

## THE OVERESTIMATED IMPACT OF SELF-INTEREST AND THE UNDERESTIMATED IMPACT OF JUSTICE MOTIVES

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**Abstract.** The underlying motives of citizens' support of locally implemented air polluting or air protecting political decision-making processes are analyzed in a questionnaire study (N = 221): To what extent is citizens' support based on self-interest, and how influential are the often overlooked justice motives?

The empirical results reveal that citizens have clear and distinguished justice appraisals concerning local policies and political regulations affecting the city's air quality. Multiple regression analyses confirm the high behavioral impact of these justice appraisals: Commitments to promote political regulations either protecting the city's air quality or endangering it are both – with opposite regression weights – based on justice appraisals. For those commitments, which endanger the air quality variables representing self-interest in form of anticipated personal benefits are of equal importance, whereas for pro-environmental commitments the only significant predictor representing self-interest is the experienced air pollution in one's own living space.

Implications of the results for model building (need of further justice-related models instead of models in the rational-choice tradition) and for practical intervention programs (using justice motives to promote pro-environmental behavior) are discussed.

### 1. Introduction

Facing the risks of long-lasting and possibly irreparable changes of the earth's eco-systems (Umweltbundesamt 1997, Oskamp 2000), ecological damages and political measures to reduce them are without any doubt one of the most important current political subjects. Most of these ecological damages can be traced back to anthropogenic influences and are caused by activities, which serve desirable aims, such as economic growth, high living standard, or enlargement of wealth (Oskamp 2000, Howard 2000). Changes in relevant behavioral and decisive patterns of individuals (Winter 2000) as well as in industry are necessary to reduce ecological risks. Furthermore, adequate local and global political decision-making seems to be required to promote and regulate these necessary changes.

As all political decision-making processes are in need of a broad acceptance within the general population, stricter pro-environmental laws (for example, laws prescribing the reduction of industrial emissions) can only be implemented and upheld when the majority of the voters agree with them. It is – therefore necessary to explore the citizens' view and behavioral attitudes toward environment-relevant decision-making. However, corresponding profound empirical research is often missing. Instead, the politicians rely on intuitive opinions. To reduce this lack of knowledge, social sciences and especially environmental psychology play an important role (Hellbrück and Fischer, 1999, Homburg and Matthies, 1998, Stern 2000).

One of the intuitive belief systems concerning people's attitude and behavior in the context of environmental decision-making concerns the overestimated impact of self-interest. The widely spread term "not in my backyard" reflects this general attitude: According to this view of human behavior, people are concerned about environmental problems, but if possible solutions enclose personal renunciations and behavioral changes their willingness to accept them is very restricted. Only when people are directly affected by ecological damages (for example, if an industrial park or a waste incinerating plant is planned to be built near one's home), they become active and seem to be willing to engage in the protection of their environment. But once the directly experienced danger is averted, pro-environmental activities are stopped.

Although this view on people's motives might look intuitively convincing, empirical research reveals that this way of looking at things is much oversimplistic. Many people are willing to engage pro-environmentally without expecting and anticipating direct personal benefit (Kals 1996), and even locally acting conservation groups receive their support not only from those who are directly affected (see e.g. Kals and Montada 1997, Opp et al 1984, Platzer 1983). Instead, other motives such as moral reasoning, taking over ecological responsibility or trying to implement environmental justice are motivating people to act pro-environmentally (see Breit and Eckensberger 1998, Eckensberger et al 1992, Kaiser 2001, Kals and Montada 1997, Kals et al 1998, Schahn 1996, Syme et al 1999).

There is an increase in researching the underlying motives of people's environmentally relevant behavior on a global level, but only a small minority of empirical studies focuses on local problems (McKenzie-Mohr 2000). Nevertheless, there are good reasons to enforce this local level of analysis:

- (1) Many political decisions regarding natural environment are made at the local level. In Germany, general laws are given by the federal government, but these laws need to be implemented and fulfilled on a local level. Moreover, many environmental laws leave space for interpretation, which is filled by the local administrations.
- (2) By focusing on local environmental problems and local decision-making processes, global problems are also diminished in the long run, because

increasing local environmental qualities, in sum, lead to enhanced global environmental quality (see Linneweber 1997).

