Center for Economic Institutions

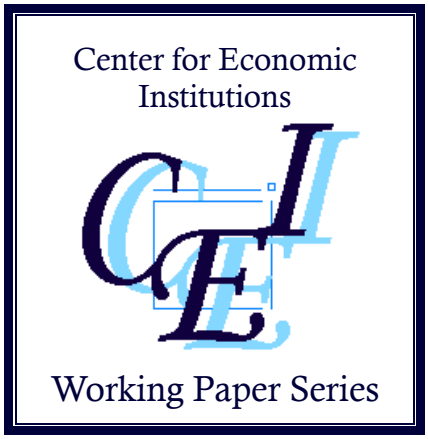
Working Paper Series

No. 2019-10

"Regime Change and Environmental Reform: A Systematic Review of Research on Central and Eastern Europe"

Masahiro Tokunaga

March, 2020 (First published in October, 2019)



Institute of Economic Research
Hitotsubashi University
2-1 Naka, Kunitachi, Tokyo, 186-8603 JAPAN
http://cei.ier.hit-u.ac.jp/English/index.html
Tel:+81-42-580-8405/Fax:+81-42-580-8333

CEI Working Paper Series No. 2019-10
March 2020 [First published in October 2019]

Regime Change and Environmental Reform: A Systematic Review of Research on Central and Eastern Europe*

Masahiro Tokunaga †

Faculty of Business and Commerce, Kansai University, Osaka, JAPAN

Abstract: In Central and Eastern Europe (CEE) after the fall of communism, it has been important to construct an effective policy framework with the aim of solving environmental issues (environmental reform), along with the transition to market economies (economic reform) and the democratization of politics (political reform). Taking that fact into consideration, this paper attempts to draw a big picture of the tower of research through a systematic review of the relevant literature that has discussed the issue of environmental reform in CEE countries. It reveals that research specifications such as targeted regions/countries, research topics, authors' affiliations and disciplines, and academic fields of the literature have an impact on the overall evaluation of environmental reform by each researcher. Also, it suggests that authors' understanding of market principles and their subjective appraisal of performance of the European Union as a leading supporter of CEE countries have a significant influence on their perceptions of effectiveness of CEE's environmental policies.

Keywords: Central and Eastern Europe (CEE), environmental reform, regime change, EU accession, systematic review

JEL classification numbers: O13, O57, P28, P52

* This paper is a revised version of Tokunaga (2016). I thank Yu Hasumi and Ichiro Iwasaki for their helpful comments and suggestions on the earlier version of this paper.
† Corresponding author: 3-3-35 Yamate-cho, Suita-shi, Osaka 564-8680, JAPAN; E-mail address: t030032@kansai-u.ac.jp

1 A short history of environmental reform in CEE countries

Central and Eastern European (CEE) countries would be the "black sheep" of a European society aiming for compatibility of economic growth and environmental protection. Historically speaking, it has been pointed out that decades of centrally planned economic systems and iron-fisted dictatorships in these countries not only left both the national economy and the civil society in shambles but also left devastating scars on the natural environment. It is still fresh in our minds that the border area of the former German Democratic Republic (GDR), Poland, and the Czech Republic was once called the "Black Triangle" and was considered a Europe-wide air pollution culprit before the process of radical transformation began in CEE society. There is a commonly held view that Eastern bloc countries were responsible for serious environmental degradation and pollution across the region compared to Western advanced countries that had promoted industrial restructuring in a move toward a resource-saving and energy-efficient society after the oil shocks in the 1970s, which led to the amelioration of industrial pollution associated with economic growth. Some researchers who delved deeply into the environmental problems under the socialist regimes have attempted to convey the critical importance of the natural environment to readers by using a shocking and impressive phrase such as *ecocide* (Feshbach and Friendly Jr., 1992; McCuen and Swanson, 1993). Hence, important political concerns for CEE countries after the revolutions of 1989 include not only the transition to market economies (economic reform) and the promotion of democratic political systems (political reform), but also the effective implementation of environmental policies necessary to solve various environmental issues (environmental reform). Moreover, the European Union (EU) encouraged the candidate CEE countries to handle these three reforms in parallel from the early phase of accession talks. EU-CEE environmental policy coordination dates back to the 1991 Association Agreements signed with Poland, Hungary, and the former Czechoslovakia prior to their official accession negotiations. These agreements provided for the gradual elimination of trade barriers and CEE national legislation that mirrored that of the EU (Caddy, 1997a). Afterwards, the EU required that the candidate countries observe the environmental laws and regulations of the EU and fundamentally revise their own laws and regulations to ensure consistency. However, in looking back on a quarter-century history of social changes in the CEE countries, their environmental reforms traveled a bumpy road with many twists and turns just as it did for their economic and political reforms. Following are a couple of symbolic events after the revolutions of 1989.

First, there was an emergence and expansion of new types of environmental issues

observed in advanced economies: events not previously experienced in the former socialist societies occurred without warning in association with the transition to capitalism. This was true despite the fact that the economic crisis after regime change caused the erosion of heavy industries and the withering of "dirty industries" in the period of economic dislocation unintentionally led to a rapid reduction in environmental stress in many CEE countries. Although observers focus on discussing different aspects, those newly emerging ecological disturbances are broadly classified: (1) the emergence of automobile pollution and growing traffic problems due to the rapid development of motorization, (2) increasing pressure for estate development and inappropriate use caused by land privatization or reinstitution mainly in agricultural and forest land, and (3) the aggravation of waste problems associated with the rise of westernized lifestyles and consumer behavior such as burgeoning household garbage and conflict over waste disposal and landfill sites. All of these issues were in place in the marketization process after regime change and spread in CEE societies, partly because developing and changing environmental authorities were not able to respond to them quickly. It has been frequently pointed out, therefore, that a laissez-faire economic reform based on market fundamentalism would have an adverse impact on the environment (Manser, 1993; Scrieciu and Stringer, 2008), and more than a few studies have persuasively demonstrated this risk in an empirical way (Gille, 2004; Jorgenson et al., 2012; Křenová and Kindlmann, 2014; Pryde, 1995; Staddon, 1999; Sumelius et al., 2005). In addition to this, many observers worried about the prospect of the CEE countries' environmental reforms with the revival of once-frozen or withdrawn massive development programs (highway construction, dam building, nuclear power station projects, etc.) as a result of anti-establishment movements during the last stage of the socialist regimes.

Second, an anti-environmentalism campaign was developed in the 1990s in some CEE countries: environmental non-governmental organizations (ENGOs) and environmental activists who enjoyed high public support for their anti-establishment orientation and had helped to achieve the revolutions of 1989 lost their esteem and popularity within just a few years of this key historical event. In many cases, accomplishing their biggest goal caused a rift among members, causing distrust of one another within and between environmental groups. After the first free elections failed to demonstrate strong popular support for green parties and their candidates, some distanced themselves from environmental groups and went back to work as usual; others started their careers as government officials who had to address all sorts of issues in the face of domestic economies that exacerbated many social problems. The result was that environmental reform was low on the political agenda in the CEE region (Frankland,

1995; Jancar-Webster, 1993a, 1998). Most of all, in the territory of the former Czechoslovakia, where the environmental movement played such a prominent role in the 1989 regime change that it could be called the "green velvet revolution," and nonviolent and democratic movements realized many tangible positive outcomes such as newly built environmental authorities and a new range of environmental laws (Podoba, 1998), a vociferous anti-environmentalism campaign against ENGOs and green activists in the 1990s, which was reminiscent of political suppression under the old regimes, shocked those people who believed that the democratization of politics and the infiltration of democracy into society should promote environmental reforms.

After the secession and independence of the Czech and Slovak Republics, two political leaders, Václav Klaus (Czech Republic) and Vladimír Mečiar (Slovakia), implicitly achieved consensus on anti-environmentalism, in spite of their divergent views on politics and economy (Watzman, 1992). On the one hand, in Slovakia, which had political friction with Hungary regarding the treatment of Hungarian minority groups on the borders, in addition to negotiations with the Czech Republic over secession and independence, increasing nationalistic feelings became tied to some infrastructure development projects as a measure of enhanced national prestige. For example, an anti-Slovakian label was applied to environmentalists and citizens peacefully protesting the expansion of the Mochovce nuclear power plant and the planned construction of the Gabčíkovo dam on the Danube.[1] They were even severely criticized by nationalistic propaganda led by the Slovak media that spread a rumor that the protestors served as foreign agent provocateurs (Podoba, 1998; Snajdr, 2001). On the other hand, the Czech government seemed unable to allow for flexible policy responses to newly emerging environmental issues along with the social transformation of the 1990s when Václav Klaus, a leading kingmaker in the CEE countries, served as the prime minister. His administration not only aggressively developed an anti-environmentalism campaign

[1] In the original plan launched in September 1977, two huge waterworks were scheduled to be built transnationally on the Danube: the Gabčíkovo Dam on the Slovakian side and the Nagymaros Dam on the Hungarian side. These works became the target of criticism from both Slovak and Hungarian environmentalists in the mid-1980s. Although the new Hungarian government unilaterally withdrew in 1989 from the construction project of the Nagymaros Dam due to ecological and financial concerns, this decision made without consultation with the Czechoslovakian side provoked a major backlash in the Slovak Parliament and became an international dispute closely tied to the historical Slovak–Hungarian ethnic conflict. The then-European Community (EC) failed to serve as a mediator, and both parties then fought in the International Court of Justice (Fitzmaurice, 1996, Chapter 7; Fleischer, 1993). After a five-year inquiry, the Hague Court finally supported Slovakia's argument, and it ended up building the dam only within the country's boundaries.

aimed at green activists and ENGOs, but also intervened in Czech environmental policy by expunging the concept of "sustainable development" in their official documents. That cut them off from the international environmental policy community (Fagin, 2001; Fagin and Jehlička, 1998; Jehlička, 2001).[2] Moreover, it was revealed in the mid-1990s that three hardline ENGOs had been included on a security services' list of "subversive organizations" and were to be targeted for surveillance. This scandal also brought a sense of deep disappointment among people who had regarded widespread civic movements, including ENGOs, as a testament of democratization in the Czech Republic (Fagin, 2002; Jehlička, 2001; Sarre and Jehlička, 2007). Although it sounds paradoxical, at the same time, the Klaus administration continued to adopt tough environmental regulations for clearing up traditional industrial pollution (Slocock, 1996): in fact, after controlling for other potential reduction factors in the country, tighter environmental protection policies proved to be the most important reason behind the dramatic reduction in air pollutant emissions (Earnhart and Lizal, 2008).

Third, a major overhaul of domestic environmental laws and regulations was requested by the EU: as remarked above, this move dates back to the early 1990s, and major CEE actors voluntarily started to harmonize a range of statutes with those of the EC/EU. Europe-wide environmental policy coordination as part of market integration or single-market establishment was officially approved in the 1994 European Council meeting (Essen), and the 1995 White Paper for the prospect of future membership presented a general program of actions to be undertaken and identified key measures to be adopted in the environmental sector (Caddy, 1997a). At that time in Hungary, which would later come into conflict with the EU over an environmental standard as detailed below, the government was surprised and then embarrassed by the first official EU document on Hungary's application for membership. This was due to the fact that the commission had a more comprehensive view concerning the natural environment than the White Paper had initially suggested. It was made clear that meeting only the conditions as stipulated in the White Paper would be insufficient for EU accession (Kerekes and Kiss, 1998). As is commonly known, all candidate countries are required to accept and implement the *acquis communautaire*, which comprises the whole body of EU

[2] Slocock (1996) analyzed in depth the environmental discourse and environmental policy discussions inside the Klaus administration in the early 1990s. See Klaus (2008) for his criticism of environmentalists, focusing on the global warming issue. He still insists that "sustainable development" is neither an appropriate nor correct concept, saying "[i]t is not a neutral term. It is … an empty, undefined and undefinable, more or less leftist ideological concept" (Klaus lecture in Russia, January 15, 2014; see http://www.klaus.cz/clanky/3504).

law, including the treaties, regulations, directives, decisions, and judgments of the European Court of Justice. Membership requirements related to environmental issues are often called *environmental acquis* (or *green acquis*), which calls for the harmonization and coordination of domestic and EU-wide environmental policies. Although an acceptance of the EU environmental standard was initially welcomed as a whole, early in the mid-1990s, some researchers responded with sharp criticism as they saw a true picture of this process and began to understand what it really involved (Caddy, 1997b; Jancar-Webstar, 1998). Among other requests, the EU asked for the revision of approximately 450 provisions of the legal system in the environmental field for just a few years, which imposed tremendous costs and burdens on the candidate countries. This legal transposition process was managed by small groups of senior civil servants, selected experts, and minimally engaged national parliaments (Gorton et al., 2010). If there was any parliamentary discussion, it was often fast-forwarded for approval, and new bills went through without sufficient consultation with those stakeholders who were highly likely to bear the economic burdens (Börzel, 2009a; Börzel and Buzogány, 2010b; Börzel and Fagan, 2015; Buzogány, 2009a, 2009b, 2015; Guttenbrunner, 2009; Slocock, 1999). The European Commission even ignored calls for a more flexible approach from the World Bank, which was concerned that the environmental acquis placed excessive burdens on applicant countries (Gorton et al., 2010). As a result, the candidate countries had no choice but to "download" the relevant laws and regulations that the EU had "uploaded" in advance (Scrieciu and Stringer, 2008). This caused resentment of the EU for demanding their top-down acceptance of the environmental acquis, non-compliance with which was ubiquitous even in Western European countries.[3] Nevertheless, considering the negative history of the natural environment under the socialist regimes, in CEE countries, no one could reach the political capability and policy performance with which they could directly compete with the EU as a green superpower.

However, it was the waste issues in Hungary that challenged the legitimacy of the EU environmental governance: the revision of domestic laws and regulations in accordance with the EU environmental standard impeded an innovative environmental policy and exacerbated the case when a serious incident occurred in the country.

[3] The EU noted that for all member states as of the beginning of new millennium, the transposition deficit for the environmental directives was much higher than for overall directives (Bell, 2004). Furthermore, among all complaints on an offense against the EU law that the Commission has received until 2010, the environmental and its derivative sector counted the highest number by sector and amounted to about 20% of the total complaints (Usui, 2013, Chapter 3).

Hungary's waste history, which from 1949 to the late 1980s favored preventative waste reduction and reuse policies, was ahead of the times in the sense that the West relied largely on waste dumps and incinerators. However, the EU did not acknowledge this progressiveness and effectiveness observed in the past and, in practice, encouraged the country to introduce remedial end-of-pipe technologies in the provision of environmental assistance. This not only created confusion in legislation and institution building in Hungary, and thus delay, but also established a practice that might lock in a retrospective path of development (Gille, 2002, 2004). The 2010 red sludge spill accident revealed the contradiction between the two entities. In Ajka, a small town in western Hungary, a huge amount of red sludge, strongly alkaline residuum from the early stage of aluminum production, leaked from storage reservoirs and cascaded through local villages, killing ten people. This serious industrial accident became a hot international issue in the European arena, when the CEO of the aluminum company that was responsible for the spill accident expressed the official view that the red sludge was not a harmful substance according to the EU criteria in spite of significant loss of human life and tremendous ecological damage beyond Hungary's borders. Although Hungarian experts had concluded that the red sludge was indeed hazardous in spite of the EU norms, based on their domestic statutes, and the Hungarian government accepted this conclusion, they failed to form a consensus with the EU investigation team. Thus, Hungarian representatives raised this issue in the EU Parliament (Ieda, 2011). Many ecological activists in the country shared their concerns that Hungarian environmental standards were actually lowered due to the EU accession, allowing the government to weaken the regulations (Hicks, 2004), which suggests a divergence of realities and the philosophy of the EU that preaches the value of sustainable development. Among other things, the Europeanization of CEE countries has revealed the essential contradiction that the EU, in fact, compels candidate countries to introduce the environmental acquis in a non-democratic way—accept these rules or be denied membership—so as to augment the democratization of environmental policies such as information disclosure and citizen participation (Bell, 2004; Gorton et al., 2010). As described again in the next section, more than a few researchers expressed critical and skeptical views on European rule adoption in the environmental field.

All of the examples mentioned above suggest that environmental changes are not linearly related to political and economic dynamics. This calls for input from multiple points of view to define the complex causal relationships among these social change

factors.[4]

In light of these observations, and based on a systematic review of previous studies that investigated a number of issues concerning regime transformation and environmental reform in CEE countries, this study summarizes various views on the relationship between regime transformation and environmental reform, systematically verifying the factors in the literature that contribute to conflicting views regarding this relationship. I decided to focus on CEE countries in this paper, even though other countries from the former Soviet Union (FSU) area also recognize the necessity of carrying through on environmental reforms in the face of the legacy of environmental degradation in the twentieth century. While these FSU countries together with CEE countries are often called transition countries, they have substantially different ecological issues to be solved and, thus, separate aims and directions of environmental reforms to be pursued. The FSU countries have a serious disaster area, represented by the territory radioactively contaminated by the Chernobyl accident, and the desertification of the seabed of the Aral Sea in Central Asia, both of which affect multiple countries and throw the region into ecological turmoil almost permanently. However, the CEE countries, which are examined in this paper, principally deal with industrial pollution and its related problems at the local level, except for a few cases in which military facilities and operations caused environmental and health damage in the Cold War years. Besides this, after the adoption of the 1986 Single European Act, which went into force in 1987, three important articles on the environment were introduced in the European Economic Community treaty, which implied that environmental protection became the primary objective and that the EC had competences in matters of the environment with its membership states (Nakanishi, 2016).[5] This modification means that the EU still has authority and responsibility for the environmental laws and regulations of CEE member states.[6] It also means that the EU

[4] A collection of works titled “Dilemmas of Transition: The Environment, Democracy and Economic Reform in East Central Europe” (Baker and Jehlička, 1998) accurately describes the circumstances at the time.

[5] Environmental legal authority was given to the then-EC, mainly because in the 1980s there was growing concern about an occurrence of “eco-dumping” with the accession of Greece, Spain, and Portugal, who had lagged far behind the original EC member states regarding environmental performance (Hakogi, 2002).

[6] According to Article 4(2) littera (e) of the Treaty for the Functioning of the European Union, the environmental policy is one of the areas where the EU and member states have shared competences, i.e., as a matter of principle, both the EU and member states may legislate and adopt legally binding acts in that field. At the same time, Article 2(2) of the Treaty clarifies that the right of the member states to exercise their legislative powers only exists to the extent that the EU has not exercised its competence; even if they maintain or introduce more stringent protective

stands outside the legislative powers that FSU countries maintain within their boundaries, despite the fact that their environmental policies have been so greatly influenced by the EU's standards and norms.

2 Overviews of selected studies for systematic review

The goal of the systematic review in this paper is to synthesize the research evidence of the literature, not ad hoc, but in such a way that enables us to look up at a tower of research, a complete view of which we cannot grasp with a narrative review only. In this section, I will give a comprehensive review of the selected studies on the subject in the following systematic review. First, Subsection 2.1 introduces discussions of the relationship between multi-dimensional regime changes and various environmental reforms in the transition countries and briefly describes the aim of the systematic review. Next, Subsection 2.2 gives an explanation of the search strategy and selection criteria for the targeted original papers to be incorporated into the systematic review. Finally, Subsection 2.3 examines research specifications such as research topics, targeted regions/countries, time and period of analysis, and methodology of each study, as well as personnel attributes, such as authors' affiliations and disciplines, academic degree, and gender, and medium characteristics, such as publication year, academic fields, and quality level of the literature.

2.1 Purpose of the systematic review

We see great variety in the discussions about how to understand the relationship between regime change and environmental reforms in transition countries. First, there is a large gap in authors' evaluations, due to a difference in the composition of countries being studied. This is typically seen in studies that compare the dynamics of environmental reforms in CEE countries, including the Baltics, with those in the FSU region. It is evaluated, in most cases, that there has been a synergy among economic reforms, democratic development, and environmental improvement in the former group; however, many countries in the latter group have been perceived as facing difficulties in establishing economic reform, stable societies, and environmental protection (Górz and Kurek, 2001; Missfeldt and Villavicenco, 2000; Zamparutti and Gillespie, 2000). Based on this point, I decided to include those papers that cover these two country groups in a common framework in the sample of the systematic review, although one must handle this issue deliberately, as mentioned in the previous section. An assessment gap due to a

measures according to a special rule in Article 193, these measures must be compatible with the Treaties, and the Commission shall be notified (Proelss, 2016).

difference in the countries being examined is seen in studies that deal with the development of environmental governance in CEE countries. Buzogány's two papers (2009a, 2009b), for example, analyze the emergence and the effectiveness of environmental governance in Hungary and Romania, giving the former high marks for its achievement while at the same time looking skeptically at the latter.

Second, even if authors engaged in a shared research subject and found common ground on the contents and dynamics, their final conclusions often show mixed results stemming from a conflict of opinions. To cite an example, we see a divergence of views on the activities of ENGOs in the CEE countries, which has radically changed before and after the revolutions of 1989. In many countries, once-radical and dissident grassroots environmental mobilizations were fading out in the context of the institutionalization of civil society groups. They showed clear signs of shifting toward more westernized, sophisticated, and new-generation movements with professionalism as non-state actors and collaborative relations with state actors. Although almost all scholars share the awareness that these ENGOs have become mainstream across post-socialist Europe, they engage in a heated debate over the characteristics of the new movements. Some respond negatively to the process of assimilating to act on Western European values and behaviors and the resulting loss of resistibility that the CEE environmental organizations demonstrated during the final phase of totalism. Others positively assess the development of cooperative state-society relations as a success story of civil society where ENGOs can be deeply committed to the planning, implementation, and evaluation of government environmental policies toward sustainable development societies with established democracies (Börzel and Buzogány, 2010a; Carmin, 2010; Carmin and Fagan 2010; Císař, 2010; Fagan, 2005, 2006, 2010; Fagin and Jehlička, 1998; Gliński, 1998; Jancar-Webster, 1998; Snajdr, 1998; Waller, 1998).

Third, differences in the awareness of regime change's impact on the environment in CEE countries stand out even in the same authors, in cases where they have another research topic or focus on a different period of analysis regarding the same topic. For instance, according to studies that examine the effects of political, structural, and economic changes on environmental quality by testing the environmental Kuznets curve (EKC), their econometric regression model provides a solid indication of the EKC validity for airborne pollutants, in the sense that there is already clear evidence that emissions have been reduced during economic growth in these countries. At the same time, they find much less evidence for the EKC hypothesis when the selected environmental indicators are used with regard to surface water quality (Archibald et al., 2004, 2009). Another example is Buzogány's works, where the author gives thought to

the emergence of environmental governance in Romania with positive expectancy in a recent paper (Buzogány, 2015), as compared with the harsh perspective on that in the early development stage in the previous paper (Buzogány, 2009b).

