American International University-Bangladesh (AIUB)

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Solar-Powered Distribution Solutions for Sustainable Farming

A Software Engineering Project Submitted
By

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1. PROJECT PROPOSAL

1.1 Background to the Problem

Farmers in many regions face ongoing challenges due to unreliable electricity and the rising cost of fuel. To solve these problems, a new initiative called **Famonergy Link** encourages each farmer to install a solar power system on their land. This system allows them to generate their own electricity using sunlight for irrigation, farm machinery, and household needs. By depending less on diesel generators and other fossil-fuel-based sources, farmers can cut costs and reduce pollution. Any unused electricity can also be stored for later use, ensuring a steady supply even during low-sunlight periods.

If the solar panels produce more electricity than the farmer needs, the extra energy can be sent to the national power grid. By selling this surplus electricity, farmers can earn additional income, improving their financial stability while also supporting the nation's renewable energy production. **Famonergy Link** not only promotes efficient energy use but also helps the country reduce its dependence on fossil fuels and move toward sustainable development.

To manage the process easily, **Famonergy Link** provides an online platform where farmers can track how much electricity they have produced, consumed, stored, or sent to the grid. With their approval, the system can automatically transfer extra electricity to the national grid. Government authorities also benefit from this platform, as it provides real-time data for planning and monitoring national renewable energy progress.

To encourage more participation, **Famonergy Link** includes a leaderboard highlighting top energy-producing farmers. National and personal production targets are set periodically, and farmers who meet or exceed these goals receive recognition and rewards. This creates motivation, healthy competition, and supports a cleaner, more sustainable environment for future generations by lowering fossil fuel use and expanding renewable energy adoption.

Target Group of Users:

Farmers (Primary Users):

Farmers are the main users of **Famonery Link**. They can monitor electricity production, consumption, and storage, approve the transfer of surplus electricity to the national grid, and view the income earned from selling extra electricity. Farmers can also track their performance on a daily, weekly, or monthly basis, check their ranking on the leaderboard, and review energy targets. The system provides guidance for installation, maintenance, and all necessary paperwork, making it easier for farmers to adopt and manage the platform.

Government Authorities:

Government authorities use a centralized dashboard to monitor nationwide energy production from participating farms, track energy distribution and contributions to the national grid, and approve or manage subsidies, grants, or other incentives. They can announce national energy targets for farmers, identify areas with high or low production, and make policy decisions using the real-time data provided by the system.

Energy Grid Operators:

Grid operators handle the connection between farms and the national power grid. They verify the energy supplied by farmers, approve surplus electricity transfers, track total input from solar farms, and generate energy purchase records for payments.

Financial Institutions :

Banks or microfinance institutions supporting farmers can provide information on loans, subsidies, or financing options. They can also track repayments for solar system loans and coordinate with farmers through the system for financial matters. They can also track how much farmer earn and send money.