- (3) For most people it is easier to get involved in the local than in the federal political decision-making process, as it is easier to approach local politicians, and people have the opportunity to take part in local political discussions and controversies.
- (4) This practical perspective of an easier involvement in local decision-making is supplemented by psychological arguments: Local environmental problems are perceived as less complex. It is easier to recognize efficient means to reduce them; and ecological responsibility is attributed more often internally than in global contexts (see Kals et al 1998).

This view from a local perspective reflects the shift of the Local Agenda 21 (Bundesministerium für Raumordnung, Bauwesen und Städtebau 1996), which tries to implement the conventions of Rio de Janeiro on the local level of acting.

Taking these arguments into account, the present article addresses the analysis of individual commitments to promote policies and political regulations. Policies and regulations protecting local environmental commons are regarded, as well as policies and regulations endangering these ecological commons. As an exemplifying environmental problem the air quality in the German city of Trier was chosen. Air pollution is one of the most severe environmental problems in Trier (Ministerium für Umwelt und Forsten 1996). The main question of interest is: What is the relative impact of self-interest on the citizens' commitments compared to the relative impact of justice appraisals?

## **2. Theory**

### *The overestimated impact of self-interest*

Within the economical sciences, rational-choice theories are getting more and more prominent (see e.g. Abell 1991) and have even gained a predominant position. These theories were developed to explain market mechanisms and the decisions of various actors (for example, the individual consumer, social groups, global players, or nations) by self-centered motives. They are based on the maxim of a restricted, resourceful, expecting, evaluating, maximizing man (summarized in the term RREEMM, see Abell 1991, Becker 1993, Jencks 1990). Following these theories, man is trying to maximize his own benefits and not the benefits of others or of the community on the rational base of valued expectations. This basic assumption is transferred into various expectation-value theories, which explain behavioral decisions as the outcome of a rational calculus with motives other than self-interest (e.g. altruistic motives or justice considerations) explicitly being excluded. The same is the case for the possible impact of emotions (Kahn 1997, 1999).

There is no doubt that self-interest can account for many human decisions and activities. This is especially the case in the context of pure economical action fields. It is a problem that maximizing self-interest as the “first principle of economics” (Sen 1990) is not restricted to economical contexts, but generalized to nearly all fields of human activity (see e.g. Becker 1993, McKenzie and Tullock 1984, as well for an overview Kals 1999), which also include decisions and activities in the context of natural environment (see e.g. Opp and Roehl 1990). In line with this over-generalized application of the rational-choice theory, its basic assumption is more and more adopted in social sciences dealing with the explanation and solution of the ecological crisis (see e.g. Diekmann and Preisendörfer 1993). This development is at least questionable (see Kals, 1999) with respect to two central critiques on the rational choice paradigm:

- (1) In rational-choice theories the pursuit of self-interest is often postulated as the only motive of human behavior. In relevant literature, this reduction to a single motive is interpreted as the “intellectual power” of the model (Mansbridge 1990: 20). First of all, considering this from a scientific point of view, every kind of “single motive assumption” is unproductive. It contradicts the basics of any scientific approach and leads to tautological statements as all interests and aims of a person need to be interpreted as self-interest per definitionem. Secondly, human behavior, for example, ecologically relevant decision-making, does not reflect a rational calculus, but largely depends on emotions (Becker 2000, Becker and Kals 1997, Kahn 1999, Kals et al 1998, Schahn 1996). Thirdly, the single motive assumption is not sufficiently proven by economists or other social scientists. Empirical data are gathered and interpreted in the light of “How might the rational-choice theory explain X?” instead of “What explains X?” (Green and Shapiro 1994: 203). Alternative hypotheses are neither formulated nor empirically tested on the methodological level established within psychology. Fourthly, the single motive assumption embraces risks for societal developments as the pursuit of daily self-interest is legitimized. This raises the probability that in an ecological decision-making situation or in other conflicts between individual and societal interest, self-interest gains dominance.
- (2) Rational-choice theories are immunized by “bridge assumptions”. Obviously, rational-choice theories have problems explaining why people engage, for example, in local conservation groups without expecting direct personal benefits in form of an improved ecological situation in one’s own living space. In these and other cases it is necessary to construct bridge assumptions to uphold the rational-choice hypothesis (see Abell 1991, Enste 1998). One of the most common assumptions is the one of a covert self-interest. Examples of a hidden self-interest for political engagements could be the expectation of social rewards, meeting friends and neighbors, the improvement of self-esteem or power, etc. A broad variety of possibly covered self-interests might be imagined and it is only a question of creativity to generalize them (Montada

1998a, 1998b). Often, these assumptions are formulated post hoc, and in the long run they hinder the development of differentiated models of human activities (Kals 1999, Maes 2001).

