



Framing of Renewable Energies in Indonesian Media

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Abstract

Many countries are turning to renewable energies as a result of the global problem of air pollution brought on by emissions from fossil fuels. The utilization of renewable energy as a remedy for climate change problems is covered by the media but earlier studies showed ongoing controversy over media coverage of renewable energies. The purpose of this study is to determine how renewable energy is framed in the media. What kinds of renewable energy get the most attention from the media, and are there any differences in how they are framed in old and new media? Entman's framing concept—which includes "problems versus benefits," "the cause or reasons," "treatment recommendation," and "moral evaluation"—was used to conduct the quantitative content analysis. Using Google Search, articles from 2019 to 2022 were gathered. The findings indicate that there is no difference in framing between old and new media, with "problems-benefits" and "treatment recommendation" emerging as the most prevalent frames. The most frequently cited forms of renewable energies are hydropower and geothermal, and the media reports renewable energies more favorably than fossil fuels.

Keywords

Renewable Energy, Media, Framing, Climate Change, Indonesia

Introduction

Climate change and air pollution due to carbon emissions from fossil fuels have become a global issue today. Carbon emissions from fossil fuels from motor vehicles, industrial activities, land burning, and waste have caused the greenhouse effect, which causes global warming and impacts climate change (KCPI, 2017). The air in several major cities in the world is indicated to have high and unhealthy pollution levels, including the capital city of Jakarta and several other cities in Indonesia, which can potentially reduce the life expectancy of its citizens (Arif, 2023).

The negative impacts of fossil fuel use have encouraged governments in many countries to use clean and environmentally friendly alternative energy, which is referred to as renewable energy

utilizing hydropower, wind power, solar power, and geothermal energy, which are environmentally friendly because they do not produce emissions that can pollute the air.

As a channel for disseminating information, the media also pays attention to the issue of climate change and the use of renewable energy as a solution (Rochyadi-Reetz et al., 2019). Media attention to renewable energy reflects the attention of the government and society at the local, national, and international levels (Rochyadi-Reetz et al., 2019). However, previous studies have shown that media coverage of renewable energy in many countries is still a controversial issue because public debates on renewable energy involve various issues such as infrastructure, economy, social, technology, ecology, and so on (Hindmarsh, 2013; Rochyadi-Reetz et al., 2019; Batel & Devine-Wright, 2014), and in this case, the media frames the various debates.

Media framing is a term in communication science that explains how the media portrays and understands an issue. The media gives meaning to an issue by selecting certain aspects of reality and making them more prominent in such a way that the media has the hegemony to determine the interpretation of the issue through various framings such as: what is the problem, what is the reason (cause), good or bad values (moral evaluation), and suggestions (treatment) for solutions (Entman, 1993 in Rochyadi-Reetz, 2019). The media can also report news in frames such as conflict, economic consequences, responsibility, human interest, and morality frames (Semetko & Valkenburg, 2006). By analyzing the frames that exist or do not exist in media reporting, it can be seen how the direction of debate in the public sphere is determined (Rochyadi-Reetz et al., 2019).

In reporting news, journalists and the media are influenced by various social factors, from the micro to the macro level, such as journalistic habits, media organizations, social institutions, social systems, public opinion, and the context that surrounds them (Shoemaker & Reese, 1991). Thus, the media becomes a place where various external actors, such as government officials, politicians, activists, scientists, and so on, express and defend their frames on an issue (Rochyadi-Reetz, 2019). However, in addition to these various social factors, journalists and the media are also influenced

by the natural structural conditions in their country (Shoemaker & Reese, 2013). Natural structural conditions are defined as various relevant factors that are interrelated with the distribution of renewable infrastructure in a region by considering the potential, demand, supply, and use of renewables (Rochyadi-Reetz, 2019). Previous research shows that social factors and structural conditions in a region or country play an important role in how the media reports EBT (Deignan & Hoffman-Goetz, 2015; Djerf-Pierre et al., 2015; Skjolsvold, 2012).

