

The future of energy based on responsible, civil economics

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INTRODUCTION

The wide-ranging development of energy prosumption is a central, sustainable part of the European Union's energy policies. In the light of environmental and social concerns, this solution is undoubtedly advantageous and may prove to be essential in the interests of energy safety.

Prosumer Energy has several advantages: it can derive from a wide range of renewable energy sources available in nature; it can be produced anywhere, independently of climatic conditions; is easily accessible to individuals; makes use of unlimited energy sources (solar, wind and water).

Nonetheless, governments and citizens (prosumers) who wish to transform an ethical ideal into reality face numerous difficulties. In this brief note, we shall reflect on the economic nature of prosumption and its potential for the economics of the environment.

Economy, energy, environment

The green economy is traditionally linked to the figure of Nicholas Georgescu-Roegen, an economist known for his magnum opus, "The entropy law and economic process" (1971), the most important XX century study of economics and the environment.

In his work, the author starts from the premise that if environmental economics is to be given a scientific basis, a new, interdisciplinary approach is needed, leading to a thorough rethinking of the principles that are at the root of standard economic theory.

The mechanistic structure of the modern-day economy has clearly negative consequences. The first, being the concept of economic processes as a circular flow within a closed, self-sufficient system. Circularity and reversibility are two characteristics of standard economics, which developed around a static vision of reality, as if we were in the field of mechanics.

Instead, in the more modern view proposed by Georgescu-Roegen, the most appropriate model to explain economics is the biological (model), not only because it links to environmental sustainability in economic growth but also because links between economic variables are better explained through thermodynamic processes (entropy).

This approach is not new, nor is it intended to provoke, but is connected to the Aristotelian concept at the basis of economic science, further pursued by subsequent medieval scholasticism, of an organic universe that distinguishes between matter and form, uniting the two dimensions in an ongoing process.

Mainstream XIX century economics offered a mechanistic, static view, composed of simple parts whose relational logic was unable to explain concepts such as the "irreversible" state of resources and their "irreproducibility", establishing the failure of mechanistic economic models at every structural crisis.

To better face the problem of growth and questions raised by economic progress, we must return to a thinking which places economics firmly within its environment and takes into account costs and environmental sustainability.

Prosumption is a part of this environmental view of economics, one in which it is possible to tackle environmental crises and the depletion of natural resources by turning to renewable energy sources, in the context of a dynamic, progressive vision.

Georgescu-Roegen's great insight was that a programme of economic development should be based on the largest possible use of solar energy in order to save the planet's resources. To make this a reality, it would be necessary to implement production policies which use renewable energy sources. But, above all: reduce differences between rich and poor countries; distribute these resources proportionally to the basic needs of humankind; eliminate the waste of solar energy; develop the intelligent use of free time.

Energy and society

The issue of energy is a part of issues surrounding the equal distribution of resources, environmental issues and the ethics of our life habits.

Increasingly, the environment, energy and sustainability are linked to the economic crisis of the XXI century. In the course of the last century, progress in science and technology has been constant and shockingly fast, changing social organizations and our lifestyle worldwide. This has all taken place so quickly that we wonder whether we are capable of sustaining such change, as evaluating the complex nature and consequences of technological progress is not easy.

One thing, however, is certain: technical progress has been facilitated by an increasingly efficient (at the lowest cost) use of available resources, though this has created situations which have undermined efficiency. That is to say, the end result of technological development on the environment and energy use has not always been taken into consideration. The global industry which has been set up has fragile foundations: the environment has not always been able to withstand our actions.

This problem does not only affect rich nations but the entire planet. Ignorance and negligence has allowed (Asian) economies to tamper with the environment, so focused were they on leading global markets.

Only in the last twenty years have Europe and Western nations become aware of the risk this inconsiderate overexploitation of our environment and its resources means for our survival. Awareness of the fact that humanity has entered an extremely serious environmental era has permeated various levels of decision-making.

The crisis humanity finds itself in has three main aspects¹.

First of all, it is a crisis of fundamental values, pertaining to two opposing points of view: how we *could* live and how we think we *can* live. We must choose between two options: either choose to use our technological knowhow for the common good; or proceed in our path towards a “collective suicide”. However brutal this statement might seem, it is the truth: we must learn to live on a planet which has almost been exhausted by our greed; or we have to contend with social conflict and wars fought to control planetary resources.

