audited smart contracts, we offer P2P users the possibility to invest even small amounts into renewable energy installations, and owners of tokenized solar panels to borrow funds against their assets at competitive interest rates whenever desired.

2 Peer2Panel ecosystem

2.1 Overview

P2P act as an intermediary between the traditional renewable energy market and the decentralized on-chain ecosystem. Our objective is to guarantee that owners of the tokenized panels benefit at least from the same return on investment as in the traditional market, while at the same time enjoying the high liquidity and transparency of the decentralized applications (Dapps) of the Ethereum blockchain. In fact, it is our responsibility to (i) ensure the quality and authenticity of the solar panels we tokenize, (ii) redistribute the energy revenue fairly and consistently to the solar panel holders, and (iii) offer solar token owners the existing Defi possibilities of the Ethereum blockchain. In the context of P2P, the ecosystem gravitates around three Ethereum compatible (ERC) tokens.



- **Tokenized solar panels (SolarT) - ERC721** represent the ownership of a unique physical solar panels (thus non fungible). A new token is minted for each new solar panels acquired and installed by P2P. Likewise, defective panels are purchased back by P2P and their corresponding SolarT token burned. Ownership of SolarT entitles to consistent income from the generated electricity sold on the market.
- **Fungible solar panels (FS) - ERC20** is a fungible stable coin pegged to a pool of staked tokenized solar panels. Briefly, its role in the ecosystem is to (i) provide temporary liquidity to investors who own non fungible solar panels and (ii) serve as a viable store of value alternative to fiat-pegged stable coins. In fact, the intrinsic value of FS is guaranteed because they are over-collateralized by staked SolarTs. Stakers of FS retrieve the interests of the borrowers (see Defi applications below).
- **P2P utility token (P2P) - ERC20** is the utility token of the P2P ecosystem. Long term stakers of P2P will benefit from reduced transaction fees and increased interest rate on the generated electricity. Liquidity provider will receive reward in P2P. The details tokenomics of P2P will be revealed before the ICO.

2.2 Tokenization

The tokenization of physical solar panels into Ethereum compatibles token is at the center of the Peer2Panel value proposition. It is our responsibility to certify the existence, quality and reliability of the physical solar panel we tokenize. We do so by working with reputable solar panels manufacturers (such as RGE certified in France), performing regular audit and inspecting thoroughly each panel we tokenize. Also, we make sure that all important information related to the solar panel, such as manufacturer, serial number and location, are recorded directly on the Ethereum blockchain, which can be accessible at any time, by anyone, from anywhere. Finally, in case of damage, defect or any other circumstances that would substantially affect the panels returns, P2P commits to replace the panel and issue a new Solar token to the defective panel owner.

2.3 Ownership

Our contracts provide the token owner direct legal ownership in the underlying solar panels, so that the value of the panels is protected even in case of fraud or bankruptcy of the solar park operator. Since solar panels are typically valued in the range of a few hundred to thousands of dollars, we do not fractionalize the ownership, meaning one solar panel token corresponds to one physical solar panel (ERC-721 standard). At any time, the owner of a tokenized panel (SolarT) can request a certificate of ownership, which is generated directly by our audited smart contract. The certificate is always guaranteed valid at the indicated generation date, as any transfer of SolarTs is instantly recorded in our smart contract.

Peer2Panel

Certificate of Ownership

This is to certify that *John Smith* with Ethereum wallet *0xb794f5ea0ba39494ce839613fffba74279579268* was the legal owner of solar panel *ZSM10201603000676* with a nominal power of *400Wc* from 01/01/2021 to 11/04/2022

Approved by Silas Lehner, chief legal officer

This certificate was generated by the P2P smart contract 0xb794f5ea0ba39494ce839613fffba74279579268 on 11/04/2022 at 11:16PM.

2.4 Revenue

Every day, Peer2Panel pays the income from the generated electricity to the P2P smart contract in USDC (after deduction of 20% for commission, maintenance, and monitoring fees), which is vested indefinitely until the solar panel token owners decide to withdraw their generated income. Note that depending on the nature and locations of the panels, the generated electricity will either be sold as market price, or under a 20-year power purchase agreement (PPA) (Figure 1). With the advent of smart contracts, there is no reason to retain monthly payments. Instead, the smart contract manages the dispersal of funds to SolarT owners so that they are able to collect their amount every day. Finally, we are planning to add the possibility insurance for a small additional fee against damage to the panels and potentially also against inclement weather which could lead to lower-than-expected returns. As of May 2022, current market conditions involve a yearly return on investment in the range of 5 to 20% APY.

