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Environmental Status Goods and Market-Based Conservation: An Arm of Ostrom's Polycentric Approach?

Shane Sanders

Falk College of Sport and Human Dynamics, Syracuse University, Syracuse, NY 13244, USA; sdsander@syr.edu

Abstract: Ostrom suggests that collective action problems may present an obstacle to the reduction in (external costs from) global greenhouse gas emissions and that a polycentric approach is necessary to find a solution. A market-based prong of such a polycentric solution—alongside, e.g., governance-based prongs such as transferable pollution permits—may lie in the nature of certain salient "environmentally friendly" goods (e.g., Toyota Prius, Tesla cars, home solar panels). The present study analyzes the social welfare consequences of positional conservation (i.e., consumption of salient environmentally friendly goods for the purpose of status signaling) within a choice theoretic model. For example, the Toyota Prius and Tesla have been shown to be such a type of good. In a two-good model of strategic consumer choice, in which consumers choose between a positional, "conservation good" and an externally costly, "non-conservation good", we find that positional conservation improves social welfare if the unit external cost of the non-conservation good consumption is sufficiently large. In such a case, positionality serves to (partly or fully) correct an under-consumption of the positional good. Fershtman and Weiss find, within a one-good (action) model, that positionality can be corrective of distortions from positive externalities but not of distortions from negative externalities (e.g., pollution). Within a two-good model of consumer choice, we find that "social rewards" can help to correct distortions generated by negative externalities and improve social welfare. The results of the present study suggest that the Paretian objective may not be to curb positional spending but to shift positional spending toward conspicuous goods that are otherwise under-consumed (e.g., conservation goods or education).

Keywords: positional spending; positional conservation; status race; relative income hypothesis

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1. Introduction

Air pollutants are among the most economically significant and pervasive example of external cost. Air-bound externalities manifest themselves in the form of elevated rates of respiratory health issues, increased rates of infant mortality, increased rates of child and adult mortality, and rising average global temperatures [1–3]. Furthermore, Sanders [4] and earlier Sanders et al. [5] found that unilateral regulation of greenhouse gas emissions at the national level can lead to perverse consequences by creating incentives for other countries to loosen regulations. In some cases, these consequences can be stronger than the initial regulatory change.

Given the issue's supra-national orientation, it is unclear whether regulation can offer a stand-alone solution. Moreover, the global pervasiveness of air-bound externalities prohibits a private solution from making significant headway. Ostrom [6] suggests that collective action problems may present an obstacle to the reduction in (external costs from) global greenhouse gas emissions and that a polycentric approach to the issue may provide a solution. The nature of certain "environmentally friendly" goods may provide a vital private, market-based prong in such an approach (e.g., alongside private and governance-based approaches such as transferable pollution permits).

Using market-level vehicle ownership data, Sexton and Sexton [7] found that peer effects increase Toyota Prius (hybrid car) demand in the U.S. states of Colorado and

Washington. They attribute this result to positional conservation or the demonstration of environmental friendliness for the purpose of garnering status. As further demonstration of positional conservation, the authors state, " ... status conferred upon demonstration of environmental friendliness is sufficiently prized that homeowners are known to install solar panels on the shaded sides of houses so that their costly investments are visible from the street" (p. 1). As further evidence of positional conservation, Schultz et al. [8] and Alcott [9] each show that household energy consumption is expected to decrease significantly when tracked and judged against that of neighboring households. Sexton and Sexton suggest that positional conservation is a relatively new dimension of status signaling that derives from shifting social norms.

The authors stated, "We identify a statistically and economically significant conspicuous conservation effect in vehicle purchase decisions and estimate a mean willingness to pay for the green signal provided by the distinctively designed Toyota Prius in the range of $430–4200 depending on the owner's location. Results are related to the growing literature on green markets and suggest that policy should target less conspicuous conservation investments that will be under-provided relative to those that confer a status benefit" (p. 303). Further, the authors cite Adam Smith's discussion of positional considerations. Smith [10] stated, "The wish to become proper objects of this respect, to deserve and obtain this credit and rank among our equals, may be the strongest of all our desires" (p. 1759). These quotes suggest positional considerations are not new to human choice behavior. Frank [11] suggests that these considerations may represent an innate tool of natural selection, a consideration through which mating selection is partly determined.

