

A Path Analysis of Greenwashing in a Trust Crisis Among Chinese Energy Companies: The Role of Brand Legitimacy and Brand Loyalty

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Abstract For many energy companies in China, green brand strategy is becoming an important approach to enhance competitive advantage. However, greenwashing behaviors result in a crisis of trust. Existing research focuses on green marketing, but is silent on the institutional view of the trust crisis resulting from greenwashing by energy brands. Thus, this study takes a decoupling perspective from institutional theory and considers legitimacy, energy policy management, and green brand theories to shed light on the path from the decoupling of an energy brand from green promise (DEBG) to green energy brand trust (GEBT) and the role of brand legitimacy and brand loyalty. It then analyzes survey data to conclude that DEBG not only has a direct negative effect on GEBT but also has an indirect influence through the vital mediating role of green energy brand legitimacy. Moreover, brand loyalty is a moderating factor and can alleviate the energy brand trust crisis. These findings not only can enrich the theories of energy brand

management and green marketing but also offer important implications for energy policy management.

Keywords Greenwashing · Energy brands · Decoupling · Legitimacy · Brand loyalty · Brand trust

Introduction

In recent years, many energy companies have been paying more attention to environmental issues because of worsening environmental pollution. Meanwhile, increasing customer demands for environment-friendly products indicates their positive attitude to green energy products or brands (Chen 2008; Herbes and Ramme 2014; Salmela and Varho 2005). Green brands are those brands that customers associate with environmental protection and sustainable business practices (Wikipedia 2012). In 2009, the market for green products and services was worth approximately 230 billion dollars and was expected to increase to 845 billion dollars in 2015 (Heidi 2015). Thus, many energy companies in China and other countries (e.g., Sinopec, PetroChina, CNOOC, Shell, ExxonMobil, and BP) are hurrying to build their green brands. For example, under pressure from the public, government, customers, media, dealers, and other stakeholders for greater environmental protection, the three largest energy companies in China (i.e., Sinopec, PetroChina, and CNOOC) supplied green products and brands to gain support and social acceptance. Specifically, Sinopec gained financial or popular support from the government and public of Qingdao City, China when it used approximately 50 million dollars to build new green gas stations and promote new green energy brands (Liu 2008); PetroChina gained strong rapport from local dealers, the

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media, and government by investing approximately 2.6 billion dollars into environmental protection and green products and brands (Shi 2008); CNOOC put approximately 2.5 billion dollars into building a new energy production base and brands, thereby gaining a good reputation with the public and government in Tianjin, China (Wu 2009).

In 2002, the Mintel global database showed only five brands in the food and beverage industry to be greening their entire production process, but by 2007, the number had increased to 328, with a 200 % annual growth rate (Crowley 2008). However, the public attaches more importance and attention to one issue: are green energy brands trustworthy? and do they really deliver what they promise (Roth 2010), specifically when energy brands have the stereotype of being heavy polluters? In addition, even as Interbrand published the list of “Best Global Green Brands” (Interbrand 2014), the well-known Chinese newspaper INFZM released “The Greenwashing List in 2013,” revealing the trust crisis arising from greenwashing by “green” brands (Duan and Jie 2013). Greenwashing here refers to the integration of two corporate behaviors: poor environmental performance and positive communication about environmental performance (Delmas and Burbano 2011). The trust crisis caused by greenwashing puts green brands at risk and can even result in the loss of brand equity (Cai 2011). Moreover, there is no Chinese energy brand in the list of “Global Best Green Brands.” Therefore, it is urgent that Chinese energy companies restore trust after greenwashing and improve their environmental protection performance if they are to increase their competitive advantage.

More important, the institutional environment is essential for alleviating the green energy brand trust (GEBT) crisis, as the following energy market reactions show:

Shell, ExxonMobil, and BP gained customers’ trust and higher outcomes for obtaining good communication and awareness with environment-friendly organizations. However, Sinopec, PetroChina, and CNOOC may lose customers’ trust for failing to obtain green certifications, with the potential result of future risk to brand equity (Cai 2011).

From these reactions, it is clear that institutional environments have an important effect on the green energy brands trust crisis (Chen 2010; Roth 2010). Furthermore, brand legitimacy in institutional environments offers a unique and vital perspective to explore green brand management (Kates 2004) and trust alleviation. Thus, from the view of legitimacy, green brand trust strategy is defined here as a means to “obtain and extend legitimacy, maintain the existing legitimacy, and make up the lost or threatened legitimacy” (O’Donovan 2002). More importantly, energy brand legitimacy can enhance GEBT by providing overall social support and the fit of energy brands with social

institutions rather than by considering only the micro-level environment and the support of a single stakeholder (Kates 2004). Therefore, green energy brands can be accepted and trusted not only by customers but also by the government, the public, the media, the dealers, etc., so that their final outcome (brand equity) can be improved. Consequently, an urgent problem in present energy policies and existing brand research is how to solve the energy brand trust crisis caused by greenwashing from a novel and interesting perspective of overall social support and brand legitimacy? To solve this problem, we must first find out the path from decoupling of an energy brand from green promise (DEBG) to GEBT, the role of brand legitimacy, and the mitigating factor (i.e., brand loyalty) that might alleviate the energy brand trust crisis.

However, existing green brand research is limited in green marketing (Grant 2008; Laroche et al. 2001), and the research is still silent on energy brands from a legitimacy perspective. Green brand research, let alone about energy companies, is still a relatively new research field (Hartmann et al. 2005; Ivana 2007). Moreover, the related research focuses only on determining the brand strategies of green brands (Hartmann et al. 2005; Ivana 2007), ignoring the institutional conditions and social supports necessary to alleviate the GEBT crisis. At present, customers are confused about the behaviors of green energy brands because of their greenwashing (Roth 2010).

Therefore, although the previous studies are very necessary and important, few shed light on GEBT from the perspective of legitimacy and decoupling from institutional theories. To fill this gap, this study focuses on the path from DEBG to GEBT from an institutional perspective, using literature on the drivers of greenwashing, decoupling and legitimacy, brand trust, brand loyalty, and green energy policy to analyze the path and the role of brand legitimacy and brand loyalty. Then, based on survey data analysis, this study uses SEM (Structure Equation Model) and regression models to test the path of DEBG to GEBT and the role of brand legitimacy and brand loyalty in the path.