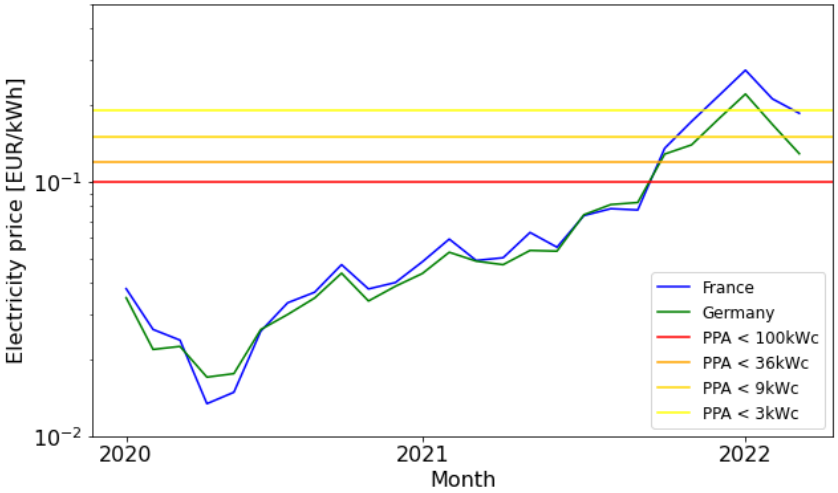


Figure 1: Monthly electricity market price in France and Germany since January 2020 [7]. The French power purchase agreement (PPA) averaged over the last 2 years is indicated for comparison [8].

2.5 Marketplace

The main place to trade solar panel tokens is the Peer2Panel marketplace, where panel tokens will be listed for USDC. We charge low transaction fees (1%) compared to other established marketplaces such as Opensea or Rarible (2.5%). After tokenization, solar panels are sold with an auction to guarantee that they are sold at a *fair* price, and also preventing abusive transactions by bots in the process. In the marketplace, solar panels are grouped by location, manufacturer and size to make it easier for users to find and compare different SolarT. In fact, it can be assumed that multiple tokens at almost the same location, and the same manufacturing model type, will generate similar returns.

2.6 Panels intrinsic value

To facilitate the implementation of Defi application and avoid potential unreasonable liquidation during market crashes, we associate an *intrinsic* value to each SolarT tokens. It is calculated mainly from the panel manufacturing price and its expected APY, which may fluctuate during the year depending on electricity market price. Every week, we update the estimated *intrinsic* value of our panels based on the energy price within the last 6months and the potential depreciation of the physical panels. For uniformity across SolarT tokens, the intrinsic value is normalized by the expected APY, such as a panel with a PPA agreement with 20% APY will be valued more than a panel without agreement selling electricity at market price (thus lower APY). Also, a correction accounting for the safety of the country of location may be applied to adjust for the potential risks of delinquency of the solar installation. The detailed formula will be communicated at a later stage.

2.7 Panels depreciation and interrest rate

It is important to reliably price the panels as they depreciate. We construct our pricing model such as an investor who buy a panel at its value at any time will always be in profit the next month with the same return r. In our setup, the investors get the returns for N months until all the panels are given to the operator for free. Thus, the value of the panel at the end of the contract is effectively zero in the context of P2P marketplace (see this spreadsheet for interactive calculations in our model).

We first describe a model were payments are made each month, but keeping in mind that it can be easily be extrapolated to weekly or daily payments. Let X_n be the value of a SolarT token at month n, and y_n be the *raw* MPY (monthly percentage yield) of the solar panels from the generated electricity during that month, relative to the panel original price P. During the SolarT token listing, the panel may be sold at a premium p at a value of $X_0 = P(1+p)$. We define an *effective* MPY r such as the value of a portfolio with a panel bought at any given time and accumulating one month of interrest equals the value of the panel at current time plus the accumulated income from the generated electricity during that month.

