

Couse I: Solar Energy



# Unit 5. Solar Energy Applications

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# In this video you will learn:

- Solar energy applications
- Solar PV applications
- AgriPV application
- Examples in Africa



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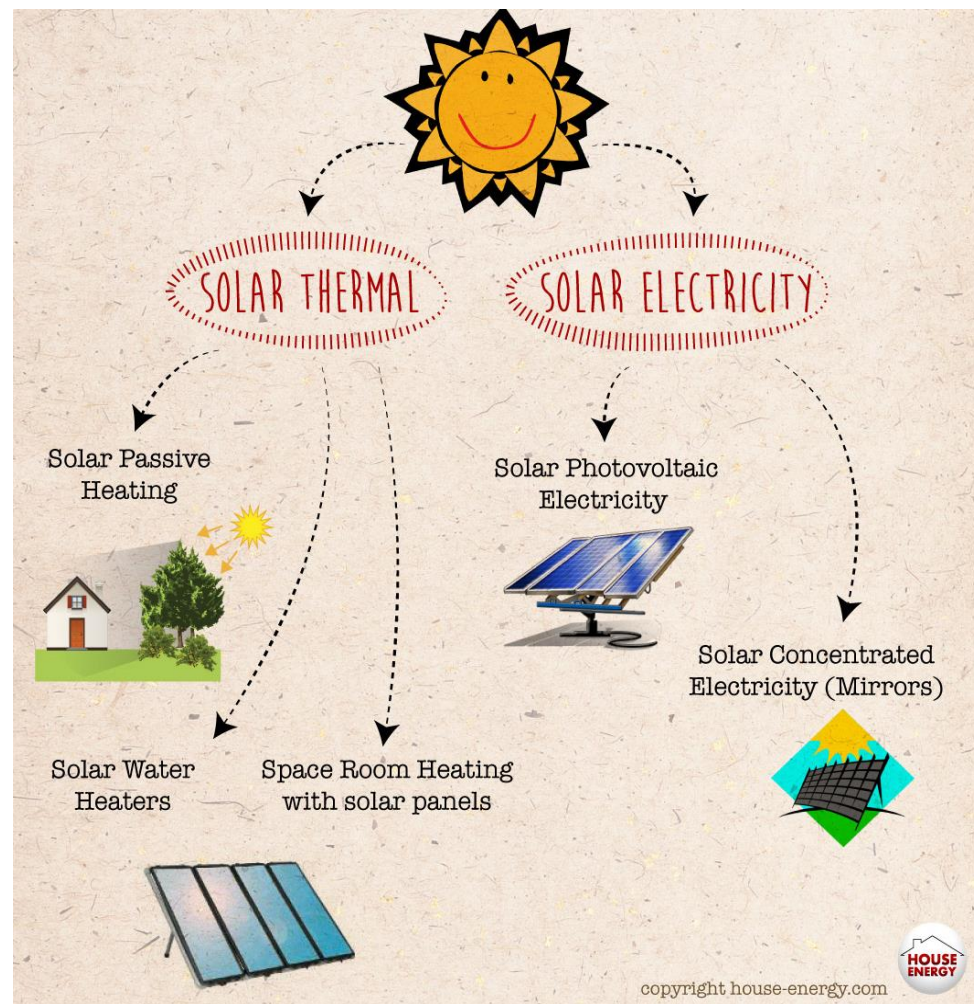