Secondly, taking our cues from Rattray Taylor (1971), we can state that if humankind sidesteps catastrophe, it will take a long time to heal from disasters of our own making. Global societies are far too overcrowded and diverse, “impersonal”, while solving our environmental and energetic problems needs a responsible, community-led approach. The risks for our planet and the survival of humanity are great.

Lastly, at a global level, the centres of power are aware that we have reached the point of no return: the natural replenishment of resources is inadequate. But at the same time, not everyone knows how best to utilise existing resources while respecting the environment; supranational directives, often vague and non-binding, alert us to existing issues but do nothing to help solve them.

One way to act in our effort to step back from our point of no return is to focus on the energy sector, as this is the basis of our production system and feeds the markets in which global society lives and thrives. Without energy, everything will come to a standstill.

Some fundamental aspects should be tackled urgently, such as energy prosumption, which could assist the reduction of energy consumption at a global level; regulate energy production in different countries on the basis of available sources (solar, wind, water and general resources); eliminate pollution (switching from fossil fuels to electric); choosing sources which have less environmental impact (wind farms instead of photovoltaic systems).

These points (well-known to literature²) show how essential it is to upend the Energy economic system.

Moving from the petroleum lobbies towards sustainable production using environmental resources, and responsible consumption. In this regard, energy prosumption seems to be a way to help humankind and our planet. The same sort of thinking should be applied to the Earth’s other resources, which are finite and not sufficient to satisfy our needs.

This problem, however, is not new: economists and scholars have been warning us of the dangers of the excessive consumption of our resources since the early nineteenth century³.

¹ G. Rattray Taylor, *La società suicida* (Mondadori Editore, 1971).

² P. Ranci, *Economia dell’energia*, (Il Mulino, 2011).

³ E. Corbino, *EEE. Energia, economia, energia* (Napoli: ESI, 2004); R. Molesti, *Economia dell’ambiente e bioeconomia* (Milano: Franco Angeli, 2003).

That notwithstanding, the damage done to the environment by different production processes was never factored into cost analyses; it was simply ignored or underestimated in an environmental and economic sense. Mankind saw the environment as a free gift and took it for granted.

Time has shown us this is not the case; one must distinguish “free” resources such as the wind, sun and water from rare resources (mines, fossil fuels, etc.).

We must also remember that even when free, ensuring these resources can be used is a costly process. Wind or watermills have an initial cost to set up and another cost linked to their effects on the environment; in a similar way, solar energy can be harnessed with prosumption, but this also requires investment, management and disposal costs.

The matter is complex and requires careful inquiry and targeted intervention at global level, something that is lacking as the market is highly fragmented and knowledge is limited to few.

Prosumption in civil economics

Generally speaking, energy prosumption is included in the macroeconomic need to rationalise the use of energy sources and the global need to respect the environment and limit the effects of pollution.

Therefore, prosumption is not just an innovative, fashionable technique but something actually essential for the common good. We shall deal with the subject according to this understanding.

What is meant by energy efficiency? As in economics, it indicates the capacity a system has to obtain a result utilising less energy than other systems, thus increasing its yield and minimizing management and production costs. In substance, it points to the capacity for adopting the best technology along with a responsible, conscious behaviour applied to energy uses.

This approach calls for civic education and a series of existing juridical and technical infrastructures (including prosumption) which would allow these energy-saving policies to be applied.

The economic benefits deriving from energy prosumption are notable and can be studied at macro level, such as the conservation of resources (scarce) and reducing pollution (which creates a wide range of problems for health and the environment); and micro, linked to the reduction in energy transmission costs, an improvement in the use of local energy sources and greater availability of energy (particularly useful in a capitalist system which is moving towards electric transport).

These benefits require the extensive involvement of local political groups and the social and civil commitment of citizens (participative citizenship for the common good).

Indeed, the first step towards making sure society is ready to accept and develop prosumption is to involve civil society, communicating the idea that the environment and energy saving are essential to wellbeing, not just in an economic sense but for health, too.

