PRESENTATION OF HORTICULTURE INSTITUTE PLAN WITH SUSTAINABILITY APPROACH (SOLAR BUILDING)

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Abstract. Renewable energies will account for two thirds of global power plants by 2040, which is why, in most countries; they are the lowest source of cost for new production. At present, the share of direct and indirect renewable energy in final energy consumption will increase from 39 percent to 45 percent in 2040. The sustainable development scenario is an integrated solution for achieving a wide range of energy-related goals for sustainable economic development:

Climate stabilization reduces the cleaner air and universal access to modern energy, and at the same time, the security risk of energy. In this regard, the purpose of this research is to achieve a combined way to access a wide range of energy goals for sustainable economic development in sustainable architecture with the aim of expressing the study and research of the principles and practical solutions and methods of implementing the design of the flower production center with the aim of the sustainable development scenario for the preservation of the global environment as well as the preservation of the architecture effect in the world ecology system:

The climate stability, clean air and global access to modern energy, as well as the reduction of energy security risks, are a comprehensive solution. And it's about the ability of the horticulture institute to combine environmental and atmospheric factors, and combine them with spatial and cosmological qualities, using the technology of the day to use sustainable energies and botanical laboratory which can focus on the laboratory needs of this center and even the region. This research is based on the analysis and description method. The type of research work is applied.

Key words: space design, targeted agricultural development, sustainability architecture (solar building), heat storage system, greenhouse

Introduction. From the 1970s, when it threatened the end of human fossil fuels, as well as the environmental effects of fossil fuels, such as contamination, thinning of the ozone layer ... led to an environmentally friendly architecture. It can also be said that man has turned to stable systems to get rid of the failings of past systems in order to be able to solve their long-term needs by these systems. If we look at all the artistic styles and social movements, We find out that all these styles and movements were looking for an ideal solution for new work that could be always effective and efficient Because humans inherently seek sustainability. Which is also objectively found in architecture (Wang et al., 2011).

Another reason to make green space is its economic benefits (Khoda bakhsi, 2002). Quantitative increase in the use of beneficial methods can have a significant effect on implementation costs, which was done in this research field by approval of research funding by the California governor in August 2001 on the costs and profitability of green buildings.

The results of this comprehensive study, entitled "The State of California Sustainable Buildings Report, October 2003," show that although green buildings may cost more than conventional buildings, the surplus that is spent on sustainable development is far less than what is thought to be. (5). This study shows that the average costs will increase by at least 2 percent, while the total life cycle savings of the project will be 20 percent, and the energy consumption of green buildings will be 25-30 percent more efficient in terms of energy consumption (Golabchi, 2011).

Also a done study by the Rocky Montion Institute also showed that sustainable design buildings could increase the created usefulness between 6-15 percent. Because the cost list usually accounts for 85 percent of the cost of the business components, it is about 70 times more than spending money for energy. Another study by the Institute for environmental studies and energy evaluated student performance in a classroom, the results showed that the test score was improved to 11 percent, and fatigue has decreased and student behavior has improved (Douglass, 2008).

It should be noted that the new technology always has a high cost at the start of the market, and it is expected that the cost of using the technology and the methods required to build sustainable architecture will be less and less, an example of this is the solar panels that the day-to-day prices have been lower due to the increasing tendency and less consumption (Baweja, 2008(.

In fact, this architecture, derived from the concepts of sustainable development, seeks to adapt and coordinate with the environment as one of the basic human needs of the present world, with the major part of it being the energy and resources that we have as a result of living in the environment. The goal of creating the green buildings is to improve the climate, prevent waste of energy used for cooling and heating, prevent the negative effects of construction on the environment and enhance the environmental beauty. Often the green building is interpreted as a building witch its negative effects on its surroundings is less. (Moosavi, 2013).

In this regard, the value of traditional architecture and the tradition of environmental values of traditional Iranian architecture has a lot of value in various ways of optimal use of energy and ecological exploitation of a variety of energies, and in particular the use of stable and unbiased energies. But the oldest Iranians conscious use of the solar energy lies in the

buildings and the traditional buildings. In other words, inactive solar systems in Iran have been used in their advanced and complete from the old times (Ghobadian, 2009).

Although the use of wind and, more correctly, the use of air movement and the creation of the breeze is the most important and most commonly used method of harmless energy in traditional Iranian architecture. However, all fourfold elements of the philosophical and religious ivory (water, air, sun, and soil) have been used extensively in the ancient civilization and architecture of Iran.

