



The Social Contract of Energy

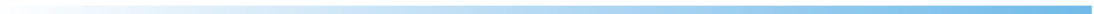
Electrify to democratise



October 2019



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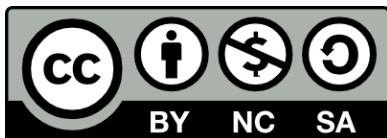
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Executive summary

Foundations for a new energy model

This document is based on the principle that **energy is a necessity good**, and this a foundational principle of **Fundación Renovables**. As such, energy is an innate right which should be recognised in our legal system and in our standards of social behaviour. Despite this conviction, we are faced with a model that does not guarantee universal access to energy, a system in which citizens have completely lost trust and in which the political will continuously reflects deregulation of coverage of basic needs.

This situation requires a drastic change to the concept and design of the future energy system, creating one in which citizens play a key role, because we understand that change is real and possible due to the emergence of strongly disruptive mature technological and industrial processes, but ultimately due to the social acceptance of these processes.

This document aims to meet the demands for taking advantage of the possibilities that technology offers us, so our energy needs are covered according to criteria of equity and intergenerational justice, while being sustainable and environmentally friendly, both now and in the future.

Reasons for change

There is a large number of different reasons that demand the model must not only be changed, but completely subverted. These include:

- No universal access to energy and energy poverty.
- No transparency in price setting.
- Concentrated control and ownership of infrastructure.
- Administrative processes converted into speculative assets.
- No degree of freedom for consumers.
- Lack of active tax policy applied to its purpose.

No universal access to energy and energy poverty

The first of the reasons for change is undoubtedly the lack of suitable access to electricity and its direct consequence: **energy poverty**. In the last 10 years, the number of homes that cannot maintain minimum living conditions, in terms of covering their basic energy needs, has continued rising. In fact, 6.8 million people are suffering from unsuitable temperatures in their properties according to the Spanish National Statistics Institute (INE), and in 2016 alone, there were 900,000 power cuts due to financial difficulties paying for the service. It is a problem that the Bono Social (discount rate) in no way resolves.

The lack of transparency in price setting

We can state that the price-setting system has been complex and opaque for decades and there has been **complete asymmetry in the allocation of costs**. The background to this is that, on the one hand, it has always protected the traditional energy sector (which, despite a reduction in

demand and increase in investment, has continued growing in terms of both regulated and deregulated income and profit), and on the other hand, it has protected large consumers and the industry, whose rates are subsidised by the rest of consumers. In the last 15 years, the cost of kWh has increased by 85.7% (with the fixed part increasing 155.8%), a number which is clearly out of proportion if you compare it with the difference of demand and the emergence of technology that can generate power more cheaply.

The electricity sector's current reputation problem

The belief that electricity is a high-value product and a 90% satisfaction rating demonstrate that the service of this product, or rather, the work carried out by the large electricity companies, has the lowest rating according to a recent study from the Spanish National Commission on Markets and Competition. This is accompanied by a 19% discontentment rating and **customers losing trust in the system and the administration that should monitor it.**

The predominant factor is consumers' assumption that the price of electricity has always been rising and that the current system will never lower prices while the same agents remain. In other words, there is confidence that change is technologically possible, but that it will never occur because of the current agents.

In fact, a comprehensive analysis of the electricity sector leaves little doubt about the possibility that the traditional and established sector can actually lead change because of how it is currently set up. It does not seem likely that the future solution can involve those who are responsible for the problem or those for whom the change of model would represent "business suicide".

The regulatory process not applied to its purpose

The feature of the system that has generated this distrust has been **sustained growth of profitability in the traditional energy sector** based on regulations that have set the profitability of assets above their real contribution to covering energy needs. Meanwhile, the excessive weight of the fixed parts of the bills and the arbitrary and opaque setting of these rates actually disincentivises efficiency and distorts not only the price signal but also the possibility for encouraging initiatives such as self-consumption or demand management. The lack of a transparent pricing policy means that the consumer does not have a price signal based on availability of energy and the costs at source that are incurred at any time.