In this respect, a most intriguing case seems to be the swaying views of Adam Fagan (Fagin), who has been investigating the development of ENGOs in the Czech Republic, among others, and other CEE countries for over the last two decades, and delivers as many as 14 works (including co-authored ones) to the sample for this systematic review. Fagan gave positive feedback regarding their activities in the first half of the 1990s (see Fagin, 1994, for an example), but the initial euphoria turned to frustration, and the author started to criticize the policy process on environmentalism with a well-placed barb. Then, Fagan discussed the issues in a more moderate way than before and now shows a favorable attitude again toward environmental activism in the CEE countries through a recent comparative study of the development of multi-level environmental governance in non-EU post-socialist countries such as Bosnia-Herzegovina and Serbia (Fagan, 2006, 2010; Fagan and Sircar, 2010; Fagin, 1999, 2001; Fagin and Jehlička, 1998; Fagin and Tickle, 2002). Reviewing his own past works critically, he admitted that there were a couple of fundamental problems with the earlier, somewhat negative analysis. The author thus explained this turnaround: "Viewed from a different functional perspective, namely the extent to which new NGOs represent effective conduits for progressive change, including new forms of governance interaction, Europeanization and the reformulation of state power, the legacy of donor intervention and assistance is judged somewhat differently" (Fagan and Sircar, 2011, p. 302).

The main purpose of the systematic review here is to quantitatively analyze those research and literature attributes that would exert an influence over the divergence of views and their changes over time. We argue the merits of our systematic review as compared with normative and descriptive literature reviews. Not only can the tower of research be comprehended in an objective fashion, but one could also discern some plausible biases that would be attributable to the characteristics of each study, thus having a huge impact upon their conclusions. No one could assert that any great scientific work is exempt from unintentional biases, contrary to everyone's best efforts. The essence of a systematic review can be ascribed to such a possibility that these biases will be grasped objectively and quantitatively, and, also, researchers with a similar research task have an opportunity to identify their positions in advance through a comparative review with others. In this respect, we discover an evolvability or scalability of systematic-review-based comparative studies.

2.2 Procedure for selecting literature

To search for past research works to target for a systematic review, some large-scale academic literature databases are commonly used as a first step. In this paper, I chose the Web of Science, maintained by Clarivate Analytics, because it gives access to multiple databases that reference cross-disciplinary research. First, I put "transition*" (* denotes truncation for a retrieval term) and "environment*" as main keywords and then limited the scope of my searches by country/region and discipline, because thousands of papers turned up in the first round. However, the situation was the same, in that it brought a flood of works: worse still, most of the papers detected were not related to environmental reforms in the context of multi-dimensional social transition. This resulted because those two keywords inherently cover wide semantic domains that indicate diverse phenomena. Additionally, both are part of various academic terms: in natural science, *transition* means a successive change in ecosystem, to cite an example, and economists often use *environment* to refer to business terms such as *management environment* and *investment environment*.

To address this issue, I replaced the wildcard "*" with some additional words and obtained two best keywords as a result of trial and error: that is "environmental transition" and "environmental reform." Furthermore, I used "ecological moderniz(s)ation" as an additional keyword, the concept of which was established and has been advocated as one of the main targets of European countries by a group of environmental social scientists. From the 1980s onward, it has prevailed not only in several academic fields but also in industrial society and among European public authorities seeking a new strategic framework for economic growth that would be in harmony with the environment (see Tokunaga, 2010). Among these publications, the relevant literature on CEE countries was chosen to make a base collection of studies under systematic review. I also searched the references in these studies and book chapters in leading collections by a method of referencing references, or a snowballing approach. As a result, I collected 384 English articles[7] that were published between 1989 and 2015 as potential candidates for the following literature survey.[8]

From these samples, articles that explicitly examined the impact of regime change on the environment in CEE countries in academic publications were selected for a total

[7] I searched only the category of article and rejected other types of works, such as proceeding papers, book reviews, etc.

[8] The final literature search was conducted in June 2017.

of 243 papers (see **Figure 1**).[9] If a journal paper was included in a book with minor changes or in the case of replication,[10] the first one published was chosen; otherwise, a later published work with an update and/or some revisions was preferentially considered. Note that I removed those studies that were (1) monographic publications and academic books with a limited number of authors; (2) unpublished research manuscripts, such as discussion papers and working paper series; and (3) included in reports published by international organizations and ENGOs. In this last case, whether we could put these works and purely academic papers in the same arena is disputable, despite the fact that researchers and experts write the reports in many cases. Although it seems far from an exhaustive collection of the relevant literature, reviewers are allowed to narrow the scope of works under examination in a clearly defined way. Where the literature is known to be vast, tighter exclusion criteria could be reasonably adopted, as in meta-analysis studies (see Stanley and Doucouliagos, 2012, Chapter 2). Furthermore, random—that is, unbiased—omission of samples seems inevitable no matter how hard one tries to avoid it.

2.3 Basic characteristics of selected studies for systematic review

Figure 1 tells us that the studies selected for this systematic review were largely published from 1993 to 2004; they amount to almost three-quarters of the total. An increase and decrease in the number of studies are heavily influenced by the appearance in academic environmental journals of special issues related to CEE countries[11] and publications of academic collections on the CEE environment.[12] In the following subsections, referring to **Figure 2**, I outline the four major attributes of the sample studies in which research topics, authors' profiles, publication media, and any other information

[9] See **Appendix** for a list of sample papers.

[10] To cite some examples, all papers published in special issues vol. 7(1), vol. 13(1), and vol. 19(5) of *Environmental Politics* are included in Baker and Jehlička (1998), Carmin and VanDeveer (2005), and Fagan and Carmin (2011), respectively.

[11] For the special issues on the CEE countries, see *Environmental Politics*, vol. 7(1), 1998; *Geographical Journal*, vol. 165(2), 1999; *Environment and Planning B: Planning and Design*, vol. 27(3), 2000; *Environment and Planning A*, vol. 33(4), 2001; *Environmental Politics*, vol. 13(1), 2004; *Land Use Policy*, vol. 22(3), 2005; *Environmental Politics*, vol. 19(5), 2010; *Environmental Conservation*, vol. 40(2), 2013; *Environment and Planning C: Government and Policy*, vol. 33(5), 2015.

[12] The following are considered to be especially noteworthy: Carter and Turnock (1993, 2002), Jancar-Webster (1993b), Vari and Tamas (1993), Carraro et al. (1994), DeBardeleben and Hannigan (1995), Bluffstone and Larson (1997), Klarer and Moldan (1997), Clark and Cole (1998), Tickle and Welsh (1998), Turnock (2001), Auer (2004), and Börzel (2009b).

are coded in a certain way.

(a) Research attributes

First, the most studies selected focus on the ten CEE countries that joined the EU in 2004 and 2007. From a total of 243 papers, non-EU CEE countries, FSU countries excluding the Baltics, and non-CEE countries (China and Hong Kong, Vietnam, Spain, Portugal, and Greece) are included in the samples of 43, 34, and 3 papers, respectively. Single-country studies, in which a specific country is the focus, are a majority, amounting to 151 works; the remaining 92 works are multi-country studies, in which two or more countries are analyzed. The nations most frequently studied among the former group are Poland (37 papers), the Czech Republic (26), and Hungary (22); followed by Romania (16), Bulgaria (13), Slovakia (9), Lithuania (5), Bosnia-Herzegovina (5), the former GDR (4), and Estonia (3). These figures reveal that the most polluted countries even in Eastern Europe—Poland and the Czech Republic—capture the attention of researchers. However, the former GDR is found far less than expected, although it was part of the "Black Triangle," with Poland and the Czech Republic. The worst legacy of environmental degradation across Eastern Europe has become an issue facing the West by the unification of Germany (Juergensmeyer et al., 1991). The policies to solve it are, thus, formulated both by the federal government of Germany and the EU (Boehmer-Christiansen, 1992, 1998; Wilson and Wilson, 2002). The former GDR, or Germany's new Länder, has been seen as a special case, which would blur the facts for analysts; therefore, they showed less interest in this part of CEE countries.

The least interest was shown in Southeastern Europe and the Western Balkan region in the 1990s. Only in the 2000s did we see some progress in research in this area. A large reorganization of chapters in the collection edited by Carter and Turnock (1993, 2002), known as a representative academic work in the field of the environmental problems in post-socialist Europe, shows an early shift of research interest to those countries that were not included in analyses before. That is to say, a country that was part of Yugoslavia in their first edition of 1993 is investigated separately in the revised edition of 2002. Croatia, one of the former countries of Yugoslavia, clearly stated their intention to join the EU in the early 2000s. The EU itself started to be directly involved in the peace process and has, since 2000, assumed much broader influence in post-conflict Bosnia–Herzegovina, which is considered to have brought about a growing trend of research interest regarding the environmental affairs in this area. After the end of the worst civil war in postwar European history, these countries were facing a specific situation in which military operations during the war directly caused severe environmental degradation on both sides. This also led to an amelioration of the industrial pollution, due to an economic crisis at the same

time (Clarke, 2002a, 2002b). Furthermore, even after the international community and local ENGOs started trying to restore the environmentally devastated area by reconstructing the region damaged by war, the weak governance capacity of state authorities, the nationalistic party politics in regions, and the ethnically divided and fractured communities coalesced to thwart the emergence of green politics in the region (Castán Broto et al., 2009; Fagan, 2006, 2010; Fagan and Sircar, 2010). At the same time, the EU has exerted much greater influence on the formal compliance process with the environment acquis in some EU candidate countries than they attempted in the CEE EU membership countries in the past, which has been strictly examined from the viewpoint of the validity and effectiveness of the EU environmental standards (Fagan and Sircar, 2015; Obradovic-Wochnik and Dodds, 2015).

Second, when we direct our attention to the research topics in each study, it turns out that there is great concern for the real state of affairs of various environmental damage, such as air and water pollution. Many researchers also focus on the environmental policies and movements dedicated to solving these issues and the international cooperation and assistance supporting these activities through financial and human resources. Most of these studies dealing with the latter topics discuss the dynamics of domestic actors in CEE countries as well as a series of measures of the EU as the biggest outside donor. The EU's financial and human assistance for the environmental problems of CEE countries had been given as part of PHARE (Poland and Hungary Action for Restructuring of the Economy) program, with the aim of restructuring domestic economies and moving to market-oriented institutions. When EU accession was on top of the political agenda, more political emphasis was then put on how to promptly follow obligatory procedures to join the EU rather than how to effectively put the environmental policies into practice. Researchers' awareness of issues has changed with these movements, and they placed the relationship of the EU accession process and environmental reforms at the center of discussion, along with the impact of market economy transition and political democratization, in which they debate the results and meaning as well as the problems and lessons of EU accession in terms of ecological improvement (Börzel, 2009b; Carmin and VanDeveer, 2005).

The association with the EU was questioned after new member states were in place in 2004 and 2007, and two issues are mainly the focus of attention in academia. The first issue is related to the EU's posture toward non-EU CEE countries in Southeastern Europe and the Western Balkan region. Although incompatibility with the EU environmental acquis was a common problem for many of the CEE countries who joined the EU in 2004 and 2007, there was little room for negotiation between the parties. In the case of Croatia,

a newcomer who became a member state in 2013, the entry requirements have been shown to be inconsistently applied and more stringent than they were for other member states (Kay, 2014). As described in the previous section, the inflexible attitudes of the EU bureaucracy have been viewed with praise or censure and, in fact, more than a few authors have expressed sharp and bitter criticism. The other issue in dispute is the introduction of Natura 2000, a unique EU-wide network of protected areas, which aims to maintain European biodiversity based on two directives: Bird Directive 79/409/EEC and Habitats Directive 92/43/EEC. To enlarge and coordinate the nature protection system at the pan-European level, the EU demands that member states consult in advance with various stakeholders (local inhabitants, municipalities, assemblies, land-owners, farmers, foresters, tourism agencies, ENGOs, etc.) and coordinate their incompatible interests, because the Natura 2000 project requires a change in the dominant model of ownership and access for protected areas. However, even in Western European countries that have a great deal of experience and achievement in nature protection and conservation biology, the implementation of Nature 2000 was criticized for being a top-down approach that insufficiently engaged stakeholders, leading to conflicts, legitimacy crises, and active opposition to the program. In many cases, this contributed to delays in designating the sites. At the same time, the EU Commission took several western member states to the European Court of Justice, citing delays and failures in the development of the protected area network (Cent et al., 2014). Despite all of this confusion, the EU requested the new membership states to strictly implement Natura 2000 and comply with the legal regulations. On the one hand, this led to harsh criticism of the EU's obstinacy and the ineffectiveness of policy in the domestic arena (Buzogány, 2009b; Grodzinska-Jurczak and Cent, 2011; Kay, 2014; Knorn et al., 2012, 2013; Křenová and Kindlmann, 2014; Mikulcak et al., 2013; Sotirov et al., 2015; Stringer and Paavola, 2013; Švajda, 2008). On the other hand, more than a few researchers appreciate the magnitude and vision of the Natura 2000 project (Cent et al., 2007, 2013, 2014; Evans et al., 2013; Kluvánková-Oravská et al., 2009, 2013; Niedziałkowski et al., 2012).

Third, as for the research period, except for 18 studies that are mainly concerned with movements under the old regimes before social transformation, many authors begin their analysis in 1989 or 1990, keeping in mind the wave of revolutions in CEE countries: they account for almost two-thirds of the total literature, or 153 of 243 papers. The average research period is 9.5 years: excluding the above 18 papers from our sample, it falls to 8.2 years for the remaining 225 papers. A distribution of the median of the research period indicates that over half (143 papers) of the total recorded the early 1990s; therefore, a majority of the sample studies discuss environmental issues in the context of social

transformation in CEE countries, keeping in mind a turbulent few years during the revolutionary period. At the same time, those studies in which the median is the late 1990s or later represent one-third (84 papers) of the total, in which Europeanization rather than transformation has been the main focus in many cases. They examine the results and lessons of environmental reforms associated with EU accession.

As might be expected, the more recent a paper's publication date, the later the research period. It is noteworthy that some recent studies do not necessarily start their analyses from the revolutions and regime changes in the CEE region, but sometimes begin empirical investigations much later. As **Figure 3** clearly indicates, while most publications issued until the early 2000s start discussing environmental affairs around the year 1990, less than half of those published later (24 of 56 papers) show a period of analysis that ends with the 2000s or later and do not refer at all to the major events that occurred before that time, or just outline events without any discussion. The other side of this seems to be that there is less interest in the environmental problems of older regimes. We can see a kind of stylized description pattern in the earlier studies; it begins with an overview and criticism of the environmental damage in the era of socialism and then examines changes in the environmental situation due to radical social transformation after the collapse of communism and a command economy in order to determine their significance and lessons as principal conclusions. However, this style of description has gradually disappeared since the mid-2000s, and the number of those papers that touch upon past environmental issues has obviously decreased. As mentioned later in detail, authors' views on the environmental problems in older regimes are manifested in no less than 80% of the literature up until the early 2000s (152 of 187 papers), but this figure has fallen to less than 40% since the late 2000s (22 of 56 papers).

Finally, concerning analytical method, a majority use descriptive analyses, while a minority use statistical and quantitative analyses (for the differences, see Note c in **Figure 2**). At the same time, the number of empirical studies with some sort of estimators has steadily increased over the last decade. Whereas we see only five such papers (4.0%) of the total 126 publications in the 1990s, there are 17 such papers (14.5%) in the 117 samples published after 2000.

(b) Authors' attributes

Next, we turn to the attributes of the authors of each paper. The following three points are worthy of remark. First, the total number of authors is 466, and their affiliation structure tells us that those who work for higher education institutions account for 85% of the total. Therefore, the majority of studies under systematic review were written by professional researchers. The remaining 15% can be attributed to practitioners who serve in consulting

agencies, including ENGOs, government institutions in the CEE or Western countries, and international organizations such as the EU and the European Bank for Reconstruction and Development (EBRD); others are from two freelancers and one staff member of a political party. Then, the locations of authors' affiliations suggest that environmental issues in CEE countries seem to be of strong interest to Western countries. Although we come across a few such cases occasionally in which a researcher from a CEE country teaches at an educational institution in the West,[13] it is interesting that the academic significance of environmental studies of CEE countries has been acknowledged not only in Western Europe, which is geographically connected to the CEE countries, but also in the faraway USA, considering that any research project needs to acquire grants from their home institutions. The location where the author's PhD was earned was identified for a total of 304 authors: North America, Western Europe, and Eastern Europe each have approximately a 30% share, which suggests that a majority of the authors gain educational and work experience in western countries.

Second, regarding researchers' genders,[14] there are 127 female authors, accounting for less than 30% of the total. As time has proceeded, the proportion has increased: specifically, female authors are included in 37 (29.4%) of 126 papers published in the 1990s, in 23 (37.7%) of 61 papers in the early 2000s, and in 32 (57.1%) of 56 papers in the late 2000s and later. A similar trend is also observable regarding the number of authors. We found that there are more singly authored than multi-authored papers in the whole sample (128 versus 115 papers), but the proportion of the latter has been rising over time: 47 (37.3%) of 126 papers in the 1990s, 30 (49.2%) of 61 papers in the early 2000s, and 38 (67.9%) of 56 papers in the late 2000s and later. The number of authors acknowledged in one paper has also been rising in recent years; the average number moved from 1.5 people in the 1990s and 1.7 people in the early 2000s to 2.7 people in the late 2000s and later. Whereas there was only one paper with five or more authors among 187 papers until the mid-2000s (Pickles et al., 2002), papers with more than five authors were found in four of 56 papers after that (Iojă et al., 2009; Knorn et al., 2012, 2013; Young et al., 2007). Many papers with multiple authors, to a maximum of ten authors, combine the humanities and sciences to yield their research results. Natural scientists from the fields of ecology, pedology, and forestry as well as remote sensing experts contribute to the projects by

[13] Petr Pavlínek (Czech Republic), Zbigniew Bochniarz (Poland), and Zsuzsa Gille (Hungary) are some examples. They all teach at US universities.

[14] I acknowledge that it is arguable to code gender as a binary choice. Nevertheless, it is classified as one of the authors' attributes in this study, considering the results that gender has significantly influenced upon the conclusions of some studies (e.g. see Stanley and Jarrell, 1998).

analyzing the observation data from satellites. A majority of multi-authored papers (68 of 115 papers) were written by researchers who share their academic discipline, but interdisciplinary works by authors with diverse academic backgrounds account for one-third of the total multi-authored papers (47 of 155 papers). In the latter case, a combination of environmental studies and economics is the largest group (20 of 47 papers), followed by the pairing of environmental studies and sociology (eight papers), environmental studies and geography (six papers), and economics and sociology (four papers). The rest include combinations of environmental studies and politics, politics and geography, politics and sociology, and sociology and geography in a few cases (no more than three papers for each).

Third, as for authors' professional disciplines, judging from research topics in each study as well as authors' careers (academic degrees and affiliations), interdisciplinary environmental studies rank first and consist of over one-third of the total, followed by economics, politics, and geography. While this indicates a diversity of authors' academic backgrounds, their professional disciplines are significantly correlated with the research topics in each study, as is shown in **Table 1**. For instance, economics articles show deep interest in the trends of air pollution and environmental policies. One major reason for the former theme seems to be a finely maintained database on air pollution substances and greenhouse gas emissions. Panel-formatted data are necessary for multiple-country and -year comparative studies and, in many cases, indices of the environmental burden related to air pollution meet this precondition. As for the latter theme, there is interest in reviewing to what extent environmental policies have contributed to a significant improvement in some environmental indices observed widely in the CEE region in the 1990s. It is unanimously agreed that the improvement has been achieved by closing production lines with outdated facilities in the transition to a market economy; however, econometrical analysts seem to have such a unique approach that they attempt to assess the presence and extent of the effectiveness of environmental policies, while controlling some beneficial effects of the economic depression in the early phase of transition (Archibald et al., 2004; Bluffstone, 1999; Earnhart and Lizal, 2008; Vukina et al., 1999). Regardless of authors' academic backgrounds, environmental policies have been a top concern for those studying environmental issues in CEE countries. However, researchers other than economists do not seem to have the perspective of factor comparison, and more than a few papers assertively conclude that the improvement in major environmental indices has been exclusively due to economic depression during the transition period (Baker, 2002; Fagin and Jehlička, 1998; Fagin, 2001). Turning to other fields, political and sociological papers are more likely to capture the relationship of regime

transformation and environmental movements as a touchstone of democratization. Specifically, they discuss the rise and fall of ENGOs and their public participation in policy decision-making processes, the status of environmental administration in the government structure of each country, and the tangible effects of environmental support from the EU (Baker and Jehlička, 1998; Carmin and VanDeveer, 2005; Fagan and Carmin, 2011). Furthermore, geographical papers are mainly interested in the dynamics of rural and mountain areas; they deal with the impact of changes in land use in agricultural and forest lands and the progress of land privatization or reinstitution upon the natural environment (Dingsdale and Lóczy, 2001; Drgona, 1996; Górz and Kurek, 2001; Iojă et al., 2009; Knorn et al., 2012; Sklenicka et al., 2014). Some argue for the development of ecotourism as an attempt to restore the devasted areas and revive impoverished rural economies (Mazurski, 1999; Turnock, 1999; Unwin, 1996).

(c) Media attributes

Here we turn to media attributes where the selected studies for systematic review were published. Of a total of 243 papers, 155 appeared in professional journals and the remaining 88 in academic collections. According to the presence or absence and level of impact factor of the 155 journal articles based on information from the 2012 Journal Citation Reports used to quantify their research quality level, no less than 80%, or 133 articles, were published in journals with an impact factor; the remaining 22 articles were published in practical or enlightening magazines that do not have an impact factor, probably due to their publication aims and/or editorial policies. With regard to research area, reflecting the research contents of selected studies, more than half of the total papers appeared in literature on environmental studies, followed by politics, economics, geography, sociology, and development studies. A few articles were published in some interdisciplinary journals, irrespective of the authors' professional disciplines. As mentioned before, their publication years are not evenly distributed, and no less than 60% were published from the late 1990s to the early 2000s. It can be inferred that researchers have developed an interest in the environmental policies of CEE countries from a growing trend toward an overall evaluation of the results and future tasks in various sectors on the tenth anniversary of the revolutions of 1989, as well as growing concern over EU accession as a top political agenda in some candidate countries during this period. As described before, acceptance and implementation of the EU's environmental acquis became an important matter for negotiation regarding EU accession.[15]

[15] It is undoubtedly a fact that candidate countries faced more difficulties in accepting the environmental acquis because the EU's environmental policies also radically changed during the

(d) Other attributes

I reviewed the other attributes that would be influential in an evaluation of environmental reforms after regime transformation. First, in order to examine the assessment of the role of the EU, which has often been considered to be a more important policy-maker than domestic entities in CEE countries for improving environmental problems in the region, a total of 177 papers that clearly discuss this issue were selected. Their conclusions were classified using a three-grade evaluation (positive, moderate, and negative). Whereas less than one-third of the total studies positively appraised the role of the EU, its negative influences are emphasized in many papers. At the same time, a majority—almost half—espoused moderate views midway between these two obvious evaluations; while they eagerly anticipate the EU's actions to improve the ecological disaster posed by the socialist regimes, they are more or less skeptical of the EU's realistic policy capabilities for environmental amelioration.[16] This ambivalence leads to mixed opinions regarding the powers and functions of the EU. Similarly, irrespective of the main subjects in each paper, a great number of cases deal with the quality and effectiveness of environmental policies and management and the results and lessons of environmental movement in CEE countries (see **Table 1**). I selected those papers that clearly described their observations about these two issues in a readable way, and their conclusions were codified as a three-grade evaluation, as described above. Almost 90% of the selected studies, or 218 papers, discussed the quality and effectiveness of environmental policies and management: they generally gave their negative comments, and no more than 10% of the literature highly appreciated the institutional changes from the standpoint of environmental reform. At the same time, no less than 60% of the selected studies, or 143 papers, refer to the results and lessons of environmental movement: here too, they are generally critical of the role of environmental movements, and studies that positively view non-profit private organizations such as civic movements and ENGOs as catalysts of environmental reform are in the minority.