The meaning of use of solar energy in buildings is utilize the best of light in order to meet the heat and cold needs and, if necessary, to supply electricity to buildings. In the first step, by the solar thermal design, which is similar to the traditional architecture of our country, the heat and cold needs is minimized (Brock, 2011). In this design, problems such as: building direction , thermal insulation, determining the appropriate level of windows, double glazing of windows in some areas and using some of the non-active solar systems such as Trombe wall, are considered which by applying these parameters, the energy required for this building types are significantly lower than a typical building (with the same infrastructure), and this percentage depends on the application of these parameters and the climate conditions of each area. An example of these buildings is the solar greenhouse, which is the place to maintain and grow plants that receive most of their energy from the sun. A greenhouse or warm house is said to be a limited space in which it is possible to create suitable conditions for the growth of plants from different areas during the seasons of the year. Solar Greenhouse is one of a number of solar receivers that directly receives solar energy and converts it to heat (Gilani, 2011).

Since Iran is a country with different climatic zones, so the energy resources are also a function of these different climatic domains. Accordingly, a building should be designed according to the region's climate in order to reduce the energy required. In all areas of the climate, buildings constructed in accordance with the principles of climate design minimize the need for mechanical heating and cooling.

Considering the importance of the subject, the purpose of this article is to design a horticulture institute with a sustainability approach (solar building).

Case study of gardening with a sustainable approach in the world.

1. The Adan garden or Adan project is recorded as the world's largest greenhouse in the Guinness Book of Records. This garden is one of the most important projects of the Millennium buildings. The Adan garden was built on the grounds of an old 160-year-old mine in the form of a three very large bubble structure in southwestern Cornwall, England. In each of these three bubble greenhouses, the three different types of climatic conditions include forest, Mediterranean rain and one of them, the weather conditions of same environment has been designed and Simulated 1.

The Adan Garden architecture has been handled by Nicholas Grimesha, and the date of the start of the project has been January 1996. In the structure of this greenhouse no columns are used and it's a masterpiece of architecture. The height of the roof is so high that it is possible to have 11 double-decker buses over each other.

The coatings on the greenhouse, which are located inside the hexagonal frames with a diameter of 9 meters, are made of a kind of polymer called ETFE, which has interesting properties. This material can take heat at daytime and give it back at night. These polymers are also transparent and recyclable and last for at least 30 years. It does not absorb any dust and, despite the fact that it has a weight of one glass percent, is very sturdy. This polymer also passes through the ultraviolet UV rays that are needed to grow plants, and sunlight does not change its properties. On these coatings, the nests of the bee and the insect's eye have been simulated. In the tropical greenhouse, an artificial waterfall has also been made (Figure. 1) 1 and (Figure. 2).

(Figure 1): Adan Garden- England - Green and Sustainable Architecture


(Figure 2): Adan garden - England - Green and Sustainable Architecture 1

There is a lake with an area of 1231 square meters outside the greenhouse. Before entering the garden, to prevent the entry of plant pests, they enter the quarantine and undergo tough tests .
Plants in the garden have been come from plants and research stations and botanical gardens around the world as seeds or cuttings.
According to Adan garden builders, this project continues and the next step is to make greenhouse of arid areas. Its purpose is not only to research but also to publicize and educate children and their parents for the right behavior with a familiar and old-fashioned human, nature and plants.
2. A Danish company specialist in renewable technology has recently built an indoor farm in the deserts of southern Australia.
The implementation of the plan, that is considered as the first such farm construction project in the world, has been made possible by solar technology. Solar power plants produce several renewable energy sources, including heating and electricity, while providing fresh water. Svante Bundgard, CEO of "Aalborg CSP" says: "This project has been a source of interest in environmentally friendly designs, which can provide local energy for places like greenhouse."
The system of this project is based on solar energy technology that allows solar energy to be used efficiently.
Yakub Yol, Project Manager at Aalborg CSP, says: "a solar energy supply is provided to provide electricity or heating traditionally. But our solar installations make it possible for several different solutions to use energy in the greenhouse".
More than 23,000 solar panels absorb sunlight and match it to the top of the solar tower.
There, the accumulation of energy generates high temperatures, which ultimately are used to greenhouse heating in the winter, provide fresh water to the seawater, and periodically generate a turbine for electricity generation.
"We feel that we have done a great job in this area, and we can say that there is the possibility of solving eco-friendly solutions using solar energy" says Yakub Yol.
This solution will be particularly effective for countries facing the problem of water and energy access.