Positional goods are defined as those "whose value depends relatively strongly on how they compare with things owned by others", whereas the value of non-positional goods depends "relatively less strongly on such comparisons ... " [11]. From Veblen [12] to Duesenberry [13] to Frank [11,14,15] and Luttmer [16], it has been observed that the positionality of a good can profoundly influence consumption behavior. Both logically and empirically, salience represents an essential aspect of a positional good. Essentially by definition, society cannot confer status based on that which is unseen. Empirically, Delgado et al. [17] found that consumers paid a positional premium for used Prius but not for used Toyota Corolla hybrids. They attribute this difference to the Prius' salient brand-unique association with hybrid car status. Similar to 7 Sexton and Sexton [7], these authors write, "We find that, controlling for observable and unobservable factors, the Prius commands an environmental signaling value of $587 or 4.5% of its value. Our research provides lessons for economists and policymakers, and contributes to the literature on identifying signaling values" (p. 1).

There is substantial empirical evidence that positional concerns influence consumption behavior (see, e.g., Luttmer [16]; Heffetz [18]; Kosicki [19]; 20 Easterlin [20]; Clark and Oswald [21]; Kagel, Kim, and Moser [22]; Oswald [23]; Sanders [24]; Damianov and Sanders [25]. Furthermore, Luttmer [16], Easterlin [20] found evidence that positional spending contests lead to large welfare losses due to the imposition of external (positional spending) costs For related work on rent dissipation from spending contests, see, e.g., Boudreau, Rentschler, and Sanders [26], 27 Boudreau, Sanders, and Shunda [27], or Boudreau et al. [28]. In the limit of participation, these costs can erode most of the positional value being conferred by the status contest. Indeed, Frank [11] showed within a model of strategic consumer choice that positional spending contests generally lead to large social welfare losses. This result is obtained because the contest creates an over-consumption of the (relatively) positional good. Frank [14] states, "Recent years have seen renewed interest in economic models in which individual utility depends not only on absolute consumption, but also on relative consumption. In contrast to traditional models, these models identify a fundamental conflict between individual and social welfare" (137). Hopkins and Kornienko [29] constructed a status game and found that, while said conflict exists generally, the degree of conflict depends on the level of income inequality in a society. They write, "In the symmetric Nash equilibrium, each individual spends an inefficiently high amount on the status good . . . (Status) signaling is costly and the Nash equilibrium is Pareto dominated by the state where agents take no account of status in their consumption decisions" (1085, 1099).

Fershtman and Weiss [30] introduced the notion of social rewards and found that positional spending need not always cause conflict between individual and social welfare. In fact, positional spending can be Pareto improving if the good being consumed is externally beneficial (e.g., the case of education). In such a case, the marginal effect of positionality can (partly) correct under-consumption of an externally beneficial good. Within a one-good (action) model, Fershtman and Weiss [30] conclude, "If it is desirable to reduce output (of an action), because the output causes pollution for instance, this must be done by other means such as legal enforcement. Social rewards will be effective only if it is desirable to increase output, because of positive externalities" (55).

Within the Fershtman and Weiss [30] model, however, the positional action (good) and the action (good) that features an externality are necessarily one and the same. Within an environment featuring two goods, it is unclear whether social rewards are Pareto effective only in the presence of positive externalities (e.g., not in the case of pollution). In the present analysis, we consider a two-good model, in which individuals of a society or socially-bound environment choose between two goods: a "conservation good" and a "non-conservation good." Within the society of consideration, the consumption of the conservation good is or has become relatively positional (i.e., status-bearing or socially rewarding), whereas consumption of the non-conservation good is relatively externally costly. In such an environment, social rewards function directly to increase consumption of the positional, conservation good and indirectly to decrease consumption of the externally costly, non-conservation good. We further find the existence of conditions under which social rewards for consumption of the conservation good reduce air-borne externalities and improve social welfare. In the special case, social rewards can bring the community to a socially optimal outcome. Importantly, Muggleton et al. [31], Carlsson et al. [32], and Delgado et al. [17] showed that salience is important toward the formation of preferences toward positional goods. The latter two studies showed that this is important specifically to the formation of positional environmental goods. Delgado et al. added that products such as the Toyota Prius are designed with said preference formation in mind.

