Roadmap for Issuing RWA Tokens by Deye (Singapore Pilot to Full-Scale Launch)

Introduction

Deye's Real-World Asset (RWA) tokenization project aims to put physical solar **inverters** (energy-generating assets) on the blockchain in a compliant way. The plan is to issue digital tokens that each represent an inverter deployed in Singapore, enabling investors to trade and track these assets on an Ethereum Layer-2 (L2) network. Crucially, each on-chain token will be **1:1 anchored** to a real inverter unit held by a licensed custodian, ensuring the token's value is backed by the physical device[1][2]. The roadmap below focuses on four key components for a successful rollout: (1) integration of an **oracle** system for off-chain data, (2) selection of an appropriate **token standard** for the RWA tokens, (3) mechanisms to **distribute the returns** (electricity revenue) from the inverters to token holders, and (4) strategies for **market making and liquidity** for the tokens. The approach will leverage an Ethereum L2 chain (e.g. Coinbase's Base) for scalability, consider *only the electricity generation income* as the source of returns, and implement a phased deployment (starting with a limited pilot and then expanding to full scale). Throughout, compliance with Singapore's Monetary Authority of Singapore (MAS) regulations (KYC/AML, licensed custody, etc.) remains a top priority[3][4].

Blockchain Platform and Token Standard

Layer-2 Chain Selection: Deye will deploy the RWA token system on an Ethereum Layer-2 network such as **Base** (an Optimistic Rollup chain) to benefit from low transaction costs and high throughput while inheriting Ethereum's security. The original plan considered Polygon or Arbitrum, which similarly offer efficiency and Ethereum-compatibility[2]. Base is comparable – it provides EVM compatibility, access to the Ethereum ecosystem, and is operated by Coinbase which could aid in future integration and trust. Using an L2 is important to enable daily transactions (like frequent oracle updates and payout distributions) economically, and to ensure a smooth user experience for trading and transfers. In summary, the blockchain platform must balance **stability and cost**; here Base (or a similar L2) offers a good mix of performance and low fees without sacrificing the security of Ethereum[5].

Token Standard Choices: Instead of a plain ERC-20, Deye will use a token standard purpose-built for representing real assets and enforcing compliance. A **standard ERC-20 token alone is insufficient** for RWAs because it cannot natively restrict transfers or embed regulatory controls[6]. Two strong candidates are **ERC-3525 (Semi-Fungible Tokens)** and **ERC-1400 (Security Tokens)**:

- **ERC-3525 (Semi-Fungible Token):** This standard combines properties of ERC-20 (fungible) and ERC-721 (non-fungible). It allows each token to carry an **ID and a**

value. In practice, Deye can mint one token *per inverter*, giving each token a unique ID tied to that inverter's metadata (serial number, location, etc.)[7][8]. At the same time, ERC-3525's value field could enable fractional ownership if needed (for example, splitting a token to allow multiple investors to share one inverter's ownership). This standard is well-suited to **map physical assets on-chain** while still being tradable and traceable; it provides the **"semi-fungibility"** needed – all inverter tokens are similar in structure/value but each is individually identifiable[2][9]. This aids transparency since investors can query a specific token and see its linked asset's details (valuation reports, performance history, etc.).

- **ERC-1400 (or ERC-3643 series):** ERC-1400 is a family of standards for security tokens which include built-in features like *partitioned ownership, transfer restrictions, and investor whitelisting*. Using an ERC-1400-compliant token would make it easier to enforce that only verified (KYC-approved) addresses hold or trade the token[6]. It also supports features like forced transfer or pause, which can be useful if an issue arises with the underlying asset (e.g. an inverter is damaged – the token could be frozen until resolved)[10]. This route offers stronger compliance controls out-of-the-box, aligning with MAS regulations if the token is deemed a security. A simpler variant is **ERC-1404**, which provides basic restricted transfer functionality (e.g., blocking non-whitelisted wallets) with standardized error messages[6].