These arguments emphasize the necessity to substitute the single motive assumption of self-interest by the assumption of multiple motives, which should be valid for most categories of human activities, including behavioral decisions and activities in the context of natural environment. Therefore, it is necessary to test the impact of self-interest against other motives. For an especially strict testing, self-interest should not only be operationalized directly but also in form of covert self-interest. Motives of ecological justice are selected as a particularly interesting but underestimated competing category of motives.

#### *The underestimated impact of justice motives*

Trying to solve the ecological crisis causes many justice problems because the necessary consequent political decision-making always implies cost and benefit components, which need to be balanced. This may be illustrated by the example of prohibitive laws: On the one hand, strict prohibitive laws (that are well-implemented and controlled) serve for the protection of natural environment. They aim to reduce, for example, activities that endanger natural environment (such as individual motor traffic, high energy consumption in households, industrial emissions). On the other hand, they create burdens and costs for those affected by the laws. Citizens might have to give up their cars; they are enforced to reduce their private energy consumption; they have to cope with less comfort in their household. Industry has to invest money to meet the stricter emission standards, which might impede their position in the market competition and as a consequence endanger job security. Can such strict prohibitive laws be nevertheless accepted and judged as just? Would it be fairer to establish less stricter regulations and policies (such as providing subsidies or establishing taxes)?

The political promotion of pure voluntary renunciations also has its specific burdens and costs. Justice theories state that renunciations based on free will are just per se (Nozick 1974). As a consequence, among the various policies (for example, prohibitive laws, raising taxes, providing subsidies, or simply appealing to the actors) mere appeals should be regarded the most just. However, the opposite is the case. Mere appeals to act pro-environmentally are rejected as unjust for various reasons: Although they hardly reduce freedom of choice, mere appeals promote free riding. Those who voluntarily follow the appeals and take, for example, the bus instead of the car give ecological and practical advantages (like free parking space and empty roads) to those who do not follow them. This could explain why even strict prohibitive laws, which equally reduce freedom of choice and efficiently change behavior patterns are accepted as just (Kals 1996, Kals et al in press, Montada 1999, Montada and Kals 2000).

These and other findings are part of a growing research in the field of environmental justice problems (Opotow and Clayton, 1994). This research advanced psychological justice models trying to explain pro-environmental or environment-endangering activities and decision-making by justice motives and justice appraisals (see e.g. Clayton 1996, Eckensberger et al 1992, Horwitz 1994, Kals 1996, Opotow and Clayton 1994, Syme et al 1999). It is rooted in the multi-disciplinary and well-developed justice research in other action fields (for an overview see Bierhoff et al 1986; Lerner and Vermunt 1986, Müller and Wegener 1995). The basic assumption is that the experience of injustices motivates behaviors to reduce this injustice, whereas the perception of justice leads to efforts maintaining the status quo (Walster, Walster and Berscheid 1978). The application of this basic assumption to the empirical explanation of environmentally relevant decision-making is in line with the hypothesis: The regard of imbalances concerning the benefits deriving from human activities that endanger natural environment on the one side, and the suffering from the ecological risks deriving from these activities on the other side, motivate pro-environmental behavior (see e.g. Albrecht 1995, Clayton 1996, Horwitz 1994, Opotow and Clayton 1994, Russell et al in press, Syme et al 1999). There are further examples of justice appraisals, which lead to pro-environmental behavior, for example, the perceived justice of policies, which (a) limit and regulate the use of water as a natural resource (see Syme et al 1999, 2000), (b) reduce emissions of industries as well as regulate individual mobility decisions (see Montada 1999), and (c) protect air quality in general (Kals 1996).

Despite this empirical support for the behavioral impact of justice motives on environmentally relevant decisions and behaviors, an empirical comparison of the impact of justice motives and self-interest is still missing. There are only some studies in the context of interpersonal justice where the relative significance of justice preferences and appraisals in comparison to self-interest and other factors was analyzed (see e.g. Mikula et al 1997, Mikula and Korytko 1989).