---

negotiation period. However, as far as I have seen, only a limited number of studies examined issues of EU enlargement clearly related to the dynamics of the EU's environmental policies, most of which focus on the controversy over Soviet atomic power stations located in the regions bordering Western European countries, such as the Temelin nuclear power plant in the Czech Republic (see e.g. Hakogi, 2002; Axelrod, 2004) .

[16] A dispute over the discretion of the EU and its member states due to a shared internal competence in the field of environmental policy, myriad violations of EU environmental laws and regulations, their bureaucratic and rigid policy-making processes, and other issues (Usui, 2013, Chapter 3; Proelss, 2016).

Finally, opting for 174 papers where the authors' views on the environmental problems under the old regimes were clearly indicated, their judgments were classified as a three-point scale variable as before, since the evaluation of the environmental situation after transformation would be affected by the evaluation of the environmental issues before transformation. Although most studies judge sternly on this point, a few papers seem to suggest that we need to observe without prejudice the CEE's environmental affairs, even in the socialist era. In many cases, these papers focus on the increase in environmental activism during the collapse of old rules and highly appreciate that environmental groups mobilized a great deal of public support for regime change (Gliński, 2001; Hicks, 2004; Rinkevicius, 2000; Snajdr, 2001). Moreover, in the CEE region, there still remain huge areas with tracts of virgin forests spared development.[17] It is often stressed that they are better at forest management than their Western European counterparts in terms of preserving relic species and maintaining biodiversity (Andersson, 2002; Ioras, 2003). With regard to environmental policies as well, we occasionally come across a few such papers that support the progressive approach to preserving the environment, such as a society- and industry-wide recycling system (Gille, 2000, 2004; Gorton et al., 2010; Jendrośka, 1998). By and large, while studies that are in complete denial about all things environmental under the socialist regime have been gradually eclipsed, the view that we should assess environmental issues during the socialist period based on their facts, as Pavlínek and Pickles (1999, 2004) insist on, seems to be prevailing.

As discussed in the previous section, an evaluation of the environmental reforms in the CEE region would be related to how their economic and political reforms after the revolutions of 1989 should be seen. Thus, we cannot rule out the possibility that each author's economic thought and/or political creed in essence exerts a certain influence upon their conclusions on the relationship of social transformation and environmental reform. As an example, according to Dryzek (2005, part 3), who analyzes practices and discourses of US environmental policies, expert-led administrative rationalism, people-led democratic pragmatism, and market-driven economic rationalism still have a great deal of influence in the policy arena and are rivals with one another. Thus, based on the normative judgments in each study on the pros and cons of market principles/marketization or democracy/democratization in the aspect of environmental

[17] The largest virgin forest area in Europe is found in the Carpathian Mountains, one of the mountain ranges belonging to the Alpine–Himalayan orogenic belt. The range stretches from the border of the Czech Republic, Slovakia, and Poland in the northwest through Ukraine to Romania in the southeast.

improvement, they were codified as three-point scale variables and tagged as positive, reserved, and skeptical appraisal for each category. A discussant like Václav Klaus, the former prime minister and president of the Czech Republic, who asserts without reservation that the penetration of market principles has a favorable effect on the environmental situation remains at around 30% of the total. The majority of researchers consider the existence of market failure and assume a cautious attitude toward the saturation of market forces. At the same time, in more than half of all cases, the democratization of political structure and the penetration of democracy into society are considered to contribute to ecological improvement through the establishment of a multiparty system and parliamentary politics, promotion of the decentralization of authority, and an enlargement of civil society. Nonetheless, more than a few authors take a reserved or skeptical position on the effect of democracy upon the environment.[18]

3 Assessment of regime change and environmental reform in CEE countries

In the following section, I examine whether and to what extent the basic characteristics of selected studies exert an influence over the divergence of views on CEE environmental reforms after regime change. The main purpose here is to discern research backgrounds that would cause diverse assessment of the relationship between social transformation and environmental reform, considering the possibility that it might be reliant on the basic characteristics specified in each study or its "personality," both in explicit and implicit ways.

Accordingly, authors' positions on the influence that regime change has exercised on environmental reform in CEE countries have been classified into the following four categories: fully support (full support without any reservation), conditionally support (partial support with reservation or under some conditions), difficult to support (little support as a whole with recognition of some positive results), and hardly support (total nonsupport or denial of outcomes). A cross table shows a correlative relationship between these four-point scale evaluations and the basic characteristics in each paper, confirming that the total picture of the selected studies is almost evenly divided between the first two with positive assessment of social changes as related to environmental improvement and

[18] It is no doubt difficult to classify and code a way of democracy/democratization appraisal, as compared to market/marketization appraisal. Therefore, an approach like this seems to be problematic. In particular, it is worth considering Pickvance's contention (1997) that democratization and decentralization affect the environment in totally different ways, although these two political processes are often identified as interchangeable.

the last two with negative assessments to the contrary (see the last raw in **Table 2**). In this table, the values of Cramer's V are shown as an index for the strength of a relationship between the graduated evaluations and the basic characteristics, as well as the results of chi-square tests for independence based on the hypothesis that two variables are independent of each other. Some of the categories of the basic characteristics are aggregated or removed to avoid minimizing the estimates of expected frequency by reason of a limited number of samples and biased frequency distribution.[19] The results suggest that the four-point scale evaluations of environmental reform are possibly related to some basic characteristics: the analytical method of each study, the place of the author's PhD, the publication year and source of each paper, and other attributes. Interestingly, individual evaluations of EU accession/support, environmental policies and institutions, and environmental movements, as well as authors' economic views from an environmental perspective, might affect their conclusions regarding the achievements of environmental reform, to a certain degree. Other characteristics such as the research topic of each paper, authors' academic disciplines, and research area of publication media do not seem to be significantly related to evaluations of environmental reform, as far as the cross table can tell.

Then, multivariate ordinary probit regression models are employed to examine whether these basic characteristics of each study are correlated with the evaluations on environmental reform after regime change in CEE countries in a statistically significant way after controlling for them simultaneously. **Table 3** lists the names and descriptive statistics of independent variables to be introduced, as well as simple correlation coefficients between each independent variable and dependent ordinal variable that could be arranged in descending order: 3 points (fully support), 2 points (conditionally support), 1 point (difficult to support), and 0 points (hardly support), with a mean of 1.5 and a median of 1. The independent variables consist of two continuous variables (median of the research period and the publication year), 3-point scale ordinal variables (evaluation of EU accession/support, evaluation of environmental institutions, evaluation of environmental movements, evaluation of environmental issues under socialism, appraisal of market economy, and appraisal of democracy), and other dummy variables with 0 or 1. The last column of the table demonstrates that some basic characteristics significantly influence the evaluations of CEE environmental reforms, although the results are

[19] The cross table was adjusted so that each cell has an estimated expected frequency of 1.0 or more; yet, at the same time, the number of cells with an estimated expected frequency below 5.0 is reduced to about one-third of the total number of cells.

somehow different from those of the cross-table analysis in **Table 2.**

Table 4 indicates the estimation results by ordinary probit regression analysis. Because all attributes are not readable in one paper and, thus, are not able to be coded concurrently, other attributes among the basic characteristics are estimated separately in each panel so as to secure a certain number of samples. Also, a portion of the basic characteristics are removed from the analysis to cope with multicollinearity issues[20]; the median of the research period and the publication year of the paper are estimated separately, as are estimations of authors' academic disciplines and the research areas of publication media. The Huber–White sandwich estimator is used to estimate robust standard errors. Akaike's information criterion (AIC) and Bayesian information criterion (BIC) are used to determine desirable models for analysis.

It follows from the estimation results shown in **Table 4** that: first, among the research attributes, the number of targeted countries, region of targeted countries, and research topics (finely classified) influence the evaluations of environmental reform. As compared to single-country studies where a specific country is discussed comprehensively, multi-country studies are likely to produce positive evaluations of environmental reforms. At the same time, multi-country studies that incorporate non-EU Southeastern European and the FSU countries into their samples demonstrate less-positive evaluations. Many scholars believe that these countries have lagged far behind CEE countries concerning environmental reform (Castán Broto et al., 2009; Clarke, 2002a, 2002b; Fagan, 2006, 2010; Fagan and Sircar, 2010; Mol, 2009; Pryde, 1995; Tokunaga, 2010; Turnock, 2002). It has been established that there is a large gap between these two country groups in the process of mandatory implementation of environmental reforms in CEE EU member states. Turning to the research topics (finely classified), it is clear that air pollution and tourism development are polarizing subjects. Whereas research on the former considers that regime change has contributed remarkably to the improvement of air pollution relative to general environmental issues, research that focuses on the latter seems to be very cautious about the impact of regime change upon the natural environment. On the one hand, it was pointed out early on that heavy industry, which used to be a core business sector of socialist economies, recorded a dramatic reduction in air pollutant emissions regardless of country and region, since operations were greatly reduced in association with industrial restructuring in the early phase of economic transition. On the other hand,

[20] Research topics (broadly classified) and length of analysis are strongly correlated to research topics (finely classified) and the median of the research period or the publication year of the paper, respectively; thus, the first two variables are removed from the following analysis.

many scholars share concerns about an adverse effect on the natural environment from privatization—land privatization, inter alia—being characterized as the pillar of economic reform. It is fully understandable that their studies are motivated by a sense of vigilance regarding the destruction of the landscape and nature possibly caused by real estate development in urban areas and recreational development in rural areas. As for the rest, a relatively negative opinion has been expressed in the study of international cooperation. This point seems to be often reflected in such an unflattering comment that overseas financial and human aid mainly from the EU have not sufficiently contributed to improving the natural environment in CEE countries. The differences in analytical methods variously impact upon the conclusions as well: compared to a descriptive analysis mainly with a case study approach, a bird's-eye survey of the dynamics of environmental issues relying on a statistical database is generally inclined to understand the impact of regime change in a negative way.

Second, it is hard to say that authors' attributes and media attributes are not such influential factors as to determine the conclusions. It looks as if some variables being classified as other organizations for authors' affiliations and other regions for location of affiliation and place of PhD significantly influence the evaluations of environmental reform after regime change; however, this result should not be overrated, because the number of sample papers is very small (three, four, and seven papers for each category, respectively). Although the proportions of papers with a female author and multi-authored papers demonstrate an upward trend, as mentioned in the previous section, it is hardly related to a difference in the above evaluations. In contrast, authors' academic disciplines and the research area of publication media seem to influence the conclusions to some extent. The following serves as an example: compared with an interdisciplinary expert on environmental studies, a researcher who majors in sociology is likely to offer a positive assessment of the impact of regime change on the natural environment. There are many cases where sociologists tackle the question of environmental movements; therefore, authors' academic backgrounds can possibly make a difference in their conclusions on this research theme. Another example: while the literature on development studies includes papers that are more optimistic about the achievements of environmental reform, papers published in the media of geography and other research areas (mainly interdisciplinary magazines and specialty journals for the judicial community) are more often written by outspoken critics. However, these estimation results regarding authors' attributes and media attributes are substantially inconsistent with those obtained from the cross-table analysis (see **Table 2**), which is generally seen as lacking sufficient

explanations.[21]

Third, as regards the other attributes among the basic characteristics, an individual evaluation of the EU accession/support, environmental policies and institutions, and environmental movements has a high possibility of closely relating to its evaluations of environmental reform, in the same way as the cross-table analysis suggested; at the same time, how to evaluate the environmental problems before regime change does not seem to be interrelated with their subjective judgments on the environmental problems after that, because the estimation results regarding an evaluation of the environmental issues under socialism are not statistically significant. Many studies on the enforcement of environmental laws and regulations and the reorganization of environmental authorities in the government sector, the implementation of environment and management policies in the business sector, and the development of environmental movements by ENGOs and other civic organizations touch upon the EU's initiatives for environmental assistance. Quite importantly, their individual evaluations correlate strongly with one another.[22] These results suggest that authors' recognition of CEE environmental reforms is greatly contingent on how they see the environmental effect of EU accession and support. In fact, the environmental impact of the EU accession process is not smaller than its political and economic impacts, and, therefore, the verification of the effects on environmental change has been one of the main research themes for experts in CEE regional studies. This is reflected by the fact that, in the selected studies, many papers tackle this issue head on. Innovative environmental policies and an ecological modernization approach have featured prominently when we see the EU as a green superpower. This makes it all the more important to inquire into the coherence and inconsistencies between their discourses and reality.[23]

Fourth, according to the estimation results of market economy appraisal as normative judgments on the pros and cons of market principles/marketization, those who see environmental reform and economic reform as inextricably linked together and support market-led environmental policies on the basis of economic rationality tend to appreciate the achievements of environmental reform to date. As a matter of fact, some researchers insist that an effective market economy mechanism should improve the natural

[21] The estimation results regarding authors' attributes and media attributes are also unstable in the sense that they are highly dependent on the coding approach for and the number of samples of the selected studies.

[22] Ordinal scores for evaluations of EU accession/support, environmental institutions, and environmental movements are positively correlated at the 1% level of statistical significance.

[23] I owe much to Usui (2013, Chapters 5 and 6) for this discussion.

environment; at the same time, they express their outright displeasure over unrealized goals and the incomplete operation of market economy principles. A typical case involves authors who consider that an inflexible bureaucratic policy-making style and cost-ineffective direct regulations of the EU stand as the greatest obstacles to environmental reform in CEE countries (Archibald et al., 2004, 2009; Żylicz, 1994, 1995). At the same time, as suggested by the insignificant estimation results of democracy appraisal, it seems that few scholars consider democratic political reform and/or the enlargement of civil society with democracy as a vehicle for the development of environmental reform.

All things considered, in light of the empirical results reported in this systematic review, I conclude that the heterogeneity observed in the pertinent literature that examined the relationship between regime change and environmental reform in CEE countries could be attributable to the following basic characteristics: number of targeted countries, region of targeted countries, research topics, and the analytical method of each paper. This heterogeneity depends as much on the effects of environmental support from the EU and the effectiveness of domestic environmental institutions and movements that partially resulted from EU accession as well as normative judgments on the impact of economic reform and marketization upon environmental affairs.

4 Future research prospects and tasks

In this final section, I will expand the argument thus far and remark on a couple of points for further research related to environmental reform in CEE countries.

To begin with, **Figure 1** indicates declining research interest in this theme in and beyond Europe after successive enlargements of the EU. In particular, CEE countries that achieved their goals of EU accession in 2004 and 2007 have lost their distinctiveness as transition countries and are now being perceived as the EU hinterland (Börzel, 2009b). It is symbolic that, at the end of 2007, the Czech Republic was pushed aside in the *Transition Report* published annually by the EBRD. At the same time, the research interests of those scholars and experts who have been engaged in environmental issues and reforms specific to the transition period are moving toward non-EU Southeastern European countries, which are often compared with EU CEE countries that were beset with similar problems earlier (Fagan and Sircar, 2010; Gorton et al., 2010).[24]

Next, as might be expected from the estimation results in **Table 4**, if we add relevant studies focused on the FSU countries to our samples for another systematic review of this

[24] This tendency is true of foreign direct investment (FDI) studies of transition economies (see Iwasaki and Tokunaga, 2019).

research field, it would cause a significant decrease in the evaluation of environmental reform in transition. In doing so, we should not overlook the possibility that conclusions could be biased by the use of specific language that is also a basic characteristic of the literature. This problem has already happened: a large difference in experts' views between English and non-English (especially Russian) literature surfaced with regard to the health and environmental impact of the 1986 Chernobyl accident. Against the 2006 official report and recommendations, which were based on about 350 articles written almost exclusively in English and edited by the World Health Organization and the International Atomic Energy Agency as 20-year anniversary project, in the following year some researchers from the afflicted areas of the FSU region (mainly Ukraine, Belarus, and Russia) published a survey report that summarized the discussion in almost a thousand research papers written in local Slavic languages and drew a definite conclusion on the still-catastrophic outcome of the accident, with harsh criticism for the optimistic view of the former group.[25] This impressive case tells us that it is necessary to control for differences in working languages when environmental studies of the FSU region are included in the samples for future systematic review, considering the fact that numerous academic and professional works have been written and published in the Russian language, one of the global languages, especially in academia.

Finally, we need to pay attention to the existence of biases mainly caused by differences in authors' attributes. Although it does not seem to be an influential factor that would radically change the conclusions of this study, some systematic surveys on other research topics have revealed that authors' attributes exercise a certain influence over their final conclusions. While these authors' attributes, unlike other attributes, are not fully readable and literally interpretable in the original literature only, we can partially cope with this hardship by performing an online search of authors' profiles and, if possible, developing a questionnaire about authors and/or interviewing some noted researchers. What information cannot be accessed directly in the original literature that should be collected and to what extent this additional information could be used remain matters for debate. How to operate a follow-up investigation should be considered to further develop systematic review surveys.

References

Andersson, Magnus (2002) Environmental policy in Poland, In: Weidner, Helmut and Martin Jänicke (eds.), Capacity Building in National Environmental Policy: A

[25] Yablokov et al. (2009) is an English version of the original report in Russian.

Comparative Study of 17 Countries, Springer: Berlin, pp. 347-373.

Archibald, Sandra O., Luana E. Banu and Zbigniew Bochniarz (2004) Market liberalisation and sustainability in transition: Turning points and trends in Central and Eastern Europe, Environmental Politics, 13(1), pp. 266-289.

Archibald, Sandra O., Zbigniew Bochniarz, Masahiko Gemma and Tanja Srebotnjak (2009) Transition and sustainability: Empirical analysis of environmental Kuznets curve for water pollution in 25 countries in Central and Eastern Europe and the Commonwealth of Independent States, Environmental Policy and Governance, 19(2), pp. 73-98.

Auer, Matthew R. (ed.) (2004) Restoring Cursed Earth: Appraising Environmental Policy Reforms in Eastern Europe and Russia, Rowman & Littlefield: Lanham.

Axelrod, Regina (2004) Nuclear power and EU enlargement: The case of Temelín, Environmental Politics, 13(1), pp. 153-172.

Baker, Susan (2002) Environmental protection capacity in post-communist Bulgaria, In: Weidner, Helmut and Martin Jänicke (eds.), Capacity Building in National Environmental Policy: A Comparative Study of 17 Countries, Springer: Berlin, pp. 97-122.

Baker, Susan and Petr Jehlička (1998) (eds.) Dilemmas of Transition: The Environment, Democracy and Economic Reform in East Central Europe, Frank Cass: London and Portland.

Bell, Ruth Greenspan (2004) Further up the learning curve: NGOs from transition to Brussels, Environmental Politics, 13(1), pp. 194-215.

Bluffstone, Randall (1999) Are the costs of pollution abatement lower in Central and Eastern Europe? Evidence from Lithuania, Environment and Development Economics, 4(1999), pp 449-470.

Bluffstone, Randall and Bruce A. Larson (1997) (eds.) Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme.

Boehmer-Christiansen, S. A. (1992) Taken to the cleaners: The fate of the East German energy sector since 1990, Environmental Politics, 1(2), pp. 196-228.

Boehmer-Christiansen, Sonja (1998) Environment-friendly deindustrialization: Impacts of unification on East Germany, In: Tickle, Andrew and Ian Welsh (eds.), Environment and Society in Eastern Europe, Addison Wesley Longman: Harlow, pp. 67-96.

Börzel, Tanja A. (2009a) After accession: Escaping the low capacity trap?, In: Börzel, Tanja A. (ed.), Coping with Accession to the European Union: New Modes of Environmental Governance, Palgrave Macmillan: Basingstoke, pp. 192-210.

Börzel, Tanja A. (2009b) (ed.) Coping with Accession to the European Union: New Modes of Environmental Governance, Palgrave Macmillan: Basingstoke.

Börzel, Tanja and Aron Buzogány (2010a) Environmental organisations and the

Europeanisation of public policy in Central and Eastern Europe: The case of biodiversity governance, Environmental Politics, 19(5), pp. 708-735.

Börzel, Tanja and Aron Buzogány (2010b) Governing EU accession in transition countries: The role of non-state actors, Acta Politica, 45(1/2), pp. 158-182.

Börzel, Tanja and Adam Fagan (2015) Environmental governance in South East Europe/Western Balkans: Reassessing the transformative power of Europe, Environment and Planning C: Government and Policy, 33(5), pp. 885-900.

Buzogány, Aron (2009a) Hungary: The tricky path of building environmental governance, In: Börzel, Tanja A. (ed.), Coping with Accession to the European Union: New Modes of Environmental Governance, Palgrave Macmillan: Basingstoke, pp. 123-147.

Buzogány, Aron (2009b) Romania: Environmental governance: Form without substance, In: Börzel, Tanja A. (ed.), Coping with Accession to the European Union: New Modes of Environmental Governance, Palgrave Macmillan: Basingstoke, pp. 169-191.

Buzogány, Aron (2015) Building governance on fragile grounds: Lessons from Romania, Environment and Planning C: Government and Policy, 33(5), pp. 901-918.

Caddy, Joanne (1997a) Harmonization and asymmetry: Environmental policy co-ordination between the European Union and Central Europe, Journal of European Public Policy, 4(3), pp. 318-336.

Caddy, Joanne (1997b) Hollow harmonisation? Closing the implementation gap in Central European environmental policy, European Environment, 7(3), pp. 73-79.

Carmin, JoAnn (2010) NGO capacity and environmental governance in Central and Eastern Europe. Acta Politica, 45(1-2), pp. 183-202.

Carmin, JoAnn and Adam Fagan (2010) Environmental mobilisation and organisations in post-socialist Europe and the Former Soviet Union, Environmental Politics, 19(5), pp. 689-707.

Carmin, JoAnn and Stacy D. VanDeveer (2005) EU Enlargement and the Environment: Institutional Change and Environmental Policy in Central and Eastern Europe, Routledge: London and New York.

