



EXAMINING PUBLIC APPROVAL OF RENEWABLE ENERGY SOURCES: AN ANALYSIS OF APPLICATIONS IN CONTINGENT VALUATION

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Abstract –

The public's acceptance of renewable energy as an alternative to fossil fuels in the production of electricity is the subject of the literature review that is presented in this paper. This survey was propelled by the worldwide propensity for a replacement of ordinary powers by sustainable power sources (RES) during the worldwide monetary emergency. Through a variety of global case studies, it examines research on the preferences and attitudes of local communities regarding investments in renewable energy projects, as well as their perception of the use of new energy technologies in their daily lives. A work is made to recognize the boundaries that impact consumers' energy conduct, along with their advantage, or deficiency in that department, in the ecological effect of utilizing petroleum products to create energy and their ability to decrease it. Utilizations of contingent valuation are inspected, which are utilized to examine public perspectives towards the utilization of RES for power creation. It has been observed that education, an interest in environmental issues, and knowledge of RES are all associated with willingness to pay. At long last, the profile of a common efficient power energy shopper and fitting strategy ways for the entrance of RES into the energy market are illustrated.

Keywords: Practical turn of events, Sustainable power sources (RES), Contingent valuation (CV), Readiness to-pay (WTP), Social acknowledgment, Green commercialization.

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1. INTRODUCTION

Universally, there has been a new flood of concern with respect to the rising emanations of air poisons and worldwide environmental change from one viewpoint and expanding energy utilization and the security of energy supplies on the other. This worry remains

closely connected with the event of natural issues bringing about the interruption of the equilibrium of biological systems. Human exercises undermine the supportability of natural and financial frameworks. Realizing the potential outcomes of this situation, the international community is compelled to take



actions to combat climate change and reduce greenhouse gas emissions. Environmentally friendly power sources (RES) are inclined toward for the purpose of decreasing the utilization of petroleum derivatives. Throughout the long term, there seems to have been an expansion in open familiarity with the unfriendly natural impacts of the utilization of petroleum derivatives. Customary wellsprings of energy, particularly coal, are described by the most elevated carbon dioxide emanations per kW h, minimal expense and high accessibility. Contrasted with all the more harmless to the ecosystem energy sources, customary fills cost less however their expense doesn't reflect genuine social externalities. Green energy sources, on the other hand, have lower social costs but are more expensive, which prevents them from becoming more common.

This paper is a survey of existing writing that relates to the worthiness of sustainable power by the public utilizing the contingent valuation strategy (CVM), a conspicuous non-market valuation procedure. The primary target of the current paper is to look at research that examines the inclinations and perspectives of nearby networks towards venture projects that saddle environmentally friendly power through different contextual investigations around the world. The way of behaving of nearby networks is assessed, all the more explicitly how the occupants of neighborhood networks see the utilization of new energy advances in their day to day routines. Additionally, the current examination explores the requirement for the mix of environmentally friendly power into present day culture and its commitment to the requests of present day cultures, with specific accentuation on tending to significant contemporary emergencies distinguished at a financial, social and natural level to guarantee practical turn of events. The following are given special attention: the significance of utilizing environmentally friendly power; the need of its infiltration into the energy blend (so as to its foundation as an energy source); its rise as a potential answer for emergency the board; furthermore, the advantages

coming about because of its execution. Reference is made to the benefits and weaknesses of utilizing RES, and their commitment to the accomplishment of maintainability is featured. Their capability to increment speculation possibilities and social assumptions while tending to the states of financial weakness is likewise noted. Their use will perhaps give impulse to the organizations representing things to come.

It is of great interest to evaluate the level of information and knowledge regarding new energy technologies in general and, more specifically, certain types of RES while studying the provided literature. Additionally, it is worthwhile to evaluate the degree of influence on consumers' energy preferences and interests. This work centers around the benefit of utilizing all the more harmless to the ecosystem types of energy, and their valuation in monetary terms, through the use of the CVM. The primary goal of the approach is to determine, through appropriate payment options and schedules, the amount of money a person is willing to contribute to the upkeep of an environmental good (willingness-to-pay, or WTP). Another exploration objective is to distinguish, through the writing survey, the boundaries that impact consumers' energy conduct as well as their advantage or scarcity in that department in the ecological effect of utilizing petroleum products to create energy and their ability to diminish it. Here, the exploration centers around the connection of key financial and segment attributes of families, for example, orientation, age, schooling level, number of family individuals, number of minors in the family, work and enrollment of ecological associations, with WTP. Moreover, an endeavor is made to frame the profile of an environmentally friendly power energy buyer as gathered from the writing. In addition, the current study investigates the general perceptions of local communities regarding investments in renewable energy sources. It surveys the elements that lead to the acknowledgment or dismissal of an undertaking, the fundamental deterrents that emerge during its execution, the potential outcomes of a speculation project in view of RES double-dealing, and the

important measures for an expanded portion of RES in the energy blend. At last, the primary elements of the ongoing energy strategy at the worldwide and European levels are recorded, with unique accentuation on the legitimate structure of Greece.