Literature Review

Greenwashing Research

According to Delmas and Burbano (2011), greenwashing refers to the integration of two corporate behaviors: poor environmental performance and positive communication about environmental performance. Moreover, based on the three institutional pillars—regulatory, normative, and cognitive (Scott 2001)—the drivers of greenwashing include nonmarket external factors (regulatory and monitoring context: lax and uncertain regulatory environment,

activist, non-governmental organizations, and media monitoring); market external factors (customer demand, investor demand, and competition pressure); organizational factors (company characteristics, incentive structure and culture, effectiveness of intra-company communication, and organizational inertia); and individual psychological factors (optimism bias, narrow decision framing, and hyperbolic intertemporal discounting) (Delmas and Burbano 2011), as shown in Fig. 1. Additionally, Delmas and Burbano (2011) proposed appropriate management strategies to reduce the false communication of greenwashing companies, to increase the transparency of environmental performance, and to enhance the understanding of greenwashing and coordinate internal structures, processes, and incentives.

Decoupling of Institutional Theory

The concept of decoupling is derived from the discipline of organizational theory. Beverland and Luxton (2005) noted that companies survive to the extent that they are seen as legitimate by their publics. In early institutional theory, decoupling was proposed by Meyer and Rowan (1977). The core concept is that organizations often follow formal policies, plans, and programs to demonstrate to the public that they are compliant, and decoupling their actual operations from formal structures in an attempt to buffer internal conflicts from an uncertain situation. However, most studies about decoupling theory are based on case study and qualitative research methods (Westphal and Zajac

2001). For example, qualitative research on the educational system and the importance of government enforcement and community needs suggested that the daily affairs of teaching and management were decoupled from formal adopted standards and procedures (Westphal and Zajac 2001).

Meanwhile, a few quantitative studies on institutional processes are concerned with how organizations deal with institutional pressures by adopting new programs, policies, or other structures (Oliver 1997). In most cases, this involves compliance with industry standards (Scott 2001), or at least apparent compliance (Beverland & Luxton, 2005). In addition, Westphal and Zajac (1994) analyzed a large sample to determine the causes of decoupling. Westphal and Zajac (2001) then delineated why organizations engaged in decoupling behavior and explained when and to what extent decoupling behavior would most likely appear.

Although Beverland and Luxton (2005) introduced decoupling theory into the study of IMC (Integrated Marketing Communications), few studies of institutional theory have applied decoupling to analyze brand management, greenwashing behavior, and much less energy policy. Moreover, because legitimacy and authenticity are components of a unique brand identity, they are core elements of a successful brand (Keller 1993), especially of an energy brand. Therefore, energy brand research based on decoupling theory is quite necessary. It is also worthwhile to study the legitimacy of energy brands and the loss of brand trust resulting from the decoupling behavior of their greenwashing.

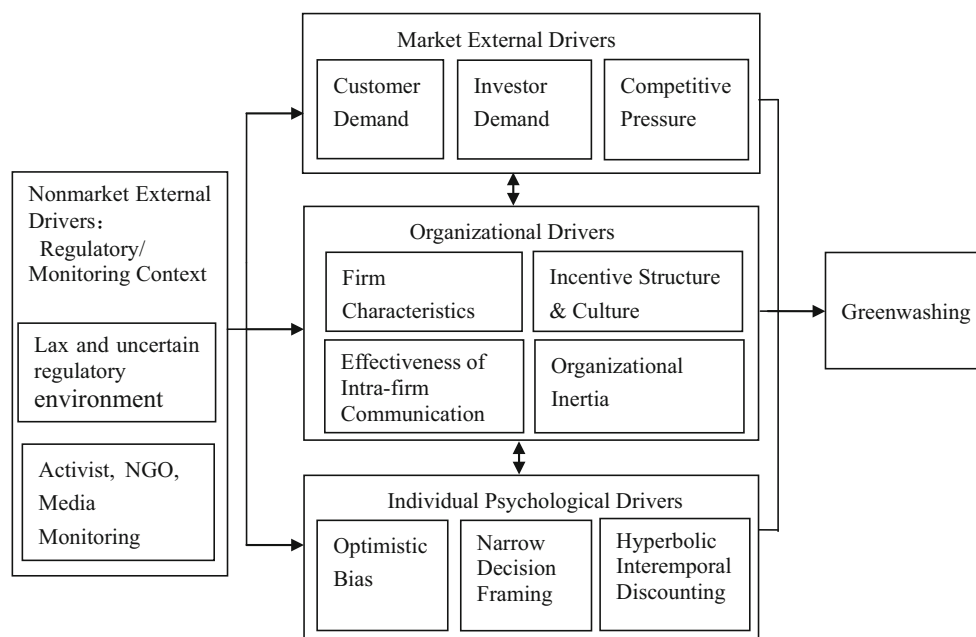


Fig. 1 The Drivers of greenwashing source Delmas and Burbano (2011)

Green Energy Brand Legitimacy

In institutional theory, legitimacy refers to a generalized perception or assumption that an entity's actions are considered to be desirable, proper, and appropriate within some socially constructed system of norms, values, beliefs, and definitions (Higgins and Gulati 2006; Suchman 1995). Legitimacy is divided into three types: pragmatic, moral, and cognitive (Higgins and Gulati 2006; Suchman 1995). According to institutional theory, an energy company and its brand are one part of the economic and institutional environment (Kates 2004). Energy brand legitimacy refers to a general perception or assumption that the actions or strategies of an energy brand are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions (Kates 2004; Suchman 1995). Energy brand legitimacy is also classified as (1) Pragmatic legitimacy, meaning that it benefits various audiences and is a transactional outcome of an energy organization or individual (an energy brand) with constituents (Suchman 1995). For example, if after greenwashing an energy brand provides new environmental technologies and additional environmental support for government, supply chain enterprises, and customers, it will gain pragmatic legitimacy; (2) Moral legitimacy denotes a positive judgment and evaluation of an energy organization or individual (an energy brand) and its actions (Kates 2004; Suchman 1995). For example, to maintain its moral legitimacy after greenwashing an energy brand can respond quickly and apologize for its behavior; (3) Cognitive legitimacy refers to the comprehensibility and acceptance of an energy organization or individual (an energy brand) and its actions (Kates 2004; Suchman 1995). For example, an energy brand after greenwashing might gain an authoritative international green certification, increasing acceptance of the brand, and resulting in an improvement in its cognitive legitimacy.

