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Contribution of Alternative Energy in Current Era

*Traditional energy sources have served mankind past many years but with the it is alarming that passage of time these traditional energy resources are exhausting and indicates to switch over to some alternative sources. Whatever resources we use whether coal, gas, nuclear or geothermal, one factor is common that they convert heat to electricity. Under this research awareness about renewable energy resources are tried to be found. **Objective** : The purpose of this research is to explain the need and importance of alternative energy resources to everyone. This study would demonstrate the difference between the contribution of different states in the field of Alternate Energy Resource and to find out that whether actually people are aware of alternative energy resources and how much it contributes in national electricity generation past 4-5 years. **Methodology** : Quantitative Research Method, Descriptive Research Method. **Key Words** : Alternate Resource, Fossil Fuel, Geothermal, Kinetic.*

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Introduction :

Alternative Energy is an energy which is alternative to Fossil Fuel and renewable source of energy that's also called free energy as they can be used number of times. Alternative Energy emits less carbon-dioxide in the nature in comparison with Traditional (Natural Resources) of energy.



Types of Alternative Energy Resources :

- (1) Hydro Electricity,
- (2) Wind Energy,
- (3) Geothermal Energy,
- (4) Nuclear Energy,
- (5) Bio-Fuel and Ethanol and
- (6) Hydrogen.

(1) Hydro Electricity : This is a kind of energy which is produced in different water bodies. It is available in many forms, energy which is retained in dams from high heads of water, Kinetic energy from rivers, tidal barrage and also from waves on relatively static water bodies. In today's era many different ways are developed for the hydro harness of energy.

(2) Wind Energy : Power generation from will is a process of converting kinetic energy of wind into power into electrical power. This was the one of the oldest inventions and people are using it for many purposes.

(3) Geothermal Energy : Geothermal energy can be explained as GEO(Earth) + THERMAL (Heat). This is an uncommon type of energy resource, under this power is

generated by the steam produced by heat emanating from the molten core of the earth or by drilling water or steam wells.

(4) Bio-Fuel Energy : It is a type of fuel which is produced Through biological process, for example agriculture and anaerobic digestion, instead of fuel generated by geological process like formation of fossil fuels. Bio fuel are generated by Agriculture crop residues such as cotton straw, rice straw and husk, wheat straw, corn cobs, grass, dry waste etc. It is comparatively cost efficient process.

(5) Nuclear Energy : This kind of electricity is generated by atomic reaction. An atomic reaction is capable of producing an alternative sources of electrical power, which coal, gas or oil can produce.

(6) Hydrogen Energy : Hydrogen is another source of electric power generation and it is promoted as one of the best environmentally friendly fuel of the future. It is promoted because it is generated from water and returns to water when it is burnt. As it is 10th most abundant element of the earth so it is easily available and it will last even when the fossil fuels will be exhausted. Best is thing about it is it is odourless and non toxic.

Objective of The Research :

(1) The main objective of the study is to find out the contribution of alternative energy resources in India.

(2) To know about the awareness of Indian people about alternative energy resources.

(3) To find the benefits of the alternative energy resources.

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Difference Between Traditional and Alternative Energy

S. N.	Basis of Difference	Traditional Energy	Alternative Energy
1	Meaning	This type of energy resources are of non durable types. Once it is consumed cant be replenish.	This is a type of energy source that is an alternative to the fossil fuel. It can be consumed again and again.
2	Carbon-dioxide	Here carbon dioxide emission is the main concern.	These sources prevent carbon dioxide emission.
3	Types	Crude oil, Kerosene, Petroleum and diesel, Coal	Marine energy, hydroelectric, wind, geothermal and solar power etc.
4	Effects on environment	Has a bad effect on environment because Carbon extracts are more while converting heat into electricity.	Most of them have actually developed as Eco friendly method and extraction of harmful substance are very less
5	Durability	These resources are of non durable type. As we consume, these can't be renewed. It takes time of thousands of years.	These resources are durable in nature and nature produces it everyday so can't be exhausted.

