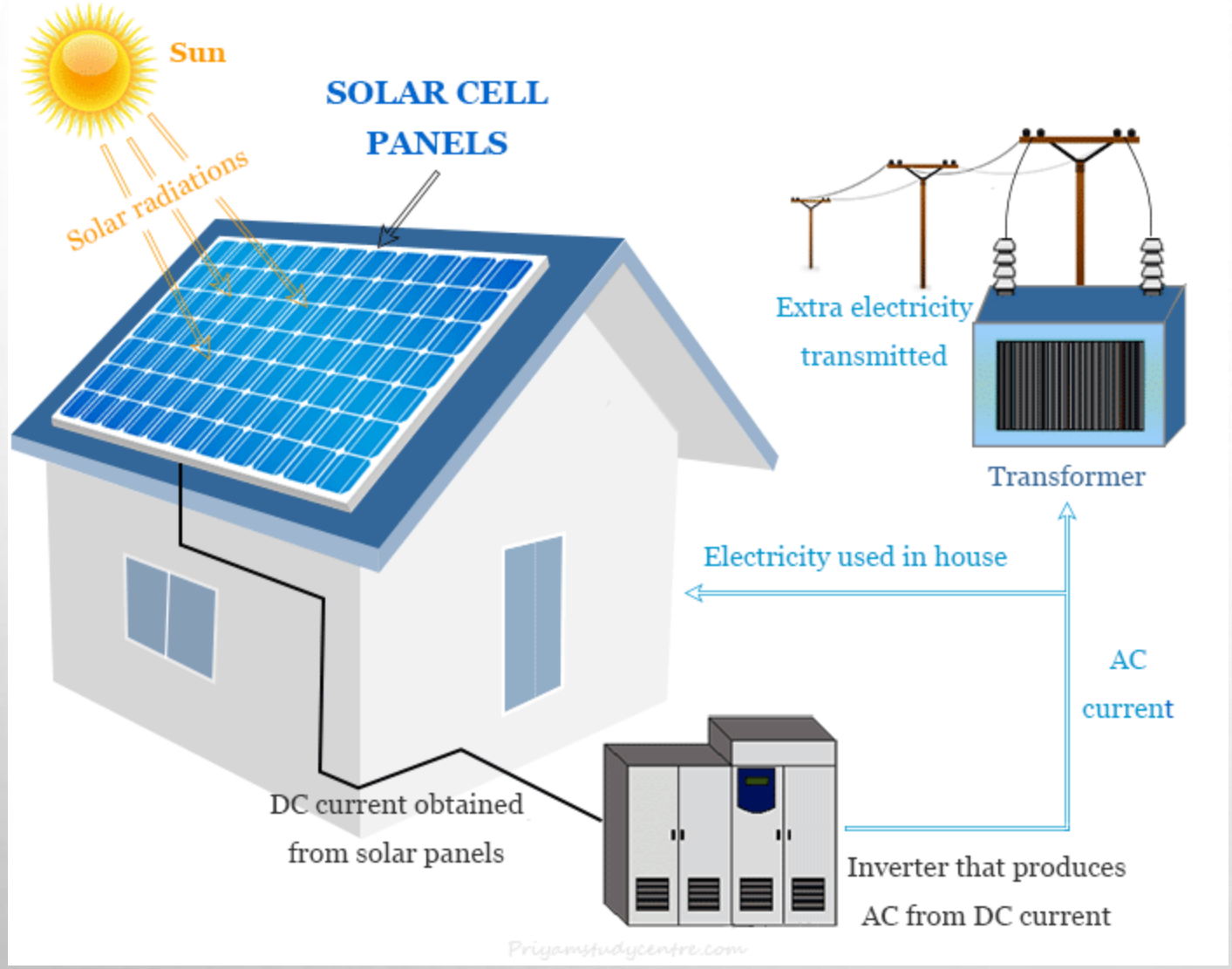
ENVIRONMENTAL IMPACTS OF SOLAR ENERGY


Sun
SOLAR CELL PANELS
Solar radiations
Extra electricity transmitted
Transformer
Electricity used in house
AC current
DC current obtained from solar panels
Inverter that produces AC from DC current
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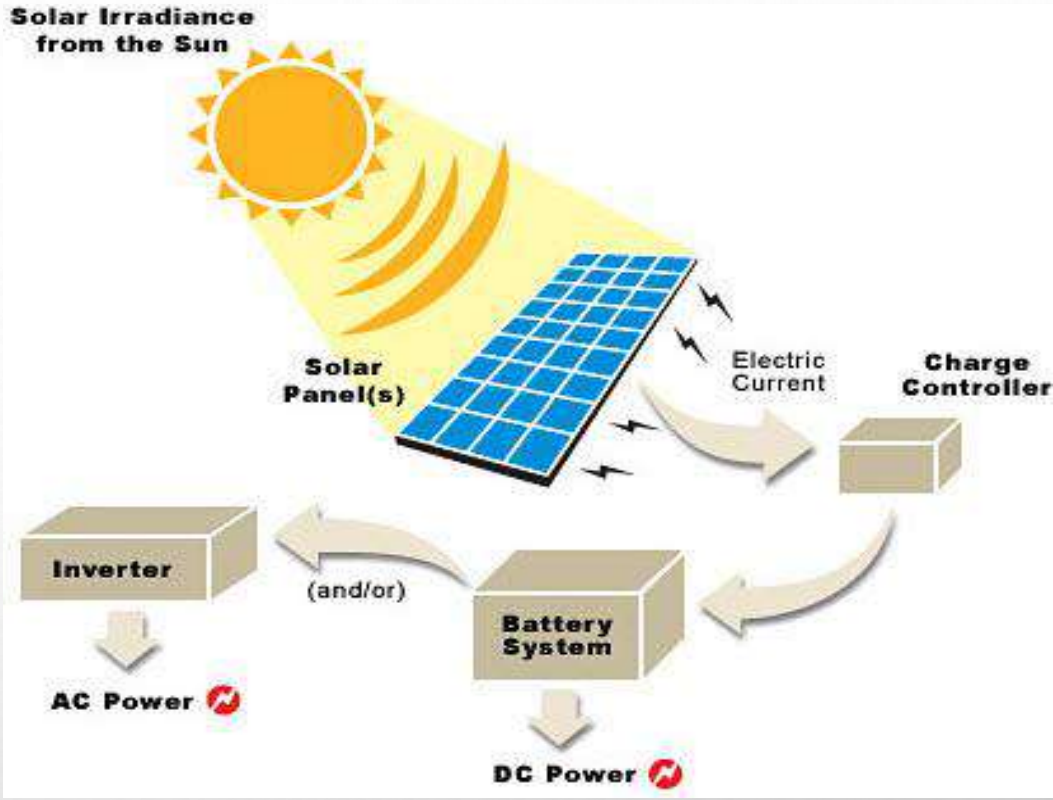
Solar Irradiance from the Sun
Solar Panel(s)
Electric Current
Charge Controller
Inverter
(and/or)
Battery System
AC Power
DC Power

IMPACTS

- LAND USE AND HABITAT LOSS
- WATER USE
- USE OF HAZARDOUS MATERIALS IN MANUFACTURING.
- AIR
- WILDLIFE

LAND USE:-

- SOLAR POWER PLANTS USE LARGE AREAS FOR COLLECTION OF ENERGY, AND THUS MAY INTERFERE WITH EXISTING LAND USES AND CAN IMPACT THE USE OF AREAS SUCH AS WILDERNESS OR RECREATIONAL MANAGEMENT AREAS.
- AS ENERGY SYSTEMS MAY IMPACT LAND THROUGH MATERIALS EXPLORATION, EXTRACTION, MANUFACTURING AND DISPOSAL, ENERGY FOOTPRINTS CAN BECOME INCREMENTALLY HIGH.
- THE CONSTRUCTION OF SOLAR FACILITIES ON VAST AREAS OF LAND IMPOSES CLEARING AND GRADING, RESULTING IN SOIL COMPACTION, ALTERATION OF DRAINAGE CHANNELS AND INCREASED EROSION.