Case study of gardening with Sustainability Approach in Iran

1. Ahmadi Ghezelzdesht (2015), did an article entitled evaluating the effective factors in designing the rose and botanical center with a consistent architecture approach to the climate of the Pakdasht area. The aim of addressing the research in sustainable architecture with the aim of study expression and research is principles and practical solutions and methods of designing the flower production center using the technology of the world for the use of sustainable energies and botanical lab which can cover the laboratory's needs of the center and even the area and also a flower shop center in general (because this region is one of the flowering poles in the country and exported to other countries), and in part, so that the general public while enjoying the pleasant atmosphere and using the necessary services by purchasing ornamental flowers from the center share in the culture of this issue, which has a high potential in our country, as well as the economic prosperity of this industry.
2. Approval of the plan to create 3000 hectares of greenhouse on the coast of Makran by using solar energy: Using advanced technology, with the participation and investment of foreign and domestic experts and investors, this project is supposed to be implemented in Chabahar's Lipar area. The electricity needed for the greenhouse and the sweetener of the project will be provided in the Oman Sea by installing 300 hectares of solar energy mirror (Tasnim, August 2017(.

3. Solar greenhouse in Yazd, this project has been created experimentally with the cooperation of Yazd Agricultural and Natural Resources Research Center and the Energy Conservation Organization. This solar greenhouse is at a surface of 1000 square meters and has been intended for various research and extension activities, and with Credit of more than 15 billion Rials.

Research method

The type of research work is applied. This research has been done based on the analysis and description method. It was also used for fieldwork and library research data.

About Boostan Goftegoo (Site Location)

Boostan Goftego was built by the Parks and Green Space Organization of Tehran in the district of municipality of zone 2 in west of Tehran and was opened in May 2003 (Figure. 3).

(Figure 3): Bostan Goftegoo in Tehran 1

This boostan that is ended from the north to set of the bridges of the intersections of the highways of Chamran and Hakim, from south to Javad Fazel Street, from the east to the Shahid Chamran highway and from the west to Koi Nasr, plays an important role in reducing the air pollution of the area and filling the leisure time of the people.The area of this park is 144580 square meters, of which 7 hectares are dedicated to planting 100 seasonal and permanent plant species.

In this park, it has been tried to identify the various architectural styles of different landscape design styles using the culture and architecture of the city. Garden planting design as far as possible is also appropriate to the climate of the region. In the area of this park, communication axes are divided into two walks and walkways for walkers and riders in the side of the park. In the meantime, the routes and passages are designed in such a way that wheelchair access can also be found in most of the park's paths. Creating various spaces with different uses makes this space one of the most beautiful metropolitan Tehran gardens that attracts many domestic and foreign tourists. Figure 4.

Findings

Identify the strengths, weaknesses, opportunities and threats of boostan Goftegoo. Table (1).

Table (1): SWOT table analysis

-Access to the aqueduct and use of natural water supply for irrigation of green space and non-use of drinking water. -How to use water with the aim of protect the environment -Creating tourism attractions and planning to attract tourists -Creating appropriate containers and standards for garbage storage -Planning for use of water used for irrigation of green spaces and the use of standard equipment -Use of solar energy to provide part of the electricity required by the boostan	**Strength**
-Not being able to produce flowers and plants required according to the requirements of the required conditions -Holding the exhibition in the park area -Not matching the fertilizer used with existing standards -The lack of compatibility of fertilizers used in the park with respect to the health of visitors visiting the garden -How to enter the required fertilizer	**Weaknesses**
-Use more than happy colors in designing and renovating boostan equipment -Create space and support for popular contributions to the Boostan plan -More cultural affairs through the use of effective communication tools -Selection of flowers and plants based on aesthetics and reduction of environmental pollution with a focus on reducing air pollution and noise pollution -Use expert suggestions for optimal park management	**Opportunities**
-Insufficient budget for boostan Goftegoo and lack of responsiveness to the needs of this park -The presence of noise pollution caused by Chamran highway and increasing of these contamination at the time of the most frequent visitors -Failure to prioritize budget information approved by the municipality -Provide most electricity required for boostan from urban electricity, despite the possibility of generating more electricity through solar energy. -Park demolition due to population congestion caused by flower and plant exhibition	**Threats**

