

## An integral approach to corporate environmentalism and its application to a country in transition\*

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### Abstract

*In this paper we propose and implement an integral approach to corporate environmentalism. Our integral model accounts not only for corporate environmentalism motivation and conception but also for corporate environmentalism mode and speed of implementation. A broad range of identified corporate environmentalism dimensions helps characterize five basic groups of companies we propose to name “non-compliers,” “legalistic incrementalists,” “greenwashers,” “incremental innovators,” and “radical innovators.” We then seek to empirically verify the soundness of the proposed integral typology by surveying a large sample of Slovenian manufacturing companies. Maximum likelihood probit estimation, exploratory factor analysis, cluster analysis and binary logistic modeling are used in the empirical analysis. Our main conclusions are twofold: (1) The integral approach to corporate environmentalism works: in*

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*the framework of a small open transitional economy, the model differentiates well among different groups of companies. (2) There are no radical innovators among Slovenian companies, and less than one third of the companies are actively thinking and acting in line of environment-friendly processes and products. This finding can be partially explained by the fact that Slovenian economy still has some transitional characteristics.<sup>6</sup>*

**Key words:** corporate environmentalism, integral analysis, ISO 14001 certificate, managerial perceptions, survey research

**JEL classification:** Q01

## 1. Introduction

The multidimensionality of the man-created climate change problem is accentuated by a variety of levels at which both discussion and action take place: at the level of the mainstream paradigm in economic and business sciences; in the process of international coordination of environment-friendly activities; when implementing measures for a more efficient use of energy resources and against increased GHG emissions at the country level; at the level of companies' strategic deliberations followed by their decision-making processes; and, finally, at the individual worker/consumer level. Consequently, four "planetary" stakeholder groups include managers, company owners, governments, and workers/consumers.

In this paper we deal with the *company level and managers, company owners and workers as stakeholders*, and raise a number of issues: To what degree do companies truly behave responsibly towards the environment? To what extent are their efforts merely declarative as opposed to intense and innovative? Where and to what extent do environmental solutions become integrated and implemented into strategy and daily operations? What are the central barriers to their integration and implementation as perceived by company managers?

In trying to answer these questions, we first developed an integral typology which accounts not only for corporate environmentalism *motivation and conception* (manifested in practice as a company's corporate environmentalism *orientation*), but also for a corporate environmentalism mode and speed of *implementation* (manifested in practice as the level of corporate environmentalism *integration* into a company's value chain and beyond). A broad range of identified corporate environmentalism dimensions helps characterize five basic groups of companies

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we propose to name “non-compliers,” “legalistic incrementalists,” “greenwashers,” “incremental innovators,” and “radical innovators.”

While it is safe to assume that even companies from the most developed economies do not simply progress linearly towards the ultimate phase of environmental evolution (i.e., corporate environmentalism – hereafter: CE – as an opportunity for break-through innovation in search of added value and competitive advantage), both diversity and nuance to practical aspects of CE implementation are more pronounced in developing and transitional countries.

Based on the analysis of annual reports published by the leading companies in OECD and developing countries, Baskin (2006) found no differences in their emphasis on the importance of environmental issues. In practice, however, environmental responsibility in developing markets is less embedded in corporate strategies, less pervasive, and less politically rooted than in most high income OECD countries. In the context of transitional countries, this can also be attributed to the predominant stance of the socialist times which managed to outlive socialism: that environmental concerns are primarily the government domain. Consequently, CE is to function in compliance with the legal and regulatory environment of a given state (Steurer and Konrad, 2009).

Our proposed model of corporate environmentalism is used to analyze the practical aspects of CE implementation in Slovenia. The country is a case of a small open economy which recently joined the EU, but is still at odds with its socialist heritage in some areas (including CE) and can thus be labelled ‘transitional’. Relatively few companies actively nurture the culture of innovation and encourage as well as empower their employees to act in the area of CE. As noted by Damjan et al. (2007) as well as Rajkovič and Prašnikar (2011), firms that have been involved in the international trade for a longer period of time and those more integrated in international supply chains possess a competitive advantage over other Slovenian companies.

Our working hypothesis is therefore as follows: *Companies which are part of an international supply chain are more deeply integrated in environment-friendly activities and have a more prominent external ecological focus. Consequently, their environmental orientation, as shown in environmental focus and general environmental protection strategy, is stronger. The same goes for the level of strategic integration. While a number of other companies are active in corporate environmentalism because of legislation, the rest are lagging behind their declarative statements or completely lack ecological focus.*

The introductory section of this paper is followed by a critical overview of existing CE typologies and proposition of an integral model in Section 2 and a description of methodology in Section 3. Results of our empirical analysis are discussed in Section 4. We conclude by proposing an agenda for future research.

## 2. Literature review

Banerjee et al. (2003, p. 106) define CE as “the recognition of the importance of environmental issues facing the firm and the integration of those issues into the firm’s strategic plans.” This definition emphasizes the multifaceted nature of CE involving a company’s overall orientation towards the environment and its more specific strategies and implementation practices. The orientation dimension subsumes the company’s general awareness of environmental issues facing the company and its commitment to resolving these issues (Menon and Menon, 1997). However, orientation alone does not warrant change if it is not integrated into the company’s strategy (at the level of various functions) and implemented in its day-to-day operations.

Although extensive studies of the interaction between business activities and the natural environment are fairly recent (Banerjee et al., 2003), CE has evolved through various stages and transitions. Peattie (2001) also distinguishes between three ages and describes progression from the 1960s and 1970s as having a narrow focus on “problematic” industries and severe cases of pollution, incremental end-of-pipe solutions, and perceptions of environmentalism as a restrictive and costly burden. In the 1980s and 1990s a more holistic understanding was adopted and environmentalism became an opportunity for innovation in search of added value and competitive advantages (Stone and Wakefield, 2000). Currently, the era of “sustainable environmentalism” based on the realization that action across the entire value chain and radical changes are inevitable, is on the way. Hart (1997) makes similar claims, differentiating among the earlier pollution prevention phase, the product stewardship phase, and the current clean technology phase.

Of course the dynamic of CE is in reality much more complex, and companies do not simply progress linearly towards the “ultimate” phase of environmental evolution (i.e., CE as an opportunity for innovation in search of added value and competitive advantage). Instead, there is much diversity and nuance to CE in practice.

