**Is Solar Energy The Future For Smart Cities?**

It is fascinating that our sun has been shining for more than 4 billion years, but still we humans know about solar energy in the mid-1800s. During that time, solar energy plants were there for heating water to generate steam that further helps to drive machinery.

All thanks to [Alexandre Edmond Becquerel](https://en.wikipedia.org/wiki/Edmond_Becquerel), he was the person who discovered the photovoltaic effect. Using this effect, we understand “how electricity can be harnessed from the Sunlight” But during that time, harnessing photovoltaic power is inefficient. After, 100 years [Russell Ohl created the solar cells](https://en.wikipedia.org/wiki/Russell_Ohl)which are efficient in converting sunlight into a flow of electrons.

Later, we moved towards fossil fuels to fulfill our energy demands and it is not right to say that “fossil fuels are not a good source of energy.”

In global energy systems, Fossil fuel plays an essential role. It was the primary driver of the Industrial Revolution, social, economic, technological; even it plays a decisive role in global change. But its negative impacts become the main reason of air pollution and global warming.

So, to recover the environmental damage; various organizations are taking initiatives to build a better world. As currently, [smart cities](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=6bc33d23bbfed8cd&type=H&mid=40328&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=6bc33d23bbfed8cd&opt=true&out=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fsmart-cities&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3Esmart%20%3C%2Fspan%3E%3Cspan%3Ecities%3C%2Fspan%3E) are one of the best choices organization around the world is making.

Yes! [Smart Cities](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=6bc33d23bbfed8cd&type=H&mid=40328&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=6bc33d23bbfed8cd&opt=true&out=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fsmart-cities&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3ESmart%20%3C%2Fspan%3E%3Cspan%3ECities%3C%2Fspan%3E), it is the best choice we can make right now. Because [Smart cities](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=6bc33d23bbfed8cd&type=H&mid=40328&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=6bc33d23bbfed8cd&opt=true&out=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fsmart-cities&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3ESmart%20%3C%2Fspan%3E%3Cspan%3Ecities%3C%2Fspan%3E) completely run on renewable energy, i.e. Solar, Wind, etc. These two are the natural energy sources because solar energy relies upon sunlight and wind energy as its name defines wind. These two energy sources are there from past billions of years.

How is Solar Energy Changing world around Us?

Let’s see some facts around the world related to the implementation of Solar energy:

* Germany is the global leader of renewable energy. In 2018, Germany generated enough electricity from a renewable resource that can power up every house present in the country for one year. The country has a target to get at least 65% of electricity by using renewable resources by 2030. Germany is dedicatedly working to have a bright future with solar power.
* In 2015, SWEDEN decided to eliminate the usage of fossil fuels for generating electricity. And make an investment in solar, smart grids, wind, and clean transport. By this decision, Swedes are inspiring others to join them in the race of transforming into 100% renewable country.

Real World adoption of Solar energy

* For Smart Renewable Cities

The Marlene Motyka (from Deloitte’s research team) interview, with [Solar Magazine](https://solarmagazine.com/) clearly defines the smart renewable cities concept. [Smart cities](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=6bc33d23bbfed8cd&type=H&mid=40328&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=6bc33d23bbfed8cd&opt=true&out=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fsmart-cities&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3ESmart%20%3C%2Fspan%3E%3Cspan%3Ecities%3C%2Fspan%3E) research, its development, and implementation is the primary concern of Deloitte as an organization.

Motyka told about the developed, named as 360° Degree [Smart Cities](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=6bc33d23bbfed8cd&type=H&mid=40328&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=6bc33d23bbfed8cd&opt=true&out=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fsmart-cities&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3ESmart%20%3C%2Fspan%3E%3Cspan%3ECities%3C%2Fspan%3E) Framework. This platform provides the stakeholders with a big range of tools and resources which helps in the development and implementation of Smart City development strategies. The framework targets the People-Centric Goals of affordable, reliable and environmentally friendly energy.

* Solar Paint

When people say that they are going to install the solar in the office or building, then the first thing that comes into the mind is the solar panel.