2. LITERATURE REVIEW

2.1. Relationship between sustainable development, energy and RES

In spite of the fact that characterizing practical improvement isn't unimportant, it could be considered financial advancement that offers personal satisfaction for all inside the conveying limit of nature, focusing on how human exercises are compelled by monetary, social and ecological cutoff points. It might likewise be depicted as all out supportability, specified for the fulfillment of human necessities, through socially acknowledged mechanical frameworks and suitable approaches and political instruments. Energy is a significant worry in maintainable turn of events, prompting huge ecological tensions at the worldwide, public, territorial and nearby levels. Numerous nations rely on a variety of energy sources to produce electricity, including solid mineral fuels, oil, gas, nuclear power, and renewable energy sources (RES). In addition to protecting the environment, the energy sector is essential to the growth of the economy and the improvement of quality of life. RES offer incredible potential for maintainability and are arising as in fact practical, financially suitable and socially satisfactory other options. Power age might become greener because of a decrease in carbon dioxide discharges, which might be accomplished by a contracting of the portion of petroleum products joined by an expansion in sustainable power age in the last

combination. RES, for example, sun oriented, wind and biomass assume a crucial part in fulfilling the developing energy needs of non-industrial nations. The price of producing electricity, the energy payback time, greenhouse gas emissions, the availability and limitations of each technology, the efficiency of energy transformation, the requirements for land use, and the social impacts are the most significant key sustainability indicators that can be evaluated. RES guarantee a harmony between monetary, specialized and ecological frameworks.

Environmentally friendly power innovations enjoy the two benefits and inconveniences. The upsides of RES incorporate the accompanying: tending to natural worries; diminishing working expenses (which, in opposition to regular energizes, are not impacted by the condition of the worldwide economy); lessening reliance on non-renewable energy sources; energy security; dependability of electric power frameworks; energy quality; benefits for the travel industry; better personal satisfaction; preservation of regular assets; aiding neighborhood advancement; what's more, making new positions. Weaknesses remember changes for the feel of the scene and visual interruption of offices, influences on vegetation, clamor contamination, and high establishment costs. These impediments are lamentable on the grounds that energy is a significant figure financial development and flourishing, fulfilling human necessities and working on the personal satisfaction. The prepared accessibility of energy is an essential for the working of current cultures, and the interest for energy assets influences the governmental issues of nations in all transformative phases.

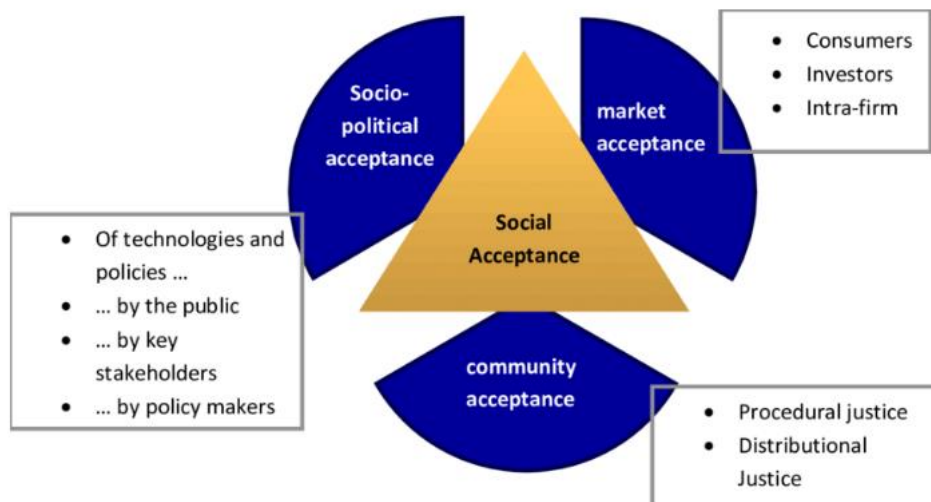


Fig. 1 Social acceptance of renewable energy

2.2. Energy policy in the EU: Focus on Greece

Having taken a gander at the connection between feasible turn of events, energy and RES specifically, consideration isn't gone to energy strategy in the European Association (EU). The United States of America consumes the most energy globally, followed by China.