WATER USE:-

- PV PANELS DO NOT USE WATER IN THE PRODUCTION OF ELECTRICITY. • LIKE ANY MANUFACTURING PROCESS, SOME WATER IS USED TO PRODUCE THE PANELS.
- THIN FILM PV PANELS USE RARE-EARTH METALS, WHICH ARE MINED IN CHINA, WHERE STRONGER REGULATIONS ARE NEEDED TO PROTECT WATER AND WILDLIFE.
- CONCENTRATING SOLAR POWER (CSP) WITH WET COOLING REQUIRES LARGE AMOUNTS OF WATER, LIKE OTHER THERMAL GENERATORS

IMPACT ON AIR

- FAR FEWER GHG EMISSIONS THAN FROM COAL OR OTHER FOSSIL FUELS; NO GHG FROM SOLAR POWER GENERATION, BUT SOME FROM MANUFACTURING, MATERIALS TRANSPORTATION, INSTALLATION, MAINTENANCE, AND DECOMMISSIONING, I.E., LIFECYCLE EMISSIONS •

IMPACT ON WILDLIFE AND BIODIVERSITY:-

- THE CONSTRUCTION AND OPERATION OF SOLAR POWER PLANTS CAN LEAD TO THE LOSS AND FRAGMENTATION OF WILDLIFE HABITAT. THIS CAN RESULT IN THE DISPLACEMENT AND DISRUPTION OF WILDLIFE POPULATIONS, AND IN SOME CASES, IT CAN EVEN LEAD TO THE EXTINCTION OF CERTAIN SPECIES.
- FOR EXAMPLE, SOLAR FARMS CAN DISRUPT BIRD HABITATS AND MIGRATION PATTERNS, AND THEY CAN ALSO IMPACT THE BREEDING AND FORAGING PATTERNS OF DESERT TORTOISES, WHICH ARE CONSIDERED A THREATENED SPECIES.
- IN ADDITION, THE CONSTRUCTION OF SOLAR FARMS CAN ALSO LEAD TO SOIL EROSION AND OTHER FORMS OF LAND DEGRADATION. THIS CAN IMPACT THE QUALITY AND AVAILABILITY OF FOOD AND WATER FOR WILDLIFE, AND IT CAN ALSO LEAD TO A LOSS OF BIODIVERSITY IN THE AFFECTED AREA.

USE OF HAZARDOUS MATERIALS:-

- THE SOLAR INDUSTRY, LIKE OTHER ELECTRONIC INDUSTRIES, RELIES ON MANY WELL-KNOWN TOXIC CHEMICALS. FOR SOLAR, THESE INCLUDE ARSENIC, CADMIUM TELLURIDE, GALLIUM ARSENIDE, HEXAFLUOROETHANE, HYDROFLUORIC ACID, LEAD, AND POLYVINYL FLUORIDE, PUTTING FRONTLINE WORKERS AND COMMUNITIES AT RISK TO TOXIC CHEMICAL EXPOSURE. THESE RISKS INCLUDE:
- EXPOSURE TO SILICON DUST AS WELL AS DUST FROM COPPER, INDIUM, GALLIUM AND SELENIUM, ALL OF WHICH MAY POSE INHALATION HAZARDS FOR WORKERS
- EXPOSURE TO CADMIUM, WHICH IS CONSIDERED “EXTREMELY TOXIC” BY THE ENVIRONMENTAL PROTECTION AGENCY AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), POTENTIALLY CAUSING KIDNEY, LIVER, BONE, AND BLOOD DAMAGE
- EXPOSURE TO SELENIUM DIOXIDE, WHICH IS A TISSUE POISON LIKE ARSENIC

IMPACT ON HUMANS

- THERE ARE SOME CHEMICALS USED IN THE MANUFACTURING PROCESS TO PREPARE SILICON AND MAKE THE WAFERS FOR MONOCRYSTALLINE AND POLYCRYSTALLINE PANELS. ONE OF THE MOST TOXIC CHEMICALS CREATED AS A BYPRODUCT OF THIS PROCESS IS SILICON TETRACHLORIDE.
- THIS CHEMICAL, IF NOT HANDLED AND DISPOSED OF PROPERLY, CAN LEAD TO BURNS ON YOUR SKIN, HARMFUL AIR POLLUTANTS THAT INCREASE LUNG DISEASE, AND IF EXPOSED TO WATER CAN RELEASE HYDROCHLORIC ACID, WHICH IS A CORROSIVE SUBSTANCE BAD FOR HUMAN AND ENVIRONMENTAL HEALTH.

On land

On wildlife

THANK YOU