Water consumption rate of boostan Goftegoo

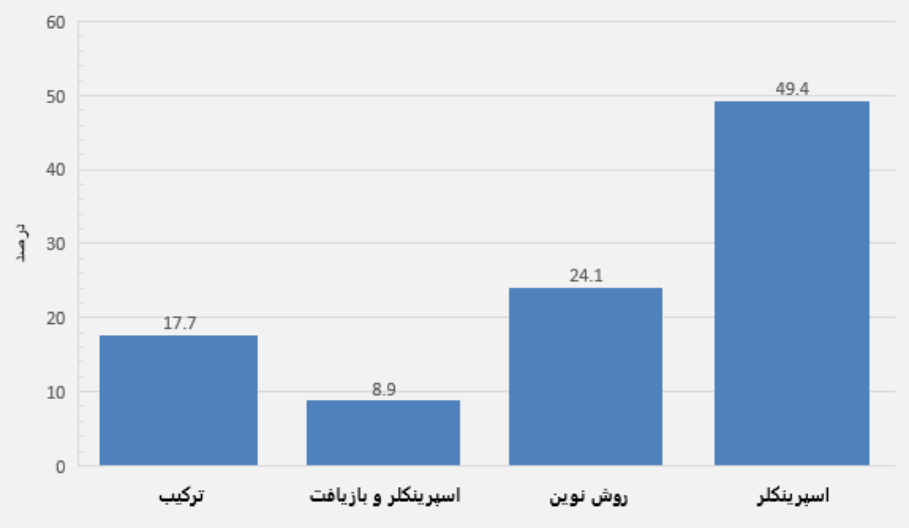

Chart (1): Water consumption rate of boostan Goftegoo

Criteria and standards

1. Research laboratories:

Research labs are divided into four categories:

1. High-capacity physics and chemistry labs
2. Converting materials lab
3. Flower and plant labors
4. Laboratories for specific experiments

A research lab building should be sufficiently capable of providing all relevant researches and related documents for at least 10 years.

Each laboratory has four main spaces:

1. Research spaces

2. Workers' offices of scientists and researchers

3. Space for research support such as Auditorium and Cafeteria

Teaching spaces may also be added to these spaces, which include teaching laboratories and conference rooms. The plan of the labors must be designed in such a way that all four of these spaces work together and are not separate from each other.

2. Research spaces

Their research spaces are divided into several sections. These spaces require places for people to sit and study, and individual and collective research units that need to be adjusted to heat and humidity, that the preparation and provision of such space is necessary in a different space, as the engine room cannot be located in the research space itself. Also, conference rooms that are directly connected to the study area are also required, and the necessary equipment that is easily accessible.

3. Location of the offices and laboratories

There is still a debate about where the best location of offices in laboratories is. Whether it is better to be inside the lab or, as an extension to the editorial board or there is a communication corridor between the two spaces or to be grouped in another part of the building. Does it necessarily have to be in connection with the exterior walls of the building or not necessary. The size of the offices is also discussed by experts. Some offices like 10x10-foot. Some 10 ×12 and some others even 10 × 14.

3-1- Labs depth

From 40 years ago, the depth of the labs has increased from 4.8 meter to 7.2 to 7.5 meter, and some have even advanced to 8 meter and 9 meter. This has made it possible to find more space in the new laboratories to locate various devices. But now in most cases, a depth of 7.2 is recommended for the lab.

Corridor width

The factors that determine the width of the corridors depend on the amount of traffic passing through the corridor, the length of the building, and even the number of doors open to these corridors. Because in the lab sometimes it is drawn to the fact that the doors open inside the corridors, so the sizes in the work space of a typical laboratory are as follows:

1. Width of the hole 3-3.5 meters
2. Depth of hole 5-8 meters
3. Floor height 3.5 meters
4. Width of corridor 2-4.5 meters

5. Labs and offices without windows

Most people prefer to work in non-window labs. Of course, if the conditions are such that there is a possibility to see the garden from the window, then it is much more enjoyable. Some people believe that people who work in a windowless room will feel confidential .

In any case, it's better to have labs and offices that come together, with windows facing outwards, but these windows are controlled in number and visibility, or that only some of them have a window, and some others (one in between) illuminate through the light between them**.**

5-1- Laboratory required area
In a particular type of labs which is recognized as labs, for every 11 researchers, according to modern criteria, ventilation, proper exposure, and the ability to move to an optimal 100 square meter space are considered.