Recommended Approach: For the pilot, Deye can prioritize **clear asset traceability and compliance**. A pragmatic choice is to implement the tokens as **ERC-3525 SFTs with added compliance logic**. This could mean writing a Solidity contract that issues one **token ID per inverter** (total of 1,000 IDs if 1000 units) and uses an internal whitelist to restrict transfers. This achieves the benefits of ERC-3525's asset mapping[11], while incorporating whitelisting similar to ERC-1400. In effect, the token contract would only allow **transfers between KYC-approved users**, and could have an emergency pause controlled jointly by Deye and the custodian (to satisfy MAS that assets can't be misused)[10]. Each token ID's metadata would include a hash or link to the inverter's documentation (stored on IPFS or a database) for auditability. The total token supply would be fixed to match the number of physical inverters (e.g. 1000 tokens for 1000 devices), and minting can be disabled after initial issuance to prevent oversupply[12]. This design ensures **1:1 anchoring** – no token exists without a real asset backing it – and any **burn** of a token would correspond to removing an inverter from service or ownership (maintaining parity between on-chain and off-chain records). By choosing such a token standard and architecture, Deye sets up a robust foundation that **meets compliance requirements and suits real asset representation** (unlike a generic ERC-20)[6].

Oracle Integration for Off-Chain Data

Connecting real-world data from the solar inverters to the blockchain is critical. **Oracle mechanisms** will be established as the bridge between off-chain information and on-chain smart contracts. In the Deye project, the oracle layer serves several functions:

- **Performance and Revenue Data:** The solar inverters' primary output is electricity. Deye will gather data on **how much energy each inverter produces daily**, and how much revenue that energy earns (e.g. via selling to the grid or powering facilities). This could be done through IoT sensors or the inverters' built-in monitoring systems. A **decentralized oracle network (e.g. Chainlink)** will pull this data from trusted sources (such as the energy off-taker's API or a smart meter reading) and deliver it on-chain. By having a **daily oracle feed** of kWh generated and current electricity rates, the smart contract can calculate each token's share of revenue to distribute. The use of a reputable oracle framework ensures the data's authenticity and tamper-resistance – vital because incorrect data could lead to wrong payouts. Chainlink, for example, can fetch and aggregate data from multiple sources (to avoid reliance on a single data source) and then publish the **verified data on-chain**[13][14].

- **Asset Valuation and Status:** Besides revenue, Deye will also track the condition and value of each inverter. Over time, hardware depreciates or might require maintenance. Oracles can periodically update an inverter's **latest valuation** (perhaps quarterly appraisals in EUR/SGD) and maintenance status. For instance, if a third-party appraisal firm assesses that an inverter is now worth €900 (down from €1000 purchase price), that information can be sent on-chain to inform investors. Likewise, if an inverter goes offline for repair, an oracle update could flag its token as temporarily non-performing. The **Chainlink oracle** can be configured to obtain these inputs too – e.g. by connecting to the custodian's asset management database or maintenance contractor reports[13]. All such data would be anchored on-chain (often by storing only a hash or a numeric value for efficiency), enabling **transparent, real-time asset monitoring**. In short, RWAs need multiple types of oracle data – performance metrics, valuations, and compliance flags – to fully mirror the off-chain state on-chain[14].

- **Exchange Rates and Financial Feeds:** If the project needs currency conversion (for example, electricity sales might be in SGD, but payouts use USD stablecoin), an oracle will fetch **forex rates** (SGD/USD or SGD/ETH) to perform conversions at a fair market rate. Chainlink Data Feeds provide decentralized price oracles for major currency pairs and could be utilized here[15]. Similarly, if indexing the token's price to any benchmark (like a consumer electricity price index or carbon credit price) is desired, those can be integrated via oracles.

