



برعاية عميد كلية علوم الهندسة الزراعية
الأستاذ الدكتورة أميرة محمد صالح المحترمة
وبإشراف رئيس قسم المكين والآلات الزراعية
الأستاذ المساعد الدكتور علاء كامل صبر المحترم
يقوم قسم المكين والآلات الزراعية ورشة عمل

بعنوان

الطاقة الشمسية، تطبيقاتها وكيفية
استغلالها لتحقيق أهداف التنمية
المستدامة

المحاضر

د.م. وليث عقيل الدين زين الدين

قاعة ابن رشد



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العاشرة صباحا



الطاقة الشمسية, تطبيقاتها وكيفية استغلالها لتحقيق أهداف التنمية المستدامة

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Contents:

☒ Sun

☒ Types of solar thermal and electrical systems:

A. Solar Thermal Systems

1. Solar Power Tower.
2. Solar Hot water (Solar Heating System).
3. Solar concentrating systems (Concentrating Solar Power) .

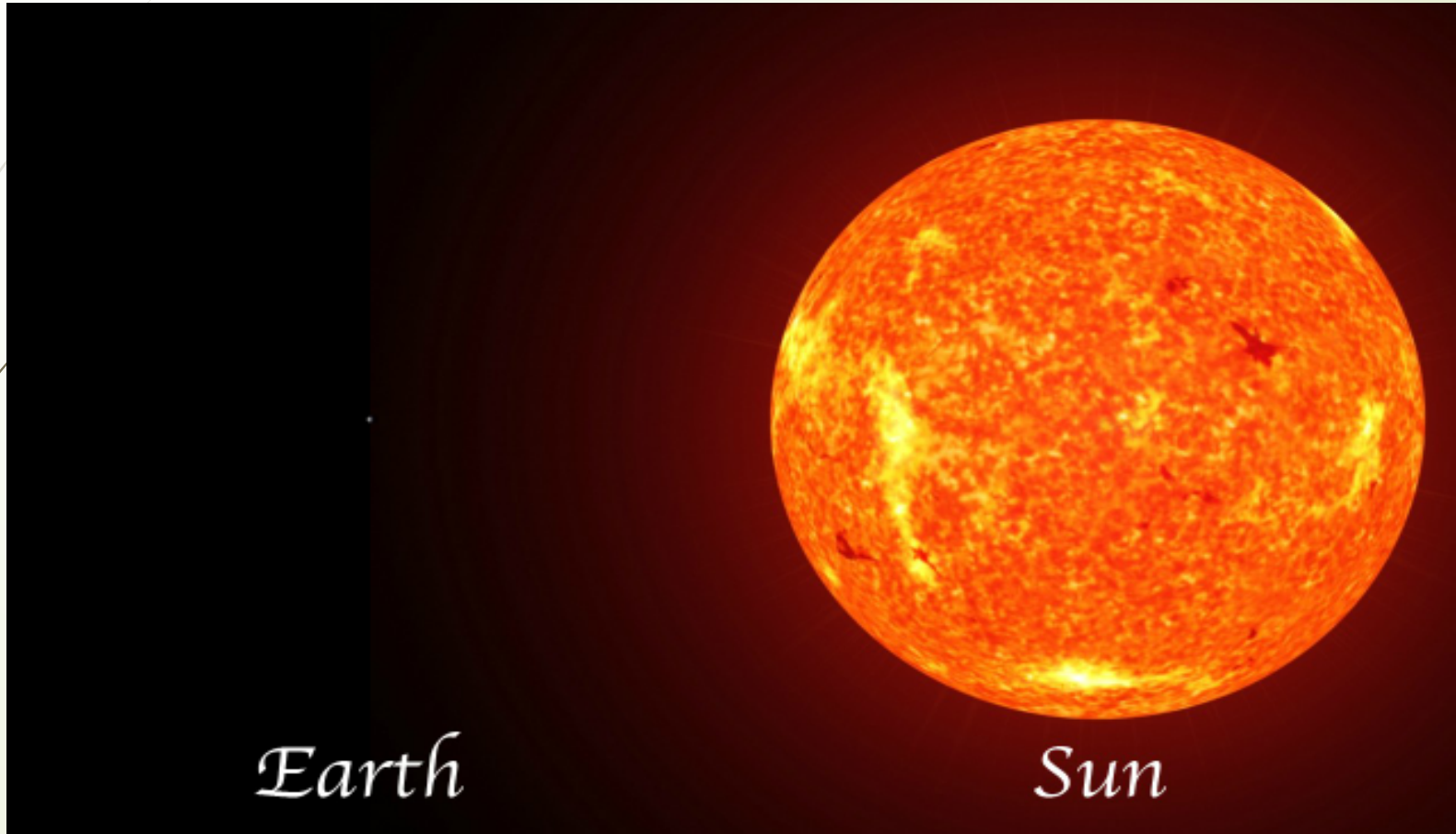
B. Solar electrical systems

Photovoltaic cells (Solar panels).

☒ Solar Energy applications in Agriculture.

☒ AgriVoltaic system?