Ghobadian et al. (1995) define three general types of corporate behaviors in a business environment, where resources are becoming more scarce and expensive, and environmental concerns are becoming more prominent. Companies that are merely abiding by the current regulatory environmental requirements are pursuing the so-called *re-active strategy*. At the other end of the spectrum, companies adopt the so-called *pro-active strategy* with a strong focus on the future and a prevailing belief that environmental strategies can produce competitive advantage; consequently their entire product development cycle (from research, to production and recycling) is determined by long-term sustainable production. The remaining group of companies is *in-between* these two extremes. These companies follow the legislation and strictly adhere to industry standards and norms, but are only pro-active when it comes to foreseeing future legislative changes, which they try to implement upfront.

Hart (2005) extends this typology by identifying what he calls a “sustainability portfolio” of strategies that are divided across the today-tomorrow and the internal-external axis. Companies implementing the so-called *Internal and Today Strategies* are improving their internal operations with continuous process improvements related to sustainability: employee involvement, waste reduction, energy conservation, emission control, and so forth. Companies implementing the so-called *External and Today Strategies* are improving extended supply chains: analysis of upstream supply chains to make trade-offs in the choice of materials and processes, closed-loop supply chains for remanufacturing, and safe disposal. Companies implementing the so-called *Internal and Tomorrow Strategies* are investing in specific capabilities: recovery of pollution-causing chemicals during intermediate stages of manufacturing so they do not become a part of emissions; development of substitutes for non-renewable inputs; and redesign of products for lower material content, lower energy consumption in manufacturing, or lower energy consumption in use. Lastly, companies implementing the so-called *External and Tomorrow Strategies* are developing dynamic core capabilities in products, processes and operations, and supply chains for long-term sustainability, and pursuing a corporate strategy and culture that would facilitate long-term sustainability.

Hart's (2005) typology thus broadens Ghobadian et al.'s (1995) reactive-proactive spectrum by adding a *temporal dimension* (short-term vs. long-term) and *spatial dimension* (internal vs. external). But other typologies exist that address specific management styles in relation to CE. Based on the company's degree of compliance with regulatory requirements, scanning for environmental information and opportunities, responsiveness to regulators and environmental activists, and development of reliable implementation routines for environmental policies, Kagan et al. (2003) identify five management types with a progressive commitment to the environment: *environmental laggards*, *reluctant compliers*, *committed compliers*, *environmental strategists*, and *true believers*. The importance of integration and implementation of environmentalism into strategic planning and daily operations is further emphasized by Menon and Menon (1997) who distinguish between *strategic*, *quasi-strategic*, and *tactical CE*. While quasi-strategic CE is restricted to existing business strategy, strategic environmentalism relies on an innovative organization-wide CE strategy. In contrast, tactical CE is limited to the functional level and is subject to achieving specific, short-term functional objectives.

Each of the aforementioned typologies remains partial because it fails to fully consider the complex multidimensionality of CE. However, the typologies are not irreconcilable. We therefore propose to synthesize principal threads underlying the existing typologies and create an integral typology. This way we can account not only for corporate environmentalism *motivation* and *conception* (manifested in practice as a company's corporate environmentalism *orientation*), but also for corporate environmentalism mode and speed of *implementation* (manifested in practice as a

level of corporate environmentalism *integration* into a company's value chain and beyond).

Consequently, such an integral model of corporate environmentalism yields a wide range of dimensions that need to be considered when observing CE in practice. These include: *the motives for CE* (e.g., regulation, top management commitment, public concern, competitive advantage), *the company's general environmental orientation*, *the level of strategic integration of environmental issues* (e.g., organization-wide vs. isolated functional strategies), *the level of systemic integration* (e.g., partial internal initiatives vs. broader engagement across the value chain), *the temporal orientation and the openness to change* (today vs. tomorrow, incremental vs. innovative), and *the scope and degree of implementation* (narrow vs. broad; declarative vs. genuine). These dimensions help characterize five basic groups of companies we propose to name "non-compliers," "legalistic incrementalists," "greenwashers," "incremental innovators," and "radical innovators" (see Table 1).

Table 1: An integral model of corporate environmentalism with proposed dimensions and groups of companies

Dimension Group	Primary motives for CE	Environmental orientation	Level of strategic integration	Scope & degree of implementation	Level of systemic integration	Temporal orientation & openness to change
<i>Non-compliers</i>	None	Very weak	Very low	None	None	Today
<i>Legalistic incrementalists</i>	Regulation	Weak or moderate	Low – isolated functional strategies	Dependent on regulation	Low-internal green islands	Today, reactive only
<i>Greenwashers</i>	Economic Public concern	Moderate	Moderate	Narrow and often declarative only	Moderate	Today Change if compensated
<i>Incremental innovators</i>	Economic	Strong	High – environmental strategists	Broad and genuine	High – internal and external	Today Proactive
<i>Radical innovators</i>	Economic top management commitment	Very strong	Very high – true believers	Broad and genuine	Very high – strong external orientation	Tomorrow Radically innovative

Source: Authors' deliberations

The question we deal with next is whether any of these company types actually exist in practice. To find out, we survey a sample of large Slovenian export-oriented manufacturing companies.

### **3. Methodology**

There are 434 manufacturing companies with at least 50 employees in Slovenia. All of them received our questionnaire in a mail survey process that took place between July and September of 2008. 138 returned the filled-in questionnaires; our response rate is thus 31.8 percent, with respondents ranging from Chief Executive Officers and managers responsible for environmental protection, to heads of different advisory departments. Given that the sample's demographic characteristics resemble those of the total population in all important aspects, it is safe to conclude that self-selection bias is not present.

Four companies with missing values are only included in the descriptive analysis. Additionally, we could not match survey to financial data for these four companies, so they are excluded in the multivariate analysis and the "financial" comparison for which 130 full company datasets are used.

Our final sample includes 73.5 percent of small and medium companies (up to and including 250 employees) and 26.5 percent of large companies (with more than 250 employees). The average total revenue in 2008 for sample companies is 35.4 million EUR, while the average total assets on December 31, 2008 amount to 10.6 million EUR. The average return on assets for surveyed companies is 5.1 percent.

A maximum likelihood probit estimation with sample selection is performed for the group membership, using company size (log of number of employees and turnover) as selection variables. Results are non-significant (for the chi-square overall test and both coefficients, the minimum significance is 0.202), indicating that we cannot reject the hypothesis that the companies in the sample were selected at random.

Our questionnaire consists of almost 100 different attitudinal items (see the Appendix). To measure motives for environmental strategies we rely on Banerjee et al.'s (2003) scales for regulatory forces, public concern, expected competitive advantage, and top management commitment. The same goes for statements about the corporate-level environmental strategy. For measurement of marketing environmental strategies we use the multi-item scales developed by Banerjee (2001) and Banerjee et al. (2003), whereas to measure the results of environmental strategies we adapt scales on company performance from Jap (1999), Hoffman (2000) and Sun (2007).

