Why Administrative Leaders Take Pro-environmental Leadership Actions: Evidence from an Eco-compensation Programme in China

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ABSTRACT

Pro-environmental leadership behaviours have been examined as the result of institutional forces, though anecdotes suggest the significant role of individual leaders. Little is known about this role in environmental policy implementation, and few empirical studies explore pro-environmental leadership behaviours in the public sector. In this study, we empirically test a typology of pro-environmental leadership behaviours, and examine administrative leaders' motives for engaging in pro-environmental behaviours. We then establish the relevance of our findings in environmental policy implementation. We empirically confirm the construct validity of pro-environmental leadership behaviours that require leaders should articulate a policy vision, change followers' perception, and take symbolic actions. Our findings show that leaders' environmental efforts are largely prompted by legal compliance and motivated by instrumental self-interest (e.g., increased economic opportunities), and normative values of engaging with broad sustainability issues may also have limited but potentially long-lasting effects. Moreover, the evidence also suggests the importance of a workplace environment conducive to pro-environmental leadership behaviours. These findings can be used to develop local strategies that stress policy implementation capacity-building to induce pro-environmental leadership behaviours in China.

Keywords: pro-environmental leadership behaviours; environmental policy making and implementation in China

Word count: 9866

1. Introduction

Pro-environmental leadership behaviours are often examined in institutional contexts and consequently explained as the result of institutional forces (Egri & Herman, 2000; Wang, van Wart, & Lebredo, 2014). The role of individual leaders is largely ignored in the literature (Niu, Wang, & Xiao, 2018; Robertson & Carleton, 2018). Institution-based explanations are particularly popular in Western democracies, where policies are made within well-established democratic institutional arrangements (Vogel & Masal, 2015; Benson, Jordan, & Huitema, 2012). Despite varying policy-making contexts, policy actions of individual leaders significantly determine policy implementation and outcomes (Brinkerhoff & Brinkerhoff, 2002; Kim & Young, 2014). Indeed, policy implementation capacity, reflected at the institutional level as resource availability and use, leads to policy outcomes only through individual leaders' actions.

The role of governments has long been considered critical because it offers an essential arena for policy discussion, provides resources, enhances a culture of environmental awareness, and organizes concrete societal actions (Fiorino, 2010; Leuenberger & Bartle, 2009, p. 124). The role of public administrators in environmental policy-making and implementation is particularly salient in Asia where legislative involvement is relatively restricted (in some cases superficial) and an active civic society is yet to develop (Brown, Gong, & Jing, 2012; Niu, Wang, & Xiao, 2018; Kostka & Zhang, 2018). Administrative authorities dominate the political space with resources for decision-making. While the role of public administrators is considered important in environmental policy implementation in Western countries, the policy role of public administrators in many Asian countries is dominant. Indeed, administrative leaders, along with political party forces, are considered the most influential forces in public policy-making in these countries (Cheung, 2005).

In addition to being actively involved in formulating environmental policies, these leaders also directly craft specific administrative practices and supporting systems, which can be complex and need extensive fine-tuning. They help overcome internal organizational resistance to change, and they work with higher levels of government and other stakeholders in evolving educative, facilitative, and regulatory ways to enhance policy effectiveness (Einstein & Humphreys, 2001; Moon, 2016; Wang, Chen, & Berman, 2016).

Despite the prominent role of administrative leaders who engage in pro-environmental actions, there is relatively limited literature discussing this. There is a general sense that pro-environmental leadership actions are lacking at all levels of government (Gallagher, 2012; Niu, Wang, & Xiao, 2018), reflected in delays in climate change action, slow funding growth (Wang, Hawkins, Lebredo, & Berman, 2012; Wang & Berman, 2014), and insufficient intergovernmental and international collaboration (McGuire & Silvia, 2010). A deficit in leadership behaviours that could have salient impact on motivating followers' pro-environmental actions is highlighted by the urgent need for sustainable urban transformation (Block & Paredis, 2013; Pasha, Poister, Wright, & Thomas, 2017; Gamso, 2018). These deficiencies are augmented by the fact that we know little about government leaders' motives for engaging in pro-environmental actions. The existing literature largely focuses on the scopes, contents, needs, and implementation dynamics of environmental policies at institutional levels. Little is known about what motivates individual leaders who are engaged in pro-environmental actions. More research is thus needed to discover and explain the determinants of pro-environmental leadership behaviours in the public sector.

To help fill this important gap in the literature, we examine the type of general leadership theory that is most applicable, and refine the patterned behaviours necessary to facilitate robust pro-environmental actions in governments. We first establish a framework that conceptualizes pro-

environmental leadership behaviours and identify the most appropriate general theory of leadership motives, and from this, detail the patterned leadership motives in a model hypothesized to affect pro-environmental leadership behaviours.

We use the data from an eco-compensation programme in Fujian Province, China. Eco-compensation is a very popular payment-for-ecosystem-services (PES) scheme in China in which environmental products are negotiated and exchanged between entities (Bennett, 2009). In watershed eco-compensation programmes like the one studied here, the goal of keeping a river clean is achieved through an administrative negotiation and collaboration process in which the upstream area restricts its economic growth activities and the downstream area benefiting from this restriction compensates the upstream area financially for its sacrifice in growth. The negotiation process is often long and difficult. Leaders of collaborating governments play a pivotal role in the process and they need to set the vision, explain the benefit of the programme to their employees, and make decisions that have significant financial implications. Leaders' behaviors and actions largely determine the success of the programme. Therefore, the programme provides an ideal setting to study leadership behaviors.

We answer two research questions: 1) How to conceptualize pro-environmental leadership behaviours in governments? 2) What motivates administrative leaders in engaging in pro-environmental behaviours? The study advances the environmental policy and management literature by focusing on a largely overlooked aspect of policy success: the role of individual leaders in pro-environmental behaviours of governments and their motives for such actions. The results of this study will help public managers articulate the concrete steps that prompt a leader towards developing a sustainable pattern of behaviours regarding environmental protection. Policy implications for enhancing macro-level national environmental policy making and implementation

are also discussed.

