

Energy Cooperatives- one Business Model for Renewable Energies

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Abstract

Cooperatives are a business model, which has been considered an option by many people due its simplicity and empowerment. This model has been adopted in many fields, such as the renewable energy sector. In this sense, energy cooperatives have been an important building block of the energy transition in Germany. Such cooperatives, whose number has greatly increased in recent years, play an important role for the supply of clean energy to the German system, helping the country on its energy transition policy. The present paper aims to provide an overview of the German energy cooperatives, ranging from the business model, elements and advantages, up to the challenges that this sector is facing today. As a result, the reader will be able to evaluate the performance and the significance of cooperatives and why these models are certainly innovative.

Keywords: *Cooperatives, Renewable, Involvement, Democracy*

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Introduction

The transformation of energy systems is influencing economic policy agendas all over the world, particularly in industrialized countries. In this process, Germany has taken a pioneering role. Technical innovations, institutional frameworks, and business models established in Germany are of interest for other countries trying to achieve broader use of renewable energies.

Energy cooperatives have been an important building block of the energy transition in Germany. Such cooperatives, whose number has greatly increased in recent years, are not a phenomenon of the recent past. The electrification of rural areas in Germany in the first half of the 20th century was driven mainly by cooperatives and there are about 50 cooperatives still existing today that can look back on such a long history. Energy cooperatives have turned into important supporters of renewable and decentralized energy structures, due to their strong growth since the year 2006, their participation in local renewable energy projects and their democratic awareness. The cooperative form of coordinating local renewable energy projects applies to a decentralized energy system that is managed by many smaller firms - a system concept that is preferred by the majority of German citizens. However, there is not enough knowledge to understand to what extent this organizational form is able to unify a broad group of actors in promoting a renewable energy system and to gather capital for elaborating renewable energy supply structures. Therefore this paper aims at providing an overview of German energy cooperatives. The first chapter deals with the business model of cooperatives, followed by a chapter on the market of renewable energies. Finally, chapter three puts it all together explaining in detail how energy cooperatives work, why members are attracted and which advantages can be found. Even though much research still needs to be done in this field some helpful sources are yet available.

1 Business model of cooperatives

A cooperative is defined as “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically controlled enterprise” (The International Co-operative Alliance, 2014). The reasons to set up a cooperative are varied, among others, the improvements of negotiation power, cost reduction, access to products and services not otherwise available, expansion of new market opportunities, and improvement of incomes. Cooperatives run under the seven principles of international cooperation, which are:

- i. Open and voluntary membership
- ii. Democratic control developed by the members
- iii. Economic participation of the members
- iv. Autonomy and independence
- v. Education, training and information
- vi. Collaboration between cooperatives
- vii. Interest in the community

The main features of cooperative are presented below:

- Easy to found, only three persons are needed, while no member limit exists.
- Members can be natural or legal persons.
- No legal minimum capital is needed
- The organizational structure is simple, composed by directory, administrative council and general committee, all of them composed by the members of the cooperative.

- Constitute a juristic person and required only one legal representative.
- Due its principle of cooperation, the joint effort and cooperation of the parts brings better results than the sum of each contribution individually.
- Democratic principle, where every member has vote, regardless of the amount of capital contribution (this protect from control movements).
- Flexibility that allows the simple entry and exit to the association.
- Security, since the responsibility is limited to the shares.
- In case of dissolution of the cooperative, members have the right to the repayment of their capital contribution.
- Can be expanded or developed to several Energy projects.
- Profits are distributed among every member.
- Cooperatives have a special tax framework, favored by a special tax devolution model.
- Energy cooperatives support a sustainable development of the energy sector.

Cooperatives subsist on the personal involvement of its members (Genossenschaftsverband, 2014). As seen previously, one substantial advantage of cooperatives is that all members have one vote, despite how much capital was provided. Therefore, it is a very democratic legal structure and prevents from superiority of particular members and also from firms, for example mergers or joint-ventures. Additionally, all members are responsible for the effective existence of the

cooperative which leads to a high degree of personal responsibility to the enterprise but also to its own invested capital. Moreover, members are owner and beneficiary at the same time which results in the principle of identity. Members are highly interested to run this institution without difficulties to reach their interests and goals but also to prevent financial difficulties since their own money are involved. This fact is a noticeable difference to other legal structures. As mentioned in previous paragraph, the entrance and resignation of the cooperative is easy to proceed and does not require specific legal frameworks. Consequently, such legal structure can be clarified as very flexible. Cooperatives have also a strong member orientation. Different from other legal structures, governing body and supervisory board have also to be members of the cooperative. Therefore, it ensures that all interests of the members are in focus and supported by the cooperative (Vogt, 2010). All these advantages contribute to great performances of cooperatives and point out the importance as well as relevance of these legal structures (Klemisch, 2014).