### **3. Research questions**

The focus of the empirical work was placed on a local problem of air pollution in the German city of Trier (state of Rhineland-Palatinate). This approach was necessary in order to, (1) be able to operationalize justice motives and self-interest on a very specific level, and (2) limit the measurement instrument to an acceptable length. In the present study, industrial emissions were analyzed as an important facet of air pollution. The central behavioral criteria are correspondingly the willingness for continued commitments to promote policies and political regulations for industrial emissions, which (1) protect the city's air quality (e.g. establishing stricter laws for industrial emissions, raising energy taxes for industrial emissions, providing subsidies for local industries using eco-friendly

mobility systems); and (2) potentially endanger the city's air quality (e.g. reduction of taxes on industrial emissions, giving industry more freedom of choice concerning the implementation of eco-friendly technologies, reducing political and practical barriers for establishing new local industry). Softer policies, for example, appealing merely to industry, were excluded because it is known from earlier studies that they are less efficient and often rejected as unjust (Kals 1996, Kals et al in press, Montada 1999).

Several types of individual commitments for the various policies were regarded in order to cover a large spectrum of activities, which might vary depending on the current individual circumstances and possibilities. Examples are: signing a signature list in order to promote the policy, supporting public campaigns aiming to establish the policy, voting for local politicians who promise to engage in the establishment of the corresponding regulation. In earlier longitudinal studies, it could be shown that these commitment variables are valid predictors of the manifest behaviors which were conducted within two months after the assessment of the commitments (Montada and Kals 1998). The transfer of commitments into manifest behavior is moderated by social as well as situational circumstances, such as modeling behavior of friends or opportunities to act in the political arena (Montada et al submitted).

Five justice variables and six self-interest variables were operationalized to explain the individual commitments. Justice variables are divided into the perception of justice and the perception of injustice (see Table 1). The justice appraisals refer to different categories of policies, which might have positive or negative consequences for the city's air quality (variables 1 to 3). On the other hand, the appraisals of injustice refer to various imbalances in the context of the causation of local air pollution as well as of activities to improve air quality: Variable four concerns the fact that industry is causing air pollution in large parts of the city whereas its resulting ecological consequences are affecting everybody. Variable five covers the perceived injustice of free riding as only some local firms are following appeals to voluntarily reduce emissions whereas others continue with their money-making polluting activities.

Self-interest is represented by five variables that refer to anticipated direct personal benefit, either due to the realization of policies in the context of air pollution and protection (variables 6 and 7) or to the realization of ecological, economical, or social interests of the city (variables 8 to 10). The latter three variables can be traced back to the multifaceted construct of sustainability (see Kals et al submitted, Linneweber 1998) and consider its three dimensions (WCED 1990). In addition to this direct measurement of self-interest, experienced ecological burdens due to air pollution in one's own living space are measured (variable 11), which represent a covert self-interest in line with the bridge assumptions of the rational-choice theory. In earlier studies it could be shown that the experience of ecological burdens does not motivate people to act for the sake of global natural environment (Kals et al 1998). This result can still be interpreted

in line with the rational-choice theory, because the direct experience of ecological burdens should not efficiently be reduced by the improvement of the global environment. One aspect of the “socio-ecological dilemma” (see Ernst 1997, Hardin 1968, Platt 1973, Spada et al 1990) touches upon this problem: In most cases the benefits of pro-environmental behaviors in form of reduced environmental risks serve the society as a whole, whereas their burdens and costs are individualized. However, on the local level of acting, this dilemma is partly solved because efficient policies reducing local industrial emissions lead to improvements of local air quality, which should also be felt in the living space of the acting individuals (Kals et al 1998).