Carraro, C., A. Haurie and G. Zaccour (1994) (eds.) Environmental Management in a Transition to Market Economy: A Challenge to Governments and Business, Éditions Technip: Paris

Carter, F. W. and David Turnock (1993) (eds.) Environmental Problems in Eastern Europe, Routledge: London and New York.

Carter, F. W. and David Turnock (2002) (eds.) Environmental Problems of East Central Europe, Second edition, Routledge: London and New York.

Castán Broto, Vanesa, Claudia Carter and Lucia Elghali (2009) The governance of coal ash pollution in post-socialist times: Power and expectations, Environmental Politics, 18(2), pp. 279-286.

Cent, Joanna, Małgorzata Grodzińska-Jurczak and Agata Pietrzyk-Kaszyńska (2014)

Emerging multilevel environmental governance: A case of public participation in Poland, Journal for Nature Conservation, 22(2), pp. 93-102.

Cent, Joanna, Cordula Mertens and Krzysztof Niedziałkowski (2013) Roles and impacts of non-governmental organizations in Natura 2000 implementation in Hungary and Poland, Environmental Conservation, 40(2), pp. 119-128.

Cent, Joanna, Hanna Kobierska, Małgorzata Grodzińska-Jurczak and Sandra Bell (2007) Who is responsible for Natura 2000 in Poland? A potential role of NGOs in establishing the programme, International Journal of Environment and Sustainable Development, 6(4), pp. 422-435.

Císař, Ondřej (2010) Externally sponsored contention: The channelling of environmental movement organisations in the Czech Republic after the fall of communism, Environmental Politics, 19(5), pp. 736-755.

Clark, John and Daniel H. Cole (1998) (eds.) Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot.

Clarke, Richard (2002a) Bosnia and Hercegovina, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 283-304.

Clarke, Richard (2002b) Yugoslavia, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 396-416.

DeBardeleben, Joan and John Hannigan (1995) (ed.) Environmental Security and Quality after Communism: Eastern Europe and the Soviet Successor States, Westview Press: Boulder, Col.

Dingsdale, Alan and Dénes Lóczy (2001) The environmental challenge of societal transition in East Central Europe, In: Turnock, David (ed.), East Central Europe and the Former Soviet Union: Environment and Society, Arnold and Oxford University Press: London and New York, pp. 187-199.

Drgona, Vladimir (1996) Ecological problems arising from intensive agriculture in western Slovakia, GeoJournal, 38(2), pp. 213-218.

Dryzek, John S. (2005) The Politics of the Earth: Environmental Discourses, Second edition, Oxford University Press: Oxford.

Earnhart, Dietrich and Lubomir Lizal (2008) Pollution reductions in the Czech Republic, Post-Communist Economies, 20(2), pp. 231-252.

Evans, Douglas, András Demeter, Peter Gajdoš and Ľuboš Halada (2013) Adapting environmental conservation legislation for an enlarged European Union: Experience from the Habitats Directive, Environmental Conservation, 40(2), pp. 97-107.

Fagan, Adam (2005) Taking stock of civil-society development in post-communist Europe: Evidence from the Czech Republic, Democratization, 12(4), pp. 528-547.

Fagan, Adam (2006) Neither ‘north’ nor ‘south’: The environment and civil society in

post-conflict Bosnia-Herzegovina, Environmental Politics, 15(5), pp. 787-802.
Fagan, Adam (2010) The new kids on the block: Building environmental governance in the Western Balkans, Acta Politica, 45(1/2), pp. 203-228.
Fagan, Adam and JoAnn Carmin (2011) Green Activism in Post-Socialist Europe and the Former Soviet Union, Routledge: London and New York.
Fagan, Adam and Indraneel Sircar (2010) Environmental politics in the Western Balkans: River basin management and non-governmental organisation (NGO) activity in Herzegovina, Environmental Politics, 19(5), pp. 808-830.
Fagan, Adam and Indraneel Sircar (2011) Foreign donor assistance and environmental capacity building: Evidence from Serbia and Bosnia–Herzegovina, European Political Science Review, 3(2), pp. 301-320.
Fagan, Adam and Indraneel Sircar (2015) Europeanisation and multi-level environmental governance in a post-conflict context: The gradual development of environmental impact assessment processes in Bosnia-Herzegovina, Environment and Planning C: Government and Policy, 33(5), pp. 919-934.
Fagin, Adam (1994) Environment and transition in the Czech Republic, Environmental Politics, 3(3), pp. 479-494.
Fagin, Adam (1999) The development of civil society in the Czech Republic: The environmental sector as a measure of associational activity, Journal of European Area Studies, 7(1), pp. 91-108.
Fagin, Adam (2001) Environmental capacity building in the Czech Republic, Environment and Planning A, 33(4), pp. 589-607.
Fagin, Adam (2002) The Czech Republic, In: Weidner, Helmut and Martin Jänicke (eds.), Capacity Building in National Environmental Policy: A Comparative Study of 17 Countries, pp. 177-200.
Fagin, Adam and Petr Jehlička (1998), Sustainable development in the Czech Republic: A doomed process?, Environmental Politics, 7(1), pp. 113-128.
Fagin, Adam and Andrew Tickle (2002) Environmental movements, nation states and globalisation, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 40-55.
Feshbach, Murray and Alfred Friendly, Jr. (1992) Ecocide in the USSR: Health and Nature under Siege, BasicBooks: New York.
Fitzmaurice, John (1996) Damming the Danube: Gabčikovo and Post-Communist Politics in Europe, Westview Press: Boulder, Col.
Fleischer, Tamás (1993) Jaws on the Danube: Water management, regime change and the movement against the middle Danube hydroelectric dam, International Journal of Urban and Regional Research, 17(3), pp. 429-443.
Frankland, Erich G. (1995) Green revolutions? The role of green parties in Eastern Europe's transition, 1989–1994, East European Quarterly, 29(3), pp. 315-345.

Gille, Zsuzsa (2002) Social and spatial inequalities in Hungarian environmental politics: A historical perspective, In: Evans, Peter (ed.), Livable Cities? Urban Struggles for Livelihood and Sustainability, University of California Press: Berkeley, London, pp. 132-161.

Gille, Zsuzsa (2004) Europeanising Hungarian waste policies: Progress or regression?, Environmental Politics, 13(1), pp. 114-134.

Gliński, Piotr (1998) Polish greens and politics: A social movement in a time of transformation, In Clark, John and Daniel H. Cole (eds.), Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot, pp. 129-153.

Gliński, Piotr (2001) The ecological movement as the element of the civil society, In: Flam, Helena (ed.), Pink, Purple, Green: Women's, Religious, Environmental and Gay/Lesbian Movements in Central Europe Today, East European Monographs: Boulder, Col., pp. 112-119.

Gorton, Matthew, Philip Lowe, Steve Quarrie and Vlade Zarić (2010) European rule adoption in Central and Eastern Europe: A comparative analysis of agricultural water management in Serbia, Environmental Politics, 19(4), pp. 578-598.

Górz, Bronislaw and Włodzimierz Kurek (2001) Sustainable agriculture, In: Turnock, David (ed.), East Central Europe and the Former Soviet Union: Environment and Society, Arnold and Oxford University Press: London and New York, pp. 200-206.

Grodzinska-Jurczak, Malgorzata and Joanna Cent (2011) Expansion of nature conservation areas: Problems with Natura 2000 implementation in Poland?, Environmental Management, 47(1), pp. 11-27.

Guttenbrunner, Sonja (2009) Poland: When environmental governance meets politics, In: Börzel, Tanja A. (ed.), Coping with Accession to the European Union: New Modes of Environmental Governance, Palgrave Macmillan: Basingstoke, pp. 148-168.

Hakogi, Masumi (2002) Environmental problems of Central and Eastern Europe and EU accession, Review of World Economy, 8, pp. 23-32. (Japanese).

Hicks, Barbara (2004) Setting agendas and shaping activism: EU influence on Central and Eastern European environmental movements, Environmental Politics, 13(1), pp. 216-233.

Ieda, Osamu (2011) Red sludge spill in Ajka, Hungary in 2010: Disputes on the dual criteria of waste management between the EU and Hungary, Japan Border Review, 2, pp. 149-172. (Japanese).

Iojă, Cristian Ioan, Maria Pătroescu, Laurenţiu Rozylowicz, Viorel D. Popescu, Mircea Vergheleţ, Mihai Iancu Zotta and Mihaela Felciuc (2009) The efficacy of Romania's protected areas network in conserving biodiversity, Biological Conservation, 143(11), pp. 2468-2476.

Ioras, Florin (2003) Trends in Romanian biodiversity conservation policy, Biodiversity

and Conservation, 12(1), pp. 9-23.
Iwasaki, Ichiro and Masahiro Tokunaga (2019) The determinants and macroeconomic impacts of foreign direct investment in transition economies, CEI Working Paper No. 2019-8, Center for Economic Institutions, Institute of Economic Research of Hitotsubashi University: Kunitachi, Tokyo.
Jancar-Webster, Barbara (1993a) Eastern Europe and the former Soviet Union, In: Kamieniecki, Sheldon (ed.), Environmental Politics in the International Arena: Movements, Parties, Organizations, and Policy, State University of New York Press: Albany, pp. 199-221.
Jancar-Webster, Barbara (1993b) (ed.) Environmental Action in Eastern Europe: Responses to Crisis, M.E. Sharpe: Armonk, N.Y.
Jancar-Webster, Barbara (1998) Environmental movement and social change in the transition countries, Environmental Politics, 7(1), pp. 69-90.
Jehlička, Petr (2001) The new subversives: Czech environmentalists after 1989, In: Flam, Helena (ed.), Pink, Purple, Green: Women's, Religious, Environmental and Gay/Lesbian Movements in Central Europe Today, East European Monographs: Boulder, Col., pp. 81-94.
Jendrośka, Jerzy (1998) Environmental law in Poland, 1989-1996: An assessment of past reforms and future prospects, In Clark, John and Daniel H. Cole (eds.), Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot, pp. 81-115.
Jorgenson, Andrew K., Brett Clark and Vincentas R. Giedraitis (2012) The temporal (in)stability of the carbon dioxide emissions/economic development relationship in Central and Eastern European nations, Society and Natural Resources: An International Journal, 25(11), pp. 1182-1192.
Juergensmeyer, Julian, Michael Kulesza and Ewa Gmurzynska (1991) Environmental protection in post-socialist Eastern Europe: The Polish example, Hastings International and Comparative Law Review, 14(4), pp. 831-848.
Kay, Kelly (2014) Europeanization through biodiversity conservation: Croatia's bid for EU accession and the Natura 2000 designation process, Geoforum, 54, pp. 80-90.
Kerekes, Sándor and Károly Kiss (1998) Hungary's accession to the EU: Environmental requirements and strategies, European Environment, 8(5), pp. 161-170.
Klarer, Jürg and Bedřich Moldan (eds.) (1998) The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester.
Klaus, Václav (2008) Blue Planet in Green Shackles: What is Endangered: Climate or Freedom?, Competitive Enterprise Institute: Washington DC.
Kluvánková-Oravská, Tatiana, Veronika Chobotová and Eva Smolková (2013) The challenges of policy convergence: The Europeanization of biodiversity governance in an enlarging EU, Environment and Planning C: Government and Policy, 31(3), pp.

401-413.
Kluvánková-Oravská, Tatiana, Veronika Chobotová, Ilona Banaszak, Lenka Slavikova and Sonja Trifunovova (2009) From government to governance for biodiversity: The perspective of Central and Eastern European transition countries, Environmental Policy and Governance, 19(3), pp. 186-196.
Knorn, Jan, Tobias Kuemmerle, Volker C. Radeloff, William S. Keeton, Vladimir Gancz, Iovu-Adrian Biriş, Miroslav Svoboda, Patrick Griffiths, Adrian Hagatis and Patrick Hostert (2013) Continued loss of temperate old-growth forests in the Romanian Carpathians despite an increasing protected area network, Environmental Conservation, 40(2), pp. 182-193.
Knorn, Jan, Tobias Kuemmerle, Volker C. Radeloff, Alina Szabo, Marcel Mindrescu, William S. Keeton, Ioan Abrudan, Patrick Griffiths, Vladimir Gancz and Patrick Hostert (2012) Forest restitution and protected area effectiveness in post-socialist Romania, Biological Conservation, 146(1), pp. 204-212.
Křenová, Zdenka and Pavel Kindlmann (2014) Natura 2000: Solution for Eastern Europe or just a good start? The Šumava National Park as a test case, Biological Conservation, 186, pp. 268-275.
McCuen, Gary E. and Ronald P. Swanson (1993) Toxic Nightmare: Ecocide in the USSR & Eastern Europe, Gary E. McCuen Publications: Hudson.
Manser, Roger (1993) Failed Transitions: The Eastern European Economy and Environment since the Fall of Communism, The New York Press: New York.
Mazurski, Krzysztof R. (1999) Environmental problems in the Sudetes, Poland, GeoJournal, 46(3), pp. 271-277.
Mikulcak, Friederike, Jens Newig, Andra I. Milcu, Tibor Hartel and Joern Fischer (2013) Integrating rural development and biodiversity conservation in Central Romania, Environmental Conservation, 40(2), pp. 129-137.
Missfeldt, Fanny and Arturo Villavicenco (2000) The economies in transition as part of the climate regime: Recent developments, Environment and Planning B: Planning and Design, 27(3), pp. 379-392.
Mol, Arthur P. J. (2009) Environmental deinstitutionalization in Russia, Journal of Environmental Policy and Planning, 11(3), pp. 223-241.
Nakanishi, Yumiko (2016) Introduction: The impact of the international and European Union environmental law on Japanese basic environmental law, In: Nakanishi, Yumiko (ed.), Contemporary Issues in Environmental Law: The EU and Japan, Springer: Tokyo, pp. 1-13.
Niedziałkowski, Krzysztof, Jouni Paavola and Bogumiła Jędrzejewska (2012) Governance of biodiversity in Poland before and after the accession to the EU: The tale of two roads, Environmental Conservation, 40(2), pp. 108-118.
Obradovic-Wochnik, Jelena and Anneliese Dodds (2015) Environmental governance in a

contested state: The influence of European Union and other external actors on energy sector regulation in Kosovo, Environment and Planning C: Government and Policy, 33(5), pp. 935-949.

Pavlínek, Petr and John Pickles (1999) Environmental change and post-communist transformations in the Czech Republic and Slovakia, Post-Soviet Geography and Economics, 40(5), pp. 354-382.

Pavlínek, Petr and John Pickles (2004) Environmental pasts/environmental futures in post-socialist Europe, Environmental Politics, 13(1), pp. 237-265.

Pickles, John, Mariana Nikolova, Caedman Staddon, Stefan Velev, Zoya Mateeva and Anton Popov (2002) Bulgaria, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 305-329.

Pickvance, Christopher G. (1997) Decentralization and democracy in Eastern Europe: A sceptical approach, Environment and Planning C: Government and Policy, 15(2), pp. 129-142.

Podoba, Juraj (1998) Rejecting green velvet: Transition, environment and nationalism in Slovakia, Environmental Politics, 7(1), pp. 129-144.

Proelss, Alexander (2016) The scope of the EU's competences on the field of the environment, In: Nakanishi, Yumiko (ed.), Contemporary Issues in Environmental Law: The EU and Japan, Springer: Tokyo, pp. 15-28.

Pryde, Philip. R. (1995) The environmental implications of republic sovereignty, In: Pryde, Philip. R. (ed.), Environmental Resources and Constraints in the Former Soviet Republics, Westview Press: Boulder, Col., pp. 1-23.

Rinkevicius, Leonardas (2000) Ecological modernisation as cultural politics: Transformations of civic environmental activism in Lithuania, Environmental Politics, 9(1), pp. 171-202.

Sarre, Philip and Petr Jehlička (2007) Environmental movements in space-time: The Czech and Slovak Republics from Stalinism to post-socialism, Transactions of the Institute of British Geographers, 32(3), pp. 346-362.

Scrieciu, S. Şerban and Lindsay C. Stringer (2008) The transformation of post-communist societies in Central and Eastern Europe and the Former Soviet Union: An economic and ecological sustainability perspective, European Environment, 18(3), pp. 168-185.

Sklenicka, Petr, Vratislava Janovska, Miroslav Salek, Josef Vlasak and Kristina Molnarova (2014) The farmland rental paradox: Extreme land ownership fragmentation as a new form of land degradation, Land Use Policy, 38, pp. 587-593.

Slocock, Brian (1996) The paradoxes of environmental policy in Eastern Europe: The dynamics of policy-making in the Czech Republic, Environmental Politics, 5(3), pp. 501-521.

Slocock, Brian (1999) "Whatever happened to the environment?" Environmental issues

in the eastern enlargement of the European Union, In: Henderson, Karen (ed.), Back to Europe: Central and Eastern Europe and the European Union, UCL Press: London, pp. 151-167.

Snajdr, Edward K. (1998) The children of the greens: New ecological activism in post-socialist Slovakia, Problems of Post-Communism, 45(1), pp. 54-62.

Snajdr, Edward (2001) Grassroots and global visions: Slovakia's post-socialist environmental movement, In: Flam, Helena (ed.), Pink, Purple, Green: Women's, Religious, Environmental and Gay/Lesbian Movements in Central Europe Today, East European Monographs: Boulder, Col., pp. 95-103.

Sotirov, Metodi, Marko Lovric and Georg Winkel (2015) Symbolic transformation of environmental governance: Implementation of EU biodiversity policy in Bulgaria and Croatia between Europeanization and domestic politics, Environment and Planning C: Government and Policy, 33(5), pp. 986-1004.

Staddon, Caedmon (1999) Localities, natural resources and transition in Eastern Europe, Geographical Journal, 165(2), pp. 200-208.

Stanley, T. D. and Hristos Doucouliagos (2012) Meta-Regression Analysis in Economics and Business, Routledge: London and New York.

Stanley, T. D. and Stephen B. Jarrell (1998) Gender wage discrimination bias? A meta-regression analysis, Journal of Human Resources, 33(4), pp. 947-973.

Stringer, Lindsay C. and Jouni Paavola (2013) Participation in environmental conservation and protected area management in Romania: A review of three case studies, Environmental Conservation, 40(2), pp. 138-146.

Sumelius, John, Stefan Bäckman and Timo Sipiläinen (2005) Agri-environmental problems in Central and Eastern European countries before and during the transition, Sociologia Ruralis, 45(3), pp. 153-170.

Švajda, Juraj (2008) Participatory conservation in a post-communist context: The Tatra National Park and Biosphere Reserve, Slovakia, International Journal of Biodiversity Science and Management, 4(4), pp. 200-208.

Tickle, Andrew and Ian Welsh (eds.) (1998) Environment and Society in Eastern Europe, Addison Wesley Longman: Harlow.

Tokunaga, Masahiro (2010) Environmental governance in Russia: The 'closed' pathway to ecological modernization, Environment and Planning A, 42(7), pp. 1686-1704.

Tokunaga, Masahiro (2016) Regime change and environmental reform: A systematic review of research on Central and Eastern Europe, Economic Review, 67(4), pp. 339-353. (Japanese).

Turnock, David (1999) Sustainable rural tourism in the Romanian Carpathians, Geographical Journal, 165(2), pp. 192-199.

Turnock, David (2001) (ed.) East Central Europe and the Former Soviet Union: Environment and Society, Arnold and Oxford University Press: London and New

York.
Turnock, David (2002) The Soviet Union and the Successor States, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 92-116.
Unwin, Tim (1996) Tourist development in Estonia: Images, sustainability, and integrated rural development, Tourism Management, 17(4), pp. 265-276.
Usui, Yoichiro (2013) Normative Politics in the EU Environmental Governance, Nakanishiya Publication: Kyoto. (Japanese).
Vari, Anna and Pal Tamas (eds.) (1993) Environment and Democratic Transition: Policy and Politics in Central and Eastern Europe, Kluwer Academic Publishers: Dordrecht, Boston, Mass.
Vukina, Tomislav, John C. Beghin and Ebru G. Solakoglu (1999) Transition to markets and the environment: Effects of the change in the composition of manufacturing output, Environment and Development Economics, 4, pp 582-598.
Waller, Michael (1998) Geopolitics and the environment in Eastern Europe, Environmental Politics, 7(1), pp. 29-52.
Watzman, Nancy (1992) Velvet revolution no longer green, New Scientist, June 20.
Wilson, Olivia J. and Geoff A. Wilson (2002) East Germany, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 139-156.
Yablokov, Alexey V., Vassily B. Nesterenko and Alexey V. Nesterenko (2009) Chernobyl: Consequences of the Catastrophe for People and the Environment, Blackwell Publishers: Boston, Mass.
Young, Juliette, Caspian Richards, Anke Fischer, Lubos Halada, Tiiu Kull, Antoni Kuzniar, Urmas Tartes, Yordan Uzunov and Allan Watt (2007) Conflicts between biodiversity conservation and human activities in the Central and Eastern European countries, Ambio: A Journal of the Human Environment, Research and Management, 36(7), pp. 545-550.
Zamparutti, Tony and Brendan Gillespie (2000) Environment in the transition towards market economies: An overview of trends in Central and Eastern Europe and the new independent states of the former Soviet Union, Environment and Planning B: Planning and Design, 27(3), pp. 331-347.
Żylicz, Tomasz (1994) In Poland, it's time for economics, Environmental Impact Assessment Review, 14(2-3), pp. 79-94.
Żylicz, Tomasz (1995) Cost-effectiveness of air pollution abatement in Poland, Environmental and Resource Economics, 5(2), pp. 131-149.

Appendix: A list of selected studies for systematic review

Adamova, Eva (1993) Environmental management in Czecho–Slovakia, In: Jancar-

Webster, Barbara (ed.), Environmental Action in Eastern Europe: Responses to Crisis, M.E. Sharpe: Armonk, N.Y., pp. 42-57.

Andersen, Mikael Skou (2002) Ecological modernization or subversion? The effect of Europeanization on Eastern Europe, American Behavioral Scientist, 45(9), pp. 1394-1416.

Anderson, Glen (1994) Addressing mobile sources of air pollution in Poland: Emerging trends and policy options, European Environment, 4(6), pp. 9-14.

Anderson, Glen D. and Boguslaw Fiedor (1997) Environmental charges in Poland, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme, pp. 187-208.

Anderson, Glen D. and Tomasz Żylicz (1999) The role of Polish environmental funds: Too generous or too restrictive?, Environment and Development Economics, 4(1999), pp. 413-448.

Andersson, Magnus (1998) Nine lessons from Poland, International Environmental Affairs, 10(1), pp. 3-7.

Andersson, Magnus (2002) Environmental policy in Poland, In: Weidner, Helmut and Martin Jänicke (eds.), Capacity Building in National Environmental Policy: A Comparative Study of 17 Countries, Springer: Berlin, pp. 347-373.

Andonova, Liliana B. (2002) The challenges and opportunities for reforming Bulgaria's energy sector, Environment: Science and Policy for Sustainable Development, 44(10), pp. 8-19.

