



The Determinant Of Carbon Emission Disclosures

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Abstrak

Penelitian ini bertujuan untuk membuktikan pengaruh kinerja lingkungan, visibilitas organisasional, kondisi keuangan, dan mekanisme tata kelola terhadap pengungkapan emisi karbon di Indonesia. Pengungkapan emisi karbon diukur menggunakan checklist indeks Carbon Disclosure Project yang dikembangkan oleh Choi et al. (2013). Populasi dalam penelitian ini adalah perusahaan non keuangan yang terdaftar di Bursa Efek Indonesia tahun 2012-2014. Sampel dalam penelitian ini diambil menggunakan teknik purposive sampling. Terdapat 32 perusahaan setiap tahun. Metode analisis penelitian ini yaitu statistik deskriptif dan analisis regresi linear berganda. Hasil penelitian ini menunjukkan bahwa visibilitas organisasional, profitabilitas, kepemilikan manajerial, dan komite audit berpengaruh positif signifikan terhadap pengungkapan emisi karbon. Sementara itu, kinerja lingkungan, financial distress, kepemilikan institusional, dan proporsi komisaris independen tidak memiliki pengaruh yang signifikan terhadap pengungkapan emisi karbon.

Abstract

This study aimed to obtain empirical evidence about the influence of environmental performance, organizational visibility, financial condition, and corporate governance mechanism to carbon emission disclosure in Indonesia. Carbon emission disclosure was measured by index checklist of Carbon Disclosure Project which developed by Choi et al. (2013). The population of this study was the non-financial companies which listed in Indonesia Stock Exchange in 2012-2014. Sample of this study was taken by using purposive sampling method. There were 32 companies in every year. Analysis method which used in this study was descriptive statistic and multiple regression analysis. The result of this study showed that organizational visibility, profitability, managerial ownership and audit committee significantly influenced to the extent of carbon emission disclosure. Meanwhile environmental performance, financial distress, institutional ownership, and independent commissioner proportion had no significantly influence to the extent of carbon emission disclosure.

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INTRODUCTION

Global warming is one of the issues that are being discussed in the international world. National Oceanic and Atmospheric Administration (2016) states that the average global temperature on land and sea level of January 2016 of 1.04 ° C is above average temperatures throughout the 20th century and is the highest record for January in the period of 137 year recording that causes the occurrence of climate change in various countries including in Indonesia. Climate change is most dominant due to global warming. This cannot be separated from human activities that produce greenhouse gases. IPCC Assessment Report 5 (KLH, 2015) describes greenhouse gas emissions between 2000-2010 is the highest number in the last 3 decades namely as big as 2.2% per year, compared to 1970 -2000 as big as 1.3% per year. The largest increases in greenhouse gas emissions are supplied from energy use. Meanwhile the growth rate of energy consumption in Indonesia increased by 4.1% per year, driven by high energy consumption in solid energy industrial sectors such as textiles, cement, ceramics, and steel and diversion of use (DEN, 2014). This shows that industrial sector contributes considerably to the increase in carbon emissions. In addition, industrial sector also contributes carbon emissions with the use of forests and land. As is the case in Riau, switching function of forest and land for industrial activities has resulted in Riau losing more than 4 million hectares of forest over the past 25 years (BNPB, 2013: 4). In fact, Riau Province stores carbon more than 10 meters in peatlands and the estimates as the largest carbon reserves in Southeast Asia.

Data of World Resources Institute (WRI) in 2012 shows that Indonesia is ranked sixth as the largest greenhouse gas emitter in the world. Meanwhile, at the G-20 meeting in Pittsburg-USA on September 25, 2009 the Indonesian government is committed to reduce greenhouse gas emission in 2020 as big as 26% by own effort and 41% by international assistance. This if is not followed by efforts to press and reduce carbon emission production would increase Indonesia's ranking as the largest greenhouse gases emitter in the world. However, Indonesia has made efforts to reduce emissions and further prevention of global warming by agreeing to the Kyoto Protocol in 1997 and issued Presidential Decree No.61 year 2011 on the National Action Plan for Green House Gas Emission Reduction and Presidential Decree no. 71 year 2011 on the Implementation of National Greenhouse Gas Inventory. It cannot be denied that various business or industries sectors have great potential in increasing economic growth and become development priorities in various provinces in Indonesia, but these activities have the potential to release GHG emissions and contribute to global warming and climate change (Utama, 2014). Therefore, the company has a social responsibility in supporting the efforts of emission reduction and further prevention of global warming. This form of social responsibility can be known from the Carbon Emission Disclosure.

