

# Rethinking energy security: An inter-paradigmatic debate

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## Abstract

Mainstream discourse on energy security is premised upon the assumption of infinite growth. It hence focuses upon the economic, political, and security aspects of energy security. Consequently, it fails to provide satisfactory answers to the global environmental, energy, economic, geopolitical, and developmental challenges. An alternative paradigm is for this reason in demand. Ecological economics makes a strong case for disentangling prosperity from growth and studies how a substantial retreat of energy consumption is not only feasible, but will also efficiently address the sustainability challenge and enhance overall energy security. It also suggests how it can alleviate geopolitical and developmental tensions. Ultimately, the paper poses the fundamental question of how valid our assumptions are to lead us into a better, and sustainable, future.

## Keywords

Energy strategy, growth, development, sustainability, geopolitics

## Highlights

- The growth-based paradigm fares poorly across internal-external energy dimensions
- Energy security calls for a broader, holistic and transdisciplinary approach.
- The alternative paradigm prioritises sustainability and enhances energy security
- The alternative paradigm fosters development and belittles geopolitical scrambles

# Rethinking energy security: an inter-paradigmatic debate

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## Introduction

The overwhelming majority of scholarly literature on energy security examines how energy issues affect overall geopolitical relations, how geological and geopolitical threats and risks to energy security are to be prevented or tackled, what steps energy importers have to take in order to increase their security of supplies, and how energy markets can continue functioning at affordable prices (Mitchell *et al* 2012; Victor *et al* 2006). Increasingly, a strong sustainability component has been added to the discussion (World Commission on Environment and Development 1987; United Nations General Assembly 1992; The World Bank 1992). In light of bleaker predictions on climate change, scholars encompass environmental aspects and repercussions of energy policies in their analyses and make calls for a broader energy security agenda (Elkind 2010). Nevertheless, mainstream work remains fundamentally preoccupied with the security, political and economic aspects of energy issues. This derives from a largely unchallenged assumption that our societies have to grow infinitely. Since energy is the backbone of all societies - and the history of humanity can also be read as the history of energy production and consumption that has allowed the human civilization to achieve goals that were regarded unimaginable in the past - it is considered given that this is the path all societies should take: strive hard to produce more energy in order to increase technological innovations that could substantially boost their welfare level. The quest for energy, in this context, is considered a *sine qua non* for all, and those countries that are able to master the most resources are the ones to progress further than others, and will be in position to increase their welfare and perhaps also dominate others. Energy issues, thus, are severely economized and securitized.

A distinct analysis of ecological and environmental issues has paved the way for an alternative theorisation of energy politics, as yet not thoroughly articulated. These dissenting voices allege that while growth has historically increased prosperity, this link is increasingly challenged today under environmental strains, economic inefficiencies and the negative impact of growth upon modern societies (Daly 1996; Czech 2013; Daly and Farley 2004; Lawn 2007; Heinberg 2011; Kallis *et al* 2012). In this reconceptualisation, growth is substituted for by the concept of development. The two terms differ in that the former is basically quantitative, while the latter carries qualitative connotations (Daly 2005; Jackson 2009). While growth refers only to economic capital, development refers also to human and social capital, at the same time that it assesses how capital is allocated and used; increasing capital thus is by itself not necessarily positive (Sen 1999). The core of the alternative paradigm can be summed up in Daly's assertion that the 'quantitative expansion of the economic subsystem increases environmental and social costs faster than production benefits, making us poorer not richer' (Daly 2008). The argument is threefold:

- Although growth has led to remarkable achievements, such as the cure of epidemics and diseases that have taken a huge toll in human lives, it has also caused new problems of no lesser significance. The anthropogenic climate change testifies to the insurmountable costs of growth and there is hence urgent need to reverse it in order not to make the planet a rather hostile place to live in the near future (Lovelock 2006; Daly and Farley 2004).
- Our economies use too many resources ending up consuming more than they actually produce. Private and state companies make profits by means of transferring to future generations payments for the damages they provoke to the environment (Lawn 2007; Daly 2005).
- Growth has made human life in many occasions more convenient and has facilitated self-fulfillment and long and happy lives, but it has also contributed to urbanisation and subsequent isolation from nature. Perseverance with growth has, additionally, led to irrational consumerism, long working hours, more stress, and less time for family and leisure (Jackson 2009).

