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Role of Renewable Energy Sources in Environmental Protection using WASPASS Methodology

[*]Chandraprakash Shivram Padmavat
International Centre of Excellence in Engineering and Management, Aurangabad, Maharashtra, India.
*Corresponding Author Email: drcspadmavat@gmail.com

Abstract: Renewable energy is from natural sources Energy is received at a greater rate than they are consumed are filled. For example, resources, etc as sunlight and wind are continuously replenished. Until the 1990s hydropower and wood were the main renewable energy sources. Since then, U.S. energy consumption has grown from “Bio fuels, geothermal energy, solar energy and wind energy. Renewable energy” is like the sun and wind is the energy produced from the sources, which are naturally replenished and perennial. Renewable Electricity generation, space and water heating and cooling, and transportation can be used. Generates Greenhouse gas from fossil fuels is Energy that does not generate emissions and some types Reduce air pollution. Energy supply Diversified and imported Reducing dependence on fuel. Manufacturing, Installation and economic growth, and employment among others Creation. Renewable energy – gas, oil, or coal unlike fossil fuels renewable energy is defined as - 2,000 years ago it started in Europe. Of course, it's the brutal format, but it is today's technological achievements that set a precedent. All this with 'Waterwheel' started, which means working backward hydroelectricity. Alternative: “Ability to retain infrared radiations compared to CO2, Pre industrial concentration, Present concentration, Share in the greenhouse effect due to human activity (%)”. Evaluation Option: CO_2, CH_4, N_2O, R-11, R-12. Result: As a result, CO2 and ranked first, whereas R-12 has the lowest ranking. Conclusion**:** The value of the dataset for Renewable energy in WASPAS method shows that it results in CO2 and top ranking.

Keywords: CO2, N_2O, CH_4, Pre industrial concentration.

1. Introduction

“One solution to the impending energy shortage is renewable abundant energy sources and technologies are used. Sometimes this rationale leads to extravagant and impossible claims. Engineering practice, reliability, applicability, Economy, supply shortage and general Consider all acceptability want Ultimately, of course, all energy on Earth Supplies are also derived from the Sun and Solar energy provides continuous energy”, [1] It shows the technological potential of six major groups For renewable energy. Between fresh water and seawater, some are very small, such as the change in osmotic pressure Only potential RE sources are avoided. The sea in the energy category wave, ocean current and tidal energy, and ocean thermal energy conversion. Solar, Technological potentials for wind, water, and ocean energy as the total production of potential electricity are provided. [2] "Renewable energy" “Sunlight, wind, flowing water, Earth's internal heat, and such as energy crops, agriculture, and” biomass Based on self-renewable energy sources Energy derived from various resources. Factory Garbage and Municipal Waste. All these resources for economic sectors and electricity and transport Fuel and Buildings and Industry Can are used to produce heat for processes. [3] Renewable sources like wind and solar only a very small share of the total supply contains However, the potential is considerable. In some regions and countries, over the past two decades, the share of renewable energy has grown significantly. [4] Stocks of buried energy relics Instead of relying on curtailment, renewable energy the story behind the solution is renewable natural energy Power our communities by harnessing flows advises to provide Climate change as awareness about renewable increases the concept of energy has become more powerful global "attention device", [5] Energy and Resources Institute Renewable Energy Research Institute is engaged Biomass combustion and gasification In the field of technology. Have been successfully established in the sector with more established capacity. [6] This is very important, and common in grassroots social programs Part of the rationale for investment is greenhouse gas emissions Beyond their impact on reducing emissions, such Projects 'work in the hearts and minds of local people and have broad catalytic effects cause'. [7] Future growth in the energy sector is renewable It is clear that there is primacy in governance. Therefore, switching to renewable energy reduces greenhouse gas emissions this will help achieve the dual goals of reducing “Future extreme weather and climate impacts Controls and reliable, timely, and Ensures cost-effective energy” supply. [8] Renewable energy (RE) offers a strong opportunity to mitigate climate change and replace fossil fuels, which we focus on here. Currently, RE share in global trade the energy is less than 10%, but rises slowly [10]. “With the recent rapid development of sustainable energy, Demand for technologies and low-emissions as the generation increases, of renewable energy Application is promising for islanded power grids Shows opportunities. Technical and economic from the features, it is Island power is the most feasible alternative to fossil fuels with renewable energy” [11]. Hydropower is the best renewable energy source, inexhaustible, Non-polluting, and more economical than other options the general consensus is that it's technically very attractive There is an opinion. Hydroelectric plants are more than thermal plants emitting fewer greenhouse gases. Greenhouse gases from hydropower Degradation of vegetation in floodplains and Heavy use of cement in dam construction Caused by use. [12] A including heating systems and bio fuels A whole industry for using renewable energy Techniques must also be developed. Thirdly, Industry oriented towards global markets As changes, the share of exports as in previous studies Cannot be ignored. [13] As countries' renewable energy preference exceeds “Non-renewable energy use and carbon intensity will be reduced; Thus, the achievement rate of this goal will increase. As a result, today's society” is its own Very little environmental impact while meeting the needs pollutes the level, and the future society is its own Adequate resources to meet needs have [14] “To contribute to the policy debate on the management of the energy sector transformation process. In the previous sections, we revealed the central stimulating and inhibiting mechanisms for the diffusion of renewable energy technology and analyzed the dynamics of the transformation process. In both successful and less successful cases” [15] Scaling Enhancement of existing risk reduction mechanisms: DFIs, insurance companies, and export credit such as warranties and insurance from increased use of existing risk reduction tools Construction and operational risks for projects Agencies to Manage Renewable Energy Construction to help finance projects. [16] Renewable energy is the main way in this scenario. The available potential of renewable energy can be explored and used to meet energy needs. It is our nature to cope with the crisis of energy like the hydro, solar, wind, and bioenergy Different sources of renewable energy contain with huge energy potential, these renewable sources will reduce the power generation problem in the future. [17]

