

Green Energy and Environmental Protection in Modern World

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Abstract: The energy needs of the world are increasing every day, and the state in which we rely on the energy potential of fossil fuels such as coal, oil or gas is completely unsustainable. The rate at which oil is consumed is absurd. It makes a large part of fossil fuel cakes, but for each barrel of oil which is found to be consumed eight barrel. In the era of industrial revolution, the use of fossil fuels has increased rapidly as a initiator of changes. Considering that we live in a modern society where one of the imperatives represents new ways of obtaining energy, it is time to take responsibility for own actions and explore alternate ways of obtaining energy which can be collectively referred to call a Green energy. The term Green energy refers to all renewable energy sources. These are sources that can not be exhausted and give pure energy without the harmful consequences on the environment and our health. The aim of this paper is to briefly explain to readers what the production of new forms of energy means for the whole economy and what will happen if any form of environmental pollution occurs.

Keywords: Energy, Industry, Economy, Health, Criminology, Law

1. Introduction

Countries using the least energy per capita have the least income per capita and their people are the poorest [1]. Countries using the most energy per capita have the largest incomes per capita and their people are the richest. The poor want to grow rich, the rich want to grow richer, and so energy consumption everywhere in the world continues to rise.

The very poorest countries are not now relevant to world energy demand or to the greenhouse gas emissions that drive climate change. There are about 1.6 billion people who have no access to any form of commercial energy. If they were magically given enough to run a refrigerator, light their homes at night, and run their schools, the added energy required would amount to only about 1% of the world's energy consumption. These countries will begin to have an impact on energy demand and climate only when their economies grow enough to make a difference. Until then, they should be left to increase the well-being of their citizens in the most effective way they can without regard to global climate issues. Of course they have to be careful about their local environment, but mandated greenhouse gas reductions should not be required of them.

Energy intensity is a measure of efficiency and of the product mix in a particular economy. Energy intensity usually drops as an economy matures, largely because of a shift from manufacturing to services (it takes much less energy to run a bank than a steel mill, though both may produce the same increment of GDP). This is particularly important because two of the world's largest countries by population, China and India, are undergoing rapid economic growth. At the beginning of their growth cycles, industry dominates over services and processes tend to be relatively inefficient. The effects of improving efficiency (reducing energy intensity) on energy demand are also important in estimating the worldwide demand for energy in the future.

Mainstream economic theory teaches that the problem with externalities is that the buyer and seller have no incentive to take the external cost or benefit for others into account when deciding how much of something to supply or demand [2]. And mainstream theory teaches that the problem with public goods is that nobody can be excluded from benefiting from a public good once anyone buys it, and therefore everyone has an incentive to "ride for free" on the purchases of others rather than revealing a true willingness to pay for public goods by purchasing them in the marketplace.

In other words, mainstream economics concedes that the laws of the marketplace will lead to inefficient allocations of productive resources when public goods and externalities come into play because important benefits or costs go unaccounted for in the market decision-making procedure. If anyone cares to listen, standard economic theory predicts that market forces will tend to produce too much of goods whose production and/or consumption entail negative externalities, too little of goods whose production and/or consumption entail positive externalities, and much too little, if any, of public goods. We illustrate the problem of negative externalities by looking at the automobile industry, and the problem of public goods by considering pollution reduction.

Ecological economists introduced a very useful concept they call throughput to reorient thinking about how the natural environment limits growth as both a source of natural resources and as a sink for wastes [2]. Throughput is defined as physical matter of one kind or another that enters the economic system and physical matter that exits the economic system as waste of some kind. As ecological economists point out, as long as the human species remains earthbound and since physical stocks of different categories of natural resources are finite, and the capacity of the biosphere and upper atmosphere to absorb physical wastes of different kinds is also finite, economic throughput cannot grow infinitely. Ecological economists turn this fact—which is undeniable in and of itself—into a relevant point by arguing that (1) much thinking about economic goals and strategies implicitly ignores this fact, and (2) the future of our present economic system seems to be predicated on the false assumption that throughput can grow infinitely.

The benefits of economic growth were gained at the expense of the environment [3]. The green paradigm indicates that the previous approach to growth, such as polluting and degrading the environment first and then cleaning up and restoring the environment afterwards, must be suspended. Instead, a new path should advocate sustainable development that protects the environment. Green growth has emerged as a new development paradigm to respond to the traditional unsustainable energy and carbon-intensive models that are based on economic growth without consideration for the environment. According to the Organization for Economic Co-operation and Development (OECD), green growth is about fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. 'To do this, green growth must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities'. Green growth is relevant to developed countries which need to retrofit their resource-consuming industries and lifestyles and to developing countries that can avoid copying damaging development pathways. They can 'leapfrog' old solutions and adopt new technologies and ideas. Meanwhile, in developed countries, the challenge of transitioning towards the green economy will be to change lifestyles and reduce consumption of natural resources to sustainable levels. In developing

countries, the challenge will be to stimulate economic growth so the green economy coincides with sustainable development.

