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IMPACT OF INSTITUTIONAL QUALITY ON CO2 EMISSIONS IN CEE COUNTRIES

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ABSTRACT

This study investigates the impact of institutional quality on CO2 emissions in Central and Eastern European (CEE) countries between 1996 and 2020. The research reveals a quadratic relationship by analyzing key institutional indicators, such as political stability, rule of law, control of corruption, voice and accountability, government effectiveness, and regulatory quality. According to the research, CO2 emissions initially increase with institutional improvements but begin to decline after exceeding a threshold of 0.329. The findings emphasize the need for improved institutional quality to reduce CO2 emissions in CEE countries. The study recommends that governments enhance institutional quality by reinforcing the rule of law, improving governmental effectiveness, and implementing anti-corruption measures.

Keywords: Institutional quality, CO2 emissions, ARDL, GDP, CEE countries.

JEL Classification Codes: F64, Q56, O43.

INTRODUCTION

All indicators of institutional quality, including the rule of law, control of corruption, lack of violence, voice and accountability, political stability, government effectiveness, and regulatory quality significantly influence CO2 emissions in a country since these variables are closely related to environmental policies and rules to prevent enviromental degradation (Fredriksson and Neumayer, 2016; Bae et al., 2017; Amin et al., 2021). In other words, the reduction of corban emissions mainly depends on the effectivenes of institutions. This research analyzes the link between institutional quality and CO2 emissions in the sample of Central and Eastern European (CEE) countries, comprising Poland, Croatia, the Czech Republic, Hungary, Albania, Bulgaria, Romania, the Slovak Republic, Slovenia, Estonia, Latvia and Lithuania.

Generally, the exploration of the link between institutional quality and CO2 can be conducted through 3 hypotheses. Firstly, the supply-leading hypothesis proposes that institutional quality could reduce carbon emissions. According to the hypothesis effective institutions result in the development and execution of strategies that could lead to more green energy use and less CO2 emissions. On the flip side, ineffective institutions and insufficient government regulation increase CO2 emissions; therefore, a country's capacity to address environmental pollution is closely tied to the effectiveness of its institutions (Ibrahiem, 2020). In the second place, a demand-following hypothesis suggests that higher CO2 emissions could cause public health problems, and this might decrease producticity and raise health-related government expenditures. Therefore, to overcome such kind of unwanted consequences, goverments implement strategies to improve the institutional quality and regulations to boost awareness and support in mitigating the adverse social impacts of CO2 emissions. Thirdly, a neutrality hypothesis emphasizes no link between institutional quality and CO2 emissions (Arvin et al. 2022). In this academic article the main focus is empirically examine the first hypothesis, and providing insights into the role of institutional quality in shaping CO2 emissions.

As it was mentioned, this academic research seeks to investigate the impact of institutional quality on CO2 emissions in Central and Eastern European countries. The study focuses on CEE countries due to several reasons. To begin with, from the institutional quality perspective it can be observed big difference among CEE countries which provides a rich dataset how different institutional quality attects CO2 emissions. According to Wordldwide Governance Indicators (2022), control of corruption index was -0.41 in Albania but in Slovenia same indicator was 0.77 in 2022. In the same year government effectiveness was -0.27 in Bulgaria but almost four times higher (1.09) in the Czech Republic. Secondly, it can be observed big variation from the environmental policy perspective. In certain CEE countries, industrial development has taken precedence over environmental regulations, resulting in higher CO2 emissions. However, other countries in the region prioritize environmental concerns, leading to a noticeable gap in CO2 emissions among them. A relevant example of this would be Estonia and the Czech Republic, according to the Emissions Database for Global Atmospheric Research (2022), CO2 emissions in Estonia was 14.9 but in Czechia it was 97.7 in 2021.

As of now, there has been less study examining the relationship between institutional quality and CO2 emissions in the CEE countries. This study seeks to bridge this gap in the literature on institutional and environmental economics in the Central and Eastern European states.

The subsequent sections of this study are organized as follows: Section 2 provides a review of the literature, Section 3 discusses the data and methodology employed. The interpretation of empirical results is presented in Section 4, while Section 5 offers concluding remarks and policy suggestions.