Carbon emission disclosure is a form of contribution of entities to environmental changes, especially global warming. The existence of a business entity certainly cannot be separated from the community environment where the activities of the company are required to be in harmony with the values and norms prevailing in the community. This causes an increase in the company's information needs related to the disclosure of the environment, especially carbon emission disclosure due to the demands. Therefore, companies should increase carbon emission disclosure to gain legitimacy from the environment. There are many factors affecting carbon emission disclosure. Choi et al. (2013) mentions influential factors that are industry type, carbon emission level, company size, and corporate governance quality. Ghomi and Leung (2013) find that company size, company's age, and institutional ownership structure affect carbon emission disclosure. Jannah and Muid (2014) state that exposure media, industry type, profitability, company size, and leverage have an effect on carbon emission disclosure. Based on the previous studies, researchers conduct further testing related to factors that affect carbon emission disclosure in Indonesian companies. This study aims to

examine the factors that influence carbon emission disclosure in Indonesian companies that are environmental performance, organizational visibility, financial condition, and corporate governance mechanism.

Disclosure of carbon emission is a form of company's contribution to environmental changes, especially global warming. Disclosure of carbon emission is usually reported in annual reports and / or sustainability reports. Theories that explain the disclosure of carbon emission in this study are legitimacy theory, stakeholder theory, and agency theory. Legitimacy theory describes companies and societies having social contracts in which companies have a demand to align corporate activities with values and norms prevailing in the community so that the companies get the legitimacy (recognition) from the community. Stakeholder theory explains that the company in running the company not only to seek profit but also provide benefits to stakeholders. Agency theory explains that there is information asymmetry between agents (Management) and principals (shareholders).

Companies with superior environmental performance have a proactive environmental strategy (Clarkson et al, 2008). The theory of legitimacy explains that the company has a social contract with the community. The company is expected to perform its activities in accordance with the values and norms prevailing in the community so that the company gets recognition from the public. This can be obtained by aligning the company's activities with the values and norms of society such as by preserving the surrounding environment. The better the environmental performance the higher the company is to gain legitimacy from the community.

Research conducted by Dwankins and Fraas (2011) and Pradini and Kiswara (2013) find that environmental performance has significant effect on carbon emission disclosure. Meanwhile, Jannah and Muid (2014) and Majid and Ghozali (2015) prove there is no effect between environmental performance and carbon emission disclosure. However, a positive effect between environmental performance on carbon emission disclosure can be considered. Due to the inconsistency of previous research results, researchers want to re-examine the effect of environmental performance on carbon emission disclosure and to formulate the following hypothesis.

H1: Environmental performance positively affects on carbon emission disclosure.

Organizational visibility in this study is proxied with the age of the company. Roberts (1992) argues that the age of the company describes several aspects such as stakeholder power, strategic attitudes, and financial performance of the company concerned. Company's age shows the company's ability to survive from all threats and to be able to compete with its competitors. Meanwhile, life sustainability of the company also depends on stakeholders' support and the support needs to be sought so that the company's activity is to seek that support (Gray et al., 1994).

Previous research has shown that company's age has a positive effect on carbon emission disclosure. Ghomi and Leung (2013) who found that company's age had a positive effect on greenhouse gas disclosure. Companies with longevity prove that companies are able to compete with competitors are likely to disclose more information voluntarily. Cormier and Magnan (1999) state that company's age negatively affects disclosure practices. The longer the company's age, the company is less likely to disclose carbon emission to maintain the competitive advantage of its competitors. However, a positive effect between organizational visibility and disclosure of carbon emission can be considered. Therefore, the second hypothesis is formulated as follows:

H2 : Organizational visibility has a positive effect on carbon emission disclosure.