Table 1

### Overview of the predictor variables

#### *Variables representing justice motives*

- |                        |    |   |
|------------------------|----|---|
| Perceived justice...   | 1. | of financial policies to protect the city's air quality ( $\alpha = .69$ )  |
|                        | 2. | of prohibitive laws to protect the city's air quality ( $\alpha = .65$ )  |
|                        | 3. | of policies and political regulations that endanger the city's air quality ( $\alpha = .77$ )   |
| Perceived injustice... | 4. | of the ratio of industrial benefits due to air polluting activities and the ecological burdens of citizens ( $\alpha = .67$ )                                     |
|                        | 5. | of voluntary air protecting activities of some local firms with regard to continuing polluting activities of others (problem of “free riders”) ( $\alpha = .76$ ) |

#### *Variables representing self-interest*

- |  |     |  |
|--|-----|--|
| Anticipated personal benefit due to the realization of ... | 6.  | air protecting policies and political regulations ( $\alpha = .72$ )                             |
|  | 7.  | policies and political regulations that endanger the city's air quality ( $\alpha = .81$ )       |
|  | 8.  | ecological interests of the city ( $\alpha = .74$ )  |
|  | 9.  | economical interests of the city ( $\alpha = .81$ )  |
|  | 10. | social interests of the city ( $\alpha = .77$ )  |
|  | 11. | experienced ecological burdens due to air pollution in one's own living space ( $\alpha = .86$ ) |

With this variable list the research questions can be specified as follows:

- (1) To what extent are the various policies protecting or endangering the city's air quality regarded as just or refused as unjust? Is the imbalance between industrial benefits on the one side and ecological burdens for the citizens on the other side reconstructed as a justice problem? Is the same true for possible free riding?
- (2) What behavioral impact do justice motives and self-interest have on the two categories of commitments either reducing or raising industrial emissions?



What is the relative prediction weight of the two motive groups? Are there differences in the prediction patterns of pro-environmental versus environment-endangering commitments?

#### **4. Method**

To give answers to these research questions, a questionnaire study was conducted with 221 citizens of Trier. The great majority of subjects ( $N_1 = 142$ ) is a convenient sample representing the general population of Trier. This sub-sample was recruited by public calls in local newspapers, by written invitation, as well as by telephone calls. Moreover, members of local conservation groups ( $N_2 = 30$ ) were invited to participate in the study. As they engage in the reduction of industrial emissions by local firms, they can serve as a criterion group to validate the two commitment variables. It is expected that the activists express significantly higher commitments to protect the city's air quality and lower commitments to support endangering policies and political regulations than a control group taken from the general population with the same socio-demographics. The overall sample consists of 125 women and 96 men with an average age of 40 years. People with higher education are slightly over-represented (like in any larger questionnaire study).

The criterion as well as the predictor variables were all measured by several Likert-type items with a six point response rate (ranging from 1 = full disagreement to 6 = full agreement to the statement; two to eight items per scale). Principal axes factor analyses with varimax rotation were conducted over the items of each scale as well as simultaneously over the items of several constructs. The empirical factors are in full accordance with the theoretical constructs given in Table 1. The internal consistencies as well as different split-half reliabilities confirm the good measuring properties of the scales. The criterion validation of the commitment scales – comparing the activists with a control group – was also successful.

Pollution control and personal efforts to reduce ecological damages are phenomena that might be subject to social desirable answering sets. This social desirability, however, is not a uniform but a multifaceted phenomenon: People belonging to conservation groups, like for example Greenpeace, are without any doubt supporting ecological norms and are taking over ecological responsibility in their political decisions as well as in their everyday behavioral decisions. The general population still mainly reflects a multiple-norm system. On the one hand, surveys show that people accept pollution control as an important aim (see Homburg & Mathies, 1999), on the other hand, norms competing with ecological interests are also carrying social acceptance like, for example, traveling via long distance flights, driving a big car, enjoying a life style with a high energy consumption. Due to this complex and interindividually varying social desirability

of subjects, it is important to control socially desirable answering behavior. This was realized by integrating a standardized scale of social desirability offered by Lück and Timaeus (1969). This scale is a modified German version of the original scale by Crowne and Marlowe (1960).

Empirical results show that socially desirable answering behavior plays only a marginal role in our investigation. Social desirability and air protecting commitments share only 4 percent of variance. The shared variance of commitments that endanger the local air quality is 8 percent. It makes sense that socially desirable answering behavior is more affecting the commitments competing with pollution control than ecological commitments. Nevertheless, even for the competing commitments the correlation with social desirability is still acceptable. Moreover, socially desirable answering behavior does not qualify as a predictor in multiple regression analyses where ecological as well as competing commitments are explained as the criterion variables. In sum, the quality of the scales and the measurement seem to be sufficiently high and confirm the reliability and the validity of the study's methodology.