2. Framework

Leadership is a vague notion that must be conceptualized clearly when studied (e.g., Bass, 1985; Rost, 1993; Yukl, 2002; van Wart, 2013; Pasha, Poister, Wright, & Thomas, 2017). In this research, we focus on activities of organizational leaders who have a primary or sole focus on employees (Van Wart, 2013). We identify the leadership theories most applicable to introducing and expanding the concept of pro-environmental leadership behaviours in the public sector. There are innumerable theories of administrative leadership related to various aspects of policy-making and policy implementation. These theories are relevant to identifying the broad context of our study, but our purposes are more focused in terms of a particular policy area (i.e., environmental policy) in the Chinese context, paying primary attention to implementation, and examining the nature of the administrative component to make pragmatic recommendations. Heeding the famous advice of Stogdill (1948), who changed the course of leadership studies (see Vroom & Jago (2007) for an updated statement), we examine situational parameters meticulously for better analysis and utility.

As a situation-specific phenomenon, leadership focuses on the particular leadership profile that promotes successful policy development or implementation success. Applying broad leadership frameworks to specific classes of situation is one of the cutting-edge areas in the field of leadership (Berman, Bowman, West, & Van Wart, 2016). This application is not the same as when leadership scholars or commentators are discussing the importance of an element of leadership in relatively universalistic terms (e.g., heroic leadership or authentic leadership) or highlighting the study or practice of that element.

2.1. Pro-environmental Leadership Behaviours

Pro-environmental leadership behaviours are practiced by administrative leaders in governmental agencies at various levels (Gallagher, 2012). This study considers pro-environmental leadership behaviours as actions taken by organization leaders to improve the environmental performance in the workplace. Leadership behaviours of administrators primarily focus on motivating pro-environmental initiatives among followers within governmental agencies (Ruepert et al., 2016; Niu, Wang, & Xiao, 2018). Thus far, no pluralist model of leadership has been developed specifically for environmental leadership (Niu, Wang, & Xiao, 2018). Nevertheless, since the most critical element in environmental leadership at this point is change management, as suggested by Portugal and Yukl (1994) when defining environmental leadership, a particularly useful set of theories is that regarding transformational leadership behaviours. Both transformational and environmental leadership theories focus on leaders' symbolic actions (regarding their influence as role models, their values, visionary sharing, and inspirational motivation), as opposed to "economic transactions between the leaders and the followers" (Qi & Zhang, 2014; Niu, Wang, & Xiao, 2018).

Further, the most useful transformational models will not be those that focus nearly exclusively on the agendas of individuals (e.g., charismatic theory, or Bass's (1985) full range theory), but will incorporate the efforts of those individuals in social settings as well. An appropriate theoretical model is Tichy and Devanna's "change master" model (1986), which is one that looks at the change phenomenon broadly in the Kurt Lewin tradition (1951). In this model, the first element or "trigger" is the recognition of the need for change, revitalization, or the critical importance of avoiding disaster. The need for change could originate either internally or externally. The second element is the ability and effort to create a new vision that can be implemented, to

change perceptions, and take symbolic action for followers. The third element is the institutionalized set of actions that will create incentives for long-term change.

However, we augment the insights of transformational leadership with the dominant role of Chinese public administrators in environmental policy-making. This role can be understood as making efforts to emphasize various elements in policy-making and the implementation process as demonstrated in traditional leadership theories, and more deliberately, as part of the developmental process in which administrative actions or capacities evolve in response to various challenges and tasks in balancing environmental protection and economic growth (Boiral, Cayer, & Baron, 2009; Zhan, Lo, & Tang, 2014). This role reflects at the individual level a leader's awareness of eco-centric values and personal commitment to organizational change through various innovative approaches (Boiral, Cayer, & Baron, 2009) as well as his/her enduring efforts to influence followers to jointly address environmental problems (Tsang & Kolk, 2010; Gallagher, 2012).

The change aspect of environmental leadership is manifested in Portugal's and Yukl's (1994) relatively comprehensive conceptualization of environmental leadership in which the challenges facing environmental leaders, especially in pro-growth circumstances, require leadership action in three dimensions. The first dimension includes articulating an appealing vision with environmental elements. An effective leader sets or advocates environmental goals and strategies, communicates the needs, values, and benefits of environmental protection with agency workers, and uses facts, stories, and cases of ecological concerns to demonstrate the value of environmental protection. The second dimension requires changing perceptions about environmental issues. More specifically, it includes asking employees to consider environmental costs and benefits as a normal part of the decision process; holding regular conversations with

stakeholders, both inside and outside the organization, when making sense of complex environmental issues; and encouraging individual employees or subordinates to get involved with green programmes. The third dimension includes symbolic actions to demonstrate personal environmental commitment. Effective environmental leaders are more likely to make dramatic changes that symbolize their commitment to a vision or objective; the results of symbolic action are highly visible and affect the everyday lives of organization members. To be more specific, symbolic actions include encouraging public agencies to adopt eco-friendly technologies and renewable energy in their operations; supporting the development of an agency website dedicated to green programmes; acquiring financial and technical resources for green programmes; supporting proposals to increase funding for environmental protection programmes in public agencies; and drafting or commenting on legislation that increases the agency's environmental sustainability efforts.

Different from the process-oriented approaches that take advantage of existing institutional arrangements in framing pro-environmental leadership actions (Wang, van Wart, & Lebredo, 2014), this definition emphasizes a goal-driven leadership mentality for significant changes in policy directions and adoptions. Most institution-level environmental actions are costly, financially and psychologically, institutional constraints and resistance are high (Eaton & Kostka, 2014; Kostka & Nahm, 2017), and sustained institutional actions are possible only when strong leadership actions are taken to bring about change (Kostka, 2016; Kostka & Zhang, 2018). This definition reflects this policy reality.