# Solar energy applications

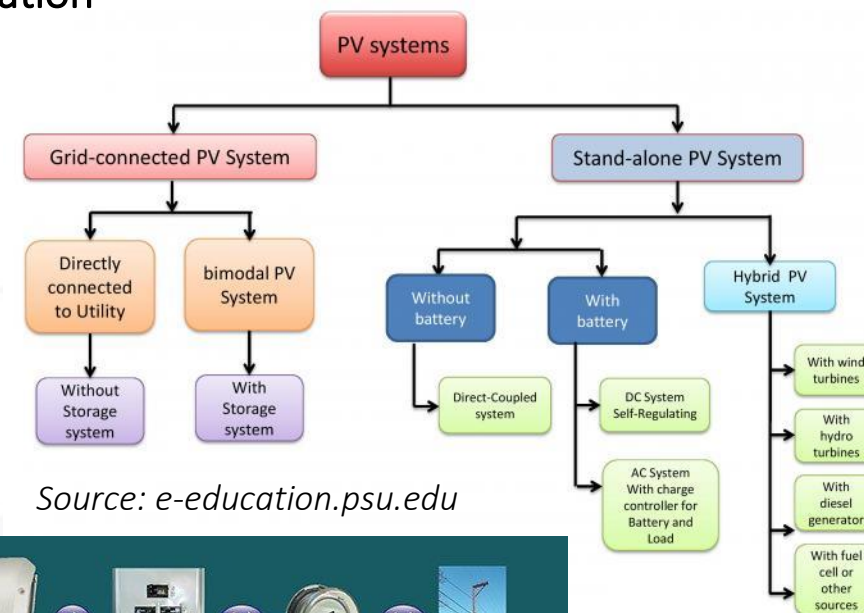
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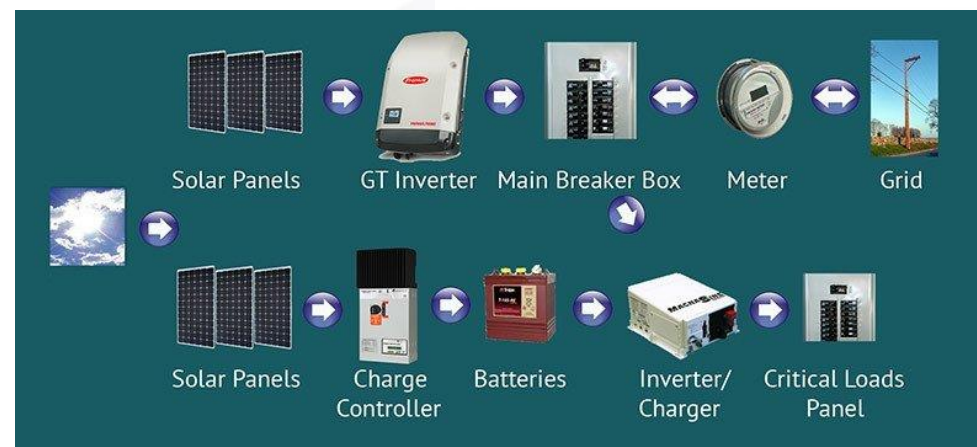
## Solar traditional classification



## PV traditional classification



Source: [e-education.psu.edu](http://e-education.psu.edu)



Source: [altestore.com](http://altestore.com)