Another factor that needs to be considered in media framing regarding renewable energies lies in the differences in media types, which can generally be divided into two categories: old and new media. Both media categories can reach large audiences, but new media has advantaged that old media does not have, namely allowing users to contribute to creating and sharing content or participating in social networks (Hasa, 2021). In other words, anyone can create content on new media. This is different from conventional media, which is mostly supported by more trained journalists but is bound by the rules of the professional code of ethics and the organizational structure of the media in which they work. This raises the question: does the difference in the working system between old media and new media cause differences in framing?

The current research has novelty in the study of media coverage in Indonesia regarding renewable energies, which is still very small at present, but the most important novelty is that there has been no study that examines the influence of different types of media on the framing of news regarding renewable energies.

Based on the description above, the author formulates the following research questions: 1) What types of media pay more attention to renewable energy? 2) How do media in Indonesia frame news about renewable energy? 3) Are there differences in the framing of renewable energy news between old and new media? 4) How do structural conditions in Indonesia influence renewable energy news? 5) What types of renewable energy receive more media attention in Indonesia?

Media Framing

This study aims to focus on how the media in Indonesia pays attention to the issue of renewable energy using framing analysis because most studies on media coverage of renewable energies use the concept of framing (Ehlers & Sutherland, 2016; Rochyadi-Reetz et al., 2019; Wright & Reid, 2011; Smith et al., 2016; Djerf-Pierre et al., 2015; Kim et al, 2014).

Media often interviews sources and use the sources' frames in reporting, but in covering and writing news based on interviews, the media often develops their frames. In other words, the media does not simply follow the sources' frames. Thus, framing can be understood as a result of the negotiation process between the media and their sources (Rochyadi-Reetz et al., 2019). Framing is used by the media to build a news structure to explain the causes, predictions, solutions and responsibilities of an event or issue.

Entman (1993, p. 52) defines the concept of framing as “to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation.” This means that the media will select some aspects of the reality being reported to make these aspects more prominent in the news. In this case, there are four aspects that the media wants to highlight regarding an issue (Entman, 1993), namely: 1) Problem versus benefit. The media determines the problem definition or benefit by stating who or what the causal agent does based on the general cultural values in society; 2) Cause/reason. Media determine the reasons (causal interpretation) by explaining the various factors causing the problem; 3) moral evaluation or providing a moral assessment or evaluation of the causal agent and the consequences it brings; and 4) treatment recommendation or giving solutions to the problem that arises by stating the actions that need to be taken and estimating the consequences that will result.

Since renewable energies is an issue that is often politically debated, framing becomes a useful concept for examining media coverage of a topic (Rochyadi-Reetz, 2019). Media covering the same event will produce different news if they use different frames. This is because the media selects, emphasizes, interprets, ignores, and manages information differently (Semetko & Valkenburg, 2000).

Literature reviews on media coverage studies on renewable energies today are still very limited and mostly conducted in Western countries (Rochyadi-Reetz, 2019). Several studies conducted comparative analyses, for example, comparing how renewable energies news is framed based on regional differences within one country (Stephens et al., 2009; Haigh, 2010; Hindmarsh, 2014; Kim et al., 2014), while other studies compared news of renewable energies between two countries (Skjølsvold, 2012; Djerf-Pierre et al., 2015) or studies comparing EBT news in various countries (Rochyadi-Reetz, 2019). Rochyadi-Reetz et al (2019) examined newspaper framing of renewable energies in 11 countries, including Indonesia, during the period 2010–2012 using the framing concept from Entman (1993, 2003) by considering the structural conditions of a country.

Several studies show that the way the media covers renewables varies across countries (Skjølsvold, 2012; Djerf-Pierre et al., 2015). This raises the question of how these differences occur. Several studies support the view that structural conditions influence media coverage of renewables, both at the regional level of a country (Stephens et al., 2009; Haigh, 2010; Hindmarsh, 2014; Kim et al., 2014) or at the national level (Skjølsvold, 2012; Djerf-Pierre et al., 2015). For example, a study in the United States reported that local media in several states that are oil producers reported more negative information about the consumption of ethanol as fuel than media in states that are ethanol producers (Kim et al., 2014).