Andrews, Richard N. L. (1993) Environmental policy in the Czech and Slovak Republic, In: Vari, Anna and Pal Tamas (eds.), Environment and Democratic Transition: Policy and Politics in Central and Eastern Europe, Kluwer Academic Publishers: Dordrecht, Boston, Mass., pp. 5-48.

Andrews, Richard, Lubomir Paroha, Jan Vozab and Petr Sauer (1994) Decentralized environmental management in the formerly communist states: A case study of Decin, Czech Republic, Environmental Impact Assessment Review, 14(2-3), pp. 111-136.

Archibald, Sandra O., Luana E. Banu and Zbigniew Bochniarz (2004) Market liberalisation and sustainability in transition: Turning points and trends in Central and Eastern Europe, Environmental Politics, 13(1), pp. 266-289.

Archibald, Sandra O., Zbigniew Bochniarz, Masahiko Gemma and Tanja Srebotnjak (2009) Transition and sustainability: Empirical analysis of environmental Kuznets curve for water pollution in 25 countries in Central and Eastern Europe and the Commonwealth of Independent States, Environmental Policy and Governance, 19(2), pp. 73-98.

Atici, Cemal (2009) Carbon emissions in Central and Eastern Europe: Environmental Kuznets curve and implications for sustainable development, Sustainable

Development, 17(3), pp. 155-160.
Auer, Matthew R. (2004a) Estonian environmental reforms: A small nation's outsized accomplishments, In: Auer, Matthew R. (ed.), Restoring Cursed Earth: Appraising Environmental Policy Reforms in Eastern Europe and Russia, Rowman & Littlefield: Lanham, pp. 117-143.
Auer, Matthew R. (2004b) Conclusion: Lessons learned for the road forward, In: Auer, Matthew R. (ed.), Restoring Cursed Earth: Appraising Environmental Policy Reforms in Eastern Europe and Russia, Rowman & Littlefield: Lanham, pp. 175-183.
Baker, Susan (2002a) Environmental politics and transition, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 22-39.
Baker, Susan (2002b) Environmental protection capacity in post-communist Bulgaria, In: Weidner, Helmut and Martin Jänicke (eds.), Capacity Building in National Environmental Policy: A Comparative Study of 17 Countries, Springer: Berlin, pp. 97-122.
Baker, Susan and Bernd Baumgartl (1998) Bulgaria: Managing the environment in an unstable transition, Environmental Politics, 7(1), pp. 183-206.
Baker, Susan and Petr Jehlička (1998) Dilemmas of transition: The environment, democracy and economic reform in East Central Europe - An introduction, Environmental Politics, 7(1), pp. 1-26.
Baumgartl, Bernd (1993) Environmental protest as a vehicle for transition: The case of Ekoglasnost in Bulgaria, In: Vari, Anna and Pal Tamas (eds.), Environment and Democratic Transition: Policy and Politics in Central and Eastern Europe, Kluwer Academic Publishers: Dordrecht, Boston, Mass., pp. 157-175.
Baumgartl, Bernd (1994) "Only" a guideline: The Environmental Action Program for Central and Eastern Europe, Environmental Impact Assessment Review, 14(2-3), pp. 147-156.
Beckmann, Andreas and Henrik Dissing (2004) EU enlargement and sustainable rural development in Central and Eastern Europe, Environmental Politics, 13(1), pp. 135-152.
Bell, Ruth Greenspan and Thomas Adam Kolaja (1993) Capital privatization and the management of environmental liability issues in Poland, The Business Lawyer, 48(3), pp. 943-961.
Bell, Ruth Greenspan (2004a) Further up the learning curve: NGOs from transition to Brussels, Environmental Politics, 13(1), pp. 194-215.
Bell, Ruth Greenspan (2004b) Hungary: Developing institutions to support environmental protection, In: Auer, Matthew R. (ed.), Restoring Cursed Earth: Appraising Environmental Policy Reforms in Eastern Europe and Russia, Rowman & Littlefield: Lanham, pp. 63-92.

Berg, Marni M. (1999) Environmental protection and the Hungarian transition, The Social Science Journal, 36(2), pp. 227-250.

Bluffstone, Randall (1999) Are the costs of pollution abatement lower in Central and Eastern Europe? Evidence from Lithuania, Environment and Development Economics, 4(1999), pp 449-470.

Bochniarz, Zbigniew and Richard S. Bolan (1998) Sustainable institutional design in Poland: Putting environmental protection on a self-financing basis, In Clark, John and Daniel H. Cole (eds.), Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot, pp. 19-29.

Bochniarz, Zbigniew and David Toft (1995) Free trade and the environment in Central Europe, European Environment, 5(2), pp. 52-57.

Boehmer-Christiansen, S. A. (1992) Taken to the cleaners: The fate of the East German energy sector since 1990, Environmental Politics, 1(2), pp. 196-228.

Boehmer-Christiansen, Sonja (1998) Environment-friendly deindustrialization: Impacts of unification on East Germany, In: Tickle, Andrew and Ian Welsh (eds.), Environment and Society in Eastern Europe, Addison Wesley Longman: Harlow, pp. 67-96.

Börzel, Tanja A. (2009) After accession: Escaping the low capacity trap?, In: Börzel, Tanja A. (ed.), Coping with Accession to the European Union: New Modes of Environmental Governance, Palgrave Macmillan: Basingstoke, pp. 192-210.

Börzel, Tanja and Aron Buzogány (2010a) Environmental organisations and the Europeanisation of public policy in Central and Eastern Europe: The case of biodiversity governance, Environmental Politics, 19(5), pp. 708-735.

Börzel, Tanja and Aron Buzogány (2010b) Governing EU accession in transition countries: The role of non-state actors, Acta Politica, 45(1/2), pp. 158-182.

Börzel, Tanja and Adam Fagan (2015) Environmental governance in South East Europe/Western Balkans: Reassessing the transformative power of Europe, Environment and Planning C: Government and Policy, 33(5), pp. 885-900.

Bowman, Margaret and David Hunter (1992) Environmental reforms in post-communist Central Europe: From high hopes to hard reality, Michigan Journal of International Law (921), pp. 921-980.

Branis, Martin (1994) A system of certified environmental impact assessment experts in the Czech Republic, Environmental Impact Assessment Review, 14(2-3), pp. 203-208.

Brieskorn, Ralph, Bert Krikke and Frank Petersen (1996) Municipal environmental policy planning in Poland: A self-regulative approach to solving environmental problems, European Environment, 6(5), pp. 150-155.

Brunenieks, Janis, Aija Kozlovska and Bruce A. Larson (1997) Implementing pollution permits and charges in Latvia, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar:

Cheltenham and Lyme, pp. 75-101.
Bužarovski, Stefan and Aleksandar Stojmilov (2002) Macedonia, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 347-365.
Buzogány, Aron (2009a) Hungary: The tricky path of building environmental governance, In: Börzel, Tanja A. (ed.), Coping with Accession to the European Union: New Modes of Environmental Governance, Palgrave Macmillan: Basingstoke, pp. 123-147.
Buzogány, Aron (2009b) Romania: Environmental governance - Form without substance, In: Börzel, Tanja A. (ed.), Coping with Accession to the European Union: New Modes of Environmental Governance, Palgrave Macmillan: Basingstoke, pp. 169-191.
Buzogány, Aron (2015) Building governance on fragile grounds: Lessons from Romania, Environment and Planning C: Government and Policy, 33(5), pp. 901-918.
Caddy, Joanne (1997a) Harmonization and asymmetry: Environmental policy co-ordination between the European Union and Central Europe, Journal of European Public Policy, 4(3), pp. 318-336.
Caddy, Joanne (1997b) Hollow harmonisation? Closing the implementation gap in Central European environmental policy, European Environment, 7(3), pp. 73-79.
Caddy, Joanne and Anna Vári (2002) Hungary, In: Weidner, Helmut and Martin Jänicke (eds.), Capacity Building in National Environmental Policy: A Comparative Study of 17 Countries, Springer: Berlin, pp. 219-238.
Carmin, JoAnn (2010) NGO capacity and environmental governance in Central and Eastern Europe, Acta Politica, 45(1/2), pp. 183-202.
Carmin, JoAnn and Adam Fagan (2010) Environmental mobilisation and organisations in post-socialist Europe and the Former Soviet Union, Environmental Politics, 19(5), pp. 689-707.
Carmin, JoAnn and Barbara Hicks (2002) International triggering events, transnational networks, and the development of the Czech and Polish environmental movements, Mobilization: An International Journal, 7(3), pp. 305-324.
Carmin, JoAnn and Stacy D. VanDeveer (2004) Enlarging EU environments: Central and Eastern Europe from transition to accession, Environmental Politics, 13(1), pp. 3-24.
Carmin, JoAnn, Barbara Hicks and Andreas Beckmann (2003) Leveraging local action: Grassroots initiatives and transboundary collaboration in the formation of the White Carpathian Euroregion, International Sociology, 18(4), pp. 703-725.
Carter, F. W. and Ewelina Kantowicz (2002) Poland, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 183-206.
Carter, F. W. and David Turnock (2002) Conclusion, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 419-432.

Castán Broto, Vanesa, Claudia Carter and Lucia Elghali (2009) The governance of coal ash pollution in post-socialist times: Power and expectations, Environmental Politics, 18(2), pp. 279-286.

Cent, Joanna, Małgorzata Grodzińska-Jurczak and Agata Pietrzyk-Kaszyńska (2014) Emerging multilevel environmental governance – A case of public participation in Poland, Journal for Nature Conservation, 22(2), pp. 93-102.

Cent, Joanna, Hanna Kobierska, Małgorzata Grodzińska-Jurczak and Sandra Bell (2007) Who is responsible for Natura 2000 in Poland? – A potential role of NGOs in establishing the programme, International Journal of Environment and Sustainable Development, 6(4), pp. 422-435.

Cent, Joanna, Cordula Mertens and Krzysztof Niedziałkowski (2013) Roles and impacts of non-governmental organizations in Natura 2000 implementation in Hungary and Poland, Environmental Conservation, 40(2), pp. 119-128.

Černá, Alena, Eva Tošovská and Pavel Cetkovský (1995) Economic transformation and the environment, Eastern European Economics, 33(3), pp. 5-43.

Císař, Ondřej (2010) Externally sponsored contention: The channelling of environmental movement organisations in the Czech Republic after the fall of communism, Environmental Politics, 19(5), pp. 736-755.

Clarke, Richard (2002a) Bosnia and Hercegovina, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 283-304.

Clarke, Richard (2002b) Yugoslavia, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 396-416.

Cofala, Janusz (1994) Energy reform in Central and Eastern Europe, Energy Policy, 22(6), pp. 486-498.

Cole, Daniel H. and John Clark (1998) Poland's environmental transformation: An Introduction, In: Clark, John and Daniel H. Cole (eds.), Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot, pp. 1-18.

Cummings, Susan (1994) The resolution of environmental protection issues in the context of privatization in Poland, In: Carraro, C., A. Haurie and G. Zaccour (eds.), Environmental Management in a Transition to Market Economy: A Challenge to Governments and Business, Éditions Technip: Paris, pp. 159-174.

Dingsdale, Alan and Dénes Lóczy (2001) The environmental challenge of societal transition in East Central Europe, In: Turnock, David (ed.), East Central Europe and the Former Soviet Union: Environment and Society, Arnold and Oxford University Press: London and New York, pp. 187-199.

Dingsdale, Alan, Imre Nagy, Gyorgy Perczel and David Turnock (2002) Hungary, In:

Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 157-182.

Dissing, Henrik (2003) Sustainable water management in the Baltic Sea region in an enlarged EU: The Water Framework Directive could be the key, Ökologisches Wirtschaften, 1/2003, pp. 22-23.

Dragomirescu, Simina, Cristina Muica and David Turnock (1998) Environmental action during Romania's early transition years, Environmental Politics, 7(1), pp. 162-182.

Drgona, Vladimir (1996) Ecological problems arising from intensive agriculture in western Slovakia, GeoJournal, 38(2), pp. 213-218.

Drgona, Vladimir and David Turnock (2002) Slovakia, In: Turnock, David (ed.), East Central Europe and the Former Soviet Union: Environment and Society, Arnold and Oxford University Press: London and New York, pp. 207-227.

Dreifelds, Juris (1995) The environmental impact of Estonia, Latvia and Lithuania on the Baltic Sea region, In: DeBardeleben, Joan and John Hannigan (ed.), Environmental Security and Quality after Communism: Eastern Europe and the Soviet Successor States, Westview Press: Boulder, Col., pp. 155-176.

Earnhart, Dietrich (2000) Environmental crime and punishment in the Czech Republic: Penalties against firms and employees, Journal of Comparative Economics, 28(2), pp. 379-399.

Earnhart, Dietrich and Lubomir Lizal (2006) Effects of ownership and financial performance on corporate environmental performance, Journal of Comparative Economics, 34(1), pp. 111-129.

Earnhart, Dietrich and Lubomir Lizal (2008) Pollution reductions in the Czech Republic, Post-Communist Economies, 20(2), pp. 231-252.

Eckerberg, Katarina (1994) Environmental problems and policy options in the Baltic states: Learning from the West?, Environmental Politics, 3(3), pp. 445-478.

Elliott, Craig and Andrej Udovč (2005) Nature conservation and spatial planning in Slovenia: Continuity in transition, Land Use Policy, 22(3), pp. 265-276.

Enyedi, György and Viktória Szirmai (1998) Environmental movements and civil society in Hungary, In: Tickle, Andrew and Ian Welsh (eds.), Environment and Society in Eastern Europe, Addison Wesley Longman: Harlow, pp. 146-155.

Evans, Douglas, András Demeter, Peter Gajdoš and Ľuboš Halada (2013) Adapting environmental conservation legislation for an enlarged European Union: Experience from the Habitats Directive, Environmental Conservation, 40(2), pp. 97-107.

Fagan, Adam (2005) Taking stock of civil-society development in post-communist Europe: Evidence from the Czech Republic, Democratization, 12(4), pp. 528-547.

Fagan, Adam (2006) Neither 'north' nor 'south': The environment and civil society in post-conflict Bosnia–Herzegovina, Environmental Politics, 15(5), pp. 787-802.

Fagan, Adam (2010) The new kids on the block – Building environmental governance in

the Western Balkans, Acta Politica, 45(1/2), pp. 203-228.
Fagan, Adam and Indraneel Sircar (2010) Environmental politics in the Western Balkans: River basin management and non-governmental organisation (NGO) activity in Herzegovina, Environmental Politics, 19(5), pp. 808-830.
Fagan, Adam and Indraneel Sircar (2011) Foreign donor assistance and environmental capacity building: Evidence from Serbia and Bosnia–Herzegovina, European Political Science Review, 3(2), pp. 301-320.
Fagan, Adam and Indraneel Sircar (2015) Europeanisation and multi-level environmental governance in a post-conflict context: The gradual development of environmental impact assessment processes in Bosnia–Herzegovina, Environment and Planning C: Government and Policy, 33(5), pp. 919-934.
Fagin, Adam (1994) Environment and transition in the Czech Republic, Environmental Politics, 3(3), pp. 479-494.
Fagin, Adam (1999) The development of civil society in the Czech Republic: The environmental sector as a measure of associational activity, Journal of European Area Studies, 7(1), pp. 91-108.
Fagin, Adam (2001) Environmental capacity building in the Czech Republic, Environment and Planning A, 33(4), pp. 589-607.
Fagin, Adam (2002) The Czech Republic, In: Weidner, Helmut and Martin Jänicke (eds.), Capacity Building in National Environmental Policy: A Comparative Study of 17 Countries, pp. 177-200.
Fagin, Adam and Petr Jehlička (1998), Sustainable development in the Czech Republic: A doomed process?, Environmental Politics, 7(1), pp. 113-128.
Fagin, Adam and Andrew Tickle (2002) Environmental movements, nation states and globalisation, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 40-55.
Fiedor, Bogusław (1998) Privatizing the Polish economy: Benefits and dangers to the natural environment, In Clark, John and Daniel H. Cole (eds.), Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot, pp. 68-80.
Fleischer, Tamás (1993) Jaws on the Danube: Water management, regime change and the movement against the middle Danube hydroelectric dam, International Journal of Urban and Regional Research, 17(3), pp. 429-443.
Francis, Patrick (2000) Financing environmental protection in economies in transition: The role of environmental funds, Environment and Planning B: Planning and Design, 27(3), pp. 365-377.
Francis, Patrick, Jürg Klarer and Bedřich Moldan (1997) Conclusions, In: Klarer, Jürg and Bedřich Moldan (eds.), The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester, pp. 271-280.

Frankland, Erich G. (1995) Green revolutions?: The role of green parties in Eastern Europe's transition, 1989-1994, East European Quarterly, 29(3), pp. 315-345.

Georgieva, Kristalina (1993) Environmental policy in a transition economy: The Bulgarian example, In: Vari, Anna and Pal Tamas (eds.), Environment and Democratic Transition: Policy and Politics in Central and Eastern Europe, Kluwer Academic Publishers: Dordrecht, Boston, Mass., pp. 67-87.

Georgieva, Kristalina and Judith Moore (1997) Bulgaria, In: Klarer, Jürg and Bedřich Moldan (eds.), The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester, pp. 67-106.

Gil, Sebastian and Jerzy Sleszynski (2003) An index of sustainable economic welfare for Poland, Sustainable Development, 11(1), pp. 47-55.

Gille, Zsuzsa (2004) Europeanising Hungarian waste policies: Progress or regression?, Environmental Politics, 13(1), pp. 114-134.

Glenna, Leland L. and Georgi V. Mitev (2009) Global neo-liberalism, global ecological modernization, and a Swine CAFO in rural Bulgaria, Journal of Rural Studies, 25(3), pp. 289-298.

Gliński, Piotr (1998) Polish greens and politics: A social movement in a time of transformation, In Clark, John and Daniel H. Cole (eds.), Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot, pp. 129-153.

Gliński, Piotr (2001) The ecological movement as the element of the civil society, In: Flam, Helena (ed.), Pink, Purple, Green: Women's, Religious, Environmental and Gay/Lesbian Movements in Central Europe Today, East European Monographs: Boulder, Col., pp. 112-119.

Gornaja, Ljuba, Eva Kraav, Bruce A. Larson and Kalle Türk (1997) Estonia's mixed system of pollution permits, standards and charges, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme, pp. 46-74.

Gorton, Matthew, Philip Lowe, Steve Quarrie and Vlade Zarić (2010) European rule adoption in Central and Eastern Europe: A comparative analysis of agricultural water management in Serbia, Environmental Politics, 19(4), pp. 578-598.

Górz, Bronislaw and Włodzimierz Kurek (2001) Sustainable agriculture, In: Turnock, David (ed.), East Central Europe and the Former Soviet Union: Environment and Society, Arnold and Oxford University Press: London and New York, pp. 200-206.

Grodzinska-Jurczak, Malgorzata and Joanna Cent (2011) Expansion of nature conservation areas: Problems with Natura 2000 implementation in Poland?, Environmental Management, 47(1), pp. 11-27.

Guttenbrunner, Sonja (2009) Poland: When environmental governance meets politics, In: Börzel, Tanja A. (ed.), Coping with Accession to the European Union: New Modes of

Environmental Governance, Palgrave Macmillan: Basingstoke, pp. 148-168.
Hall, Derek R. (2000) Evaluating the tourism - Environment relationship: Central and East European experiences, Environment and Planning B: Planning and Design, 27(3), pp. 411-421.
Hall, Derek R. (2002) Albania, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 251-282.
Hanf, Kenneth and Marcel Roijen (1994) Water management networks in Hungary: Network development in a period of transition, Environmental Politics, 3(4), pp. 168-196.
Havlicek, Peter (1997), The Czech Republic: First steps toward a cleaner future, Environment: Science and Policy for Sustainable Development, 39(3), pp. 16-42.
Herrschel, Tassilo and Timothy Forsyth (2001) Constructing a new understanding of the environment under postsocialism, Environment and Planning A, 33(4), pp. 573-588.
Hicks, Barbara (2004) Setting agendas and shaping activism: EU influence on Central and Eastern European environmental movements, Environmental Politics, 13(1), pp. 216-233.
Huba, Mikuláš (1996) Environment and sustainable development 1989-1995, Südost-Europa, 45, 282-294.
Huba, Mikuláš (1997) Slovak Republic, In: Klarer, Jürg and Bedřich Moldan (eds.), The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester, pp. 229-270.
Hughes, Gordon (1991) Are the costs of cleaning up Eastern Europe exaggerated? Economic reform and the environment, Oxford Review of Economic Policy, 7(4), pp. 106-136.
Iojă, Cristian Ioan, Maria Pătroescu, Laurenţiu Rozylowicz, Viorel D. Popescu, Mircea Vergheleţ, Mihai Iancu Zotta, Mihaela Felciuc (2009) The efficacy of Romania's protected areas network in conserving biodiversity, Biological Conservation, 143(11), pp. 2468-2476.
Ioras, Florin (2003) Trends in Romanian biodiversity conservation policy, Biodiversity and Conservation, 12(1), pp. 9–23.
Jancar-Webster, Barbara (1993a) Eastern Europe and the Former Soviet Union, In: Kamieniecki, Sheldon (ed.), Environmental Politics in the International Arena: Movements, Parties, Organizations, and Policy, State University of New York Press: Albany, pp. 199-221.
Jancar-Webster, Barbara (1993c) Conclusion, In: Jancar-Webster, Barbara (ed.), Environmental Action in Eastern Europe: Responses to Crisis, M.E. Sharpe: Armonk, N.Y., pp. 220-225.
Jancar-Webster, Barbara (1995) Environmental degradation and regional instability in

Central Europe, In: DeBardeleben, Joan and John Hannigan (ed.), Environmental Security and Quality after Communism: Eastern Europe and the Soviet Successor States, Westview Press: Boulder, Col., pp. 43-68.

Jancar-Webster, Barbara (1998) Environmental movement and social change in the transition countries, Environmental Politics, 7(1), pp. 69-90.

Jendrośka, Jerzy (1998) Environmental law in Poland, 1989–1996: An assessment of past reforms and future prospects, In Clark, John and Daniel H. Cole (eds.), Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot, pp. 81-115.

Jehlička, Petr (2001) The new subversives - Czech environmentalists after 1989, In: Flam, Helena (ed.), Pink, Purple, Green: Women's, Religious, Environmental and Gay/Lesbian Movements in Central Europe Today, East European Monographs: Boulder, Col., pp. 81-94.

Jordan, Peter (2002) Croatia, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 330-346.

Jorgenson, Andrew K. (2011) Carbon dioxide emissions in Central and Eastern European nations, 1992–2005: A test of ecologically unequal exchange theory, Human Ecology Review, 18(2), pp. 105-114.

Jorgenson, Andrew K., Alina Alekseyko and Vincentas Giedraitis (2014) Energy consumption, human well-being and economic development in Central and Eastern European nations: A cautionary tale of sustainability, Energy Policy, 66, pp. 419-427.