# Solar PV energy applications

## Conventional PV fields



100 MWp PV plant

Source: PV-magazine.com



2 kWp PV plant

Source: SolarFeeds.com

## New PV applications



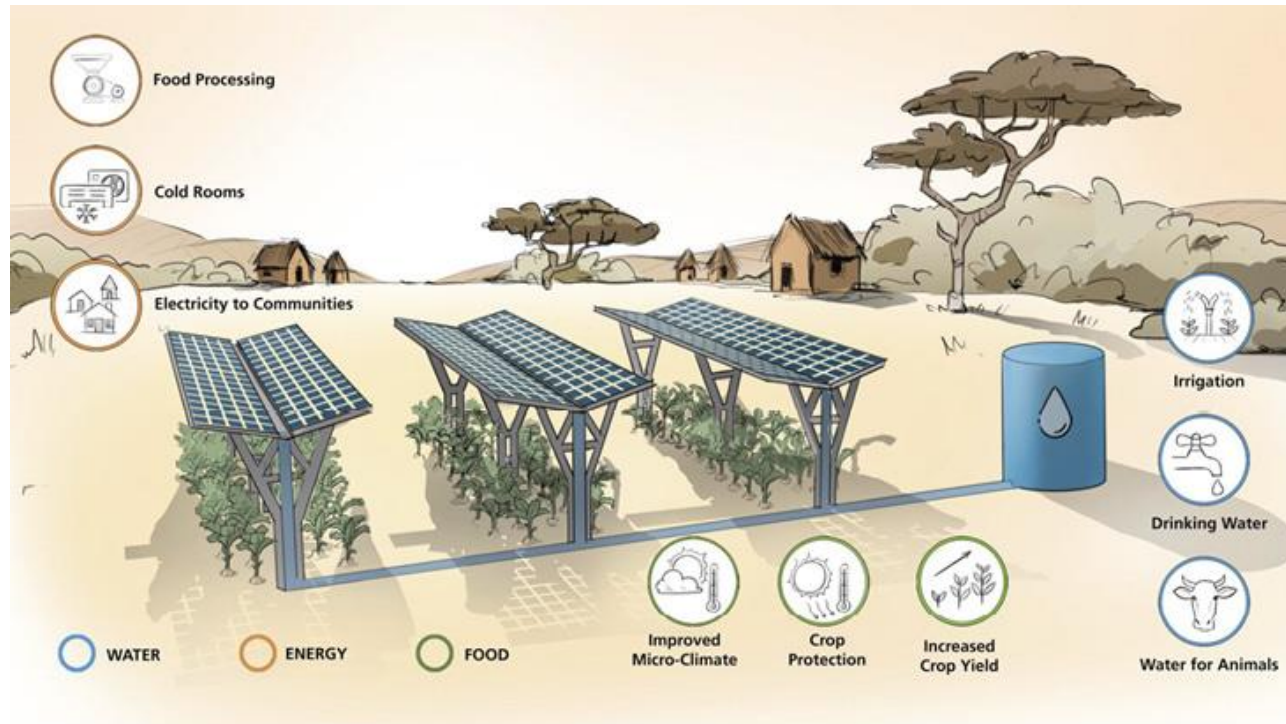
Source: Fraunhofer ISE





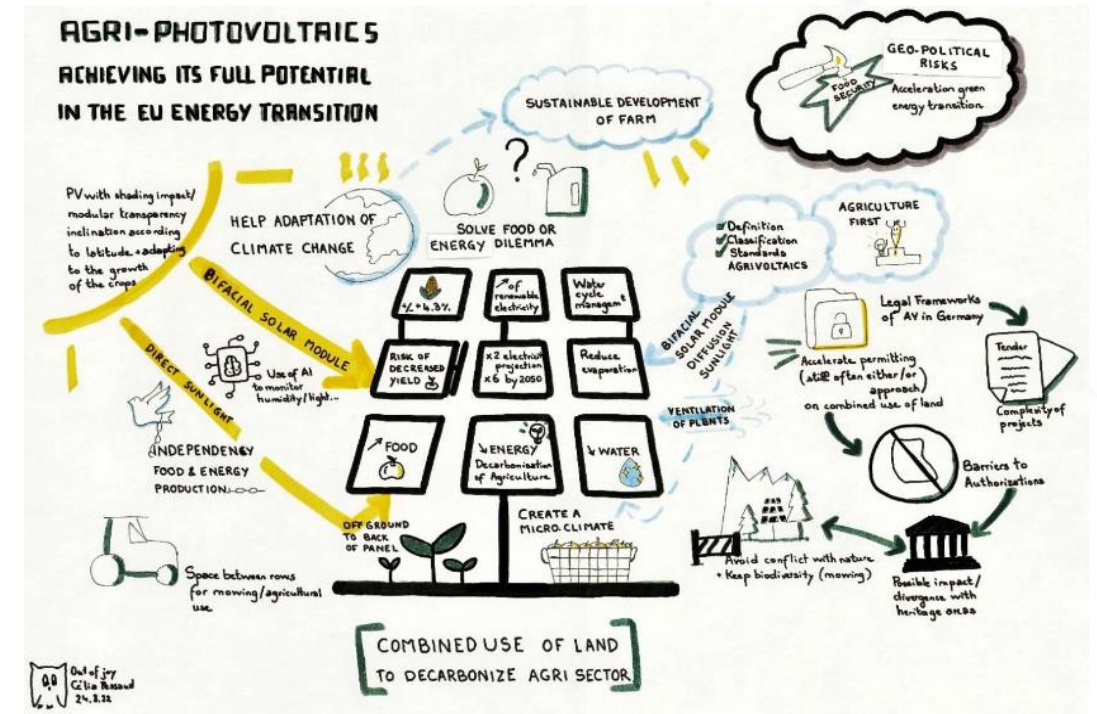
# AgriPV application

What is it?