The goal-driven approach (Portugal & Yukl, 1994) views environmental leadership as a dynamic process in social change that requires leaders to influence, build consensus, and form collaborations with stakeholders to bring positive changes and achieve environmental goals. In

China, change-seeking actions are primarily reflected in leadership efforts to overcome the traditional mentality that stresses economic growth at the expense of the environment, while in the West, they are more displayed in conflict resolution and partnership development (Uusi-Rauva, 2010; Bruyere, 2015).

2.2. Why Environmental Leadership Behaviours? The Motives to Lead

Much of the literature in environmental leadership concerns business practices in which environmental initiatives are increasingly viewed as a positive way for firms to gain economic advantages in competition through cost-saving, better long-term profit margins, and improved corporate image (Čater, Prasnikar, & Čater, 2009). Economic and financial interests are largely attributable to environmentally responsible behaviours in many firms (Campbell, 2007; Earnhart, Khanna, & Lyon, 2014). However, the motives underlying pro-environmental leadership behaviours largely depend on sector-specific characteristics (Runhaar, Khanna, & Lyon, 2008; Niu, Wang, & Xiao, 2018). In this regard, the motivational factors identified in leadership studies (focusing particularly on the private sector) are not sufficiently convincing to examine environmental leadership behaviours in the public sector. Indeed, lacking the profit motive, the public-sector leader has to rely on normative or instrumental goals in initiating and implementing environmental programmes.

Leadership studies so far have focused mostly on organizational incentives, though an individual's motivation is increasingly verified as one of the best indicators for explaining and predicting their environmental actions (e.g., Kollmuss & Agyeman, 2002; Lindenberg & Steg, 2013). In environmental psychology studies that explore individuals' motivations influencing pro-environmental leadership behaviours, the goal-framing theory (Lindenberg & Steg, 2007) suggests

hedonic, instrumental, and normative goals have great influence on individuals' cognitive and motivational processes (Steg & Velk, 2009).

This approach, later refined and known as the Integrated Framework for Encouraging Pro-environmental Behaviours (IFEP) (Steg, Bolderdijk, Keizer, & Perlaviciute, 2014), integrates motivational factors and situational cues influencing pro-environmental behaviours, presenting the dynamic relationships between hedonic goal-frames, gain goal-frames, and normative goal-frames more clearly. The IFEP has identified two motive paths for promoting pro-environmental leadership behaviours. The first emphasizes individual interests or institutional pressures and, importantly, the need for leaders to fulfill instrumental purposes (e.g., cost saving, regulatory compliance, career advancement etc.) in order to exert influence inside or outside an organization. The second motive path is a normative valuation process echoing the fundamental idea of environmental sustainability, in which leaders discover meaningful ways to promote the types of human activities that reconcile human interactions with the natural environment in shaping civil society. Different from instrumental motives, normative concerns are rooted in a person's deep desire to abide by long-held beliefs or gain intrinsic long-lasting satisfaction.

This instrumental/normative distinction is consistent with the literature on leadership motivation for engaging the public in environmental programme implementation (Wesselink, Paavola, Fritsch, & Renn, 2011). Figure 1 demonstrates the two motive paths. Moreover, pro-environmental leadership behaviours are more likely to be taken in a circumstance perceived by the leader as favorable for pro-environmental actions. This perception, captured in the contextual control in Figure 1, represents the role of stakeholder preference and a leader's perceived capacity to influence others.

[Figure 1 about here]

2.3. Local Administrative Context for Environmental Leadership in China

The dominant role of administrative agencies, along with political party forces, in policy-making in China has been well established (Cheung, 2005). With the absence of a bona fide legislature, bureaucratic positions in policy-making often go unchallenged, and are reinforced by the bureaucratic monopoly of technical expertise in policy implementation (Ahlers & Schubert, 2015). Fiscal decentralization over the past three decades, symbolized by tax structure reforms and relegation of central government decision-making power, has empowered local administrations with policy autonomy and resource diversity, leading to significant progress in local economic development and instructional growth (Zhang, 2006; Zhang, Zhu, & Hou, 2016).

Despite recent policy actions at the national level to stress environmental benefits (Kostka and Zhang 2018), local bureaucrats are still motivated largely by economic growth and the extended benefits associated with it (Xu, 2011; Li & Zhou, 2005; Liu, de Jong, & Huang, 2016). The growth mentality ingrained by more than three decades of rapid economic expansion still carries weight. The benefits of economic growth are still perceived as outweighing the benefits of environmental protection, given considerable pressure from neighboring governments for growth and the lack of immediate benefits of many environmental projects. Performance evaluation systems are still tilted toward economic achievements and growth measures. Bureaucratic behaviours, particularly at the local level, are largely self-serving and instrumental: obeying laws, growing the local economy, promoting personal opportunities, and winning political support for financial resources.

Nevertheless, there have been recent signs of change in policy actions that favor a balanced

approach that takes account of environmental benefits in growth, largely due to the increasing role of local environmental protection bureaus in environmental monitoring and the central government's pressure for sustainable growth (Kostka and Zhang 2018). Underlying a variety of political discourses such as those of "beautiful China" and "ecological civilization", the central government has placed sustainable development high on the agenda. In addition to investing heavily in green technologies, the central leadership has also consolidated power and implemented new environmental measures to strengthen administrative coordination over local governments in 12th and 13th Five-year Plans (Brombal, 2017; Kostka and Zhang 2018; Li, Liu, & Li, 2012; Wang, 2013; Niu, Wang, Gao, & Wang, 2020).