The respondents evaluated each item on a 1 to 5 scale (1 = absolutely not true; 2 = not true; 3 = indifferent; 4 = true; 5 = absolutely true). When evaluating scope and level of strategy implementation and the level of systemic integration, the following scale was used: 1 = not at all relevant; 2 = relevant but not part of our activities; 3 = we have only just started dealing with this area; 4 = we have been dealing with this area but have not found all solutions yet; 5 = we have all relevant solutions.

## 4. Empirical research and discussion

### 4.1. CE dimensions in practice

Given that standard scales on corporate environmentalism cannot be found in the literature we decided to develop our own measurement instrument. For this purpose exploratory factor analysis on the correlation matrix was applied, using maximum likelihood method of extraction and improving the solution by the varimax rotation with Keiser optimization. In the process we manage to identify 17 measurement scales which show appropriate variability and can be classified into the previously identified *five major CE dimensions*: primary motives for corporate environmentalism, environmental orientation, level of strategic integration, scope and degree of implementation, level of systemic integration, and barriers to environmental strategy deployment (see Table 2).

Table 2: Strategy of environment protection (arithmetic means and a 95-percent confidence interval)

Area	Scale	Mean	St.dev.	95% confidence interval	
Primary motives for CE	Market opportunities	3.14	1.51	2.89	3.39
	Legislation	3.22	1.56	2.96	3.48
	Management vision	3.56	1.77	3.26	3.86
Environmental orientation	Environmental focus	3.59	1.57	3.32	3.85
	General environmental protection strategy	3.77	1.67	3.49	4.05
Level of strategic integration	Environmental strategy in production and marketing	3.35	1.61	3.08	3.62
	Environmental strategy in HRM	3.14	1.63	2.87	3.41
Scope & degree of implementation	Customer related activities	3.01	1.57	2.75	3.27
	Ecological activities in transport	2.56	2.21	2.19	2.94
	Eco-friendly product and process development	3.23	1.72	2.94	3.52
	Production process enhancement	3.84	1.59	3.57	4.11
	Waste and emissions management	3.33	2.21	2.96	3.7
Level of systemic integration	Activities in the supply chain	3.00	1.27	2.79	3.22
	Ecological focus outside of the company	2.18	1.84	1.86	2.49
Barriers to environmental strategy deployment	Costs/owners	3.07	1.52	2.81	3.32
	Problems in supply chain	2.89	1.41	2.65	3.13
	Limited technology supply	3.46	1.65	3.19	3.74

Source: Authors' calculations



In the framework of each of the five identified dimensions there are several factors that are linear combinations of original items. For these the scale validity is verified by calculating Cronbach's alpha coefficient. All have high alpha values of at least 0.7, the majority even above 0.8, which is rated as adequate (George and Mallery, 2003). Topics, scale items, and relevant values of Cronbach's alpha coefficient are given in the Appendix. We also checked several relevant aspects of validity. Using factor analysis insures discriminant validity, while ex-post matching the scales with our theoretical assumptions indicates construct validity of our scales.

The first four empirically identified areas correspond with dimensions described in the previous section. While temporal orientation remains implicit in the general environmental orientation and strategy integration dimensions, we identify an additional dimension containing *barriers to implementation*.

The existing literature (Harrison and Freeman, 1999; Henriques and Sadosky, 1999; Banerjee et al., 2003) discusses four broad groups of *motives for environmental concerns*: regulation, public concern, expected competitive advantage, and top management's commitment.

As shown in Table 2, in our research the statistically most important motive for environment-friendly enterprise engagement seems to be management vision. Both legislation and market opportunities are close to the neutral value, yet still important when it comes to differentiating among identified clusters of industrial enterprises. Although public concern is an important motive for environment-friendly enterprise engagement (see e.g. Čater et al., 2009), this particular scale does not have any weight when researching the enterprise differences in the framework of our project.

Next, we analyze to what degree eco-strategies are incorporated into general and functional strategies, i.e. what is the *company's environmental orientation and level of strategic integration*. Corporate environmental strategies at the highest organizational level deal with environmental issues in the balance of a company's strategic business units and the links among these units and, therefore, address environmental questions on starting new businesses, technology choices, plant locations, and research and development investments (Theyel, 2000; Banerjee, 2001). On the other hand, functional environmental strategies show how environmental concerns are included in long-term plans within such business functions as purchasing, production, marketing, and personnel (Peattie and Crane, 2005; Theyel, 2000; Ghobadian et al., 1995).

In line with the above, Table 2 displays, in the area of environmental orientation, two relevant factors: environmental focus and presence of a general environmental protection strategy. On average the companies in the sample have quite a well-developed environmental orientation with both factors significantly above the indifference value of 3. The level of strategic integration mostly exceeds the indifference level as well, with the first strategic dimension (environmental strategy

in production and marketing) slightly above 3, and the second one (environmental strategy in HRM) practically reaching the value 3 (indifferent). Other functional strategies do not have weights of enough importance to differentiate the enterprises in our research.

A connection between production and marketing function is related to the idea of complementary capabilities and competences discussed in other works of our research group (Prašnikar et al., 2008; Rajkovič and Prašnikar, 2011). Slovenian enterprises seem to differ in their ability to implement complementary capabilities and competences (e.g. to implement technological capabilities and competences that are market-driven, as well as to implement market capabilities and competences that make incremental innovations possible). Although the functional strategy – HRM averages only slightly above the value 3 (indifferent), this dimension also seems to be important when trying to differentiate among the enterprises. As Perez et al. (2007) explain, there are numerous differences among companies when it comes to the development of embedded mechanisms for change and their influence on critical intangible assets that foster the environmental protection process.

Among the identified areas of *CE strategy implementation*, only one area, the production process enhancement, has an average value significantly above the neutral point, which again demonstrates the importance of incremental innovation in Slovenian firms in reality (see also Čater et al., 2009). Within the production process it is energy and water consumption management that seems to merit the most attention. Additionally, it should be noted that companies only engage in the development of environment-friendly products if active customer demand exists.

We then move on to investigate the *level of systemic integration* of environmental concerns across the whole value chain and beyond. The two dimensions, ecological focus outside the enterprise with the average value slightly above 2 (relevant but not part of our activities), as well as activities focused on the supply chain (3 = we have only just started dealing with this area), both score relatively low. The average Slovenian industrial enterprise is thus, as far as the level of systemic integration is concerned, obviously giving more priority to internal issues.