Companies with good financial condition are more likely to voluntarily disclose environmental information, even though the information is not necessarily beneficial to the company, compared to companies with poor financial conditions (Cormier and Magnan, 1999). This is in line with the research of Jannah and Muid (2014) and Majid and Ghozali (2015) indicates that the better the financial performance of the company the more widespread carbon emission disclosure because the company will be more able to carry out environmental responsibility.

Legitimacy theory explains that there is a social contract between the company and Community. The company has the demands of the community for the activities of the company in accordance with the values and norms prevailing in the community, so that to gain legitimacy from the community, companies need to make efforts to reduce these demands. This effort can be done one of which by doing environmental responsibility in this case carbon emission disclosure. Implementation of this carbon emission disclosure requires costs so that companies with high financial performance will more easily disclose carbon emission. Meanwhile, companies with poor financial performance, the disclosure of environmental obligations in the future requires extra costs to pay attention to the stakeholders, so that companies with poor financial performance will be more difficult to carry out environmental responsibility in this case carbon emission disclosure.

Choi et al. (2013) and Jannah and Muid (2014) proxy poor financial condition with leverage. The results show that leverage negatively affects on carbon emissions disclosure. Larger obligations to pay debt and interest would limit the company's ability to implement reduction strategy of carbon emission (Luo et al., 2013). Companies with low leverage tend to disclose more information related to greenhouse gas than companies with high leverage. This is because companies with low leverage level have a low corporate liability too, so companies will be easier in the disclosure of greenhouse gases. Therefore, poor financial condition is expected to negatively affect on carbon emission disclosure.

H3: Profitability has a positive effect on carbon emission disclosure

H4: Financial distress has a negative effect on carbon emission disclosure

Corporate governance mechanism is one of the key business entities to maintain its business continuity. In this study, corporate governance mechanism is proxied with managerial ownership, institutional ownership, the proportion of independent commissioners, and audit committee. Great managerial ownership shows that the company is controlled by most management. The greater the managerial ownership then the management of the company will be greater. Based on stakeholder theory the company has pressure from external parties to be more active in carrying out social and environmental responsibility. Therefore, when managerial ownership has a large proportion, then the management control of the company's performance will be greater so that the disclosure of carbon emission will be wider. The wider disclosure of environmental information is also a means of corporate communication with stakeholders reducing misunderstandings and improving relationships between companies and stakeholders.

This is in line with Uwuigbe's research (2011) which proves that high level of managerial ownership will give a big role in monitoring the activities of companies related to the environment. Unlike the case of Chang and Zhang (2015) proving that managerial ownership negatively affects the disclosure of environmental information. This is because ownership structures encourage companies to pursue a strategy of maximum value and private ownership provides a strong encouragement to earn a high income and reduce costs (Earhart and Rizal, 2006).

Institutional ownership is also one component affecting carbon emission disclosure. With the existence of institutional ownership is expected supervision of management is more optimal. The greater the institutional ownership, the greater the institutional encouragement to oversee the company's management so that the company can optimize the company's performance. Chang and Zhang's study (2015) shows that companies with high institutional ownership will disclose more information related to the environment. This is in line with Nainggolan's study (2015) which shows that institutional ownership has a positive effect on carbon emission disclosure. The greater the institutional ownership is expected to be tighter supervision of management so that fraud can be prevented and pressure on to disclose carbon emission is greater.

Kuswanto, et al (2014) argue that the proportion of large independent commissioners makes surveillance tighter so that companies can survive, conduct business, and grow. Liao et al. (2014)

proves that the board of independent commissioners is positively related to the disclosure of the environment. The higher the proportion of board of independent commissioners, the greater the disclosure of the environment by the company. Nainggolan (2015) also proves that the proportion of independent commissioners positively influences environmental disclosure. Therefore, the proportion of independent commissioners is expected to have a positive influence on environmental disclosure. Rahmi (2014) states that the number of audit committees is very important for the supervision and controlling of the company so that with the audit committee in a company it will increase the effectiveness of supervision including the practice of corporate environmental disclosure. Therefore, the existence of the audit committee also influences the disclosure of carbon emission.

H5: Managerial ownership positively affects carbon emission disclosure.

H6: Institutional ownership positively affects carbon emission disclosure.

H7: The proportion of independent commissioners positively affects carbon emission disclosure.

H8: Audit Committee positively affects carbon emission disclosure.