In this understanding, the relationship between growth and prosperity should not be considered as *a priori* mutually reinforcing. More evidence is accumulating that the two concepts are increasingly at odds. It is essential, in this understanding, to move beyond growth, the quantitative, that is, expansion of the economy, that carries high environmental, economic and social costs and focus instead on development. This reordering aims at the maintenance and qualitative improvement of the economy with an emphasis on improving the human lot and welfare rather than increasing economic indexes and expanding the economic system beyond biophysical limits.

This controversy between mainstream and alternative paradigms pits shallow against deep ecologists<sup>1</sup>; international relations scholars who follow a traditional, realist-minded approach against more normative-oriented scholars, the work of which goes well beyond the scope of traditional threats; and, last but not least, classical and neoclassical economists against ecological and steady-state economists. These contrasting assumptions lead to different approaches to energy security. In the mainstream approach, the goal is to ensure adequate, increasing, supplies of energy, even if this comes at a rather high cost. These costs could be very high prices, significant damage to the environment, and exacerbation of geopolitical tensions, the undermining of human rights and developmental causes in third world countries and so on. The alternative approach, to the contrary, sees the acquisition of energy resources as embedded within a broader framework. Energy resources are important, but not to the same extent - it is not self-evident that we need as many energy resources as currently deemed necessary - and do not automatically take priority over all other goals. Even more importantly, there are limits to the production and consumption of energy that cannot be forever ignored as is the case today. The prioritisation is reversed, with sustainability and reversal of climate change becoming the higher order goal, at the same time that the quest for energy becomes less critical and less urgent, thus not legitimizing polemical actions to secure enough resources.

This paper has a number of aims. Firstly, it aims to clearly present the alternative paradigm and demonstrate its promising potential as a framework that can satisfactorily tackle environmental and energy threats, as well as soothing ensuing geopolitical and developmental tensions. While not disregarding the difficulties its implementation entails, as well as the critiques labeling it a utopian project, it attempts, secondly, to uncover the problematic character of the current mindset of mainstream scholarship on energy issues. Thirdly, it makes a strong point that interdisciplinary research, encompassing physics, environmental studies, international relations and economics, is indispensable so that different aspects of the energy and environmental nexus of problems are dealt with in a holistic framework.

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<sup>1</sup>Shallow ecologists acknowledge current threats to the environment, but consider that reformist policies will be enough to deal with them efficiently. Deep ecologists, on the other hand, advocate radical policies for tackling global climate change and posit that a substantial refashioning of our everyday lives is necessary to that cause.

## A benchmark framework of energy security

Energy security, from the standpoint of importers, has three dimensions: security of supplies, affordable prices and environmental protection and sustainability (Qingyi 2006; Eng 2003). Energy security, in other words, refers to the state whereby nation-states face no energy shortages and meet their energy needs at no excessive cost and without further deteriorating the state of the environment. This reading of energy security, nevertheless, does not examine the interconnections between energy politics and economics and other fields of global politics, as geopolitics, development studies, democratization processes, human rights and so on. Since energy has a central role in all societies, its production and consumption patterns influence a wide array of issues (Jaffe *et al* 2008). The task of assessing the state of energy security thus compels us to look beyond the three basic dimensions of energy security and to examine what impact current energy configurations have on global politics in general. Since this is a rather daunting task, we focus here primarily on some evident repercussions of geopolitical and developmental nature. This brings us to an internal-external energy security nexus and a complex of five variables:

- a) Secure supplies
- b) Affordable prices
- c) Sustainability
- d) Impact on geopolitical configurations and peace
- e) Impact on development (extending to democracy and protection of human rights)

The first three factors are endogenous to the energy sector and revolve around the concept of energy security. The other two concern the impact and feed-in of energy politics and economics into two high-order goals of the international system.

## The mainstream energy paradigm: is it viable?

In case all five variables work satisfactorily, the current energy regime can be regarded as functional and efficient. A thorough analysis, nevertheless, reveals not only that it is unsustainable, but also that it is fraught with a number of challenges pertaining both to securing adequate supplies and to the level of prices. Furthermore, the current energy regime pits in many cases importers against exporters, as well as importers against importers, highlighting the high potential for conflict. This does not mean that energy politics is tantamount to conflict. Far from it, international players and stakeholders in energy trade and security have worked out a number of mechanisms to diffuse the potential for conflict (Florini and Sovacool 2009; Goldthau and Witte 2009, 2010). Nevertheless, tensions with regard to energy issues form an integral part of polemical politics in many cases and heighten the risk for conflict. In this context, Jaffe and Soligo (2008, pp. 43-44) maintain that the

concern over the relative power of nations is fostering a new concept of energy security - one where oil consuming countries wish to minimise the chances that a key oil supplier could use the threat of a cutoff of supplies to gain geopolitical advantage or ... to impose political conditions inside the oil importing country.