Finally, when it comes to *barriers to environmental strategy deployment*, limited technology supply is key among the barriers to environmental strategy implementation (see Table 2), followed by the high cost of environment-friendly activities paired with the lack of owner support and understanding. The least important among the barriers for the enterprises that participate in our research seem to be problems with customers and suppliers.

## 4.2. Groups of companies in practice

### 4.2.1. Identification of clusters and description of cluster characteristics

In the second phase of our research we use the identified 17 measurement scales to cluster the industrial enterprises into groups. Our initial clustering is hierarchical using the Ward method with squared Euclidean distances. We end up with an optimal four-group solution. In the next step we use a K-Means procedure to fine-tune the results of the hierarchical procedure. These can be matched to four of the five hypothesized basic groups of companies: although we cannot find any radical innovators, we manage to identify the “non-compliers,” “legalistic incrementalists,” “greenwashers,” and “incremental innovators.”

Table 3: Selected cluster indicators in 2008

Indicator	Non-compliers	Legalistic incrementalists	Greenwashers	Incremental innovators
Number of companies in the cluster	31	39	19	41
Number of employees (mean)	123.2	231.0	277.3	319.7
Debt to assets (mean, %)	67.4	64.7	65.2	61.1
ROA (mean, %)	3.2	5.3	2.4	7.4
Share of exports in total sales (mean, %)	43.9	56.9	60.4	74.8
Percentage with ISO 14001	6.5	44.7	36.8	57.9

Source: Authors' calculations

Table 3 shows a selection of interesting indicators such as number of employees, debt to assets ratio, ROA, share of exports in total sales, and ISO 14001 certificate possession, describing the identified four clusters of “non-compliers,” “legalistic incrementalists,” “greenwashers,” and “incremental innovators.” The smallest companies can be found among “non-compliers,” and the most successful Slovenian companies among “incremental innovators.” This is in line with Kagan et al. (2003) and Thornton et al. (2009) who report that larger and more successful companies have better environmental performance. On average, “incremental innovators” export the most (nearly three quarters of all sales, mostly to the EU countries) while “non-compliers” on average export less than half of their sales. Almost two-thirds of “incremental innovators” are ISO 14001 certificate holders, while only 6.5 percent of “non-compliers” hold an ISO 14001 certificate.

For the most part, “incremental innovators” come from manufacturing of electrical equipment; a relatively high percentage can also be found in manufacturing of chemicals, chemical products, and rubber (see Table 4). The latter industry is also well represented in the group of “legalistic incrementalists,” which is not surprising

due to very strict regulation. Companies from manufacturing of textiles, wearing apparel, and shoes can mostly be found among “greenwashers,” whereas those from manufacturing of wood and paper, as well as many of their counterparts from manufacturing of metal products and machinery, classify among the “non-compliers.”

Table 4: Cluster structure by main enterprise activity, in percent

Industry	Non-compliers	Legalistic incrementalists	Greenwashers	Incremental innovators
Mining and quarrying	0.0	2.6	0.0	10.0
Manufacturing of food and beverages	6.5	15.4	0.0	2.5
Manufacturing of textiles, wearing apparel, and shoes	3.2	5.1	26.3	2.5
Manufacturing of wood and paper	25.8	12.8	0.0	5.0
Manufacturing of chemicals and rubber	3.2	23.1	10.5	17.5
Manufacturing of metal products and machinery	32.3	20.5	26.3	20.0
Manufacturing of electrical equipment	22.6	20.5	31.6	42.5
Construction	6.5	0.0	5.3	0.0
Total	100.0	100.0	100.0	100.0

Source: Authors' calculations

As shown in Table 5, “incremental innovators” are the more advanced companies with a well-developed general environment-protection strategy and well-developed functional strategies covering marketing, production, and human resources. These companies try to optimize their production processes, pay great attention to waste and emissions management, and, to a lesser degree, also focus on transport and ecological activities outside the enterprise. The main motive for this group seems to be the vision of their top management; however, the importance of market opportunities should also not be overlooked. Among the barriers, these companies most vehemently point towards limited technology supply.

Table 5: Group comparison based on measurement scales (95-percent confidence intervals)

Topic		Non-compliers			Legalistic incrementalists			Greenwashers			Incremental innovators		
Primary motives for CE	Market opportunities	2.12	-	2.61	2.84	-	3.25	3.22	-	3.60	3.55	-	3.86
	Legislation	2.69	-	3.44	3.16	-	3.78	2.91	-	3.32	3.00	-	3.39
	Management vision	2.50	-	2.98	3.09	-	3.76	3.76	-	4.17	3.89	-	4.39
Environmental orientation	Environmental focus	2.38	-	2.82	3.43	-	3.92	3.71	-	4.11	3.98	-	4.23
	General environmental protection strategy	2.47	-	2.92	3.63	-	4.07	3.99	-	4.39	4.14	-	4.46
Level of strategic integration	Environmental strategy in production and marketing	2.11	-	2.54	3.21	-	3.64	3.49	-	3.85	3.72	-	4.07
	Environmental strategy in HRM	2.02	-	2.50	2.89	-	3.47	3.18	-	3.54	3.48	-	3.89
Scope & degree of implementation	Customer related activities	1.88	-	2.34	2.73	-	3.17	3.17	-	3.55	3.45	-	3.75
	Ecological activities in transport	1.54	-	1.99	3.13	-	3.92	1.72	-	2.23	2.21	-	2.86
	Production process enhancement	3.03	-	3.72	3.67	-	4.65	3.25	-	3.54	3.97	-	4.26
	Waste and emission management	2.27	-	2.94	3.60	-	4.06	1.57	-	2.04	3.88	-	4.29
	Eco-friendly product and process development	2.05	-	2.56	2.91	-	3.50	3.30	-	3.70	3.72	-	4.04
Level of systemic integration	Activities in the supply chain	2.08	-	2.43	2.87	-	3.30	3.06	-	3.32	3.28	-	3.58
	Ecological focus outside the company	1.25	-	1.59	2.28	-	2.88	1.60	-	2.09	2.20	-	2.84
Barriers to environmental strategy deployment	Costs/owners	3.38	-	3.89	2.66	-	3.24	2.62	-	3.10	2.65	-	3.07
	Problems with customers/suppliers	2.61	-	3.17	2.82	-	3.20	2.51	-	3.02	2.62	-	3.00
	Limited technology supply	3.16	-	3.78	3.17	-	3.71	2.95	-	3.47	3.35	-	3.89