Finally, it is important to mention that cooperatives deal only on behalf of the members. This means, that the private investors, the shareholders, are only responsible for the amount which were paid into the company assets. In this business model, every cooperative member is owner as well as beneficiary at the same time. As a consequence, the members shall benefit directly from the cooperative (Genossenschaftsverband, 2014).

2 Cooperative in the energy market

Germany is one of the most active nations with regard to the installment of renewable energy. Almost 27% of the current energy production comes from renewable sources, mainly from solar, wind power and bioenergy. Figure 2.1 shows the renewable energy production in Germany.

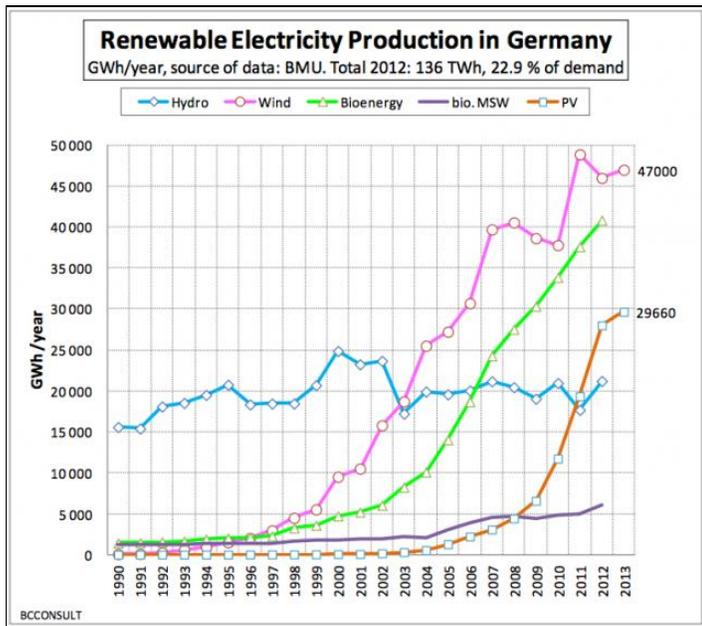


Figure 2.1: Renewable energy production in Germany
Source: Climate Progress, 2014

The previous figure demonstrates the growth experienced by the different sources. Specially, in the specific case of photovoltaic sources, this phenomenon is related with the rise of energy cooperatives, which support the generation from these sources. As shown in the Figure 2.2, energy cooperatives experienced a huge growth in the past years.

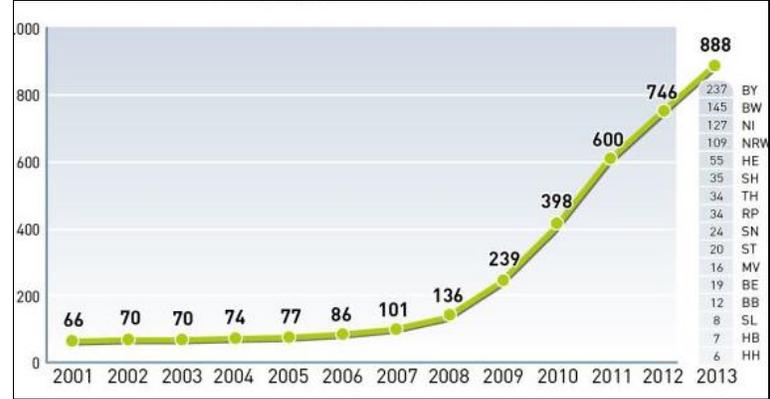


Figure 2.2: Development of energy cooperatives in Germany
Source: Swedish Agency for Growth Policy Analysis, 2013