2. Methods and materials

Both weighted aggregate Product Assessment (WASPAS) and Ratio Analysis (MOORA) based multi-objective methods Optimization is to achieve single response properties To normalize multiple response characteristics were implemented. Statistics on MRR, CF and SR to examine statistically significant parameters ANOVA is carried out. [1] This method is a well-known weighted sum model and an individual composition of a weighted product sample approach. Behind WASPAS Mathematical Principles in Comparative Simple ones, and that too with traditional methods Provides more accurate results compared to capable of [2] One of A place Creating a wave power project is a very challenging problem This study is of FAHP and WASPAS methods Basically the potential of tidal energy on the Vietnamese coast based on MCDM model for estimation of locations describes. [3] WASPAS, and TOPSIS methods should be used. Best of many alternatives, using MCDM methods the choice of energy scheme is considered works. [4] Evaluations were made using criteria Literature review and past research basically determined. And WASPAS To evaluate criteria and alternatives is used. Priority is nanotechnology its purpose is to identify applications explored. [5] In WASPASS method, entropy and divergence A formula scale based on measurement Developed to detect weights. This For purpose, many intuitions for IFT2S Fuzzy entropy and variance measures have been created. [6] The classical WASPAS method is objective and Issues under subjective criteria Extended to handle. In this manner, proposed entropy and divergence Weights of criteria using measures are calculated. [7] Multi criteria Decision-making methods address many sustainability issues Powerful and flexible to solve Techniques. A new extension of the WASPAS method is WASPAS- SVNS. This extension is single-valued structure of the neutrosopic synthesis perceived, [8] the method is used Proximity of the optimal solution to the positive VASPASS method maximize, the best solution is the negative best To reduce its proximity to solutions. Every this also calculates the distance of weighted substitution the method is easy to use. [9] Help practitioners and educators adopt WASPAS and SWARA in various application areas New MCDM application techniques like and Provide insight into the literature. [10] New entropy, divergence and similarity for IVIFSs Actions are proposed. MCDM Classical WASPAS method for handling problems as an extension, for space value Classical WASPAS method intuitionist fuzzy contexts Suitable. [11] Approach IT2FSs operators, classical WASPAS Some changes in methodology and weighting criteria a new process for calculating based on Scale weight in the calculation process, [12] by of Managed Edge Detection Algorithms A new MCDM for visual features of satellite images the problem is devoted to adaptive testing we create. Also, using the neutrosopic WASPASS method. [13] WASPAS methodology for final assessment of 3PL providers is used. Of the classical WASPAS method Steps WASPAS-CRITIC integrated with IT2FS Used to expand the approach. [14] “The WASPAS method is a weighted sum model and the weighted product model” A mixture ranks the alternatives thoroughly are used of Critic and WASPASS methods A new composition-based this approach to decision-making literature this is an important contribution article. [15]

3. Analysis and Discussion

This table 1 shows that the value of dataset for Renewable energy in WASPAS method Alternative: Retains infrared rays compared to CO2 Capacity, pre-industrial concentration and current Concentration in the greenhouse effect due to human activity Stock (%). Evaluation Option: CO_2, CH_4, N_2O, R-11, R-12.