Source: Authors' calculations

“Greenwashers” are very bold when it comes to verbally stating their initiatives and goals concerning environment protection (these are supposed to reflect both top management vision and market opportunities). In the phase of actual implementation of these strategies, however, they seem to lack the drive and ambition they verbally display in such a prominent manner although – rather paradoxically – they do not identify any important barriers to environmental strategy deployment. In the long term, this might have severe consequences for the public image of these companies on one hand, and consumer trust in their activities on the other hand. Crane (2000) argues that corporate environmentalism has become increasingly characterized by a consumer backlash against green marketing, fuelled by perceived problems with green product performance and dishonest corporate claims made in the 1980s and 1990s. “Greenwashers” contribute toward the continuation of this trend by jeopardizing their own reputation as well as the general standing of corporate

environmentalism. As a result, the backlash effect increases the popularity of reactive strategies (passive greening), defensively oriented incremental strategies (muted greening), and narrow strategies focused solely on the green niche (niche greening). On a more positive note, Crane (2000, p. 289) concludes that the backlash effect also strengthens the realization that “solitary approaches by individual firms might have only limited potential in providing an effective strategic route forward,” thus stimulating “collaborative greening.”

The group of companies named “legalistic incrementalists” emphasizes legislation as the primary motive of environmental activities. Compared to other groups they are not particularly emphasizing either ecological focus or the integration of eco-strategies in their functional strategies. However, they are much stronger when it comes to implementation of ecological issues in production processes, waste and emissions management, as well as ecological activities in transport. The latter eventually proves why they claim the strongest ecological focus outside the company among all studied groups of firms. Their activity is limited by existing technology.

“Non-compliers,” those companies that are systematically ignoring environmental concerns, form the last group. They do not integrate the eco-strategy either in general or functional strategies. Their environment-friendly activities are very limited and mostly induced by their adherence to legislative requirements (especially in the area of production). In their opinion, owners are the key barriers to environmental strategy deployment because they perceive the strategy as too costly.

#### ***4.2.2. Binary logistic modeling of cluster differences***

In the final phase of our research we try to determine the relationship between the environmental performance of companies and company size, their financial situation, and firm’s commitment to fulfill environmental standards, presented by different environmental certificates. Sales, return on assets, debt to assets, and ISO 14001 certificate possession, were used as explanatory variables.

Given that larger companies have both more resources (which means they can dedicate some of their resources to environmental innovations) and a larger portfolio of products and services (to which they can apply such innovations), a hypothesis that there is a positive relationship between size and environmental activity/awareness seems justified and is corroborated by Ahmed et al. (1998), Baylis et al. (1998), Stanwick and Stanwick (1998), as well as Bowen (2000).

Return on assets (ROA) is measured as earnings before interest and taxation in total assets, roughly measuring the cash flow from operations. A positive relation with environmental activity/awareness is hypothesized here as well, since companies with larger ROA have more resources that can be allocated to discretionary spending like environmental innovations. This hypothesis is derived out of our extended CE

dimensions based on Hart's (2005) and Ghobadian et al.'s (1995) assumption that companies in the most aware, passionate and/or innovative CE groups are more likely to outperform their competitors in the future.

The ratio of debt to assets indicates financial leverage. A negative relation is expected here because companies with lower leverage put less emphasis on cash flow and can allocate more resources to innovations.

A positive impact is expected should a company possess an ISO 14001 certificate since this is not only an indication of a firm's environmental concerns but also a pre-condition for firms doing business in foreign markets, especially if they want to become part of a global supply chain. Nawrocka et al. (2009) show that foreign customers generally form a significant stakeholder group encouraging the adoption of ISO 14001 and that suppliers wishing to access environmentally conscious markets can obtain an advantage with ISO 14001 certification.

Finally, industrial dummies for eight industries (listed in Table 4) are also added to account for industry dynamics.

We assume an ordinal distribution of the identified four groups of companies; from the most environmentally aware to the least ("incremental innovators" being at the top of the hierarchy, followed by "legalistic incrementalists," "greenwashers," and "non-compliers") and apply binary logistic regression. Due to a rather small sample, a bootstrap procedure is used when estimating the parameters of the logistic regression in order to obtain more reliable estimates for the parameters and their standard errors. We test three models:

- In the first model, "incremental innovators" are set opposite to "legalistic incrementalists," "greenwashers," and "non-compliers" – i.e. we are comparing companies that act in the field of environmental innovation because of their own drive and desire with the rest of the companies.
- In the second model, "incremental innovators" and "legalistic incrementalists" are set opposite to "greenwashers" and "non-compliers" – i.e. we are comparing companies that are active in the area of environment protection with those companies that are not.
- In the third model, "incremental innovators," "legalistic incrementalists," and "greenwashers" are set opposite to "non-compliers" – i.e. we are comparing companies that are passively or actively aware of environmental innovation with the companies that display no such awareness.

In all three models presented in Table 6, industry dynamics does not seem to account for any differences, whereas the effect of ISO 14001 certificate possession seems to be the strongest. Firms having this certificate are more aware of environmental issues and, consequently, are more proactive. Further influential factors are a firm's size and return on assets. Larger companies and firms with higher return on assets

also tend to be more environmentally conscious. Further interesting insights can be obtained by a closer look at Models 1 and 2.

In Model 1 we compare a group of “incremental innovators” to a group of “legalistic incrementalists,” “greenwashers,” and “non-compliers.” In this model explanatory variables explain the highest differences between two groups of firms – the pseudo R-square is 0.402. ISO 14001 certificate possession is the main factor of differentiation between the two groups. Given that it is a pre-condition should the firm want to become part of a global supply chain, the possession of an ISO 14001 certificate certainly increases the involvement of these firms in international relations. In addition, the group of “incremental innovators” is bigger in size. Looking at Table 5, this group of companies has in all aspects the best environment-related performance results. Limited technology supply is the main barrier to environmental strategy deployment.