The boom in the formation of cooperatives shown in the previous figure is principally associated with the change on Germany’s national policy towards renewable energies and at the same time improvements, which were introduced in 2006, on the cooperative act, which made it easier to establish and manage cooperatives (Debor, 2014). In 2006, changes to the German’s cooperative law were settled to refresh and align it with the European legislation about this issue (Statute for a European Cooperative Society, 2003). The main improvements were related with more autonomy and simplification of rules for small size cooperatives, facilitation for the admission of potential investors and minimum capital requirements, simplification of the formal accounting and facilitation of cooperative foundation (specially by the reduction of minimum members from seven to three). With these improvements more people decided to form cooperatives and take advantage from this business model. Another reason for the proliferation of energy cooperatives in the last years is related with changes in the energy market, which makes power generation

based on renewable energy an attractive business. Finally, other factors are the availability of assistance for the establishment of energy cooperatives, rise of funds and, in the view of the financial crisis, people considered cooperatives as an attractive alternative of economic activity (Özgür et al., 2014). Nowadays, cooperatives have a great participation in the total energy supply. Almost half of the total energy production is in the hands of normal citizens and cooperatives. Figure 2.3 displays the participation percentage of cooperatives in the total national renewable energy production.

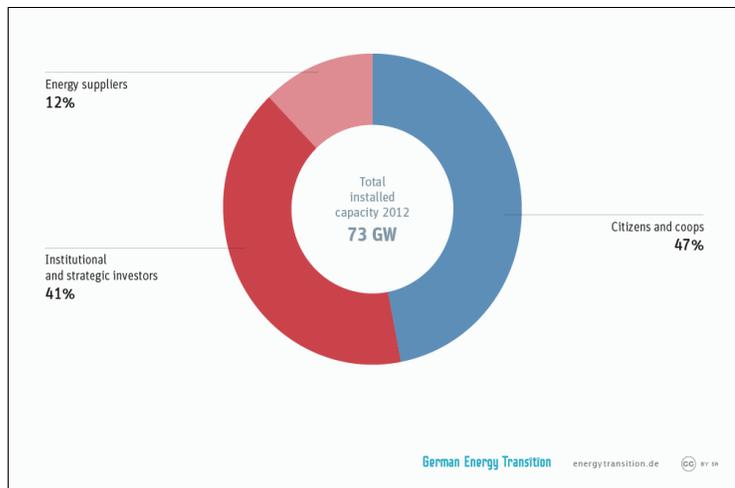


Figure 2.1: Ownership of renewable in 2012

Source: Energy Transition, n.d.

3 Energy Cooperatives

Foundation of energy cooperatives

Flieger and Klemisch (2008), argue for an increasing role of energy cooperatives in the (German) energy system and call attention to the historic relevance of energy cooperatives in Germany, ensuring electricity provision in rural areas in the early 20th century. About

40 such cooperatives are still active today, most of them situated in Bavaria. The authors notice a ‘modest renaissance’ of the idea of energy cooperatives in the 1980s – initially in the area of wind energy, but meanwhile increasingly also in the area of photovoltaics. As seen in Figure 2.2, there has been a noticeable increase in the foundation of cooperatives operating in the field of renewable energies since 2006. Since then, well over 100 new cooperatives have been founded every year. According to Klemisch (2014) here are seven benefits of energy cooperatives which can be compared with the general advantages of this cooperate form, as shown in the next table (Table 3.1).

Table 3.1: Advantages of energy cooperatives.

Advantage	Reason
Balance of interests	As cooperative enterprises allow the joint commitment of various actors in the field and combine environmental, economic, and social and community interests.
Acceptance	Increase the acceptance of the citizens for the implementation of renewable energy projects in the regions by real participation in the company.
Regional value added	Strengthen regional value cycles, as citizens jointly invest in projects which are implemented with local companies and banks, craftsmen and project planners. Besides the local authorities take advantage of them through tax revenues.
Social justice	contribute to greater social justice, since even citizens with low incomes can participate as a cooperative

Advantage	Reason
	member in the energy revolution
<i>Needs-based energy industry</i>	Enable demand-driven production and supply of energy, because they are not aimed at a high rate of return for shareholders, but to the best promotion of their members.
<i>Long-term commitment</i>	They do not mean purely capital participation of citizens, but they are local companies which manage the regional energy supply in the long term with the involved actors.
<i>Insolvency Secure Form of enterprise</i>	Are extremely insolvency-proof and offer their members and business partners a high level of security through close supervision and regular examination by a cooperative association.