In some other cases, considerations of energy security are one of the reasons for the outburst and/ or perpetuation of conflicts (Orbán 2008; Barnes and Jaffe 2006). Furthermore, current energy patterns serve for a host of reasons as impediments to development, at the same time that they protect and in many cases bolster inhuman and undemocratic regimes thus rendering democratisation and protection of human rights, both inherent components of development, near impossible (Keen 2008; Youngs 2009).

## Are we energy secure in the current energy paradigm?

When states ensure enough supplies at prices they can afford (a level which varies significantly from one country to another as it is intimately connected with rather diverse purchasing power capacities), and without creating extravagant damage to the environment, they are considered energy secure. While in the previous decades energy crises revolved around sudden, temporary supply shortages and/ or skyrocketed prices, nowadays we are going through an energy crisis mainly due to the fact that current consumption patterns and levels contribute to climate change that jeopardises the future of the planet. The Intergovernmental Panel for Climate Change (IPCC 2001, 2007, 2013) accepted for the first time in the previous decade that climate change is to an important extent driven by human activities, thus calling for a swift change in energy use. Subsequently, the International Energy Agency (IEA) (2008, p. 37) made a strong point that humanity needs nothing less than an energy revolution. As a result, we can no more consider the world energy secure, since its patterns of consumption lead to environmental degradation that put the earth and humanity in danger.

We are going through a dual energy crisis, with the second pillar being the unsettling balance between global energy supply and demand (Müller-Kraenner 2008). Projections are that while the developed parts of the world are not going to decrease their energy consumption levels, if not further increase them, new centers of development, especially in Asia, will continue to demand much more energy supplies. This might well lead to a point where the aggregate energy produced will not be adequate to cater for global demand, with the result being energy shortages. Such arguments date back to the late 19<sup>th</sup> century and are summed up in the amply cited peak oil theory. These prophecies, however, have up to now not come true, mainly due to technological innovations and the fact that successful market mechanisms have prolonged, rather than led to the end of, the era of fossil fuels (Odell 2004; Tonnensson and Kolas 2006, p. 57). Nevertheless, fossil fuels are non-renewable and exhaustible. Their lifetime has expanded considerably, but eventually they will run out, while some scholars make a point that peak oil is close or has already been reached (Heinberg 2011; Hubbert 1969). The scale of rising demand is unprecedented, moreover, posing a challenge as to how global demand will be satisfied and thus spreading concerns for security of supplies in the near future. This becomes even more dramatic, if one takes into account the fact that exploration focuses nowadays on shale oil and gas and tar sands that are even more of a pollutant to an already critically overburdened natural environment (IEA 2009, 2010).

Environmental risks aside, energy security is jeopardized by fundamentally political factors. With the return of resource nationalism, and the consolidation of powerful national champions, political considerations have ascended to significant drivers of energy strategies. Importing nations are wary of supply shortages not only due to geological reasons, but also due to geopolitical ones. Dependence on unreliable regimes features as one of the most crucial risks in the energy security strategies of most importers (Yergin 2006, p. 75; Cable 2010 pp. 75-82).

Thirdly, the tighter the global energy markets become, the higher prices will be. This creates significant strains for many societies. Since cheap energy is the basis for positive growth rates, energy prices have also come to be securitised. According to Jaffe and Soligo (2006, p. 45),

in this new setting, where oil suppliers might be more inclined to use oil as a lever to political ends, energy security could be redefined as reducing the vulnerability of the economy to the reduction or cut off from supplies from any given supplier or group of suppliers or to sudden large increases in prices of specific energy commodities such as oil and natural gas.

The situation is considerably direr in poorer regions. Energy poverty remains, despite all developmental progress, extensive. Many rural regions in India and China, for example, face every-day shortages, while the situation is even more dramatic in the least developed countries, most prominently in Africa (Khandker *et al* 2010). High energy prices render energy purchases unaffordable for many parts of the world.

It should be noted at this point that, in the words of Emily Adams (2013), the energy game is rigged and deeply flawed. The energy sector is heavily subsidized, thus transmitting wrong signals to the market that resources are amply available. Fossil fuels extraction, moreover, bears a high environmental cost that is not paid for by the energy industry; internalization of this cost would render energy prices much higher. Some scholars even make the point that energy prices should also incorporate (part of) the costs that troop-stationing and foreign



military bases in oil-producing regions bear (O' Hanlon 2010; Latouche 2009, p. 74). Eventually, some of these costs will have to be incorporated in energy prices in order to help strained national budgets, enhance environmental protection and sustain military overstretch (Wackernagel *et al* 2006). There are good reasons, therefore, to believe that energy prices will follow an upward trend.