## 5. Results

### *Descriptive findings*

As an overall result the sample of this study has clear and distinguished justice appraisals on various political regulations with regard to industrial emissions. Relatively to the mid-point of the scales (3.5), people perceive financial policies and prohibitive laws to protect the city's air quality as just, and policies and political regulations that endanger the local air quality as unjust (cf., Table 2). Pro-environmental financial policies embracing subsidies and taxes are less strict policies than prohibitive laws. Therefore, it is especially impressive but in line with earlier findings (Kals 1996, Montada and Kals 2000) that even the most strict political regulation instrument, the enforcement of prohibitive laws, is accepted and regarded as just by the great majority of the sample. In addition, environment-risking policies are rejected as unjust. As an overall picture people seem to require local policies that efficiently protect air quality even if they are demanding great renunciations and changes in industrial decisions and production processes (Kals et al in press).

In line with this finding the ratio between industrial benefits on the one side and ecological sufferings of the population on the other side is clearly regarded as unjust. Even higher perceived injustice can be found for the judgment of free riding of some local firms in comparison to others, who voluntarily follow local appeals to reduce their emissions (cf. Table 2).

Table 2

**Descriptive findings on justice appraisals concerning local air pollution**  
 (Average deviation (AD) and Standard deviation (SD); Answering scale ranging from 1 = full disagreement to 6 = full agreement with the statement of justice versus injustice)

	AD	SD
1. Perceived justice of financial policies to protect the city's air quality	5.15	.90
2. Perceived justice of prohibitive laws to protect the city's air quality	4.08	1.19
3. Perceived justice of policies and political regulations that endanger the city's air quality	1.93	.99
4. Perceived injustice of the ratio of industrial benefits due to air polluting activities and the ecological burdens of the citizens	5.17	.94
5. Perceived injustice of voluntary air protecting activities of some local firms with regard to continuing polluting activities of others (problem of "free riders")	5.55	.75

#### *Multiple regression analyses*

For answering the second research question on the underlying motives of the two criterion variables, which either protect or endanger the local air quality in Trier, stepwise multiple regression analyses were conducted on these two commitment variables. As some of the predictor variables (1 to 11) are intercorrelated, it is necessary to vary the set of predictor variables included in the multiple regression analyses. The problem of multicollinearity, however, did not lead to unstable findings; instead the empirical models deriving from the full set of predictor variables were successfully validated and replicated by various selections of the predictors. Therefore, in the following the most informative full regression models with all predictors are presented in Figure 1 and 2.

Explaining individual commitments to promote air protecting policies, four predictor variables explain 35 percent of the criterion variance (cf. Figure 1). The more pro-environmental commitments increase, the more people judge the ratio between industrial benefits due to air polluting activities and ecological burdens of the citizens as unjust (4), the more they regard financial (1) and strict prohibitive policies (2) to protect the city's air quality as just, and the more they experience air pollution in their own living space (11). This shows that only the fourth and last qualifying predictor represents covered self-interest. All variables representing direct self-interest due to the realization of policies or societal interests, are of no significance.

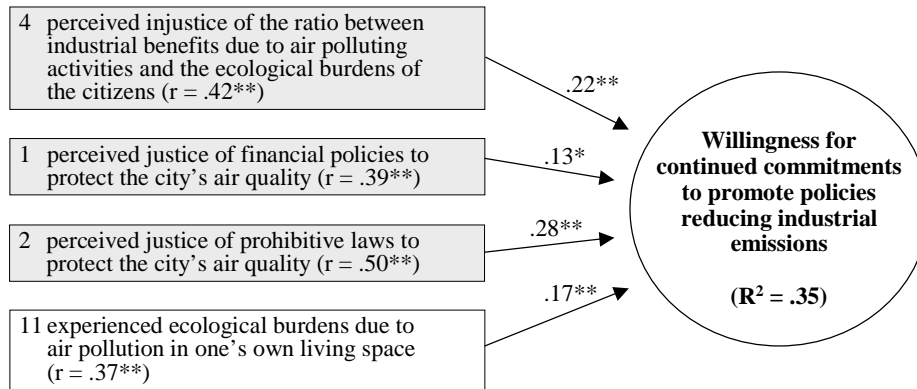


Figure 1. Stepwise multiple regression of the willingness for continued commitments to promote policies reducing industrial emissions on all model predictors representing self-interest and the justice motive (beta-weights)