Thus, it is very important for an energy brand to gain legitimacy, that is, social support and fit (Kates 2004). Social support and fit can improve brand trust (Chen 2008), therefore, after greenwashing improving brand legitimacy is very helpful to an energy brand for alleviating its brand trust crisis.

Green Energy Brand Trust

Trust is defined as the level of confidence one has in the anticipated behavior of another party (Hart and Saunders 1997). Previous studies suggested that trust includes three beliefs: honesty, benevolence, and reliability (Blau 1964; Schurr and Ozanne 1985). As we know, brand trust is defined as the dependence of customers, that is, a dependence on a green brand to perform what is expected (Chaudhuri

and Holbrook 2001; Moorman et al. 1992; Morgan and Hunt 1994). Consequently, according to Blau (1964), Chaudhuri and Holbrook (2001), Chen (2010), Ganesan (1994) and Schurr and Ozanne (1985), this study defines GEBT as a dependency on beliefs or expectations based on credibility, benevolence, and environmental performance.

Therefore, customer trust will affect purchasing decisions (Gefen and Straub, 2004), and trust is very important for a green brand (Chen 2010). However, companies need to promote new products or brands, and if the promotion contains misleading or confusing green slogans and exaggerates environmental performance, customers will no longer believe in the brand (Kalafatis and Pollard 1999). This is the why an energy brand needs to alleviate its brand trust crisis after greenwashing.

Theoretical Framework and Hypothesis Development

Based on the definition of greenwashing by Delmas and Burbano (2011), “decoupling” behavior as defined by Meyer and Rowan (1977), and the process model (Fig. 2) of Kimberly and Sutton (1992), this study proposes a conceptual model of the path from DEBG to GEBT from an institutional perspective using the theories of greenwashing motivation, “decoupling” and legitimacy, brand trust, brand loyalty, and green energy policy (Fig. 3).

At first, “decoupling” behaviors here mean that energy brands after greenwashing always appear to adopt formal policies, plans, and programs to demonstrate their conformity to social norms, even as they are decoupling some of their actual practices from those formal structures (Meyer and Rowan 1977). However, the purpose of decoupling behaviors is to maintain legitimacy with important external constituents by buffering internal routines from external uncertainties to enhance flexibility (Meyer and Rowan 1977). Thus, the greenwashing of “green” energy brands is essentially a decoupling behavior for alleviating the external public pressures and uncertainties and avoiding the conflict with external constituents. The decoupling includes symbolic environmental protection behaviors that have no positive impact and that fail to fulfill environmental protection commitments. Moreover, organizations are more likely to use a “decoupling” strategy to avoid institutional pressures (Oliver 1997) because they often do not want to pay more to implement those formal pressures. If a green energy company wants to meet the demands and pressures of external constituents, but it cannot achieve the goal of environmental performance that it promised, the company engages in greenwashing behaviors. Thus, when some green energy brands cannot achieve the demands of a “green” energy product, industry environmental standards,

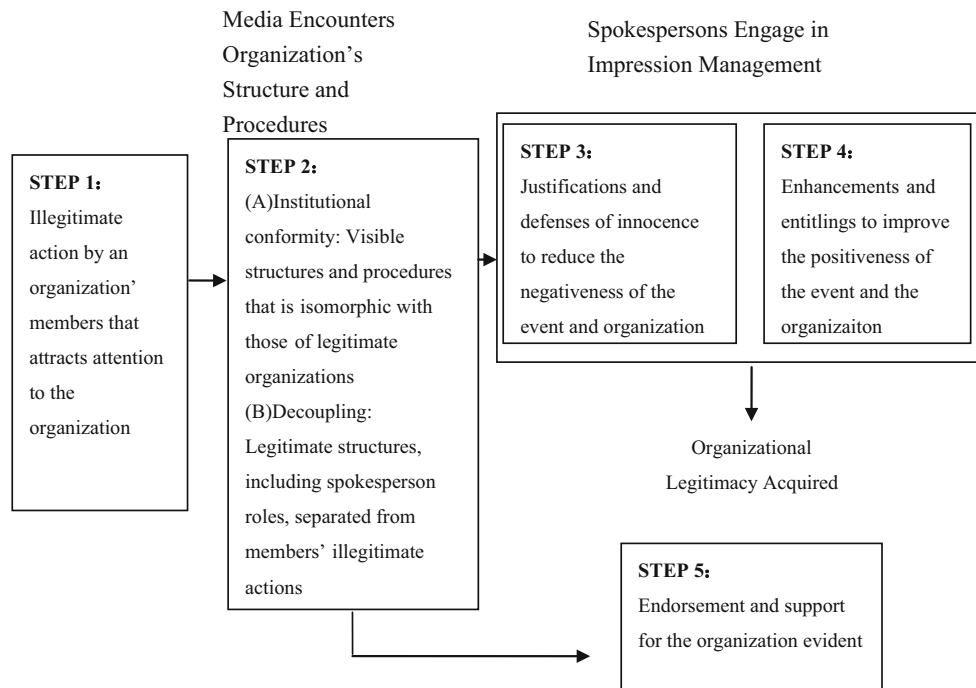


Fig. 2 A process model of how illegitimate actions by members of radical social movement organizations can ultimately lead to acquired organizational legitimacy *Source* Kimberly and Sutton (1992)

