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**Fachbereich 1**



Hochschule für  
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# The diversification of natural gas supplies and its implications on the future of European renewables

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TERM PAPER

for the Course Dimensions of European Integration:  
Nature, Sustainability and Security  
in the MA Programme Political Economy of European Integration

Berlin, February 2015

Due date: 16.02.2015

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Semester: Winter Term 2014/15

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## ***1. Abstract***

The essay examines the impact of diversification of gas supplies on the attainability of the EU targets for renewable energy. It is argued that the aspirations to diversify along with general dynamics in European energy production can have a detrimental effect on the future of renewables. The transition to renewable energy is hindered by the systemic fallacies of fossil capitalism, while the diversification can only be a catalyst to continuing capital accumulation.

## ***2. Introduction***

The unstable situation in the east of Ukraine, which is a transit country for about 15% percent of EU total import gas, has sparked the debate on the diversification of gas supplies.<sup>1</sup> We argue that the aspirations to diversify along with general dynamics in European energy production can have a detrimental effect on the future of renewables. The transition to renewable energy is hindered by the systemic fallacies of fossil capitalism, while the diversification can only be a catalyst to continuing capital accumulation.

The essay is divided into 4 sections. In the first section, we assess the premises for this critical stance drawing onto the ideas of capital infinite accumulation, Jevons paradox, and the second capitalist contradiction in the context of fossil capitalism (Alvater 2006, Foster 1995, O'Connor 1998, Piketty 2014). In the section 2, we then explain why diversification of gas supplies as the securitization of the issue of energy security helps to accumulate capital in fossil fuels energy production (Dickel *et al.* 2014, Pedell 2005). In the section 3, the lack of capital and imperialist tendencies on renewables' market are analysed. The final section is dedicated to a case study on tracked tendencies in Poland (Helm 2011, Johnson & Boersma 2013).

The diversification of gas supplies draws attention on the current energy system overreliance on Russian exported gas, while the signs of struggle in the transition to renewable energy that diversification is a socially constructed issue and a more fundamental revision is needed.

## ***3. Foundations of criticism***

The recent data published by Eurostat reveals that Europe is experiencing 20-year low energy consumption level. Peaking in 2006, consumption has then dramatically fallen by 9% up to 2013 (Eurostat 2015). The agency was quick to indicate that European striving for more energy-efficient production yields some fruits, as the problem of climate change well-recognised by politicians is impossible to tackle without considerable reduction in energy use. However, a more obvious reason for this trend is the impact of the long-standing financial crisis, inhibiting

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<sup>1</sup> The total gas imports from Russia constitute 34% of all natural gas imported (Dickel *et al.* 2014: 4).

the demand for energy within the EU. The researches argue although that being a financial crisis at the beginning, it has revealed its multidimensional nature and the flaws of the whole capitalist system. One can speak of a ‘global crisis’, encompassing socio-economic, ecological, and ideological crises, with a food crisis as a consequence (Roberts, 2008). And since orthodox economics doesn’t regard the ‘Earthsystem’ as a closed system including economy and putting limits to the growth of it, other parts of the closed system, such as ecosystems, in turn harshly experience the expansion of economy (Daly & Farley 2011). The dominance of orthodox thinking ignores that economy is embedded in society, as well as nature, and puts economy into borderless position subduing and commodifying society and nature (Polanyi 1944). The current realities of global multidimensional crisis raise the question of building economy back into society.

We would argue that the transition to renewable energy production as a key part of nature de-commodification is hindered by the systemic fallacies of fossil capitalism that promotes the exploitation of fossil fuels, such as natural gas, to continue economic development (Alvater 2006). The vast amount of capital accumulated from the production of fossil fuels barely transforms into the capital for renewables and thus threatens the progress to the targets for 2020 set by Renewable Energy Directive (RED) and beyond. We then examine the premises of such a critical stance.

