Smart microgrid & system integration

Lesson 6: Existing examples of Smart Microgrids

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In this video you will learn:

- Revisit concept of smart microgrid
  - Different use-cases/examples of microgrids
    - Current and Future trends for microgrids

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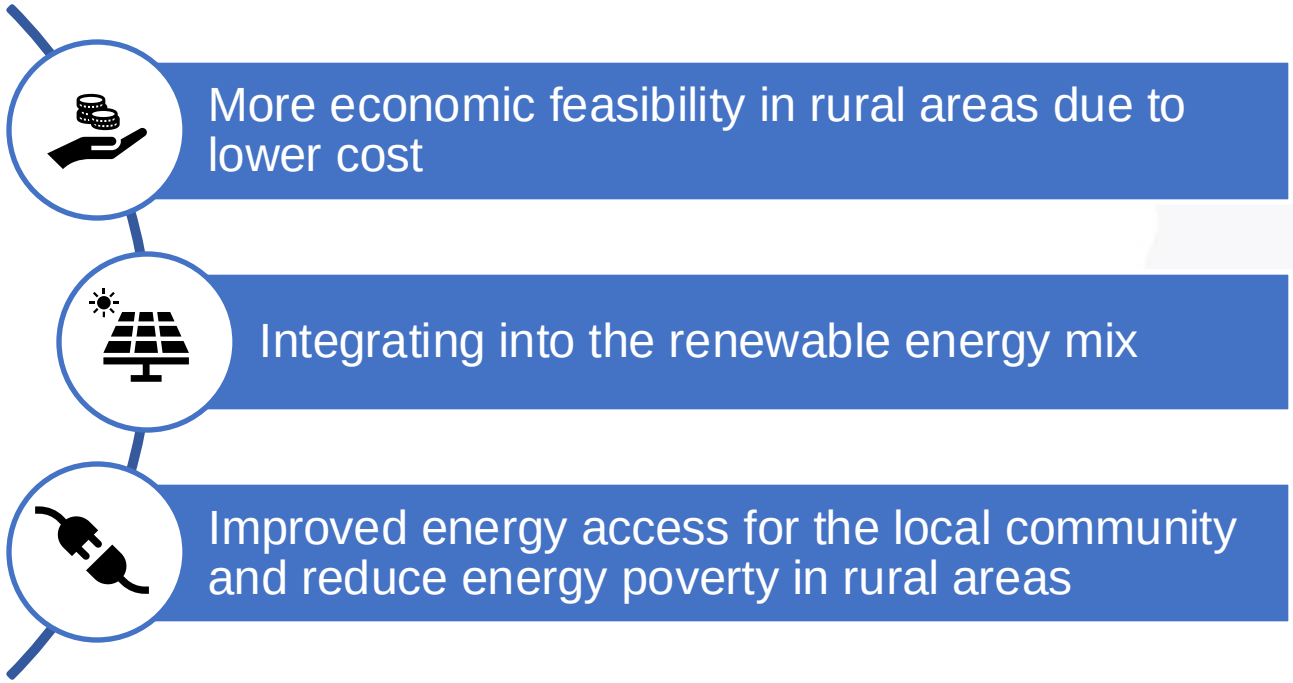
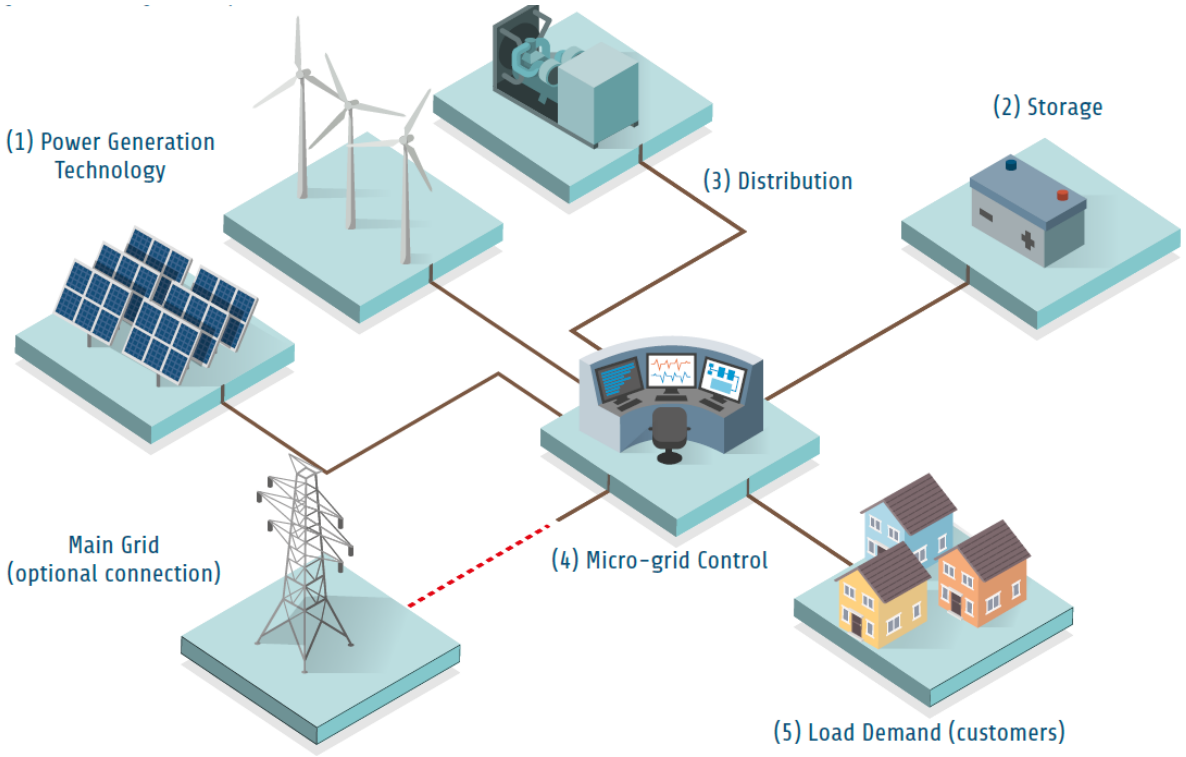
Why smart microgrids are needed in African rural areas?