Research Methodology :

Two main research methods are used while conducting this research study :

- (a) Descriptive Research Method and
- (b) Quantitative Research Method.

(a) Descriptive Research Method : This method is used where a particular situation or a phenomenon is studied and this method also describes the characteristics of a situation. This method answers the question of 'What' rather than 'Why and How'. It is a statement of affair which describes the situation as it is.

(b) Quantitative Research Method : This research method is known as a systematic investigation of data which can be analyzed with the help of stastical or mathematical tools like statistics, Percentage, Average etc. This method connects the empirical observation and mathematical expressions of data.

Limitations :

Research is a process of finding some thing unrevealed related to the topic. When researcher starts finding the facts before that he has to develop few assumptions under which his/her study will be developed. Every research must has it's own limitations. In this research few things are there :

Analysis of Research :

Table 1 : Data Collection on Renewable Energy Generation in Last 4 Years (In GWh)

Year	Hydro Energy	Solar Energy	Wind Energy	Bio Mass	Other	Total Energy	% of Total Energy	Total Energy
2014-15	137304	4600	28214	14944	414	191025	17.28	1105446
2015-16	129732	7450	28604	16681	269	187158	16.02	1168359
2016-17	129986	12086	46011	14159	213	204182	16.52	1236392
2017-18	131190	25871	52666	15252	358	227973	17.50	1302904

(i) Research is based on secondary data.
 (ii) Though the criteria of alternative energy is not that new but awareness about this criteria among Indian people is very resent. So analysis has been conducted on past four years.

(iii) The study has been conducted on all India level.

(iv) Four different type of alternative energy resources have been taken for the purpose of analysis.

Problems :

Every Research concludes with some pros and cons, and some hurdles will always be there. few of them are as follows :

(i) Graphical area is a big hurdle in alternative energy resources. Because each and every area is not bless with every resources. People are aware of those energy resources which are available at their near by areas.

(ii) Though these energy generation plants lasts for very long period of time and cost of generation of energy is very low in comparison of traditional energy resources but these plants required high installation cost.

(iii) People are orthodox in nature so they don't accept new things very easily.

Suggestions :

(i) Every Problem has one or other solutions, as per our Research we too have some suggestions which can contribute to reduce the dependence on Traditional energy source.

(ii) These sources should be encouraged by government. So that people will get detailed information about these energy resources.

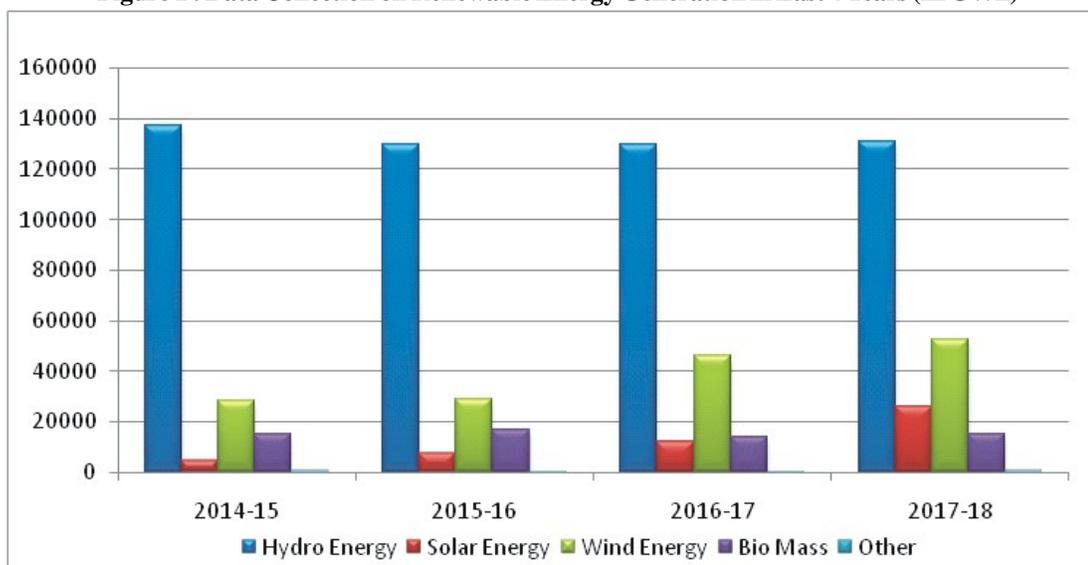
(iii) Some power plants can be used by household as well as for commercial purpose. So awareness will generate the demand of such kind of power plants.

