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GEOGRAPHIC INFORMATION SYSTEMS & REMOTE SENSING IN TRACKING SYSTEM FOR MAPPING RENEWBLE ENERGY SOURCES

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ABSTRACT

There are two driving forces behind renewable energy development: the threat of climate change and the need for countries to secure their own energy production. A significant part of most countries' energy production comes from burning fossil fuels. This process releases carbon dioxide (CO2), contributing to the greenhouse effect and global warming. Thus, governments are under pressure to promote and encourage new forms of energy production with zero CO2 emissions. Renewable energy is generally defined as energy that comes from resources that are constantly replaced in nature on a human timescale such as sunlight, wind, rain, tides, waves and geothermal heat, this is why is commonly accepted as the key for future life in the world.

The diverse natural environments found on the earth surface shows different potential uses of this kind of energy. In order to tap the potential of renewable energy sources, there is a need to assess the availability of resources spatially as well as temporally. Geographic Information Systems (GIS) along with Remote Sensing (RS) helps in mapping on spatial and temporal scales of the resources and demands and are well suited for identifying of these potential zones. Different tools as decision support system presented for forest biomass exploitation for energy, or finding future areas suitable for others renewable energy exploitation, are amply used according to the bibliography. For these reasons, the main objective of this review is to realize an integration of the information for the application of remote sensing and GIS, in some renewable energy.

INTRODUCTION

In material science, energy is a property of articles which can be exchanged to different questions or changed over into distinctive structures, however can't be made or crushed. The "capacity of a framework to perform work" is a typical depiction, however it is hard to give one single complete meaning of energy of its numerous structures. Case in point, in SI units, energy is measured in joules, and one joule is characterized "mechanically", being the energy exchanged to an item by the mechanical work of moving it a separation of 1 meter against a power of 1 newton. Then again, there are numerous different meanings of energy, contingent upon the setting, for example, warm energy, brilliant energy, electromagnetic, atomic, and so on., where definitions are inferred that are the most advantageous.

Basic energy incorporate the dynamic energy of a moving article, the brilliant energy conveyed by light, the potential energy put away by an object's position in a power field (gravitational, electric or attractive), flexible energy put away by extending strong items, synthetic energy discharged when a fuel copies, and the warm energy because of an object's temperature. The greater part of the numerous types of energy are convertible to different sorts of energy, and comply with the law of protection of energy which says that energy can be neither made nor be crushed; in any case, it can change starting with one shape then onto

the next. For "shut frameworks" with no outer source or sink of energy, the first law of thermodynamics expresses that a framework's energy is steady unless energy is moved in or out by mechanical work or warm, and that no energy is lost in exchange.
This implies it is difficult to make or pulverize energy. The second law of thermodynamics expresses that all frameworks doing work dependably lose some energy as waste warmth. This makes a point of confinement to the measure of energy that can do work by a warming process, a breaking point called the accessible energy. Mechanical and different types of energy can be changed in the other course into warm energy without such impediments. The aggregate energy of a framework can be figured by including all types of energy in the framework.
Cases of energy change incorporate producing electric energy from warmth energy by means of a steam turbine, or lifting an item against gravity utilizing electrical energy driving a crane engine. Lifting against gravity performs mechanical work on the item and stores gravitational potential energy In the article. On the off chance that the article tumbles to ground, gravity does mechanical work on the item which changes the potential energy in the gravitational field to the active energy discharged as warmth on contact with the ground. Our Sun changes atomic potential energy to different types of energy; its aggregate mass does not diminish because of that in itself (since regardless it contains the same aggregate energy regardless of the possibility that in distinctive structures), yet its mass decreases when the energy getaways out to its surroundings, to a great extent as radiant energy.

RENEWABLE ENERGY:

Energy exists unreservedly in nature. Some of them exist endlessly (never run out, called RENEWABLE), the rest have limited sums (they took a huge number of years to shape, and will run out one day, called NON-RENEWABLE).

There are numerous types of renewable energy. The greater part of these renewable energies depend in somehow on daylight. Wind and hydroelectric force are the immediate aftereffect of differential warming of the Earth's surface which prompts air moving about (wind) and precipitation framing as the air is lifted. Sun based energy is the immediate change of daylight utilizing boards or authorities. Biomass energy is put away daylight contained in plants. Other renewable energies that don't rely on upon daylight are geothermal energy, which is an aftereffect of radioactive rot in the covering consolidated with the first warmth of accumulating the Earth, and tidal energy, which is a change of gravitational energy.

Solar power: This type of energy depends on the atomic combination power from the center of the Sun. This energy can be gathered and changed over in a couple of diverse ways. The reach is from sun oriented water warming with sun powered authorities or storage room cooling with sun oriented loft fans for residential use to the unpredictable advances of direct transformation of daylight to electrical energy utilizing mirrors and boilers or photovoltaic cells. Lamentably these are as of now lacking to completely control our current society.
Wind Power. The development of the climate is driven by contrasts of temperature at the Earth's surface because of fluctuating temperatures of the Earth's surface when lit by daylight. Wind energy can be utilized to pump water or create power, however requires broad areal scope to deliver critical measures of energy.
Hydroelectric energy. This structure utilizes the gravitational capability of raised water that was lifted from the seas by daylight. It is not entirely talking renewable since all repositories in the end top off and require exceptionally costly removal to end up helpful once more. As

of now, the vast majority of the accessible areas for hydroelectric dams are as of now utilized as a part of the created world.