To sum up, the current energy security regime is unsustainable; and security of supplies is fraught with a number of challenges, while the IEA underlines that we have to become used to living with high energy prices for a long time (Block 2012). In this context, importing states utilize a number of tactics with an eye to improve their energy security. The cornerstone of their energy strategies is diversification away from a single source of energy and a single, or a few, predominant exporters, especially if they are deemed as politically unstable or rival, and thus unreliable. Forming strategic alliances with exporters is another critical pillar of the importers' strategy. Energy conservation, energy efficiency, holding substantial reserves in case of an emergency, and collective monitoring of the energy markets are all policies that have come to play an increasing role the last decades under the auspices of IEA (Yergin 2006; Nivola with Carter 2010). They have not managed, however, to effectively protect the importers from the vagaries of political decisions and conflict (for example, war in Iraq and embargo on Iran), of the market (sustained high prices) and from environmental hazards (global climate change) as the discourse on a global energy crisis reveals.

## Geopolitics and development in the current energy paradigm

Furthermore, the scramble for resources heightens geopolitical risks. Scholarly literature has focused lately on the extensive potential for conflict that resource scarcity creates (Klare 2008). We can discern here two distinct arguments. Firstly, a number of crises, such as the second Iraqi war and the Sudanese civil war, are either energy-induced, or wars in which energy considerations have played a significant role, depending on the different perspective of various scholars (Klare 2003; Proedrou 2012, pp. 12-13). Exactly due to the paramount significance of the Middle East, any realignment in the region cannot escape scrutinisation of its potential impact on the energy security of the main importers. The first Gulf war that, despite its normative rhetoric, was undertaken in order to cater for the stability of the energy markets and to ensure the energy security of the West is an indicative example.

Secondly, the web of geopolitical alliances is entangled with energy politics (Andrews-Speed and Dannreuther 2011; Jaffe *et al* 2008; Perovic *et al* 2009). Russia's attempts to retain its hegemony in the ex-Soviet space, especially in energy-rich Central Asia, have a clear energy security rationale. Latin American states such as Venezuela have switched their energy exports away from the US market and towards the Chinese in line with their deteriorating relations with the former. China has turned to Africa to secure more energy supplies, thus acquiring wider stakes in the future of the region and provoking fierce criticism from the West. All these realignments constitute moves in the strategic chessboard that pit great powers against each other and add to an atmosphere of persistent competition, hostility and mutual suspicion. The argument here is not that energy is the main driver behind conflict, but that energy is severely politicized and securitized, and thus adds to tensions whenever international relations are characterized by animosity, rivalry and mistrust (Pascual and Elkind 2010; Youngs 2009).

One should not forget that resource endowment is the critical feature of a number of political systems in the Middle East and Africa that enables the elites to govern in an authoritarian way. The influx of petrodollars makes these governments immune from popular pressures for a more decent life, elections and provision and protection of human rights. With the tacit support of the importers, most of which are, paradoxically, consolidated democracies that aim at the protection of human rights internationally and the spread of democracy, authoritarian regimes retain the power to oppress their people (Douthwaite 1992; Youngs 2009). Development, nevertheless, is infeasible without respect for human rights and democratization processes that put the individual at the heart of political life (Sen 1999). Last but not least, current energy patterns are conducive to the persistence of energy poverty. For the reasons explored above, prices are likely to remain high if not follow an even further upward trend. High prices may create strains for developed economies, but they primarily hit the weaker ones, as the energy crises of the 1970s had made clear. This state of affairs is not so problematic for states like Russia and China that hardly pronounce any humanitarian rhetoric. To the contrary, the US and the EU have for decades projected cosmopolitan ideals and normative issues as being of high order

in the global system. Through their sustained high energy consumption levels, however, as well as their deep-rooted alliances with undemocratic energy producers, they contribute to the perpetuation of energy poverty and thus underdevelopment in many corners of the world. This undermines their rhetoric, soft power and integrity in the global scene.