In substance, it is necessary to move away from economic liberalism and delve into the view proposed by Civil economics (a discipline that evolved from the religious and social teachings of Saint Francis in Italy).

Liberalism, expression of the free market and a pillar of the liberal economic expansion that guaranteed the economic growth of capitalist countries from the XIX to the XX century, has shown its tendency to dehumanise economic development; nowadays (from the start of the XXI century onwards), we see the need for a different type of progress, one that is not just economic (in terms of profit and mathematical “efficiency”) but also civil and linked to an awareness of human rights (including the right to health, education and integration), open to well-being and the welfare society, more “effective”⁴ and democratic (inclusive, not only to fossil fuel lobbies).

A key part of renewable resources is their territorial distribution. The sun, the wind, the sea and its tides cannot be transported and energy production using these sources is necessarily (and democratically) distributed in different areas.

Diffuse prosumption ensures economic savings and social benefits, but it requires that energy is consumed in a conscious manner; furthermore, communities are required to collaborate in a “competitive” manner (a concept taken from from civil economics).

⁴ Per efficacia si intende l’adeguatezza del mezzo impiegato per ottenere un dato risultato. Tiene conto degli effetti sociali dei risultati ottenuti. Invece l’efficienza fa riferimento alla minimizzazione dei costi ed è quindi un indicatore economico riduttivo poiché non tiene conto dell’impatto ambientale e sociale delle attività produttive.

In truth, prosumption can only be achieved in a social context in which participants collaborate and overcome the idea that economics is a zero-sum game (I win, you lose).

The socio-economic context in prosumption is geared towards the common good: an individual is OK if everyone is OK, because “together we grow” and increase the common good.

Traditional Anglosaxon economics views collaborative competition to be a visionary, utopian way of doing economics; however, in the Mediterranean traditional of civil economics (from the historical roots of the Renaissance and the Italian Enlightenment)⁵, it is the only way to guarantee economic growth and civil progress.

To implement prosumption policies, the existing economic paradigm must be changed, more sustainable lifestyles must be offered. It would help if people were made more aware of the fact that natural goods are not meant for individuals but are part of the common good, therefore meant for the community.

The relationship between goods-utility-need must also turn the corner, from a consumer logic towards one which prioritises ethics and values; one in which contributing to the common good is more relevant than the satisfaction of a need. In this view, responsible, conscious consumption brings benefits to society, not only because renewable energy resources have been chosen but because this reduces pollution and increases the feeling of belonging to a community.

If everyone is a producer and consumer of energy, they will feel more responsible. Prosumption can therefore be considered a relational good (particularly dear to Civil economics) as it stems from a relationship and creates a relational logic between prosumers and the community.

It is interesting to note that, unlike traditional economic goods, prosumer goods do not have a decreasing marginal utility; instead, utility increases with the diffuse production and consumption of goods and the interaction of community and prosumer⁶.

Prosumption uses non-economic goods such as water, sun and wind to create economic energy; initial production costs are slashed, as are energy costs. Distribution should not be affected by market distortion and oligopolistic control mechanisms, and to avoid this the state should implement welfare society policies to regulate the distribution of energy and activities connected to prosumption, as well as educate on the correct use of these market methodologies.

That this logic is not completely visionary is confirmed by political debates on global issues such as the environment, health, peace and human rights, which can be solved through reciprocity, collaboration, inclusion and the acknowledgement of diversity. Key words which have an economic significance in civil economics but which were excluded from the vocabulary of XIX century economics.

The EU's current commitment is set out by the Environment Council which defines objectives the EU aims to reach within 2050 and can be summed up in this manner: living in a waste-free environment, resources are managed sustainably, biodiversity is protected and restored. This means protecting, conserving and improving the EU's natural capital; transforming the EU into a low-emission economy that is efficient in its use of resources, green and competitive; protecting EU citizens from pressure and risks to health and well-being linked to the environment. But most of all, making sure that EU members can deal with global environmental and climate challenges efficiently⁷.

In this regard, Agenda 2030 reminds EU citizens of the road to take in order to live in a sustainable, free society. Upon closer examination, these objectives can only be met by applying the principles of civil economics (see keywords above).

Diffuse prosumption is among these objectives and can be included in the energy technologies accepted by Agenda 2030.