(iv) Government can sale electricity generated by these power plants, which will save environment as well as society will be served by lower cost power.

Conclusion :

After the Deep observation and Study of available information and analysis of data we reach to the conclusion that the Renewable Energy Generation has been achieving

Figure 1 : Data Collection on Renewable Energy Generation in Last 4 Years (In GWh)



great importance in the development of the different sector of the Indian economy. In spite of different problems we can see in above analysis that in the year of 2016-17 Alternative energy generation has got good speed and success. Hydro Energy got first position in the generation of Power and electricity and Wind Energy comes second in the above analysis.

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Farmers Suicide

As announced by the Indian government recently crop insurance may be the best solution to the major problems of farmers related to standing crops which can be destroyed by natural calamities and due to sparking of electricity. In crop insurance the farmers are to be paid the amount by which the crop has been insured and he can get some financial relief. Various institutional land reforms like consolidation of holdings and cooperative farming will enhance the size of land holdings where technical and scientific cultivation is possible, per hectare yield can be increased which leads to more incomes to farmers results in financial and social security.

ANU BALA

More than 60 percent of India's population depends upon agriculture and allied activities directly or indirectly. But in recent 5 year plans and economic reforms, this sector has not given due importance as compared to industrial and tertiary sector. In first 5 year plan, fifteen percent of the total outlay was used for agriculture and in 11th five year plan it is just 7% of total outlay. Indian farmers have been in financial crisis for long time and the farmers suicide has become one of the most important socio-economic issue in India. Suicide by a large number of farmers during last two decades is a clear indicator of emerging agrarian crisis and farmers distress. According to National crime record bureau (NCRB) there were 13754 farmers suicide in India, in 2012, the maximum were in Maharashtra. In the year 2001, total number of suicides were 16415 and 3536 were in Maharashtra, 2505 in Kerala and 45 in Punjab. According to a research, there is one farmer suicide in every 41 minutes in India. In Punjab 449 farmers committed suicide last year reached at second position in all India. State of Maharashtra is at top. In the year 2015 average 5 farmers had committed suicide in every two days.

According to National Sample Survey Office (NSSO) Large Number of farmers in country are not interested in Agriculture .80 percent farmers do not want their sons to be agriculturists.

There are many causes in India for farmers suicide. The most crucial of them are as below :

(1) The most important cause is the increasing cost of inputs like cost of tubewell, tools, tractors, HYV seeds, fertilizers, pesticides etc. and the output or benefits derived are not enough to recover even these costs.

(2) The argument is that government is providing

subsidies for these inputs. But the small and marginal farmers are not benefitted by these subsidies. The deserving farmers does not receive the required benefits.

(3) Another crucial cause is indebtedness. Indian farmers take birth in debt, lives in debt and dies in debt. He is illiterate and can't maintain the accounts of debt and it's interest. So once he tied himself in clutches of debt, can't get rid of it in his whole life and generations after.

(4) The Indian farmers have to spend a lot of on unproductive activities like marriage of a daughter and on others social rituals. Recently a farmer had committed suicide on a day of marriage of his daughter. Due to these social and family responsibilities, the expenditure upon them is also a major reason behind farmers suicide.

(5) The natural fertility of land is decreasing day by day because the cultivation on Indian land has been done since centuries . That's why water level is also going deep & deep day by day.