$$X_{n-1}(1+r) = X_n + y_{n-1}P \tag{1}$$

First Assuming that $y_n = y_0$ is constant, we obtain an arithmetico-geometric sequence with geometric term $a = 1+r$ and arithmetic term $-yP$. Then, the panel value at any given month is given by:

$$X_n = X_0 \left[(1+r)^n + y_0(1+p)\frac{1-(1+r)^n}{r} \right] \tag{2}$$

From there, we can compute r from knowing that the panel will be worth zero after N months. Setting $X_N = 0$, we obtain the equation

$$y_0(1+p) = \frac{r(1+r)^N}{(1+r)^N - 1} = 0 \tag{3}$$

Knowing the interrest rate r, the regular payment y_0 can be calculated easily with this formula. On the other hand, finding r from y_0 is is equivalent to finding the roots of a Nth degree polynomial, which can be done approximatly with WolframAlpha or with an IRR calculation in Excel. As an example, for a 14% APY and no premium, we get a 12.7% effective APY for a contract of 20 years (Figure 2). Aurel: need to add plot showing r vs (y,p)

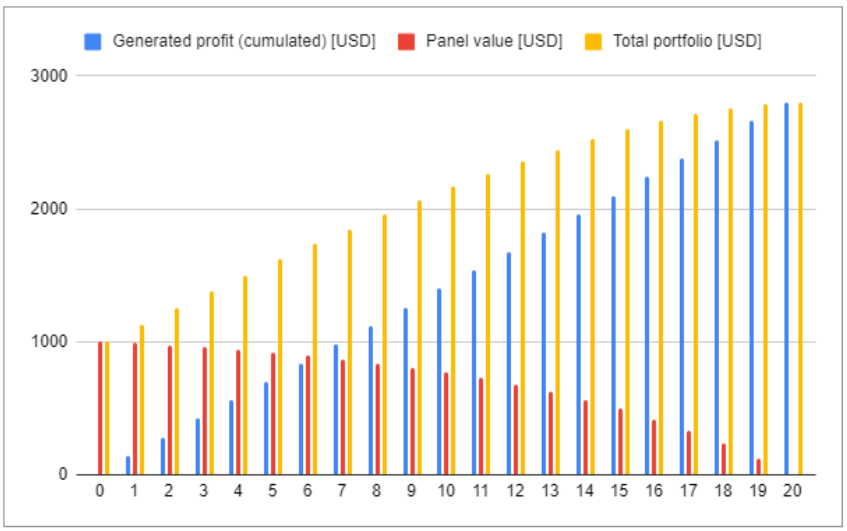


Figure 2: Estimation of portfolio growth for an effective APY of 12% in a 20 years contract.

This model works well for products with constant payments such as mortgages and bank loans. However, in the general case, we need to consider the depreciation of the photovoltaic efficiency (estimated to 0.5% per year [9]), which reduces the amount of regular returns. In this general case, we can write the value of a portfolio after time Δt for a panel bought at time t:

$$X_{t+\Delta t} = X_t\,(1+r)^{\Delta t} - P\int_t^{t+\Delta t} y_\tau d\tau \tag{4}$$

Assuming a degradation rate d of the raw MPY, we have $y_t = y_0(1-d)^t$, thus we can write

$$\begin{aligned} X_{t+\Delta t} &= X_t\,(1+r)^{\Delta t} - P y_0 \int_t^{t+\Delta t} (1-d)^\tau d\tau \\ &= X_t\,(1+r)^{\Delta t} - \frac{P y_0 (1-d)^t}{\log(1-d)} \left[(1-d)^{\Delta t} - 1\right] \end{aligned} \tag{5}$$

This series cannot be solved analytically and we compute it numerically for a time Δt of 1 day, 1 week and 1 month to see if there is any major differences for different choices of time intervals. Aurel: Need to make numerical calculations.

2.8 Defi applications

One of the main breakthroughs of Defi on Ethereum was the development of collateralized loans (Aave [10], Compound [11]), providing instant liquidity over collateralized crypto assets. At P2P, we implement a similar model, where user can stake their SolarT token in order to borrow FS stable-coins, which can then be exchanged into USDC. Below we provide an overview of the different Defi application of our protocol, but most of the numbers described may be adjusted later by P2P after validation from our users.

- **SolarT auction**. After tokenization, all SolarT tokens are sold on a one-week auction to prevent abusive transactions by bots, with a starting price initialized to its intrinsic value. We use the same auction mechanism as Aavegotchi [12], where bids during the final 5 minutes activate a *Hammer Time*, with an additional 5 minutes added to the overall time of the auction.