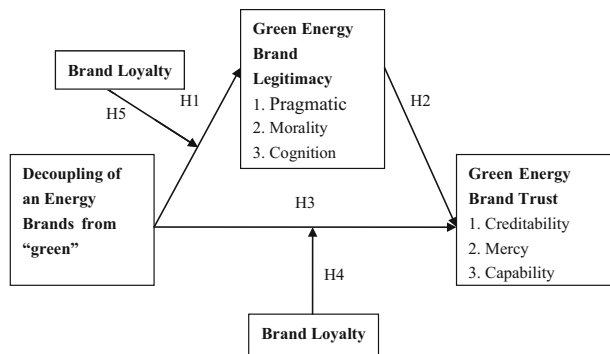


Fig. 3 Theoretical framework of this study *Source* this study

and government environmental protection requirements, etc., it engages in decoupling behaviors to increase the acceptance of external constituents such as energy customers and governments (cognitive legitimacy) (Suchman 1995), their positive evaluation (moral legitimacy) (Suchman 1995), and constituents' interest in "green" or environmental protection (pragmatic legitimacy) (Suchman 1995). Based on this reasoning, H1 is proposed as follows:

H1 Decoupling of an energy brand from green promise (DEBG) has a negative impact on its green energy brand legitimacy (GEBL).

Kates (2004) noted the brand strategies that companies need to gain social support and fit by improving pragmatic legitimacy, moral legitimacy, and cognitive legitimacy.

Social support and fit can help green brands improve brand trust because energy brand legitimacy plays an important role in obtaining, maintaining, and enhancing GEBT (Chen 2010; Kates 2004). Therefore, if an energy brand after greenwashing can gain support from social constituents, for example, getting media rapport and institutional certification, the social supports can improve brand trust after greenwashing. Therefore, H2 is proposed as follows:

H2 Green energy brand legitimacy (GEBL) has a positive impact on its green energy brand trust (GEBT).

Moreover, the "decoupling" behaviors of an energy brand from green promise are always "words not matched by deeds", which will inevitably cause the direct loss of customer trust in the energy brand. Meanwhile, based on the reasoning of H1 and H2, decoupling an energy brand from green promise can influence the energy brand trust among customers by achieving social fit and support. In addition, Chen (2010) delineated that GEBT is an important factor and mediator in green brand equity. Thus, H3 is proposed as follows:

H3 Green energy brand legitimacy (GEBL) plays a mediator role between DEBG and its green energy brand trust (GEBT).

In addition, brand loyalty is defined as customers' deeply held commitment to consistently re-purchase a preferred product or service in the future, thereby causing

repetitive same brand or same brand set purchasing, despite purchase situational changes and marketing efforts of other brands in an attempt to change customers' buying behavior (Oliver 1997). Moreover, brand loyalty has a positive impact on customer buying behavior. For example, despite Sinopec's past greenwashing behaviors, the company still has many fans and loyal customers who like and trust it and actively defend Sinopec's brand trust. Therefore, after greenwashing, loyal customers can mitigate the negative effect of DEBG on their brand trust more than non-loyal customers. This is consistent with the brand equity theory of Aaker (1991) and Keller (1993). Therefore, H4 is proposed as follows:

H4 Brand loyalty negatively moderates the effect of decoupling of an energy brand from green promise (DEBG) and its green energy brand trust (GEBT).

Furthermore, customers loyal to an energy brand after greenwashing can mitigate the negative effect on brand legitimacy that results from DEBG more than non-loyal customers can. For example, Sinopec fans, actively loyal energy brand fans, are more likely to use word-of-mouth offline and online or other methods to defend the social support and fit of the brand than non-loyal constituents, even when it's entangled with the trust crisis resulted from greenwashing. Therefore, the negative effect on its brand legitimacy from an energy brand's decoupling from green promise is mitigated by brand loyalty, consistent with the brand legitimacy research of Kates (2004). Therefore, H5 is proposed as follows:

H5 Brand loyalty negatively moderates the effect of decoupling of an energy brand from green promise (DEBG) and its green energy brand legitimacy (GEBL).

Measurement and Hypothesis Test

Based on institutional, brand, and energy management theories, this study focuses on the trust crisis of an energy brand after greenwashing and explores the path from GEBG to GEBT and the role of brand legitimacy and brand loyalty. Furthermore, according to the customer-based brand equity theory proposed by Keller (1993), this study uses a survey to collect data to test the hypothesis and research framework. First, from the "Chinese greenwashing list" of INFZM in 2010, 2011, and 2012, we found that most greenwashing energy brands in China are in the energy and mineral industries. Thus, this study chooses Sinopec Inc. for the target brand because Sinopec appeared in the INFZM list in 2011 and 2012, ranking first and second in energy brands and sixth and fourth in all brands, respectively (INFZM 2012, 2013). Moreover, Sinopec has

spent approximately 1.1 billion dollars during 2008–2014 on green and environmental protection activities and is still on the greenwashing list (Liu 2008; Zhang 2014). In addition, Sinopec is widely recognized by Chinese customers and has many loyal customers in China. The questionnaires were randomly emailed to customers who had purchased from Sinopec. The questionnaire design referred to the decoupling concept in Meyer and Rowan (1977), brand legitimacy in Pratima and Clelland (2004), green brand trust in Blau (1964), Chaudhuri and Holbrook (2001), Elena and Munuera-Alemán (2001), Ganesan (1994), Schurr and Ozanne (1985), and brand loyalty in Jacoby and Chestnut (1978). Moreover, five experts proposed suggestions for the first pre-test questionnaire that we emailed to respondents. After the first pre-test, the second pre-test questionnaires were emailed to 15 random respondents, whom we asked whether the questionnaire statements were unambiguous. Thus, after the two pre-tests, the questionnaire had high content validity. Then, teachers in Chinese universities who have purchased Sinopec products were randomly selected and emailed the questionnaires with the requirement to submit the questionnaires within 1 week. High content validity is necessary because energy products are governed by more international and local environmental laws and regulations than other products and customers need to buy the energy products that they perceive to meet their green demands to reduce environmental pollution. Eventually, this study emailed 300 questionnaires and received 203 valid questionnaires, with an effective response rate of 67.7%. Based on a comparison of response and non-response data (Armstrong and Overton 1977), this study does not have a non-response bias. Moreover, an analysis of Harman's single-factor test indicates that the explained variance of the first factor is 26% of total variance, meaning that CMV (Common Method Variance) is not a serious problem (Lindell and Whitney 2001).