6. Institute spaces

1- Training 460 square meters
2-Office 240 square meters
3-Research 1400 square meters
4- Service 1400 square meters
5- Exhibition 350 square meters

1-6- Training 180 square meters
1- The relevant classes 80 square meters
2- Computer part 30 square meters
3- Service 25 square meters
4- Teaching laboratory 50 square meters

2-6- laboratories 500 square meters
1-Research and laboratory space of 280 square meters
2-Work group offices 90 square meter
3- Waiting 35 square meters
4- Service 25 square meters
5-Changing clothes 25 square meters
3-6- office 340 square meters
1- Information 40 square meters
2- Presidential rooms 35 square meters
3-Service 25 square meters
4- Archive square meters
5-Conference room 60 square meters
Work offices 35 square meters

4-6- Service 1400 square meters
1- Parking 700 square meter
2- Restaurant 2000 square meters
3- Lobby and information 210 square meters
4- Coffee Shop 40 square meters
5-Facilities 200 square meters
6-Warehouses 70 square meters

-5-6Library 300 square meters
-1Reading room 80 square meters
-2Reservoir 70 square meters
-3Internet 50 square meters
-4Office 25 square meters
-5Magazines and information 25 square meters
-6archive 15 square meters
-7Copy and publish 30 square meters
- 6-6 Conference Room 140 people 300 square meters
-1Main hall 150 square meters
-2scene 20 square meters
-3Cold food buffet 25 square meters
-4Waiting room 100 square meters

-7-6 Swimming pool 300 square meters
-1Dressing room 20 square meters
-2Pool 80 square meters

-3Jacuzzi 25 square meters
-4Buffet 15 square meters
-5Service and shower 25 square meters

8. Amphitheater design standards

8-1- Input

It must be such as to prevent crowds from behind, and people can easily book tickets and enter the hall. In terms of dimensions per square meter, a maximum of 6 people can be placed. If people are placed in a linear position (queue), each 4 persons will need 87.1 meter in space longitude, so we will conclude that if people want to enter the hall, it's better to organize them linearly.

-2-8Waiting room (lobby)

After the entrance, we have the space for the waiting room. If our theater has 200 seats, then For 6 people we need to 1 square meter and 200 people need 34 square meters of space. However, this is where the people are dense. For this purpose, we multiply the above dimensions by 3 and turn to 102 square meters so people have free space for 2 people.

The next element, which is located in the lobby is the coffee shop. For this space, we need space for each 4-person desk, 5.76 square meters. If, for every run time, 50 people want to use a coffee shop, we need 12 tables of 4 people that is 93.24 square meters of space. Next to it, we want 15 square meters of kitchen space and sales area.
The other space in lobby is toilets, and since they are only third degree spaces, it should not be in sight, but it's best to be easily accessible. Because it is of service space 29.11 square meters needed for 8 toilets and washbasins.

-3-8-Performance Hall

In total, the maximum capacity of the audience part is chosen and the audiovisual limitations depend on which index is the type of program production. Other factors include levels. Line of sight. Acoustic Traffic congestion as well as the size and shape of the platform (scene).

-4-8-row length

Maximum 16 seats per each corridor. If for each of 3-4 corridor, one lateral output door with width of 1 meter is considered, for each corridor, 25 seats are allowed. For each sitting viewer you should consider an area equal to at least 0.5 square meters.

8.5. Size of space

This volume is based on acoustic conditions as follows: theaters about 4-5 cubic meters for each viewer and opera about 6-8 cubic meters. (Due to air conditioning, the volume should not be less than this).

6-8- The proportions of the audience

1. Optimal visibility without moving but with a slight eye movement of about 30 degrees
2. The optimal visibility with a slight movement of the head and a slight eye movement of about 60 degrees
3. The maximum angle of perception without moving the head is about 110 degrees
4. For complete movement of the head and shoulders, 360 degree perception area is also possible.

7-8-Service spaces behind the scene

1- -8-7-changing clothes room

It is one of the main areas of the hall. In designing this space, it must be taken into account that this space is considered as a private space, and all its privacy must be preserved especially for women. The required space for each person is 5 square meters and for 6 people with 8 wardrobes is 45 square meters. Another thing is the availability of a warehouse that is 5.7 square meters.