https://blogs.lse.ac.uk/africaatlse/2023/12/14/how-microgrids-can-electrify-rural-africa/
https://www.renewableenergyworld.com/storage/microgrids/empowering-rural-areas-microgrid-initiatives-in-developing-countries/#gref

Concept of smart microgrids

Microgrid components



- A smart microgrid is a small-scale power grid that can operate independently or in conjunction with the area's main electrical grid.
- It can generate, distribute, and regulate the flow of electricity to multiple buildings or households.
- Smart microgrids can integrate renewable energy sources, such as solar or wind power, and use advanced control systems to manage the flow of electricity, improving energy efficiency and reducing costs

https://www.nepad.org/file-download/download/public/114349

SMART INNOVATION NORWAY

PUE through smart microgrids in Africa

energicity

PowerGen

SUNKOFA ENERGY

powerhive

meshpower rwanda

HUSK.

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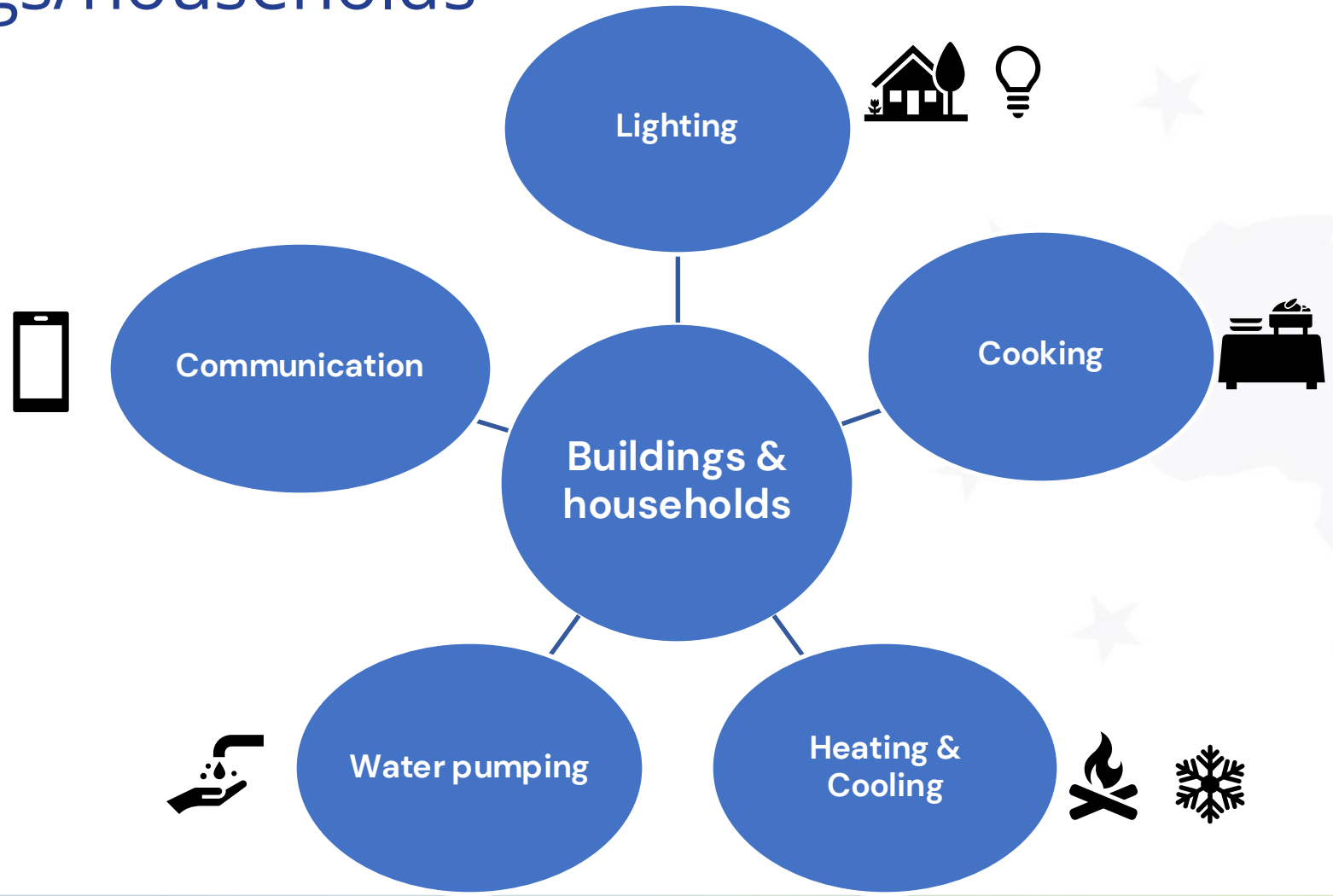
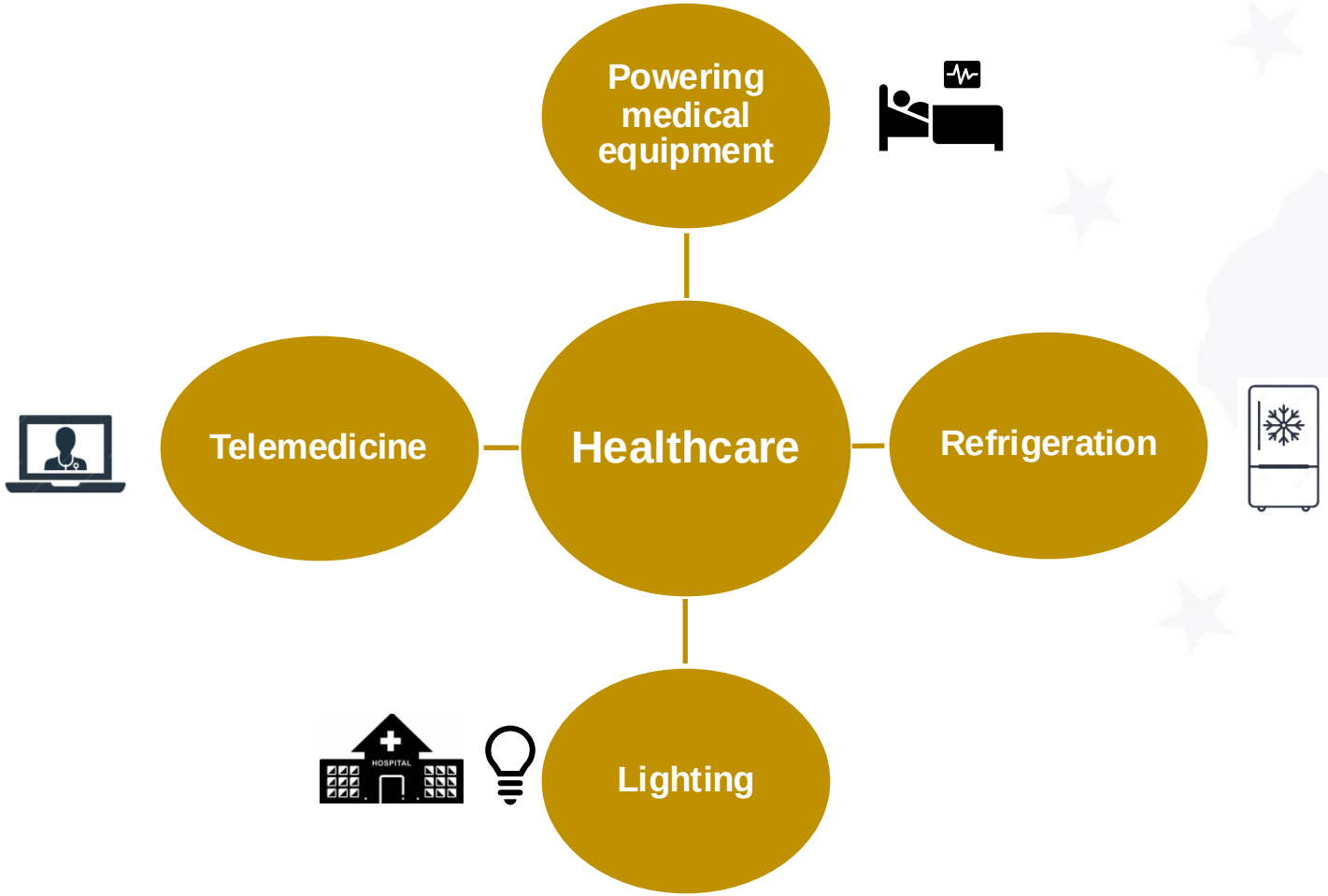
Use-cases/examples of microgrids