These results are important from a social welfare perspective. Leguizamon and Ross [33] note that, while government policy may be effective in reducing the positionality of certain positional goods (e.g., through taxation or consumption quotas), it is potentially more difficult to curb positional spending in general. Status-valuing individuals may substitute toward (garner positional utility from) unregulated, conspicuous goods. Results of the present study suggest that the Paretian objective may not be to curb positional spending. Rather, the Paretian objective may be to shift positional spending toward conspicuous goods that are otherwise under-consumed (e.g., conservation goods or education).

2. Model

There are n consumers in a society (socially-related population). Each consumer chooses between two sets of goods—a conservation good and a non-conservation good—within a setting of strategic consumer choice. A given good is categorized as non-conservational (conservational) if its consumption imposes a relatively large (small) external cost via air-borne emissions. For example, a passenger kilometer of travel via Hummer combusts more petroleum, ceteris paribus, than does a passenger kilometer via Toyota Prius. Similarly, the consumption of locally grown food does not typically require as much petroleum as an input for distribution as does the consumption of food grown remotely (conservation goods and non-conservation goods need not be related to one another, as in these examples). Some goods might be classified as nearly pure conservation goods. Goods whose consumption does not impose a significant air-borne externality include bicycle travel, several forms of renewable energy, and instruments in a state of reuse (e.g., shopping bags or water bottles). As was stated in the introduction, consumption of the conservation good is relatively positional in the present setting, Setting 1. That is to say, the signaling of environmental friendliness is positional or status-bearing in Setting 1 of the model. Consumer i, an individual within the society, addresses the following utility maximization exercise in Setting 1.

$$\mathrm{Max}_{\{a_i,b_i\}}\ U_i = W(a_i, b_i) - \frac{e}{n} b_i, - \frac{e}{n} \sum_{\substack{j=1 \\ j \neq i}}^{n} b_j + \bar{s} + \alpha(a_i - f(a_{-i})) \quad \text{s.t.} \quad p_a a_i + p_b b_i = M_i \tag{1}$$

where a_i represents consumption of the conservation good by consumer i, b_i designates consumption of the non-conservation good, $\frac{e}{n}$ symbolizes the internal cost of air pollution per unit of b_i consumed, and $\frac{(n-1)e}{n}$ represents the total external cost of air pollution per unit of b_i consumed. In other words, a unit of b_i consumed imposes e units of total pollution cost or $\frac{e}{n}$ units upon each member of the community. Furthermore, a_{-i} represents consumption of the non-conservation good $\forall$ consumers $j(\neq i)\ \epsilon\ \{1, 2, \ldots, n\}$, and $f(a_{-i})$ is some function of a_{-i} (e.g., median consumption value in a_{-i}) such that $f_{a_j} \geq 0$ $\forall$ consumers $j(\neq i)\ \epsilon\ \{1, 2, \ldots, n\}$ and $f_{a_j} > 0$ for at least one $j(\neq i)\ \epsilon\ \{1, 2, \ldots, n\}$. The parameter $\alpha(> 0)$ represents the (positional) value of increasing the term $(a_i - f(a_{-i}))$ by one unit, and $\bar{s}$ represents the mean or pre-consumption level of status for an individual in the society. We further hold that $W_{a_i} > 0$, $W_{a_i,a_i} \leq 0$, $W_{b_i} > 0$, and $W_{b_i,b_i} \leq 0$ such that $U_{a_i} > 0$, $U_{a_i,a_i} \leq 0$, $U_{b_i} > 0$, and $U_{b_i,b_i} \leq 0$.

With extensions, the present consumer choice environment follows 11 Frank (1985) in considering a strategic choice between two goods, one of which is positional in nature. Several studies of positionality are conducted within a one-good (action) environment (see, e.g., Clark and Oswald [21]; Fershtman and Weiss [30]). The positional argument of the utility function in (1) is derivative of Clark and Oswald [21]. Frank [11,14] and Sanders [24] consider two-good settings with positional and non-positional goods bundled together. Frank defends this abstraction as follows [11]: "Though the characteristics of consumption goods clearly vary continuously along many different dimensions, it will be convenient for analytical purposes to think of goods as falling into one of two classes, positional goods and non-positional goods" (p. 103). An individual's positional utility increases in the difference between her positional good consumption level and some weakly increasing function of the positional good consumption levels of societal peers. Assuming interior solutions throughout, first order conditions for consumer i are derived as follows.

$$W_{a_i} + \alpha = \lambda p_x \tag{2a}$$

$$W_{b_i} - \frac{e}{n} = \lambda p_y \tag{2b}$$

Dividing Equation (2a) by Equation (2b) yields the following equation.