The need for environmental action

The fight against climate change is starting to be taken up by society as a whole. They not only claim it is necessary, but they also want to participate actively in the energy process, both as a show of power and due to the required commitment to the environment. **The only way to drastically and quickly reduce emissions is by consuming less energy, eradicating the use of fossil energy sources and ensuring that energy comes from renewable sources.** As a result, the energy policy must be completely aligned with environmental policy and with commitments to climate action that have already been made.

We have exceeded all the biophysical limits and a drastic but organised reduction in the total energy demand is required, but without losing sight of the social justice of covering basic needs. At the same time, we should expand renewable energy sources so that we can reach a 100% renewable energy model.

The levers for change

The reasons for change explained in the first part are not enough for carrying out this change. The magnitude of the necessary transformation requires the existence of levers or alternatives that enable the current paradigm to be replaced by another. The significance of the current moment is that social demand coincides with different **disruptive technological processes that are incorporated as development levers and scenarios with the ability to change the model from bottom to top.**

The coincidence of currently having electricity generation at lower costs due to renewable energy at consumption points, the feasibility of electrical energy storage and the availability of tools that adopt customised decisions automatically due to the development of Information and Communication Technology (ICT) is, without doubt, **the lever that will enable a new action paradigm to be implemented.**

The future is renewable

At this point, it is not necessary to analyse the evolution and potential of renewable energy, but we want to note the main reasons, alongside more efficient consumption, for what are going to be the axes of the new energy model. Most studies and reports presented by different consulting and technology companies and institutions state that **electricity generation with renewable energy sources is currently, in microeconomic terms, more competitive than the use of fossil fuels or nuclear energy.** And this is without considering the externalities and benefits resulting from its use.

Towards a disruptive process in energy

The change of paradigm we are calling for does not consist solely of replacing conventional energy sources with renewable sources, but also replacing a centralised generation structure connected to consumption through radial structure networks for an energy generation and exchange setup that is focused on consumption. In other words, **changing the centralised generation and radial distribution design for a decentralised design with web-style distribution**, which would give citizens the central role in the new scenario.

This change will lead to disruptive social and business behaviour, which is the only way to achieve exponential change given that the current energy paradigm may never disappear due to the linear evolution of the system itself. One of the reasons is that the traditional sector is aware that the only way to make its power last is gradual, linear change from technology it owns to other technology that it also expects to own.

The evolution of photovoltaic solar energy

Electricity generation with photovoltaic solar energy is possibly the greatest technological and industrial revolution that is taking place, both due to the achievements already made and the future prospects. This document does not attempt to provide an exhaustive analysis of its evolution and potential, but to reveal some features that make it **the crucial technological disruption for laying the foundations for changing the current energy model.**

There are many reasons for the key role of photovoltaics, including technological development, industrial development and cost, distributed generation, its modularity and integration, and digitalisation, which are all features that make it the main driver of the change.

Self-consumption

The **Social Contract of Energy** proposed in this document provides the most definitive expression of self-consumption. Self-consumption opens the door to citizens, to all users and to a new way of behaving with energy as it offers us the opportunity to manage our own energy, taking responsibility for our own energy within society.

Assuming the role of energy manager is a key element to the change because until now citizens have only been concerned with consumption, without thinking about how much or when. Generating your own energy, and above all doing it cleanly and efficiently, provides a new, closer and more tangible perspective of energy. Understanding how an installation works and how the electrical equipment we have at home consumes energy is the basis for citizens to undertake cleaner, more responsible and more efficient energy habits.

Storage and the effects on demand management

We always refer to this as one of the disruptive elements that will make the move towards another energy model possible. **Storage of electricity in batteries is key** for both the electrification of demand and, above all, for the manageability of the system and reduction of investments in low-use generation. Introducing storage close to consumption and to distributed generation in an interconnected electricity system will have a significant impact on crucial services. In this respect, we have to distinguish four large lines: network services, integration of renewable energy, self-consumption and mobility.

The Internet of Things. IoT

The third element of disruption is the combination of the progress in ICT, the origin of the so-called third industrial revolution, and social acceptance of technological progress. This double line will put consumers right at the centre of the electricity system, making them capable of not only deciding how they will cover their energy needs, but also acting as active elements within the system.

The future, which is already upon us, will be based on a multi-directional, neuronal-type communication model that enables us to connect to one another without the inefficiency of a radial system, a long way from a traditional model of one-way relationships.