(6) Less development of banking facilities in rural areas is the cause of indebtedness of Indian farmers. Private banks have no interest in lending agricultural loans. So farmers have to depend upon Mahajan's and Shahukars for economic and social needs. Majority of Farmers who are driven to take such a horrible step borrow from private money lenders including commission agents under emergency situations on exorbitant rate of interest. They are not able to repay these loans because these are used for unproductive purposes that do not generate any addition repaying capacity. When these borrowers are pressed for repayment they are often compelled to resort bank loan.

(7) Indian agriculture is gambling of monsoon. If there

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Number and Rate of suicide for the General population and Farmers in the Major States of India, 2001

Sl. No.	State	Number of Suicides		Farmers suicides as a percent of all suicides	Suicide rate (per 100,000 members)		
		Among Farmers	Among all Population		In general population	Among Farmers	
						With all Cultivators considered	With only main cultivators considered
1	Maharashtra	3536	14618	24.2	15.1	29.9	34.7
2	Karnataka	2505	11881	21.1	22.5	36.4	40.5
3	Andhra Pradesh	1509	10522	14.3	13.8	19.2	20.4
4	Chhattisgarh	1452	4025	36.1	19.4	33.7	41.6
5	Madhya Pradesh	1372	6860	20.0	11.4	12.4	15.4
6	West Bengal	1246	13690	9.1	17.1	22.0	27.3
7	Kerala	1035	9572	10.8	30.1	142.9	176.5
8	Tamil Nadu	985	11290	8.7	18.1	19.3	20.8
9	Uttar Pradesh (incl. Uttarakhand)	709	3827	18.5	2.2	3.0	3.7
10	Gujarat	594	4791	12.4	9.5	10.2	12.6
11	Rajasthan	505	3195	15.8	5.7	3.8	5.3
12	Orissa	256	4052	6.3	11.0	6.0	7.5
13	Assam	167	2647	6.3	9.9	4.5	6.2
14	Haryana	145	2007	7.2	9.5	4.8	6.5
15	Pondicherry	91	529	17.2	54.3	834.9	865.8
16	Bihar (incl. Jharkhand)	88	853	10.3	0.8	0.7	0.9
17	Punjab	45	648	6.9	2.7	2.2	2.4
18	Tripura	41	854	4.8	26.7	13.1	16.2
19	Himachal Pradesh	22	307	7.2	5.1	1.1	2.0
20	Goa	18	256	7.0	19.0	35.7	60.7
21	Jammu & Kashmir	15	153	9.8	1.5	0.9	1.6
All India		16415	108506	15.2	10.6	12.9	15.8
Coefficient of variation (%) (n=21)		116.3	93.4	---	82.3	299.0	280.6

Source : ADSI, NCRB, GOI, 2001.

is adequate and required rainfall, the fields give better results. Otherwise the result is drought or flood. In the last decade in Maharashtra 90% of the total farmers suicide were because of drought. In India two third land is not under assured irrigation.

(8) The whole world is facing the problem of environmental disturbance. In India when we expect fog for wheat there is rainfall and when rainfall is expected there is only moisture. This was the practical scene in 2015. This environmental disturbance results in unexpected seasonal variations and the result is less output.

(9) Agricultural profession is a seasonal occupation. In many states of India, farmers work only for few months in fields and for rest of the year they remain idle. So the average family income of farmers is very low and if they do not receive proper output for that few seasonal months then they have to face financial crisis.

(10) Joint family system in rural areas gives birth to the problem of disguised unemployment particularly in agriculture. The burden of whole family is on the shoulders of the head of the family and the persons who can surplus the income of the family takes no interest because their lives are running without any efforts and when agriculture does

not give enough income to serve all the members of a family (10 to 15). The head of the family remains with only one solution that is suicide.

(11) Now a days farmers are drug addicted and drunkards. They try to find the solution of all problems in drugs which leads to health problems, this results in death or suicide. The health problem to any of the family member deepens the financial crisis of farmers and when they seek no relief they find the solution in the form of suicide.