Another study found that Australian newspapers paid a great deal of attention by publishing more news about solar and wind power, two energy sources that are abundant in the country. In contrast, the media in Sweden focused on news about bioenergy because the country has more biomass fuel

sources (Djerf-Pierre et al., 2015). Thus, previous research generally supports the idea that the structural conditions of a region or country influence the amount of media coverage and the way (positive or negative) renewables are viewed. For this reason, in addition to asking the research question "Which type of renewable energy gets more media attention in Indonesia?", this study also hypothesizes that the media in Indonesia pays different attention to renewable energy and fossil energy in terms of the amount (quantity) of news published with the following formulation:

H1: There is a difference in the amount of media coverage in Indonesia based on the type of energy.

Previous studies from various countries have shown that community acceptance of renewable energy depends on several factors such as economic consequences, environmental impacts (Olson-Hazboun et al., 2016), attachment to place, and the principle of 'as long as it's not near me' (Liebe and Dobers, 2019), trust in operators, and influence in making decisions about renewable energy projects (Liu et al., 2019). However, conflicts between supporters and opponents of renewable energy are often unavoidable (Devine-Wright, 2011; Haggett, 2011). The possibility of conflict is greater in regions or countries that have more renewable energy projects and facilities and are more intensive in using renewable energy. This is because there is a greater chance that residents will feel disturbed by the construction and presence of renewable energy facilities in their environment.

Since the media must consider the audience's perspective, media coverage of renewable energy will be more likely to voice acceptance of renewable energy because it provides more positive impacts than negative impacts (problems vs. benefits), so it is seen as more favorable than fossil fuels. Thus, we propose the second hypothesis as follows:

H2: Media in Indonesia frames renewable energy as more positive than fossil fuels.

Differences in media types have the potential to influence the framing of renewable energies

(Rochyadi-Reetz, 2019). Because anyone can create content in new media, content creators have greater freedom to convey their ideas and concepts, including ideas and concepts about renewable energies. This is because content creators in new media do not work in an organizational structure that has a superior-subordinate relationship. This is different from old media, which is supported by journalists who are more trained but are more bound by the structure and code of ethics of the profession. Based on this argument, the following hypothesis can be formulated:

H3: There are differences in the framing of EBT based on media type.

Methodology

This study used a quantitative content analysis method, which is defined as "a method of studying and analyzing communication in a systematic, objective, and quantitative manner for the purpose of measuring variables" (Kerlinger, 2000 in Wimmer & Dominick, 2009). What is meant by 'variable' in this definition is the category of media content to be measured as one of the important steps that must be taken in content analysis research.

In this study, the media content category to be measured uses the framing concept from Entman (1993, 2003 in Rochyadi-Reetz, 2019). This category was chosen because Entman's framing is a concept commonly used in quantitative content analysis studies (Rochyadi-Reetz, 2019). In addition, Entman's framing concept can be applied to analyze most social and political issues. In addition, this framing concept also offers clear and concrete framing categories so that they are easy to operationalize (Matthes & Kohring, 2008).

Regarding the issue of renewable energy, the four framing categories of Entman (1993, 2003) can be stated as follows (Rochyadi-Reetz, 2019): (1) Problems vs. benefits of implementing renewable energies; (2) the cause/reasons for harnessing renewable energy; (3) treatment recommendations; and (4) moral evaluation, namely comments or assessments from various parties regarding renewable energy. Furthermore, the categories of 'problems vs. benefits' and 'the causes/reasons'

are each divided into several dimensions, as can be seen in Table 1. Each article analysed would be coded if the article mentioned one of the dimensions of the category.

Table 1. Description Of Entman’s Frame Elements

(Source: Rochyadi-Reetz, M., Arlt, D., Wolling, J., & Bräuer, M. [2019]. *Explaining the Media’s Framing of Renewable Energies: An International Comparison. Frontiers in Environmental Science*, 7, 119)

Element	Dimension	Examples from the operationalization	Values
Problems vs. benefits	Economy:	Negative impacts of using renewable energy on economy (e.g., price of energy, goods and services, return on investment, asset value, employment, wages, taxes)	-1 = problems were dominating; +1= benefits were dominating; 0 = no problems or benefits were mentioned / both, problems and benefits are mentioned.
	Problems vs. benefits	Positive impacts of using renewable energy on economy (e.g., price of energy, savings, investment, fast amortization, jobs, promotion of other business sectors)	
	Technology:	Negative characteristics of renewables regarding power efficiency, security of supply, construction time, maintenance, quality, and life span of devices	
	Problems vs. benefits	Positive characteristics of renewables regarding high capacity, power efficiency, easy construction, transfer of expertise, quality of devices, construction time, and life span of plants	