- **SolarT staking and FS borrowing**. FS stable coins can be borrowed by staking SolarT tokens. They are minted by staking SolarT tokens and are burned when the user returns them in order to retrieve his SolarT token, hence have a dynamic supply. This way, we ensure that FS tokens are always backed by real physical solar panels. The amount of FS acquired by the staker is determined from the *intrinsic* value of the panel (in USD), such that 1 FS represent 1W of staked solar panel normalized to a 10% APY. After staking, the revenue from the generated electricity is locked in the staking contract as additional collateral until the borrower returns his FS tokens. As having a large FS supply is beneficial for P2P liquidity, we may incentive SolarT owner to stake their panels with rewards paid in P2P tokens.

  Providing an amount of FS in exchange of staked panels is a risk for the P2P ecosystem. In fact, the electricity market price may fluctuate, or panels themselves may depreciate. In compensation for this risk, the P2P smart contract implements the two following mechanism. (i) An interest rate of 3% per year on the borrowed FS is charged to the SolarT staker, deducted directly from the profit of generated electricity. (ii) Minted FS after staking a panel are overcollateralized, with only 85% of the panel intrinsic value minted in FS to the user. Note that the interest rate may be adjusted to favor the stability of FS.

- **FS staking**. FS can be staked in order to receive interest, which comes from the fees collected from the FS borrowers. In other word, staker of FS act as indirect lender of FS to SolarT stakers.

- **SolarT liquidation**. In the situation where the SolarT collateral intrinsic value rises above 95% of the borrowed FS, the smart contract will automatically liquidate the position by opening an auction on the P2P marketplace with a starting price of 95% of its intrinsic value. In the rare case where no buyers can be found after 1 week, P2P commit to buy the panel with its dedicated found, thus always guarantying exit liquidity.

- **Solar investment pool**. Users who do not which to invest and handle panels themselves can stake USDC into a crowdfunding pools. As soon as the available cash in a pool reach the value of a panel (roughly 500USDC), the contract will automatically purchase the panels with the best APY on the market place and start yielding interrest to the users who staked their money. Investors who wish to withdraw their staked USDC will trigger an automatic sell of the panels if needed.
- **Auto-compounding**. Users may chose to automatically stake their generated income into the solar investment pool in order to compound their revenues from the generated electricity. This possibility may be especially interesting around the end of the panels life time where it depreciates fast (Figure 3).

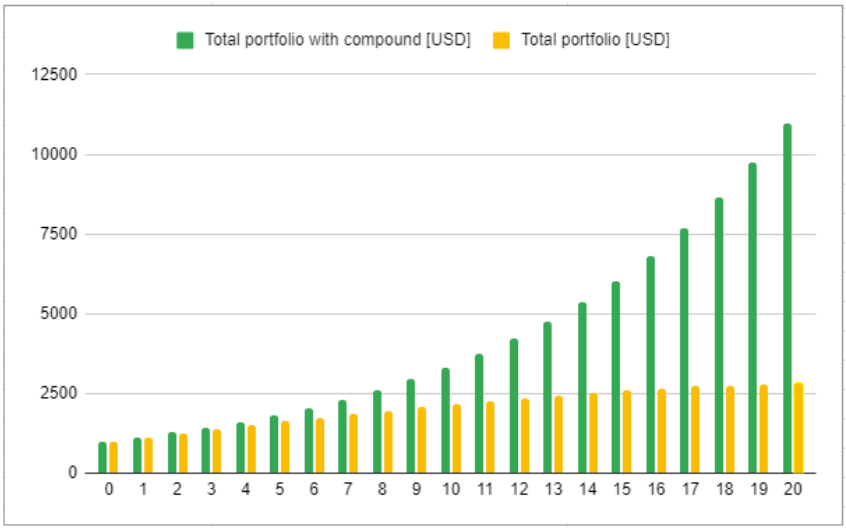


Figure 3: Estimation of portfolio growth for an effective APY of 12%, with and without compounding.

- **P2P staking**. P2P can be staked to receive benefits and interests. Stakers of P2P will (i) receive part of the revenue from the P2P ecosystem, (ii) benefit from lower fees in the P2P marketplace, and (iii) get increased interest rate on the generated electricity. In order to incentives long term staking, the magnitude of received benefits will depend on the amount and the time the users staked P2P, with a model similar to Platypus Finance [13].
- **Liquidity pools**. In addition to the P2P marketplace, we incentive two liquidity pools, FS/USDC and P2P/USDC, with reward paid in P2P token. Note that FS being a proxy of the value of physical solar panels, its USD valuation is quasi-stable and thus impermanent loss is expected to be low on the pair FS/USDC. We expect that arbitrageurs will keep the FS value consistent with the panels' values (see use cases below).
- **P2P burn**. P2P will use part of its profit to buy back P2P tokens at market price and burn them. This result in an increasing buying pressure on the P2P token, potentially compensating the inflation from liquidity mining rewards.