Also, the introduction of Blockchain reduces intermediation costs and frees consumers from inflexible supply contracts that ignore the possibilities offered by ICT and the current reality of consumption.

Social acceptance of the need for change

The change of energy model will not depend fundamentally on the technological advances that will be incorporated in the future, although these will make it possible. With these alone, the transition would not occur fast enough to reach the objectives of the fight against climate change and to recover many of the rights people have lost.

We are aware of the existing difficulty of making political parties take the will of the people into account and translating this into effective political actions, but it is clear that **society's concerns are playing a more and more decisive role in shaping political commitments** in the face of real pressure and the effectiveness of business lobbies.

The paths to change

Electricity tariffs: price signal and transparency

If the **price signal** and its projection over time is the signal for action and decision, this should ultimately be **transparent and real**, because if the signals that the market is giving each agent do not reflect reality, the measures that are taken may have the opposite effect.

The requirements of this transparent price signal should be based on the availability of information about all the components that set it, so that consumers can act as a result and so the fixed part, now known as regulated, is also established as a variable and reflects the price of the service that is actually provided to the consumer.

Digitalisation of the electricity system

The role to be taken on by installations that use renewable energy sources, with a greater diversity of sources, a much smaller size and a greater variety of agents, together with self-consumption and distributed generation, requires that the system changes both its way of working and its responsiveness. With regard to the current needs, **digitalising the operation of the electricity system is a reality that cannot be ignored**. In order to have capacity to progress, we need to consolidate measures that improve generation predictions, energy and network planning processes, entry to demand aggregators, consumer participation in the market, optimisation of the offer/demand balance, and last but not least, within an information economy, Big Data management in terms of citizens' habits.

The future role of consumers in electricity trading

Until now, the role of consumers in an economy that is ill-defined as a market economy is to accept an adhesion contract in which their energy profile is normally one that has already been defined by the provider, with whom they then sign a supply contract.

In any planning model, there should be a clear definition of an objective function whose optimisation should be the basis for the decisions of the consumer/producer, based on minimising the cost of covering the energy needs. The measures in demand management, which are understood to be those that occur downstream of the meter, may have different origins and ways of being implemented:

- Load transfers that maintain their value over time.
- Efficiency processes that lower energy needs due to more efficient equipment and by changing control and use signals.
- Energy storage.
- Energy generation, such as self-consumption.
- External exchange systems.

Therefore, the **demand aggregator** makes sense because it can be physically close to the different consumers and make it a local energy community (acting in the low-voltage section, forming a micro-network built into the electricity system) or operate with assets spread across the country.

Co-responsibility in meeting commitments to cover the final demand with renewables

In 2010, **Fundación Renovables** issued a **co-responsibility proposal** in which it established the need for all energy sources to proportionally support the efforts to reach the acquired objective of covering the final energy demand with renewables in 2020. The proposal not only tried to create transparency in cost setting, but also aimed to serve as an instrument for taxing the use of energy sources that we did not have and that were also not sustainable, such as gas and oil.

The change of model in ownership and management of infrastructure

Ownership and profitability of investments in infrastructure has recently become a safe and secure financial product that is protected by regulations, and therefore, is an attractive product for investment funds seeking high returns with highly leveraged assets, due to the low monetary cost and its risk reduced by the country guarantee.

At **Fundación Renovables**, we believe that we need to **eradicate the idea of a State that is incapable of acting as a manager**, especially when its role is to own and maintain an asset for a public service, as is the case with the railway infrastructure.

Active tax policy as a necessary tool

The tax policy is the foundation of any process of technological and industrial change, such as modification of habits if it maintains as a key exponent that its role is not only to collect but also to act as a catalyst for adapting contributors' uses and habits.

A tax policy is considered active if, when economically taxing measures, it is accompanied by a desire to act transparently, taxing that which it wants to reduce and reducing tax on that which it wants to encourage. Therefore, in terms of energy, the tax policy should take the following into account:

- **The consideration of externalities and the inclusion of the basic concept of “who contaminates pays”.**
- **The distinction between creating value and creating profit.**
- **Reducing taxes on the initiatives we want to support and promote.**
- **Increasing taxes on the initiatives we want to reduce.**

The document created by **Fundación Renovables** in June 2019, entitled “Scenario, policies and guidelines for the energy transition”, included a list of activities on which to increase or reduce taxes depending on their consequences in favour of and against the proposed energy model.