$$\frac{W_{a_i} + \alpha}{W_{b_i} - \frac{e}{n}} = \frac{p_a}{p_b} \tag{2c}$$

Let us now consider a setting in which the positionality of the conservation good is eliminated (e.g., via a shift in social norms or via a government policy that causes cooperative consumption of conservation goods). In this alternative setting (Setting 2), individuals have the same value for status as in Setting 1 but obtain it in a non-distortive manner (i.e., via direct income comparison). By comparing Setting 1, Setting 2, and a subsequent setting void of consumptive distortion (Setting 3), we seek some understanding as to the marginal social welfare consequence of positional conservation. In Setting 2, consumer i addresses the following utility maximization exercise.

$$\mathrm{Max}_{\{a_i,b_i\}}\ U_i = W(a_i, b_i) - \frac{e}{n} b_i, - \frac{e}{n} \sum_{\substack{j=1 \\ j \neq i}}^{n} b_j + \bar{s} + \mu(M_i - g(\mathbf{M_{-i}})) \ \text{s.t.}\ p_a a_i + p_b b_i = M_i \tag{3}$$

where $g(\mathbf{M_{-i}})$ is some function of the income levels of all societal peers of consumer i (e.g., median income level among all "other" consumers). As in 11 Frank (1985), let us consider the cooperative consumption case as a collection of individual utility maximization exercises as follows.

$$\begin{gathered}\mathrm{Max}_{\{a_j,b_j\}}\ U_j = W\left(a_j,b_j\right) - \tfrac{e}{n}b_j, -\tfrac{e}{n}\sum_{\substack{j=1 \\ j\neq i}}^{n} b_i + \bar{s} + \mu\left(M_j - g\left(\mathbf{M_{-j}}\right)\right) \quad \text{s.t.} \\ p_a a_j + p_b b_j = M_j \ \forall\, j \in \{\,1,\,2,\,\ldots,\,n\,\}\end{gathered} \tag{4}$$

Exercise (4) represents a collective utility maximization exercise. As each individual in (4) has an identical preference structure, consumer i (j) obtains the same status rating in Setting 2 as in Setting 1 but in a different manner (e.g., through direct revelation of income rather than through positional spending). That is, $\mu(M_i - g(\mathbf{M_{-i}}))$ in Setting 2 equals $\alpha(a_i - f(\mathbf{a_{-i}}))$ in Setting 1. In Setting 2, consumer i's utility maximization problem yields first order condition (5).

$$\frac{W_{a_i}}{W_{b_i} - \frac{e}{n}} = \frac{p_a}{p_b} \tag{5}$$

Let us now consider a third setting (Setting 3), in which no consumptive distortions are present (e.g., the externality is internalized and the positional good is cooperatively consumed). Setting 3 represents the (benchmark) socially optimal case. In Setting 3, consumer i's utility maximization behavior is described as follows.

$$\mathrm{Max}_{\{a_i,b_i\}}\ U_i = W(a_i,b_i) - eb_i + \bar{s} + \mu\left(M_j - g\left(\mathbf{M_{-j}}\right)\right) \quad \text{s.t.} \quad p_a a_i + p_b b_i = M_i \tag{6}$$

From this exercise, we assume interior solutions and obtain the following first order condition.

$$\frac{W_{a_i}}{W_{b_i} - e} = \frac{p_a}{p_b} \tag{7}$$

Comparing first order conditions in Setting 1 and Setting 2, one confirms the standard result that consumption of the relatively positional (conservation) good is higher when consumption decisions are made non-cooperatively (i.e., a_i is higher in Setting 1 than in Setting 2). This result does not necessarily condemn positional conservation, however. A comparison of Setting 2 and Setting 3 indicates an under-consumption of a_i in Setting 2 due to the negative externality associated with consumption of b_i. From these respective pairwise comparisons, we conclude the following proposition.

Proposition 1. *Setting 1 may feature an under-consumption or over-consumption of the conservation good depending on the relative distortive effects of (a) the external cost of the non-conservation good and (b) the positionality of the conservation good. Therefore, both individual welfare obtained by consumer i and social welfare generated by consumer i may be higher when the conservation good is positional, ceteris paribus (i.e., conflict between individual and social welfare is not necessary given positional conservation).*

We also consider the general social welfare implications of positional conservation in Proposition 2 as follows.