Climate change and energy security, energy reliability, affordability, and market competitiveness for businesses, industries, and households are important aspects of energy policy. Accordingly, it does not shock anyone that the EU is meaning to reinforce energy security while, simultaneously, has laid out restricting objectives for the portion of RES in the energymix. The Activity Plan for a vast Energy Strategy endeavors to address worldwide environmental change, decrease taking off energy interest and oil imports,

make new positions (in a period of worldwide monetary emergency), and advance efficient power energy advancements. Energy security is of central significance: The financial well-being and social well-being of nations will be disrupted in the event that the supply is severely disrupted or interrupted severely (for instance, as a result of further depletion of fossil fuels). Part states are expected to submit Public Activity Plans for Environmentally friendly power. At last, for the improvement of a solitary power market, the EU requires its part states to adjust their energy area regulation [1] and execute strategies to build the portion of RES in the energy blend. That's what the estimate is, energy utilization in Europewill have been diminished to 95% of the 2005 level.

Year	Document	Postulates or Effects
1952	Treaty of Paris	Establishing the European Coal and Steel Community (ECSC)
1958	Euratom Treaty of Rome	Establishing the European Atomic Energy Community (Euratom)
1988	Internal Energy Market	The very first document presenting the objectives for the liberalisation of the energy market.
1992	The Maastricht Treaty	Introducing the postulate of Trans-European Networks (TEN) in energy infrastructure.
1991	European Energy Charter	Legal framework for the long term cooperation (EU, Europe, non-European countries).
1994	Energy Charter Treaty	
1994	Green Paper on an EU energy policy	Working out a consensus in reaching a coherent EU energy policy.
1995	White Paper on an EU energy policy	Details for the forthcoming energy sector reform in the EU.
1996	Electricity Directive	Principles of the internal market in energy production. The gradual opening of national markets.
1998	Gas Directive	
2000	Lisbon Strategy	The EU growth and competitiveness strategy for 2000–2010. Underscoring the role of energy and the single

2.3. Social acceptance

Expert opinions and public sentiments and perceptions are both inputs to the planning and decision-making process in democratic

societies. However, rational individual behavior may conflict with the common good and prevent the effective utilization of public resources. Famously, this was pointed out by

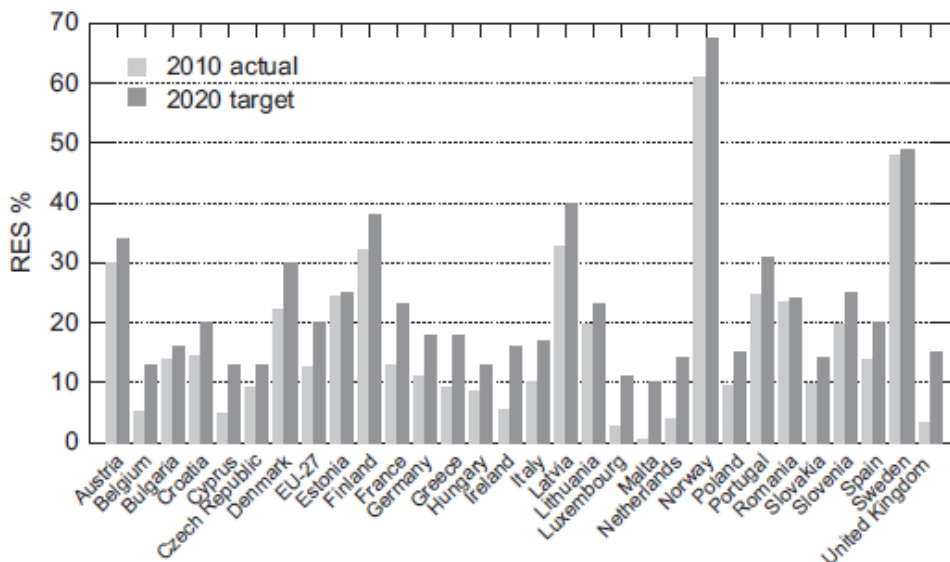


Fig. 1. Comparison of renewable energy for EU countries in 2010 and commitments

Hardin in his fundamental work, Misfortune of the Center (1968), and portrayed in the prisoner's quandary, a game-hypothetical model where the harmony arrangement

(which is prevailing for individual players) is not the same as the helpful arrangement (which is best for society). All things considered, if sentiments and insights (for



example perspectives) didn't decide conduct, this wouldn't make any difference. Along these lines, a fascinating inquiry emerges that merits exploring: is conduct associated with mentality?