If the justice appraisals (1 to 5) are removed from the predictor set, the explained criterion variance decreases to 19 percent: In addition to the experienced ecological burdens (11), the anticipated personal benefit due to the realization of ecological interests (8) qualifies with a positive beta-weight. If – on the other hand – the predictors representing self-interest (6 to 11) are removed, the explained variance only decreases to 33 percent. The significant predictors are the same justice appraisals that qualify in the full model (1, 2 and 4).

For the prediction of commitments to actively promote policies endangering the city's air quality, four predictor variables gain significance explaining 48 percent of the criterion variance (cf. Figure 2). Again the most significant predictor in the first analytic step is justice appraisal. It is the perceived justice of policies and regulations that endanger the city's air quality (3): The more people judge these policies as just, the more they are willing to engage in the enactment of policies that raise emissions by enlarging the industrial liberty. The remaining three significant predictors are direct measurements of self-interest: The more people deny the expectation of personal benefits due to air protecting policies (6), the more they anticipate personal benefits due to the realization of political regulations that endanger the city's air quality (7), and in addition, the more they expect personal benefits deriving from the realization of economical interests of the city (9), the more they are willing to actively engage for the sake of the industry. The covered self-interest of experienced air pollution in one's own living space (11) has no behavioral impact.

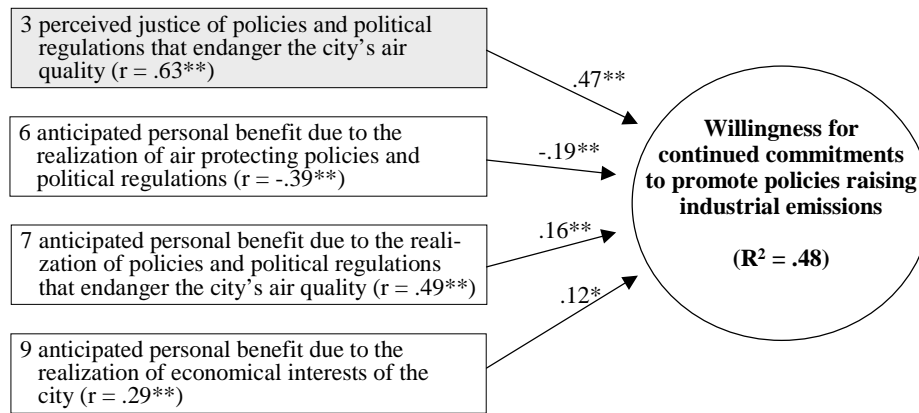


Figure 2. Stepwise multiple regression of the willingness for continued commitments to promote policies raising industrial emissions on all model predictors representing self-interest and the justice motive (beta-weights)

In a supplementary regression analysis including only the justice appraisals (1 to 5), the explained variance of the commitments to actively promote policies endangering the city's air quality decreases lightly to 42 percent: In addition to the perceived justice of policies and regulations that endanger the city's air quality (3) the perceived justice of prohibitive laws to protect the city's air quality (2) qualifies with negative weight. If the predictor set is limited to variables representing self-interests (6 to 11) 33 percent of the variance could be explained. In comparison with the full model one more predictor gains significance: the expected personal benefits deriving from the realization of social interests of the city (10).

## 6. Discussion

There is growing research within environmental psychology (for an overview see Homburg and Matthies 1998, Kruse and Schwarz 1988, Oskamp 2000, Winter 2000), which reflects the significant role of social sciences in understanding and modifying people's environmental attitudes and pro-environmental behavior, helping to overcome the ecological crisis. A crucial question within this research is: Why do people act towards nature in the way they do, and how can these behaviors be modified in favor of pro-environmental decisions?

The rational-choice theory answers this question by focusing on self-interest as the only and dominant motive of people's activities in decision-making situations (see e.g. Abell 1992). However, models in the tradition of rational-choice theories are questioned by scientific, empirical, and practical arguments (Kals 1999). Taking these contra-arguments into account, the behavioral impact of self-interest was empirically tested in the present article and contrasted with justice appraisals

to explain environmentally relevant decisions on the local level. As an exemplifying ecological problem, commitments concerning local air pollution – especially industrial emissions – in a German city were analyzed. Pro-environmental commitments were regarded as well as environment-endangering commitments.