2. Energy and Industry

Motivated by the pressing needs of finding solutions to security of supply risks and climate change, governments are trying to implement approaches along these lines, which mix centralised global objectives with policies and measures at national level [4]. For instance, in the EU long-term targets—such as CO₂ emission reductions or penetration levels of renewables—are set at EU level, while leaving to subsidiarity of the Member States and to ad hoc global markets associated with each target—like the EU emission trading scheme or the possibility of exchanging renewable certificates among Member States—the actual task of deciding how to meet these commitments.

The main issue here is to assess, for each type of infrastructure or activity, the right amount and kind of regulatory intervention, so that the investment that takes place is compatible with the long-term sustainability requirements that have been previously identified. What is the borderline that the regulator should not cross? Perhaps too naively, at the beginning of the liberalisation process it was believed that all kinds of investment decisions should be "left to the market". Now, the more recent realisation of the serious shortcomings of our energy model demands a shift in paradigm. An energy policy will provide the identification of the objectives. Then, orthodox principles of microeconomics and regulation should be employed to determine the nature and intensity of the regulatory measures (quotas, incentives, or cross-cutting policies), if any, to be applied in each case: renewable energy penetration and the corresponding support schemes; energy efficiency and savings targets and how to achieve them; any support schemes required to improve the security of electricity and gas supply; the development of gas and electricity network infrastructures; priorities and resources for R&D in energy; carbon allowance allocations; and the practical implementation of any guidelines resulting from the public opinion on the future of nuclear energy.

Markets should be used as much as possible, with the prices of energy, emissions and green or white certificates sending the correct economic signals for investment in adequate technologies or consumption. However, while the longterm and sustainability implications of the energy model are not duly internalised in these prices (for reasons already explained), market instruments will need to be supplemented by other measures, such as R&D support, and also, especially in those sectors such as energy efficiency and savings where externalities are more difficult to internalise fully and behavioural issues are more prevalent, by more traditional "command and control" measures such as standards.

Energy is a capital-intensive industry, and as a \$6 trillion global business, the largest industry in the world [5]. Its transformation to a more energy efficient and environmentally benign industry will take decades. Today,

we are at a turning point in the energy world as emerging environmental regulation on climate change and governmental mandates on both renewable energy and energy efficiency proliferate throughout the world. The energy industry will rise to the environmental challenge through both technology and engineering solutions as it has throughout the past forty years of environmental rules. It will require more capital to be invested into this emerging sector. Most importantly, energy finance will also change. Besides funding for oil, gas, and coal production projects, there will be new business opportunities in both renewable energy and clean energy technology. Change will be incremental, but will accelerate throughout both the developed and developing worlds. But there clearly will be a need for fossil fuels for many more decades. The changes in financial markets in coming years will be more fundamental than many realize.

Already, a new green business model is emerging that is rising to meet environmental challenges. The environmental sector can no longer be considered an isolated field engaging only scientists and a small group of concerned activists. The surge in global environmental consciousness has expanded from typical environmental and health personnel to finance and other corporate professions. Collectively, individuals have developed a greater understanding of environmental concerns (directly or indirectly), particularly through the realization of the severity of human actions; the inclination to support a more sustainable lifestyle; or just the desire to generate financial profits from environmental economic activity. Thusly, environmental concerns will impact how the energy industry extracts fossil fuels going forward.

3. Business Option

Many countries have renewable energy, energy efficiency, and greenhouse gas programs [6]. Some coordination to provide consistency needs to take place, but most such programs today are, and have been, independently developed. Consistent methodologies for measuring emissions, including GHG, renewable, and efficiency efforts would facilitate project investment, and efforts are underway in standardizing these metrics. Consistency would facilitate development of project templates, reducing costs and gaining rapid dissemination of the learning gained from early projects. National and international markets for GHG credit trading would offer the liquidity necessary to return value to projects and, thereby, financing. To function efficiently such markets require assurance of integrity—clear definitions, avoidance of double counting, verification, and liquidity. At this point in market development, it is critical for some consensus to emerge around the development of common metrics for the private sector and policymakers to analyze opportunities at the regional, national, and international levels. Greenhouse gas registries managed by a third-party, nongovernmental entity could serve as a model at both the state level, as in California, or at the federal level as in most European Union (EU) countries. All these efforts are coming to the fore.

When governments, civil society, businesses, and banks

each define how they aim to contribute to a better world, they will collectively have the mass needed to realise the global vision of a world where nine billion people can thrive within the limitations of our planet [7].