Proposition 2. *If both individual welfare obtained by consumer i and social welfare generated by consumer i are higher when the conservation good is positional, ceteris paribus, then we know from (4) that the same is true for all consumers* $j(\neq i) \in \{\,1,\,2,\,\ldots,\,n+1\,\}$. *Thus, there exist conditions under which Setting 1 Pareto dominates Setting 2 (i.e., positional conservation improves social welfare, ceteris paribus).*

If, as in the present model, only incomes vary across individuals, then the qualitative (individual and social) welfare effects of the relative consumptive distortions, whether positive or negative, are the same across individuals. A form of this generalization, based on homogeneous preferences, also holds in Frank's [11] model. Given Proposition 2, we derive conditions under which Setting 1 Pareto dominates Setting 2 (i.e., positional conservation improves social welfare).

Case I: If Setting 1 features *no* net distortion of conservation good consumption (i.e., the two distortions balance one another), then Setting 1 Pareto dominates Setting 2. Positional consumption of the conservation good improves social welfare, ceteris paribus, in this case. The condition under which Case I is obtained is given as follows.

$$\frac{W_{b_i,\text{Setting 1}}(b_i^*) - e}{W_{a_i,\text{Setting 1}}(a_i^*)} = \frac{(n-1)e}{n\alpha} \tag{8}$$

The intuition of Case I is clear. If there is no consumptive distortion in Setting 1, then there will be an under-consumption of the conservation good in Setting 2.

Case II: If a net under-consumption of the conservation good exists in Setting 1 (i.e., the externality-based distortion is relatively strong), then Setting 1 Pareto dominates Setting 2. Positional consumption of the conservation good improves social welfare, ceteris paribus, in this case. The condition under which Case II is obtained is given as follows.

$$\frac{W_{b_i,\text{Setting 1}}(b_i^*) - e}{W_{a_i,\text{Setting 1}}(a_i^*)} < \frac{(n-1)e}{n\alpha} \tag{9}$$

The intuition of Case II is clear. If there is a net under-consumption of the conservation good in Setting 1, this distortion will only be greater in Setting 2. Note that Equation (8) was derived after first deriving inequality (10) to follow.

Case III: If a net over-consumption of the conservation good exists in Setting 1 (i.e., the positional distortion is relatively strong), then it is a priori ambiguous whether positional conservation (marginally) imposes a conflict between individual and social welfare. The condition under which Case III is obtained is derived as follows.

$$\frac{W_{b_i,\text{Setting 1}}(b_i^*) - e}{W_{a_i,\text{Setting 1}}(a_i^*)} > \frac{(n-1)e}{n\alpha} \tag{10}$$

Setting 1 Pareto dominates Setting 2 for an undefined subset of Case III. If the welfare loss from under-consumption of the positional good in Setting 2 is greater (less) than the welfare loss from over-consumption of the positional good in Setting 1, then Setting 1 (2) Pareto dominates Setting 2 (1) in Case III. There may be harmony or disharmony between individual and social welfare in this case. It is important to note that the model results of Frank [11] and of Hopkins and Kornienko [29] arise from a setting that itself inhabits a subset of Case III. In these two models, it is implicitly the case that $e = 0$ (i.e., no externality exists) such that Case III holds if $\frac{W_{b_i,\text{Setting 1}}(b_i^*)}{W_{a_i,\text{Setting 1}}(a_i^*)} > 0$ (i.e., Case III always holds given two goods with a positive price). The particular subset of Case III that holds within these two models does not allow for an under-consumption of the positional good in Setting 2 (i.e., Setting 2 is optimal in these models). Therefore, neither set of authors finds a case in which positionality motivates harmony between individual and social welfare.

3. Example

Let us consider an environment in which each consumer possesses a (given) specific utility structure. In Setting 1 of this environment, each consumer i addresses the following utility maximization exercise.

$$\text{Max}_{\{a_i,b_i\}}\ U_i = a_i b_i - \frac{e}{n} b_i - \frac{e}{n} \sum_{\substack{j=1 \\ j \neq i}}^{n} b_j + \bar{s} + \alpha(a_i - f(\mathbf{a}_{-i})) \quad \text{s.t.} \quad p_a a_i + p_b b_i = M_i \tag{11}$$

From this exercise, we assume interior solutions and solve these for optimal allocations as follows.