LITERATURE REVIEW

The increasing significance of institutional quality in the promotion of environmental sustainability is becoming more pronounced in recent literature. According to Egbetokun et al. (2020), environmental quality in a country relies on governmental institutions, as air pollution tends to rise in nations where the implementation of environmental rules is not effective. The effectiveness of institutions is crucial for the promotion of renewable energy use and the achievement of sustainable development. Salman et al. (2019) found a critical role of institutional quality in reducing CO2 emissions and enhancing economic growth by analyzing the economies of Indonesia, South Korea, and Thailand between 1990 and 2016. In the same

vein, Shahbaz et al. (2019) concluded that institutional quality enhances the enviromental sustainability in G7 countries.

A theoretical model proposed by Fredriksson and Svensson (2003) provided evidence that, corruption and political instability reduce the effectiveness of environmental policies. A view was also supported by Biswas et al. (2012), who argued that high level of corruption fosters growth of the shadow economy which in turn increases CO2 emissions. Especially, the author mentioned detrimental effects of political corruption on the environment. Al-Mulali and Ozturk (2015) concluded that while corruption control and government effectiveness do not significantly affect the credibility of the Environmental Kuznets Curve (EKC) hypothesis, institutions could play a central role in reducing CO2 emissions in Cambodia.

Using the system-GMM method, Tamazian and Rao (2010) demonstrated that in transitional economies, institutional quality leads to a reduction in carbon emissions. Correspondingly, using the same methodology, Ali et al. (2019) considered the rule of law, corruption, and bureaucratic quality in a sample of 47 developing countries and concluded that institutional quality reduces CO2 emissions. In contrast, Arminen and Menegaki (2019) applied system-GMM to examine the impact of corruption on carbon emissions in 67 selected countries and revealed that corruption has a limited impact on CO2 emissions. Bae et al. (2017) took into consideration not only corruption but also political democracy and economic freedom and revealed that all mentioned institutional quality factors rise CO2 emissions in 15 former post-Soviet countries. In the same vein, Migliardo and Lisciandra (2017) analyzed 153 countries and found that corruption exacerbates the environment.

Furthermore, Damania et al. (2003) and Cole et al. (2006) highlighted the crucial role of institutions in determining how foreign direct investment and trade policies affect the environment. This implies that countries with adequate institutions can increase the effectiveness of foreign direct investment and trade policies, leading to lower carbon emissions. Since, countries with better institutional quality are more successful in implementing and enforcing environmental laws. On the other hand, Minlah et al. (2021) noticed that strong protection of property rights leads to efficient resource allocation, preventing environmental challenges and promoting economic growth. Similarly, Bhattacharya et al. (2017) reported that institutions promoting property rights protection and reducing transaction costs could enhance the adoption and utilization of eco-friendly technology, limiting the increase of carbon emissions.

Apergis and Ozturk (2015) highlighted the crucial role of political indicators in understanding CO2 emissions in 14 Asian countries from 1990 to 2011. Law and Ibrahim (2016) indicated that air quality improvement mainly depends on better institutional quality. According to the authors trade worsens air quality in nations with poor institutional quality, however benefits those with strong institutions. Gani (2012) observed that political stability and corruption control reduce CO2 emissions, however, the researcher mentioned no significant correlation between CO2 emissions and government effectiveness. Gholipour and Farzanegan (2018) emphasized the positive effect of government spending on environment conservation in reducing PM10 and CO2 emissions in a sample of Middle Eastern and North African countries during the period from 1996 to 2015.

The importance of institutional quality in reducing CO2 emissions and fostering economic growth was also observed in the sample of the European Union and the Middle East and Africa regions (Abid, 2017). Khan and Rana (2021) revealed that a decrease in CO2 emissions across 41 Asian countries from 1996 to 2015 was due to the quality of institutions. Adams et al. (2019), identified a minimal impact of institutional quality on reducing CO2 emissions in Sub-Saharan African nations from 1980 to 2015. However, according to Abid (2016), in the Sub-

Saharan region, government efficiency, control of corruption, political stability, and democracy decrease CO2 emissions, while rule of law and regulatory quality increase CO2 emissions. Similarly, Wawrzyniak and Doryn (2020) claim that government effectiveness decreases CO2 emissions in emerging and developing economies. By analysing sixty-six developing countries from 1991 to 2017, Azam et al. (2021) revealed a positive impact of institutional quality on CO2 emissins.

