

TECHNICAL SEMINAR

Renewable Energy Systems

Solar, wind and the path to clean power

PRESENTED BY

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GUIDE

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02 | Agenda

01

Overview

02

Core concepts

03

Applications

04

Challenges

05

Future

OVERVIEW

01

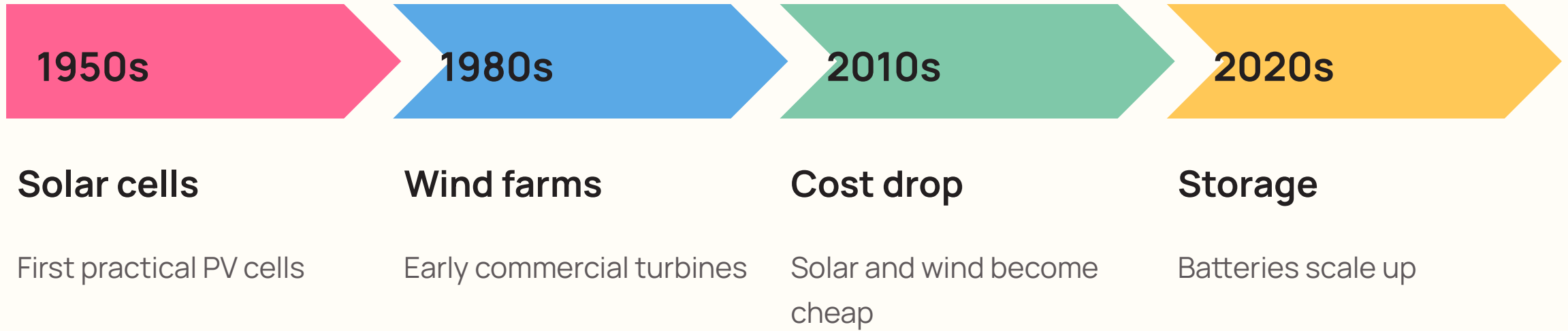
04 | Introduction

- Renewable energy comes from sources that refill naturally
- Solar and wind are now among the cheapest power sources
- Storage and smart grids handle their variability
- Clean energy is central to climate goals



Image

05 | Evolution





CORE CONCEPTS

02

07 | Key concepts

1

Photovoltaics

Solar cells turn light directly into electricity.

2

Wind turbines

Blades turn a generator using wind energy.

3

Energy storage

Batteries and pumped hydro balance supply.

08 | Architecture



Architecture diagram

Generation, storage and a smart grid.

Variable renewable output is smoothed by forecasting, battery storage and flexible demand, while a digital grid balances supply and demand every second.

APPLICATIONS

03

10 | Applications



Image 1

Rooftop solar

Homes and offices cut bills.



Image 2

Solar parks

Large plants for utilities.

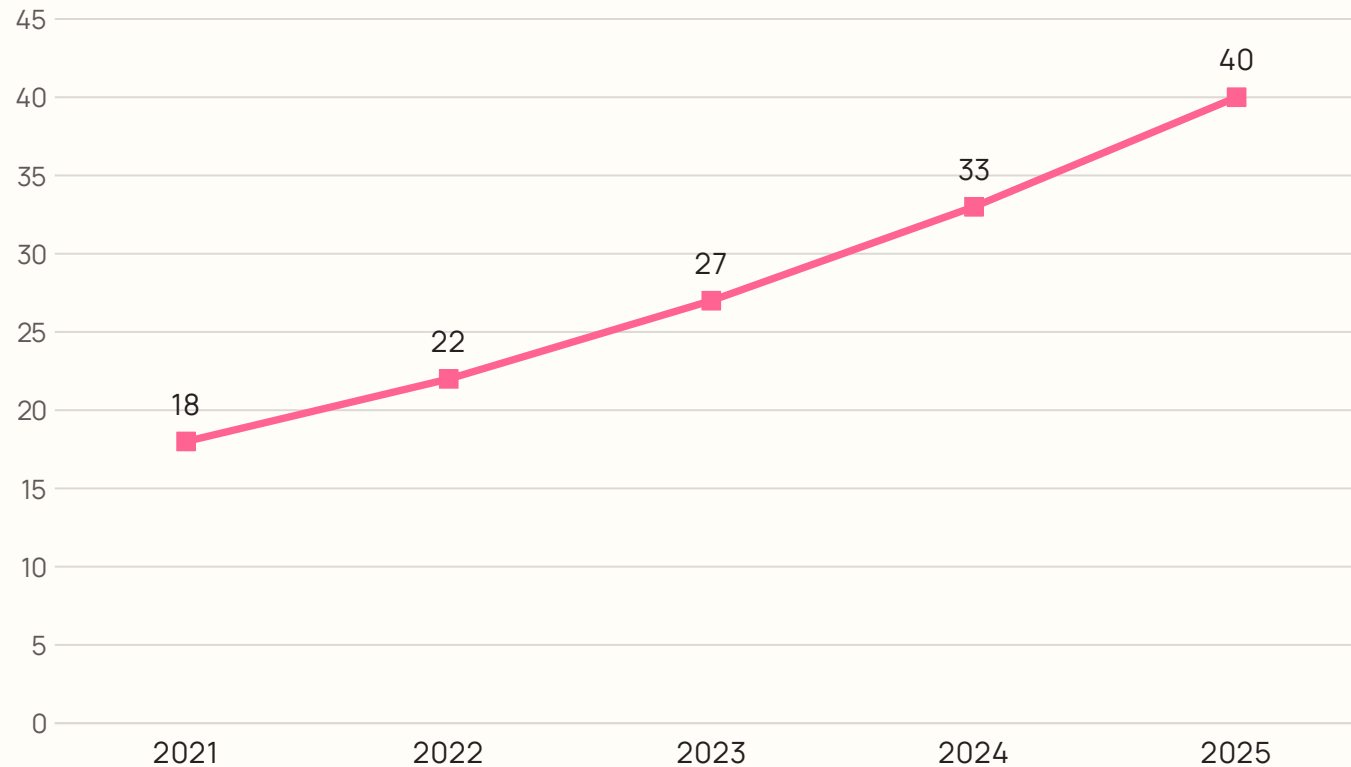


Image 3

Microgrids

Power for remote villages.

11 | Adoption trend



Share of renewables in new capacity (sample data).

Sample data for illustration – replace with your own figures.

CHALLENGES

04

13 | Advantages and limitations

Advantages

- No fuel cost
- Low emissions
- Energy independence
- Creates local jobs

vs

Limitations

- Weather dependent
- Needs storage
- Land use
- Grid upgrades required

14 | Open challenges

1

Variability

Sun and wind change.

2

Storage cost

Batteries still costly.

3

Grid

Transmission must expand.

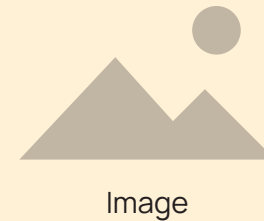
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**Cheaper storage will
make round-the-clock
clean power common.**

Looking ahead

16 | Conclusion

- Renewables are now mainstream
- Storage and grids are the key enablers
- Policy and finance will set the pace



Questions?

Thank you for listening.

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