Source: Self prepared

Establishing of new cooperatives

Most energy cooperatives are owned by citizens. Nevertheless, there are many actors that contribute or help for the initial establishment of an energy cooperative. In practice, there are mainly local rural credit cooperatives, called Volks- und Raiffeisenbanken, which provide the impetus for the foundation. In the area of the Rheinisch-Westfälische cooperative association, about 60-65% of the energy cooperatives have been formed on the initiative of local cooperative banks. Reasons for this are, firstly, that cooperative banks are themselves cooperatives, and thus are familiar with the legal form and its special features. On the other hand they aggregate the necessary commercial expertise and human resources,

which are important for the establishment of cooperatives. Motives for the banks arise from the fact that that they maintain their image by allowing customers a "green" investment opportunity. Since cooperative banks also represent a solid and reputable financial investment, they are very helpful as a partner for newly formed energy cooperatives (Walker, 2009). In addition to their close relationship to each municipality, municipal savings banks (Sparkassen), as "unincorporated institutions of public law", are important partners as multipliers and also for their commercial skills. The banks are also of particular interest due to the proximity to (local) customers as well as their manifold engagements. Another actor that may be involved is the municipal energy supplier (Stadtwerke) of each city as a public, whom, as an operator of power generation plants, can contribute to the success with technical and economic know-how. Another important local institution is the local promotion of economic development. The action field of renewable energies is of particular interest for this institution, since the value of renewable energy is strongly dependent on location and therefore not capable of relocation. An actor that is particularly important in the initial establishment of an energy cooperative is the municipality. Each city has various roof surfaces that can potentially be used for photovoltaic systems. As currently many municipalities do not have the financial resources to take advantage of these opportunities themselves, they can make the roof surfaces available for leasing to the energy cooperatives. In addition, cooperatives can benefit of

building regulations and planning law expertise of the local government. For municipalities there are many advantages. For one, they can improve their image through a membership in a cooperative energy as a modern municipality which becomes independent of fossil and nuclear energy sources and be a role model. Secondly, the cooperative serves as a direct and indirect source of funds: the cooperative pays rents, for example for roof surfaces and receives various tax revenues for engineering services, crafts, accountant etc. that remain in the region. Finally, it is important to mention that energy cooperatives are founded by individuals without or with poor experience on cooperatives systems, as well as the renewable energy market. This is the reason that the establishment of a cooperative needs a certain effort. It requires more in-depth business and technical knowledge to create a successful energy cooperative, so that collaboration with the actors just mentioned makes sense. Moreover, the work of the board of the cooperative usually is voluntary, which can overburden the people in charge. Therefore it is not surprising that in practice, the Executive and other tasks (acquisition of members, negotiations with engineers and craftsmen etc.) are often taken over by members of the local cooperative banks, public utilities or municipal government that are exempt to a certain part of their other work. However, also in this case the commitment, which is spent outside of regular working hours, should not be underestimated.

Members and their motivations

Energy cooperatives have a broad range of different members, from citizens, farmers and businesses to churches, solar clubs, workforces and communities. The advantages mentioned and the special form of organization opens the possibility of all these groups to join and work together (Debor, 2014). Prominent among the groups of new actors are (family) farms and citizens, and business models often build on consumer participation and ownership, especially in the context of decentralized energy supply. Projects can be either completely owned by the community or developed in co-ownership with the private or public sectors. Patterns of ownership are determined by project initiators and managers, who themselves operate within the boundaries set by legal forms, financing schemes, and available equity capital (Figure 3.1) (Hansen, 2002).