Definition and Measurement

The questionnaire used a 5-point Likert scale from "strongly disagree" to "strongly agree." There were four important constructs in the questionnaire (See Appendix): DEBG, green energy brand legitimacy, GEBT, and brand loyalty. In addition, the study referred to the existing research about "decoupling" in institutional theory, energy brand legitimacy, brand trust brand loyalty, and green energy policy and proposed definitions and measurements for these four constructs. Survey respondents were asked to name the greenwashing energy brand with which they were most familiar. If the answer was Sinopec, the respondent was required to complete the questionnaire. The four important constructs were defined and measured as follows.

The Definition and Measurement of DEBG

The DEBG, according to the definition of “decoupling” in the institutional theory (Meyer and Rowan 1977), greenwashing (Delmas and Burbano 2011), and brand theory (Keller 1993), is referred as to a situation in which an energy company after greenwashing adopts formal policies, plans, and programs to demonstrate conformity to a socially sanctioned purpose while decoupling some of their ongoing, actual practices from these formal structures. Thus, this study defined DEBG as the inconsistency between the environmental commitment of an energy brand after greenwashing and its actual behavior when it wants to meet the demand and alleviate institutional pressure from constituents such as customers, media, public, and governments. Three-item measure of DEBG is developed on the basis of the conceptualization of Meyer and Rowan (1977), Delmas and Burbano (2011) and Keller (1993). The scale assesses the extent to which the energy firm’s environmental protection practices are different from its promises of environmental protection. The three items are shown in Appendix.

The Definition and Measurement of GEBL

According to the definition of brand legitimacy (Suchman 1995; Kates 2004), environmental legitimacy (Pratima and Clelland 2004), and green energy providers (Herbes and Ramme 2014; Salmela and Varho 2005), this study defined green energy brand legitimacy (GEBL) as the general cognition or assumption that a green energy company’s environmental performance is proper, appropriate, or desirable in some socially constructed systems of norms, values, beliefs, and definitions. In addition, GEBL was divided into pragmatic legitimacy (benefiting each green energy constituent), moral legitimacy (gaining the positive evaluation of outputs, processes, procedures), and cognitive legitimacy (taken for granted and comprehensible) from Kates (2004) and Suchman (1995). The six-item measure of GEBL is adapted from Pratima and Clelland (2004). The respondents are asked to indicate the extent to the level of pragmatic, moral, and cognitive legitimacy of the energy brand. The six items are shown in Appendix.

The Definition and Measurement of GEBT

According to the definition of green trust (Blau 1964; Chen 2010; Ganesan 1994; Schurr and Ozanne 1985), brand trust (Chaudhuri and Holbrook 2001; Elena and Munuera-Alemán 2001), and green energy providers (Herbes and Ramme 2014; Salmela and Varho 2005), this study defined GEBT as dependent on beliefs or expectations based on the credibility, benevolence, and ability of an energy company’s environmental performance after greenwashing. Following the studies of Chen (2010) and Chaudhuri and Holbrook (2001),

this study developed the six-item measure of GEBT that indicates the level of the dependence on beliefs or expectations based on credibility, benevolence, and the ability of an energy company’s environmental performance after greenwashing. The six items are shown in Appendix.

The Definition and Measurement of Brand Loyalty

This study adopted Oliver’s (1997) definition of brand loyalty as customers’ deeply held commitment to consistently re-purchase a preferred product or service in the future, thereby causing repetitive same brand or same brand set purchasing, despite purchase situational changes and marketing efforts of other brands in an attempt to change customers’ buying behavior. The four-item scale of brand loyalty is adapted from Chaudhuri and Holbrook (2001) to assess the level of purchase and attitudinal loyalty of the energy brand. The four items are shown in Appendix.

Hypothesis Test

This study used structural equation modeling (SEM) and regression models to analyze the survey data and empirically test the conceptual framework and the hypothesis mentioned above in AMOS 17.0 and SPSS 17.0. The SEM model examined the measurement and structural models to test the path from DEBG to GEBT, the mediating role of GEBT, and finally to make regression models to examine the moderating role of brand loyalty in the path. The results are shown as follows.

Measurement Model Results

Table 1 shows the mean, standard deviation, and correlation matrix of each construct derived from the measurement model. Except for the negative correlation between DEBG and other constructs, significant positive correlations exist among green energy brand legitimacy (GEBL), GEBT, and brand loyalty (BL). In addition, this study uses CFA (Confirmatory Factor Analysis) to measure each construct, as shown in Table 2.

The questionnaire in this study was designed based on previous related research. Before preparing for the formal measurement, this study completed the pre-test to modify the questionnaire. Thus, this study shows high content validity. Additionally, this study measured the reliability of each construct. At first, it examined each item loading of each construct (each loading is shown in Table 3) and then measured Cronbach’s α for each construct (each Cronbach’s α is also shown in Table 3). Each Cronbach’s α is greater than 0.7, meaning that the reliability of each construct is acceptable (Hair et al. 1998). This study also examined the validity of the measurement and used the average variance extracted

Table 1 Means, standard deviations, and correlations

Constructs	Mean	Standard deviation	A	B	C
A. DEBG	4.231	0.312			
B. GEBL	4.016	0.361	-0.218*		
C. GEBT	3.724	0.564	-0.364*	0.396**	
D. BL	3.689	0.438	-0.322*	0.238**	0.315**

* $p < 0.05$, ** $p < 0.01$

Source this study

Table 2 Factor analysis

Constructs	Number of items	number of factors	Cumulative percentage of variance explained
DEBG	3	1	43.2
GEBL	6	1	38.6
GEBT	6	1	53.3
BL	4	1	56.4