The first environmental critique of capitalism was essentially provided by Karl Marx. Analyzing the Ricardian model of principle of scarcity and the price of capital, he concluded with what is known as the ‘principle of infinite accumulation’, meaning the bias of capital to accumulate in ever fewer pockets. The only aspiration of capitalists then is the reinvestment of surplus value, supported by competition. “Production tends to expand exponentially until interrupted by crises (depressions and wars) and it is this dynamic at the very core of capitalism that places enormous, unsustainable pressure on the environment.” (Townsend 2007:17) One example here can be that long-term nature of investment into natural gas extraction and transportation infrastructure, as well as stable income from its delivery to consumers, does not provide an economic incentive for fossil capitalists to turn to renewables.

The term ‘second contradiction of capitalism’ coined by J. O’Connor to complement Marx’s contradiction of labour and capital goes on to explain why capitalism undermines the factors for production needed for infinite accumulation of capital. These factors don’t only include energy, resources and labour power. They also encompass transport infrastructure, education and healthcare system, decent ecosystem, etc. that are not plainly produced by capital, but are necessary for its disruptive accumulation. As the side factors for production are

degrading, the costs of labour, capital and resources grow, leading to underproduction. Ecological degradation following the nuclear waste dumping or carbon dioxide emissions as inevitable consequence of energy production would after all imply the erosion of living standards of a human being, regardless of income (O'Connor 1998). The temperature growth by 2 degrees, as indicated by noted Stern Review, would mean the deterioration of humanity's natural capital in the century ahead and a completely different ecological reality in which the transition to carbon-free world would be too late to be relevant (Piketty 2014: 567-568).

The diversification of natural gas supplies to Europe, supported by the collapse in oil prices in 2014, certainly leads to the decrease in natural gas prices. Paraphrasing the Jevons paradox, namely that an advance in energy efficiency of a fossil fuel only leads to the rise in its extraction and dependence on it, the reduction in prices and an improved position of natural gas supplies, in terms of European energy security, can eventually mean the continuing reliance on it. Such a rebound effect exemplifies the unsteady conditions for renewables in what J.B. Foster called the capitalist treadmill of (energy) production. (Foster 1995)

#### ***4. Gas capital: diversification and accumulation***

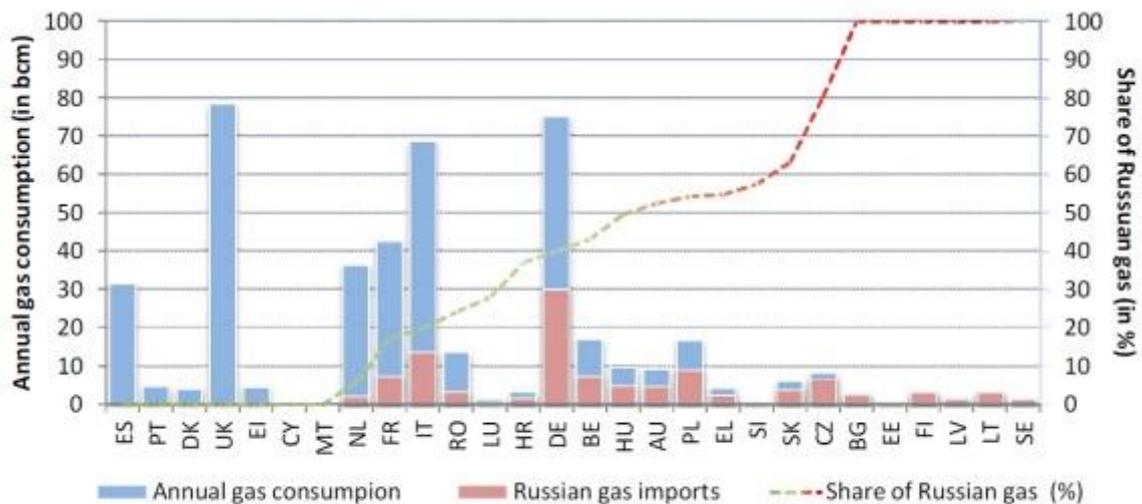
Being less polluting than coal and less risky than nuclear power, natural gas has been given the role to balance alternating renewable power sources such as wind and solar in load peaks and to provide a back-up while in transition to renewable energy. However, the reliance on it can hinder this process, as gas prices get low, and more capital is in turn channeled to establish new gas infrastructure accelerated by a political decision to diversify gas supplies.