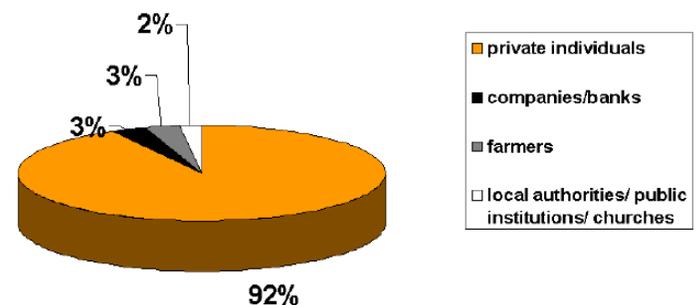


Figure 3.1: Membership structuring of energy cooperatives

Source: DGRV, 2013

Members are attracted by ecological motivations, by the feeling of participation and by the low financial barriers. Cooperatives enable people of relatively modest means who may not own a roof of their own to take part in the energy transition. Shares in some

cooperatives can be bought for as little as 10 euros. The average minimum shareholding in an energy cooperative is 692 euros. Two thirds of cooperatives enable members to participate with shares of less than 500 euros. On average, individual members have a shareholding of 3,125 euros. The average shareholding in almost 70% of cooperatives is between 1,000 and 6,000 euros. The cooperative is also a particularly insolvency-proof legal form (Theurl, 2011).

Benefits for the society

Cooperatives combine civic responsibility, participation and economic activity. The explicit advantages for members of energy cooperatives are basically the same as for members of all cooperatives, as explained in first chapter. However, there exist some further exceptions. Considering the recent trend towards energy cooperatives, the cooperative model possesses advantages that tend to influence the decisions of initiators. The crucial question of liability is solved by the cooperative model as well. Partners are generally not liable individually, which also makes the model attractive for larger projects (Park, 2012). Energy cooperatives offer citizens the opportunity to contribute to energy policy and climate protection. They also offer investment opportunities in local and regional energy projects. Cooperatives offer a variety of action and design possibilities. In addition, each member has one vote. Projects can be carried out with many equal partners locally and democratic. In recent years, about 650 successful new cooperatives have been established in the field of renewable energies in Germany -

tendency rising (Schröder, 2014). In the case of third parties, cooperatives enable the joint commitment of various local actors and unite social, economic, community and environmental interests. They increase the acceptance of renewable energy projects in their own region (Nilsson, 2001). Summing up, cooperatives are not the only relevant business model for financial citizen participation within the energy sector in Germany, but they are the organizational form that has become the most relevant regarding active participation in local energy policy.

Problems with the model: changes to the game

The clean energy policy adopted by Germany in 2000, known as EEG, set the goal to rely on renewable resource on 80% by 2050. The main idea is the diversification of energy sources by replacing nuclear and coal for renewable and clean sources, like wind, biomass, solar, geothermal and hydropower. Here the introduction of the Feed-in-Tariff (FiT) was crucial for the development of renewable energy projects by cooperatives. This promotes the generation of clean energy by every citizen and the right to sell it to the grid by a defined tariff, the FiT. The mechanism guaranteed a fixed price to the energy produced by long terms contracts (for example 20 years). This price makes investments in solar and wind turbines a secure and lucrative business, driving the investment on renewable energy to get benefit from this bonus as soon as possible (Kroh, 2014). This is reflected on the boom on renewable energy investments by cooperatives since 2006. Nevertheless, the consumers were affected by the

FiT, since they have to pay the cost of the tariff. The FiT system established a surcharge, defined by the difference between the fixed price and the market price, which should be paid by energy consumers with exception of energy intensive industry. Since the supply of renewable energy has increased, the market price of renewable energy at the stock market has dropped, leading to an increase of electricity prices in Germany, paid almost by consumers (Heinrich Böll Stiftung, 2014). As result on April 2014, the German cabinet approved the Renewable Energy Act Reform, which seeks the stabilization on energy prices and makes some corrections to market distortion. On 27 June 2014 the Bundestag adopted the EEG 2014. The aim was to keep the EEG apportionment stable and thus ensure the affordability of electricity and security of supply. The new regulations shall decrease the FiT of new plants to on average 12 ct / kWh. Since the passage of the first EEG in 2001, it became attractive for private persons or cooperatives to collect electricity and to supply it to the grid. However since the 2014 reformation of the EEG, cooperatives are very cautious with their investments. The number of cooperatives that are currently planning any additional investments has decreased dramatically. Reason is the uncertainty and the bad conditions, according to a survey of all energy cooperatives, the German Cooperative and Raiffeisen Confederation (DGRV). Energy cooperatives believe that their future business success will depend in particular on a reliable long-term energy policy framework and the continued feed-in priority for renewables. Based on the number of start-ups of energy cooperatives the DGRV assumes