	<p>Environment: Problems vs. Benefits</p>	<p>Negative impact of renewable energy on animals, plants, water, soil, air, and climate</p> <hr/> <p>Positive impact of renewable energy on animals, plants, water, soil, air, and climate (e.g., classified as clean, renewable, sustainable, CO2 free, smog-free, emission free, eco-friendly)</p>	
	<p>Society: Problems vs. Benefits</p>	<p>Negative impact of renewable energy on quality of life (e.g., noise, resettlement, health, overall appearance of the landscape, aesthetic aspects) and on social harmony</p> <hr/> <p>Positive impact on quality of life (health, social harmony, peace), e.g., through noise reduction, flood prevention, avoidance of resettlement, reduction of conflict</p>	
Cause	<p>Economy</p> <hr/> <p>Technology</p>	<p>Three economic arguments were coded: a) technology is getting cheaper; b) fossil fuels are limited; c) renewable energy is an unlimited resource</p> <hr/> <p>Two technological arguments were coded: a) accidents in context of conventional energy extraction (e.g., oil spill); b) damage caused by nuclear accident (e.g., Fukushima)</p>	<p>-1 = caused was denied;</p> <p>+1 cause was mentioned as relevant;</p> <p>0 = cause was not mentioned or it was disputed.</p>

	Environment	Two ecological arguments were coded: a) fight against climate change/less CO2 emissions; b) water/soil/air pollution caused by conventional energy sources	
	Social / political	Two social/political arguments were coded: a) regulations and subsidies promoting renewable energy usage; b) public awareness of the importance of renewable energy	
Treatment recommendation	Economic / social / technological	The problem of adopting renewable energy should be solved through more investment/more research and the implementation of already available innovations/regulations supporting the implementation and dialogue with involved parties.	- 1 = one or more solutions were regarded as not necessary or unsuitable; +1 = one or more solutions were supported; 0 = no solution was mentioned.
Moral Evaluation	Variety of actors	Government, opposition, NGO, society, individuals, firms and associations of renewable energy companies, the conventional energy sector, industry in general, own country and other countries	-1 at least one actor was blamed for being in favor of renewable energy or praised for being against it; +1 = at least one actor was blamed

	for being against renewable energy or praised for being in favor of it; 0= no moral evaluations were coded.
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The unit of analysis in this study were articles about renewable energy that appeared in the media and were written in Indonesian. In general, all types of media, including old media, have online versions. For this reason, the collection of media content about renewable energy was only carried out online via Google Search using the keyword 'new renewable energy' or other relevant keywords. The population was determined from all online articles about renewable energy from various media. A total of 100 articles that appeared from 2019 to 2022 were used as samples (n = 100).

This study selects four types of renewable energy: (a) hydropower, which is only suitable for use in areas with rivers; (b) geothermal, which can only be built in areas with volcanic activity; (c) wind power, which is more suitable for use in coastal areas; (d) solar power, which can be used in almost all regions because geographically Indonesia is located on the equator, which has high levels of solar radiation.

In this study, the content analysis method was carried out through the following stages: First, all selected articles on renewable energies were collected and distributed into four category groups: print media, electronic media, social media, and other online media. Second, after the articles on renewable energies were collected based on their media type, the coder then read each article and

determined its framing using Entman's framing categories.

In quantitative content analysis research, data reliability and validity are determined by intercoder reliability, namely the person in charge of determining whether the contents of the selected articles contain the specified categories. This research was assisted by coders consisting of communication science study program students in Jakarta. The consideration of choosing communication students is because they already have a relatively good understanding of the media and also understand the social, economic, and geographical conditions in Indonesia. The three selected coders were then given training in which they were explained the criteria for the articles selected as samples and also an explanation of the various framing categories contained in the coding sheet that had been prepared (See Table 1).

Each article was analysed by three coders independently. Then they had to compare their coding results, and if there were differences, then the coders were asked to discuss the differences to reach a consensus. If consensus was not reached then a vote was held to determine the selected coding category. The results of this decision were then stored as research data results. Finally, the Chi-Square test of association (independent) was conducted using the Statistical Package for the Social Sciences (SPSS) Version 20 to analyse the differences.