The debate around instability of natural gas supplies from Russia sparked during the ongoing Ukrainian crisis. The termination of supply to Ukraine is believed to show that Russia can play its energy card against sanctions imposed by the EU and entirely interrupt the supply to Europe. Therefore, to ensure sufficient energy security Europe, and especially Baltic and Eastern European countries heavily dependent on Russian gas, should diversify the supplies of natural gas from other producers.

The dependence of Europe on Russian gas is uneven, as Figure 1 show. If disrupted, it will firstly affect Eastern Europe, with only 6 countries of EU-28 not importing Russian gas. An argument over the price of gas for Ukraine in 2009 has already led to the shut-off of the pipelines through Ukraine for 2 weeks. In the short term, such a disruption would not more damaging than it was in 2009, but in the longer term Europe finds itself vulnerable and in need to diversify. However, it is still arguable whether Russia has considerable will and desire to even question its commitment to long-term contracts with European countries. Russian natural gas exports to

Europe account for 14,5% GDP (Forbes 2014), and the shut-off coupled with sanctions on Russian oil industry and banking sector would be disastrous for any political regime. Russia is also in search for diversification, looking mainly to Chinese energy market, although the construction of delivery infrastructure is long from being fully established. One can then argue that striving for more energy security with the reduction of Russian gas share is much more politically motivated than risk-motivated, with the construction of new costly infrastructure independent from Russia being a securitization of the problem.

Figure 1. Imports of Russian gas in relation to total annual gas consumption of the EU-28 (aggregated 2012 data)



Sources: BP (2013), EIA (2013 and 2014).

Source: De Micco (2014)

Moreover, most of the supply contracts are long-term, from 10 to 35 years, and signed on take-or-pay basis, reflecting the fact the operation of a gas field requires constant transportation or combustion if there no consumers. Hence, Europeans are obliged to buy around 130 bcm and 70 bcm of gas in 2020 and 2030 respectively (Dickel *et al.* 2014). The price for this gas is calculated partly on gas-to-gas-competition basis and partly indexed to oil prices. The recent downturn of the latter brings the price for the gas down significantly, while the former is used for pricing LNG gas and will also be the basis for pricing in the complete liberalized market which goes in line with the creation of energy union. The completion of energy union is one of the major targets of newly-elected European Commission. It would promote the spot-market pricing, which can further decrease the price for gas in Europe. The introduction of spot-market mechanism can then lead to three resulting issues. First, the pace of oil prices drop has already had a cumbersome effect on deflation within eurozone, and the same gas trend will burden ECB objectives of price stability (Bloomberg 2015). Second, as already mentioned in the first section of the essay, fossil fuel prices fall, and particularly natural gas, which is seen as a transitory

fossil fuel to carbon-free energy production, can have a rebound effect. Consequently, dependence on natural gas in electricity generation will increase, especially in the countries engaged in the long-to-be-recompensed gas infrastructure projects and slow development of the infrastructure for renewable energy.

The third resulting issue arises with the process of unbundling introduced with the Third liberalization package. This basically strikes off the possibility of monopolization of energy sector, meaning that production (or extraction in case of fossil fuels), transporting infrastructure and the delivery to consumers must be operated by different companies. Primary example of capitalism insustainability and market incapability to provide an answer to the crisis is in this sense the Californian energy crisis in the summer of the year 2000. A period of long drought has brought down the generation of hydroelectric energy while gas-fired power plant were already working at full capacity. Due to a decade-long low investment into transmission, or mid-stream stage, the load of gas pipelines from Texas has thrown the prices up. At the same time, up-stream and down-stream stages were at place but could prevent the sudden crisis owing to the lack of infrastructure (Pedell 2005: 114).

