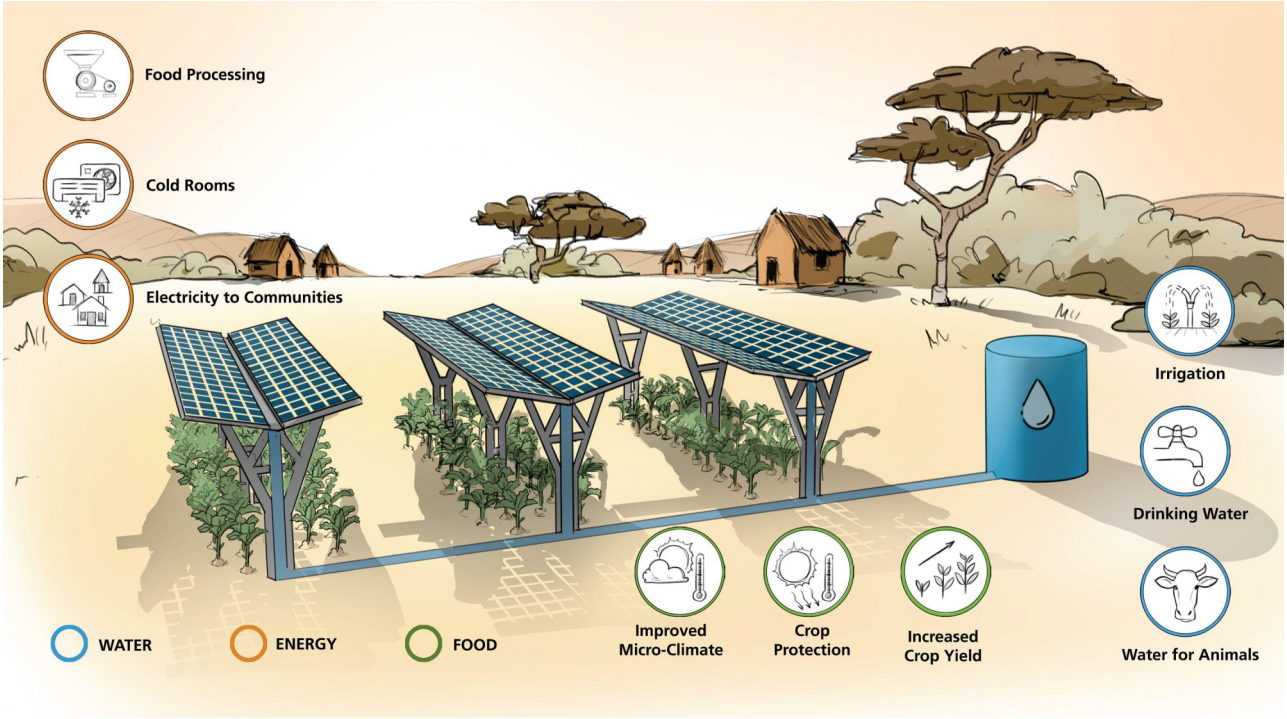
AGI ENERGY SERVICE CENTRE
Sustainable Energy for Profitability

SOLAR PV CAN HELP FARMS TO ACHIEVE CONSIDERABLE SAVINGS

Food, water, and energy have a dynamic relationship where one needs another to produce better results. However, combining all three for maximum benefits can be difficult due to land scarcity. Besides, farms must be optimized in order to meet the growing global demand for agriculture produce.

Combining agriculture with solar photovoltaic (PV)

photovoltaic (PV) Combining agriculture with solar photovoltaic (Agri-voltaics) can help **farms achieve considerable savings**. This combination produces solar PV power and agricultural crops on the same parcel of land. The coexistence of PV and crops ensures full use of scarce land, saves cost, increases productivity and gives extra income to producers.



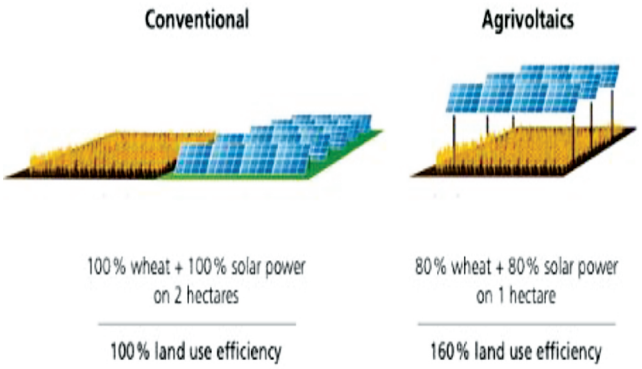
Food – Energy – Water Nexus

The traditional approach of farming does not integrate the food-energy- water nexus. However, building a resilient system requires taking a holistic view of the nexus. Agri-voltaic systems hold promising implications for food production, water savings and energy production. In fact, research shows that crop production increases and efficiency of PV arrays improves.

Benefits and savings

01 Land use

One of the main benefits of agri-voltaics is to provide a good ratio between the use ofarable and production of power. Infact, a LER (Land Equivalent Ratio) higher than 1 (see picture) is obtained for the system. In addition, the elevation of the PV panels gives the opportunity to livestock to continue to graze, for example.

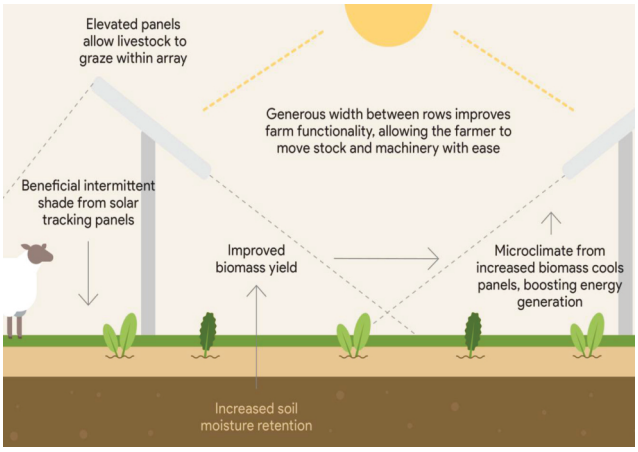


02 Protection

Agri-voltaic is also a good solution for protection against risks such as climate disruptions, extreme temperatures and also provides hail protection.

03 Food production and water savings

Based on recent research, food production was three times larger in agri-voltaics systems compared to the traditional approach. Indeed, crops are protected by solar panels and are allowed to retain more moisture resulting in a better yield. Water savings are also observed as plant evapotran spiration is reduced. Traditional farming methods can also be used alongside.



04 Renewable energy production

Agri-voltaics can also reduce energy costs and be a source of income for farmers. Indeed, in addition to satisfying energy needs on a farm, surplus solar production may be sold to the power grid for further financial benefits (where grid is available, and regulations allow). The efficiency of a PV system on an agricultural land is also higher as the panels are cooler than in traditional ground mounted systems. Finally, preparation of land for PV system installation is not required as most agricultural farms are already on level ground.

For additional information on this opportunity, please contact:

AGI Association of Ghana Industries

german cooperation DEUTSCHE ZUSAMMENARBEIT

Implemented by: giz

+233 507 977 902
info.esc@agighana.org
www.esc.agighana.org
AGI Energy Service Centre
@agi_energy