

SOLAR ENERGY. STRENGTHS

100% renewable source of energy, that doesn't have any negative impact on environment

Suitable to be used in the cities – before implementing any technology in populated cities like Astana, we should think about how it's going to affect citizens life's, and what is the societies view on this technology. And, solar energy has big advantage over other sources of energy in this field. First of all, solar panels are rather simple technologies, so they are safe. Also, in comparison with other renewable sources it is absolutely noise free. All this factors, create positive image about solar energy among society.

Rapidly developing technology – Solar energy is one of the fastest developing renewable energy technologies in the world. In particular, in Astana there've some important achievements in integration of this technology. For example, in 2012 Kazakhstan's first ever PV solar panel producing plant, "Astana Solar" LLP, started functioning. And currently, in a single year they are able to manufacture photovoltaic modules with total capacity of 5 megawatts. Having this factory near the city allows Astana to save money on transportation of the solar panels.

SOLAR ENERGY. WEAKNESSES

Not cost efficient

Enormous demand and little supply –

SOLAR ENERGY. OPPORTUNITIES

Each hour 430 quintillion Joules of energy from the sun hits the Earth. That's 430 with 18 zeroes after it. In comparison, the total amount of energy that all humans use in a year is 410 quintillion Joules.

In 90 minutes, enough sunlight strikes the earth to provide the entire planet's energy needs for one year.

Solar energy use has surged at about 20 percent a year over the past 15 years

Do not increase our carbon footprint or exacerbate global warming, like burning fossil fuels does.

Pollution and noise free farms

SOLAR ENERGY. THREATS

When the weather becomes cloudy, the output of the panels is dramatically decreased.

Unexpected future developments of homes or commercial property can quickly put a damper on your solar investment

Most of the photovoltaic panels are made up of silicon and other toxic metals like mercury, lead and cadmium. Pollution in the environment can also degrade the quality and efficiency of photovoltaic cells. Photovoltaic Cells convert sunlight into electricity. These substances are harmless, but they can cause health problems if not handled or stored carefully.

Generation of power reduced during time of clouds cover

Input-output life cycle environmental assessment of greenhouse gas emissions from utility scale wind energy in the United States (Kumar, Tyner and Sinha 2016)

The effect of wind power on birds and bats (Rydell, Engstrom, Hedenstrom, Larsen, Pettersson and Green 2012)

Wind power plants: fundamentals, design, construction and operation (Gasch and Twele 2011, 537)

Effect of Wind Turbine Noise on Workers' Sleep Disorder: A Case Study of Manjil Wind Farm in Northern Iran (Abbasi , Monnazzam, Zakerian and Arsalan 2015)

Renewable Electricity Futures Study (Hand, Baldwin, DeMeo, Reilly, Mai, Arent, Porro, Meshek and Sandor 2012, 279)

Wind power: Renewable Energy for Home, Farm and Business (Gipe 2004, 17)

Wind Power (Musgrove 2010, 13)

The 2016 Global PV Outlook: US, Asian Markets Strengthened by Policies to Reduce CO2 (Movellan,2016)

Wind power by country (Wikipedia, n.d.)

This incredible fact will get you psyched about solar power (Harrington,2015)

Solar Energy Perspectives(Philibert, 2011)

Solar Energy(National Geographic, n.d.)

Bad Things about solar panels (Sherwood, 2015)

Disadvantages of Solar Energy (2011)

ENERGY: When clouds block sun, solar panels lose power slowly (Wolff 2011)