Jorgenson, Andrew K., Brett Clark and Vincentas R. Giedraitis (2012) The temporal (in)stability of the carbon dioxide emissions/economic development relationship in Central and Eastern European nations, Society and Natural Resources: An International Journal, 25(11), pp. 1182-1192.

Juergensmeyer, Julian, Michael Kulesza and Ewa Gmurzynska (1991) Environmental protection in post-socialist Eastern Europe: The Polish example, Hastings International and Comparative Law Review, 14(4), pp. 831-848.

Kahn, Matthew E. (2003) New evidence on Eastern Europe's pollution progress, Topics in Economic Analysis and Policy, 3(1), pp. 1-16.

Karaczun, Zbigniew (2005) Preparing for EU environmental policy in Poland: The case of the Nitrates Directive, Land Use Policy, 22(3), pp. 245-253.

Kay, Kelly (2014) Europeanization through biodiversity conservation: Croatia's bid for EU accession and the Natura 2000 designation process, Geoforum, 54, pp. 80-90.

Kerekes, Sandor (1993) Economics, technology, and environment in Hungary, Technology in Society, 15(1), pp. 137-147.

Kerekes, Sandor and Miklos Bulla (1994) Environmental management in Hungary, Environmental Impact Assessment Review, 14(2-3), pp. 95-101.

Kerekes, Sándor and Károly Kiss (1998) Hungary's accession to the EU: Environmental requirements and strategies, European Environment, 8(5), pp. 161-170.

Kerényi, Szabina and Máté Szabó (2006) Transnational influences on patterns of mobilisation within environmental movements in Hungary, Environmental Politics, 15(5), pp. 803-820.

Klarer, Jürg and Patrick Francis (1997) Regional overview, In: Klarer, Jürg and Bedřich Moldan (eds.), The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester, pp. 1-66.

Kluvánková-Oravská, Tatiana, Veronika Chobotová, Ilona Banaszak, Lenka Slavikova and Sonja Trifunovova (2009) From government to governance for biodiversity: The perspective of Central and Eastern European transition countries, Environmental Policy and Governance, 19(3), pp. 186-196.

Kluvánková-Oravská, Tatiana, Veronika Chobotová and Eva Smolková (2013) The challenges of policy convergence: The Europeanization of biodiversity governance in an enlarging EU, Environment and Planning C: Government and Policy, 31(3), pp. 401-413.

Knorn, Jan, Tobias Kuemmerle, Volker C. Radeloff, William S. Keeton, Vladimir Gancz, Iovu-Adrian Biriş, Miroslav Svoboda, Patrick Griffiths, Adrian Hagatis and Patrick Hostert (2013) Continued loss of temperate old-growth forests in the Romanian Carpathians despite an increasing protected area network, Environmental Conservation, 40(2), pp. 182-193.

Knorn, Jan, Tobias Kuemmerle, Volker C. Radeloff, Alina Szabo, Marcel Mindrescu, William S. Keeton, Ioan Abrudan, Patrick Griffiths, Vladimir Gancz and Patrick Hostert (2012) Forest restitution and protected area effectiveness in post-socialist Romania, Biological Conservation, 146(1), pp. 204-212.

Kolk, Ans and Ewout van der Weij (1998) Financing environmental policy in East Central Europe, Environmental Politics, 7(1), pp. 53-68.

Kramer, John M. (1995) Energy and the environment in Eastern Europe, In: DeBardeleben, Joan and John Hannigan (ed.), Environmental Security and Quality after Communism: Eastern Europe and the Soviet Successor States, Westview Press: Boulder, Col., pp. 89-104.

Kramer, John M. (1999) Energy and environment in Eastern Europe, Problems of Post-Communism, 46(6), pp. 47-56.

Krawatzky, Axel (1994) The environment in Romania's economic transition, In: Carraro, C., A. Haurie and G. Zaccour (eds.), Environmental Management in a Transition to Market Economy: A Challenge to Governments and Business, Éditions Technip: Paris, pp. 253-289.

Křenová, Zdenka and Pavel Kindlmann (2014) Natura 2000 – Solution for Eastern Europe or just a good start? The Šumava National Park as a test case, Biological

Conservation, 186, pp. 268-275.
Kronenberg, Jakub and Tomasz Bergier (2012) Sustainable development in a transition economy: Business case studies from Poland, Journal of Cleaner Production 26, pp. 18-27.
Kružíková, Eva (2004), EU accession and legal change: Accomplishments and challenges in the Czech case, Environmental Politics, 13(1), pp. 99-113.
Legro, Susan and Matthew R. Auer (2004) Environmental reforms in the Czech Republic: Uneven progress after 1989, In: Auer, Matthew R. (ed.), Restoring Cursed Earth: Appraising Environmental Policy Reforms in Eastern Europe and Russia, Rowman & Littlefield: Lanham, pp. 37-62.
Lehoczki, Zsuzsa and Zsuzsanna Balogh (1997) Hungary, In: Klarer, Jürg and Bedřich Moldan (eds.), The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester, pp. 131-168.
Lubiński, Marek (1994) Ecological consequences of economic transition in Poland, In: Carraro, C., A. Haurie and G. Zaccour (eds.), Environmental Management in a Transition to Market Economy: A Challenge to Governments and Business, Éditions Technip: Paris, pp. 205-213.
Marshall, Patrick G. (1991) The greening of Eastern Europe: Devastated countries try to reverse communism's environmental toll, The CQ Researcher, 1(26), pp. 849-872.
Matev, Nikola and Nino I. Nivov (1997) Implementation of pollution charges and fines in Bulgaria, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme, pp. 221-231.
Mazurski, Krzysztof R. (1997) Poland’s national parks: Problems and prospects, Forum for Applied Research and Public Policy, Summer, pp. 111-114.
Mazurski, Krzysztof R. (1999) Environmental problems in the Sudetes, Poland, GeoJournal, 46(3), pp. 271-277.
Meyer, Andrew and Grzegorz Pac (2013) Environmental performance of state-owned and privatized Eastern European energy utilities, Energy Economics, 36, pp. 205-214.
Mikulcak, Friederike, Jens Newig, Andra I. Milcu, Tibor Hartel and Joern Fischer (2013) Integrating rural development and biodiversity conservation in Central Romania, Environmental Conservation, 40(2), pp. 129-137.
Millard, Frances (1998) Environmental policy in Poland, Environmental Politics, 7(1), pp. 145-161.
Miskinis, Vaclovas, Jurgis Vilemas and Inga Konstantinaviciute (2006) Analysis of energy consumption and energy intensity indicators in Central and Eastern European countries, Energy Studies Review, 14(2), pp. 171-188.
Missfeldt, Fanny and Arturo Villavicenco (2000) The economies in transition as part of the climate regime: Recent developments, Environment and Planning B: Planning and

Design, 27(3), pp. 379-392.
Mitsuda, Hisayoshi and Konstantin Pashev (1995) Environmentalism as ends or means? The rise and political crisis of the environmental movement in Bulgaria, Capitalism Nature Socialism, 6(1), pp. 87-111.
Moldan, Bedřich (1997) Czech Republic, In: Klarer, Jürg and Bedřich Moldan (eds.), The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester, pp. 107-129.
Morris, Glenn E., József Tiderenczl and Péter Kovács (1997) Environmental emission charges and air quality protection in Hungary: Recent practice and future prospects, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme, pp. 156-186.
Muica, Cristina and Ion Zavoianu (1996) The ecological consequences of privatisation in Romanian agriculture, GeoJournal, 38(2), pp. 202-212.
Niedziałkowski, Krzysztof, Jouni Paavola and Bogumiła Jędrzejewska (2012) Governance of biodiversity in Poland before and after the accession to the EU: The tale of two roads, Environmental Conservation, 40(2), pp. 108-118.
Novac, M. Cristina and Matthew R. Auer (2004) Forestry resources in transition: The Romanian experience, In: Auer, Matthew R. (ed.), Restoring Cursed Earth: Appraising Environmental Policy Reforms in Eastern Europe and Russia, Rowman & Littlefield: Lanham, pp. 93-115.
Nowicki, Maciej (1997) Poland, In: Klarer, Jürg and Bedřich Moldan (eds.), The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester, pp. 193-227.
Obradovic-Wochnik, Jelena and Anneliese Dodds (2015) Environmental governance in a contested state: The influence of European Union and other external actors on energy sector regulation in Kosovo, Environment and Planning C: Government and Policy, 33(5), pp. 935-949.
O'Toole, Laurence J., Jr. and Kenneth Hanf (1998) Hungary: Political transformation and environmental challenge, Environmental Politics, 7(1), pp. 93-112.
Owen, Thomas H., Jozef Myjavec and Danka Jassikova (1997) Implementation of pollution charge systems in a transition economy: The case of Slovakia, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme, pp. 209-220.
Panayotou, Theodore, Randall A. Bluffstone and Vladislav Balaban (1994) Lemons and liabilities: Privatization, foreign investment, and environmental liability in Central and Eastern Europe, Environmental Impact Assessment Review, 14(2-3), pp. 157-168.
Pataki, György (2009) Ecological modernization as a paradigm of corporate sustainability, Sustainable Development, 17(2), pp. 82-91.

Pavlínek, Petr (2002) Czech Republic, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 119-138.

Pavlínek, Petr and John Pickles (1999) Environmental change and post-communist transformations in the Czech Republic and Slovakia, Post-Soviet Geography and Economics, 40(5), pp. 354-382.

Pavlínek, Petr and John Pickles (2004) Environmental pasts/environmental futures in post-socialist Europe, Environmental Politics, 13(1), pp. 237-265.

Peszko, Grzegorz and Tomasz Zylicz (1998) Environmental financing in European economies in transition, Environmental and Resource Economics, 11(3-4), pp. 521-538.

Persanyi, Miklos (1993) Red pollution, green evolution, revolution in Hungary: Environmentalists and societal transition, In: Jancar-Webster, Barbara (ed.), Environmental Action in Eastern Europe: Responses to Crisis, M.E. Sharpe: Armonk, N.Y., pp. 134-157.

Péter, Judit (2007) Law and sustainability: The impact of the Hungarian legal structure on the sustainability of the water services, Utilities Policy, 15(2), pp. 121-133.

Peter, Sandor (1993) New directions in environmental management in Hungary, In: Jancar-Webster, Barbara (ed.), Environmental Action in Eastern Europe: Responses to Crisis, M.E. Sharpe: Armonk, N.Y., pp. 28-41.

Pickles, John, Mariana Nikolova, Caedman Staddon, Stefan Velev, Zoya Mateeva and Anton Popov (2002) Bulgaria, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 305-329.

Pickvance, Christopher G. (1999) Democratisation and the decline of social movements: The effects of regime change on collective action in Eastern Europe, Southern Europe and Latin America, Sociology, 33(2), pp. 353-372.

Pickvance, Christopher G. (2000) Local-level influences on environmental policy implementation in Eastern Europe: A theoretical framework and a Hungarian case study, Environment and Planning C: Government and Policy, 18(4), pp. 469-485.

Pickvance, Katy with Luca Gabor (2001) Green future - in Hungary?, In: Flam, Helena (ed.), Pink, Purple, Green: Women's, Religious, Environmental and Gay/Lesbian Movements in Central Europe Today, East European Monographs: Boulder, Col., pp. 104-111.

Plut, Dušan, Metka Špes and Valentina Brečko (2002) Slovenia, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 228-247.

Podoba, Juraj (1998) Rejecting green velvet: Transition, environment and nationalism in Slovakia, Environmental Politics, 7(1), pp. 129-144.

Prazan, Jaroslav, Tomas Ratinger and Veronika Krumalova (2005) The evolution of nature conservation policy in the Czech Republic - Challenges of Europeanisation in the White Carpathians protected landscape area, Land Use Policy 22(3), pp. 235-243.

Pryde, Philip. R. (1995) The environmental implications of republic sovereignty, In: Pryde, Philip. R. (ed.), Environmental Resources and Constraints in the Former Soviet Republics, Westview Press: Boulder, Col., pp. 1-23.

Roberts, Lesley and Fiona Simpson (1999) Developing partnership approaches to tourism in Central and Eastern Europe, Journal of Sustainable Tourism, 7(3-4), pp. 314-330.

Rink, Dieter assisted by Saskia Gerber (2001) Institutionalization instead of mobilization - The environmental movement in Eastern Germany, In: Flam, Helena (ed.), Pink, Purple, Green: Women's, Religious, Environmental and Gay/Lesbian Movements in Central Europe Today, East European Monographs: Boulder, Col., pp. 120-131.

Rinkevicius, Leonardas (2000a) Ecological modernisation as cultural politics: Transformations of civic environmental activism in Lithuania, Environmental Politics, 9(1), pp. 171-202.

Rinkevicius, Leonardas (2000b) The ideology of ecological modernization in 'double-risk' societies: A case study of Lithuanian environmental policy, In: Spaargaren, Gert, Arthur P. J. Mol and Frederick H. Buttel (eds.), Environment and Global Modernity, Sage Publications: London, pp. 163-185.

Sarre, Philip and Petr Jehlička (2007) Environmental movements in space-time: The Czech and Slovak Republics from Stalinism to post-socialism, Transactions of the Institute of British Geographers, 32(3), pp. 346-362.

Scrieciu, S. Şerban and Lindsay C. Stringer (2008) The transformation of post-communist societies in Central and Eastern Europe and the Former Soviet Union: An economic and ecological sustainability perspective, European Environment, 18(3), pp. 168-185.

Semėnienė, Daiva, Randall Bluffstone and Linas Čekanavičius (1997) The Lithuanian pollution charge system: Evaluation and prospects for the future, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme, pp. 102-127.

Serafin, Rafał and Maciej Żebrowski (1994) Environmental management in Polish economic and political reforms, In: Carraro, C., A. Haurie and G. Zaccour (eds.), Environmental Management in a Transition to Market Economy: A Challenge to Governments and Business, Éditions Technip: Paris, pp. 183-193.

Simpson, Fiona (1999) Tourist impact in the historic centre of Prague: Resident and visitor perceptions of the historic built environment, The Geographical Journal, 165(2), pp. 173-183.

Sklenicka, Petr, Vratislava Janovska, Miroslav Salek, Josef Vlasak and Kristina Molnarova (2014) The farmland rental paradox: Extreme land ownership fragmentation as a new form of land degradation, Land Use Policy, 38, pp. 587-593.

Śleszynski, Jerzy (1996) Economic instruments in environmental policy: A profile of Poland, Environmental Environment, 6(4), pp. 126-134.

Śleszyński, Jerzy (1998) Economic instruments in Polish environmental policy, In Clark, John and Daniel H. Cole (eds.), Environmental Protection in Transition: Economic, Legal and Socio-Political Perspectives on Poland, Ashgate: Aldershot, pp. 30-67.

Slocock, Brian (1996a) The paradoxes of environmental policy in Eastern Europe: The dynamics of policy-making in the Czech Republic, Environmental Politics, 5(3), pp. 501-521.

Slocock, Brian (1996b) Regional management of industrial pollution in Eastern Europe: Air quality in Katowice Province, Poland, Environmental Environment, 6(1), pp. 21-27.

Slocock, Brian (1999) "Whatever happened to the environment?": Environmental issues in the eastern enlargement of the European Union, In: Henderson, Karen (ed.), Back to Europe: Central and Eastern Europe and the European Union, UCL Press: London, pp. 151-167.

Snajdr, Edward K. (1998) The children of the greens: New ecological activism in post-socialist Slovakia, Problems of Post-Communism, 45(1), pp. 54-62.

Snajdr, Edward (2001) Grassroots and global visions: Slovakia's post-socialist environmental movement, In: Flam, Helena (ed.), Pink, Purple, Green: Women's, Religious, Environmental and Gay/Lesbian Movements in Central Europe Today, East European Monographs: Boulder, Col., pp. 95-103.

Sotirov, Metodi, Marko Lovric and Georg Winkel (2015) Symbolic transformation of environmental governance: Implementation of EU biodiversity policy in Bulgaria and Croatia between Europeanization and domestic politics, Environment and Planning C: Government and Policy, 33(5), pp. 986-1004.

Sova, Robert, Christophe Rault, Guglielmo Maria Caporale and Anamaria Sova (2014) Improving environmental performance: A challenge for Romania, Environmental and Resource Economics, 57(3), pp. 431-452.

Staddon, Caedmon (1998) Democratisation and the politics of water in Bulgaria: Local protest and the 1994–5 Sofia water crisis, In: Pickles, John and Adrian Smith (eds.), Theorising Transition: The Political Economy of Post-Communist Transformations, Routledge: London and New York, pp. 347-372.

Staddon, Caedmon (1999) Localities, natural resources and transition in Eastern Europe, The Geographical Journal, 165(2), pp. 200-208.

Staddon, Caedmon (2000) Restitution of forest property in post-communist Bulgaria, Natural Resources Forum, 24(3), pp. 237-246.

Staddon, Caedmon and David Turnock (2001) Conclusion: Environmental geographies of post-socialist Transition, In: Turnock, David (ed.), East Central Europe and the Former Soviet Union: Environment and Society, Arnold and Oxford University Press:

London and New York, pp. 231-246.

Steenge, Albert E. (1991) A survey of environmental problems in Eastern Europe, Structural Change and Economic Dynamics, 2(2), pp. 315-332.

Stepanek, Zdenek (1997) Integration of pollution charge systems with strict performance standards: The experience of the Czech Republic, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme, pp. 144-155.

Stringer, Lindsay C. and Jouni Paavola (2013) Participation in environmental conservation and protected area management in Romania: A review of three case studies, Environmental Conservation, 40(2), pp. 138-146.

Sumelius, John, Stefan Bäckman and Timo Sipiläinen (2005) Agri-environmental problems in Central and Eastern European countries before and during the transition, Sociologia Ruralis, 45(3), pp. 153-170.

Švajda, Juraj (2008) Participatory conservation in a post-communist context: The Tatra National Park and Biosphere Reserve, Slovakia, International Journal of Biodiversity Science and Management, 4(4), pp. 200-208.

Szacki, Jakub, Irmina Głowacka, Anna Liro and Barbara Szulczewska (1993) Political and social Changes in Poland: An environmental perspective, In: Jancar-Webster, Barbara (ed.), Environmental Action in Eastern Europe: Responses to Crisis, M.E. Sharpe: Armonk, N.Y., pp. 11-27.

Szirmai, Viktoria (1993) The structural mechanisms of the organization of ecological-social movements in Hungary, In: Vari, Anna and Pal Tamas (eds.), Environment and Democratic Transition: Policy and Politics in Central and Eastern Europe, Kluwer Academic Publishers: Dordrecht, Boston, Mass., pp. 146-156.

Taylor, Andrew (2015) Environmental governance in Croatia and Macedonia: Institutional creation and evolution, Environment and Planning C: Government and Policy, 33(5), pp. 969-985.

Tickle, Andrew (2000) Regulating environmental space in socialist and post-socialist systems: Nature and landscape conservation in the Czech Republic, Journal of European Area Studies, 8(1), pp. 57-78.

Tickle, Andrew and Richard Clarke (2000) Nature and landscape conservation in transition in Central and South-Eastern Europe, European Environment, 10(5), pp. 211-219.

Tickle, Andrew and Josef Vavroušek (1998) Environmental politics in the former Czechoslovakia, In: Tickle, Andrew and Ian Welsh (eds.), Environment and Society in Eastern Europe, Addison Wesley Longman: Harlow, pp. 114-145.

Tickle, Andrew and Ian Welsh (1998) Environmental politics, civil society and post-communism, In: Tickle, Andrew and Ian Welsh (eds.), Environment and Society in Eastern Europe, Addison Wesley Longman: Harlow, pp. 156-185.

Turnock, David (1999) Sustainable rural tourism in the Romanian Carpathians, The Geographical Journal, 165(2), pp. 192-199.

Turnock, David (2001) Environmental protection: The Carpathian ecoregion, In: Turnock, David (ed.), East Central Europe and the Former Soviet Union: Environment and Society, Arnold and Oxford University Press: London and New York, pp. 216-229.

Turnock, David (2002a) The Soviet Union and the Successor States, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 92-116.

Turnock, David (2002b) Romania, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 366-395.

Turnock, David and F. W. Carter (2002), Introduction, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 3-21.

Unwin, Tim (1996) Tourist development in Estonia: Images, sustainability, and integrated rural development, Tourism Management, 17(4), pp. 265-276.

Vavrousek, Josef (1994) Environmental management in Czechoslovakia and succession states, Environmental Impact Assessment Review, 14(2-3), pp. 103-110.

Viguier, Laurent (1999) Emissions of SO_2, NO_x and CO_2 in transition economies: Emission inventories and Divisia index analysis, The Energy Journal, 20(2), pp. 59-87.

Vilnitis, Valts (1997) Latvia, In: Klarer, Jürg and Bedřich Moldan (eds.), The Environmental Challenge for Central European Economies in Transition, Wiley: Chichester, pp. 169-192.

Vukina, Tomislav, John C. Beghin and Ebru G. Solakoglu (1999) Transition to markets and the environment: Effects of the change in the composition of manufacturing output, Environment and Development Economics, 4, pp 582-598.

Waller, Michael (1998) Geopolitics and the environment in Eastern Europe, Environmental Politics, 7(1), pp. 29-52.

Waller, Michael and Frances Millard (1992) Environmental politics in Eastern Europe, Environmental Politics, 1(2), pp. 159-185.

Warner, Jonathan (1999) Poland: The environment in transition, The Geographical Journal, 165(2), pp. 209-221.

Wilson, Olivia J. and Geoff A. Wilson (2002) East Germany, In: Carter, F. W. and David Turnock (eds.), Environmental Problems of East Central Europe, Second edition, Routledge: London and New York, pp. 139-156.

Young, Juliette, Caspian Richards, Anke Fischer, Lubos Halada, Tiiu Kull, Antoni Kuzniar, Urmas Tartes, Yordan Uzunov and Allan Watt (2007) Conflicts between biodiversity conservation and human activities in the Central and Eastern European

countries, Ambio: A Journal of the Human Environment, Research and Management, 36(7), pp. 545-550.

Zamparutti, Tony and Brendan Gillespie (2000) Environment in the transition towards market economies: An overview of trends in Central and Eastern Europe and the new independent states of the former Soviet Union, Environment and Planning B: Planning and Design, 27(3), pp. 331-347.

Zellei, Anett, Matthew Gorton, and Philip Lowe (2005) Agri-environmental policy systems in transition and preparation for EU membership, Land Use Policy, 22(3), pp. 225-234.