Source this study

Table 3 Item λ loadings, Cronbach's α , and AVE of each construct

Constructs	Item	λ	Cronbach's α	AVE	CR	AVE square root
DEBG	DEBG1	0.882	0.723	0.676	0.862	0.822
	DEBG2	0.764**				
	DEBG3	0.816**				
GEBL	GEBL1	0.834	0.802	0.699	0.933	0.836
	GEBL2	0.872**				
	GEBL3	0.825**				
	GEBL4	0.831*				
	GEBL5	0.867**				
	GEBL6	0.786**				
GEBT	GEBT1	0.886	0.812	0.709	0.936	0.842
	GEBT2	0.835**				
	GEBT3	0.824**				
	GEBT4	0.852**				
	GEBT5	0.821*				
	GEBT6	0.832**				
BL	BL1	0.863	0.836	0.780	0.914	0.883
	BL2	0.902**				
	BL3	0.884*				

* $p < 0.05$, ** $p < 0.01$

Source this study

(AVE) to assess the discriminant validity of the measurement (Fornell and Larcker 1981). According to the Fornell and Larcker (1981), if the square root of AVE is greater than the correlation coefficient between constructs, the discriminant validity of the measurement would be acceptable. Tables 1 and 3 show that the square root of the AVE of each construct is greater than 0.8 and greater than the correlation coefficients. Thus, the measurement has good discriminant validity. Meanwhile, because each AVE is greater than 0.5, the convergent validity was acceptable. Therefore, the reliability and validity analysis shows that the measurements in this study have both good reliability and acceptable validity.

To further assess the discriminant validity, this study has used the new HTMT (heterotrait-monotrait) method based on MTMM (Multi-Trait, Multi-Method) matrix, proposed by Henseler et al. (2015). Compared to the Fornell-Larcker's criterion and the assessment of cross-loadings, this method has a higher sensitivity to detect a lack of discriminant validity (Henseler et al. 2015). The HTMT analysis results are shown in Table 4. Monotrait-heteromethod (MHTT) correlations are in the low-to-moderate range, with the highest convergence ($r = -0.38$) and the lowest convergence ($r = 0.28$). The HTMT correlations vary from -0.36 to 0.40 . The MHTT correlations (mean $r = .245$) are lower than

Table 4 HTMT analysis results

Constructs	A	B	C
A. DEBG			
B. GEBL	-0.36**		
C. GEBT	(-0.38*)	0.40*	
D. BL	-0.23*	(0.28**)	0.26**

Bold correlations indicate discriminant validity coefficients (HTMT, heterotrait–monomethod); correlations in parentheses indicate convergent validity coefficients (MTHT, monotrait– heteromethod); and italicized correlations indicate common method effects (HTHT, heterotrait– heteromethod)

* $p < 0.05$, ** $p < 0.01$

Source this study

the correlations of both the MTHT and HTMT. Therefore, the findings of low-to-moderate MTHT correlations support good convergent validity of constructs while the findings of low-to-moderate HTMT correlations supported a good discriminant validity of constructs (Henseler et al. 2015). The discriminant validity of the measures is assessed in the two ways described above: the HTMT method and the Fornell–Larcker’s method. The results of both analyses indicate that the measurement has a good convergent and discriminant validity.

Structural Model Results

In the mediated model in Fig. 4, GFI, NFI, and CFI are 0.901, 0.913, and 0.914, respectively, whereas RMSEA is 0.032. These overall fit coefficients meet the requirements of a good overall fit ($GFI > 0.9$, $NFI > 0.9$, $CFI > 0.9$, $RMSEA < 0.05$) (Bagozzi and Yi 1988). As shown in Fig. 4, the coefficients of the path are significant, which means that

decoupling an energy brand from green promise has a negative effect on GEBL (-0.326^{**}) and a direct negative effect on GEBT (-0.254^{**}), whereas GEBL has a positive effect on GEBT (0.363^*). Thus, H1, H2 are supported. Additionally, the non-mediated model, shown in Fig. 5, examines the relationship between DEBG and GEBT without the mediator of GEBL. These overall fit coefficients, GFI, NFI, CFI, and RMSEA, are 0.900, 0.905, 0.903, and 0.046, respectively, which meet the requirements of a good overall fit ($GF > 0.9$, $NFI > 0.9$, $CFI > 0.9$, $RMSEA < 0.05$) (Bagozzi and Yi 1988). Moreover, the path coefficient is -0.418^{**} ($p < 0.01$), which means that DEBG has a significant effect on GEBT without the mediator of GEBL.

Therefore, based on the coefficients of the mediated model in Fig. 4 and those of the non-mediated model in Fig. 5, GEBL played a mediating role between DEBG and GEBT (Baron and Kenny 1986). Thus, H3 is supported. The final test results of H1-3 are shown in Table 5.

Regression Model Results

To test the moderating effect of brand loyalty on the relationship between DEBG and GEBT, this study used regression models proposed by Baron and Kenny (1986) and Wen et al. (2005). At first, after the centralization of the independent variable (i.e., DEBG) and the moderator variable—that is, BL— R_1^2 can be measured by the regression from GEBT to DEBG, BL, and their interactive terms $DEBG*BL$. Then, R_2^2 can be measured by the regression from GEBT to DEBG and BL. As shown in Table 6, R_1^2 (0.48) is significantly higher than R_2^2 (0.32), and the interaction term $DEBG*BL$ regression coefficient is also significant (-0.168^{**}). According to the moderating rules