## **The alternative paradigm of ecological economics: disentangling prosperity from growth**

Two distinct, but conceptually interrelated, threads meet in the discourse of the alternative energy paradigm. Environmental scholars warn that the state of the planet is deteriorating with the effect that in the not so distant future environmental hazards and problems will multiply. According to the Gaia hypothesis, the Earth is a semi-closed, more or less stable system that regulates the parameters of its function. Anthropogenic climate change creates pressures that the planet will withstand in its own way, without however taking into consideration human needs. As a result, unless we make it our utmost priority to conform to the earth's needs, we might well find ourselves, to put it mildly, in a rather unfriendly environment (Lovelock 2006). Furthermore, nature imposes limits on the possible levels of energy production and consumption in two ways. Firstly, fossil fuels are non-renewable and exhaustible, while the law of entropy determines that energy cannot be converted from one form to the other without losses, this applying to both renewable and non-renewable resources. Secondly, there is a maximum level of carbon emissions that the earth's atmosphere can absorb. Surplus quantities meddle with the earth's self-regulating mechanisms creating dangerous alterations in the climate (Lawn 2007; Costanza 1991; Daly 1996; Daly and Farley 2004).

Ecological and steady-state economists endeavor to work out, on the basis of these assumptions and building upon John Stuart Mill's (1909) idea of the 'stationary state', a viable and sustainable economic model. Since the earth is a more or less stable system in terms of inputs and outputs, what we need is correspondingly a more or less stable economy that will not consume more than it can produce and will cease abusing the ecosystem (Daly 1996; Besch 2011). Emphasis then shifts from energy supply to energy demand. Scholars increasingly discuss demand management, without however disentangling the height of energy consumption from the overarching principle of growth, which calls for the constant expansion of the economy and, hence, also of energy consumption (Elkind 2010; Lesage *et al* 2010). Growth, however, aggravates the climate change threat and leads societies to consume more than they can produce. Growth therefore is rendered quite uneconomic, and has tied humanity into an irrational race for economic expansion that in many cases undermines, rather than contributes to, human prosperity. It is thus the very assumption of growth that needs rethinking (Proedrou, 2013). Energy consumption should, in this understanding, be determined by nature's ability to reproduce natural resources and absorb the wastes of economic activity, not by our propensity to grow our markets infinitely in disregard of biophysical limits (Daly 1996; Heinberg 2011; Lawn 2007; Daly and Farley 2004; Dietz and O' Neill 2012).

## **Ensuring energy security in the alternative paradigm**

What is needed then is a twin process of reduction of global energy consumption and exponential increase of energy efficient renewable resources. Although the world has made significant steps towards the partial substitution of fossil fuels for renewable resources and has substantially increased energy efficiency over the last decades, these measures remain out of proportion with the magnitude of the challenge we are faced with and with the reduction of fossil fuels consumption that is necessary in order to deal effectively with the rise of global temperature (Jackson 2009). Since carbon dioxide and methane are the principal culprits of the overheating of the planet, the drastic decrease of fossil fuels consumption will have as a result the stabilisation of global temperature and the gradual elimination of its projected consequences, such as desertification, rise of the sea levels to the point of overwhelming whole islands and more radical climatic phenomena that provoke disasters of biblical proportions. This energy regime will be sustainable, in the sense that it will not sacrifice the wellbeing of future generations and the longevity of our ecosystem for the sake of the current generations.

A distinction has to be made at this point. The decrease of energy consumption is only pertinent to the developed parts of the world, and especially to the urban centers. As Peral (2009, p. 124) notes, ‘the new, expanded approach to security integrates national goals entailing competition - energy security - with goals for the good of humankind (halting climate change) and should entail generous concessions in the same fields’. It will be the West and the more developed parts of the developing world that will have to substantially cut down on their energy demand, in order to free up resources for the least developed parts of the world. Rural regions of China and India, for example, are in much more dire need to illuminate and heat their homes, in comparison to the urban centers of these countries where a lot of energy is consumed on leisure facilities. Even more importantly, regions in sub-Saharan Africa, by far the poorest place of the world, would benefit the most by energy sources that are needlessly spent in the West. In other words, while the global North should cut down on its growth and focus on the qualitative improvement of products and services by means of using less, not more, material inputs, growth is still very much relevant to and critical for the improvement of living conditions in the global South. This, however, should be accompanied by breaks in further population increase, which will minimize or totally annul both the environmental benefits that will evaporate from lower global energy consumption, and the social benefits accruing from the fairer distribution of energy resources. ‘Environmental concerns’, argues Laos (2011, p. 160)

compel us to think in ‘cosmopolitan’ terms and, thus, connect environmental concerns with human rights and equity issues. In fact, environmental concerns emphasise the responsibility of the present people towards one another for the continued viability of ‘global commons’ and towards future generations. Additionally, environmental issues are connected to the issue of the equitable distribution of wealth, because the poor are worst affected by environmental problems and least able to provide adequate solutions to them, and, on the other hand, wealth encourages overconsumption of natural resources and energy and overproduction of waste. Hence, inequitable distribution of wealth encourages the expression of unsustainable behavior and inhibits behavior change ... environmental thresholds call for a concern for rightness and measure. Thus, sustainable development calls for managing demands, instead of ‘meeting’ them. Demand management means that human activities must be carried out ‘critically’, and, therefore, policy processes are needed which are designed in order to reduce or redirect certain demands, rather than to meet them.