Empirical data reveal that the citizens have clear and differentiated appraisals on local environmental justices and injustices. They fully agree to strict policies that protect local air quality and restrict the freedom of choice of local industry. They feel affected by the unjust ratio between individual benefits due to industrial emissions and the corresponding ecological burdens in the whole city. Furthermore, they reject free riding of some local industrial firms as mostly unjust, which might be reduced by stricter laws that affect all local firms in the same way and efficiently restrict their possibility to continue with their polluting activities. These clear descriptive findings are supplemented by explanatory results showing that the citizens' commitments are not predominantly motivated by pure self-interest. Instead, pro-environmental commitments are mainly based on justice motives as well as on the hidden self-interest of experienced ecological burdens, which might be reduced by efficient local air protecting policies. Commitments endangering the natural resources of air are also partly based on justice appraisals, whereas the remaining explained criterion variance can be traced back to direct self-interest, illustrating the existence of a motive mixture of self-interest and justice motives.

The results are not limited to commitments and justice appraisals aiming at industrial policies, but are in full agreement with the findings on behavioral decisions with regard to local air quality from the perspective of private emissions (produced by individual traffic and energy consumption in households). Even in this case of direct affiliation, people still have the same distinguished justice appraisals as well as the commitment to actively engage in strict policies and regulations. The behavioral impact of justice appraisals is also cross-validated by other literature findings (for an overview see Opatow and Clayton 1994).

What do these results mean for theoretical model building? It is reasonable for the psychological sciences to be more careful in taking over and adapting the rational-choice paradigm from the economical sciences. Theoretical arguments as well as the presented empirical findings clearly indicate that self-interest has explanatory power for ecologically relevant decisions. However, this is mainly the case for decisions, which set natural environment at risk. Here, self-interests are quite often competing with the ecological interests of society as it is presented in the concept of the socio-ecological dilemma (see originally Hardin 1968).

In addition to this result people are willing to accept renunciations and act politically for the sake of natural environment, even though they do not anticipate direct self-interest, but are only motivated by the experience of ecological burdens in their own living space. They care about ecological injustices in the distribution of costs and benefits and base their judgments on it. Therefore, justice theories should be adopted to ecological decision-making situations to an increased extent.

It should always be an empirical question (and not a question of a priori postulations) how powerful these justice motives are in comparison to self-interest when it comes to explain ecologically relevant decisions.

The presented empirical results have also practical implications for the promotion of pro-environmental decision-making of individual citizens (e.g. in educational programs). All variables, which can account for pro-environmental or environment-risking commitments can serve as potential starting-points for interventions to modify the behavioral commitments of citizens in the desirable direction. According to the findings, appraisals of (in-)justice should be in the center of such interventional programs. The data clearly illustrate that the complexity of the consequences of various policies as well as of cost-benefit outcomes is well recognized by the general population. People are able to make distinguished justice appraisals on environmental problems and to recognize that strict policies are more efficient to reduce environmental risks and avoid free riding (Montada 1999). It is for that reason that strict policies are well accepted and regarded as just, although they restrict liberty. As Susan Clayton said: "Appeals to justice matter. Framing an issue in terms of justice may lead to resistance to considering other aspects, such as technological or economic ones" (Clayton 1996: 196). The feedback of these and other findings to the general population might help to further reduce the impact of self-interest and to strengthen the desired influence of justice considerations.

Despite the practical relevance of the ecological justice research, it is still rarely conducted. Different reasons might account for this lack of research (see Kals et al in press): The complexity of the issue might make it difficult to formulate understandable items on ecological justice. Moreover, the scientific community might still be insufficiently aware of the significance of psychological research on perceived justice and its influence on individual behavior and decisions. One strategy to overcome these barriers might be to increasingly focus on local instead of global environmental problems as it was done in the present study. On the local level not only ecological problems but also justice problems can be understood more easily, and the reduced ecological complexity might ease the realization of the practical implications of the findings. Once a higher awareness for environmental justice problems is established on the local level, the justice perspective could gradually be extended to establish and increase environmental justice on the level of global playing.

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