Biomass is the term for energy from plants. Energy in this structure is generally utilized all through the world. Sadly the most prevalent is the smoldering of trees for cooking and warmth. This procedure discharges extensive measures of carbon dioxide gasses into the climate and is a noteworthy giver to horrible air in numerous territories. A percentage of the more present day types of biomass energy are methane era and creation of liquor for car fuel and filling electric force plants.

Hydrogen and energy components. These are additionally not entirely renewable energy assets but rather are extremely copious in accessibility and are low in contamination when used. Hydrogen can be smoldered as a fuel, commonly in a vehicle, with just water as the burning item. This perfect smoldering fuel can mean a noteworthy diminishment of contamination in urban communities. On the other hand the hydrogen can be utilized as a part of energy units, which are like batteries, to control an electric engine. In either case huge generation of hydrogen requires rich influence. Because of the requirement for energy to deliver the beginning hydrogen gas, the outcome is the migration of contamination from the urban areas to the force plants. There are a few promising routines to create hydrogen, for example, sunlight based force, that may adjust this photo radically.

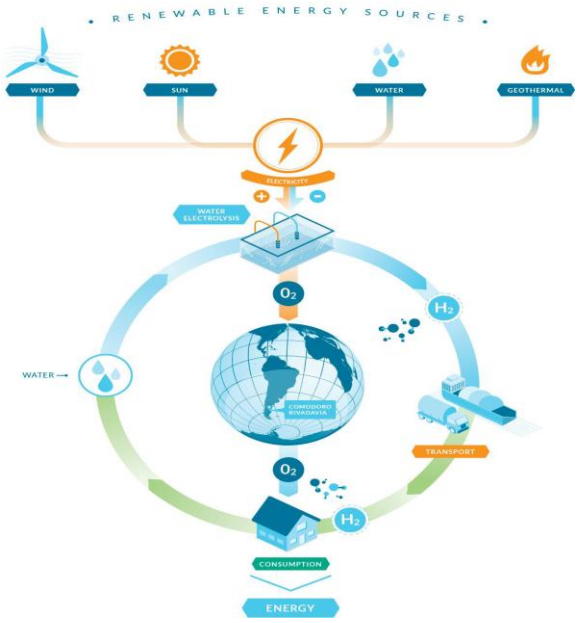

Figure 1: Renewable energy sources

OBJECTIVES OF THE STUDY:

The aim of the survey is as follows:

• The gain knowledge of being an evaluation of the GPS/GIS mapping process.

• In this be taught, Wi-Fi sensor network routing nodes are cast aside inside the sub-discipline of study.

• The reason of the be trained is to present the more than a few surveys and mapping of renewable energy sources.

• All the discipline information can also be categorized into one-of-a-kind layers in GIS and proven on the GIS map based on their GPS role.

• In the unattended computerized Wi-Fi clever technology for the area know-how assortment and control can quite simply make use of hardware assets, enhance the field know-how intelligent administration and scale down the information and intelligent pace.

• They learn implements analyzed developed GPS/GIS within the metropolis of Hyderabad to search out make it an intelligent city in India.

PROBLEM STATEMENT:

• The system for updating knowledge which is collected via GPS/GIS approaches.

• The development of digital computing applied sciences has had a large have an impression on both architecture and concrete preparation.Many computing purposes had been applied to help the process of architectural plan and concrete preparation.

- At the reward, the explosion of late and quite a set of information types from a type of sources can contribute to success, however a fine measure of information approach is needed and replacing these data are nonetheless colossal challenges.

CONCLUSION

The analysis of the results drawn at various stages of the work revealed that integration of Remote Sensing and GIS are effective tools for the preparation of various digital thematic layers and maps showing spatial distribution of various Renewable energy sources in Hyderabad. Overlaying spatial distribution water quality maps on Satellite imagery is a very authenticate concept to identify the Renewable energy sources in Hyderabad and to correlate them with the land use .
Monitoring of land use / land cover patterns and its trends with respect to urbanization is an important task for achieving sustainable management of Renewable energy sources. An integrated Remote sensing and GIS study proves to be an essential tool to evaluate and quantify the impacts of land use / land cover on Renewable energy sources.
This review has demonstrated that Geographic Information Systems (GIS) helps in mapping on spatial and temporal scales of the resources and demand of energy and this would help in the regional energy planning. GIS provided the means for identifying, and quantifying the factors affecting the available solar and wind energy potential.

Hyderabad has great potential for renewables, mainly due to its varied geography and climate throughout the country. An example would be that wind power farms could be installed in south of the country where the winds are constant year round. The country has also high solar energy potential, because the region of the earth between the latitude of 40°N and 40°S is generally known as the solar belt and this region is supposed to be with an abundant amount of solar radiation.

Remote sensing plays an increasing role in EBC research, especially regarding large spatial and/or long-term temporal scales. Moreover, the use of remote sensing deepens with the support of state-of-the-art remote sensing products and technology.

Certainly, it is impossible to make progress without the assistance of GIS and GPS. It is believed that remote sensing will develop in a path similar to that of computer science, which has penetrated all aspects of human life. EBC performs as a propeller to push up the naissance of advanced remote sensing instruments and techniques.

This paper has described the notion of "energy landscapes" and some associated concepts. "Energy landscapes" establish a link between views on energy commodities and their spatial footprints on the one hand, and the 'energy landscape' concept and how people think about geographic space on the other hand. Such "energy landscapes" may in future become a valid intuitive concept for spatial planning and may provide spatial analysis capabilities and methods with which to plan future courses of action. We consider our framework to be a starting point, aiming to stimulate inter-disciplinary discussions between energy experts, spatial planners and (speculatively), future "energy landscape" managers.

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