To ensure **data integrity and reliability**, the oracle design will incorporate redundancy and security best practices. Multiple independent node operators will supply data to avoid any single point of failure, and any critical data (like revenue numbers) might require **median of sources** or threshold signatures before the contract accepts it[16][17]. We will also establish fallback procedures: if the primary oracle feed fails or is delayed, a secondary mechanism (perhaps a backup oracle or a time-bound manual input) can kick in so that operations like daily payout aren't halted. All oracle updates will be logged on-chain for auditability. By leveraging a decentralized oracle network, Deye addresses the classic

"oracle problem" – ensuring that the **blockchain can trust the off-chain data** – which is paramount for RWA tokenization to work in practice[14]. This oracle layer underpins the transparency and trust of the whole system: investors can verify on-chain the energy output and health of their asset, MAS regulators can likewise see that payouts and valuations are based on verifiable data, and Deye as issuer can automate many processes (like triggering a pause if an inverter is not producing, via an oracle signal). Overall, robust oracle integration **bridges the gap between physical energy assets and the digital token world**, enabling accurate and timely information flow.

Return Accumulation and Distribution Mechanism

One of the most attractive features of tokenizing the inverters is the ability to **pass through the income** they generate to token holders. Unlike static assets, these solar inverters produce ongoing cash flow in the form of electricity sales or savings. The roadmap includes a clear mechanism to accumulate those returns and distribute them to investors in a compliant, efficient manner.

Accumulating Revenue: The operational entity (Deye or a partner operating the solar installation) will collect the revenue from electricity generation. For example, if the inverters are feeding power to the grid under a feed-in tariff or selling to a utility, the utility would pay Deye (perhaps in SGD) for the kWh delivered. This could occur daily or monthly depending on the agreement; for our model we assume **daily measurement** is possible even if actual cash settlement is less frequent. Deye will likely maintain a treasury account where these funds accumulate. To bring this on-chain, the project can use a stablecoin (for instance, an SGD-pegged stablecoin if available, or USD stablecoin if more practical) as the **payout currency**. The daily SGD earnings can be converted to the stablecoin. An oracle can then confirm the amount to be distributed on a given day, and the equivalent stablecoin is **deposited into a smart contract** that handles distributions.

Daily Distribution to Holders: On the blockchain side, a **distribution smart contract** will manage how funds are paid out to token holders. Given that we aim for daily distributions (to closely match daily generation), the contract will likely implement a *pull-based* model: it continuously calculates accruals for each token holder and allows them to claim at will. For instance, every 24 hours the oracle feeds in "Inverter X generated Y kWh, earning Z USD," and the contract updates an internal record of how much Z belongs to each inverter's token ID. If each token corresponds to one inverter, then the revenue Z is allocated entirely to that token's account. If instead tokens were fractional, it would split among holders of that token. Users could then call a `claim()` function to withdraw their earned stablecoins from their token's account. This avoids gas-heavy micro-transfers every single day to potentially thousands of addresses; instead, investors claim their accumulated yield at their convenience. Alternatively, for simplicity in the pilot, the contract might **automatically distribute** the stablecoin to each holder daily (a push model), since with fewer participants the gas cost is manageable – but for scaling, the pull model is more efficient. In either case, the goal is to credit investors with **proportional revenue from their inverter's generation** on a near real-time basis. This effectively turns

the RWA token into a yield-bearing asset, where the yield comes from real economic activity (solar power sales) rather than DeFi speculation. As one industry example, the Dogger Bank Wind Farm in the UK *tokenized its energy production and pays token investors dividends tied to the wind farm's output*, demonstrating exactly this kind of real-world cash flow distribution via tokens[18].

Handling Variability ("Mixed" Returns): It is important to note that the electricity revenue can fluctuate day by day – sunny days yield more power (and thus more income) than cloudy days. The distribution mechanism is designed to handle this variability gracefully. Investors will see variable daily income, not a fixed interest rate. In other words, the returns are *fully mixed with the asset's performance* – if an inverter produces 5% less power one month, the token holders simply receive 5% less revenue that month. This aligns incentives and reflects the **true performance** of the asset. To smooth out extreme short-term variability, Deye could optionally introduce a **reserve fund** that buffers payouts (for example, holding back a small percentage of peak-day revenue to supplement low-day revenue), but this adds complexity and may not be needed if investors understand the nature of the asset. Most likely, transparency is preferred: token holders directly experience the ups and downs of daily generation, which is communicated via the oracle data. This model is supported by the broader trend in energy tokenization, where *users receive tokens representing a stake in the infrastructure's output or revenue, and profits are distributed more efficiently than in traditional setups*[19]. Essentially, by tokenizing the solar equipment, **profit-sharing is automated** – the blockchain system enforces that when real revenue comes in, it gets to the token owners without delay or middleman fees.

