# From Waste to Watts

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In most recent years, Egypt has been suffering from some grand challenges that disrupt its march of progress. These challenges include the insufficient production, overconsumption and the dependence on the nonrenewable energy sources. Although all energy production has been subjected to high growth, electricity consumption has increased substantially causing heavier reliance on fossil fuels and an unaffordable burden on the government budget. Egypt consumes fossil fuels to produce 96% of its power. These resources emit enormous amounts of hazardous gases such as CO2 and SO2 that destroy human health. To solve this problem, we searched for various types of alternative energy sources and found that is possible to generate electricity from the soil by modified Plant microbial fuel cell (P-MFC). Microbial Cells harvest energy from bacteria through anaerobic respiration. In addittion to producing clean water will be used in smart irrigation system for rice crops. With the modifications suggested by this study, there will be clean, available and suitable energy source. The design requirements that have been set to the project are cost and efficiency. As a practical step, the prototype was made to ensure that the project will fulfill these design requirements. In conclusion, the results of testing the prototype showed that the project is suitable to Egypt’s needs and will save the energy consumption as it achieved the design requirements.