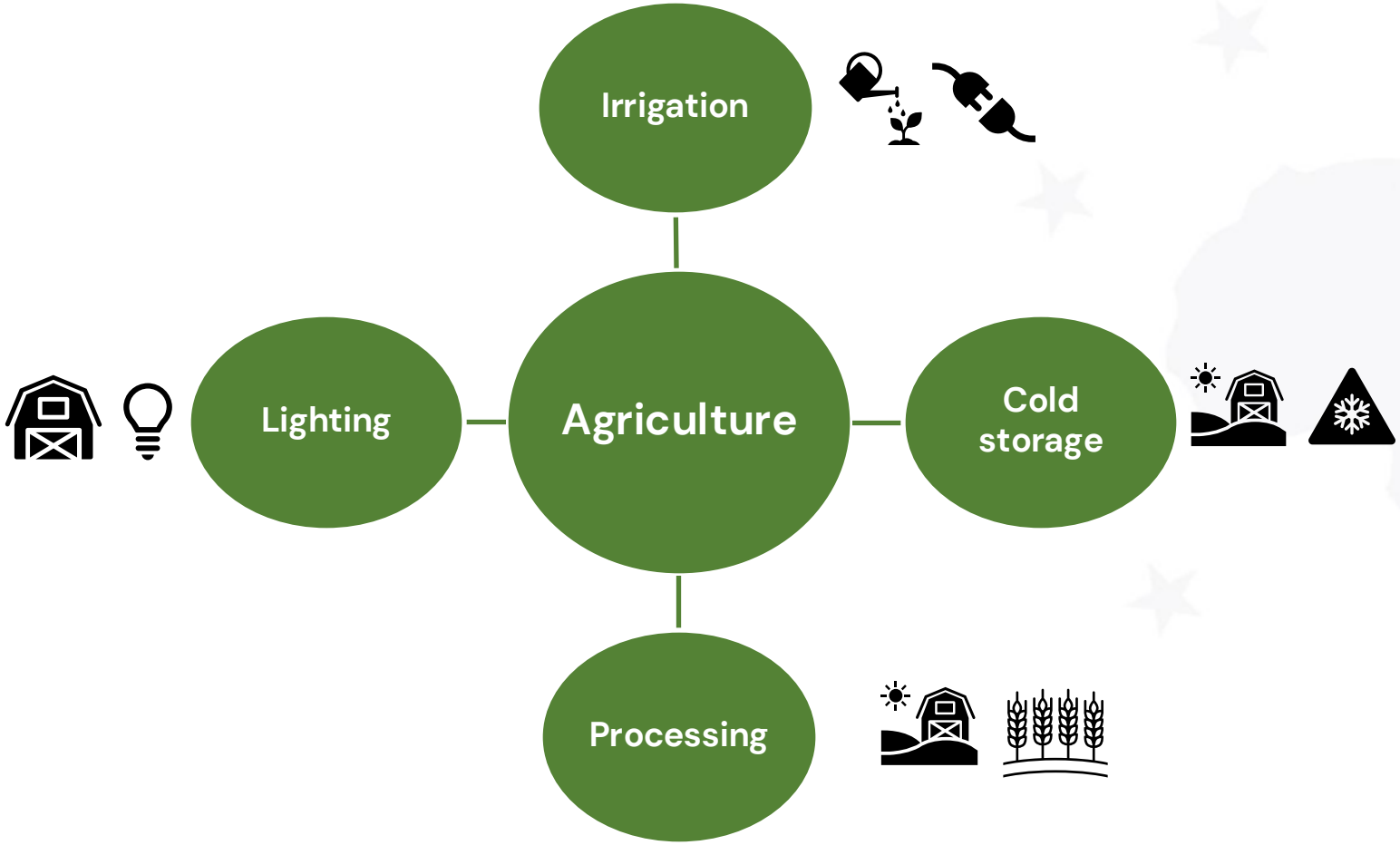
Buildings/households



Healthcare


Powering medical equipment
Telemedicine
Healthcare
Refrigeration
HOSPITAL
Lighting

Agriculture



Challenges in implementing microgrids

- Regulatory environment
- Upfront cost
- Energy storage
- Environmental concerns

Current and Future trends for smart microgrids

Agenda 2063 Goal	SDG	Micro-grid relevance
Goal 1 - A high standard of living, quality of life and well-being for all citizens.	Goal 1 - End poverty in all its forms everywhere in the World Goal 8 - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable	Enhance socio-economic well-being through improved quality of life, access to public services, job creation/ entrepreneurship opportunities and industrialization enabled by access to energy.
Goal 7 – Environmentally sustainable and climate resilient economies and Communities.	Goal 7 - Ensure access to affordable, reliable, sustainable and modern energy for all. Goal 13 - Take urgent action to combat climate change and its impacts.	Reduce dependency on fossil fuels.
Goal 10 - World class infrastructure criss-crosses Africa.	Goal 9 - Build resilient infrastructure, promote inclusive and sustainable Industrialization and foster innovation.	Promote access to affordable energy based on emerging technologies which are adapted to Africa's needs.

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Conclusion

- Solar microgrids are becoming increasingly popular in rural Africa due to their lower cost and environmental benefits compared to traditional diesel generators.
- Smart microgrids can create job opportunities in rural communities in Africa.
- The development and deployment of microgrids can also stimulate local economies by providing electricity to schools, buildings, agriculture, healthcare and powering businesses, supporting economic growth.
- Governments and organizations are also implementing initiatives to accelerate access to energy in rural Africa using solar microgrids.
- These trends suggest that the use of microgrids in rural Africa is likely to continue to grow in the coming years, providing reliable and sustainable energy to communities that may not have access to traditional power grids.

https://blog.se.com/sustainability/2023/12/05/accelerating-access-to-energy-in-africa-with-solar-microgrids-a-study/

THANK YOU

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