ENVIRONMENTAL IMPACT OF PV SYSTEMS

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NEEDED DURING ?

A pv system uses a lot of energy during its total life cycle, for example: the manufacturing process, transportation, installation of the modules and recycling.

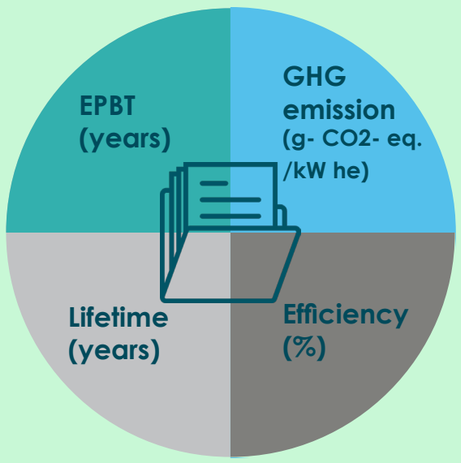
THREE DIFFERENT PV SYSTEMS:

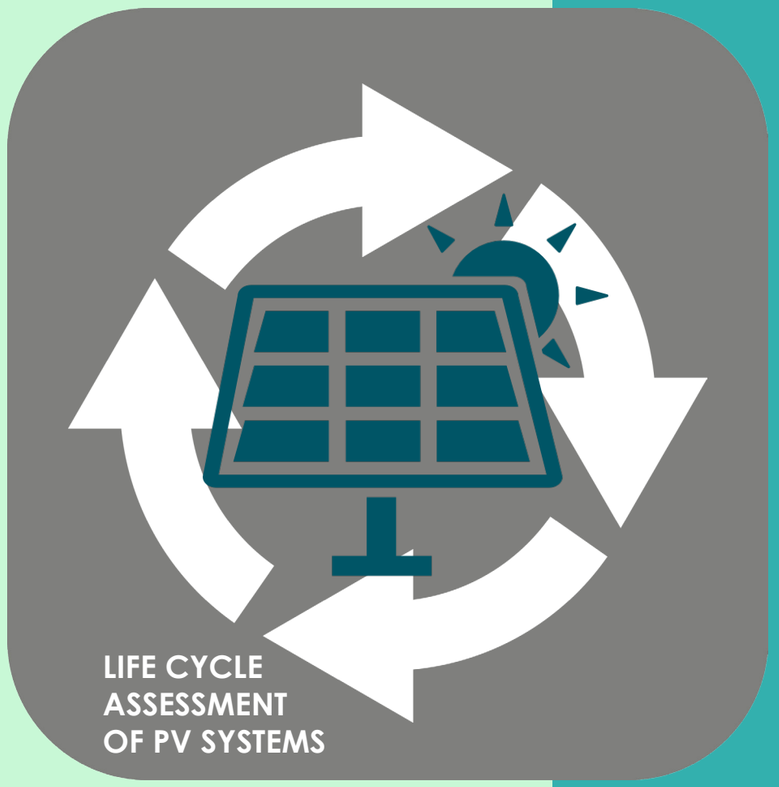
The life cycle assessment of three (most common) different Solar PV systems has been investigated: mono-crystalline (mc) PV systems, poly-crystalline (pc) PV systems and amorphous PV systems.

DATA COLLECTION:

20 More than **twenty** different studies were collected.

Data collection was focussed on four parameters: efficiency (%), life time (years), EPBT: energy payback time (years) and GHG emission (g- CO2- eq./kW he).





EPBT: energy payback time (years)

1.75-15.5	mono-crystalline	
1.5-5.7	poly-crystalline	
1.4-3.3	amorphous	

GHG emission (g- CO2- eq. /kW he)

mono-crystalline		30-217
poly-crystalline		9.4-104
amorphous		15.6-50

Poly-crystalline PV systems have a shorter EPBT and the GHG emissions are lower comapred to mono-crystalline systems. The performance of EPBT and GHG emission are better of Amorphous PV systems than of the crystalline PV modules.

5% **30%**

''Silver requirement for manufacturing solar PV modules could contribute to the depletion of silver resources. To meet **5% of the world electricity production** from solar PV modules, their production would require about **30% of the current silver production.** (Phylipsen and Alsema, 2009)'' (Kannan et al, 2006:562)

DIFFERENCES IN THE RESULTS WERE CAUSED BY DIFFERENT FACTORS:

1. MANUFACTURERS
2. PRODUCTION METHODS
3. INSTALLATION METHODS
4. DIFFERENT RESEARCH METHODS
5. EFFICIENCY OF THE PANELS
6. DIFFERENT CLIMATES
7. DIFFERENT COUNTRIES, IRRADIATION AND GRIDS

IMPROVEMENT (Kannan et al, 2012):

a. ALTERNATIVE MATERIAL FOR SUPPORTING STRUCTURE

b. IMPROVING PRODUCTION METHODS

c. INCREASE THE EFFICIENCY

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