Sun:



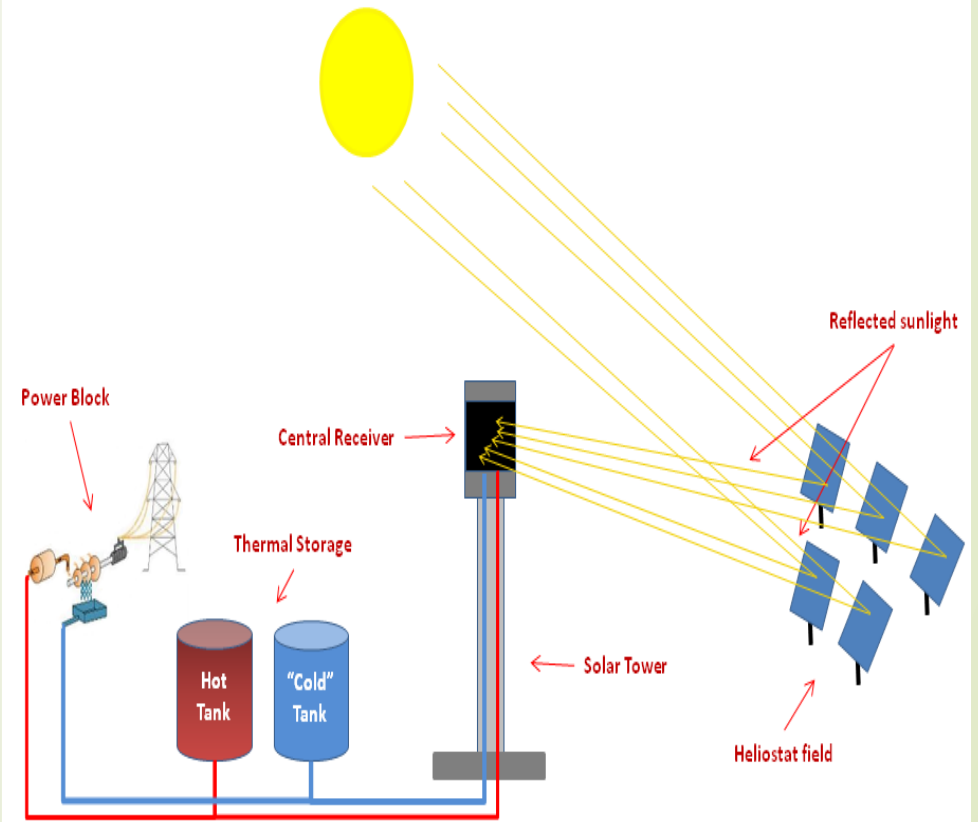
Earth

Sun