Table 6: Results of binary logistic estimation

<i>Model 1</i>	<i>Incremental Innovators vs. Legalistic Incrementalists, Greenwashers, and Non-Compliers</i>				
<i>Variable</i>	<i>b</i>	<i>exp. B</i>	<i>S.E.</i>		
Return on assets	3.026	20.605	3.946		<i>Nagelkerke R Square</i>
Debt to assets	1.625	5.079	1.227		
Total sales (log)	0.45	1.568	0.267	*	
ISO 14001	2.515	12.362	0.824	***	<i>Percentage Correct</i>
Industry	Yes				
Constant	-4.495	0.011	3325.733		
<i>Model 2</i>	<i>Incremental Innovators and Legalistic Incrementalists vs. Greenwashers and Non-Compliers</i>				
Return on assets	7.076	1183.804	3.648	**	<i>Nagelkerke R Square</i>
Debt to assets	1.135	3.112	1.06		
Total sales (log)	0.337	1.401	0.207	*	
ISO 14001	1.482	4.402	0.515	***	<i>Percentage Correct</i>
Industry	Yes				
Constant	-3.293	0.037	3387.129		
<i>Model 3</i>	<i>Incremental Innovators, Greenwashers, and Legalistic Incrementalists vs. Non-Compliers</i>				
Return on assets	5.77	320.389	3.513	*	<i>Nagelkerke R Square</i>
Debt to assets	-0.577	0.562	1.085		
Total sales (log)	0.203	1.225	0.198		
ISO 14001	0.97	2.638	0.475	**	<i>Percentage Correct</i>
Industry	Yes				
Constant	-4.22	0.015	3.047		

\*, \*\* and \*\*\* indicate statistical significance of coefficients at 0.1, 0.05, and 0.01 respectively

Source: Authors' calculations



In Model 2 we compare a group of “incremental innovators” and “legalistic incrementalists” to a group of “greenwashers” and “non-compliers.” The possession of ISO 14001 certificate, return on assets and total sales explain the highest differences between two groups of firms. As shown in Table 5, the scope and degree of implementation of ecological activities are much more pronounced in the case of “incremental innovators” and “legalistic incrementalists” as opposed to “greenwashers” and “non-compliers.” The former are also more often a subject of systemic integration. While “incremental innovators” are more actively involved in supply chains, “legalistic incrementalists” build ecological focus primarily through ecological activities in transport.

## 5. Conclusions

With our approach to corporate environmentalism analysis we extend the existing body of literature on CE dimensions, typical company clusters and CE dynamics. Development, testing and application of a comprehensive survey measurement instrument classify our study as an original one and open wide possibilities for its replication. So does the proposed typology of companies whose profiles are composed on the basis of globally-relevant profiling variables such as selected business indicators, possession of ISO 14000 certificate, etc.

Based on the empirical research our main conclusions are twofold: (1) The proposed integral approach to corporate environmentalism works: in the framework of a small open transitional economy the model identifies distinct company clusters, thus accentuating the need to approach CE as a complex, multidimensional phenomenon; (2) There are no radical innovators among Slovenian companies, and less than one third of companies are actively thinking and acting in line of environment-friendly processes and products.

The main limitation of our research is the application of the integral approach to corporate environmentalism in the framework of a small open transitional economy. It is therefore natural that questions about its validity and generalizability arise

Both results should serve as important impulses for policy makers in the areas of environment protection, industrial policy and foreign investment policy, as well as for decision makers at a company level when identifying new sources of competitive advantage:

(1) The results indicate that an average Slovenian industrial company is paying less attention to a systemic integration of environmental concerns across the value chain and beyond: the utmost priority is given internal issues. Furthermore, the majority of companies does not rate environmental legislation as the most important behavioural motive: there seem to be no significant differences among the identified company

clusters (the “legalistic incrementalists” are being only slightly more positive in their evaluation than the other three identified company clusters). This is in line with the predominant stance in transition countries that environmental concerns are primarily the government domain and that, consequently, corporate environmentalism is to function in compliance with the legal and regulatory environment of a given state. While the relevant environmental legislation exists in Slovenia, resources and mechanisms to effectively enforce it are missing.

(2) We manage to confirm our working hypothesis: companies, which are part of an international supply chain, are more deeply integrated in environment-friendly activities and have a more prominent external ecological focus. The environmental orientation of these companies, as shown in their environmental focus and general environmental protection strategy, is stronger. The same goes for their level of strategic integration. This finding should inform both Slovenian industrial and foreign investment policy because it showcases the importance of company exposure on international markets, along with peer pressure within an international supply chain, for CE dynamics.

(3) Our results indirectly indicate that sound environmental strategies could be a source of competitive advantage. As shown in Damijan et al. (2007), more productive Slovenian companies are also more internationalized, while according to our study a sound environmental strategy serves as a pre-condition for firm’s inclusion in an international supply chain. This should lead both economic policy makers and decision makers at a company level to consider environmental innovation as a potential source of growth. Among the several existent deficiencies and obstacles of CE, a myopic narrowing of CE to internal company issues and a limited technology supply were found to be especially prominent. This indicates the need for managers and policy makers to adopt a more holistic and systemic approach to CE (thinking of value chains and systems rather than individual companies), and the need to approach environmental technologies not only as a vital resource, but also as a market opportunity. In both cases broad and intense collaboration is an essential prerequisite for progress and radical innovation.

(4) Despite the rising threat of consumer backlash (Crane, 2000) a far from negligible segment of companies continues to engage in the greenwashing tactics. The approach seems to be especially prominent in (but not limited to) the textile, apparel and shoes manufacturing industry. Seeing that “greenwashers” have been found to most significantly underperform when it comes to waste, emissions and transport management, the public and regulators would do well to turn a more critical eye to these areas of operation in order to encourage (if not force) “greenwashers” to live up to their environmental promises.

The future research challenge therefore lies in implementation and validation of our approach in: (1) economies of similar size and development level, (2) larger

economies, and (3) more developed as well as less developed economies to support the general validity of our approach.