Source: Fraunhofer ISE

Some underlying ideas



Source:

[https://www.researchgate.net/publication/360547182\\_Agri-photovoltaics\\_Agri-PV\\_how\\_multi-land\\_use\\_can\\_help\\_deliver\\_sustainable\\_energy\\_and\\_food](https://www.researchgate.net/publication/360547182_Agri-photovoltaics_Agri-PV_how_multi-land_use_can_help_deliver_sustainable_energy_and_food)

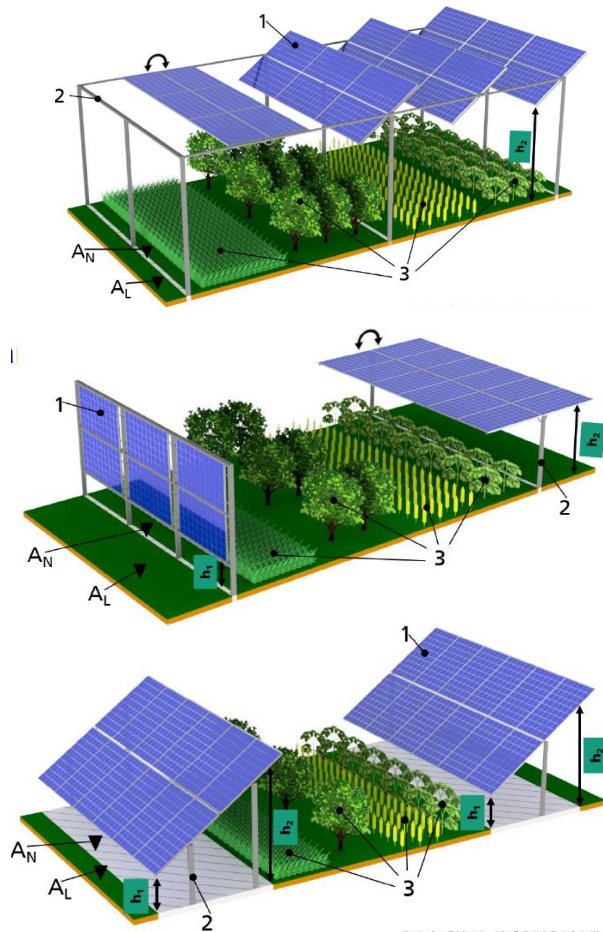
Combined use of land for agriculture (first) & power generation (second) exploitations





# AgriPV application (ii)

Wide variety of solutions on the market adapted to needs of different crops and locations