2.9 P2P Decentralized Autonomous Organization (PanelDAO)

While P2P is centralized in the way we certify solar panels and redistribute revenue from the generated electricity, the PanelDAO is crucial to favor a balanced and democratic usage of our protocol. Hence, the possibilities described above may be modified if voted by our DAO members. As we want all users of our ecosystem to be able to contribute, voting right will be given to SolarT, FS and P2P holders, proportionally to their implication in the ecosystem.

3 Value proposition

3.1 Overview

Our tokenized solar panels (SolarT) may serve both as a store of value and as a *low-risk* profitable investment. Since they provide direct legal ownership of the underlying physical solar panels and democratic revenue distribution, we believe it makes it a more attractive investment compared to the traditional renewable energy market. In fact, it removes the risk of going through solar agencies or acquiring stocks of solar companies. Also, SolarT tokens are easily and quickly tradable at any time thanks to the decentralized nature of the Ethereum blockchain, and they can be transferred to other P2P users at minimal transaction cost. Importantly, P2P unlock the access to solar investment for blockchain users from any countries, without having to go through the transfer fees and delays of the traditional market.

P2P also offer a competitive alternative to other store-of-values such as Bitcoin [14] or precious metals. On one hand, SolarT tokens consume much less energy during *mining*, and instead benefit the environment via the production of renewable energy. On the other hand, they generate a steady stream of income in addition to *storing* the value.

Finally, our solar-pegged stable coin, Fungible Solar (FS), may provide a viable alternative to fiat-pegged stable coins like USDC, Tether or DAI. As with DAI, our tokens cannot be frozen by us and are fully backed by crypto tokens. Unlike the collateral in MakerDAO [15], which is composed of volatile crypto currencies (mainly Ethereum) and hence vulnerable to market crash, FS tokens have intrinsic value via the physical solar panels they are backed with. Other stable coins like Tether and USDC are backed by fiat currency, thus vulnerable to inflation.

3.2 Use cases

- *User A* wants to invest in solar energy to diversify his crypto portfolio, so he bought some SolarT tokens and receive his interest daily (5-10% APY). In the context of rising electricity price and inflation, SolarT tokens are increasingly profitable.
- *User B* bought thousands of SolarT tokens, but need some liquidity temporarily for some other application. He stakes his panels in the P2P staking contract and get FS in exchange. Then, he exchange his FS to USDC and now has liquidity for anything he wishes to do in Defi.
- *User C* is relatively new to crypto, and want to invest a small amount of money. Instead of going through the hassles of NFT marketplace, he directly buy FS and stake them in order to obtain returns.
- *Company A* wants to raise investment to build solar panels. Through partnering with P2P, it can access crowdfund investing from blockchain users.
- *User D* is an arbitrageur. Due to some exceptional event, he notice that the market cap of FS in USD is significantly lower than the estimated price of staked panels in the contract, and the interest rates of staking FS is higher than owning the panels themselves. Thus he buys a lot of FS, expecting it to return later to its intrinsic value.
- *User E* is an arbitrageur. Due to some exceptional event, he notice that the market cap of FS is significantly higher than the estimated price of the staked panels, and the borrowing fees of the SolarT staking contract is lower than usual. He purchases additional SolarT tokens on the P2P marketplace, stake them to get additional FS and exchange to USDC until FS price returns to normal.

4 Business

4.1 Revenue model

Ideally, P2P do not own any solar panels but act as an intermediary between a token-owning individual and a physical solar panel. Our business model lies in the commissions we take as a third-party intermediary. More specifically, our revenue comes from (i) the direct profit from the panels auctions, (ii) the 1% commission for all transactions in the P2P marketplace, (iii) the 20% commission from the generated electricity sale, and (iv) the 3% interest rate we charge to the FS borrowers. From these revenue, we deduct the operational cost of the solar panels installation. Note the majority of the profit is redistributed to our users staking FS and P2P tokens.

4.2 Roof and ground solar panels

Roof and ground solar panels involve different regulation, installation and maintenance cost. On one hand, ground solar farms implicate tight regulation and higher entry investment cost. While on the other hand, roof installations benefit from cheaper installation cost and more advantageous selling price under the french 20 years PPA. Still they are heavily constrained by the simple necessity of having a compatible roof, thus removing flexibility about the location and orientation of the solar panels.