$$a_i^* = \frac{M_i + \frac{e}{n}p_a + \alpha p_b}{2p_a} \qquad b_i^* = \frac{M_i - \frac{e}{n}p_a - \alpha p_b}{2p_b} \tag{12}$$

We now consider the same utility specification for Setting 2 and obtain the following utility maximization exercise.

$$\mathrm{Max}_{\{a_i,b_i\}}\ U_i = a_i b_i - \frac{e}{n}b_i - \frac{e}{n}\sum_{\substack{j=1 \\ j \neq i}}^{n} b_j + \bar{s} + \mu(M_i - g(\mathbf{M_{-i}})) \quad \text{s.t.} \quad p_a a_i + p_b b_i = M_i \tag{13}$$

Solving this exercise, we obtain the following allocation for Setting 2.

$$a_i^* = \frac{M_i + \frac{e}{n}p_a}{2p_a} \qquad b_i^* = \frac{M_i - \frac{e}{n}p_a}{2p_b} \tag{14}$$

Lastly, we consider the same utility specification for Setting 3 and obtain the following utility maximization exercise.

$$\mathrm{Max}_{\{a_i,b_i\}}\ U_i = a_i b_i - e b_i + \bar{s} + \mu(M_i - g(\mathbf{M_{-i}})) \quad \text{s.t.} \quad p_a a_i + p_b b_i = M_i \tag{15}$$

Solving this exercise, we obtain the following allocation for Setting 3.

$$a_i^* = \frac{M_i + e p_a}{2p_a} \qquad b_i^* = \frac{M_i - e p_a}{2p_b} \tag{16}$$

From these exercises, we obtain the following results.

$$\begin{gathered} a^*_{i,\text{setting }1} > a^*_{i,\text{setting }2} \\ a^*_{i,\text{setting }3} > a^*_{i,\text{setting }2} \\ a^*_{i,\text{setting }1} > a^*_{i,\text{setting }3} \ \text{ if } \alpha p_b > \left(\tfrac{n-1}{n}\right) e p_a. \end{gathered}$$

The third result implies that we are in Case I or Case II, in which $a^*_{i,\text{setting }1} \leq a^*_{i,\text{setting }3}$, if $\alpha p_b \leq \left(\frac{n-1}{n}\right) e p_a$. For the present specification, therefore, we can be sure that positional conservation has the marginal effect of improving social welfare if $\alpha p_b \leq \left(\frac{n-1}{n}\right) e p_a$.

4. Conclusions

Within a two-good model, we show that social rewards associated with conservation good consumption can function indirectly to decrease consumption of an externally costly, non-conservation good and improve social welfare. This result builds upon the work of Fershtman and Weiss [30], who find that social rewards can be effective in promoting externally beneficial goods and social welfare. Despite their powerful finding, Fershtman and Weiss [30] conclude within a one-good (action) environment that social rewards are not effective in curbing consumption of an externally costly good (e.g., one that causes pollution). We find herein that this last result of Fershtman and Weiss [30] does not hold generally within a two-good consumer choice setting. Namely, pollution externalities can be decreased through positional conservation. Sexton and Sexton [7] showed that social norms in parts of the United States have shifted such that certain types of conspicuous conservation are now positional in nature (e.g., home solar panels and Toyota Prius automobiles). This social response may provide a partial solution to (external costs of) growing greenhouse gas emissions. As Ostrom [6] notes, there are no stand-alone solutions to this issue. Viable solutions must be polycentric given the magnitude of external costs.

While government policy may be effective in reducing the positionality of certain positional goods (e.g., through taxation or consumption quotas), it is potentially more difficult to curb positional spending in general. Status-valuing individuals may substitute toward (garner positional utility from) unregulated, conspicuous goods. Results of the present study, as well as those of Fershtman and Weiss [30], suggest that the Paretian objective may not be to curb positional spending. Rather, the Paretian objective may be to shift positional spending toward conspicuous goods that are otherwise under-consumed (e.g., conservation goods or education).

The examples of the Toyota Prius hybrid car and Tesla electric car, among other such car models linked to environmental friendliness, have demonstrated that individuals wish to purchase environmentally friendly goods for positional reasons. That is, the design of salient environmental goods can lead to Pareto improving positional spending. Further, as we closer to energy self-sufficient buildings, such buildings can be designed to make their on-site energy production salient. Such visibility might convince environmentally positional individuals and companies to locate at such building sites.

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