According to the researchers of the Royal Melbourne Institute of Technology, they were [using paint to generate or harnessed solar power](https://futurism.com/a-new-solar-paint-lets-you-transform-your-entire-house-into-a-source-of-clean-energy). They have developed an innovative solar paint that generates the hydrogen by using moist sunlight and air. According to researchers, this technology will be in the market for people in the next five years.

* Perovskite

The researchers in Ecole Polytechnique Federale Lausanne designed the Perovskite solar cell and it is still under development as an experimental module in the GOTSolar project.

As per this project, the new material is highly sensitive to lights and it is the future of Solar cells. It will overcome the current PV efficiency and its performance limits. Moreover, it is going to become the face of the solar panel by the year 2023.

* Solar Cell Harnessing Energy From Raindrops

Another innovation in solar panel, this innovation focuses on [harnessing electricity by using the raindrops on the solar panel](https://www.theguardian.com/environment/2018/mar/13/rain-or-shine-new-solar-cell-captures-energy-from-raindrops). This new solar PV is developed and demonstrated in the Soochow University’s laboratory in China which states that the electricity can be produced at any time in a day. The technology is developed by utilizing two transparent polymer layers which are placed at the top of the Solar PV cell. So, when it’s raining, raindrops create friction and produce static energy.

Why Smart cities need Solar energy?

It has already been stated that 10% of the [smart cities](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=6bc33d23bbfed8cd&type=H&mid=40328&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=6bc33d23bbfed8cd&opt=true&out=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fsmart-cities&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3Esmart%20%3C%2Fspan%3E%3Cspan%3Ecities%3C%2Fspan%3E) energy comes from solar energy and 80% of buildings must be energy efficient. Solar energy can play a significant role in the development of [Smart Cities](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=6bc33d23bbfed8cd&type=H&mid=40328&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=6bc33d23bbfed8cd&opt=true&out=https%3A%2F%2Fwww.coursera.org%2Flearn%2Fsmart-cities&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3ESmart%20%3C%2Fspan%3E%3Cspan%3ECities%3C%2Fspan%3E). Below the following reasons behind this are mentioned:

* Renewable resource: Solar is renewable energy as it generates electricity with the help of the sun again and again which is a never-ending energy source. It can be harnessed by installing solar panels, and this eliminates the requirement and dependency of non-renewable energy sources.
* Eco-friendly: Solar energy is an excellent alternative to fossil fuels as it is reliable,non-polluting and renewable sources of energy. It does not release any harmful gases such as nitrogen oxides, [carbondioxide](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=1746c8a40d1c697f&type=H&mid=8251&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=1746c8a40d1c697f&opt=true&out=http%3A%2F%2Fwww.pjatr.com%2Ft%2F1-8251-43737-8251%3Furl%3Dhttps%253A%252F%252Fwww.mscdirect.com%252Fbrowse%252Ftnpla%252F68531441&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3Ecarbon%20%3C%2Fspan%3E%3Cspan%3Edioxide%3C%2Fspan%3E).

Thus, there is no risk of damaging the environment. The energy is produced from the sun, so it does not need any sort of fuel or storage of radioactive waste.

* Maintenance is Easy: We know that the cost of installing a solar panel is really high, but it is a one-time investment with minimal maintenance, and you will enjoy its benefits for years. Also, the solar panels don’t release toxic substances, and they are completely noiseless.
* Solar Panel Installation: When its about the installation of solar panel than its an easy job. You do not require any cords, wires or power sources and not even a new space for installing the solar panels. You can simply install the solar panels over your rooftops, but make sure rooftop experience good sunlight.
* Reduction in Electricity Bill: It’s an interesting fact that the utilization of solar energy will decrease the utility bills. Also, by installing PV solar panels in your house will help you to cut down your electricity cost.

Moreover, you can also utilize solar energy for various purposes such as heating water, heating swimming pool, charging batteries, even you can cook food by harnessing solar energy. And you’ll find it really interesting that it will potentially save up to 20 percent of your electricity cost.