(12) Beside above, now in so called rich states like Punjab, the rural farmers who have some extra income adopted the luxurious lifestyle. They just waste their extra income on unproductive activities. To copy that lifestyle, small farmers, youngsters take loan from banks for purchasing a tractor or installing a tube well but spend it on unproductive activities.

(13) There are non standardized weights and measures and no proper arrangements for standardization of agricultural products. Non existence of regulated agricultural markets, also limits the income of farmers. They are not paid even the minimum support price for their produce so they become the victim of financial crisis which may lead to suicide..

In new economic policy of liberalization, privatization and globalization there is a problem of selling raw material of

commercial agricultural products at competitive prices in such cut throat competition the Indian farmer does get the satisfied amount for the product.

(14) Because of the high rate of population growth the demand for land is increasing but area under cultivation is decreasing day by day. In India per hectare holding is very less as compared to other countries. The average size of marginal holding is .41 hectare and that of small holding is 1.4 hectare much lower than the upper class limit of 2 hectare. So there is less scope of cultivation by scientific means that's why per hectare yield is also less.

(15) Sparking of electricity on ripped crops completely destroys the whole output, ruin the farmer financially, breaks him internally compels him to suicide.

(16) Indian farmer is facing the problem of storage of agricultural produce that's why he has to sell the product in haste at lower price or to the middlemen. In both the cases he does not receive the reasonable price of his hard work.

Because of the above reasons Indian farmers seems to be hopeless, helpless, in depression and having no inspiration and faith. Now the question is how to overcome and solve these problems? Following are the some remedies which can help the farmers and some hope can be enlightened in their hearts for life.

(1) As announced by the Indian government recently crop insurance may be the best solution to the major problems of farmers related to standing crops which can be destroyed by natural calamities and due to sparking of electricity. In crop insurance the farmers are to be paid the amount by which the crop has been insured and he can get some financial relief.

(2) Various institutional land reforms like consolidation of holdings and cooperative farming will enhance the size of land holdings where technical and scientific cultivation is possible, per hectare yield can be increased which leads to more incomes to farmers results in financial and social security.

(3) In the various technical reforms the inputs like the High yielding variety seeds (HYV), fertilizers and tools should be provided on easy loan basis or subsidies should be ensured on pesticides and fertilizers to the deserving farmers.

(4) As stated earlier that agriculture is a seasonal occupation, so farmers and other family members should involve themselves in other related activities like poultry farming, dairy farming, animal husbandry etc, in the months when they have no work in fields so that they can surplus their income.

(5) Government should grant loans on feasible conditions for development of small scale and cottage industries in villages where all the family members can involve themselves productively.

(6) The banking facilities should be developed in rural areas where loans to be granted only for productive purposes on less rate of interest. The activities of private banks must be regulated to ensure that they are taking interest for the

development of rural and agricultural development. NABARD and RBI must immediately take necessary steps in this regard.

(7) The activities of Mahajans and rural money lenders should also be regulated to ensure that they grant loans only for productive purposes.

(8) There should be standardization of agricultural products and standardized weights and measures should be used. Regulated markets should be established near villages where farmers can get at least minimum support price for their product. Necessary steps should also be taken by Government for storage of agricultural products so that farmers can wait until they receive competitive market price.

(9) Free irrigation facilities should be provided by the Government to small and marginal farmers and continuous supply of electricity should be made sure when required.

(10) The debt recovery system from the small farmers should be relaxed in those years in which the output is less or completely destroyed.

(11) It should make compulsory for foreign investors to take raw materials from Indian farmers on priority basis at reasonable prices.

(12) Above all, recommendations of national commission on agriculture should be implemented. Swaminathans recommendation of minimum support price of cost plus 50% should be adopted.

(13) In the budget of 2016-2017 44485cr has been reserved for agricultural development. This allocation has almost doubled. The farmer's income can also be doubled by proper reorient interventions of the Government which is a good sign. Let us hope for the best.

It is better to take preventive measures from both social and economic side.

(a) Educate the farmers

(b) Provide medical facilities.

(c) Give him proper counseling on social and economic matters. So that Indian farmer never thinks about suicide.

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