Distribution Currency and Platform: Given the project is based in Singapore, an ideal scenario is to use a **regulated stablecoin or digital currency** for payouts (to avoid currency risk for local investors). If an SGD stablecoin is approved by MAS, that could be used; otherwise, USD stablecoin (like USDC) might be more liquid and acceptable. The distribution contract will hold these stablecoins and when investors claim, they receive them in their wallets. Smart contract auditing is vital here to ensure no errors in calculation or vulnerabilities in the payout logic, since it will hold and transfer real money value regularly. Additionally, tax implications for investors will be considered (the contract could provide an on-chain record of earnings per token as needed for reporting).

In summary, **Deye's RWA tokens will provide a direct line from real-world energy profits to token holders**. This daily streaming of revenue sets it apart from static tokens. It also enhances investor confidence, knowing they don't have to wait for quarterly or annual dividends – they see value coming out of the project every day. The combination of reliable oracles and a well-designed payout contract makes this possible. Over time, this could even be extended: for instance, if Deye adds battery storage or carbon credits as part of the project, those could become additional revenue streams fed into the token's yield (hence "mixed" sources of return). But initially, we focus purely on electricity generation revenue for simplicity and clarity. This approach aligns with industry pioneers like Daylight/DayFi, which let token holders **earn passive income from renewable energy revenues via smart contracts**[20]. By demonstrating that each token correlates with a

real, cash-flowing asset, Deye's RWA issuance will attract investors looking for stable, asset-backed yields in the crypto space.

Market Making and Liquidity Strategy

Creating the tokens and distributing returns is only part of the picture – a successful RWA project must also facilitate a **liquid market** for investors to buy/sell these tokens. Real-world assets are historically illiquid, and tokenization promises improved liquidity, but it doesn't happen automatically. Deye will implement a dual strategy combining **decentralized exchange (DEX) liquidity** with **professional market making** to ensure that the RWA tokens trade with reasonable volume and price stability.

Exchange Listings (Secondary Market): First, Deye will list the RWA tokens on one or more trading venues that **allow compliant trading**. On the decentralized side, this could mean deploying a liquidity pool on a DEX such as Uniswap on the Base network (assuming Uniswap or similar AMMs are available on Base). The pool would likely pair the RWA token with a stablecoin (e.g. USDC) to provide a clear price in fiat terms. However, given the regulatory constraints (only whitelisted investors can hold the token), the pool would need to enforce permissioning. This is a technical challenge: traditional AMMs are open to all, but solutions exist (for instance, creating a wrapper or using an allowlist in the token contract so that even LP providers and traders must be KYC-approved). Deye can explore launching a **permissioned DEX pool** or use emerging platforms that support compliant pools. In parallel, Deye should seek a listing on a **centralized exchange** or regulated security token platform that caters to RWAs. For example, in Singapore, a platform like **ADDX** or **InvestaX** (which are licensed for security tokens) could list the token for trading among accredited investors. Even a listing on a traditional crypto exchange (like Coinbase, given the Base connection) could be possible if regulatory requirements are met and the exchange is comfortable with RWA tokens. The project's documentation already noted that connecting to a *compliant decentralized exchange or a centralized platform can help improve token circulation (liquidity)*[21]. Thus, from day one of the full launch, there should be at least one venue where price discovery can occur.