These policy efforts are associated with, or reflect, the media's (social media included) growing awareness of the environmental consequences of development, increasing pressure from citizens and civic groups due to health issues caused by development (Li & Higgins, 2013), and a decentralized decision-making structure that relegates environmental policy implementation and regulation enforcement powers to local governments that are closer to local realities (Zhan, Lo, & Tang, 2014). All these developments indicate an increasing impetus for developing local administrative leadership and central-local leadership coordination in environmental protection.

3. Methodology

A survey and interviews were used in data collection in 2013. The survey was developed to collect data on pro-environmental leadership behaviours and motives in an environmental financing programme in China. The programme, known as eco-compensation, is an innovative payment-for-ecosystem-services scheme in which environmental products, water in this case, are negotiated and exchanged between governments. Eco-compensation has been one of largest environmental

initiatives in China; governments at all levels have invested significantly (Bennett, 2009; Wan & Zou, 2008). The study was conducted on an eco-compensation network in Fujian, a leading eco-compensation province. In this network, there are 96 cities, counties, and townships involved in water resource conservation activities.

To ensure that survey questions would be asked and worded properly, we conducted ten interviews with relevant officials from environmental protection bureaus in a pre-survey preliminary study in which they were asked, in an open-ended fashion, about their agencies' programmes and activities. The results of these interviews were used to construct questions asked in a mail survey. Survey items were developed to measure pro-environmental leadership behaviours and motives, the two key concepts in the study. Specific survey items are presented in Tables 1 and 2. Measures of leaders' personal attributes and behavioural control variables were also developed. These control variables included age, gender, and educational level of the respondents, and the behavioural dynamics that may contribute to pro-environmental leadership behaviours (see Figure 1 and Table 2).

The survey was sent out using a top-down snowball method that began with the provincial government, which identified the persons in charge of the eco-compensation programme at the city/county level. Of all 96 participants in the eco-compensation programme, 80 completed the survey (a response rate of 83.3%). All respondents held key administrative positions involving formulating and/or implementing environmental policies in China. The functions of the individual respondents within the government agencies varied. There are 14 respondents (about 17%) were mayors or chief executive officers at various levels of government; 32 respondents (about 40%) were directors of local environmental protection bureaus; and the remaining 34 respondents (43%) were either managers or supervisors directly involved in the eco-compensation programme. All

respondents were regarded as holding significant administrative responsibilities in the Chinese cadre system.

After the survey, two waves of interviews were conducted with environmental managers to gain insights. A total of 20 environmental managers were interviewed, which was designed to gather additional evidence that could verify and substantiate the findings of the survey data, and to provide examples and explanations of pro-environmental leadership behaviours and motives.

4. Results

4.1. Conceptualizing Pro-environmental Leadership Behaviours

Shown in Table 1, common leadership behaviours are: developing environmental goals (4.550), communicating need and value (4.513), and drafting or commenting on environmental legislation (4.538). Less common are acquiring financial resources (3.988) and technical supports (4.125). Large standard deviations (SDs) suggest that environmental leadership behaviours vary greatly in different governments, especially in acquiring financial resources and technical expertise (0.879 and 0.753 respectively). Financial and technical support are essential for furthering environmental programmes and are more difficult to acquire because of their scarcity. These findings indicate an area for improvement in environmental leadership.

[Table 1 about here]

In this study we are interested in how to conceptualize pro-environmental leadership behaviours in governments. If these behaviours follow certain patterns in practice, they must be classified in certain ways, which requires empirical testing of a typology of the behaviours. The only typology in the literature that helps clarify such behaviours in significant detail is found in

the work of Portugal and Yukl (1994), who argue for a three-dimensional construct of environmental leadership behaviours that especially emphasizes the change dynamics of such behaviours, based on the transformational leadership tradition. In their view, for changes to occur, a leader needs to (a) articulate a vision for environmental goals, (b) change the perception of followers, and (c) take symbolic actions to lead.

In a factor analysis (Table 1), we tested if the survey responses resembled this three-dimensional typology, and whether the typology was comprehensive enough to represent the key contents of pro-environmental leadership behaviours. The conditions to conduct a factor analysis were met, as demonstrated in the results of a correlation analysis, Bartlett's statistics of sphericity (561.82, p = .000), and the KMO value (0.800).

The items constituting Factor 1 were "advocating environmental goals in the agency's vision or mission", "communicating the need and value of environmental protection to agency workers" and "using facts, stories, and cases to demonstrate the value of environmental protection", largely representing the first dimension of Portugal and Yukl's (1994) conceptualization, which requires leaders to articulate a vision for environmental activities. Factor 2 comprised the following items: "asking employees to consider environmental costs and benefits in decision-making", "holding regular conversations with stakeholders on environmental issues", "developing an agency website for environmental programmes", and "drafting or commenting on environmental legislation", thus largely representing leadership efforts to engage stakeholders in communicating and understanding environmental issues, reflecting the change perception dimension of Portugal and Yukl's (1994) framework.

Items with large loadings in Factor 3 were "acquiring financial resources", "acquiring technical support", "adopting green technologies", and "proposing to increase funding",

representing the actions taken by leaders to move environmental programmes substantially forward. This factor may be considered a representation of the symbolic action dimension of Portugal and Yukl's (1994) framework. The three factors explained about 70 percent of total variance. Only one item ("encouraging employee involvement in green programmes") did not have a clearly preferred factor loading and subsequently was removed from further analysis. These 11 items in total then were used to construct the pro-environmental leadership behaviours. Though restricted in scope, this test largely supports the typology of Portugal and Yukl (1994).

4.2. Motives for Pro-environmental Leadership Behaviours

We asked respondents about the motives behind environmental actions. Table 2 shows how these items were ranked by respondents, with analysis of the bivariate relationship between the motives and an index of pro-environmental leadership behaviours. The index consists of all the leadership behaviour items listed in Table 1 that were classified in the factor analysis. The aim of this analysis was to screen out motive variables unrelated to pro-environmental leadership behaviours. All relationships were statistically significant. The descriptive analysis of the model control variables is also presented in Table 2.