TABLE 1. Renewable energy in Data Set

	DATA SET			
	Ability to retain infrared radiations compared to CO2	Pre industrial concentration	Present concentration	Share in the greenhouse effect due to human activity (%)
CO2	55.08	269.53	20.15	23.05
CH4	45.12	372.97	29.69	24.3
N2O	48.08	382.58	29.18	33.1
R-11	49.17	398.28	24.6	27.59
R-12	51.33	246.41	27.96	38.89

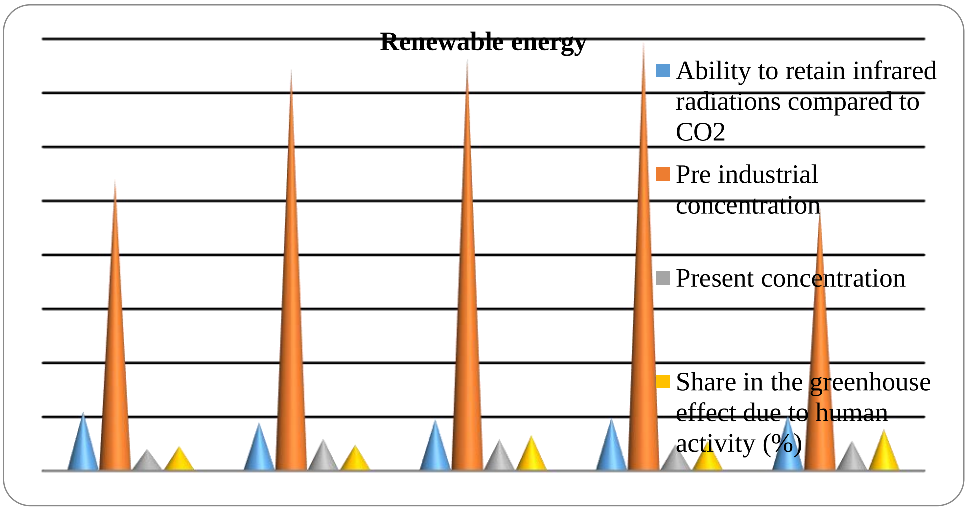

FIGURE 1. Renewable energy in Data Set

This figure 1 shows that the value of dataset for Teacher in higher education in WASPAS method Alternative: Retains infrared rays compared to CO2 Capacity, pre-industrial concentration and current Concentration in the greenhouse effect due to human activity Stock (%). Evaluation Option: CO_2, CH_4, N_2O, R-11, R-12.

TABLE 2. Renewable energy in Performance value

Performance value			
1	0.676735	1	1
0.819172	0.936452	0.67868	0.94856
0.872912	0.96058	0.690541	0.696375
0.892702	1	0.819106	0.835448
0.931917	0.618685	0.720672	0.592697

This table 2 of renewable energy in the WASPAS system displays the values. To find out pair wise comparison value for CO_2, CH_4, N_2O, R-11, and R-12.

TABLE 3. Renewable energy in Weight age

Weight			
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25
0.25	0.25	0.25	0.25

Table 3 Renewable energy on weight in all weight ages same weight

TABLE 4. Renewable energy in Weighted normalized decision matrix 1

Weighted normalized decision matrix 1			
0.25	0.169184	0.25	0.25
0.204793	0.234113	0.16967	0.23714
0.218228	0.240145	0.172635	0.174094
0.223175	0.25	0.204776	0.208862
0.232979	0.154671	0.180168	0.148174

This table 4 shows that the values of Renewable energy in WASPAS method Weighted normalized outcome matrix 1. CO_2, CH_4, N_2O, R-11, and R-12.

TABLE 5. Renewable energy in Weighted normalized decision matrix 2

Weighted normalized decision matrix 2			
1	0.906994	1	1
0.951358	0.98372	0.907645	0.986884
0.966591	0.989996	0.911586	0.913505
0.972023	1	0.951338	0.956048
0.982527	0.886885	0.921371	0.877421

This table 5 shows that the values of Renewable energy in WASPAS method Weighted normalized outcome matrix 2. CO_2, CH_4, N_2O, R-11, and R-12.