## References

- Ahmed, N. U., Montagno, R. V., Firenze, R. J. (1998) "Organizational Performance and Environmental Consciousness: An Empirical Study", *Management Decision*, Vol. 36, No 2, pp. 57-62.
- Banerjee, S. B., Iyer, E. S., Kashyap, R. K. (2003) "Corporate Environmentalism: Antecedents and Influence of Industry Type", *Journal of Marketing*, Vol. 67, April, pp. 106-122.
- Banerjee, S. B. (2001) "Corporate environmental strategies and actions", *Management Decision*, Vol. 39, No 1, pp. 36-44.
- Baskin, J. (2006) "Corporate Responsibility in Emerging Markets", *The Journal of Corporate Citizenship*, Vol. 24, Winter, pp. 29-47.
- Baylis, R., Connell, L., Flynn, A. (1998) "Company Size, Environmental Regulation and Ecological Modernization: Further Analysis at the Level of the Firm", *Business Strategy and the Environment*, Vol. 7, No 5, pp. 285-296.
- Bowen, F. E. (2000) "Environmental Visibility: a Trigger of Green Organizational Response?", *Business Strategy and the Environment*, Vol. 9, No 2, pp. 92-107.
- Crane, A. (2000) "Facing the Backlash: Green Marketing and Strategic Reorientation in the 1990s", *Journal of Strategic Marketing*, Vol. 8, No 3, pp. 277-296.
- Čater, T., Prašnikar, J., Čater, B. (2009) "Environmental Strategies and Their Motives and Results in Slovenian Business Practice", *Economic and Business Review*, Vol. 11, No. 1, pp. 55-74.
- Damijan, J., Polanec, S., Prašnikar, J. (2007). Outward FDI and productivity: micro-evidence from Slovenia. *World econ.*, Vol. 30, No. 1, pp. 135-155.
- George, D., Mallery, P. (2003) *SPSS for Windows Step by Step: A Simple Guide and Reference*. 11.0 Update. Boston: Allyn & Bacon.
- Ghobadian, A. et al. (1995) "The Influence of Environmental Issues in Strategic Analysis and Choice: A Review of Environmental Strategy Among Top UK Corporations", *Management Decision*, Vol. 33, No 10, pp. 46-58.
- Harrison, J. S., Freeman, E. R. (1999) "Stakeholders, Social Responsibility, and Performance: Empirical Evidence and Theoretical Perspectives", *Academy of Management Journal*, Vol. 42, No 5, pp. 479-485.
- Hart, S. L. (2005) "Innovation, Creative Destruction and Sustainability", *Research Technology Management*, Vol. 48, No 5, pp. 21-27.
- Hart, S. L. (1997) "Beyond Greening: Strategies for a Sustainable World", *Harvard Business Review*, Vol. 75, No 1, pp. 66-76.

- Henriques, I., Sadosky, P. (1999) "The Relationship between Environmental Commitment and Managerial Perceptions of Stakeholder Importance", *Academy of Management Journal*, Vol. 42, No 1, pp. 87-99.
- Hoffman, N. P. (2000) "An Examination of the 'Sustainable Competitive Advantage' Concept: Past, Present, and Future", *Academy of Marketing Science Review*, Vol. 4, No 3, pp. 1-16.
- Jap, S. D. (1999) "Pie-Expansion Efforts: Collaboration Process in Buyer-Supplier Relationships", *Journal of Marketing Research*, Vol. 36, No 4, 461-475.
- Kagan, R. A., Gunningham, N., Thornton, D. (2003) "Explaining Corporate Environmental Performance: How Does Regulation Matter?", *Law & Society Review*, Vol. 37, No 1, pp. 51-89.
- Kleindorfer, P. R. (2007) "Implications of Globalization and Sustainability for Emerging Business Models". In: Prašnikar, J. ed., Cirman, A. ed. *New Emerging Economies and Their Culture*, New York: Nova Science Publishers, Inc.
- Menon, A., Menon, A. (1997) "Enviropreneurial Marketing Strategy: The Emergence of Corporate Environmentalism as Market Strategy", *Journal of Marketing*, Vol. 61, No 1, pp. 51-67.
- Nawrocka, D., Brorson, T., Lindhqvist, T. (2009) "ISO 14001 in Environmental Supply Chain Practices", *Journal of Cleaner Production*, Vol. 17, No 16, pp. 1435-1443.
- Peattie, K. (2001) "Towards Sustainability: The Third Age of Green Marketing", *The Marketing Review*, Vol. 2, No 2, pp. 129-146.
- Perez, E., Ruiz, C., Fenech, F. (2007) "Environmental Management Systems as an Embedding Mechanism: A Research Note", *Accounting, Auditing, Accountability Journal*, Vol. 20, No 3, pp. 403-422.
- Prašnikar, J. et al. (2008) "Identifying and Exploiting the Inter Relationships Between Technological and Marketing Capabilities", *Long Range Planning*, Vol. 41, No 5, pp. 530-544.
- Rajkovič, T., Prašnikar, J. (2011) "Enhancing core technological, marketing and complementary competencies in promoting innovative performance". In: Kern, T. ed., Rajkovič, V. ed. *People and sustainable organization*, Frankfurt am Main: Peter Lang.
- Steurer, R., Konrad, A. (2009) "Business-Society Relations in Central-Eastern and Western Europe: How Those Who Lead in Sustainability Reporting Bridge the Gap in Corporate (Social) Responsibility", *Scandinavian Journal in Management*, Vol. 25, No 1, pp. 23-36.
- Stanwick, P. A., Stanwick, S. D. (1998) "The Relationship between Corporate Social Performance, and Organizational Size, Financial Performance, and Environmental Performance: an Empirical Examination", *Journal of Business Ethics*, Vol. 17, No 2, pp. 195-204.

- Stone, G. W., Wakefield, K. L. (2000) "Eco-Oriented: An Extension of Market Orientation in an Environmental Context", *Journal of Marketing Theory and Practice*, Vol. 8, Fall, pp. 1-11.
- Sun, P. (2007) "The Correlations Among Domain Knowledge Specificity, Joint New Product Development and Relationship Performance", *International Journal of Commerce & Management*, Vol. 17, No 1-2, pp. 44-55.
- Theyel, G. (2000) "Management Practices for Environmental Innovation and Performance", *International Journal of Operations & Production Management*, Vol. 20, No 2, pp. 249-266.
- Thornton D., Kagan, R. A., Gunningham, N. (2009) "When Social Norms and Pressures Are Not Enough: Environmental Performance in the Trucking Industry", *Law & Society Review*, Vol. 43, No 2, pp. 405-436.

## Integralni pristup poslovnoj ekologiji i njegova primjena na zemlju u tranziciji

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### **Sažetak**

*U ovome radu predložen je i implementirani integralni pristup ekologiji na razini poduzeća (poslovnoj ekologiji). Predloženi integralni model ne pojašnjava samo motivaciju i koncepciju ekološkog poslovanja već i načine njegova postizanja te brzinu implementacije. Široki spektar utvrđenih dimenzija korporativnih okruženja pomaže u opisivanju pet temeljnih skupina poduzeća. Navedene skupine poduzeća u ovome su radu imenovane sukladno svojim svojstvima te se razlikuju "nepokretljivi", "minimalni legalisti", "kvazi zeleni", "minimalni inovatori" i "radikalni inovatori". U cilju empirijskog potvrđivanja utemeljenosti predložene integralne tipologije provedeno je anketiranje velikog uzorka slovenskih proizvođačkih poduzeća. U empirijskoj analizi korištena je probit analiza, eksploratorna faktorska analiza, klaster analiza i binarno logističko modeliranje. Glavni zaključak vodi dvjema ključnim postavkama: (1) Integralni pristup poslovnoj ekologiji djeluje: u okviru male, otvorene tranzicijske ekonomije, model razlikuje dobro diferencirane skupine poduzeća. (2) Među slovenskim poduzećima ne postoje "radikalni inovatori", a manje od trećine poduzeća aktivno razmišlja i djeluje u smjeru proizvodnje ekološki prihvatljivih procesa i proizvoda. Rezultati bi se djelomice mogli objasniti činjenicom da se slovenska privreda još uvijek odlikuje određenim tranzicijskim karakteristikama.*