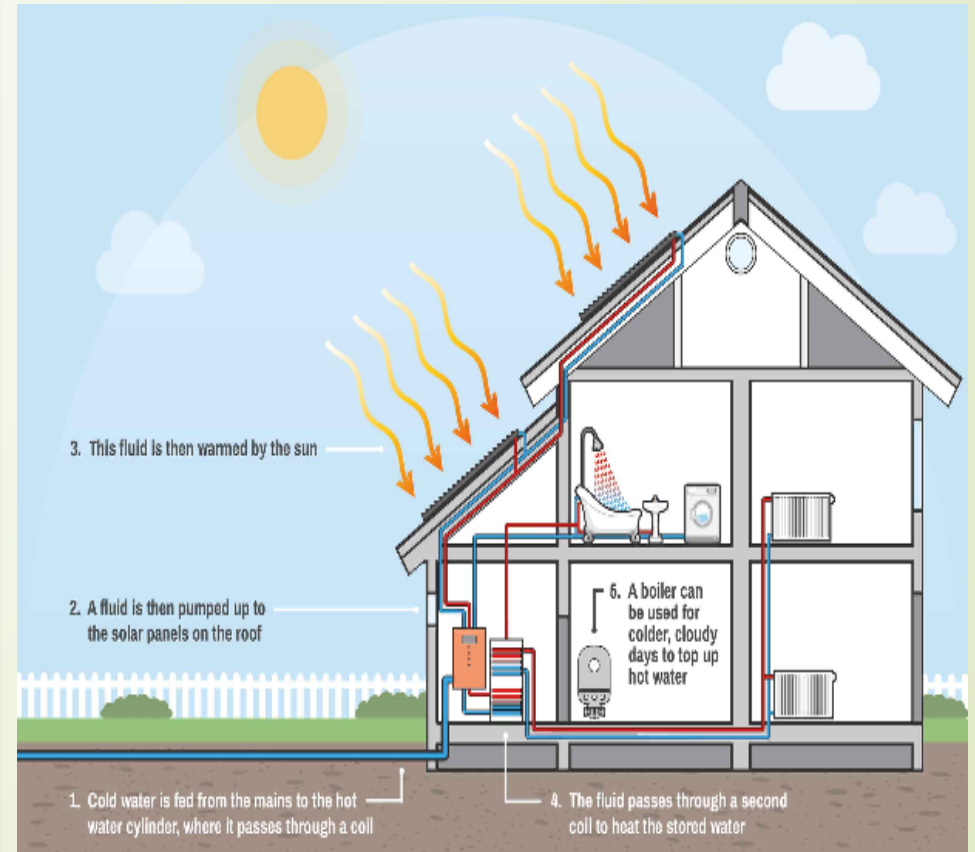
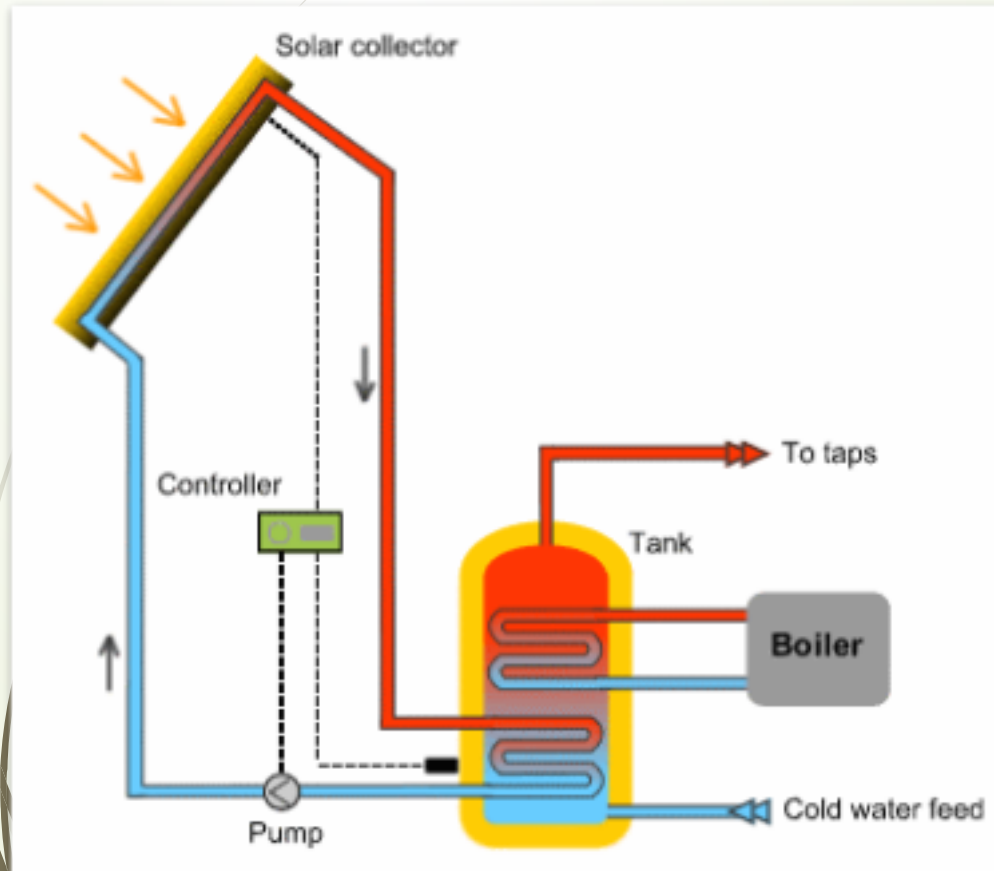


