

TECHNICAL ENGLISH COMMUNICATION — SEMESTER 1

Green Energy and Green Fuels

From Fossil Fuels to Green Cells — Rethinking How We Power Our World

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THE GROWING DEMAND

Why Do We Need More Energy?



Industry 4.0

Automated factories and robotics run around the clock.



Urbanization

Rising living standards mean more ACs, appliances, and EVs.



Digital Economy

Data centers, cloud computing, and AI consume power nonstop.



Population & Electrification

More people, and more regions gaining power access.

THE OLD APPROACH

The Trouble with Fossil Fuels

Coal, oil, and natural gas come at a cost



Greenhouse Gas Emissions

Combustion releases CO₂ and methane, driving global warming.



Air Pollution

Particulate matter, SO₂, and NO_x cause respiratory illness and acid rain.



Finite Reserves

Non-renewable resources that deplete with every barrel burned.

What Are Green Cells?

Devices and systems that generate power from renewable, low-emission sources — instead of burning fuel.



Solar PV

Sunlight → electricity



Wind

Turbines → electricity



Fuel Cells

Hydrogen → electricity



Biogas

Organic waste → fuel

THE COMPARISON

Why Green Cells Win



FOSSIL FUELS

- Finite & depleting reserves
- Heavy greenhouse gas emissions
- Volatile, rising fuel costs
- Centralized power plants only
- Creates import dependency



GREEN CELLS

- Renewable & virtually inexhaustible
- Zero or near-zero emissions
- Falling long-term costs
- Decentralized generation possible
- Improves energy security

Why Wasn't This Adopted Sooner?



Cost & Efficiency

Early solar cells converted ~6% of sunlight vs 20%+ today.



Storage & Intermittency

Battery tech wasn't mature enough to store power when the sun or wind wasn't active.



Infrastructure Inertia

Fossil infrastructure was already built and cheap — little urgency or policy push.

WHAT'S NEXT

The Road Ahead

1

Higher Efficiency

Perovskite solar cells push efficiency further.

2

Better Storage

Solid-state batteries close the storage gap.

3

Green Hydrogen

Scaling up to power steel and shipping.

4

Smart Grids

AI balances supply and demand in real time.

REAL-WORLD IMPACT

Powering Every Sector



Electricity

Micro-grids reach villages the main grid never did.



Agriculture

Solar pumps and cold storage cut spoilage.



Household Health

Clean stoves replace smoky indoor fires.



Industry & IT

Green hydrogen and renewable-powered data centers.

THE BIG PICTURE

Picture one village: a solar micro-grid powers homes and a water pump for the fields, a small cold-storage unit keeps vegetables fresh longer, and clean stoves replace indoor wood fires. One shift — and electricity, agriculture, and women's health all improve together.

IN CLOSING

Power Progress, Responsibly

Fossil fuels got us this far, but green cells — solar, wind, hydrogen, and biogas — offer a cleaner, more dependable path forward for every sector, and every home.



THANK YOU