METHODS

Dependent variable in this study was carbon emission disclosure measured by using Carbon Disclosure Project index checklist developed by Choi et al. (2013). Choi et al. (2013) determined five categories with a number of 18 relevant items to carbon emission disclosure. The following was a checklist of carbon emission disclosure.

Table 1. Carbon Emission Disclosure Checklist

Categories	Items
Climate Change/ CC: Risk and Opportunity	CC1 – Assessment / description to risk (rule / regulation, physical or general examination) related to climate change and actions taken to manage risk. CC2 – Current (and future) assessments / descriptions of the financial, business, and opportunities impacts of climate change
Accounting for Greenhouse Gas Emissions (Green House Gas/ GHG)	GHG1 – Description of the methodology used to calculate GHG emissions (eg GHG or ISO protocols) GHG2 – The existence of external verification of GHG emissions quantity by whom and on what basis. GHG3 – total emission of green house gas – metric tons of CO ₂ -e produced GHG4 – Disclosure of scope 1 and 2, or scope 3 of direct GHG emissions GHG5 – Disclosure of GHG emissions by its sources (eg coal, electricity, etc.) GHG6 – Disclosure of GHG emissions based on facilities or class levels. GHG7 – Comparison of GHG emissions with the previous year.
Accounting of Energy Consumption (Energy Consumption/ EC)	EC1 – total energy used (eg. tera-joule or peta-joule) EC2 – The energy calculations used from renewable resources EC3 – Disclosure by type, facility, or class
4. Reduction of GHG emissions and costs	RC1 – Details of a strategic plan to reduce GHG emissions RC2 – Level target specification and year of GHG emission reduction

Categories	Items
5. Carbon Emission Accountability	RC3 – Reductions of emission and costs or savings as a result of the reduction plan
	RC4 –Future emission costs as an element of capital expenditure planning
	ACC1 –An indication in which the board of committee (or other government) has overall responsibility for action relating to climate change.
	ACC2 – description of the mechanism in which the board (or other government) review the company's progress on climate change.

Source: Choi et al., 2013

The calculation of carbon emission disclosure index score was done by giving an assessment on each item of disclosure with dichotomous score, total minimum score was 0 and maximum score was 18. Each item scored 1 so that if all items were disclosed then the company score was 18. Independent variables in this study were environmental performance, organizational visibility, financial condition, and corporate governance mechanism. Environmental performance was measured using the Proper rating issued by the Ministry of Environment, organizational visibility measured by company's age, financial condition proxied with profitability and financial distress, and corporate governance mechanisms proxied with managerial ownership, institutional ownership, the proportion of independent commissioner, and audit committee.

The population of this study was non-financial companies listed on the Indonesia Stock Exchange in 2012-2014. Sampling in this study used purposive sampling method with the following criteria: Non-financial companies listed on the Indonesia Stock Exchange in 2012-2014; Companies provided annual report or sustainability report for 2012-2014; Companies followed PROPER for 2012-2014; Companies that issued carbon emission disclosure policy at least one policy.

Hypothesis testing was done by using multiple regression analysis. Regression model in this research was as follows.

$$PEK = \alpha + \beta_1KL + \beta_2VO + \beta_3PROF - \beta_4FD + \beta_5KM + \beta_6KI + \beta_7PKI + \beta_8KA + \varepsilon$$

Explanation:

PEK : Carbon emission disclosure

KL : Environmental performances

VO : Organizational visibility

PROF : Profitability

FD : Financial distress

KM : Managerial ownership

KI : Institutional ownership

PKI : The proportion of independent commissioners

KA : Audit committee

α : Constant

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$: regression coefficient

ε : error

RESULTS AND DISCUSSIONS

The object of this study was companies listed on the Indonesia Stock Exchange in 2012-2014. Sample selection in this study used purposive sampling method. Based on this method, 37 companies were included in the sample criteria. The explanation of sampling was showed in Table 2.

Table 2. Population and Sample year 2012-2014

Criteria	Number
Companies that listed on IDX	421
Financial companies that listed on IDX	(89)
Companies did not follow PROPER	(280)
Companies did not issue carbon emission disclosure policy	(20)
Total Sample	32

Descriptive statistics in this study was presented in table 2. Based on table 2. it could be seen that the unit of analysis in this study was as many as 96.