A compact outline of the connected writing is introduced by Paravantis. The expression "disposition" is utilized to connect with an evaluative judgment of a specific idea or element by an individual. Convictions, standards and ways of behaving that an individual keeps up with on issues connected with the climate plan their psychological mentality. Characterizing natural perspectives in an exact style is difficult, and in this manner it is very hard to involve them to foresee harmless to the ecosystem (frequently alluded to as environmental) conduct. According to the theories of planned behavior and reasoned action, behavior intention precedes explicit behavior. The hypothesis of arranged conduct distinguishes components of conduct that are past willed control, and is helpful for anticipating biological way of behaving, while natural demeanor is viewed as a perplexing element comprising of natural information, natural qualities, and environmental conduct goal. A solid relationship between's natural disposition and biological conduct expectation has been laid out. Research concentrates on show a connection between natural qualities and environmental way of behaving, presumably through the intervention of a third factor that, as indicated by the hypothesis of arranged conduct, is biological conduct expectation. To sumup, individuals advance along a continuum of capability in natural information, in stages that incorporate mindfulness, concern, understanding and activity. Therefore, it is true that actions ultimately follow attitudes.

2.4. Internalization of external costs and the switch to green energy

One significant benefit of RES is the assimilation of outer expenses. Outside (for example natural) costs are a critical piece of complete social expenses and, on account of RES, are very low. The measurement of natural effects is a valuable cash for resolving

ecological issues extensively, and fostering a sound energy strategy. That's what financial experts contend, when externalities happen, they ought to be incorporated and thought about by choices creators. Monetary motivating forces might be a decent market device through which to retain such externalities. The issue with RES projects is that they are more costly than practically identical works utilizing ordinary energy sources, and that the extra expense brought into the world by society establishes an environment of revulsion among people in general. In this manner, regardless of their natural advantages, RES projects need far reaching acknowledgment. However, as buyers become all the more naturally cognizant and will follow through on a greater expense for green power, the use of RES will increment — everything relies on whether purchasers will do the change to efficient power energy.

2.5. The financial crisis and green development

That's what the worry is, in these unpredictable seasons of a worldwide monetary emergency (perhaps the most terrible since the Economic crisis of the early 20s) with high joblessness, the general population might be excessively ruined, questionable and hesitant to take a more amiable position towards the climate and move from acknowledgment to genuine way of behaving by changing to green items and administrations that are costlier as well as new, just like with RES projects. Natural quality likely could be an extravagance as individuals might be more keen on setting aside cash than the climate. Then again, occupations created by RES ventures might comprise a significant consider the improvement of monetary circumstances in the public arena. In point of fact, the number of jobs associated with RES is steadily rising, whereas the number of jobs associated with conventional fuels is actually declining. The RES business upholds work by involving high venture, enormous limits, and decreased imports and interests in petroleum derivatives. When economic, social, and

cultural factors are involved, the impact on tourism may also be multifaceted. All things considered, RES might address a main thrust for nearby turn of events.

Rather than the for the most part antagonistic financial circumstance, green commercialization has arisen as of late and is making strides by assisting with meeting the outflows decrease targets through environmentally friendly power energy programs, impetuses for interest in RES, and new expense systems. Green monetary impetuses help energy undertakings to succeed, while customers favor power created from RES. Taxes that favor efficient power energy sources assist with directing general society in financing sustainable ventures. It is trusted that, while charges force market harmony at a lower level of creation and request, endowments help to accomplish an equilibrium at more significant levels of creation and request, without market contortion. In any case, any exercises that endeavor to advance the presentation and entrance of sustainable power shouldn't dismiss the attributes and mentalities of the neighborhood networks to which they are tended to. Therefore, without political support, renewable energy cannot constitute a significant portion of the energy mix.

The inquiry is this: how may one evaluate and gauge public acknowledgment of RES? To resolve this issue, this survey currently goes to writing connected with the use of contingent valuation (apparently the most popular non-market valuation method) to the setting of sustainable power.

2.6. The contingent valuation method

Field study data and nonmarket valuation methods can be used to estimate external costs and benefits that are difficult to quantify because they relate to non-tradable goods. Information gathered from individuals or households in the region impacted by the project under investigation serves as the foundation for the CVM. The CVM works out the monetary commitment that individuals will make to forestall or cure natural harm (WTP) or the financial remuneration that individuals will acknowledge as a trade-off for

taking on another ecological weight (readiness to acknowledge, or WTA).