[Table 2 about here]

Among the control variables, age was found to be significant. Older respondents tended to exhibit more leadership behaviours. Educational level, gender, and position were not associated with the index of pro-environmental leadership behaviours. We followed the analytical rule that only variables statistically significant at the bivariate level are included in the multivariate modeling.

4.3. How do Motives Affect Leadership Behaviours?

A multivariate modeling was employed to detect possible influences of motives on pro-environmental leadership behaviours. Table 3 shows the results on the index of pro-environmental leadership behaviours with three models. The impact of motives was detected through the statistical difference between the basic model (Model 1) without the motive variables and two models with the motive variables (Models 2 and 3). In Model 2, an aggregating process was used to construct an instrumental motive index and a normative motive index, while in Model 3, the impact of individual motives is analyzed. Tests of regression assumptions revealed no threat of multicollinearity or other assumption violations. The variance inflation factors of all models, including Models 4 to 6 that follow, were from 1.20 to 6.38, an acceptable level for analysis (Gujarati, 2014).

The results indicate a significant improvement in model goodness-of-fit with the adjusted R^2 improvement from 46.3% in Model 1 to 51.4% and 61.2% in Models 2 and 3 respectively, representing the role of various motives in pro-environmental leadership behaviours. Instrumental motives as a whole were statistically significant in impact on the behaviours (p = .018), while the normative motives were not, suggesting that public sector leaders are largely motivated by self-interest rationality, not normative values, in pro-environmental actions—a finding that is perhaps not surprising, particularly in China given that policy priorities and performance assessment systems are still very much geared towards non-environmental achievements such as economic growth.

[Table 3 about here]

The results from Model 3, presenting the impact of individual motives, indicate that "increasing economic opportunities for the agency" was significantly associated with

environmental leadership behaviours. Among normative motives, the belief that it is a "human obligation" to protect the environment was the only motive statistically associated with pro-environmental leadership behaviours, demonstrating a need to explore the deep root of normative valuation in environmental protection. Seemingly conflicting results from Models 2 and 3 point out a need for a more nuanced approach to examine environmental leadership behaviours. We broke down the behaviours into three dimensions in accordance with Portugal and Yukl's (1994) framework, which was supported empirically in this study. Models 4 to 6 examined the impact of motives on the three-dimensional behaviour variables: vision articulation, perception change, and actions taken.

[Table 4 about here]

Legal/regulatory compliance was significantly associated with vision articulation, but not with the other two dimensions, suggesting the important role of environmental laws and regulations in shaping leaders' visions and goals for environmental efforts, perhaps more at the early stage of environmental initiatives when legal mandates are the only impetus for actions. The utility of legal compliance becomes limited when the task for leaders is to convince stakeholders of the benefits of actions. Instead, other motives emerge.

Money-saving had a potentially negative impact on vision articulation and actions taken, indicating that it is probably unwise to argue for environmental causes in terms of financial interests. Indeed, money-saving in China is often seen as a reason for and prelude to cutting staff, which may set a negative tone for a policy. On the other hand, increasing economic opportunities for agencies was positively associated with leadership efforts to change stakeholder perception and actions taken. Increasing promotion opportunities for employees was also associated with pro-environmental leadership behaviours taken. These results demonstrate clearly the benefits of

tapping into forward-thinking motivations, framing environmental initiatives as bringing more opportunities and benefits rather than as conserving resources or cutting staff.

Among the normative motives, "desire to get involved in decision-making" was positively associated with perception change, while "discovering meaningful ways to promote human activities within the natural environment" was associated negatively with perception change, showing the potential crowding-out effect of decision-making engagement. Deeper engagement in decision-making takes time and resources away from promoting human interactions with nature in influencing leadership behaviours. However, importantly, "human obligation" stands out as the only significant variable that may influence all three dimensions of pro-environmental leadership behaviours, on a scale greater than all other independent variables as shown in the beta values in Tables 3 and 4. Though far from certain, this finding provides hope for developing the potential role of normative environmental values in sustaining pro-environmental leadership behaviours in governments.

Moreover, the index of pro-environmental leadership behaviours was consistently associated with two control variables: (a) having a good relationship with agency employees and (b) having personal influence over employees, indicating the important role of leaders' ability to affect followers. A leader's capacity to influence followers is particularly important in environmental policy-making in local governments in China where the pro-growth sentiment is predominant. [1] The age of the leader may also have some influence over perception change,

[1] It is also possible that these contextual factors may interact with the key explanatory variables, such as instrumental and normative factors, to shape pro-environmental leadership behaviours. In this study, we tested the interaction terms of the contextual factors that show significant relationships in our models (Tables 3 and 4), mainly the administrative leaders' relationships with employees and personal influences over employees. Our results do not show an interactive impact on pro-environmental leadership behaviours, suggesting that the influences of these institutional variables on pro-environmental leadership behaviours may be direct, not through interacting with motive variables. From a leadership perspective, these findings suggest that a good leader-employee relationship provides a favorable context— rather than an

perhaps signifying the traditional Chinese societal value of respecting senior managers in making policy changes.

5. Discussion

First, pro-environmental leadership behaviours can be empirically characterized as a goal-driven process that encompasses three distinctive but interconnected dimensions with a wide range of activities: setting visions/goals for environmental projects and activities, getting stakeholder support and contribution through persuasion and communication, and taking symbolic actions on challenges such as obtaining funding and technologies. The definition and dimensions, rooted in transformation leadership, well represent the reality of ecological services facing significant challenges and in shortage of resources. Vision-setting, perception-altering, and action-taking are three sequential phases of leadership development, in environmental service provisions in general and eco-compensation services in particular, in which environmental values and goals are instilled prior to operational and daily efforts being made for changes and actions to happen.