More than ever before, consumers are turning to the green or sustainable option. A growing number of people want the products they buy to be produced fairly by companies that mirror their concern for the future. Even in finance, consumers are taking an increasingly active role in investment decisions, insisting that their money be invested in projects that generate a positive impact on society. Though some businesses have made changes to meet their clients' needs, few have integrated their environmental and social contributions into the core of their business model. From a business perspective, this is pure folly. The growing consumer momentum is not some fleeting trend—it is the future. And those companies that do not jump on the bandwagon will be left behind.

4. Environmental Harm

Harm is contested, but this contestation is not limited to the academic realm [8]. As a normative concept, the notion of harm has an unequivocal political dimension: to speak of harm is to challenge, to dispute, or to make a claim to something, the assertion of a right, a demand for change, and so on. The politics that as such inhere in "harm" manifest themselves in two forms. One way is via the denunciations voiced by those who endure alleged harms, and those who represent or support the former in their struggles. Furthermore, politics also inhere in the production of harm: bringing about a degree of harm may be crucial to secure, facilitate, or reproduce particular political and economic interests, privileges and arrangements, and the broader cultural framework in which these are embedded. No less crucial, in turn, are the ways in which these alleged harms are discursively framed, denied, justified, relegated to external factors and processes, and so on.

Investigating environmental harm lends itself to the use of images (e.g., those in documentary photography; those in film) in the course of knowledge construction and evaluation thereof, helping to take into account and value the relationality/relatedness and the ambiguity of the processes in play [9]. This passage may be structured by using socio-criminological iconic indicators and by recognizing the constitutively collaborative nature of visual methodologies, which allow working with research subjects to illuminate the depth and complexity of environmental issues. Furthermore, the adoption of visual methodologies in order to generate participation in social interactions and to co-construct knowledge through the direct experience (cultural and also corporeal) of the participants represents a necessary bridge between theory and practice, as shown by the various forms of participatory action research (PAR). This praxis will contribute to increasing the value of the social actors' reflexivity and to creating the conditions for a transformation of cultural and environmental sensitivities towards an attitude

able to transcend a rigid anthropocentrism. In particular, participatory filmmaking could help people to become sensitive to a socioenvironmental reality different from their own, and represents a methodological strategy capable of placing the spectator within the social and cultural (practical) experience of the participants. From this perspective, visually observing socio-environmental processes will also mean encountering them in their complex intertwining, in their ineradicable opaqueness, ambivalence and richness.

Environmental problems, in particular those caused by human economic activity, are among the defining issues of the twenty-first century [10]. For many people, damage to the environment is seen as problematic in its own right: nature has intrinsic value, and harm to nature is something to care about purely because of this. Increasingly, however, environmental harm is recognized not just as a problem for the natural world, but as a major contributory factor in a broad array of social problems: environmental harm often causes, exacerbates or otherwise contributes to social harm. From a social science perspective, it becomes clear that the social world cannot be understood in separation from the natural world.

Current sociological thinking recognizes this: human-caused environmental damage is seen as one of the major contributors to contemporary 'risk society'. The concept of the risk society recognizes the way that late-modern societies are characterized by the distribution of and exposure to the 'manufactured risks' associated with industrial and post-industrial economic activity. In relation to environmental harm, we can point to the way industrial society has contributed to (among other things): the production of greenhouse gases, ozone-depleting substances and other air-, water- and land-borne pollutants; the acidification of oceans; the depletion (locally and globally) of natural resources including old-growth forests, mineral deposits, fish stocks and fresh water; the use of radioactive materials for energy production or warfare; the production and distribution of carcinogenic and other harmful chemicals; the destruction of natural habitats, and the depletion of biodiversity. Related manufactured risks include: global warming; damage to the ozone layer; increased incidences of cancers, birth defects and other health problems; desertification of once-fertile land and sea areas; food, water and other resource shortages, and unpredictable changes to local and global eco-systems and weather patterns (climate change). Specific tangible harms range from the physical (including death, injury and illness; damage to and loss of property) through the economic (loss of production and economic opportunities; increased competition for resources; costs of physical consequences of environmental victimization) to the cultural (loss of traditional ways of life; impacts of migration and urbanization). Such harms overlap with broader contemporary economic and political concerns and have a tendency to increase inequality and social conflict.

5. Green Criminology

'Green criminology' is an umbrella term used to cover and

capture the study of ecological or environmental crime or harm, and related matters of speciesism and environmental (in) justice [11]. It provides a perspective and loose framework of theories and methods to apply to the investigation of harms, offences and crimes related to the environment, different species and the planet. Importantly, it is 'open' to inter- and multi-disciplinary engagement.

The argument is that an ecological perspective can make important contributions to criminological theory: broadly speaking, as we increasingly recognize that sustained environmental harm often creates social harm, and that environmental victimization often contributes to criminality, it follows that criminology should recognize environmental harm not just as crime, but as an important contributory factor in the genesis of crime [10]. If we accept the prediction that environmental problems—and therefore related social problems—are likely to persist, and probably accelerate, as we move further into the twenty-first century, we should recognize that the links between this and crime are also likely to accelerate.