Critics argue that there is hardly any reason to reduce resource throughput since technology and markets provide always solutions. In this understanding, improvements in technology will increase both energy production and efficiency allowing for more energy being available, while markets ensure its optimal allocation and use (Ridley 2012; Simon 1996). Nevertheless, high energy prices attest to the technological difficulties in the quest for substitutes to fossil fuels. Indeed, this is no new problem as focus on its resolution begun in the early 1970s after the first energy crisis. Although energy efficiency has improved markedly since, it has only pushed natural limits further, not abolished them. More importantly, higher energy efficiency has led, in the absence of limits to energy consumption, to contrary outcomes, since it encouraged the consumption of more energy thus contributing both to resource scarcity and carbon emissions, the so called Jevon’s paradox (Lawn 2007, p. 59). At the same time, any technological breakthroughs that would bolster energy production further would at the same time create even more critical problems to the earth’s sinks. Technological solutions on climate change remain mute, however. Even those negating the advent of climate change can hardly find counterarguments to the trend that natural disasters become fiercer and global temperature is on the rise these last decades. Their allegations, furthermore, lack the authoritativeness of the Intergovernmental Panel of Climate Change.

Critics also argue that a broad downscale of energy consumption, especially in the global North with an eye to benefit the global South, is not a feasible project. As Daly (2005, 1973, p. 163) argues, however, ‘such a policy is radical, but less radical than attempting the impossible, i.e., growing forever’ and ‘in choosing between tackling a political impossibility and a biophysical impossibility, I would judge the latter to be the more impossible and take my chances with the former.’ There are strong grounds, nevertheless, for someone to believe that taking this course might not be so utopian after all. Lovins (1976), for example, has focused on behavioral changes that can lead to a substantial change in energy consumption. Our behavior is premised upon our normative and ideological background and our fixation on growth. It is a matter of understanding that more does not always equal better (Max-Neef 1991, 1995). When it does not, we should free up energy resources for

the poorer regions, in the same way that we donate a part of our income for charity, not least to the third world channeled through the activities of a vast network of NGOs that work for the improvement of living conditions in the least developed countries. There is a certain threshold of sufficiency, beyond which the accumulation of more material wealth does not significantly add to human happiness (Daly 2008, p. 10). To the contrary, adding a small amount to the income of the poor makes a big difference to their welfare level and, subsequently, to their experience of pleasure, satisfaction and happiness.

Freeing up resources, as well as income, then, is neither as irrational nor as unlikely as it might seem in the beginning. Switching into less energy-intensive modes of living would also be wholeheartedly welcomed by a significant part of the population in modern societies. Data show that the most affluent societies present the highest number of suicides, as well as increased levels of stress that are connected with a number of serious health problems. Disentangling prosperity from growth and moving beyond the subsequent addiction with the infinite accumulation of wealth and resources would thus render western societies less rich, but holds the potential to make them more prosperous with their citizens enjoying better quality of life and higher welfare standards (Jackson 2009; Speth 2008; Kallis *et al* 2012).

One prominent way to induce desirable changes at the societal level is through the promotion of ecological tax reform. This boils down to the principle ‘tax bads, not goods’ and carries the potential for alternative revenue-raising mechanisms that are overall more positive for the people, the environment and the corporations as well. In particular, eco-taxes are imposed on all aspects of economic activity that make us in every way poorer (degradation of the environment, smoking etc.). At the same time, taxes on employment and income are correspondingly reduced, thus providing motives for more economic activity that can generate wealth without creating costs to the environment. The important link here is that energy savings and energy efficiency become the crucial factor. Citizens and corporations are nudged to save on energy and get rewarded for that with tax breaks (Lawn 2007). In this understanding, working in line with the ecological economics paradigm is not only more promising, but would also most likely be supported by large segments of western societies that are plagued by increasing unemployment and high levels of income taxation.