Solar Thermal Systems:

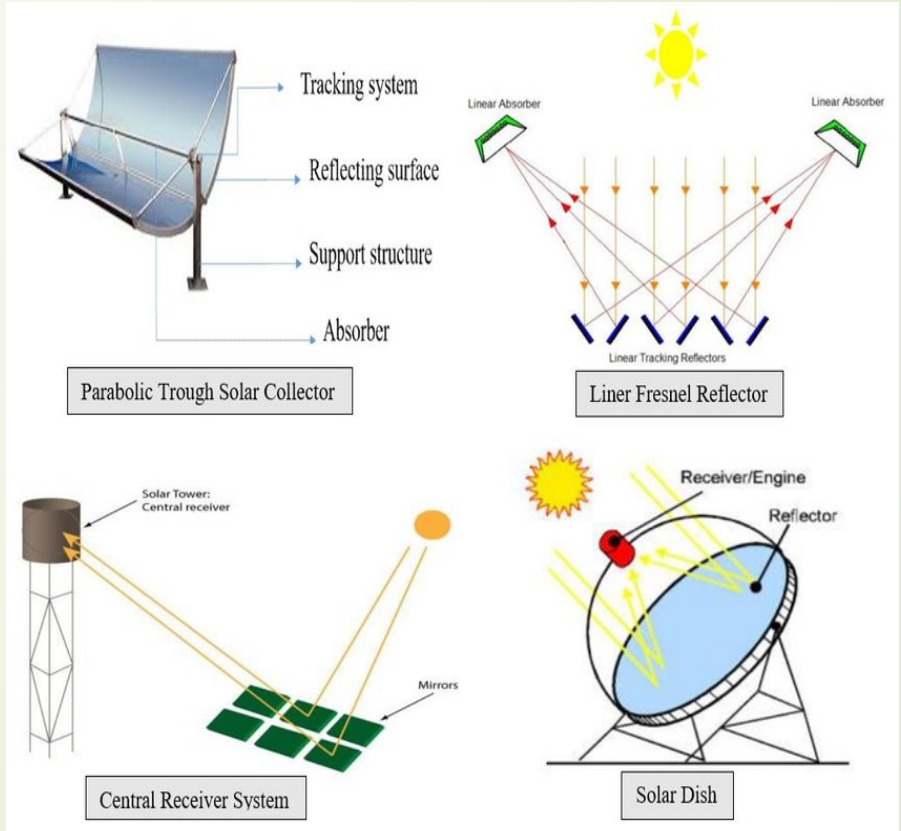
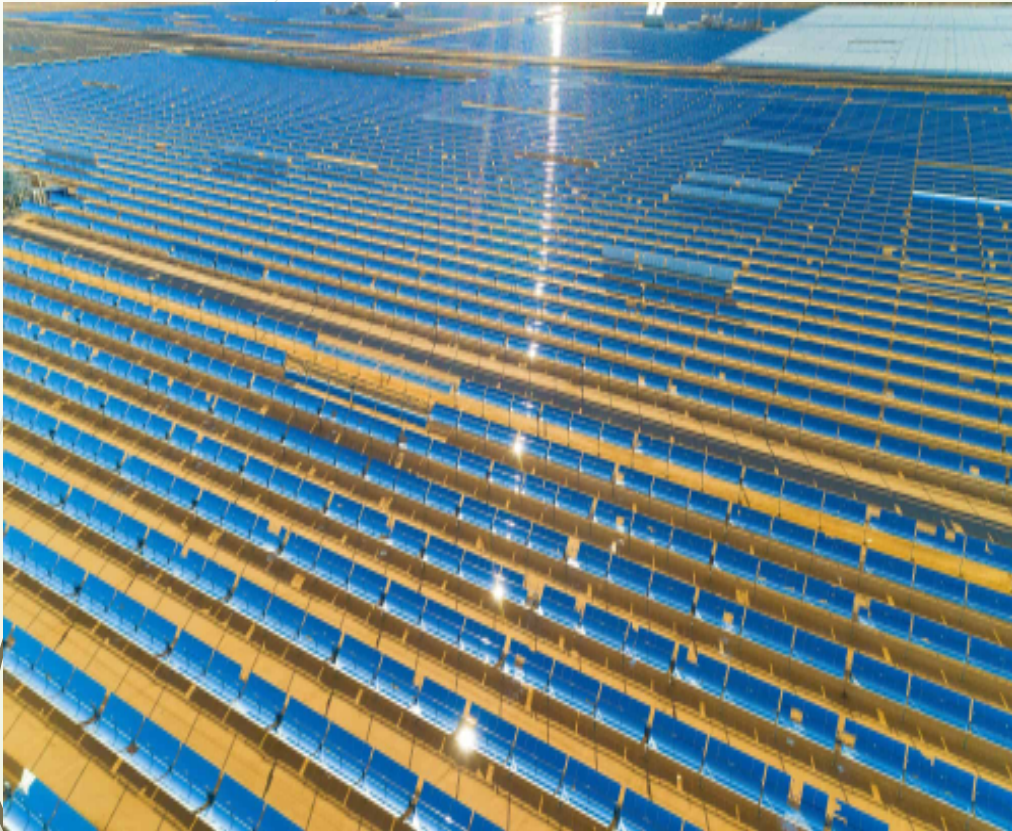
1. Solar Power Tower (SPT):