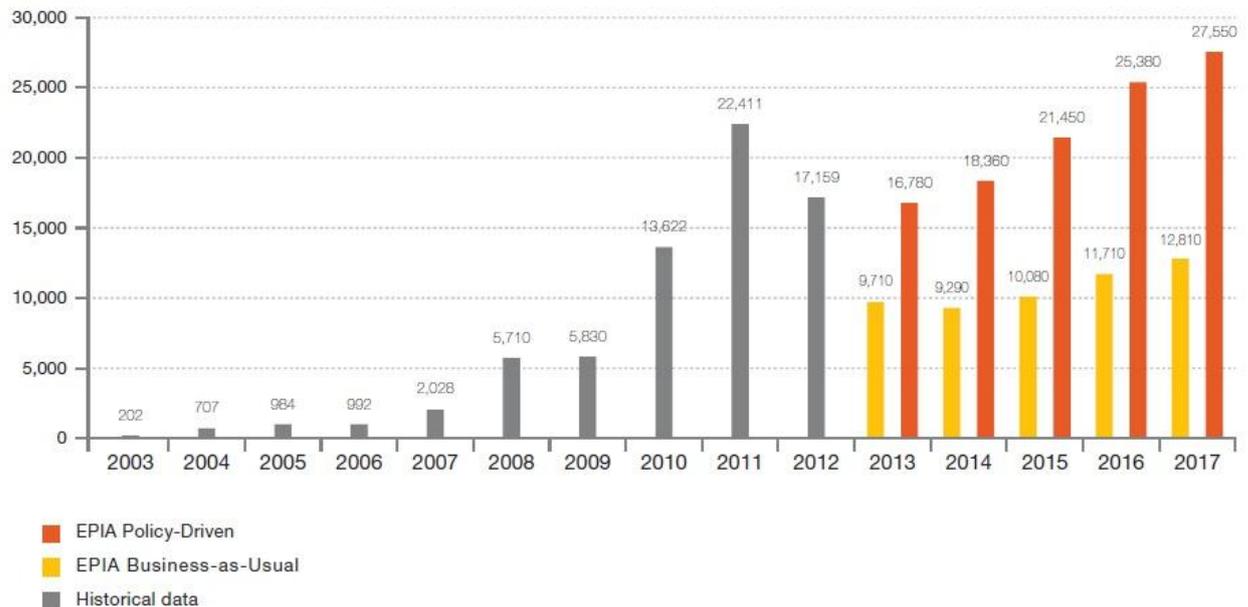
The finalizing construction of LNG hubs in Lithuania, Poland and Croatia as well as 19 other realising projects together with the development of interconnection network would help to bring more spot-market priced gas to Europe. Still, Europe should outbid the thirsty Japanese market which is importing considerable amount of gas from Qatar, the world's biggest exporter. The option of bringing US shale gas seems to be even costlier (Spiegel 2014). Then, a question arises if the energy security is the derivative from more diversified gas supply, which can come even more expensive. If the answer is positive, it displaces investment that could have been made into renewable energy. The abandonment of South Stream by Gazprom and the promotion of Trans-Anatolian and Trans-Adriatic pipelines by European energy giants: E.on, Statoil and BP would bring non-Russian gas as well, providing an opportunity to Southern European countries to rely on gas, putting aside the most ambitious renewable projects.

## ***5. Constraining renewables***

It is uncertain whether the 2020 targets set by RED for clean energy production will be achieved, regarding the current progress. EU Tracking Roadmap Report tells that with 6 countries underachieved modest interim targets, only 9 are projected to meet 2020 targets. There are doubts about 4 countries. While a half of the EU falls short (EU 2014). The outburst of criticism also followed the 2030 EU climate and energy framework agreed in October 2014 by European Council. The targets of 30% for EU-wide energy-efficiency and renewable energy production were reduced by 3% each, with no binding target nationally. According to summit

conclusions, this can be later re-negotiated, namely after UN summit on climate change in December 2015. The opening clause of the conclusions allows also to review the targets in 2020. Both Oxfam EU and Greenpeace EU indicated it as “weak climate package deal” that “must have set the floor not the ceiling of European action”, prior to UN summit. The view was supported by the clean energy and energy-efficient production industries, such as European Photovoltaic Industry Association (EPIA) and European Insulation Manufacturers Association (EurActiv 2014). Renewable energy production remains highly subsidized, often in form of higher costs for consumers, to compete with hydrocarbons. Coal industry is in turn subsidized from the budget, and subsidization continuing to 2018 now threatens Germany’s position to decrease greenhouse gas emission to 40% also set by RED (Reuters 2010). Capital does not run into renewable projects, following the ever diminishing goals for its development. Figure 2 exemplifies dependence of solar power on support mechanisms, such as feed-in tariffs. EPIA business-as-usual scenario presents the phasing out of tariffs and zero replacement of existing support mechanisms, while policy-driven scenario assumes the greater political will to see PV as major power source.