Generally, few articles have analyzed the link between CO2 emissions and institutional quality in CEE countries. Hence, this study seeks to empirically examine the comprehensive impact of institutional quality on CO2 emissins in a sample of CEE countries.

DATA AND METHODOLOGY

This study employs balanced panel data from 1996 to 2020 to estimate the impact of institutional quality on CO2 emissions in Central and Eastern European (CEE) countries. The dataset for this analysis is sourced from various databases, with CO2 emissions data obtained from the World Bank. Other indicators derived from the same source include Foreign Direct Investment (FDI), GDP per capita (GDPPCAP), and trade openness (OPEN), which are incorporated into the regression model as control variables. The primary independent variable is institutional quality (INSQUAL), derived from the World Governance Indicators (WGI).

INSQUAL serves as a widely recognized proxy for institutional quality, as demonstrated in previous studies (Salman et al., 2019; Le and Ozturk, 2020; Khan and Rana, 2021; Mehmood, 2021). This index comprises six dimensions: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption, all sourced from WGI. INSQUAL is calculated as the arithmetic mean of these dimensions, with a range from -2.5 (indicating the lowest institutional quality) to 2.5 (indicating the highest institutional quality).

In addition, FDI is included as a proxy for financial development, following the methodology of Ibrahim and Law (2016), Le and Ozturk (2020), and Haldar and Sethi (2021). FDI is measured as net inflows expressed as a percentage of GDP.

Numerous studies underscore the significance of these variables in the context of economic development and their relationship with CO2 emissions (Mavragani et al., 2016; Ali et al., Jahanger et al., 2022). Consequently, GDP per capita (constant 2015 USD) is also included among the control variables. The final variable considered is trade openness, which has been identified as a critical factor influencing CO2 emissions in multiple studies (Sebri and Ben-Salha, 2014; Jebli and Youssef, 2015).

The final equation for this study is represented as follows:

$CO2_{it}$=*f*(INSQUAL, $INSQUAL^2$ FDI, GDPPCAP, OPENNESS)

This study analyzes the long-run impact of institutional quality on CO2 emissions using the PMG-ARDL method developed by Pesaran et al. (1999). This approach offers several advantages compared to alternative methodologies, including the ability to estimate both short- and long-run relationships among variables while effectively addressing endogeneity issues (Gasimov et al., 2023). Additionally, this method demonstrates greater efficiency when applied to datasets with a limited number of observations (Alexiou et al., 2014).

Before implementing the PMG-ARDL method, it is essential to test for cointegration among the variables. Several tests are available for this purpose; in this study, the Johansen Fisher test is employed. This method serves as an alternative by combining individual cross-sections to

obtain test statistics for panel data (Skare and To, 2020). The null hypothesis posits the absence of a cointegration relationship among the variables. Following the application of the cointegration test, the long-run relationships among the variables can be investigated.

EMPIRICAL RESULTS

Coingetartion test results

For analyzing the long-run relationship among variables Johansen Fisher test with the null hypothesis of no cointegration is applied. Test results are presented in Table 1.

Table 1. Johansen Fisher cointegration test results

Hypothesized No. Of CE(s)	Fisher Stat (Trace test)	Prob	Fisher Stat (Max-eigen test)	Prob
None	164.7	0.0000	125.1	0.0000
Atmost 1	64.86	0.0000	45.17	0.0056
Atmost 2	35.46	0.0619	26.11	0.3474
Atmost 3	24.40	0.4387	19.88	0.7037
Atmost 4	32.00	0.1271	32.00	0.1271

Source: Based on E-views estimations

ARDL results

By testing the existence of long-run relationships among variables long-run coefficients can be estimated. Obtained results are presented in Table 2.