Ecological and steady-state economists, moreover, make the point that current energy consumption levels render the global economy deficient, uneconomic and unsustainable in the long term. Current economics only marginally incorporate externalities, the costs, that is, that are born out of environmental degradation and climate change. If one adds these costs altogether, it becomes obvious that the global economy is working at a negative pace. Not only is then the economy underperforming, but the dominant blueprint for measuring economic activities, Gross Domestic Product (GDP) indexes, does not (fully and adequately) incorporate these externalities<sup>2</sup>, leaving us unaware of the problem itself (Daly 1996, 2008). Special mention should be made to the costs infringed upon future generations that have whatsoever no means of representing themselves and defending their rights.<sup>3</sup> Chains of causality and responsibility then remain vague, and there is a pressing need to be identified and resolved. What is remarkable is that market fundamentalists have not paved the way for the rationalization of economics to its furthestmost point, but instead preach about the optimality of the distortive economic model currently at play.

Going to the first dimension of energy security, security of supplies, this energy paradigm will serve the high goal of eliminating, or at least alleviating, energy poverty. At the same time, security of supplies in the global North will be enhanced since fewer supplies will be needed, this bearing broad positive repercussions to the economy and the environment. Energy consumption in the developed parts of the world will have to become substantially rationalized. Switching to more sustainable, closed loop technological systems that will produce more robust end products with a longer lifespan can achieve substantial reduction of energy consumption (Commoner 1971). A switch away from the supply of products and towards the supply of services can significantly reduce resource throughput. Such a transition, however, calls for the prior restructuring of anachronistic industrial relations and the reconceptualisation of the production cycle from the designing stage (Jackson 1996). In other words, de-growth does not mean cutting down on indispensable needs, like heating and lighting, but putting a break on the constant increase of energy demand. The world has increasingly been using technologies that need more and more inputs from resources, thus aggravating resource scarcity, as well environmental damage. While the dominant economic mindset of growth is focused upon expansion of resource

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<sup>2</sup>Externalities can be defined as side-effects of economic schemes that bring about costs to the whole society, or market outcomes that go contrary to the public interest.

<sup>3</sup>This, indeed, is what has been happening intensively since the advent of the Industrial Era.

throughput, development is premised upon improvement of resource efficiency within the overall limits of energy consumption that do not surpass the earth's regenerative and absorptive capacities (Daly 1996, pp. 10-11).

Moreover, in such a market, dependence on exporters, a ubiquitous risk to the energy security of importers, will significantly dwindle. This is also the case with regard to the competition among importers that works to their detriment. In a world of constrained energy demand that will be determined in accordance with biophysical, ecological limits and not economic considerations based on growth, it will be more difficult for prices to skyrocket. Market mechanisms, in conjunction with the public sector in the understanding that energy forms an indispensable public good, will function to multiply renewables' share in the energy mix and ensure adequate energy capacity at relatively stable and affordable levels. Energy can become more localized (since renewables are more competitive at a local basis), thus reducing market interdependencies. Although it is true that market prices of different commodities interact and influence each other and derive from the state of financial markets, the main argument here is that reduced overall energy consumption and more localized renewable energy systems will upset the current price-hike dynamics and carry the potential to lead to much lower and more stable prices. In any case, the smaller size of energy needs will probably render security of supplies more manageable. One should also note that politically-induced energy shortages will most probably prove to be a much less efficient weapon in a constrained energy market than has traditionally been the case.

The main strength of the alternative energy paradigm, to sum up, is its sustainability. With prioritising the needs of the destitute, energy poverty is also alleviated, while the developed world remains at a privileged position, but cuts down significantly on its energy consumption principally through a rationalisation process. A curtailed energy market may well yield affordable energy prices, at the same time that it impacts positively on both geopolitics and development.

## Geopolitics and development in the alternative paradigm

Starting with the latter, the eradication of energy poverty aside, a global energy market of a smaller size would diminish the leverage of the resource-endowed autocratic regimes spanning the Middle East and North Africa. This would weaken their dictatorial rule and potentially unlock the democratisation processes that the West so openly and zealously supports in rhetoric. Such developments are also likely to enhance the record of human rights protection and empower individuals across the world. They also seem to hold much more potential for the rise of the welfare standards in these regions, since, despite energy-born revenue losses that usually feed, however, autocratic elites rather than the people, they will reduce the attractiveness of an enclave economy and necessitate the establishment of healthier and more robust broad economic, and corresponding institutional, structures.