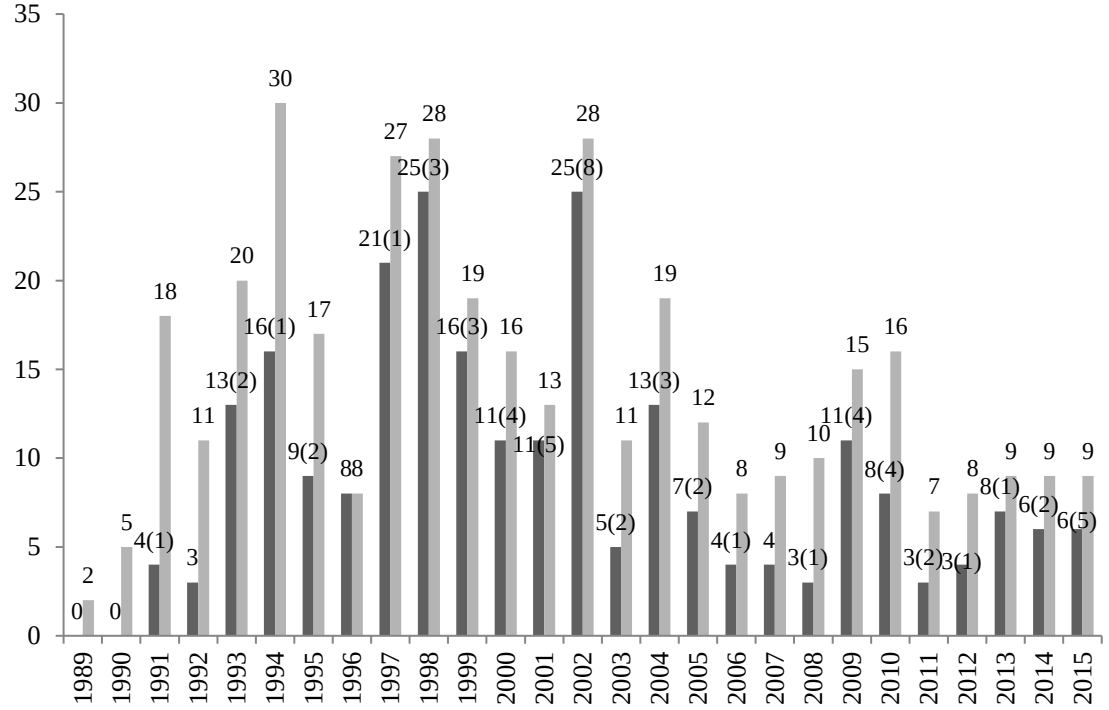
Zemeckis, Romualdas, Sigitas Lazauskas and Matthew Gorton (2005) The Europeanisation of agri-environmental policy: A case study of water quality in the Lithuanian rarst zone, Land Use Policy, 22(3), pp. 255-264.

Zinnes, Clifford F. (1997) The road to creating an integrated pollution charge and permitting system in Romania, In: Bluffstone, Randall and Bruce A. Larson (eds.), Controlling Pollution in Transition Economies: Theories and Methods, Edward Elgar: Cheltenham and Lyme, pp. 232-252.

Żylicz, Tomasz (1994) In Poland, it’s time for economics, Environmental Impact Assessment Review, 14(2-3), pp. 79-94.

Żylicz, Tomasz (1995) Cost-effectiveness of air pollution abatement in Poland, Environmental and Resource Economics, 5(2), pp. 131-149.

Figure 1. Publication year and number of publications of the literature (left: number of selection, right: number of search)

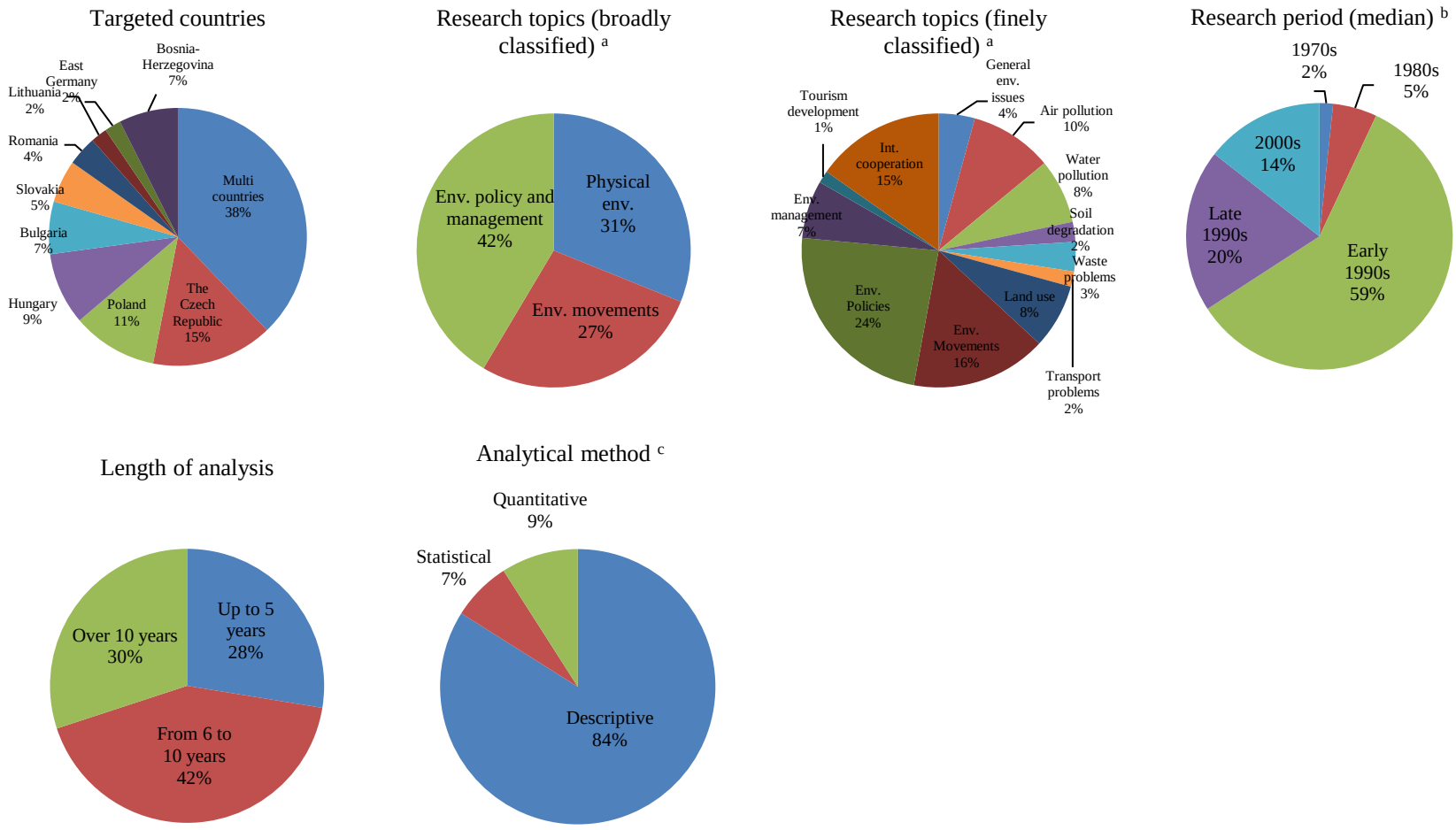


Note: Figures in parentheses denote the numbers of studies where non-CEE countries, mainly FSU countries and the former Yugoslavia, are studied.

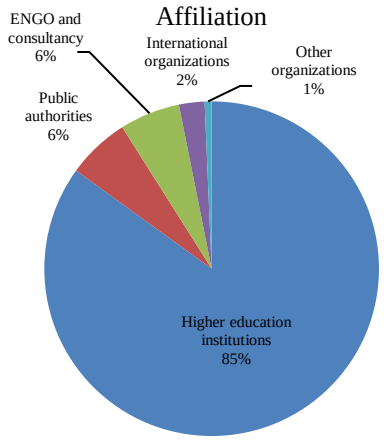
Source: Author's illustration

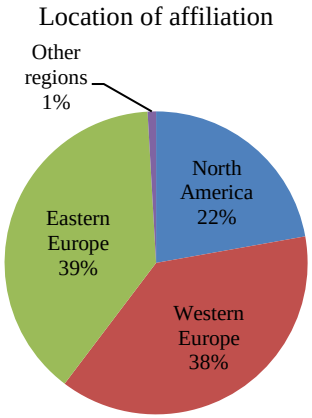
Figure 2. Basic characteristics of selected studies

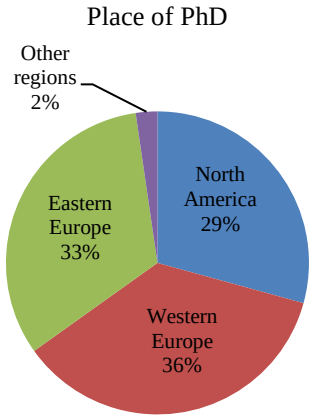
(a) Research attributes

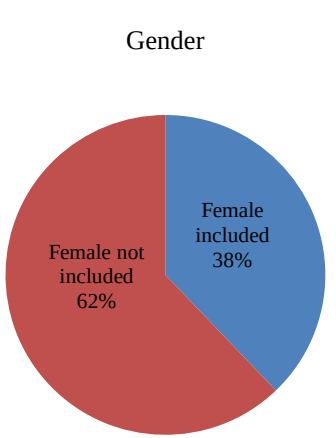


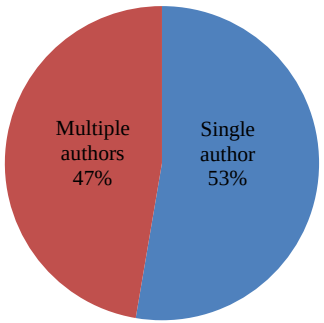
(b) Authors' attributes

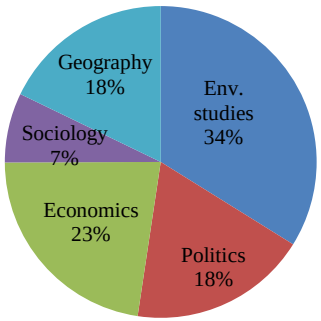






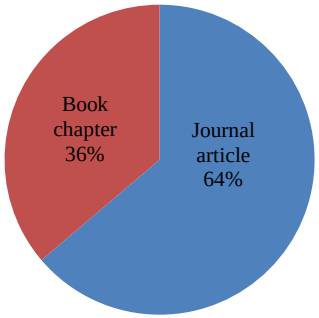




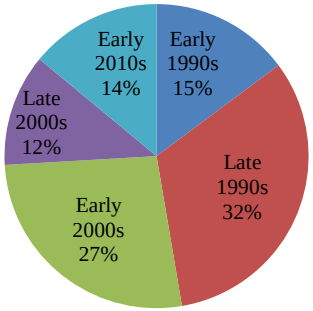


(c) Media attributes

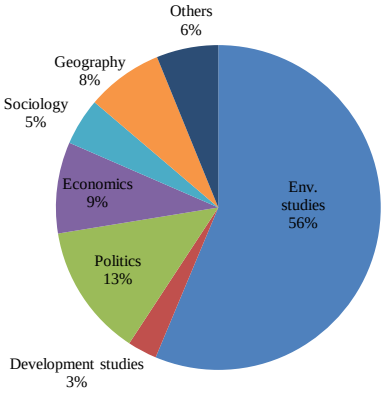
Publication source



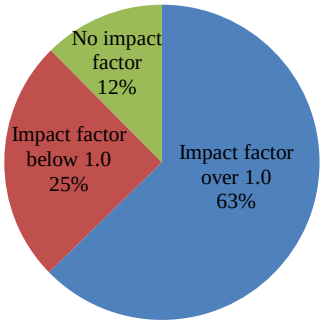
Publication year



Research area [e]

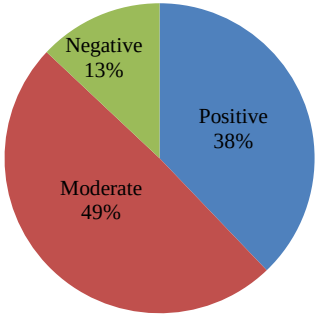


Research level [f]

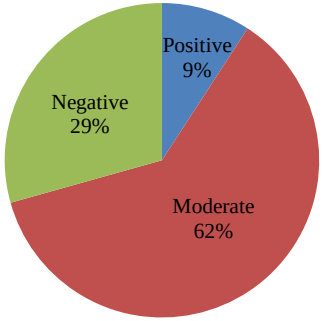


(d) Other attributes

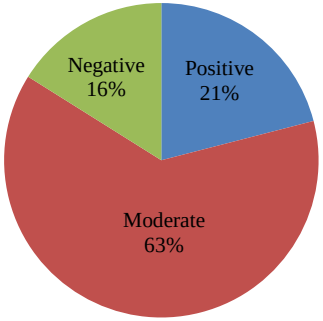
Evaluation of EU accession/support



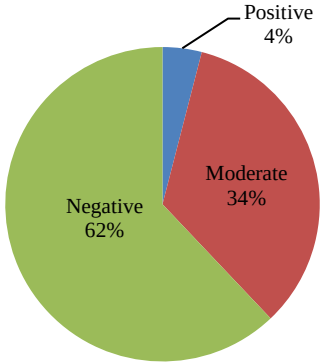
Evaluation of environmental institutions



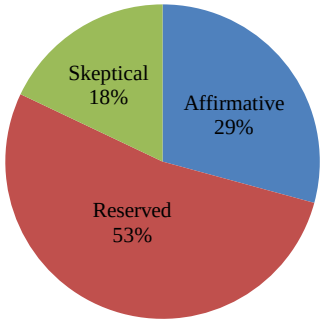
Evaluation of environmental movements



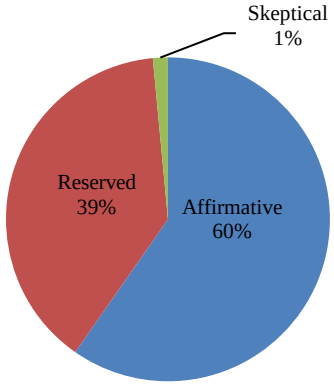
Evaluation of environmental issues under socialism



Appraisal of market economy [g]



Appraisal of democracy [g]



Notes:

[a] Broadly classified research topics are not strictly compatible with finely classified research topics due to a difference in coding.

[b] The median is obtained by dividing the sum of the first year and the final year of analysis by two.

[c] Quantitative analysis, statistical analysis, and descriptive analysis denote a study with an econometrical method, a study using statistical database, and a study with a qualitative method, respectively.

[d] Classification is based on information regarding the names of authors' affiliations, their academic degrees, and their past research activities.

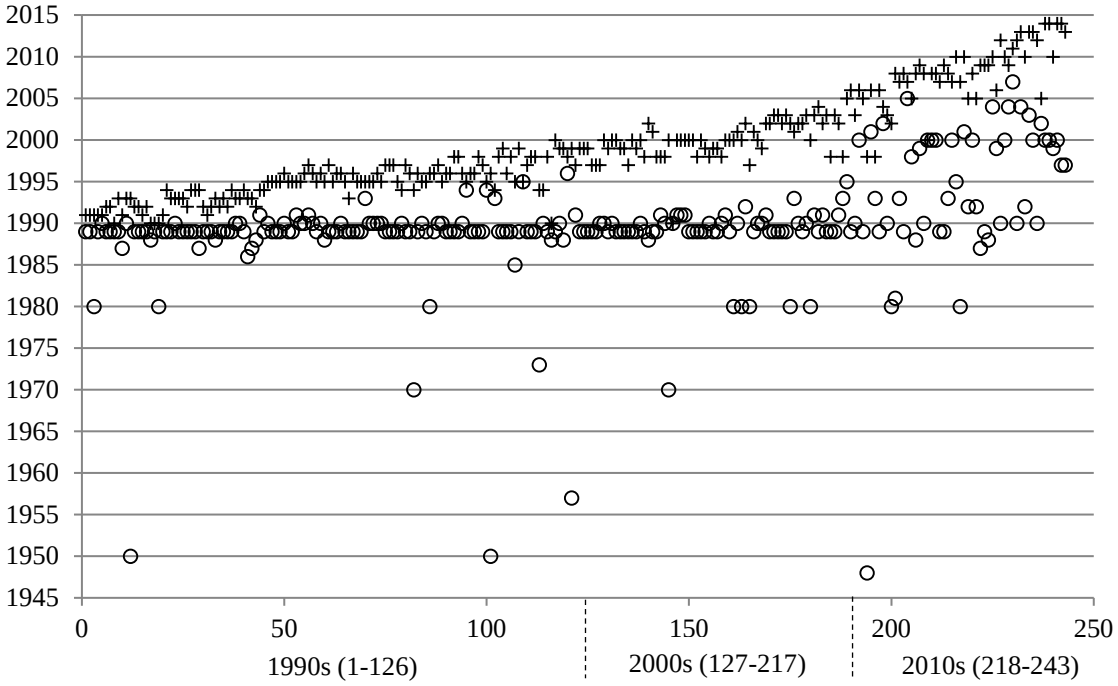
[e] Classification is based on information from the 2012 Journal Citation Reports for academic journals and keywords (tags) available from search engines and publishers for books.

[f] This refers to the 2012 Journal Citation Reports for a total of 155 papers published in academic journals.

[g] This refers to authors' normative value judgments on market principles (marketization) or democracy (democratization), not to their analytical assessment of the progress of economic or political reforms.

Source: Author's illustration

Figure 3. First year (○) and last year (+) of the analysis period of selected studies



Note: Vertical and horizontal lines denote first and last years of the analysis period of each study and the cumulative number of studies, respectively. They are placed in chronological order from left to right.

Source: Author's illustration

Table 1. Research topics (finely classified) of selected studies and authors' academic disciplines [a, b]

	Environmental studies	Politics	Economics	Sociology	Geography	Total
General environmental issues	14	6	13	3	12	48
Air pollution	25	22	34	4	16	101
Water pollution	26	14	23	2	17	82
Soil degradation	7	2	8	0	9	26
Waste problems	12	6	8	3	10	39
Transport problems	7	5	2	0	3	17
Land use	38	5	10	6	27	86
Environmental movements	48	56	15	22	25	166
Environmental policies (public sector)	76	58	57	20	37	248
Environmental management (private sector)	31	6	26	2	11	76
Tourism development	3	0	2	0	8	13
International cooperation	53	51	17	14	23	158
Total	340	231	215	76	198	1060

Notes:

[a] Multi-coding corresponding to finely classified research topics

[b] Chi-square test for independence: $\chi 2 = 149.168$ and Cramer's V: $V = 0.265$

Source: Author's calculation

Table 2. Cross table for four-point scale evaluations on environmental reform and basic characteristics (real number) [a]

	Four-point scale evaluations of environmental reform					Statistical test [b]
	Fully support	Conditionally support	Difficult to support	Hardly support	Total	Upper: χ2 Lower: Cramer's V
Research attributes						
(a) Number of targeted countries						
Multi countries	12	35	40	5	92	
Specific country	13	61	58	19	151	4.494
Total	25	96	98	24	243	0.136
(b) Region of targeted countries [c]						
EU CEE countries	25	91	90	21	227	
Non-EU CEE countries	3	19	17	4	43	
FSU countries	4	12	14	4	34	1.207
Total	32	122	121	29	304	0.063
(c) Research topics (broadly classified) [c]						
Physical environment	16	62	65	19	162	
Environmental Movements	14	50	67	12	143	
Environmental policy and management	17	92	86	21	216	3.924
Total	47	204	218	52	521	0.087
(d) Research topics (finely classified) [c]						
General environmental issues	2	13	19	4	38	
Air pollution	9	43	30	5	87	
Water pollution	3	33	28	4	68	
Waste problems	3	16	11	1	31	
Land use	6	25	28	9	68	
Other issues	2	9	16	2	29	
Environmental movements	7	23	32	6	68	
Environmental policies (public sector)	14	51	66	12	143	
Environmental management (private sector)	16	89	85	20	210	
International cooperation	3	32	19	7	61	26.543
Total	8	53	64	11	136	0.173
(e) Research period (median)						
1970s and 1980s	3	4	9	1	17	
Early 1990s	11	66	55	11	143	
Late 1990s	5	15	22	6	48	
2000s	6	11	12	6	35	12.178
Total	25	96	98	24	243	0.158
(f) Length of analysis						
Up to 5 years	3	34	26	4	67	
From 6 to 10 years	12	40	40	11	103	
Over 10 years	10	22	32	9	73	8.851
Total	25	96	98	24	243	0.135
(g) Analytical method						
Descriptive	17	81	89	17	204	
Statistical and quantitative	8	15	9	7	39	11.227 **
Total	25	96	98	24	243	0.152
Authors' attributes						
(h) Affiliation [c]						
Higher education institutions	25	83	87	24	219	
Other organizations	4	26	17	3	50	3.780
Total	29	109	104	27	269	0.119
(i) Location of affiliation [c]						
North America	13	26	26	6	71	
Western Europe	7	44	50	14	115	
Eastern Europe	12	43	33	12	100	8.686
Total	32	113	109	32	286	0.123
(j) Place of PhD [c]						
North America	14	23	24	7	68	
Western Europe	4	28	33	10	75	
Eastern Europe	10	34	20	10	74	0.080 *
Total	28	85	77	27	217	0.161
(k) Gender						
Female included	11	31	41	9	92	
Female not included	14	65	57	15	151	2.326
Total	25	96	98	24	243	0.098
(l) Number of authors						
Single author	8	51	57	12	128	
Multiple authors	17	45	41	12	115	5.548
Total	25	96	98	24	243	0.151
(m) Academic discipline [c]						
Environmental studies	9	33	29	10	81	
Politics	8	21	32	6	67	
Economics	8	33	23	3	67	
Sociology	7	10	9	4	30	
Geography	3	15	19	7	44	14.588
Total	35	112	112	30	289	0.159

	Four-point scale evaluations of environmental reform					Statistical test [b]
	Fully support	Conditionally support	Difficult to support	Hardly support	Total	Upper: χ2 Lower: Cramer's V
Media attributes						
(n) Publication source						
Journal article	20	53	61	21	155	
Book chapter	5	43	37	3	88	11.847 ***
Total	25	96	98	24	243	0.156
(o) Publication year						
Early 1990s	0	19	15	2	36	
Late 1990s	6	35	31	7	79	
Early 2000s	9	23	29	4	65	
Late 2000s and early 2010s	10	19	23	11	63	16.616 *
Total	25	96	98	24	243	0.185
(p) Research area [c]						
Environmental studies	16	80	77	19	192	
Politics	7	14	17	7	45	
Economics	5	12	12	2	31	
Geography	2	9	13	2	26	
Others	5	14	19	9	47	10.500
Total	35	129	138	39	341	0.124
(q) Research level [d]						
Impact factor over 1.0	11	40	42	18	111	
Impact factor below 1.0	9	13	19	3	44	
No impact factor	2	7	12	1	22	8.259
Total	22	60	73	22	177	0.153
Other attributes						
(r) Evaluation of EU accession/support						
Positive	16	32	17	2	67	
Moderate	1	32	47	7	87	
Negative	1	5	11	6	23	41.637 ***
Total	18	69	75	15	177	0.343
(s) Evaluation of environmental institutions						
Positive	10	9	1	0	20	
Moderate	7	77	46	4	134	
Negative	0	7	40	17	64	116.265 ***
Total	17	93	87	21	218	0.516
(t) Evaluation of environmental movements						
Positive	10	15	5	0	30	
Moderate	4	31	46	9	90	
Negative	0	5	15	3	23	36.210 ***
Total	14	51	66	12	143	0.356
(u) Evaluation of environmental issues under socialism						
Positive and moderate	6	23	32	5	66	
Negative	8	49	40	11	108	2.841
Total	14	72	72	16	174	0.090
(v) Appraisal of market economy						
Affirmative	12	26	18	1	57	
Reserved	4	48	41	10	103	
Skeptical	2	6	20	7	35	29.628 ***
Total	18	80	79	18	195	0.276
(w) Appraisal of democracy						
Affirmative	10	29	34	7	80	
Reserved and skeptical	1	20	28	5	54	5.077
Total	11	49	62	12	134	0.138
Grand total	25	96	98	24	243	

Notes:

[a] See Note 19 in the text.