that this number will halve in the current year compared to last year. The DGRV names the federal politics as the cause. The new EEG threatens the energy transition and hurts especially the small market players, such as energy cooperatives. Although more citizen participation was promised in the coalition agreement, the activity of energy cooperatives will be significantly limited. The new EEG amendment does not match the needs of the energy cooperatives. Among other things, the personal consumption of the members of cooperatives energy should be exempted from the EEG surcharge. For this is one of the business principles of many of these cooperatives. In addition, the mandatory direct marketing should apply only to installations with a capacity of 1.6 megawatts, since this would not apply to the majority of energy cooperatives. The mandatory direct marketing will imply that the energy cooperatives are forced to either merchandise their electricity themselves or even to leave that to an external service provider. Direct marketing however is tied to obligations which pose a high challenge to energy cooperatives, which are usually managed by volunteer boards of directors. Therefore, many energy cooperatives will rely on external service providers. But the associated increased costs together with a decreasing system performance are in turn a disadvantage for the cooperatives because their systems are very small.

4 Conclusion

Cooperatives are a business model, which has been considered an option by many people due its simplicity

and empowerment. The attractiveness of this model is related with its simplicity, democratic character and empowerment. Simple, because it is easy to create this type of association, which can be founded with only three members and without limit of memberships, has a simple organizational structure, offers a free entry and exit and the possibility of implementing several projects. This model is also democratic, since all members have one vote, despite how much capital was provided. Additionally, cooperatives empower their members, being responsible for the existence, capital invested and benefits of the cooperative. Finally, special features of cooperatives are related with their security, since the responsibility is limited to the shares, and the distribution of profits, which should be divided among every member. Cooperatives exist in different areas, such as energy, health care system, agriculture, mining, in craftsman, consumption, social services, among others. Of special interest are the existing cooperatives on the market of regional energy production and distribution, especially in Germany, where this model has been quite popular. Reasons behind this phenomenon are the introduction in 2000 of the Renewable Energy Sources Act, which established a new national policy toward renewable energy, and the changes introduced to the cooperative act in 2006, which made it easier to establish and manage cooperatives, and gave assistance for the establishment of energy cooperatives. However, the Renewable Energy Sources Act is the one which has had more impact on the proliferation of energy cooperatives, through the introduction of the Feed-in-Tariff (FiT),

which promotes the generation of clean energy by every citizen and the right to sell it to the grid by a defined tariff. The mechanism guaranteed a fixed price to the energy produced based on long terms contracts (e.g 20 years), making this a secure and lucrative business. Advantages of energy cooperatives, besides supplying energy and generating profits for their members, is the combination of social and community interests. Members are attracted by ecological motivations, by the feeling of participation and by the low financial barriers. Making local community participatory in renewable energy projects in the regions leads to an increase in the social acceptance for such projects in the respective areas. Cooperatives also contribute to social justice giving each citizen the opportunity, regardless of incomes level, to participate in the energy revolution. Finally, this kind of association enables the joint commitment of various local actors and unites social, economic, community and environmental interests. They build a long term commitment between all involved actors and strengthen regional value cycles. The future of energy cooperatives is nowadays uncertain. The implementation of changes to the cooperative act and the enactment of the Renewable Energy Sources Act, the latter with the introduction of the FiT tariff, have certainly attracted investment in such business model, giving impetus to cooperatives. Nevertheless, this has distorted the market, leading to consequences for final consumers, who must bear the cost of this tariff. Since the supply of renewable energy has increased, the market price of renewable energy at the stock market has dropped. Consumers are finally

those who pay the difference between the fixed price (FiT tariff) and the market price. As consequence, in April 2014, the German cabinet approved the Renewable Energy Act Reform for corrective measures of this market distortion, fixing a lower FiT tariff for new plants. If renewable energy cooperative projects will still remain attractive is now unclear. The new scenario has already had its effect on investment, making nowadays cooperatives to be more cautious with their investments. Uncertainty and worst market conditions have raised concern about the future of energy cooperatives. How to make this business model again attractive, encouraging the participation of society and avoiding distortions in the market, are the major challenges for this sector.

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