**Ključne riječi:** *ekologija na razini poduzeća, integralna analiza, ISO 14001 certifikat, upravljačka opažanja, anketiranje*

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## Appendix

### An overview of attitudinal item structure with relevant Cronbach alpha coefficients

Topic	Dimension	Item	Alpha-value
Primary motives for corporate environmentalism	Market opportunities	Our efforts towards environment protection will influence the future legislation in our industry.	0.869
		Our customers believe the destruction of environment to be the key problem of today's world.	
		Our customers demand more and more environment-friendly products and services.	
		Our customers expect us to be environment-friendly.	
		Due to achieved environment-related product improvements we managed to significantly lower our costs.	
		With regular investment in development of »cleaner« products and processes we could become the industry leader.	
		By making our products more environment-friendly we can increase our market share.	
		By reducing negative environmental impact of our activities we improve the quality of our products and processes.	
	Legislation	Our environmental strategy is to a large extent influenced by the government policy of regulation.	0.747
		Environmental legislation importantly influences our future growth.	
		A more restrictive environmental legislation is the main driver of our environmental efforts.	
		Our industry is influenced by a very strict environmental legislation.	
	Management vision	Our top management is completely dedicated to environment protection.	0.893
		Company activities aimed at environment protection have a full top management support.	
		Environmental strategy in our company is fully shaped by our top management.	
Environmental orientation	Environmental focus	Environmental issues are the primary guideline for decision-making processes in our main business functions.	0.915
		Environment protection is actively promoted as the basic internal goal of all our departments.	
		We make sure our employees in all our key business areas are aware of environmental issues.	
		Environment protection is the key value of our company.	
		Ecology is the key element pertaining to the positive public image of our company.	
		Our responsibility towards the owners is more important than our responsibility towards the environment.	
		We feel a high degree of responsibility towards environment protection.	
		We would like the public to perceive us a company that acts in an environment-responsible way.	
	General environmental protection strategy	Environmental issues are included in our process of strategic planning.	0.897
		Our quality is also assessed by the influence of our products and processes on the environment.	
		Wherever possible, our environmental goals match our strategic goals.	
		We are developing new products and processes that minimize our negative environmental impact.	
		Environment protection is the key element of our strategy.	

Topic	Dimension	Item	Alpha-value	
Level of strategic integration	Environmental strategy in production and marketing	Wherever possible we use sources of renewable energy.	0.896	
		Reduction of environmental pollution is the primary goal of our production processes.		
		We advertise environmental benefits of our products and services.		
		Our marketing strategy is driven by environmental issues.		
		Our product and market decisions are always made in view of environmental concerns.		
		In our marketing activities we always tend to emphasize our care for environment protection.		
		In our company the packaging is adjusted in such a way as to minimize the negative environmental impact.		
	Environmental strategy in HRM	We encourage our employees to separately collect waste within the company.	0.779	
		Our employees are regularly educated about ways and means to protect the environment.		
		In order to increase environmental awareness of our employees we deploy our internal company newsletter.		
		We encourage our employees to use environment-friendly means of transportation to work.		
		We always reward the employees whose ideas contribute to environment protection.		
	Scope & degree of implementation	Customer-related activities	Customers are actively searching for ecological products and ecological suppliers.	0.838
			In order to protect the environment, customers are ready to change their habits.	
Our customers are prepared to pay a higher price for environment-friendly products.				
Our sector (department, service ...) is actively promoting environment-friendly activities of our company when addressing our customers.				
We are actively aiming to educate our customers about the importance of environment protection.				
Following the suggestions/demand by customers we already developed environment-friendly products.				
Ecological activities in transport		Energy consumption in transport.	0.864	
		Transport emissions.		
Production process enhancement		Consumption of energy in the production process.	0.765	
		Consumption of materials in the production process.		
Waste and emission management		Emissions of greenhouse gas in the production process.	0.722	
		Hazardous waste, created in the production process.		
		Waste recycling.		
		Water pollution.		
Eco-friendly product and process development		We have an efficient internal information system to disseminate information on business process improvements in the area of environment protection among different departments within our company.	0.904	
		One of the core tasks of R&D is implementation of energy-saving processes.		
		Our company is actively developing products with the smallest possible negative environment impact during their lifecycles and beyond.		
		When developing new products we carefully study possibilities to use environment-friendly materials.		
		When developing new products, we take into account all their possible negative environmental impacts in all their lifecycle phases and beyond them.		



Topic	Dimension	Item	Alpha-value
Scope & degree of implementation	Eco-friendly product and process development	With regard to our environment-protective technology we qualify as industry followers.	0.904
		We are implementing ecological technological solutions, which are something new in our industry and provide us with competitive advantage.	
		We actively encourage innovation which leads to reduced energy and materials consumption and consequently to reduced environment pollution.	
Level of systemic integration	Activities in the supply chain	In order to adjust the supply chain to environmental concerns we closely cooperate with our suppliers.	0.769
		Our suppliers are regularly evaluated from the viewpoint of their ecological activities.	
		When evaluating our suppliers from the viewpoint of their ecological activities we use specific environmental standards.	
		We actively increase the share of renewable energy sources (e.g. biomass, solar energy, wind energy, etc.).	
		Whenever possible we only buy environment-friendly materials.	
		Within purchasing we managed to increase the share of recycled materials to a very high level.	
		Our transport and logistics are more environment-friendly than demanded by the current legislation.	
	A number of ecological solutions were developed and implemented due to an initiative or a demand of our suppliers.		
	Ecological focus outside the company	Suppliers' consumption of energy.	0.848
		Suppliers' emissions.	
End-of-life product recycling.			
Customers' energy consumption.			
Customers' hazardous waste due to our products.			
Barriers to environmental strategy deployment	Costs/owners	Implementation of environment-friendly solutions is not attractive from the investment point of view (size of investment, payback time).	0.743
		Our owners' interest for environmental issues is limited.	
		Environment-friendly solutions are too expensive, investment would not repay.	
	Problems with customers/suppliers	We are facing many problems when trying to include our suppliers in our environment-friendly activities.	0.742
		We are facing many problems when trying to include our customers in our environment-friendly activities.	
	Limited technology supply	The market supply of renewable energy sources is very limited.	0.702
The market supply of ecologically clean technologies is very limited.			