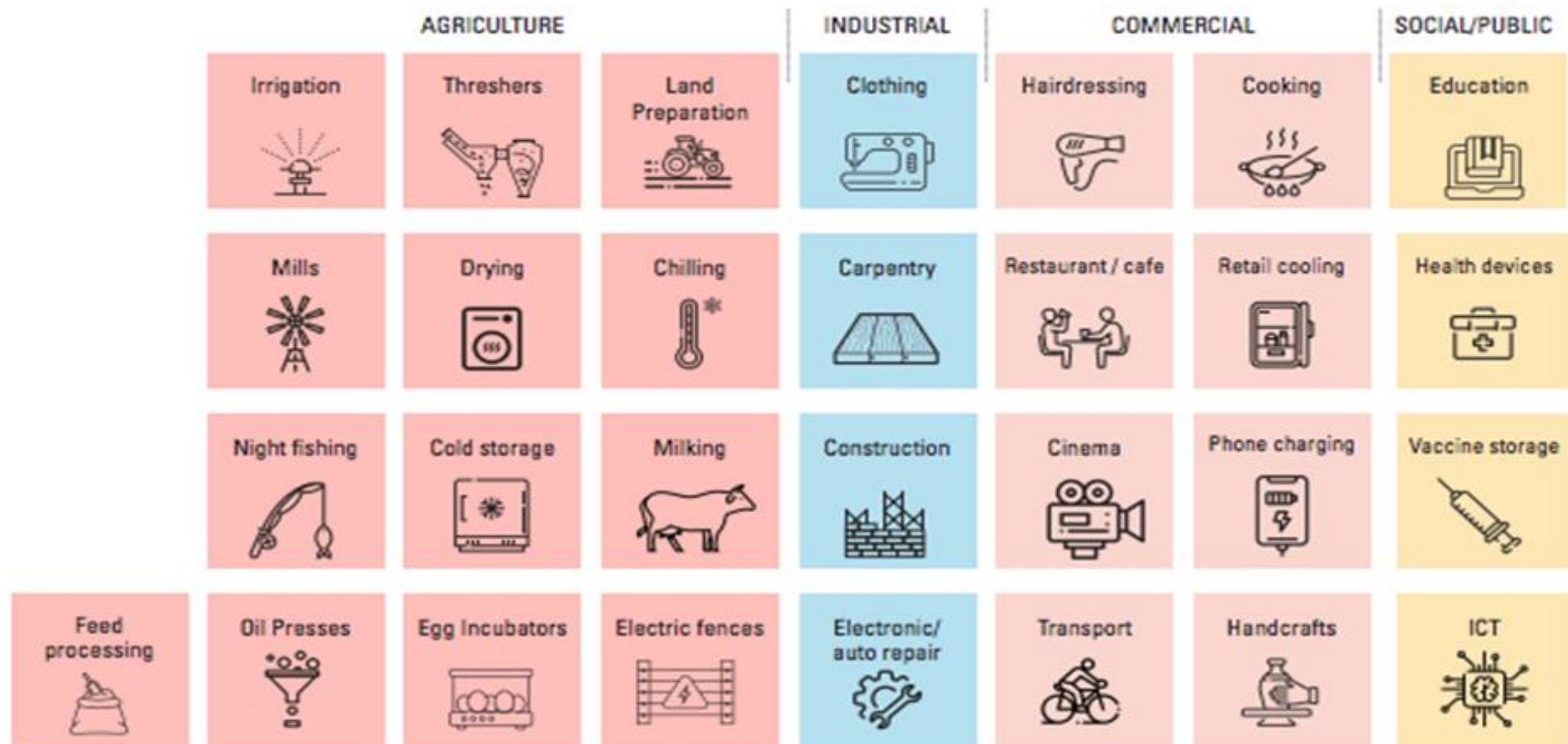




# Solar PV for productive use application

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Source: Universe of productive uses relevant for off-grid markets in sub-Saharan Africa (non-exhaustive) (IFC, 2019)





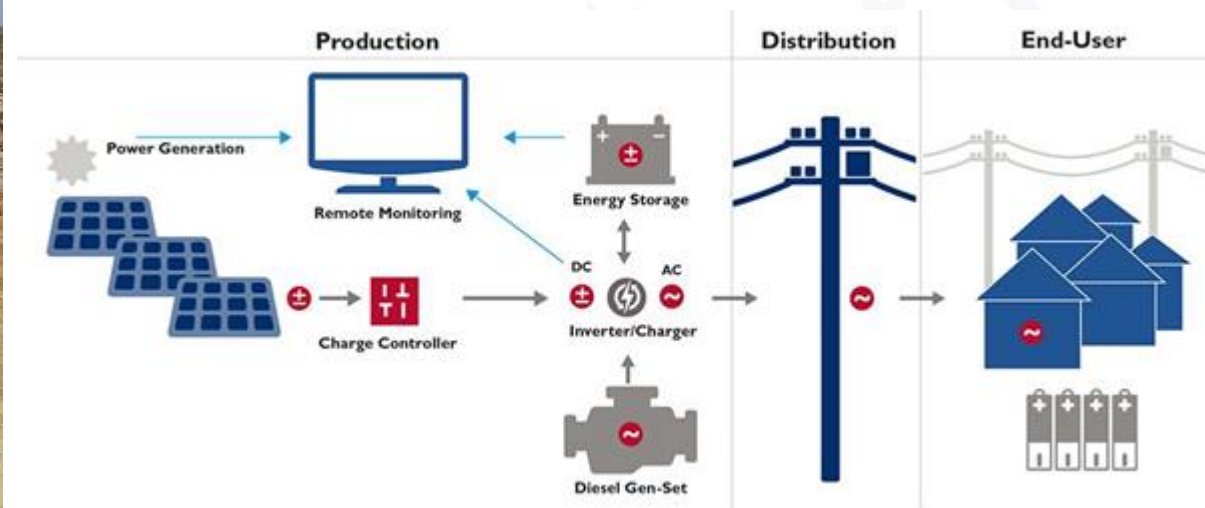
# Smart mini-grids application

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Solar PV minigrid in Zambia (CrossBoundary Energy Access, 2020)



Source: usaid. (2018). What are the technical components of a mini-grid?  
<https://www.usaid.gov/energy/mini-grids/technical-design/components>





# Solar energy water nexus

## Solar Water Treatment Systems



*OffGridBox unit delivering clean water in Rwanda (OffGridBox, 2022)*

## Solar-powered Water Pumps and Irrigation Systems



*Solar- Powered Pump (Sub Sahara Farmers Journal, 2022)*





# Solar energy food nexus

## Food processing: Solar grain milling



*Application of the Agsol Gen2 mill  
(Efficiency for Access, 2020, agsol.com)*

## Cooling



*Solar-powered cold storage for developing countries (coldhubs.com)*

# THANK YOU

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