An electricity model for the future

The consideration of electricity as a necessity good and a public service in which all citizens play an active role, behaving responsibly and efficiently in terms of consumption, demand management and participation in the manageability of the energy generation system, requires the development of an electricity model that is characterised by:

- A low final price of electricity.
- A system that is open in its management and transparent in its operation.
- Taking advantage of the multiple agents, both to make demand more flexible and increase the investment capacity.
- The State's presence and assumption of a predominant role both in creating regulations and establishing independent control institutions, and as an investor.

- The commitment to renewable energy, efficiency and sustainability.
- Assuming that the third industrial revolution is the basis of the technological development of the system: digitalisation, exchange platforms, storage for demand management and Big Data management.

The Social Contract of Energy

Moving from the current idea of electrical energy as a financial product towards a more social concept of energy in which it is characterised as a necessity good should be an objective for any government that puts the needs of society before the interests and will of companies. The idea of energy as a public service or a public utility should be one of the primary elements that enables technology to work.

250 years ago, Jean-Jacques Rousseau published the *Social Contract*, the premises of which should make us reflect on the need and demand to implement a new **Social Contract of Energy** which puts the rights of everyone before those of the few and re-establishes by mutual consent the rights we have lost, as well as the duties that have never been demanded of us.

Applying this line of argument to something as basic as energy is what is behind the general proposal of this document: to recover the innate right to energy within the commitment parameters of each member of society, with an intergenerational perspective on environmental sustainability. We need a **Social Contract of Energy** as the basis of everyone's commitment to change the unjust and inefficient current system, which would enable us to take advantage of all the available technological advances as individuals who are jointly responsible for the change that needs to be implemented.

The current situation cannot be changed without subverting the system, with this term understood as the need to change the moral order of the current system.

For this reason, we must reach an agreement between everyone and establish a Social Contract of Energy which is formed as an agreement between all the parties and prompted by the pressure of a society that no longer believes in the current system or the agents that control it.

Declaration and foundations of the Social Contract of Energy

The proposal and content of the **Social Contract** is carried out with the co-existence of the recognition of citizens' unavoidable rights and the proposal of basic initiatives, through legal reforms, in one programmatic document that serves as a mandate of the will of the people to our political representatives.

Foundations and rights

- Universal access to energy should be regulated as an unavoidable right for everyone.
- Electricity should be considered a public utility and, in some cases, as a public service.
- Everyone is committed and each individual's role should be based on the assumption of the duties that that commitment entails because energy is a basic and scarce good which should be consumed and generated sustainably and efficiently.
- Intergenerational social justice should be prevalent in the design of the present and future energy model.

- The Social Contract does not expire, and it is designed as a continuous commitment over time.
- The Social Contract of Energy should be the basis of the State Energy Agreement.
- The State should have an active role in planning, business, regulating and investing.

Proposals and scenarios to aim for

The Social Contract should be carried out alongside legislative measures that include:

Passing the law for the fight against climate change. It should be a core document in which the Social Contract is established and should have a multi-disciplinary scope that serves as a legal guideline for the commitment to a new economy and its respectful relationship with the rural environment. The law against climate change should specifically allow the following to be carried out as a priority in the field of energy:

- a. Reform law of the electricity sector** to regulate the operation of the electricity system with the aim of guaranteeing universal access to energy, a transparent price signal that commits to responsible consumption, modernisation and digitalisation of the electricity sector, promotion of self-consumption and efficiency, independent control bodies, and different state administrations assume an active role as investors, so the consumers are at the heart of the system.
- b. Tax reform law. Social and intergenerational justice.** Creation of active taxation that not only aims to raise funds according to “who contaminates pays”, but that also promotes a new energy culture that encourages positive actions and taxes those that are not.
- c. Local government regulatory law.** The urban nature and the need to work for better air quality means we need to set cities as a priority scenario. Consequently, this is a reality that should be accompanied by legal developments that incorporate sufficient skills and instruments, so that this commitment can be assumed.

This is a model for and by everyone, in which the social agreement is the basis from which we all assume the rights and obligations it entails.