Second, pro-environmental leadership behaviours are perhaps largely prompted by legal/regulatory compliance but also motivated by economic or financial incentives for individuals and agencies. Legal restrictions, mandates, economic opportunities, and career advancement can give rise to different leadership behaviours in various leadership development phases. Leaders may rely on different motivating forces in advancing different leadership actions. These instrumental motives stem from self-interest and a strong orientation to external policy stimuli of rewards/punishments, which perhaps reflects the motive of local leaders engaging in the eco-

interactive influence through the motives— for leadership behaviours.

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compensation programme in the first place to seek financial and economic benefits. Unlike normal motives, rooted in internalized beliefs and values, instrumental motives rely on these external stimuli to work. Though rapid and immediate responses can be expected from such policy stimuli, their impact could wane or disappear in the absence of stimuli, calling into question the sustainability of leadership actions in the long term. Instrumental motives are causes of prolific opportunistic rent-seeking behaviours in China (Lu, 2000; Wedeman, 2000). Given the intensive focus on economic growth and the lack of governing capacity in Chinese local governments, the governing system is prolific with policies that serve instrumental motives, though normative values are occasionally mentioned, largely in the state-controlled media and often in the form fleeting news coverage of individuals' heroic feats.

Interestingly, saving money, a primary argument for sustainability efforts in the literature, may give leaders pause for thought, shown by declining leadership activity regarding setting visions and taking action. This may reflect the negative association of money-saving with cutting staff. More generally, the business-like narratives of money-saving could be viewed as inconsistent with the nature of environmental values, as observed in some interviews.

Increasing economic opportunities, on the other hand, is important for leaders in persuading followers to change their perceptions of the need for environmental actions. This is perhaps a leadership strategy to get followers' buy-in in potentially costly environmental initiatives like eco-compensation projects. Expending economic activities seems to give local leaders the impetus to take action in getting financial and technical support for environmental projects. Nevertheless, advocating this benefit may not benefit leaders whose objective is to set visions and goals. Vision/goal-setting largely echoes the need for legal compliance. Moreover, economic activities are institution-based; they do not necessarily benefit individual employees, who

constitute the force that carries out leaders' actions. Promises made by leaders to promote individual benefits may oblige them to obtain financial resources and make technological investments in environmental projects.

In sum, opportunity-seeking, rather than resource-saving, perhaps motivates leaders more to assume environmental leadership roles. This finding reveals the nature of change that leaders are seeking but, perhaps more importantly, reflects the administrative and performance incentive structures in China that leave local governments with little resources for environmental projects but large loopholes for opportunistic behaviours.

Third, compared with instrumental motives, normative motives have a limited impact on pro-environmental leadership behaviours. They are manifested as leaders' emphasis on humans' collective responsibility to protect the environment, which could potentially lead to significant leadership actions. Indeed, previous studies have linked normative (biospheric) values with sustained pro-environmental behaviours (Steg, Bolderdijk, Keizer, & Perlaviciute, 2014). Cases reported in the Chinese media and advocated in government documents suggest the potentially significant impact of highlighted deeds of individuals, often portrayed in a heroic fashion. Nevertheless, as discovered in this study, normative values may also have a negative influence on pro-environmental leadership behaviours. Emphasizing moral obligations and human-nature interaction may negate leadership actions if leaders act to only appear moral while avoiding the cost of actually being moral, a situation known as "moral hypocrisy" (Lindenberg & Steg, 2013).

Finally, the effect of motivating factors on pro-environmental leadership behaviours is augmented in a workplace environment conductive to personal and institutional growth. This study demonstrates the importance of developing a good leader-follower relationship as well as the influence of leaders.

6. Conclusion

This study contributes to the leadership literature by empirically confirming the validity of a concept of pro-environmental leadership behaviours that emphasizes the goal-driven dynamics of leadership and encompasses a range of activities in various leadership development phases. Employing this concept, we offer a leadership motive explanation that distinguishes leaders' instrumental pressures and their normative causes for pro-environmental leadership behaviours. The model represents one of the first efforts to study the motives underlying pro-environmental leadership behaviours in the public sector where environmental and sustainability policies are formulated and implemented. The results provide a basis for further testing, replicating, and refining knowledge of the motives of effective pro-environmental leadership behaviours.

In practice, from the perspective of local environmental policy making, we call for leadership development strategies and institutional support. First, environmental goal-setting is a legal response. Legal compliance is perhaps the least costly and therefore most effective way to persuade a leader to initiate an environmental agenda. Second, once the agenda starts to be implemented, financial incentives and economic opportunities should be articulated by the leader to change employee perceptions and take actions. A strong instrumental motive system is needed to alter the growth-oriented mentality. Third, leaders should realize the limitations and risks of instrumental motives, and thus find a path to sustainable pro-environmental leadership behaviours by discovering the cause of normative motives and fostering a culture for long-lasting environmental leadership support. Continual education and training regimens could be used to build leaders' awareness of moral obligations and responsibilities in sustaining pro-environmental actions. Finally, challenges in advocating environmental policies in a growth-oriented economy call for leaders to foster institutional support and good leader-employee relationships for

environmental actions. From the perspective of macro-level national environmental policy making and implementation, the findings call for a more nuanced understanding central-local dynamics in leadership development. The finding that instrumental motives— such as environmental law/regulation compliance and (green) economic opportunities being the key drivers for pro-environmental leadership behaviours— has implication for developing environmental leadership strategies that accommodate the recent policy movements adopted by the central government to consolidate power and enhance institutional capacity for environmental issues (Kostka and Zhang 2018). This finding indicates an important role of developing local environmental institutional capacities (e.g., financial incentives or regulatory measures) to incentivize local leadership behavioural changes preferred by the central policy makers. Given a workplace environment conducive to leadership influence (another finding of this study), local capacity-building can promote leadership actions in environmental law enforcement and protection measures. Besides the traditional investment in environmental bureaucracies, new environmental institutions such as interjurisdictional environmental collaborations (e.g. eco-compensation practices) and third-sector environmental monitoring mechanisms (Niu et al. 2020) should encourage local leaders' engagement in strategic environmental actions advocated by the central government.