TABLE 6. Renewable energy in Priority score 1, priority Score 2 and WASPASS coefficient and ranking

	Preference Score	Preference Score	WASPAS Coefficient	RANK
CO2	0.919184	0.906994	0.913089	1
CH4	0.845716	0.838296	0.842006	3
N2O	0.805102	0.796864	0.800983	4
R-11	0.886814	0.88408	0.885447	2
R-12	0.715993	0.704457	0.710225	5

This table 6 shows that the values of Renewable energy in Priority score 1, priority Score 2 and WASPASS coefficient and ranking For Product recommendation using WASPAS. Find the pair wise comparison value for CO_2, CH_4, N_2O, R-11, and R-12.

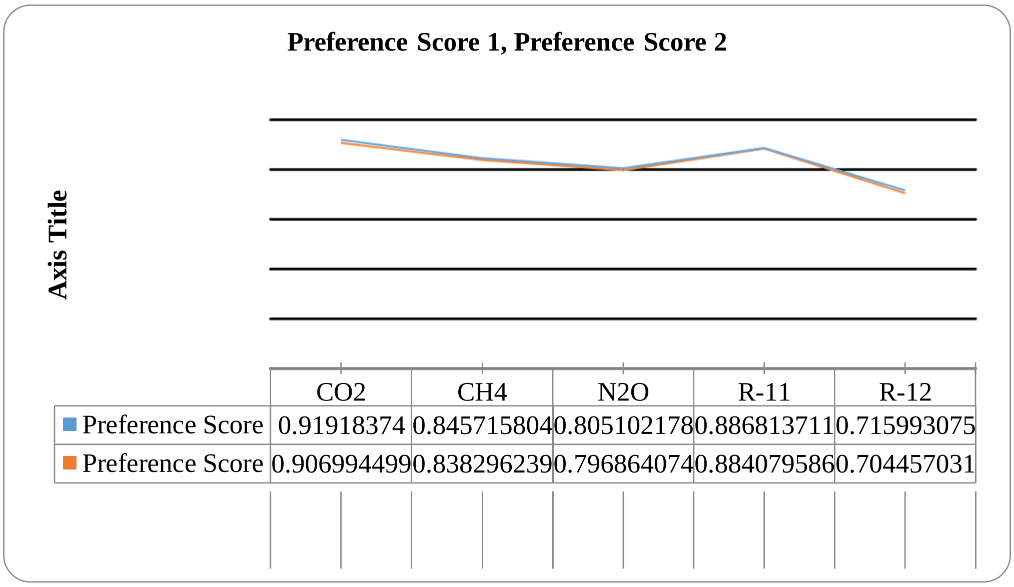

FIGURE 2. Renewable energy in Preference Score 1, Preference Score 2

This That's from renewable energy That's from renewable energy Figure 2 shows that it is observed CO2 = 0.919184 and got the first value R-12 = 0.715993 got is having the lowest value. This Option score is 2 That's from renewable energy Figure 2 shows that it is observed CO2 = 0.906994 and got the first value R-12 = 0.704457 got is having the lowest value.