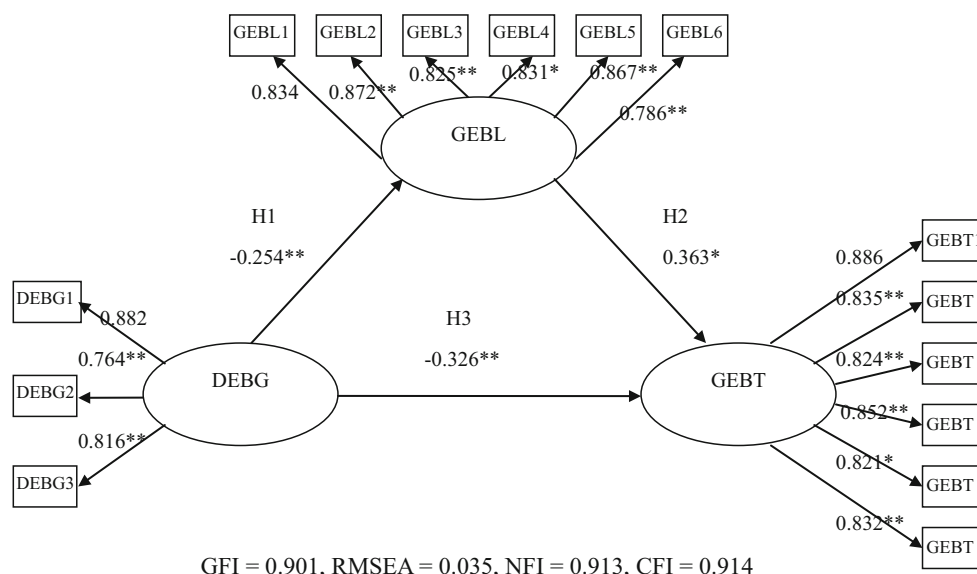


Fig. 4 The results of structural equation model (SEM) * $p < 0.05$, ** $p < 0.01$. Source this study

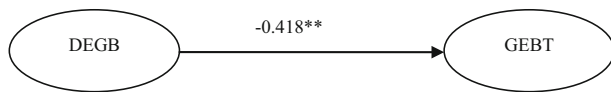


Fig. 5 The path coefficient of non-mediated model $***p < 0.01$. Source this study

from Wen et al. (2005), these results suggest that the moderating effect is significant and that brand loyalty can alleviate the negative effect from DEBG on GEBT. Therefore, H4 is supported.

The same regression analysis is applied to test the moderating effect of brand loyalty on the relationship between DEBG and GEBL. As shown in Table 7, R_1^2 (0.56) is significantly higher than R_2^2 (0.38), and the interaction term DEBG*BL regression coefficient is also significant (-0.142 **). According to the moderating rules from Baron and Kenny (1986) and Wen et al. (2005), these results suggest that the moderating effect is significant and that brand loyalty can moderate the negative effect from DEBG on GEBL. Therefore, H5 is supported.

Conclusions and Discussion

While the world faces serious environmental pollution problems, partly resulting from energy companies, energy customers, especially in China, increasingly prefer environmentally friendly energy products and brands (Chen 2010; Herbes and Ramme 2014; Salmela and Varho 2005). For example, under pressure from the public, government,

customers, media, and other stakeholders for greater environmental protection, the three largest energy companies (i.e., Sinopec, PetroChina, and CNOOC) supplied green products and brands to gain support and social fit. Specifically, after Sinopec took approximately 50 million dollars to build new green gas stations and promote new green energy brands, it gained financial or popular support from the government and public of Qingdao City, China (Liu 2008). On February 25th of this year, Sinopec spokesman Lv Dapeng said in the Global Compact China Internet Conference that the “Clear Water and Blue Sky” environmental protection plan would invest approximately 2.3 billion dollars to complete 472 environmental improvement projects. This would account for more than half of the total number of projects, which include the reduction of major pollutants, treatment of volatile organic compounds, odor control, and environmental risk control to improve the company’s reputation and support from the public and government (Zhang 2014). PetroChina invested approximately 2.6 billion dollars into environmental protection and introduced green products and brands, earning strong rapport from local dealers, the media, and the government (Shi 2008), CNOOC put approximately 2.5 billion dollars into building its new energy production base and brands, gaining a good reputation from the local public and government in Tianjin, China (Wu 2009).

Energy companies have introduced a variety of green energy brands to attract customer purchases because this positive trend not only could benefit the public, the government, customers, and other stakeholders but also could improve the environmental performance and reputation of the

Table 5 Hypothesis test results of SEM

Hypothesis	Expected results	Path coefficients	Hypothesis testing results
H1	–	–0.326**	Support
H2	+	0.363*	Support
H3	–	–0.254**	Support

* $p < 0.05$, ** $p < 0.01$

Source this study

Table 6 Regression model of moderator effect in H4

Model	c	R^2	Sig
GEBT = aDEBG + bBL + cDEBG*BL + e	–0.168**	0.48	0.000
GEBT = aDEBG + bBL + e		0.32	0.000

** $p < 0.01$

Source this study

Table 7 Regression model of moderator effect in H5

Model	c	R^2	Sig
GEBL = aDEBG + bBL + cDEBG*BL + e	–0.142**	0.56	0.000
GEBL = aDEBG + bBL + e		0.38	0.000

** $p < 0.001$

Source this study

green energy brands. However, because green energy brands need more environmental inputs than non-green energy brands, the actual environmental performance of many green energy brands is far from the commitments they have made; therefore, green energy brands do not keep their word. Then, the dishonest energy brands give rise to the unique social phenomenon of greenwashing in energy brands, that is, the decoupling activities found in institutional theory. Thus, if an energy brand engages in decoupling behavior, that is, its actual operations and behaviors inconsistent with its green commitments, it must cope with external institutional stress (Meyer and Rowan 1977).

Meanwhile, existing research focuses on green marketing and green branding from the customer's (micro-level) perspective rather than from the perspective of society and institutions about the path from DEBG to GEBT. Previous research in neo-institutional theory is also silent on the introduction of decoupling and legitimacy for exploring energy policy issues. Thus, to fill the research gap, this study introduced decoupling and legitimacy from institutional theory and green energy management in energy policy theory to explore the path from DEBG to GEBT and provided a new perspective on energy policy research, i.e., from the institutional view. Based on the survey data targeting Chinese energy companies, this study employed SEM and regression models to analyze the path from DEBG to GEBT and to conclude some interesting and vital findings, namely that DEBG not only has a direct impact on brand trust but also has an indirect effect on brand trust through the mediating role of brand loyalty. In other words, by meeting public green interests, moral and industrial green standards, and green cognition and acceptance, green energy brands that engage in the decoupling behavior of greenwashing can alleviate their brand trust crisis. Another important finding is that brand loyalty can alleviate the negative effect of greenwashing on GEBT. This finding suggests that fostering brand loyalty is a very valid and important strategy for energy brands to alleviate their brand trust crisis, especially in a trust crisis resulting from greenwashing.