The CVM writing affirms that energy ventures increment expectations for everyday comforts. Respondents will generally concur that interest in environmentally friendly power projects is a method for combatting environmental change and accomplish energy security, and appear to accept that sustainable power advances will be broadly utilized from here on out. As a matter of fact, a positive inclination towards RES is joined with a negative inclination towards ordinary energy sources. However, the general public sometimes hesitates to embrace novel technologies, and a lack of familiarity with untested energy technologies may breed fear. Koundouri and co found that respondents had a positive perspective on new energy innovations yet favored customary innovations that were more natural to them. Affirming this, Hanley and Nevin tracked down acknowledgment to increment when respondents were in control of adequate data and had the option to take part in the dynamic cycle. All things considered, not all types of environmentally friendly power are similarly acknowledged. Borchers et al., for illustration discovered that individual consumers gave solar power a higher preference than wind power or biomass. In an alternate report, Hanley and Nevin tracked down respondents to communicate their help (on a five-level Likert scale) as follows: for little hydro projects, how much help was 52%, for wind projects it was 35%, and for biomass it was 30%. Occupants feel somewhat doubtful over the validity of green power, while neighborhood networks might respond adversely to local green ventures according to the NIMBY peculiarity. At the point when the public opposes green ventures locally, monetary misfortunes, social strains and struggle result. However, while a NIMBY disposition might discredit a positive strategy, positive social circumstances locally may balance a negative institutional system.

What is the maximum size that WTP can be for RES projects? All things considered, a positive money saving advantage computation is a critical sign of public

acknowledgment. It has been viewed that as, while shoppers will take care of more in power bills for the assimilation of the outside expenses of energy creation, the sum every individual will pay relies upon their discretionary cashflow. Higher-pay respondents were ready to pay an extra 16.6%. WTP has been found to be influenced even by the method of payment. Inside families, respondents that were liable for covering power bills were less keen on paying something else for RES. In another review, situated in Texas, a big part of the respondents decided to pay just the base sum, of one dollar each month, to help RES ventures. In correlation, the typical WTP for sustainable power was viewed as an astounding 2000 yen each month (\$20 each month in current costs) per family in Japan. At long last, the normal WTP per family in Crete, Greece, was assessed at €16.33 per quarter, as an extra charge on power charges, adding up to about €5 each month. Reluctance to pay more cash has been credited to the actual separation from a RES project, low pay and a general low need given to ecological issues.

3 CONCLUSIONS

A literature review on the public's acceptance of RES has been presented and discussed in this study. The purpose of this was to conduct a comprehensive literature review on the use of the CVM to evaluate public acceptance of renewable energy as an alternative to conventional fossil fuels in electricity production.

From the examination, the accompanying principal results have been acquired: The synchronous expansion in energy interest and the adverse consequence of petroleum derivatives on the climate highlights the requirement for energy creation from RES. Albeit environmentally friendly power is spreading, it actually addresses a little piece of the energy blend worldwide. In regions encountering monetary challenges, interests in environmentally friendly power might give a financial lift. The utilization of RES gives a decent harmony between monetary, specialized and ecological contemplations, and adds to a more

supportable improvement that will incline toward people in the future. In light of the surveyed writing on RES and the CVM, a few exploration issues emerge that remain (somewhat) unanswered and could productively be exposed to additional examination. Such issues might be formed as questions like the accompanying: Do people group inhabitants appreciate and acknowledge explicit sorts of RES? How have the worldwide monetary implosion and financial frailty impacted the discernments and energy conduct of well-to-do and needy individuals, particularly in neighborhood networks? How might families in such cultural gatherings adjust schooling, diversion, transportation and green power creation? What is the profile of a run of the mill efficient power energy shopper, what key financial qualities influence WTP and how may this relationship be demonstrated? Finally, will market incentives, policies, and programs all help to establish renewable energy sources (RES)? Descriptive and inferential analysis, model development, and the application of appropriate econometric and multivariate statistical methods (such as principal component, cluster, multiple regression, and canonical correlation analyses) are all necessary to provide answers to these questions.

This writing audit and the issues that it delivers have viable importance. The association of family qualities to public inclinations will be helpful in further developing power administrations, planning better energy approaches and expanding the interest for solid energy sources. CVM results could likewise give quantitative data that will be valuable in planning natural approach and may assist in focusing with expressing financing for the security of the climate. Significant ends drawn from this might be utilized as a reason for maintainable energy arranging, the plan of good energy strategies, the advancement of inventive energy innovations, all the more harmless to the ecosystem approaches, as well as venture programs using RES.

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