Table 2. ARDL long-run results

Variables	Coefficients	Std. Error	t-statistic	Prob
INSQUAL	0.783388	0.247620	3.164678	0.0018***
INSQUAL^2	-1.192071	0.356201	-3.346627	0.0010***
FDI	0.027050	0.011002	2.458653	0.0148**
GDPPCAP	-1.05e-05	3.93e-05	-0.266526	0.7901
OPENNESS	-0.024050	0.005021	-4.790072	0.0000***

Source: Based on E-views estimations

Note: ***, ** and * denote significance levels 0.01, 0.05 and 0.1 respectively

According to ARDL long-run estimations, there is a non-linear relationship between institutional quality and CO2 which is statistically significant at 1%. Calculating the threshold level gives us 0.329. Statistically significant coefficients are also obtained for FDI and openness with negative signs. Differently, the coefficient of GDPPCAP is statistically insignificant.

CONCLUDING REMARKS

The main aim of this study is to examine how institutional quality affects CO_2 emissions in Central and Eastern European (CEE) countries over the period 1996–2020. In addition to institutional quality, the analysis also considers foreign direct investment (FDI), GDP per capita, and trade openness as key determinants of CO_2 emissions. To investigate these relationships, the PMG-ARDL method is applied.

The empirical results indicate a quadratic (non-linear) relationship between institutional quality and CO_2 emissions. More specifically, once institutional quality exceeds the threshold value of 0.329, further improvements contribute to a reduction in CO_2 emissions in the sample countries. The findings for the control variables show that FDI and trade openness have a statistically significant and negative effect on CO_2 emissions. Although GDP per capita has a negative coefficient, its long-run impact is not statistically significant.

These findings offer several important policy implications. First, policymakers in CEE countries should give priority to institutional reforms that strengthen the rule of law, improve government effectiveness, enhance regulatory quality, and intensify anti-corruption efforts. The existence of a threshold effect suggests that in countries with weak institutional structures, initial reforms may coincide with higher emissions due to increased economic and industrial activity. Therefore, reforms need to be comprehensive, consistent, and long-term in order to surpass the identified threshold, after which environmental improvements become more visible. In this sense, partial or fragmented reforms are unlikely to produce lasting environmental benefits.

This study contributes to the literature on institutional economics and environmental sustainability by providing empirical evidence from CEE countries, a region that has received relatively limited attention in this field. However, some limitations should be acknowledged. The composite index of institutional quality may conceal the distinct effects of individual governance components. Future research could analyze each institutional dimension separately and consider alternative environmental indicators, such as the ecological footprint or renewable energy consumption. Extending the time period and incorporating structural break tests may also provide deeper insights into the dynamic relationship between institutional reforms and environmental outcomes in transition economies.

REFERENCES

Abid, M. (2016). Impact of economic, financial, and institutional factors on CO2 emissions: evidence from sub-Saharan Africa economies. *Utilities Policy*, *41*, 85-94.

Abid, M. (2017). Does economic, financial and institutional developments matter for environmental quality? A comparative analysis of EU and MEA countries. *Journal of environmental management*, *188*, 183-194.

Adams, S., & Acheampong, A. O. (2019). Reducing carbon emissions: the role of renewable energy and democracy. *Journal of Cleaner Production*, *240*, 118245.

Alexiou, C., Tsaliki, P., & Osman, H. R. (2014). Institutional quality and economic growth: Empirical evidence from the Sudanese economy. Economic Annals, 59(203), 119-137.

Ali, H. S., Zeqiraj, V., Lin, W. L., Law, S. H., Yusop, Z., Bare, U. A. A., & Chin, L. (2019). Does quality institutions promote environmental quality?. *Environmental Science and Pollution Research*, *26*, 10446-10456.

Amin, S., Jamasb, T., & Nepal, R. (2021). Regulatory reform and the relative efficacy of government versus private investment on energy consumption in South Asia. *Economic Analysis and Policy*, *69*, 421-433.

Apergis, N., & Ozturk, I. (2015). Testing environmental Kuznets curve hypothesis in Asian countries. *Ecological indicators*, *52*, 16-22.

Arminen, H., & Menegaki, A. N. (2019). Corruption, climate and the energy-environment-growth nexus. *Energy Economics*, *80*, 621-634.

Arvin, M. B., Pradhan, R. P., Nair, M. S., & Dabir-Alai, P. (2022). Exploring the temporal links between foreign aid, institutional quality, and CO2 emissions for poorer countries. *Energy and Buildings*, *270*, 112287.