Initial Liquidity Provision: Simply listing isn't enough; there must be liquidity (buyers and sellers) to facilitate trades. During the pilot and at launch, Deye will likely act as or appoint an **initial liquidity provider**. This means allocating some funds to seed the DEX pool (e.g. depositing stablecoin and a portion of RWA tokens into the AMM to create a tight spread around the token's NAV price). Additionally, Deye could arrange for an **OTC desk** to handle large trades manually if an institutional investor wants to enter or exit without slippage. In fact, OTC trading is often the go-to for illiquid assets; Deye can maintain an OTC channel where the project team or a partner is ready to buy back tokens at a formula price (perhaps based on latest NAV minus a fee) from any seller who can't find a buyer, thus providing a price floor and confidence to investors.

Professional Market Making: To further enhance liquidity and keep the market price aligned with fundamentals, engaging a professional market maker is recommended. This

could be an algorithmic trading firm or liquidity provider (for instance, firms like GSR, Jump, etc., which have experience in both crypto and traditional markets). The market maker's role would be to continuously quote **bid and ask orders** for the RWA token, narrowing the spread and providing depth to the order book[22]. They would do this on whichever exchanges the token trades (they can market-make on the centralized venue and even provide funds into the DEX pool or use arbitrage between venues to stabilize the price). Active market making is crucial for RWA tokens because trading activity may be sporadic – without it, tokens might trade at erratic prices or large discounts/premiums to their intrinsic value. By maintaining tight spreads and sufficient liquidity, the market maker helps the token **reflect its real-world Net Asset Value (NAV)** and yield profile in the price[22]. Investors gain confidence seeing that they can enter or exit positions near fair value without huge slippage.

NAV Transparency and Pricing: Because each token corresponds to a known asset (worth ~€1000 initially, depreciating over time as used), there is a concept of NAV or book value. The oracle-provided valuations will inform this. Deye can publish a periodic **NAV per token** (e.g., if after a year an inverter is valued at €900 and has generated €100 in distributed income, the "total value" was ~€1000 so the token might trade around that aggregate). The market maker will take such information into account to set price ranges. If the token consistently trades below NAV, Deye might consider token buybacks or increased marketing to new investors; if above NAV, perhaps it signals strong demand or expectation of higher future yields. Either way, the oracle feeds and transparency help ground the price, and the market maker ensures **real-time price discovery** is happening, rather than the token languishing untraded[23][24].

AMM vs Order Book Considerations: While automated market makers (AMMs) bring decentralized liquidity, they have some drawbacks for RWAs. As noted, **impermanent loss** can deter liquidity providers and the inability to enforce KYC on a public AMM pool is problematic[25]. Also, the trading of RWA tokens might be better served by an order book model (as used in traditional exchanges) because price updates can incorporate external info (like NAV) more directly. The project might lean more on the **centralized/OTC side initially**, using the DEX pool mainly for smaller retail trades or as a proof of concept. Over time, if regulatory technology allows (e.g., on-chain identity verification), a truly decentralized trading environment could flourish. It's also possible to integrate with **permissioned DeFi protocols** – for example, a lending protocol that accepts the RWA token as collateral (but this usually requires high liquidity and price oracles for the token itself, which might be further down the roadmap once the token has some trading history).

Regulatory and Infrastructure for Liquidity: Because the token is restricted to certain investors, any exchange or platform must enforce those same restrictions. This means the exchanges need to perform KYC and only allow eligible Singapore (or other jurisdiction) users to trade. DigiFT's insights on RWA liquidity note that *permissioned venues that enforce eligibility, and smart contract automation for settlement, are key to building a secondary market for RWA tokens*[26]. Deye will ensure that whichever market venues are used, they have these controls. The Base chain itself doesn't enforce KYC at the protocol

level, so it relies on the token smart contract and exchange front-ends to do so. In practice, the pilot might restrict trading to a simple bulletin-board or OTC facilitated by Deye (for instance, the pilot participants can sell their tokens back to the issuer at a set price, or to each other with the issuer's help). For the full launch, integrating with a licensed exchange will be a priority for scaling up liquidity.