Table 3. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PEK	96	1,00	17,00	6,6146	5,07495
KL	96	2,00	5,00	3,3958	,80104
VO	96	2,00	25,00	17,0000	6,98570
PROF	96	-16,91	28,97	7,1749	8,57984
FD	96	14	76	45,52	16,113
KM	96	,00	9,35	,4039	1,71926
KI	96	17,50	97,20	65,6507	18,47532
PKI	96	1,00	6,00	2,5938	,93559
KA	96	3,00	6,00	3,4063	,70454
Valid N (listwise)	96				

Source: Output of SPSS, 2016

Table 3 showed carbon emission disclosure (PEK) of the 96 analyzed units showed that the mean value was 6.61. The standard deviation value of 5.07 was lower than the mean value which meant that the standard error of small carbon emission disclosure variable was small. Carbon emission disclosure (PEK) had minimum value of 1 and maximum value of 17 with a range of 16. Environmental performance of 96 analyzed units had a mean value of 3.39. The standard deviation value of 0.80 was lower than the mean value, meaning the standard error of environmental performance variable was small. Environmental performance had minimum value of 1 and maximum value of 5 with a range of 4.

Organizational visibility of 96 units of analysis which studied had mean value of 17. The standard deviation value of 6.98 was lower than the mean value which meant that the standard error of organizational visibility variable was small. Organizational visibility had minimum value of 2 and maximum value of 25 with a range of 23. Profitability of 96 analysis units which studied had a mean value of 7.17. The standard deviation value of 8.57 was greater than the mean value meaning that the standard error of profitability variable was large. Profitability had minimum value of -16.91 and maximum value of 28.97 with a range of 23. Financial distress of 96 analysis units which studied had a mean value of 45.52. The standard deviation value of 16.11 was lower than the mean value

meaning that the standard error of the financial distress variable was small. Organizational visibility had minimum value of 14 and maximum value of 76 with a range of 62.

Managerial ownership of 96 analysis units studied had a mean value of 0.40. The standard deviation value of 1.71 was higher than the mean value meaning that the standard error of the managerial ownership variable was large. Managerial ownership had minimum value of 0.00 and maximum value of 9.35 with a range of 9.35. Institutional ownership of 96 analysis units studied had a mean value of 65.65. The standard deviation value of 18.47 was lower than the mean value meaning that the standard error of the institutional ownership variable was small. Institutional ownership had minimum value of 17.50 and maximum value of 97.20 with a range of 79.70.

The proportion of independent commissioners of 96 analysis units which studied had a mean value of 2.59. The standard deviation value of 0.93 was lower than the mean value meaning that the standard error of the proportion of independent commissioners variable was small. The proportion of independent commissioners had minimum value of 1 and maximum value of 6 with the range of 5. Audit committee of 96 analysis units which studied had a mean value of 3.40. The standard deviation value of 0.70 was lower than the mean value which meant that the standard error of audit committee variable was small. The audit committee had a minimum score of 3 and a maximum value of 6 with a range of 3.

Testing the research results conducted with multiple regression analysis with tool SPSS version 21 for windows. The regression results of this study were described in Table 3.

Table 4. Hypothesis Test Results

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-12,551	4,579		-2,741	,007
	KL	,656	,626	,104	1,049	,297
	VO	,240	,075	,331	3,193	,002
	PROF	,161	,072	,272	2,246	,027
	FD	,035	,038	,111	,920	,360
	KM	,636	,291	,215	2,182	,032
	KI	,026	,027	,095	,968	,336
	PKI	-,220	,554	-,041	-,397	,692
	KA	2,557	,714	,355	3,580	,001

Dependent Variable: PEK

Source: Data processed, 2016

Based on table 4 it could be seen that variables which significantly affected on the disclosure of carbon emissions, namely organizational visibility, profitability, managerial ownership, and audit committee. While the variables that did not affect namely environmental performance, financial distress, institutional ownership, and the proportion of independent commissioners. Based on table 3. it could be concluded the mathematical equation as follows.