In the long term, however, given the weakening of local officials' motives and shirking of responsibilities inherent in the Chinese bureaucratic accountability system (Gao 2017), the sustainability of local leaders' pro-environmental behaviours in China may be partly (or even largely) determined by individual leaders' beliefs on the values of sustainable development and their assessment of the central government's wills and strategies in balancing environmental and economic developmental goals when facing long-term challenges in policy implementation. Indeed, this research finds the important, though limited, role of normative motives in pro-

environmental leadership behaviours. The real challenge is how to identify and promote this type of motives among local government leaders to overcome the inherent obstacles of short-term behaviours due to the top-down campaign-style policy enforcement in an authoritarian China (Kostka and Zhang 2018).

The study has several limitations, which highlight priorities for future studies. First, the sample is from local public leaders in Fujiang Province, China. Future studies are needed to verify the results in other local, provincial, and central governments in China and other countries, where leadership behaviours may be motivated differently by different institutional arrangements and sociopolitical and demographic circumstances. Further, the study focuses on the specification of leadership motives. Future analysis should explore how leaders, working within specific institutional environments, designs, and structures, influence environmental actions. Moreover, the study looks into leadership behaviours. Future analysis may examine the outcomes of these behaviours, which are the ultimate goal in improving environmental service quality. Finally, the current study uses cross-sectional data from a survey and interviews. Longitudinal and archival data could be used in the future to examine long-term patterns for the motives and more objective measurement of pro-environmental leadership behaviours. Yet despite these limitations, this study has taken the first step in examining a topic that is critically important for environmental policy-making and implementation, and it reminds us of the importance of leadership in an ever-changing context and the complexity of leadership strategies for encouraging environmental policy-making and implementation.

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Table 1

Pro-environmental leadership Behaviours: Descriptive Measures and Factor Analysis

Survey Items ("Our leaders have….") [1]	Mean (n = 80)	SD (range)	Factor Analysis [2]		
			Factor 1	Factor 2	Factor 3
advocated to include environmental goals in our agency's vision or mission	4.550	0.634 (3, 5)	**0.669**	-0.184	0.325
communicated the need, value, and/or benefits of environmental protection to agency workers	4.513	0.551 (3, 5)	**0.781**	0.411	0.047
used facts, stories, and cases of ecological concerns to demonstrate the value of environmental protection	4.338	0.615 (2, 5)	**0.850**	0.178	0.273
Vision articulation (average value of the above three questions)	4.467	0.494	-	-	-
asked employees to consider environmental costs and benefits as a normal part of the decision process	4.101	0.778 (2, 5)	0.187	**0.622**	0.429
held regular conversations with stakeholders inside and outside the organization on making sense of complex environmental issues	4.238	0.815 (2, 5)	0.344	**0.704**	0.276
supported the development of an agency website dedicated to green agency programmes	4.463	0.674 (2, 5)	0.127	**0.833**	0.081
drafted or commented on legislation that increases our agency's environmental sustainability efforts	4.538	0.594 (2, 5)	0.075	**0.777**	0.323
Perception change (average value of the above four questions)	4.329	0.590	-	-	-
encouraged our agency to adopt eco-friendly technologies or renewable or clean energy in operations (e.g., energy-saving light bulbs, electronic appliance or vehicles, solar, wind, geothermal heat)	4.425	0.652 (1, 5)	0.331	0.252	**0.565**
acquired financial resources for our green programmes	3.988	0.879 (2, 5)	0.018	0.189	**0.846**
acquired technical support for our green programmes	4.125	0.753 (3, 5)	0.278	0.199	**0.851**

supported proposals to increase funding for environmental protection programmes	4.313	0.565 (3, 5)	0.265	0.199	**0.809**
Action taken (average value for the above four questions)	4.213	0.598	-	-	-
Pro-environmental Leadership Behaviours (average value of all above questions)	4.319	0.470	-	-	-
encouraged individual employees or my subordinates to get involved in green programmes in our agency	4.288	0.679 (2, 5)	0.394	0.448	0.490

Notes: (1) Survey items are measured on a 5-point scale with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. (2) Presented are factor loadings using principal-component factoring and varimax rotation, with the largest highlighted. The three factors above explain 69.7% of the variance. Eigenvalues are 5.793, 1.383, and 1.190 for the three factors extracted.

Table 2

Descriptive Analysis for Motive and Control Variables.

Variables	Mean	SD	Relationship with PLBI (Spearman)
Instrumental Motives ("The reason for environmental activities in our agency is to….")			
comply with environmental laws and regulations	4.500	0.574	.542***
save money for the agency	4.190	0.878	.395***
compete better with other agencies for resources	3.797	1.055	.456***
protect the image of the agency	3.988	1.037	.473***
increase economic opportunities for the agency	3.513	1.214	.383***
increase the promotion opportunities of agency employees	3.304	1.170	.384***
Instrumental Index (Alpha = .860) (average values of the above six items)	3.890	0.770	.510***
Normative Motives			
To protect the environment is morally right	4.500	0.595	.516***
Protecting the environment is a human obligation	4.550	0.501	.551***
Environmental protection activities facilitate personal and internal contentment	3.913	1.058	.325**
I want to contribute to solving the problem of natural resource depletion	4.338	0.615	.403***
I want to improve decision-making in environmental policy-making and implementation	4.113	0.795	.395***
I want to discover meaningful ways to promote human activities within the natural environment	4.138	0.775	.422***
I want to contribute to the sustainable development of our economy	4.163	0.818	.368***
Normative Index Scale (Alpha .836) (average values of the above seven items)	4.245	0.520	.532***
Control Variables			
Age	36.178	7.631	.246*
Educational level	2.013	0.254	-0.141

Position	--	--	(p = .55)
Gender	--	--	(p = .117)
Legislators are supportive of the environmental protection efforts of my agency	3.938	0.862	.414***
Many citizens want my agency to take action to protect the environment	3.875	0.786	.376***
I have developed good relationships with most employees in our agency	4.392	0.724	.460***
I have significant personal influence over employees	3.303	0.864	.461***

Notes: (1) PLBI = Pro-environmental Leadership Behaviour Index. (2) Motive items are measured on a 5-point scale with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. (3) Presented are Spearman correlation coefficients. * $p < .1$, ** $p < .05$, *** $p < .01$. The p values for the chi-square test for position and gender are also presented.