In summary, **market making for Deye's RWA token** will involve a combination of: listing on a regulated exchange, seeding liquidity in a DEX or order book, and partnering with an active market maker to continuously provide liquidity. This multifaceted approach addresses the inherent **liquidity challenges of RWA tokens**, which tend to have lower trading volume and a limited pool of investors[27]. By planning for liquidity from the outset, Deye can avoid the tokens "trading like static wrappers" that nobody can sell[28]. Instead, the tokens become **tradable, yield-bearing instruments with real-time price discovery**, fulfilling the promise of tokenization to make these assets more liquid and accessible. This is aligned with industry best practices: for example, recent RWA exchanges have launched with *active market making to maintain tight spreads and reflect real-time NAV*[24], as well as OTC channels for large trades. Deye will adopt these techniques to ensure investors can confidently trade the tokens at fair value whenever needed.

Compliance and Phased Rollout Strategy in Singapore

Launching an RWA token in a regulated environment like Singapore requires meticulous compliance planning. Deye will adopt a **phased approach**: start with a **pilot phase** under regulatory exemptions or sandbox conditions, then transition to a fully compliant, scaled-up operation once the model is proven. This approach mitigates risk and satisfies regulators that the project is proceeding responsibly.

Pilot Phase – Limited Scope and Regulatory Carve-Outs: In the initial pilot, Deye will likely tokenize a subset of the inverters (for example, 50–100 units) and onboard a small group of investors. The primary goal is to test the end-to-end system (token minting, oracle feeds, return distribution, trading) in a real-world setting but under controlled conditions. To do this legally without heavy licensing, Deye can use Singapore's existing exemptions: **MAS regulation Section 275** allows offering investments only to **Accredited Investors** without needing a full prospectus or license, and **Section 272A** allows raising up to S$5 million from no more than 50 non-retail investors in a 12-month period[29]. By ensuring the pilot participants are all accredited (or kept below 50 persons and S$5M total), Deye can launch the pilot **without a Capital Markets Services (CMS) license** and without registering the tokens as formal securities with a prospectus. This is a common strategy used by fintech startups in Singapore – *"Smart founders start with exemptions"*[30] – to validate their project before going for full regulatory approval.

Additionally, Deye could seek admission to the **MAS FinTech Sandbox** (notably, MAS's *Project Guardian* is exploring DeFi and tokenization pilots). The sandbox would provide a structured environment to operate the on-chain RWA model with MAS oversight but with some flexibility on rules during the testing period[29]. For example, MAS may allow Deye to

run the blockchain platform for the pilot under a provisional authorization, to observe how KYC, custody, and token trading are handled. Being in the sandbox can also ease discussions with banks and custodians, since they know the regulator is involved.

During the pilot, the focus will be on **data collection and feedback**: Deye will monitor the performance of the oracles (accuracy, timeliness), the user experience of claiming yields and trading tokens, and any technical hiccups. Simultaneously, they will ensure all compliance measures are working – every pilot investor will go through KYC/AML checks (likely integrating with SingPass or a licensed KYC provider as mentioned in the plan[31][32]), and the token's transfer restrictions will be actively enforced (no unauthorized wallet can receive the tokens). The pilot will also involve **auditing and reporting**: Deye will produce reports for MAS and for the investors, for instance, showing that the physical inverters are indeed held by the custodian and performing as expected, with evidence (audit documents uploaded to IPFS and their hashes stored on-chain for tamper-proof verification[33]). These measures align with the principle that in an RWA project **transparency and compliance come first**, even at the cost of some decentralization (hence a "mixed" DApp + off-chain model as earlier noted).