2. Solar Heating System (SHS):

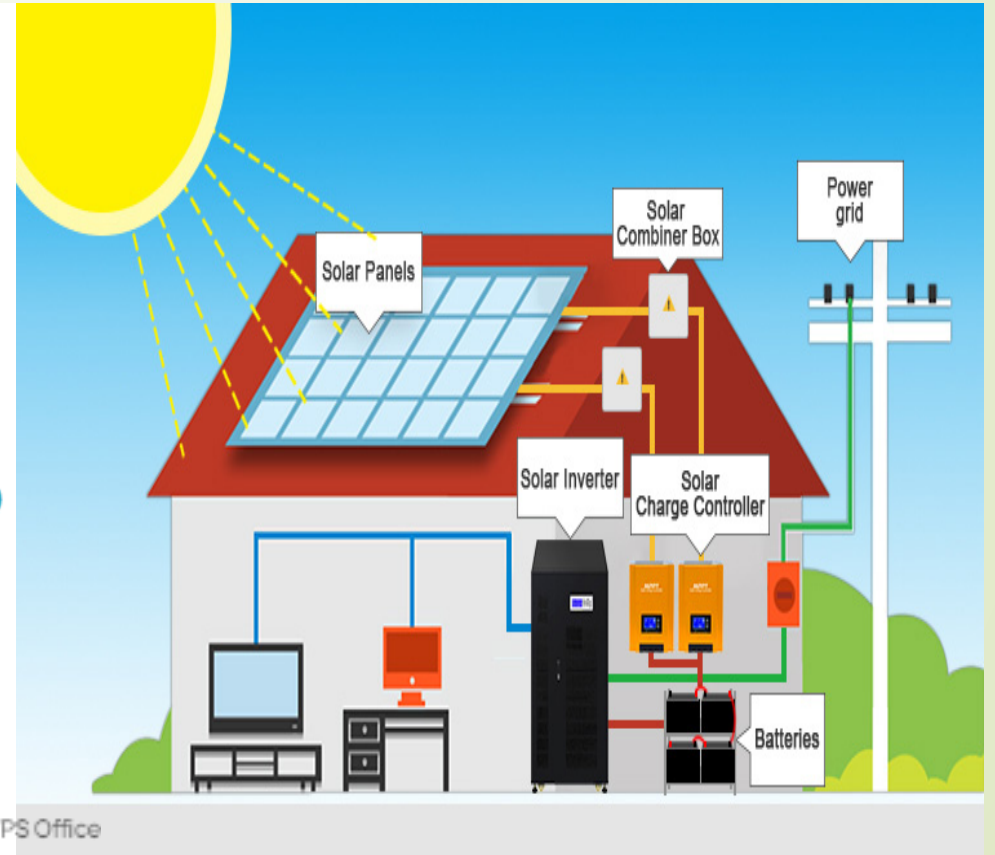
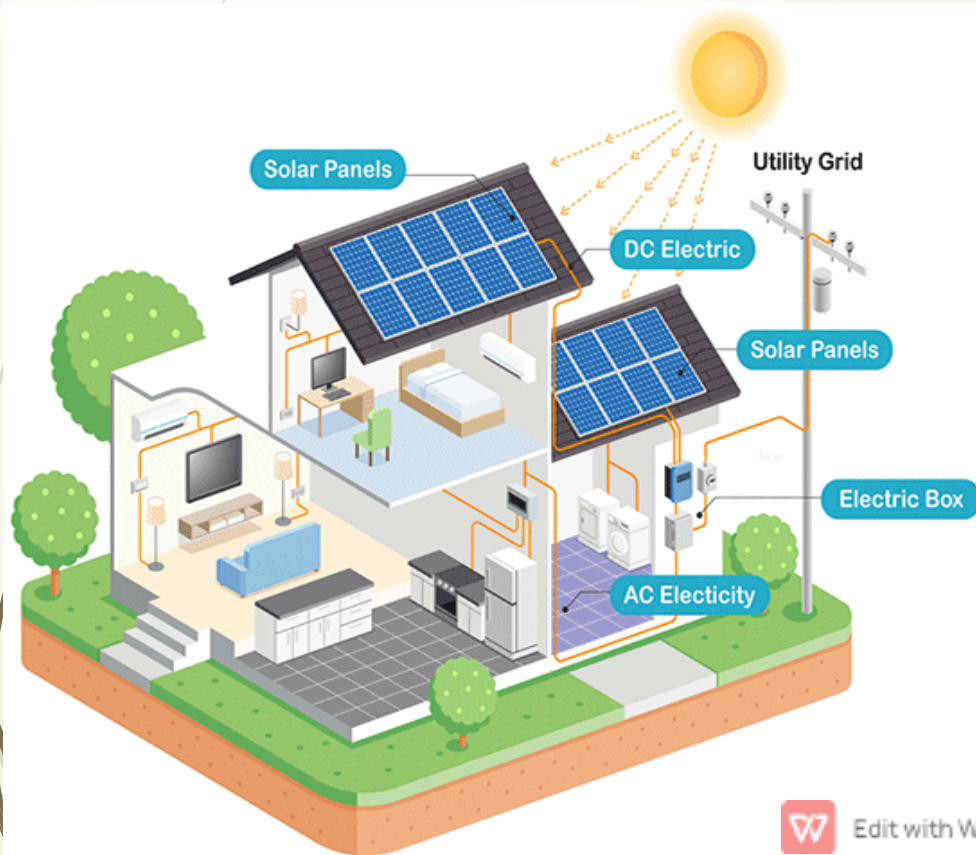


3. Concentrating Solar Power (CSP):



Solar electrical systems:

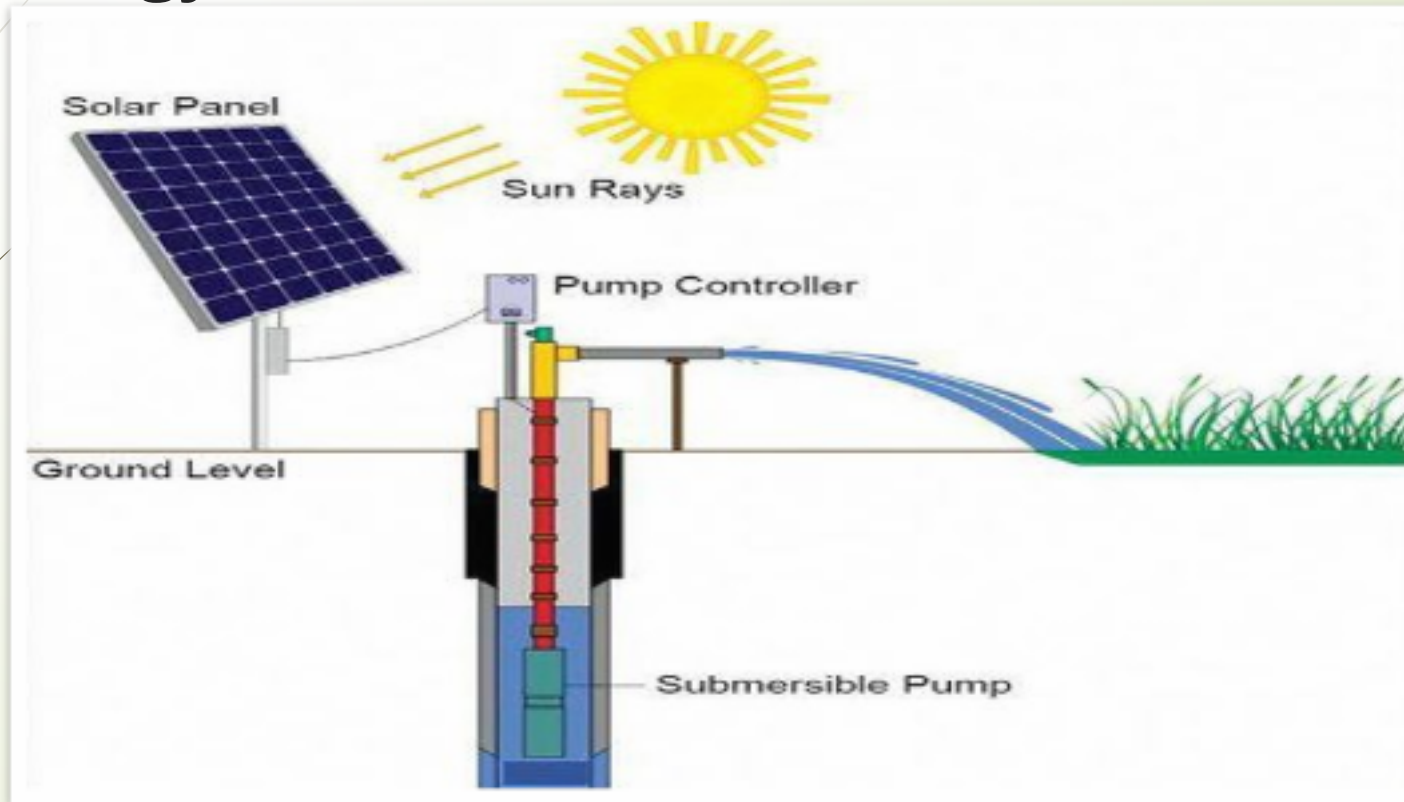
- Solar panels



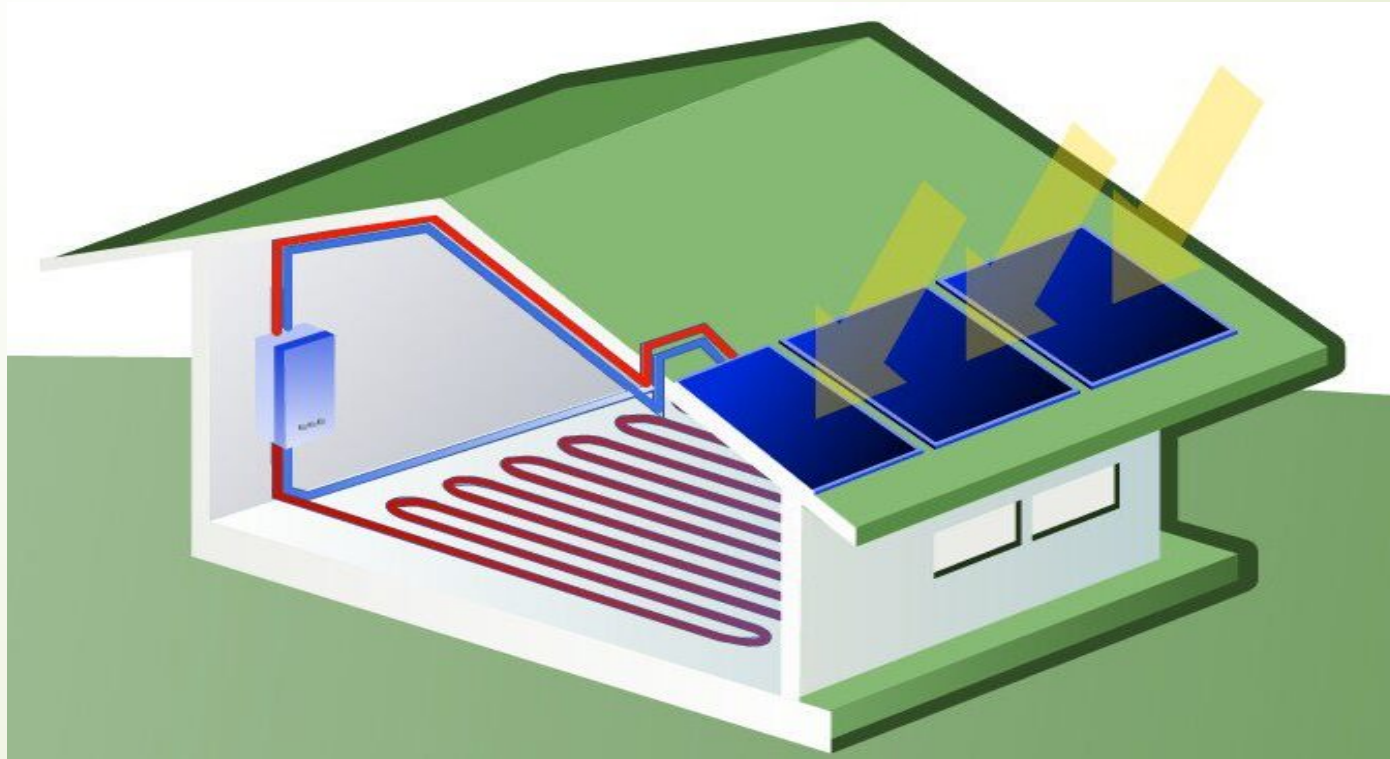
Solar Energy applications in Agriculture.