[b] ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively for chi-square test for independence.

[c] Multi-coding corresponding to items in each category

[d] Applicable only for journal articles

Source: Author's estimation

Table 3. Descriptive statistics of dependent and independent variables for ordinary probit regression analysis

Variable group and name	Variable type [a]	Mean	Standard deviation	Median	Maximum	Minimum	Correlation coefficient [b]
Dependent variable							
Four-point scale evaluations of environmental reform [c]	O	1.5	0.810	1	3	0	—
Independent variable							
Research attributes							
Number of targeted countries							
Multi-country studies	D	0.379	0.486	0	1	0	0.082
Region of targeted countries							
Non-EU CEE countries	D	0.177	0.382	0	1	0	-0.008
FSU countries	D	0.140	0.348	0	1	0	-0.016
Other countries	D	0.012	0.111	0	1	0	-0.069
Research topics							
Air pollution	D	0.358	0.480	0	1	0	0.131 **
Water pollution	D	0.280	0.450	0	1	0	0.010
Soil pollution	D	0.086	0.282	0	1	0	0.045
Waste problems	D	0.128	0.334	0	1	0	0.083
Transport problems	D	0.066	0.249	0	1	0	0.020
Land use	D	0.280	0.450	0	1	0	-0.070
Environmental movements	D	0.588	0.493	1	1	0	-0.050
Environmental policies (public sector)	D	0.864	0.343	1	1	0	-0.066
Environmental management (private sector)	D	0.251	0.435	0	1	0	0.004
Tourism development	D	0.053	0.225	0	1	0	-0.102
International cooperation	D	0.560	0.497	1	1	0	-0.105
Research period							
Median	C	1994	5.406	1994	2009	1972	-0.041
Analytical method							
Statistical	D	0.070	0.256	0	1	0	-0.031
Quantitative	D	0.091	0.288	0	1	0	0.106
Authors' attributes							
Affiliation							
Public authorities	D	0.070	0.256	0	1	0	0.029
ENGO and consultancy	D	0.086	0.282	0	1	0	0.045
International organizations	D	0.037	0.189	0	1	0	0.013
Other organizations	D	0.012	0.111	0	1	0	0.069
Location of affiliation							
North America	D	0.292	0.456	0	1	0	0.116 *
Western Europe	D	0.473	0.500	0	1	0	-0.140 **
Other regions	D	0.012	0.111	0	1	0	0.023
Place of PhD							
North America	D	0.280	0.450	0	1	0	0.112 *
Western Europe	D	0.309	0.463	0	1	0	-0.129 **
Other regions	D	0.025	0.156	0	1	0	-0.066
Gender							
Female included	D	0.379	0.486	0	1	0	-0.023
Number of authors							
Multiple authors	D	0.473	0.500	0	1	0	0.095
Academic discipline							
Politics	D	0.337	0.590	0	1	0	-0.027
Economics	D	0.412	0.774	0	1	0	0.150 **
Sociology	D	0.132	0.362	0	1	0	0.055
Geography	D	0.325	0.846	0	1	0	-0.131 **
Media attributes							
Publication source							
Book chapter	D	0.362	0.482	0	1	0	0.062
Publication year							
Year	C	2001	6.232	2000	2015	1991	-0.017
Research area							
Development studies	D	0.041	0.199	0	1	0	0.076
Politics	D	0.185	0.389	0	1	0	-0.021
Economics	D	0.128	0.334	0	1	0	0.068
Sociology	D	0.066	0.249	0	1	0	-0.042
Geography	D	0.107	0.310	0	1	0	-0.034
Other areas	D	0.086	0.282	0	1	0	-0.173 ***
Other attributes							
Evaluation of EU accession/support [d]	O	1.6	1.154	2	3	0	0.182 ***
Evaluation of environmental institutions [d]	O	1.6	0.781	2	3	0	0.354 ***
Evaluation of environmental movements [d]	O	1.2	1.113	1	3	0	0.091
Evaluation of environmental issues under socialism [d]	O	1.0	0.803	1	3	0	-0.038
Appraisal of market economy [e]	O	1.7	1.039	2	3	0	0.173 ***
Appraisal of democracy [e]	O	1.4	1.344	2	3	0	-0.052

Notes:

[a] C: continuous variable, D: dummy variable, O: ordinal variable

[b] ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

[c] Fully support: 3; Conditionally support: 2; Difficult to support: 1; Hardly support: 0

[d] Positive evaluation: 3; Moderate evaluation: 2; Negative evaluation: 1

[e] Affirmative appraisal: 3; Reserved appraisal: 2; Skeptical appraisal: 1

Source: Author's calculation

Table 4. Estimation results of ordinary probit regression analysis

Dependent variable	Four-point scale evaluations of environmental reform																	
Model	[1]			[2]			[3]			[4]			[5]			[6]		
Independent variable (Default category)	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]
Number of targeted countries (Single-country studies)																		
Multi-country studies	0.556	0.225	2.47 **	0.498	0.228	2.18 **	0.381	0.245	1.55	0.304	0.248	1.22	0.624	0.307	2.03 **	0.722	0.321	2.25 **
Region of targeted countries (EU CEE countries)																		
Non-EU CEE countries	0.045	0.269	0.17	0.003	0.239	0.01	0.250	0.246	1.02	0.268	0.227	1.18	-0.103	0.292	-0.35	-0.228	0.280	-0.81
FSU countries	0.108	0.312	0.35	0.062	0.295	0.21	-0.932	0.288	-3.24 ***	-0.904	0.287	-3.15 ***	0.163	0.346	0.47	0.069	0.333	0.21
Other countries	0.089	0.404	0.22	-0.505	0.357	-1.41	0.726	0.478	1.52	0.661	0.556	1.19	-0.698	0.400	-1.75 *	-1.262	0.389	-3.25 ***
Research topics (General environmental issues)																		
Air pollution	0.642	0.320	2.00 **	0.647	0.317	2.04 **	0.260	0.243	1.07	0.246	0.238	1.03	0.068	0.387	0.18	0.098	0.367	0.27
Water pollution	-0.508	0.262	-1.94 *	-0.419	0.273	-1.53	-0.045	0.221	-0.20	0.000	0.214	0.00	0.277	0.294	0.94	0.002	0.326	0.01
Soil degradation	0.315	0.320	0.98	0.144	0.330	0.44	-0.205	0.317	-0.65	-0.425	0.308	-1.38	0.339	0.440	0.77	0.167	0.454	0.37
Waste problems	0.193	0.354	0.55	0.264	0.350	0.75	0.229	0.323	0.71	0.379	0.311	1.22	0.254	0.514	0.49	0.693	0.519	1.34
Transport problems	0.113	0.340	0.33	-0.010	0.292	-0.03	-0.237	0.454	-0.52	-0.354	0.431	-0.82	-0.144	0.498	-0.29	-0.326	0.437	-0.75
Land use	0.203	0.256	0.79	0.000	0.251	0.00	0.392	0.238	1.65	0.199	0.216	0.92	0.427	0.306	1.39	0.176	0.304	0.58
Environmental movements	-0.175	0.220	-0.79	0.042	0.206	0.20	0.074	0.192	0.38	0.139	0.191	0.73	0.680	0.532	1.28	0.341	0.726	0.47
Environmental policies (public sector)	-0.446	0.368	-1.21	-0.365	0.334	-1.09	-0.502	0.469	-1.07	-0.352	0.426	-0.83	-0.500	0.393	-1.27	-0.540	0.361	-1.50
Environmental management (private sector)	-0.036	0.240	-0.15	-0.225	0.250	-0.90	-0.100	0.183	-0.55	-0.235	0.196	-1.20	0.050	0.259	0.19	-0.013	0.261	-0.05
Tourism development	-0.774	0.447	-1.73 *	-0.898	0.373	-2.41 **	-0.697	0.283	-2.46 **	-0.666	0.308	-2.16 **	0.125	0.513	0.24	0.021	0.476	0.04
International cooperation	0.104	0.283	0.37	-0.103	0.299	-0.34	-0.308	0.238	-1.29	-0.483	0.236	-2.05 **	-0.428	0.316	-1.35	-0.598	0.344	-1.74 *
Research period																		
Median	0.008	0.022	0.37				-0.003	0.019	-0.17				0.011	0.020	0.55			
Analytical method (Descriptive)																		
Statistical	-1.437	0.473	-3.04 ***	-1.348	0.442	-3.05 ***	-0.607	0.367	-1.65 *	-0.487	0.332	-1.47	-1.415	0.579	-2.45 **	-1.108	0.632	-1.75 *
Quantitative	-0.405	0.563	-0.72	-0.225	0.541	-0.42	-0.202	0.417	-0.48	-0.427	0.428	-1.00	0.720	0.508	1.42	0.085	0.567	0.15
Affiliation (Higher education institutions)																		
Public authorities	-0.202	0.401	-0.50	0.007	0.490	0.01	-0.024	0.370	-0.06	0.106	0.413	0.26	1.218	0.501	2.43 **	1.189	0.460	2.59 **
ENGO and consultancy	0.371	0.346	1.07	0.343	0.353	0.97	-0.323	0.241	-1.34	-0.345	0.266	-1.30	0.161	0.363	0.44	0.085	0.434	0.20
International organizations	-0.123	0.403	-0.31	-0.153	0.446	-0.34	-0.490	0.550	-0.89	-0.503	0.608	-0.83	-0.279	0.467	-0.60	-0.236	0.466	-0.51
Other organizations	1.747	0.371	4.71 ***	1.886	0.473	3.99 ***	1.828	0.506	3.61 ***	2.009	0.658	3.05 ***	1.528	0.447	3.42 ***	1.644	0.557	2.95 ***
Location of affiliation (Eastern Europe)																		
North America	0.105	0.261	0.40				0.010	0.233	0.05				0.268	0.298	0.90			
Western Europe	-0.276	0.260	-1.06				-0.046	0.231	-0.20				-0.176	0.306	-0.58			
Other regions	2.521	1.035	2.44 **				0.132	0.586	0.23				-2.304	0.506	-4.55 ***			
Place of PhD (Eastern Europe)																		
North America				0.226	0.259	0.87				0.123	0.207	0.59				0.559	0.280	1.99 **
Western Europe				0.011	0.245	0.04				0.054	0.226	0.24				-0.168	0.320	-0.53
Other regions				-0.535	0.526	-1.02				-0.793	0.375	-2.11 **				-1.252	0.388	-3.23 ***
Gender (Female not included)																		
Female included	-0.323	0.220	-1.47	-0.147	0.220	-0.67	-0.089	0.198	-0.45	-0.049	0.200	-0.25	-0.217	0.236	-0.92	-0.294	0.246	-1.20
Number of authors (Single author)																		
Multiple authors	0.063	0.229	0.27	0.109	0.209	0.52	0.214	0.204	1.05	0.244	0.188	1.30	0.394	0.292	1.35	0.374	0.285	1.31
Academic discipline (Environmental studies)																		
Politics	0.194	0.197	0.98				0.003	0.218	0.02				0.144	0.237	0.61			
Economics	0.131	0.240	0.55				0.288	0.129	2.24 **				0.388	0.228	1.71 *			
Sociology	0.854	0.314	2.72 ***				0.535	0.357	1.50				0.615	0.331	1.86 *			
Geography	-0.032	0.130	-0.25				-0.122	0.111	-1.11				-0.066	0.169	-0.39			
Publication source (Journal article)																		
Book chapter	-0.157	0.259	-0.61	-0.330	0.263	-1.26	0.468	0.210	2.22 **	0.156	0.226	0.69	0.383	0.262	1.46	0.053	0.334	0.16
Publication year																		
Year				0.018	0.021	0.82				0.009	0.020	0.46				0.052	0.026	2.01 **
Research area (Environmental studies)																		
Development studies				1.234	0.535	2.31 **				1.003	0.410	2.44 **				0.817	0.515	1.59
Politics				-0.214	0.273	-0.78				-0.310	0.274	-1.13				-0.544	0.354	-1.54
Economics				0.136	0.374	0.36				0.127	0.303	0.42				0.410	0.458	0.90
Sociology				-0.029	0.600	-0.05				0.583	0.459	1.27				0.531	0.353	1.50
Geography				-0.052	0.327	-0.16				-0.855	0.335	-2.55 **				-0.785	0.313	-2.51 **
Other areas				-0.687	0.365	-1.88 *				-0.856	0.336	-2.55 **				-0.847	0.408	-2.08 **
Evaluation of EU accession/support	0.988	0.177	5.59 ***	0.863	0.178	4.86 ***												
Evaluation of environmental institutions							1.627	0.194	8.38 ***	1.731	0.190	9.14 ***						
Evaluation of environmental movements													1.066	0.190	5.61 ***	0.956	0.203	4.71 ***
N		177			177			218			218			143			143	
Log pseudolikelihood		-167.504			-168.394			-182.553			-180.545			-129.305			-125.741	
Pseudo R^2		0.193			0.189			0.275			0.283			0.221			0.242	
AIC		405.007			412.789			437.106			437.089			330.611			327.481	
BIC		516.173			533.482			558.948			565.700			437.273			440.069	
Wald test (χ^2) [c]		—			111.92***			154.86***			173.14***			154.38***			110.35***	

Dependent variable	Four-point scale evaluations of environmental reform																	
Model	[7]			[8]			[9]			[10]			[11]			[12]		
Independent variable (Default category)	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]	Correlation coefficient	Standard error [a]	z-value [b]
Number of targeted countries (Single-country studies)																		
Multi-country studies	0.600	0.243	2.47 **	0.628	0.254	2.47 **	0.427	0.243	1.75 *	0.373	0.246	1.51	0.638	0.262	2.43 **	0.538	0.298	1.80 *
Region of targeted countries (EU CEE countries)																		
Non-EU CEE countries	0.163	0.274	0.60	0.104	0.259	0.40	0.259	0.271	0.95	0.151	0.257	0.59	0.583	0.309	1.89 *	0.200	0.299	0.67
FSU countries	-0.434	0.389	-1.11	-0.434	0.365	-1.19	-0.546	0.313	-1.74 *	-0.328	0.307	-1.07	-0.545	0.354	-1.54	-0.436	0.377	-1.16
Other countries	-0.626	0.646	-0.97	-1.067	0.693	-1.54	-0.920	0.574	-1.60	-1.074	0.467	-2.30 **	-0.277	0.545	-0.51	-0.916	0.620	-1.48
Research topics (General environmental issues)																		
Air pollution	0.695	0.278	2.50 **	0.876	0.287	3.05 ***	0.352	0.250	1.40	0.362	0.245	1.48	0.702	0.344	2.04 **	0.805	0.353	2.28 **
Water pollution	-0.387	0.253	-1.53	-0.512	0.269	-1.90 *	-0.093	0.214	-0.44	-0.140	0.204	-0.69	-0.255	0.284	-0.90	-0.557	0.277	-2.01 **
Soil degradation	0.116	0.364	0.32	0.069	0.365	0.19	-0.099	0.348	-0.28	-0.019	0.320	-0.06	0.928	0.501	1.85 *	0.772	0.512	1.51
Waste problems	0.165	0.350	0.47	0.290	0.374	0.78	0.201	0.304	0.66	0.169	0.295	0.57	-0.690	0.518	-1.33	-0.409	0.546	-0.75
Transport problems	0.052	0.358	0.14	0.064	0.375	0.17	0.096	0.427	0.22	0.111	0.415	0.27	0.110	0.460	0.24	0.017	0.441	0.04
Land use	0.080	0.282	0.28	-0.111	0.273	-0.41	-0.156	0.239	-0.65	-0.257	0.240	-1.07	0.095	0.273	0.35	-0.269	0.280	-0.96
Environmental movements	-0.040	0.235	-0.17	-0.006	0.228	-0.02	0.110	0.202	0.55	0.053	0.200	0.27	-0.197	0.277	-0.71	0.166	0.296	0.56
Environmental policies (public sector)	-0.205	0.370	-0.55	-0.086	0.332	-0.26	-0.531	0.336	-1.58	-0.362	0.330	-1.10	-0.134	0.344	-0.39	0.200	0.314	0.64
Environmental management (private sector)	0.193	0.217	0.89	0.126	0.227	0.55	-0.010	0.189	-0.06	0.049	0.201	0.24	0.373	0.242	1.54	0.241	0.271	0.89
Tourism development	-0.228	0.440	-0.52	-0.348	0.432	-0.81	-0.151	0.389	-0.39	-0.075	0.351	-0.21	-0.065	0.477	-0.14	0.151	0.500	0.30
International cooperation	-0.461	0.261	-1.76 *	-0.572	0.269	-2.13 **	-0.094	0.241	-0.39	-0.172	0.252	-0.68	-0.243	0.335	-0.72	-0.299	0.317	-0.94
Research period																		
Median	0.006	0.023	0.27				0.005	0.024	0.22				0.001	0.025	0.04			
Analytical method (Descriptive)																		
Statistical	0.036	0.531	0.07	-0.416	0.505	-0.82	-0.823	0.350	-2.35 **	-0.764	0.336	-2.28 **	-0.735	0.728	-1.01	-1.020	0.802	-1.27
Quantitative	1.197	0.670	1.79 *	0.663	0.634	1.05	-0.158	0.475	-0.33	-0.280	0.519	-0.54	2.299	0.744	3.09 ***	1.567	0.692	2.26 **
Affiliation (Higher education institutions)																		
Public authorities	-0.433	0.459	-0.94	-0.413	0.482	-0.86	-0.414	0.370	-1.12	-0.201	0.399	-0.50	0.776	0.473	1.64	0.853	0.508	1.68 *
ENGO and consultancy	0.353	0.315	1.12	0.274	0.310	0.88	-0.375	0.256	-1.47	-0.281	0.267	-1.05	0.506	0.386	1.31	0.250	0.366	0.68
International organizations	-0.362	0.500	-0.72	-0.407	0.471	-0.86	-0.745	0.418	-1.78 *	-0.683	0.451	-1.51	0.451	0.646	0.70	0.120	0.576	0.21
Other organizations	0.996	0.314	3.17 ***	1.953	0.489	4.00 ***	1.088	0.336	3.24 ***	1.204	0.400	3.01 ***	1.374	0.400	3.43 ***	1.102	0.554	1.99 **
Location of affiliation (Eastern Europe)																		
North America	-0.006	0.260	-0.02				-0.029	0.232	-0.13				-0.251	0.315	-0.79			
Western Europe	-0.327	0.271	-1.21				-0.215	0.252	-0.85				-0.671	0.303	-2.21 **			
Other regions	-1.035	0.561	-1.84 *				-0.814	0.432	-1.89 *				-1.033	0.610	-1.69 *			
Place of PhD (Eastern Europe)																		
North America				0.174	0.268	0.65				0.153	0.239	0.64				0.216	0.286	0.75
Western Europe				-0.212	0.254	-0.83				-0.151	0.248	-0.61				-0.195	0.314	-0.62
Other regions				-0.398	0.441	-0.90				-0.201	0.377	-0.53				-0.549	0.427	-1.29
Gender (Female not included)																		
Female included	0.039	0.231	0.17	0.231	0.236	0.98	-0.097	0.219	-0.44	-0.050	0.212	-0.23	-0.286	0.269	-1.06	-0.123	0.275	-0.45
Number of authors (Single author)																		
Multiple authors	0.312	0.248	1.26	0.262	0.233	1.13	0.620	0.228	2.72 ***	0.591	0.204	2.90 ***	0.390	0.271	1.44	0.344	0.293	1.17
Academic discipline (Environmental studies)																		
Politics	0.248	0.263	0.94				-0.257	0.213	-1.21				0.422	0.262	1.61			
Economics	-0.014	0.176	-0.08				0.138	0.157	0.88				-0.049	0.282	-0.17			
Sociology	0.292	0.356	0.82				0.120	0.412	0.29				0.711	0.349	2.04 **			
Geography	0.026	0.130	0.20				-0.160	0.126	-1.27				0.167	0.131	1.27			
Publication source (Journal article)																		
Book chapter	0.315	0.239	1.32	0.178	0.244	0.73	0.430	0.217	1.99 **	0.340	0.238	1.43	-0.009	0.284	-0.03	-0.258	0.305	-0.85
Publication year																		
Year				0.027	0.024	1.11				0.008	0.022	0.38				0.036	0.027	1.32
Research area (Environmental studies)																		
Development studies				1.084	0.584	1.86 *				0.377	0.478	0.79				1.933	0.826	2.34 **
Politics				-0.293	0.308	-0.95				0.005	0.299	0.02				-0.486	0.350	-1.39
Economics				0.200	0.302	0.66				0.132	0.271	0.49				0.105	0.452	0.23
Sociology				0.311	0.495	0.63				-0.353	0.553	-0.64				0.776	0.433	1.79 *
Geography				0.046	0.343	0.13				0.253	0.282	0.90				-0.577	0.374	-1.54
Other areas				-0.583	0.408	-1.43				-0.541	0.345	-1.57				-1.050	0.408	-2.57 **
Evaluation of environmental issues under socialism	0.050	0.171	0.29	0.058	0.201	0.29												
Appraisal of market economy							0.659	0.169	3.90 ***	0.673	0.157	4.29 ***						
Appraisal of democracy													0.218	0.236	0.92	0.170	0.227	0.75
N		174			174			195			195			134			134	
Log pseudolikelihood		-178.258			-174.806			-197.160			-198.718			-130.438			-126.883	
Pseudo R^2		0.111			0.128			0.137			0.130			0.150			0.174	
AIC		422.516			421.613			466.319			473.437			330.877			327.766	
BIC		526.764			535.339			584.147			597.811			432.301			434.986	
Wald test (χ^2) [c]		—			—			75.93***			140.46***			—			—	

Notes:

[a] Robust standard error is used for hypothesis testing.

[b] ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

[c] Null hypothesis: all of the coefficients are equal to zero.

Source: Author's estimation