Transition to Full-Scale Launch: After a successful pilot (e.g., 3-6 months of operation) with no major issues and perhaps iterative improvements, Deye will prepare for scaling up to the full 1000 inverters and opening the investment to a broader base. This stage likely requires moving beyond the regulatory exemptions into a fully compliant offering. That could involve working with MAS to either **register the tokens as a security offering (STO)** or structuring the offering such that it falls under a regulatory framework (for example, perhaps as a collective investment scheme or a listed product on an exchange). By this time, Deye would have accumulated data and perhaps a track record that can convince regulators (and potential new investors) of the project's viability. If needed, Deye might partner with a licensed entity – e.g., a licensed trust company or fund manager – to officially issue the tokens under their umbrella, while Deye continues to handle the technology. This was the path followed by ADDX (a security token platform in Singapore) which started with exempt offerings and then obtained full licenses as it grew[30].

Key steps in the full-scale launch would include:

- **Minting and Custody:** Tokenizing all remaining inverters (up to the 1000 units worth €1M as planned) on the chosen L2. The custodian (perhaps a licensed digital asset custodian or a bank's trust arm) will update their custody records to show they hold these specific assets on behalf of token holders. Any legal structure (such as a special purpose vehicle that actually owns the inverters) will be finalized such that token holders have legal rights to the asset or its proceeds. Ensuring **asset title and token holder rights are clear** is crucial to avoid the token being seen as an unbacked or synthetic asset[1][34].

- **Smart Contract Deployment and Audit:** Deploy the final audited smart contracts for token management, oracle interactions, and distribution on the Base mainnet

(or chosen chain). The code should be open-sourced for transparency[35]. All addresses (custodian, oracle nodes, project multisig) are made public so they can be monitored.

- **Investor Onboarding:** Open up onboarding for a larger set of investors. If retail participation is desired and allowed, this might involve integrating with a platform to do mass KYC and ensure each retail investor falls within any applicable limits (MAS might impose a cap on how much each retail investor can invest in such products, or require a simplified prospectus). If still limited to accredited investors at this stage, Deye will broaden the reach through marketing within that category (perhaps regionally, not just in Singapore, if allowed – though cross-border adds complexity). In any case, the onboarding process will be through the DApp's front-end: new users will create a wallet or use MetaMask, complete the **KYC/AML verification via integrated APIs**[32], and once approved, they can acquire tokens (through the exchange or direct issuance if still in an offering phase).

- **Full Operations and Monitoring:** With full launch, the system moves into ongoing operation mode. Deye will set up continuous monitoring: oracle performance (with alerts if any feed fails), on-chain transactions (using tools or Chainlink Keepers to watch for anomalies[36]), and periodic asset audits. The custodian will continue to issue periodic reports on the physical assets (perhaps **monthly generation reports and quarterly valuation reports** uploaded to IPFS, with hashes stored on-chain for integrity[33]). MAS may require regular filings or access to an online dashboard to supervise compliance. Deye will also need to comply with **Personal Data Protection Act (PDPA)** requirements in Singapore – ensuring all user personal info used in KYC is stored securely (probably off-chain in encrypted form) and only minimal proofs (like an address's KYC-passed flag) are on-chain[37].

- **Scaling and Growth:** Beyond the initial 1000 inverters, the full-scale roadmap could include onboarding new assets (more solar equipment or other renewable assets) under the same platform. The technology stack chosen (Base L2, oracle networks, token standard) is flexible enough to accommodate additional asset pools, potentially each as separate token series. But any expansion will follow the proven template established by the first full launch.

Throughout the full-scale phase, **regulatory compliance remains an ongoing effort**. Singapore's MAS is actively refining rules for digital assets, so Deye will stay engaged with regulators (perhaps participating in industry sandbox programs or consultations). The legal team will ensure that the RWA token avoids unintended classification as a security unless it is explicitly treated as one with proper licensing. If the token is giving regular revenue shares, it likely will be seen as an **investment product**, so Deye will lean into that and maintain the project within the scope allowed (e.g., keeping to accredited investors if that's the trade-off for not doing a full prospectus). The LinkedIn commentary from compliance experts sums it up well: MAS provides **regulatory shortcuts for early stages**, but to scale to a broad platform, a firm eventually needs to get the appropriate licenses –

Deye's strategy is to use those shortcuts initially and **earn the full licensure over time through a track record of compliance**[29].