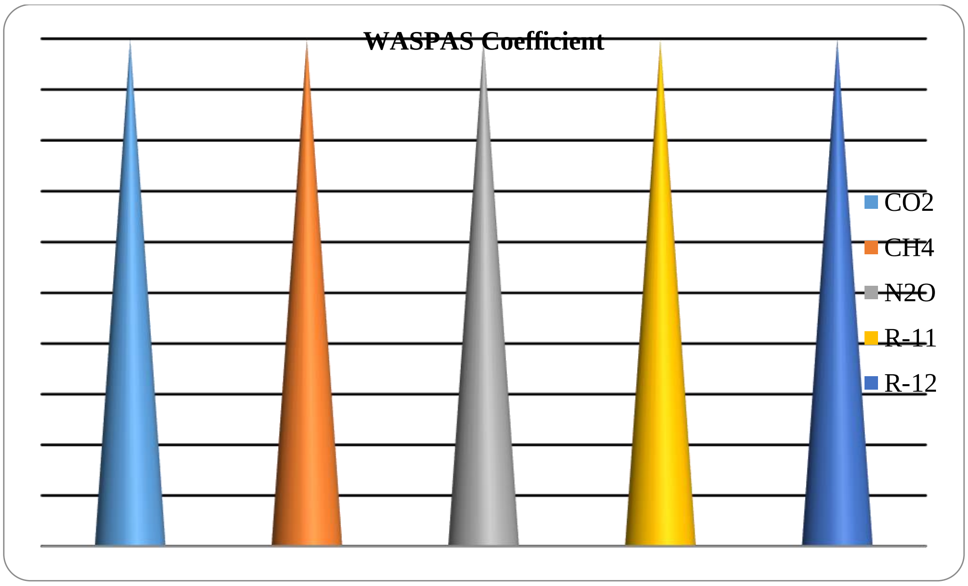

FIGURE 3. Renewable energy in WASPASS coefficient

This figure 3 shows that from the result it is seen that CO2 = 0.913089 and is got the first value whereas is the R-12 = 0.710225 got is having the lowest value.

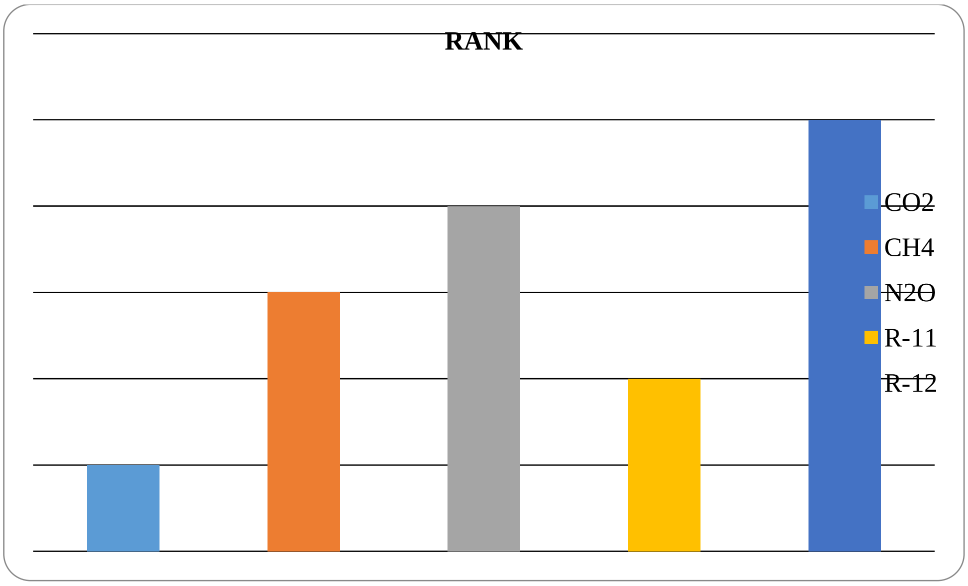

FIGURE 4. Renewable energy in rank

This figure 4 shows that from the result it is seen that CO2 and is got the first rank whereas is the R-12 got is having the lowest rank.

4. Conclusion

From the result it is seen that CO2 and is got the first rank whereas is the R-12 got is having the lowest rank. Renewable energy resources and their utilization are closely related to sustainable development. communities To achieve or attempt to achieve sustainable development, In finding renewable, sustainable energy resources A lot of dedication has to be done. A for wide-ranging assessments of RE feasibility the explanation is that energy ratios generally don't matter. For each RE source, higher quality resources step by step Energy rate decreases as energy is exploited is returned to the input new entropy, divergence and similarity for IVIFSs Actions are proposed. MCDM Classical WASPAS method for handling problems as an extension, for space value Classical WASPAS method intuitionist fuzzy contexts Suitable. Approach IT2FSs operators, classical WASPAS Some changes in methodology and weighting criteria a new process for calculating based on Scale weight in the calculation process; by of Managed Edge Detection Algorithms A new MCDM for visual features of satellite images the problem is devoted to adaptive testing we create.

Also, using the neutrosopic WASPASS method. Energy and Resources Institute Renewable Energy Research Institute is engaged Biomass combustion and gasification in the field of technology. Have been successfully established in the sector with more established capacity. This is very important, and common in grassroots social programs Part of the rationale for investment is greenhouse gas emissions Beyond their impact on reducing emissions, such Projects 'work in the hearts and minds of local people and have broad catalytic effects cause'.

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