* Good for Remote Location: There are still many remote locations that don’t have electricity and Solar energy is the most effective solution to this problem, it is really effective for those places where it is difficult to install power lines. So, it’s a good option; to install solar panels in remote locations.

Importance of Solar Energy in Future

* Solar Is Clean and Safe

As per the current utilization of fossil fuels, Solar energy is the safest alternative that can replace fossil fuels such as gas, coal, etc. that is used for generating electricity. Further, generating electricity in this way lead to water, air, and land pollution.

According to WWF (World Wide Fund), the generation of electricity with the help of [fossil fuels causes air pollution](http://wwf.panda.org/wwf_news/?327615/air-pollution-car-cities-wwf), and it leads to acid rain. Also, it damaged forest areas and affected agricultural production which causes loss of billions of dollars worldwide.

So, go clean and safe by adopting Solar Energy.

* Prevents Destruction of Habitats

Mining for raw materials such as fossil or nuclear fuels has destroyed many Pristine forests. So, when forests are cut down for mining raw materials, this automatically removes the major carbon sink disappears; And further, it also increases climate change.

[According to WWF “On land, Nine out of ten animals lives in Forests.](http://wwf.panda.org/our_work/forests/)” and cutting down of forests for conventional energy causing loss of habitats that diminishes their population. So, switch to renewable energy or Solar power because this will keep habitats intact for animals and continue to keep the [air clean](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=4f2431d25da9624c&type=H&mid=41610&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=4f2431d25da9624c&opt=true&out=https%3A%2F%2Fwww.ssense.com%2Fen-au%2Fmen%2Fproduct%2Fhope-mens%2Fmulticolor-painted-flower-air-clean-shirt%2F3663459&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3Eair%20%3C%2Fspan%3E%3Cspan%3Eclean%3C%2Fspan%3E).

* Combats Climate Change

We all know that the temperature around us is changing fast. Due to which, the temperature is getting higher that results in the melting of polar ice caps, increasing sea level, and decrease habitats for wildlife. As a result, loss of coastal area land, shifting people. Also, not proper rain and agriculture get affected due to drought. So, adopting renewable energy is necessary to control these effects.

Final Remarks

As per now, solar energy keeps on involving our daily lives like a solar [lawn mower](http://i.viglink.com/?key=781bd7fa503ccf881830c201d6c655d8&insertId=5efe270e0904230e&type=H&mid=7937&exp=60%3ACI1C55A%3A5&libId=jvq430090100y1f7000DAbwhczgbx&loc=https%3A%2F%2Ftechnofaq.org%2Fposts%2F2019%2F04%2Fis-solar-energy-the-future-for-smart-cities%2F&v=1&iid=5efe270e0904230e&opt=true&out=http%3A%2F%2Fwww.pntrs.com%2Ft%2F1-7937-43737-7937%3Furl%3Dhttps%253A%252F%252Ftractorsupply.affiliatetechnology.com%252Fredirect.php%253Fnt_id%253D5%2526url%253Dhttps%253A%252F%252Fwww.tractorsupply.com%252Ftsc%252Fproduct%252Fremington-4060-40v-21-in-cordless-battery-powered-lawn-mower-1321306%253Fcm_mmc%253DAffiliates-_-Pepperjam-_-product-_-feed%2526utm_source%253DAffiliates%2526utm_medium%253DPepperjam%2526utm_campaign%253Dproduct-feed&ref=https%3A%2F%2Fcn.bing.com%2F&title=Is%20Solar%20Energy%20The%20Future%20For%20Smart%20Cities%3F%20%7C%20Techno%20FAQ&txt=%3Cspan%3Elawn%20%3C%2Fspan%3E%3Cspan%3Emower%3C%2Fspan%3E), flashlight, rechargeable power tool, in our houses. And even researchers are working on clear PV windows. So, we need to understand that if we need a better future, we need to involve more renewable energy source. As a human being, we need to understand our responsibility towards a better future for our planet.

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