Conclusion

Deye's roadmap for issuing RWA tokens backed by solar inverters combines cutting-edge blockchain tech with practical compliance and business strategy. By leveraging an Ethereum Layer-2 solution like Base and a specialized token standard, the project ensures technical scalability, low-cost operations, and accurate representation of real assets on-chain[2]. The integration of robust oracles anchors the tokens in reality – providing trusted data on energy output, asset health, and valuations – which in turn enables automated and transparent distribution of real-world returns to investors on a daily basis. This **marriage of IoT data and smart contracts** is what turns a physical inverter into a source of on-chain yield for token holders[18].

On the financial side, Deye's plan addresses the often-neglected liquidity aspect by planning for market making and exchange connectivity from the start. Investors will not only receive regular income, but also have avenues to trade their positions, aided by liquidity providers and possibly OTC arrangements to keep prices fair and reflective of underlying value[24]. In doing so, the project tackles the liquidity risk that many RWA initiatives face[21], thereby making the tokens more attractive and viable in the long run.

Crucially, this roadmap is grounded in the Singapore context. The phased approach – **pilot first, then full launch** – aligns with MAS's regulatory framework that encourages innovation via sandboxes and limited-scope exemptions[29]. The pilot will validate the concept with real data and ensure all moving parts (tech, legal, operational) work in harmony. Lessons from the pilot will feed into the full-scale launch, which will then operate with the confidence of both the regulators and the market. By the time of full launch, Deye aims to be a compliant issuer, possibly one of the pioneers in Singapore's RWA space, demonstrating how renewable energy assets can be financed and traded using blockchain in a safe, transparent manner.

In summary, the roadmap for Deye's RWA issuance can be visualized in stages:

1. **Preparation & Asset Onboarding:** Secure custodian and legal structure, register 1000 inverters (worth ~€1M) with proper documentation. Choose L2 (Base) and finalize token standard (ERC-3525/1400 hybrid)[2]. Integrate KYC provider and set up oracle connections (Chainlink for energy data and valuations)[13].
2. **Pilot Deployment:** Issue a small batch of RWA tokens to accredited investors under exemptions[29]. Deploy contracts to testnet then L2 mainnet, representing, say, 50 inverters. Stream daily revenue to these token holders as a test. List pilot tokens on a controlled marketplace or facilitate trades manually. Monitor system performance and compliance closely.

3. **Audit & Feedback:** Conduct smart contract audits, gather user feedback, and fix any issues from pilot. Provide MAS with pilot results, ensuring the token is not misused and all requirements (KYC, asset backing, disclosures) are met.
4. **Full-Scale Launch:** Mint tokens for all remaining inverters and release them to a broader investor pool (staying within allowed categories). Deploy on final Base network environment with hardened contracts. Enable full oracle data streams for all assets. Open trading on at least one exchange/DEX with market maker support to ensure liquidity. Begin regular operations – daily payouts, periodic reporting.
5. **Operations & Expansion:** Continuously operate and improve the platform. Handle investor support and governance (e.g., if token holders have any say in asset management decisions, create a mechanism for that through the DApp). Explore expanding the model to new assets or jurisdictions once proven. Keep engaging with MAS for any regulatory updates and adapt accordingly (for example, if MAS introduces a new RWA token framework, migrate to it).

By following this roadmap, Deye will create one of the first **tokenized clean energy asset platforms** in Singapore. This detailed focus on the oracle system, token design, return distribution, and market liquidity ensures that all critical components are addressed, increasing the likelihood of long-term success. The result will be a fully functional DApp where investors can **invest in solar power infrastructure via tokens**, receive **daily income** from those assets, and have the flexibility to exit their investment through a liquid market – all under the oversight of forward-thinking regulation that Singapore provides. This synergy of technology, finance, and compliance embodied in Deye's RWA issuance could serve as a template for future projects looking to bridge real assets with the on-chain world in a responsible way[38][39].

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