$$PEK = -12,551 + 0,656 KL + 0,240 VO + 0,161 PROF + 0,035 FD + 0,636 KM + 0,026 KI - 0,220 PKI + 2,557 KA$$

Based on the SPSS output, environmental performance did not have effect on carbon emission disclosure. This finding was in line with Jannah and Muid's research (2014) in which high-ranking proper publications indirectly represented the company's commitment in tackling climate change so that the company's motivation to disclose carbon emission was reduced. Based on the SPSS output, organizational visibility had a positive effect on carbon emission disclosure. This indicated that the longer the age of the company the higher the carbon emission disclosure. This finding was in line with the research of Ghomi and Leung (2013) that company's age had a positive effect on carbon emission disclosure. This result supported stakeholder theory in which the company would continue to seek stakeholder's support to maintain its survival, so the longer of company's age would increase carbon emission disclosure.

Based on the SPSS output, profitability had a positive effect on carbon emission disclosure. Companies with good financial condition were likely to disclose more information including information on carbon emission disclosure. This finding supported stakeholder theory in which companies with high profitability had the ability to adopt an active strategy that trying to influence their organization with stakeholders that considered important (Ulman, 1985 in Ghozali, 2007). This was in line with the research of Jannah and Muid (2014) and Majid and Ghozali (2015) that profitability had a positive effect on carbon emission disclosure. Based on the SPSS output, financial distress did not have effect on carbon emission disclosure. This was in line with the research of Choi et al. (2013) which found that financial distress did not have effect on carbon emission disclosure. High and low of financial distress did not affect the disclosure of carbon emission. This finding also did not support legitimacy theory, where companies with poor financial performance would be harder to disclose carbon emissions.

Based on the SPSS output, managerial ownership positively affected carbon emission disclosure. This finding supported agency theory in which to reduce agency problems, companies can increase managerial ownership. This was due to the existence of managerial ownership as the controller, the higher the managerial ownership the higher the carbon emission disclosure. This finding was in line with Uwuigbe's research (2011) which proved that high level of managerial ownership would play a big role in monitoring the environment-related activities of the companies. Based on the SPSS output, institutional ownership did not have effect on carbon emission disclosure. This was not in line with Chang and Zhang's research (2015) which showed that companies with high institutional ownership would disclose more information related to the environment. This did not support agency theory where institutional ownership had a role in minimizing agency conflict between managers and shareholders.

Based on the SPSS output, the proportion of independent commissioners did not effect on carbon emission disclosure. This was not in line with Liao et al. (2014) and Nainggolan (2015) which proved that the proportion of independent commissioners had an effect on carbon emission disclosure. This finding did not support stakeholder theory in which independent commissioners were responsible for monitoring top management actions to seek stakeholders' support. Based on the SPSS output, audit committee had an effect on carbon emissions disclosure. This supported stakeholder theory that the audit committee had an important role in the supervision and controlling of the company, including in the disclosure of the environment. Therefore, the higher the number of audit committees the higher the disclosure of carbon emissions because supervision became more effective.

CONCLUSIONS

This study aims to examine the factors affecting carbon emission disclosure in companies in Indonesia, namely environmental performance, organizational visibility, financial condition, and corporate governance mechanisms. The result shows that organizational visibility, profitability, managerial ownership, and audit committee have significant effect on carbon emission disclosure, while environmental performance, financial distress, institutional ownership, and proportion of independent commissioners do not have effect on carbon emission disclosure.

This study has limitations. First, this study is limited to the non-financial sector in general, so it is suggested for further research can be conducted on the sectors existing on the Indonesia Stock Exchange specifically, such as sectors of mining, property and real, food and beverages, and other sectors related to disclosure of carbon emissions. Second, disclosure of carbon emission in Indonesia is still relatively low, especially in the disclosure of greenhouse gas emission and costs reductions. This is because Indonesia does not have regulation in the disclosure of costs in this case the cost of carbon emission reduction. Therefore, it is suggested for policy makers (regulators) to formulate policies related to disclosure of carbon emission reduction costs and carbon emission reduction funds provision, as currently many companies have not disclosed the costs associated with carbon emission disclosure separately from operational costs of the company. For the company, it is better to increase carbon emission disclosure especially related to the financial impacts and opportunities of climate change as companies contribute to climate change and this situation affects the company's performance.

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