⁵ L. Becchetti, L. Bruni and S. Zamagni, *Microeconomia. Un testo di economia civile* (Bologna: Il Mulino, 2010). S. Zamagni and L. Bruni, *Economia civile. Efficienza, equità, felicità pubblica* (Bologna: Il Mulino, 2004).

⁶ B. Gui and R. Sugden, *Economics and Social Interaction: Accounting for Interpersonal Relations* (Cambridge: University Press, 2005).

⁷ B. Gui and E.M., MacGill, *Typology of future clean energy communities: an exploratory structure, opportunities, and challenges* (Energy Research & Social, 1, 2018).

European policies

Of all the renewable energy sources, the one most used in diffuse prosumption is, without a doubt, solar energy, as this is widely available and easy to convert into energy using consolidated, low-cost technology.

The gradual availability of storage systems which increased at the same time as a costs fell, has allowed prosumers to accumulate excess energy to be used at a later date or sold to other energy suppliers.

This hybrid market (production + consumption) has incentivised the economy and created new jobs as well as satisfying consumer needs in terms of their direct participation in economic processes.

The new energy paradigm has inevitably led to an increased complexity in the management of the power grid and services connected to energy supply. The development of energy prosumption requires distribution and transmission networks and their operation to be adequate.

One necessary condition is the parallel development of intelligent networks near production sites. The final aim is the existence of numerous, increasingly self-sufficient units which require a reduced consumption of energy but are able to meet peak energy demand requirements.

Recent studies⁸ have shown the prosumption market is complex and disorganised so there is still a lot to be done, most of all to ensure that good intentions are not replaced by capitalist oligopolistic logic⁹. EU members still follow highly different policies and this does not help achieve hoped-for objectives.

Until now, the main challenge at European level has regarded the creation of a body of basic laws to manage the production, consumption and management of renewable energy in EU countries¹⁰. Countries which have so far adequately observed European directives are Germany, France, the Netherlands and the United Kingdom. While Belgium, Croatia and Italy are still not showing adequate levels of self-consumption.

The main opportunities offered by the European plan concern the establishment of competitive business models which can create technological districts. This is happening in Germany, where the virtual prosumption grid offers a series of opportunities for collective economic growth in terms of occupation and the development of new technologies¹¹.

But even when the benefits of renewable energy projects have not been widely shared, people with no access to a prosumption plant have been able to share energy output at a reduced cost.

Despite the fact that there are as yet no specific laws in Italy regulating self-consumption, there is an existing law allowing the self-production and consumption of renewable energy. There are no restrictions on the size of self-consumption systems, nor limits on the quantity of electricity that can be produced. Any excess energy must, however, be bought by the owner of the plant.

Conclusions

Moreover, issues concerning like poverty, security and climate change appear to promote the use of energy prosumption.

A low-emission economy is based on the link between energy, environment and economy. This requires the adoption of objectives which aim for tackling climate change and integrate with measures which aim to tackle the financial crisis we are currently undergoing. These objectives have to decouple economic growth on the one hand and environmental impact and the exploitation of resources on the other.

In this vision, prosumption, in its incarnation as a civil economics activity, offers meaningful opportunities for the development and transformation of the energetic-economic systems, towards a more sustainable incarnation.

The implementation of these policies is strongly correlated to the diffusion of technologies which reduce environmental impact and create opportunities for socially responsible economic development.

⁸ I. Campos, G. Pontes Luz, E. Marin-Gonzalez, G. Swantje, S. Hall and L. Holstenkamp, Regulatory challenges and opportunities for collective renewable energy prosumers in the EU (Energy Policy, vol 138/2020).

⁹ D. Hendricks and R. Mesquita, Prosumer Guidelines for Eight EU Member States. European Renewable Energies Federation (Retrieved from, 2019).

¹⁰ Parere del Comitato economico e sociale europeo su «L'energia e le cooperative energetiche dei prosumatori: opportunità e sfide negli Stati membri dell'UE». Gazzetta Ufficiale, 2017/C 034/07.

¹¹ M.J. Burke and J.C. Stephens, Political power and renewable energy futures: a critical review (Energy Research & Social Science 35, 78–93, 2018).