Figure 2. European annual PV market scenarios until 2017 - Business-as-Usual and Policy-Driven (MW)



Source: (EPIA 2013)

In the short run, massive expansion of renewable seems impossible because it would have baneful impact on market of fossil fuels and such supported industries as coal one in Germany. Huge investment has already been made into gas infrastructure as well, with take-or-pay clause being relevant for a longer term. It makes continuation of the search for higher return in gas

industry more profitable in, for instance, building the interconnection pipeline system which is as politically justified in the light of energy union creation and ‘unstable’ energy security.

In addition, despite high potentials, both wind power and solar power face the problem of high up-front costs owing to the current state of business. Feed-in tariffs provide only the opportunity to recompense the costs over a long period of time. This raises the question of more heavy subsidies which are barely available due to austerity policies and prolonged low public investment in infrastructure. Thus, under current capitalist system private investment is desirable. Still, one should have in mind the example of California that is particularly up-to-the-point in case of wind power which needs lengthy transmission lines from offshore, where it has highest potential, to load areas. If the mid-stream would be owned a company different from up- and down-stream, according to the logic of liberalization, then, to become profitable, such an investment appears to be even more long-term than into natural gas.

Accumulated capital best represents the power fossil fuel companies have and enables them to enter bargaining on how transition to clean energy would be conducted. The retreat of the EU on the renewables target to 2030 owes to the pro-gas positions expressed by clean energy associations such as EPIA or European Wind Energy Association. These lobby groups are now controlled by big fossil fuel capitalists, as majority positions in the board are occupied by representatives of European hydrocarbon giants Total, E.On, Enel and Iberdrola (Guardian 2015). Both EPIA and EWEA are now arguing for renewable-gas alliance and have substantially reduced their renewable targets before the crisis. The equal political support for both gas and renewables, as now even clean energy producers think, would inevitably mean the displacement of finance equally between the two and endanger the renewables’ future.

Targets for renewable energy are not binding and leave countries to achieve them using their own methods, and it seems reasonable to examine the process on the national level. Next, we would analyze what implications the natural gas industry, now aspiring to diversification, has on the progress to carbon-free energy in Poland.

## ***6. Case study: Poland***

Currently, 95% of electricity generation in Poland is dependent on coal, with only 7% in the total energy mix dedicated to renewables, mostly biomass, as for 2010 (Piria *et al.* 2014). The country’s resistance to phase out the coal from energy production has had a long story. Polish politicians, including previous PM Donald Tusk, has not once voiced the support for coal, gas and even nuclear energy production, with renewable being a back-up option. The prime reason is the understanding of energy independence as the tool to achieve energy security. Of

course, Poland's coal stance is the object to climate change critique. And as D. Helm puts it, "the obvious strategy would be to switch to natural gas, but that requires reliance on Russia in a context within which the Nord Stream pipeline has been deliberately built outside its borders, between Russia and Germany. Given Poland's terrible historical experiences with its neighbours, energy independence has a much greater resonance than for most other EU members." (Helm 2011: 85) Tusk, now the president of the European Council, has also been an active opponent of gas supplies dependence on Russia what can now have an effect on European level (DW 2014). To promote energy security, Poland is rather looking to fossil fuel energy rather than clean.