To sum up, brand managers or CMO (Chief Marketing Officer) of energy companies after greenwashing should take from the interesting and pivotal findings of this study that, before taking valid strategies to alleviate energy brand trust crisis resulted from greenwashing, they should first understand the path from DEBG to GEBT. Managers also should start from the perspectives of each constituent (customers, governments, media, suppliers, distributors, public, etc.) and of legitimacy (social fit) to analyze the path and mitigating factors in the trust crisis. Moreover, although according to the customer-based brand equity theory of Aaker (1991) and Keller (1993) the main purpose of brand strategy is to influence the customers, it is clearly not enough for either marketing research or energy policy

research to explore energy policies of green energy brands after greenwashing from a single perspective, i.e., the customers. Thus, from the perspective of overall social fit of green energy brands, that is, a legitimacy perspective, we can deeply analyze the path from DEBG to GEBT. Moreover, the greenwashing energy companies need to adjust their outdated and incomplete perspective, and strategies to alleviate brand trust should not be based solely on customers, but on the whole social support network. For example, to meet the green energy interests of each constituent, reach green energy industrial and moral standards, and strengthen the green cognition and take-for-grantedness of energy brands, these legitimacy strategies are important to alleviate the energy brand trust crisis. In addition, energy brands after their greenwashing should make full use of the mitigating role of brand loyalty to alleviate the trust crisis. Specifically, as one of the three largest oil companies in China, Sinopec began to pay more attention to other stakeholders besides the government and customers, especially to the media and public, to satisfy their interests and forge better trust relationships because of the incremental communication capability of the internet and growing public concerns about environmental protection (Liu 2008). In addition, PetroChina gained some international green certificates and encouraged loyal customers and dealers to support its green brands, announcing that its green business behaviors complied with industrial green standards and INFZM (2013), (2012) and Liu (2008).

Finally, a limitation of this study is its focus is on the Chinese energy industry. Future research could pay attention to other countries. Cross-cultural energy policy research is necessary to determine the path from DEBG to GEBT because different regulative, normative, and cognitive institutions can forge completely distinctive brand legitimacy and result in different brand trust and mitigating effects of brand loyalty. In addition, the survey sample is limited to teachers in Chinese universities; this should be enlarged to samples from other industries and the data should be collected from a more diverse sample, such as governments, media, and competitors. Meanwhile, a longitudinal or dynamic data analysis is important for further research because the cross-sectional analysis of survey data is insufficient to shed light on the dynamic effect on GEBT. Moreover, this study focused only on the path from DEBG to GEBT, but not on specific brand strategies to alleviate a GEBT crisis and mitigate the trust crisis resulting from DEBG. This might be an interesting subject for future research. Finally, the relationship between GEBT and the final outcome (green energy brand equity), is worth further research.

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Appendix

Questionnaire

You are being invited to participate in a research study about green brand study. The Objective of this research project is to attempt to understand green brands.

There are no known risks if you decide to participate in this research study, nor are there any costs for participating in the study. The information you provide will help me understand green brands. The information collected may not benefit you directly, but what I learn from this study should provide general benefits to customers, companies, and researchers.

This survey is anonymous. If you choose to participate, do not write your name on the questionnaire. No one will be able to identify you. No one will know whether you participated in this study. Your participation in this study is voluntary. You are free at any time to leave if you feel comfortable.

What is Your Most Familiar Greenwashing Energy Brand?

- If the answer is Sinopec, go on answering the following items.
- If the answer is not Sinopec, stop here.

Please Read the Following Items and Give Your Answer Based on Your Real Thoughts About Sinopec with 1 (Strongly Disagree) to 5 (Strongly Agree)

1. The decoupling of an energy brand from "green"

The decoupling of an energy brand from "green"	1	2	3	4	5
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- This energy brand (Sinopec) has not implemented its green promise that they committed;
- This energy brand (Sinopec) has a long distance to a green brand in your mind;
- This energy brand (Sinopec) exaggerated their products or services about the green performance in promotions.

1 = Strongly disagree, 5 = Strongly agree

Source Delmas and Burbano (2011), Keller (1993) and Meyer and Rowan (1977)

2. Green energy brand legitimacy

Green energy brand legitimacy	1	2	3	4	5
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- This energy brand (Sinopec)'s environmental performance is satisfactory;
- This energy brand (Sinopec)'s environmental performance is favorable to the public;
- This energy brand (Sinopec)'s environmental performance conforms to industry and social norms;
- This energy brand (Sinopec)'s environmental performance is appropriate;
- This energy brand (Sinopec) is natural green brand;
- This energy brand (Sinopec)'s environmental performance is consistent with your cognition.

1 = Strongly disagree, 5 = Strongly agree

Source Pratima and Clelland (2004)

3. Green energy brand trust

Green energy brand legitimacy	1	2	3	4	5
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- This energy brand (Sinopec)'s environment commitment is generally reliable;
- This energy brand (Sinopec)'s environmental performance is generally dependable;
- This energy brand (Sinopec)'s environmental argument is generally trustworthy;
- This energy brand (Sinopec)'s environmental concern meets your expectations;
- This energy brand (Sinopec) is honest to environmental performance;
- This energy brand (Sinopec) can keep its words about the green environmental protection.

1 = Strongly disagree, 5 = Strongly agree

Source Chen (2010) and Chaudhuri and Holbrook (2001)

4. Brand loyalty

Green energy brand legitimacy	1	2	3	4	5
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- You will buy this energy brand (Sinopec) next time you buy energy products;
- You intend to keep purchasing this energy brand (Sinopec);
- You are committed to this energy brand (Sinopec);
- You are willing to pay a higher price for this energy brand (Sinopec) over other energy brands.

1 = Strongly disagree, 5 = Strongly agree

Source Chaudhuri and Holbrook (2001)

Your Personal Information

- (1) *Your age* (1) Below 30 years old; (2) 31–40 years old; (3) 41–50 years old; (4) 51–60 years old; (5) Over 60;
- (2) *Your income per month*: (1) Below 3000RMB; (2) 3001–5000RMB; (3) 5001–7000RMB; (4) 8001–10000RMB; (5) Over 10000RMB;

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