-2-7-8Makeup Room

This space should be direct in relation to the age, should be free from sound and with sufficient light. An environment that requires a makeup artist to easily move around the actor and monitor his entire work is 2.28 square meters that with this in mind, we want 6.72 square meters space for the work of the three makeup artist simultaneously. The existence of washbasin service in this space is necessary

8- -3-7-light and sound Room

This space, which is shared between the light and the soundtrack, must have a direct view of the runway, which usually place it in the back of the salon at the height, like the apparat room in cinema. The minimum space for a light-transmitter

with a projector and 4 illuminators is 6 square meters and for sound recorder with tuner and recorder device is 5 square meter. Also, communication staircases should be considered, but a warehouse of 12 square meters is required.

-4-7-8 The director's room

Which comes next to the scene when the director is directly associated with scene when running directly in a way that is not visible. Its dimensions are 9 square meters.

-5-7-8Music group room

One of the most important parts of a theatrical work is the performance of regular melodies in different sequences. For this reason, it is better to music group work go along with the theater, so we consider the space for the band. The band's music space should be arranged so that the supervisor monitor the whole group and as well as is placed in the low-noise part and must have a space for storage of musical instrument with dimensions of 4 square meters. Dimensions suitable for the music band is 16 square meters.

-6-7-8-Group rest room

It is a space that the group is concentrating before its runs and then resting there. Sufficient space for 8 sofa and table is 6 square meters. So for one 16-person group, we want 40 square meters of space.

-8-8- Study Room

The part in which the group is deployed, and while reading the scenario, they begin to work together. The sufficient amount of space for studying of 20 people is 42 square meters.

-1-8-8 Interview room

The necessary space is 16 meters, which includes 1 table and 10 chairs.

-9-8 Hall of office area

-1-9-8 boss office

This room should be strategically located at the best point. Usually this space is combined with the meeting room, which Intended dimensions for us is 35 square meters.

-2-9-8Accounting department

16square meters for the room itself and a space of 5 square meters for the archive and 1 space of 16 square meters for the computer center is needed.

-3-9-8 Archive room

16square meters for the archive room, which contains 15 files in it, and 9 square meters for the manager of the archive room and 20 square meters for the salon documentation center.

.9Service sector

-1-9 Powerhouse

This part should be in a place that can serve all the hall. Desired dimensions for our hall is 50 square meters**.**

.9.2 Central warehouse

Due to the fact that each section has usually a warehouse, we do not want a large storage space for the central warehouse. The required size is 25 square meters.

9-3- Parking

Necessary space for parking is 750 square meters for 42 light cars. In addition, if is placed under the building, ramp space and ventilation space is also included in the calculation table.

Summary and conclusion

1-The energy of the sun accelerates with the help of the future. Solar power plants that convert solar energy into electricity, in the future, with the advantages of fossil fuels, they will solve the electricity problem and, to a lesser extent, solve the problem of water deficit, especially during the oil and gas phase. And, of course, the establishment and use of power towers will provide the necessary ground for self-sufficiency and interruption of the country's dependence.

-1-1-The promotion of the culture of production and planting of flowers and plants with generating electricity without fuel consumption, lack of plenty of water, not infecting environmental pollution, low depreciation and long life are the important advantages of power towers and solar power plants relative to fossil and atomic power plants.

2. Among other objectives of this research is the expansion of the culture of nature and tourism and the optimal use of leisure time, the promotion of the role of environmental organizations in sustainable development programs, familiarity with environmental management based on international standards; the introduction of sustainable industries In oil field, gas and petrochemicals, transportation, automobiles, building, mines, stores, aviation, urban planning, telecommunications, insurance and banks, environmental awareness in the community and the creation of suitable land for the participation of people in environmental protection.

3. Presenting scientific and methodological approaches to preventing environmental degradation, creating coherence among environmentalists in order to enable the implementation of environmental projects and as well as the introduction of the natural environment and wildlife in Iran.

.4Provide background for discussing the problems of gardening is of goals of the solar building approach and the importance of the problem of life and environment and sustainable development; full participation of technology development leaders in this event with a brief description of the functions of the technology development leaders in quintet parts of awareness of the community about the problems in water sectors, uncontrolled cultivation, cultivate pattern, medicinal plants, herbal medicines have been intended.

5. Solar panels was designed suitable for winter and snowy weather. According to the Energy Hub reporting, if you live in an area where snow falls, you might think that solar panels will not be functional. This is while the solar panels will be better off after a bit of snow. Researchers at the Vlinneston Vermont Test Center, in collaboration with the Sindhi Lab, were able to test a new type of photo voltaic panels that also work in snowy conditions. One of the goals of Sindia Lab and its five main research centers is the development of solar panels for different weather conditions. This research has also been done in the same direction and has come to the end.

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