Findings

The results of online data collection using keywords produced various types of articles. After removing irrelevant articles such as journal articles, theses, or dissertations and focusing on news articles, 100 news items were obtained regarding renewable energies from various types of media in Indonesia. The sample size of 100 articles is quite adequate considering that the statistical calculations to be carried out using Chi-Square are very sensitive to sample size because if the sample size is too large (for example, $n \sim 500$), then almost all small differences will appear

statistically significant so that the results calculation becomes biased (Bergh, 2015; Bearden et al, 1982).

The data shows that new media dominated news about renewable energy (85%), and the rest was reported by old media (15%). As shown in Table 2, news about renewable energy in new media appeared more in the category of 'other online media', which are generally websites managed by parties interested in renewable energy, such as government organizations (ministries or local governments), community organizations (NGOs) interested in environmental issues or companies engaged in the business of developing renewable energy facilities. Thus, the answer to the research question regarding the type of media that produced more renewable energy news was new media. In addition, of the 15 articles representing old media, electronic media such as television and radio were the ones that report the least about renewable energy (3%).

Table 2: Media types

Media types	Frequency	%
Print	12	12
Electronics	3	3
Social media	3	3
Other online media	82	82
Total	100	100

Table 3: Frames used in media

FRAME	Frequency	%
Problems vs. benefits	26	26
Cause	16	16
Treatment recommenddation	26	26
Moral Evaluation	19	19
Frameless	9	9
More than one frame	4	4
Total	100	100

Table 4: The most widely reported types of renewable energy

Energy types	Frequency	%
Fossil	2	2
Renewable energy	29	29
<i>Hydropower</i>	20	20

Geothermal	28	28
Wind energy	1	1
Solar energy	8	8
Fossil energy and renewable energy	12	12
Total	100	100

Tabel 5: Crosstab media types and energies

Energy types Media types	Fosil energy	Renewable energy	Fosil & renewable energy	Total
	Old media	1	12	2
New media	1	75	9	85
Total	2	87	11	100

Table 6: Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.958 ^a	5	0.556
Likelihood Ratio	4.131	5	0.531
Linear-by-Linear Association	2.619	1	0.106
N of Valid Cases	100		

Answering the question of how the media in Indonesia frames news about renewable energy. The results of the analysis show that the 'problem vs. benefit' and 'treatment recommendation' emerge as the most dominant frames. This shows that the use of renewable is generally seen as more profitable than fossil energy and was a way out (solution) to the problem of limited fossil fuel supplies while maintaining the environment, especially clean air quality. The media uses both frames in the same amount, 26 articles each (26%) followed by moral evaluation' (19%) and 'cause'

frames as much as 16% (see Table 3).

Answering the question of the type of energy that gets the most media attention in Indonesia, the results of data collection show that renewable energy was the most widely reported (86%), and specifically, the type of renewable energy that was most widely reported is geothermal energy at 28% and hydropower at 20% (See table 4). In this case, there was a difference in the amount of media coverage in Indonesia based on the type of energy; the Chi-Square test shows the results of χ^2 (df = 3, n = 100) = 1.83, $p > .05$. Thus, this study accepts H3 that there was a difference in the amount of media coverage in Indonesia based on the type of energy.

Answering the question of whether there is a difference in framing regarding renewable energies between old and new media. The Chi-Square independence test was conducted, and the results showed that seven cells (58.3%) in the crosstab table had an expected count value of less than five and therefore must refer to the likelihood ratio value, which shows that there was no difference in framing between the two types of media χ^2 (df = 5, n = 100) = .53, $p > .05$ (Table 5). This means that neither old media nor new media show any difference in framing. Thus, H5 is rejected and H0 is accepted, namely that there is no difference in framing between old media and new media.

The cross-tabulation results show that the media in Indonesia framed renewable energy more positively than fossil energy. As many as 82% of news articles were considered positive or neutral, and only 5% of articles reported renewable energy as negative. However, there was no difference between old and new media in reporting certain types of energy as more positive or negative, with the results of the Chi-Square test being χ^2 (df = 9, n = 100) = .93, $p > .05$ (Table 6). This means that both old and new media framed renewable energy more positively than fossil energy. The media mentioned more positive impacts of using renewable energy in terms of economy, technology, environment, and quality of life. Thus, H1 is accepted that the media in Indonesia framed renewable energy more positively than fossil energy.