Table 3

Multivariate Regression Analysis of Pro-environmental Leadership Behaviours (DV: PLBI)

	Model 1		Model 2		Model 3	
	β	*p*	*β*	*p*	*β*	*p*
Control Variables						
Age	0.018	0.002***	0.011	0.064*	0.013	0.021**
Legislators are supportive of the environmental protection efforts of my agency	-0.033	0.613	-0.012	0.851	0.000	0.995
Many citizens want my agency to take action to protect the environment	0.114	0.074*	0.058	0.382	0.081	0.309
I have developed good relationships with most employees in our agency	0.226	0.001***	0.153	0.028**	0.186	0.011**
I have significant personal influence over employees	0.184	0.004***	0.199	0.001***	0.158	0.011**
Independent Variables						
Aggregate Incentives						
Instrumental index	–	–	0.177	0.018**	–	–
Normative index	–	–	0.039	0.712	–	–
Disaggregate incentives						
Instrumental Motives						
Comply with environmental laws and regulations	–	–	–	–	0.088	0.464
Save money for the agency	–	–	–	–	-0.107	0.150
Compete better with other agencies for resources	–	–	–	–	0.048	0.468
Protect the image of the agency	–	–	–	–	-0.092	0.249
Increase economic opportunities for the agency	–	–	–	–	0.121	0.045**

Increase the promotion opportunities of agency employees	–	–	–	–	0.052	0.394
Normative Motives						
To protect the environment is morally right	–	–	–	–	-0.192	0.051
Environmental protection is a human obligation	–	–	–	–	0.503	0.001***
Environmental protection actions facilitate personal and internal contentment	–	–	–	–	-0.059	0.487
I want to contribute to solving the problem of natural resource depletion	–	–	–	–	-0.130	0.229
I want to improve decision-making in environmental policy formulation and implementation	–	–	–	–	0.176	0.117
I want to discover meaningful ways to promote human activities within the natural environment	–	–	–	–	-0.073	0.559
I want to contribute to the sustainable development of our economy	–	–	–	–	-0.013	0.895
Constant	1.821	0.000	1.592	0.000	0.871	0.068
R^2	0.503		0.567		0.720	
R^2 adj.	0.463		0.514		0.612	
F	12.540		10.830		6.700	
p for the F-test	0.000		0.000		0.000	

Notes: (1) PLBI = Pro-environmental Leadership Behaviours Index, (2) "–" = not applicable. (3) * < *.1,* ** < *.05,* *** < *.01.*

Table 4

Multivariate Regression Analysis of Pro-environmental Leadership Behaviours Dimensions

	Model 4 (DV: Vision)		Model 5 (DV: Perception)		Model 6 (DV: Action)	
	β	*p*	*β*	*p*	*β*	*p*
Control Variables						
Age	0.007	0.286	0.020	0.009	0.013	0.116
Legislators are supportive of the environmental protection efforts of my agency	-0.055	0.461	0.081	0.347	-0.026	0.781
Many citizens want my agency to take action to protect the environment	0.106	0.265	0.125	0.257	-0.001	0.994
I have developed good relationships with most employees in our agency	0.149	0.083*	0.248	0.014**	0.160	0.135
I have significant personal influence over employees	0.155	0.035**	0.203	0.018**	0.101	0.265
Independent Variables						
Instrumental Motives						
Comply with environmental laws and regulations	0.297	0.042**	-0.121	0.466	0.178	0.323
Save money for the agency	-0.148	0.096*	0.021	0.839	-0.213	0.057*
Compete better with other agencies for resources	0.058	0.420	0.106	0.249	-0.106	0.238
Protect the image of the agency	-0.055	0.539	-0.041	0.709	-0.088	0.435
Increase economic opportunities for the agency	-0.039	0.566	0.153	0.064*	0.162	0.062*
Increase the promotion opportunities of agency employees	0.100	0.175	-0.122	0.153	0.202	0.031**
Normative Motives						
To protect the environment is morally right	-0.146	0.207	-0.133	0.319	-0.262	0.074*
Environmental protection is a human obligation	0.310	0.076*	0.541	0.009***	0.587	0.008***

Environmental protection actions facilitate personal and internal contentment	-0.069	0.494	-0.119	0.312	-0.026	0.834
I want to contribute to solving the problem of natural resource depletion	-0.047	0.714	-0.073	0.622	-0.243	0.134
I want to improve decision-making in environmental policy formulation and implementation	0.026	0.834	0.381	0.016**	0.168	0.299
I want to discover meaningful ways to promote human activities within the natural environment	0.094	0.528	-0.352	0.045**	0.092	0.622
I want to contribute to the sustainable development of our economy	-0.002	0.985	0.138	0.756	0.006	0.970
Constant	1.189	0.034	0.142	0.827	1.050	0.130
R^2	0.643		0.675		0.578	
R^2 adj.	0.509		0.551		0.419	
F	4.800		5.430		3.640	
p for the F-test	0.000		0.000		0.000	

Note: * < *.10.* ** < *.05,* *** < *.01*

Figure 1. The Motivation Model for Pro-environmental Leadership Behaviours