4.3 Partners

The installation and maintenance of multiple solar installation across different places involve a lot of manpower, and the logistics and regulatory processes in different countries are challenging to navigate. Therefore, we work together with partners who plan and operate solar parks, taking responsibility for the necessary infrastructure such as the connection to the electricity grid and the inverters. Additionally, as the advantageous french 20 years PPA agreement is only possible with solar roof installation, we partner with utility scale installations or corporations with a large total roof area, possibly across multiple locations. These include retail companies, restaurant chains or sport facilities. For these activities, partners receive either part of the electricity revenue of the solar panels or a fixed monthly fee agreed with them. The exact amount and other contractual provisions are noted transparently in the minted solar panel tokens.

4.4 Pre-financing

One challenge in tokenizing solar power assets is the need for temporary financing to acquire and install solar panels before they can be tokenized and sold. To raise the necessary funds, we may perform a pre-sell of SolarT tokens, where payments are held in an escrow account by a smart contract to be released to the panel manufacturer once the installed panels are certified by P2P.

4.5 Cost estimation

Different costs are to take into account

- Renting roofs (It is an existing buisness model for solar companies already) Examples are `https://oyasolar.com/commercial-solar-lease/rooftop-solar/`, `https://www.sens-energy.com/en/roof-rental-photovoltaics/`, `https://ecogyenergy.com/rent-my-roof`
- Buying a field
- Installation cost
- Panel cost
- Maintenance cost

4.6 Roadmap

- **2022: Proof of concept**. Launch of SolarT tokens after Certik and Halborn audit of our smart contract are passed. We will initially have a small photovoltaic complex to demonstrate the viability of our system. With an initial tokenization of roughly 10kW solar panels (roughly 400), we will sell our first SolarT tokens to the P2P ecosystem. To make sure anyone can participate, panels will be fractionalized into multiples semi-fungibles ERC1155 tokens.
- **2023-2024: Full launch**. After our proof of concept phase is validated, we will launch the DAO, the FS token and perform our ICO of P2P. During that year, we plan to scale the deployment of solar panels massively in Germany and France.
- **2025 & After: Expansion**. Expansion into other countries other than France and Germany. Extension to other energy sources such as wind turbines.

5 Perspectives

P2P leverage the possibilities offered by web 3.0 to offer blockchain users a new form of investment, which was only accessible to a restricted part of the population before. In the process, it allows for efficient fund raising for renewable energy projects, while at the same time providing security and convenience to P2P users. We hope that this possibility will contribute to bridging the funding gap required for the transition into net zero emission.

As solar farms can be installed to generate electricity worldwide, P2P have a very high scalability potential. Especially, installations in south America and Africa may turn out particularly beneficial thanks to the very high amount of sunlight the receive compared to other parts of the worlds. But more importantly, we hope at a later stage to tokenize other form of *clean* energy, such as wind turbines and nuclear small modular reactors (SMR) [16]. These are typically more profitable but involve a much higher entry cost, on the order of at least several millions, and are thus usually reserved to governments entities and established companies. The possibility for the middle-class to directly invest and collectively own these power-plant using other form of energy could contribute positively to the transition into net zero emission.

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Risk associated with the purchase of Peer2Panel tokens

Prospective purchasers of Peer2Panel tokens should evaluate all risks and uncertainties associated with the purchase of Peer2Panel tokens. This white paper does not constitute advice nor a recommendation by the Peer2Panel Team on the merits of purchasing or holding Peer2Panel tokens or any other token or cryptocurrency. Such purchase and holding carry substantial risks that could lead to a loss of part, or all, of the funds invested. As of the date hereof, the Peer2Panel tokens have no known potential uses outside of the Peer2Panel platform. No promises of future performance, value or utility are or will be made with respect to the Peer2Panel tokens, including no promise that the Peer2Panel platform will be launched, in particular the PanelDAO, and no guarantee that the Peer2Panel tokens will have any intrinsic value. The Peer2Panel Team may decide to amend the intended functionality of Peer2Panel tokens for any reason, including to ensure compliance with any legal or regulatory requirements to

which it is subject, which may affect the utility or any other properties of the Peer2Panel tokens. Any Peer2Panel tokens could be impacted by regulatory action, including potential restrictions on the ownership, use, or possession of such tokens. Regulators or other competent authorities may demand that the mechanics of the Peer2Panel tokens be altered, entirely or in part.

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