- 1. Solar Energy-Powered Water Pumps in most areas.**
- 2. Water and Space Heating for Livestock and dairy operations.**
- 3. Crops and Grains Drying.**
- 4. Green House Heating.**
- 5. Remote Supply of Electricity.**
- 6. Cooling Application.**

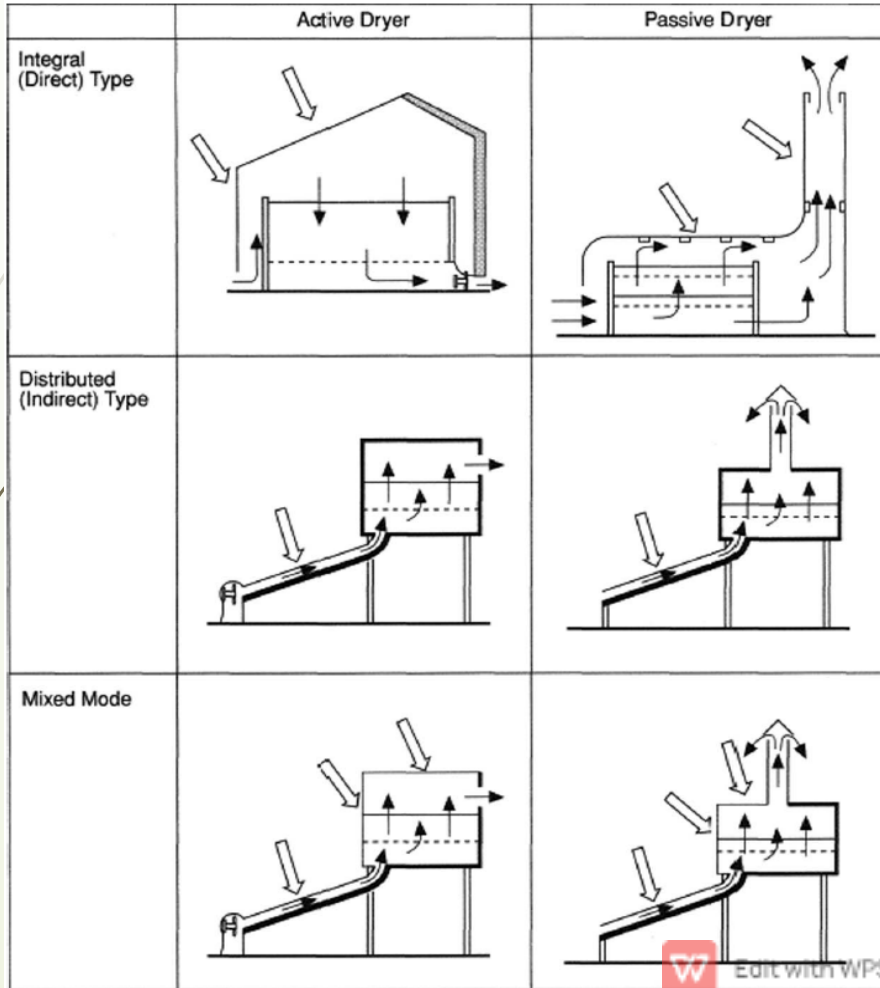
1. Water Pumps powered by Solar Energy:



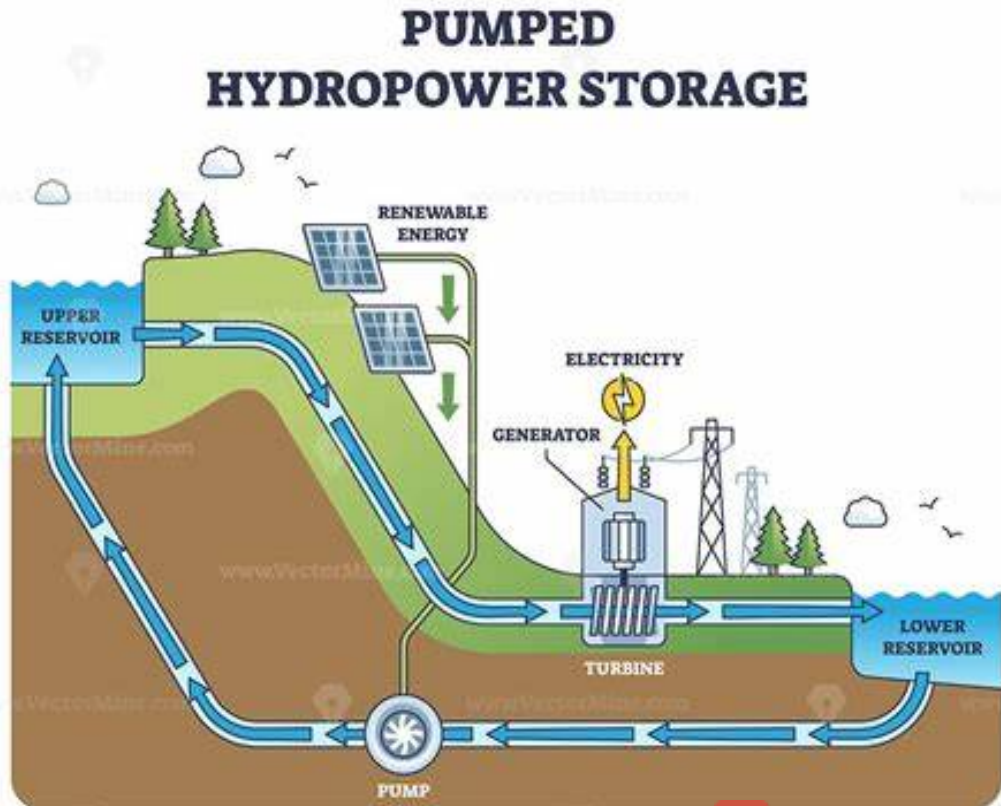
2. Water and Space Heating for Livestock:



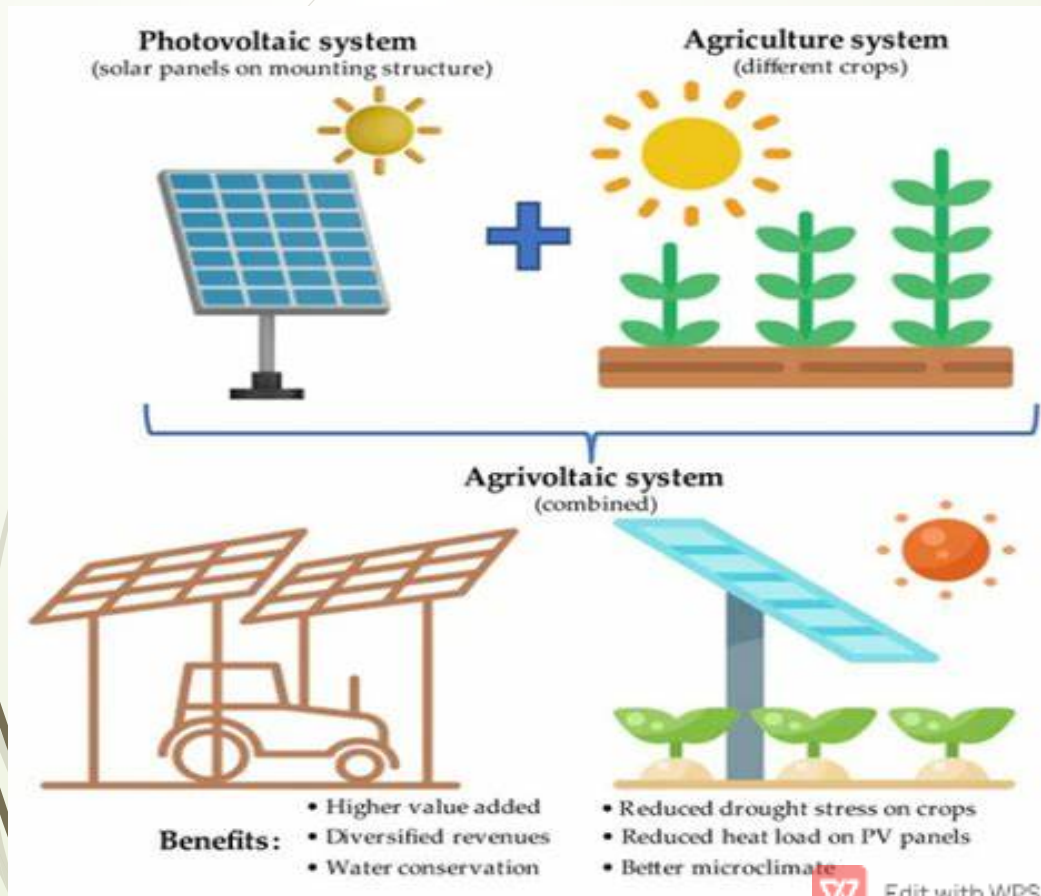
3. Solar Dryers:



Hybrid Systems:



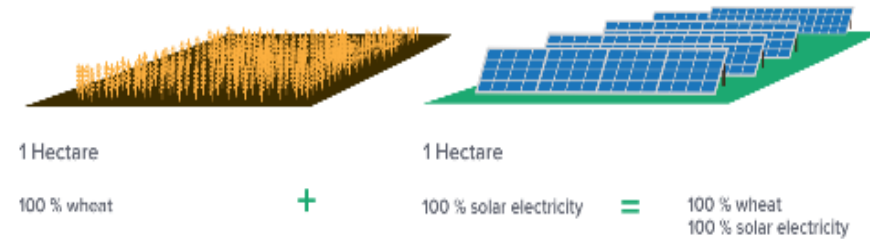
AgriVoltaic system:



AgriVoltaic benefits:

1. Higher value added.
2. Diversified revenues.
3. Water conservation.
4. Reduce drought stress on crops.
5. Reduced heat load on PV panels.
6. Better microclimate.

SEPARATE LAND USE ON 2 HECTARE CROPLAND



COMBINED LAND USE ON 2 HECTARE CROPLAND: EFFICIENCY INCREASES OVER 60%

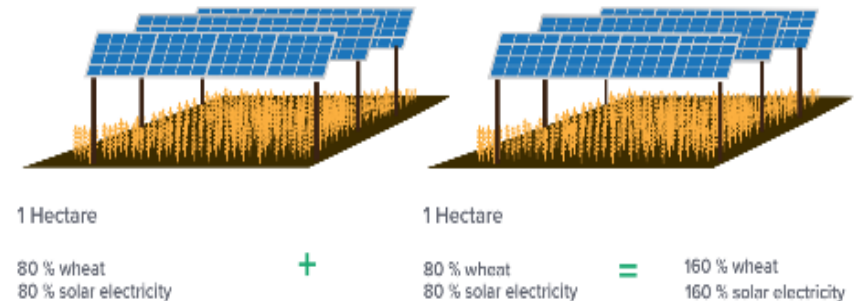


Figure 6: Product visualization under agrivoltaic systems.

Photo source—[Fraunhofer Institute for Solar Energy Systems](#)





Thanks for your listening

Questions ?