Azam, M., Liu, L., & Ahmad, N. (2021). Impact of institutional quality on environment and energy consumption: evidence from developing world. *Environment, Development and Sustainability*, *23*, 1646-1667.

Bae, J. H., Li, D. D., & Rishi, M. (2017). Determinants of CO2 emission for post-Soviet Union independent countries. *Climate Policy*, *17*(5), 591-615.

Bhattacharya, M., Churchill, S. A., & Paramati, S. R. (2017). The dynamic impact of renewable energy and institutions on economic output and CO2 emissions across regions. *Renewable Energy*, *111*, 157-167.

Biswas, A. K., Farzanegan, M. R., & Thum, M. (2012). Pollution, shadow economy and corruption: Theory and evidence. *Ecological economics*, *75*, 114-125.

Cole, M. A., Elliott, R. J., & Fredriksson, P. G. (2006). Endogenous pollution havens: Does FDI influence environmental regulations?. *Scandinavian Journal of Economics*, *108*(1), 157-178.

Damania, R., Fredriksson, P. G., & List, J. A. (2003). Trade liberalization, corruption, and environmental policy formation: theory and evidence. *Journal of environmental economics and management*, *46*(3), 490-512.

Egbetokun, S., Osabuohien, E., Akinbobola, T., Onanuga, O. T., Gershon, O., & Okafor, V. (2020). Environmental pollution, economic growth and institutional quality: exploring the

nexus in Nigeria. *Management of Environmental Quality: An International Journal*, *31*(1), 18-31.

Emissions Database for Global Atmospheric Research (2022), https://edgar.jrc.ec.europa.eu/

Fredriksson, P. G., & Neumayer, E. (2016). Corruption and climate change policies: do the bad old days matter?. *Environmental and resource economics*, *63*, 451-469.

Fredriksson, P. G., & Svensson, J. (2003). Political instability, corruption and policy formation: the case of environmental policy. *Journal of public economics*, *87*(7-8), 1383-1405.

Gani, A. (2012). The relationship between good governance and carbon dioxide emissions: evidence from developing economies. *Journal of Economic Development*, *37*(1), 77.

Gasimov, I., Asgarzade, G., & Jabiyev, F. (2023). The impact of institutional quality on economic growth: Evidence from post-Soviet countries. *Journal of International Studies*, *16*(1).

Gholipour, H. F., & Farzanegan, M. R. (2018). Institutions and the effectiveness of expenditures on environmental protection: evidence from Middle Eastern countries. *Constitutional Political Economy*, *29*, 20-39.

Haldar, A., & Sethi, N. (2021). Effect of institutional quality and renewable energy consumption on CO2 emissions− an empirical investigation for developing countries. *Environmental Science and Pollution Research*, *28*(12), 15485-15503.

Ibrahiem, D. M. (2020). Do technological innovations and financial development improve environmental quality in Egypt?. *Environmental Science and Pollution Research*, *27*(10), 10869-10881.

Ibrahim, M. H., & Law, S. H. (2016). Institutional quality and CO2 emission–trade relations: evidence from S ub-S aharan A frica. *South African Journal of Economics*, *84*(2), 323-340.

Jahanger, A., Usman, M., & Balsalobre-Lorente, D. (2022). Linking institutional quality to environmental sustainability. *Sustainable Development*, *30*(6), 1749-1765.

Jebli, M. B., & Youssef, S. B. (2015). The environmental Kuznets curve, economic growth, renewable and non-renewable energy, and trade in Tunisia. *Renewable and sustainable energy reviews*, *47*, 173-185.

Khan, M., & Rana, A. T. (2021). Institutional quality and CO2 emission–output relations: the case of Asian countries. *Journal of Environmental Management*, *279*, 111569.

Le, H. P., & Ozturk, I. (2020). The impacts of globalization, financial development, government expenditures, and institutional quality on CO2 emissions in the presence of environmental Kuznets curve. *Environmental Science and Pollution Research*, *27*(18), 22680-22697.

Lisciandra, M., & Migliardo, C. (2017). An empirical study of the impact of corruption on environmental performance: Evidence from panel data. *Environmental and resource economics*, *68*, 297-318.