In answering the question of whether the media frames renewable energy as more profitable than fossil fuels, the crosstab analysis shows that the use of renewable energy was viewed by the media as more profitable. Of the 21 indicators (reasons) used, the most indicators that appeared were 'environmentally friendly' (14%) and receive positive support in the form of 'moral evaluation' or positive comments (10%) from many parties (for example from the government and NGOs). The Chi-Square test shows the results of χ^2 (df = 54, n = 100) = 240.11, $p < .05$. This means that the media did assess renewable energy and framed renewable energy as significantly more profitable than fossil fuels, and thus H3 is accepted that the media framed renewable energy as more profitable than fossil fuels.

Discussions

The results of the study show that the media in Indonesia generally frame news about new renewable energy in the framing of 'problem vs. benefit' and 'treatment recommendation' because renewable energies are seen as more profitable than fossil fuels and are a way out of the problem of limited fuel supplies from fossil fuels as well as a solution in efforts to realize clean air quality and blue skies. In addition, both old and new media framed renewable energies more positively than fossil fuels, which means that the media mentioned more positive impacts of using renewable energies from economic, technological, environmental, and quality of life aspects. This finding is in line with previous research, for example, a study by Rochyadi-Reetz et al (2019) on renewable energy news in various countries, which shows three media coverage frames: problem vs. benefit, environmental and social problems, and positive aspects of technology.

Data analysis shows that new media dominated news about renewable energy (85%), especially in the category of 'other online media'. However, news about renewable energy mostly came from websites owned by stakeholders in the sector itself. It is noteworthy that environmental issues have

not yet become a concern for independent content creators on social media, so differences in media types (old and new) do not have the potential to influence the framing of renewable energies (Rochyadi-Reetz, 2019).

Old media had not paid attention to renewable energies, especially electronic media such as television and radio, because very little (only 3%) news about alternative energy was produced by these media. Although the mainstream media quite often produced news about environmental pollution, for example, the level of air pollution in Jakarta and several other cities in Indonesia, the media had not yet brought up renewable energies as a solution to overcome pollution.

As a country with structural conditions that have many rivers and active volcanoes, the media in Indonesia provided a more positive view of the use of geothermal and hydropower as new energy sources. This is in line with the view of Shoemaker and Reese (2014) that media content is influenced by the structural conditions in each country where the media is located. Thus, the findings of this study is in line with the results of previous studies that support the idea that the structural conditions of a country influence news about renewable energy.

To accelerate the development of renewable energy facilities, Indonesia has indeed planned to issue a renewable energy law since 2022, but until now it has not been realized. Unfortunately, the media has also not paid serious attention to the law, and the issue of the importance of having a renewable energy law is rarely raised as a media agenda. In this regard, Indonesia lags behind other ASEAN countries, for example, neighbouring Malaysia, who Arfua the Renewable Energy Act (RE Act 2010), which was passed in 2011 to promote the use of renewable energy by offering Feed-in Tariff (FiT). Arguably this provides more attractive incentives to spur the development of power plants from renewable energy resources connected to the electricity grid (Govindaraju, 2019).

Conclusions

Based on the findings and discussion, it can be concluded that new media paid more attention to renewable energy than old media. Framing analysis shows that the 'problem vs. benefit' and 'treatment recommendation or solution' frames emerged as the most dominant frames in news reporting on renewable energy. Meanwhile, the types of renewable energy that were most widely reported were geothermal and hydropower. In addition, there were differences in the amount of media coverage in Indonesia based on the type of energy where renewable energy was more often reported than fossil energy. The research findings show that the media in Indonesia framed renewable energy more positively than fossil energy. As many as 82% of news articles were considered positive or neutral and only 5% of articles reported renewable energy as something negative. However, there was no difference in framing between old and new media, which answered the research gap mentioned earlier. The results of the analysis also show that the media frames renewable energy more favorably than fossil energy. Finally, as a country with structural conditions of many rivers and active volcanoes, the media in Indonesia reported more and more positively on the use of hydropower and geothermal as new energy sources.

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