As far as geopolitical scrambles are concerned, cutting down on energy consumption will inevitably decrease the strategic significance of natural resources and, subsequently, competition for their acquisition. This will mean that 'oil' or 'gas' wars will become less relevant. At the same time, while geopolitics will remain important, especially in patterns of international politics that follow a 'Hobbesian' understanding of anarchy (Wendt 1999), energy issues will cease to play the primary role they currently entertain. This removes a source of tension and will lead to diversified assessments of certain situations compared to what is the case now. For example, a revolution in Saudi Arabia would be looked at by the West in a totally different light in case dependence on Saudi oil was marginalised. This does not translate into a more pacific international system, although this might well be the case, but pinpoints to a fundamental shift in vested interests, patterns of alliance and chains of dependency and domination. A significant decrease in energy consumption, to sum up, will have as a result the substantial downgrade of energy as a strategic good. This will remove some sources of tension and will serve to ease pressures on resource-endowed regions and countries.

Although one could argue that reshaping the fundamentals of energy security will not yield fruitful results unless global equity is made a global pillar of the new paradigm, we look at it the other way round here. Since energy is the backbone of modern economies and societies, locking them out of the growth rationale through a number of practical actions is the first, indispensable step towards creating a fairer level ground on which global politics and development can take place. Once this scheme takes roots, it can spill-over to other critical

issues, such as water, health, education, food, clean air etc. and, hopefully, facilitate the improving plight of the world.

## Conclusion

To sum up, the mainstream energy paradigm is fraught with a wide array of challenges. Security of supplies is a fact for the developed world, albeit risks for supply shortages remain acute and prices at rather high levels. A substantial part of the human population, nevertheless, continues to suffer from energy poverty, due both to supply shortages and non-affordable prices. Most significantly, the current energy paradigm has up to now failed to live up to the expectations to efficiently deal with the challenge of climate change thus seemingly compromising the welfare of the future generations. Furthermore, the quest for resources heightens geopolitical risks and the potential for conflict, while it empowers authoritarian rule in many countries and undermines the protection of human rights worldwide. On both fronts then, internal and external, the mainstream energy paradigm seems to underperform and only yields benefits for a part of the global population - and this increasingly at a high cost - while exacerbating climate change and geopolitical tensions, and perpetuating underdevelopment.

Despite this, scholarly literature remains firmly embedded within this energy paradigm and studies energy politics and economics and environmental issues within this framework. The alternative energy paradigm, to the contrary, is inspired by a cosmopolitan and normative mindset and promises to render the future of humanity sustainable. It aspires to make energy affordable to more people, at the same time that it will remove sources of tension and open new pathways to the fight against underdevelopment, violations of human rights and authoritarian rule. In doing so, it reverses the order of the three dimensions of energy security, putting sustainability in the first place, with security and affordability of supplies following suit.

This paper aimed to present and evaluate the two contrasting paradigms of energy security. Which one humanity will follow in the future will prove of detrimental importance both for the sustainability of our planet, as well as for the achievement of a number of high order goals in the global system and for patterns of relations among the world's great powers. The persevering fixation with growth seems to plague the globe in severe environmental hazards, while being unable to guarantee secure and affordable energy services for most parts of the world. Disentangling prosperity from growth, on the other hand, will allow us to dare a fundamental break with the past, secures the necessary environmental conditions for the maintenance of human presence on earth, as well as fares positively across the fronts of security and affordability of supplies, and geopolitical and developmental issues.

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ELIAMEP can trace its origins to informal meetings in the mid-1980s among academics, diplomats, military officials and journalists. That group's goal was to introduce an independent and scholarly approach to policy options regarding European integration, transatlantic relations as well as the Mediterranean, South-eastern Europe, the Black Sea and other regions of particular interest to Greece. In April 1988 these meetings were institutionalized and became the Hellenic Foundation for Defence and Foreign Policy (Greek acronym, ELIAMEP).

Since its official establishment, ELIAMEP has experienced significant growth and has attracted the attention of scholars, government officials and corporate entities in Greece and abroad. As developments in the wider region moved rapidly, the focus of the institute was enlarged to include more policy-relevant research projects assisting post-communist democracies in the creation of a civil society, providing training and networking services and acting as a contact point to public and private sector bodies on politico-economic and security matters, as well as on European affairs. This was reflected in the 1993 amendment of ELIAMEP's statutes to include a change of name (without abandoning its original acronym), which would illustrate the Foundation's wider scope of concerns and activities: Hellenic Foundation for European and Foreign Policy. The message is clear: in the context of the EU and shared sovereignties, a distinction needs to be drawn between European policy and traditional foreign policy.

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