Mavragani, A., Nikolaou, I. E., & Tsagarakis, K. P. (2016). Open economy, institutional quality, and environmental performance: A macroeconomic approach. *Sustainability*, *8*(7), 601.

Mehmood, U. (2021). Renewable-nonrenewable energy: institutional quality and environment nexus in South Asian countries. *Environmental Science and Pollution Research*, *28*(21), 26529-26536.

Minlah, M. K., Zhang, X., Ganyoh, P. N., & Bibi, A. (2021). Does the environmental Kuznets curve for deforestation exist for Ghana? Evidence from the bootstrap rolling window Granger causality test approach. *Forestry Economics Review*, *3*(1), 38-52.

Ozturk, I., & Al-Mulali, U. (2015). Investigating the validity of the environmental Kuznets curve hypothesis in Cambodia. *Ecological indicators*, *57*, 324-330.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American statistical Association*, *94*(446), 621-634.

Salman, M., Long, X., Dauda, L., & Mensah, C. N. (2019). The impact of institutional quality on economic growth and carbon emissions: Evidence from Indonesia, South Korea and Thailand. *Journal of Cleaner Production*, *241*, 118331.

Sebri, M., & Ben-Salha, O. (2014). On the causal dynamics between economic growth, renewable energy consumption, CO2 emissions and trade openness: Fresh evidence from BRICS countries. *Renewable and Sustainable Energy Reviews*, *39*, 14-23.

Shahbaz, M., Balsalobre, D., & Shahzad, S. J. H. (2019). The influencing factors of CO 2 emissions and the role of biomass energy consumption: statistical experience from G-7 countries. *Environmental Modeling & Assessment*, *24*, 143-161.

Škare, M., & TO, D. (2020). Energy Consumptio Cointegration Anal. *Acta Montanistica Slovaca*, *25*, 202.

Tamazian, A., & Rao, B. B. (2010). Do economic, financial and institutional developments matter for environmental degradation? Evidence from transitional economies. *Energy economics*, *32*(1), 137-145.

Wawrzyniak, D., & Doryń, W. (2020). Does the quality of institutions modify the economic growth-carbon dioxide emissions nexus? Evidence from a group of emerging and developing countries. *Economic research-Ekonomska istraživanja*, *33*(1), 124-144.

Wordldwide Governance Indicators (2022)
https://www.worldbank.org/en/publication/worldwide-governance-indicators

MƏRKƏZİ VƏ ŞƏRQİ AVROPA ÖLKƏLƏRİNDƏ İNSTİTUSİONAL KEYFİYYƏTİN CO2 EMİSSİYALARINA TƏSİRİ

Qədir Əsgərzadə,
İlkin Qasımov

Xülasə

Bu tədqiqat 1996–2020-ci illər ərzində Mərkəzi və Şərqi Avropa ölkələrində institusional keyfiyyətin CO_2 emissiyalarına təsirini araşdırır. Tədqiqat siyasi sabitlik, qanunun aliliyi, korrupsiyaya nəzarət, ifadə azadlığı və hesabatlılıq, hökumətin effektivliyi və tənzimləmə keyfiyyəti kimi əsas institusional göstəriciləri təhlil etməklə kvadratik əlaqənin mövcudluğunu müəyyən etmişdir. Nəticələrə əsasən, institusional göstəricilərin yaxşılaşması ilkin mərhələdə CO_2 emissiyalarının artmasına səbəb olur, lakin 0,329 hədd göstəricisini aşdıqdan sonra emissiyalar azalmağa başlayır.

Əldə olunan nəticələr Mərkəzi və Şərqi Avropa ölkələrində CO_2 emissiyalarının azaldılması üçün institusional keyfiyyətin yüksəldilməsinin zəruriliyini vurğulayır. Tədqiqat hökumətlərə qanunun aliliyinin möhkəmləndirilməsi, dövlət idarəçiliyinin effektivliyinin artırılması və korrupsiyaya qarşı mübarizə tədbirlərinin həyata keçirilməsi vasitəsilə institusional keyfiyyətin gücləndirilməsini tövsiyə edir.

Açar sözlər: İnstitusional keyfiyyət, CO_2 emissiyaları, ARDL modeli, ÜDM, Mərkəzi və Şərqi Avropa ölkələr

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