Over the last 25 years, "green criminology" has become familiar on an international level as a perspective oriented towards the opening of criminological paradigms to issues of environmental harms and crimes [9]. Green criminology allows for the meeting of a wide range of theoretical orientations aimed at connecting a series of issues of crucial importance for today's world: environmental crimes, harms and various forms of (in) justice related to the environment, plants and non-human animal species, and the planet as a whole. More specifically, green criminology represents a "conceptual umbrella" under which researchers and scholars examine and rethink from various perspectives the causes and consequences of different environmental harms, such as pollution, the deterioration of natural resources, the loss of biodiversity and climate change. While emerging within the framework of critical criminology, green criminology is marked by a constitutive openness that allows it to extend beyond the boundaries of a specific criminological tradition to become a theoretical laboratory for thinking about environmental issues in the richest and broadest meaning of the word. In this sense, green criminology seems to promote new "ways of looking" at the human-environment relationship—a peculiar "green gaze" that can expand the criminological understanding and imagination of environmental crimes beyond the existing criminological frames. To borrow from the Spanish philosopher José Ortega y Gasset, we might say that green criminologists have "the good fortune to see for the first time landscapes never seen before" and sail "through seas never sailed through before". Therefore, it has been necessary, first of all, to find a language that is able to define what has been discovered.

Whilst Green Criminology as a subject area has continued to development since at least the early 1990s, there has been a surprising lack of engagement within this literature with environmental victimisation or the victims of environmental harm [12]. This may be partly based on the assumption that environmental crime (or wider notions of environmental

harm) is largely victimless, or at best, such victimisation is relatively equally shared amongst the population of a given area, country or the world as a whole. More recent studies have begun to unpick such assumptions. For example, there is now growing evidence to the effect that the impacts of environmental crime (like most other forms of crime) in fact fall disproportionately on the weak, the marginalised and the powerless at a national and international level. Furthermore, the impacts of environmental crime are becoming increasingly understood and are now known to be multi-faceted and complex, including health-related, social, economic, cultural and security impacts. It has also been noted that environmental victimisation may be criminogenic, with clear implications for wider criminology.

6. Law

Law concerns the relations between individuals as such relations affect the social and economic order [13]. It is both the product of civilization and the means by which civilization is maintained. As such, law reflects the social, economic, political, religious, and moral philosophy of society.

Law is an instrument of social control. Its function is to regulate, within certain limitations, human conduct and human relations. The rights and duties of all individuals, as well as the safety and security of all people and their property, depend on the law.

The law is pervasive. It permits, forbids, or regulates practically every known human activity and affects all persons either directly or indirectly. Law is, in part, prohibitory: certain acts must not be committed. For example, one must not steal; one must not murder. Law is also partly mandatory: certain acts must be done or be done in a prescribed way. Thus, taxes must be paid; corporations must make and file certain reports with state authorities; traffic must keep to the right. Finally, law is permissive: certain acts may be done. For instance, one may or may not enter into a contract; one may or may not dispose of one's estate by will.

To a great extent, business activity across the world is carried on within a capitalist, market-based system [14]. With regard to such a system, law provides and maintains an essential framework within which such business activity can take place, and without which it could not operate. In maintaining this framework, law establishes the rules and procedures for what is to be considered legitimate business activity and, as a corollary, what is not legitimate. It is essential, therefore, for the businessperson to be aware of the nature of the legal framework within which they have to operate. Even if they employ legal experts to deal with their legal problems, they will still need to be sufficiently knowledgeable to be able to recognise when to refer matters to those experts.

One of the most obvious and most central characteristics of all societies is that they must possess some degree of order, in order to permit their members to interact over a

sustained period of time. Different societies, however, have different forms of order. Some societies are highly regimented with strictly enforced social rules, whereas others continue to function in what outsiders might consider a very unstructured manner, with apparently few strict rules being enforced.

7. Conclusion

The EU's environmental protection policy is based on the principles of precaution, preventive action and the removal of pollution at the source, as well as on the principle of "polluter pays". The precautionary principle is a risk management instrument that can be applied when there is scientific uncertainty as to whether a particular activity or policy poses a potential risk to human health or the environment. For example, if there are any doubts about potentially harmful effects of the product and if after an objective scientific assessment this uncertainty persists, there is a possibility to order termination of the distribution of that product or its removal from the market. Such measures must be non-discriminatory and proportionate and must be re-examined when more scientific data is available. Environmental protection from the aspects of protection is considered by Criminology and Law, scientific disciplines aimed at detecting pollutants and imposing sanctions foreseen by national legislation.

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