Nevertheless, Poland national renewable energy action plan is targeting 15% in the final consumption by 2020 (Ministry of Economy 2010). To keep on track, the country has developed the system of green certificates (GS), which a company receives with each MWh renewable energy generated. GCs then operate as securities and are bought by electric distribution companies which would pay a fine if they don't spend 10% of their output on GCs. Up to 2011, this scheme helped to support many independent renewable energy producers, mainly in wind sector. Simultaneously, the non-renewables energy producers, namely 4 major state-owned corporations dominating the energy sector, have also claimed their GCs, because they started using co-firing in their energy production. These corporations are PGE, Tauron Group, ENEA and Energa (B4). Co-firing implies burning of dry biomass from Asia, which is also regarded as a renewable source of energy. In 2011, the EU introduced measures to limit this practice and make Poland more substantially comply with the renewables requirements. The answer was the comprehensive plan developed by Waldemar Pawlak, then Minister of Economy, to incorporate feed-in tariffs. They proved to be very beneficial to private users, especially in photovoltaics (RI 2012). However, after it became known that this policy would cost €3,5 bln to the B4, the Minister was fired and the renewable policy reconsidered. New legislation pact introduced auctioning meaning that renewables projects should be pre-developed and pre-licensed what is too expensive for independent energy producers. The flood of GCs following the co-firing in the market has also badly hit them, leaving the B4 the only likely investors (Clean Technica 2014). This case exactly shows how path-dependent fossil capitalism can be. Capital draws on higher return which in the short term is concentrated in maintaining coal industry bypassing renewable requirements, and does not transform into capital for clean energy. Small producers are eventually phased out, in this case with the help of the government. Coal policy is of course partly based on the desire to be self-sufficient and satisfy growing demand for energy. But it also leaves 'cleaning' of the energy production to big capital, continuing its endless accumulation.

Still, other obligations, such as the reduction of greenhouse gases emissions, make Poland search for alternatives. There are a number of controversial projects with none of them related to renewable. First, the discovery of shale gas in Europe with significant resource base in Poland made its politicians sure that fossil fuel imports will soon become unnecessary. Polish Geologic Institute estimates the shale gas will cover from 35 years to 65 years of Poland's demand for gas. Nonetheless, the technology of fracking is very contradictory and is banned in France, for example, owing to ecologic costs it bears (Johnson & Boersma 2013). Second, former PM D. Tusk proposed the creation of two nuclear power plants in the country to decrease the CO<sub>2</sub> emissions. The construction cost is considerable and the future of the plants is still unclear. Here, one recalls the second contradiction of capitalism proposed by O'Connor. Both shale gas and nuclear power have damaging impact on the environment. Trying to sort out its own contradictions and to invest in less polluting energy production, capitalism destroys eco-system the industry would work in.

On the top of that is "the most important strategic energy project" which displaces €750 mln investment to create a grand LNG port in Świnoujście with 1200 km net of pipelines to connect consumers up. The project if financed by another state company PGNiG. It is assumed to enlarge the network and eventually link to it LNG terminal under construction in Croatia. Such a network, as well as the complete interconnection network, would certainly require large investment and adequate demand for gas, further troubling the road to more energy-efficiency.

Overall, Poland represents an example of much more dynamic state of business in fossil fuel industry than in renewables. The desire to become entirely self-sufficient does not rest on the idea of using inexhaustible resources, but is stuck in the capitalist choice for well-trodden path. The case of Polish legislation demonstrates how financial power opens the way to bargaining and pressures independent development of renewable energy. In this sense, diversification of gas supplies appears to be a securitization of energy security problem. Socially constructing the notion of overreliance on Russian gas supplies, politicians put forward the expensive projects to become independent. At the same time, they concentrate not on definitely forward-looking renewable option, but on fossil fuel energy supporting the capital.

## ***7. Conclusion***

The transition to renewable energy production as a key part of nature de-commodification is hindered by the systemic fallacies of fossil capitalism that promotes the exploitation of fossil fuels such as natural gas. Long-term nature of investment into natural gas extraction and transportation infrastructure, as well as stable income from its delivery to consumers, does not provide an economic incentive for fossil capitalists to turn to renewables. The decision to turn to

them is thus political, and in the current system fossil capitalists acquire a significant bargaining power in determining the future of renewable energy. The gas-renewables alliance recently promoted is the best example for this.

What is more, the introduction of spot-market mechanism and common gas market, as well as diversification of gas supplies with new pipelines, would significantly bring gas prices down. The problem of induced demand then can confirm Jevons paradox and inhibit the transition to more energy-efficiency and renewable energy production. Moreover, the Poland's case examined in the last part provides many examples for tendencies described earlier. Trying to sort out its own contradictions and to invest in less polluting energy production, capitalism ignores other factors of production destroying eco-system. By doing so, it destroys the milieu necessary for continuing capital accumulation. Oppressing influence of biggest Polish energy companies has also had a profound impact on renewable energy legislation, leaving them the only likely investors in exploitation of inexhaustible resources.

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