

Energy Transition Efficiency

The efficiency of the Energy Transition (ET) for all mankind is the higher, the less harmful effect of energetics to the environment, the duration of ET and its cost, provided that the energy needs is satisfied.

The ET Initiators, including: [UNFCCC](#), [IRENA](#), [IEA](#), [World Bank](#), [European Commission](#) and the governments of the countries, made a strategic decision to move to carbon neutrality by 2050, motivating it to the interests of all mankind (≈ 9.73 billion people). They plan [to increase the volume of investments in ET](#) from $\approx \$ 500$ billion in 2018 to $\approx \$ 1200$ billion in 2030 ([total \$\approx \\$ 11\$ trillion](#)) and [attract capital of institutional investors](#) in the amount of $\approx \$ 100$ trillion to achieve this goal. That is, the total investment will amount to $\approx \$ 111$ trillion. National governments can guarantee investors a typical ROI of ≈ 30 -50%. That is, they will return to investors on behalf of all mankind $\approx \$ 144$ -167 trillion. Consequently, the average cost of ET Initiators' forced environmental services per person will be $\approx \$ 14800$ -17163.

The advertisements of the mentioned forced services are presented in the documents of [UNFCCC](#), [IRENA](#), [IEA](#), [World Bank](#) and [European Commission](#) and are unreliable. ET Initiators do not take into account the obvious facts and results of well-known scientific research, and also refuse to consider, discuss and apply effective technologies, for example:

1. The US [National Renewable Energy Laboratory \(NREL\)](#) and [other researchers](#) have studied the life cycles of all types of Renewable Energy Sources (RES). They have showed that RES are not "environmentally clean". Harmful impacts to the environment during the manufacture, transport, maintenance and disposal of RES are inevitable and may be significant. The use of RES changes the place, type and magnitude of harmful effects to the environment, but does not exclude them. Therefore, the concept of "clean energy", its synonyms and analogues are hazardous. Such concepts misinform humanity, are the basis of the passionate belief that any use of RES provides the generation of "clean energy". The erroneous decisions and actions caused by this belief are shown below. ET Initiators support this misinformation: they widely use these concepts, do not change their interpretation in their documents, dictionaries, textbooks and other sources of information.

2. [NREL studies](#) and [other authors](#) have shown that energy costs for the life cycle of the same RES may differ several times without it control. This means that the value of its [energy efficiency](#) may also differ several times. The [simplest calculations](#) show that the duration of ET will be infinite when the value of the energy efficiency of RES is below a well-defined level. Such RES cannot physically replace all Traditional Energy Sources (TES), and an increase in the volume of their implementation will accelerate the degradation of the environment. The [same calculations](#) show that the use of RES with high energy efficiency reduces the duration of ET. However, the ET Initiators rejected the free (!) [Technology of choosing the best RES in terms of energy efficiency](#) without giving a reason. This solution will increase ET duration, its cost and environmental impact. Thanks to this decision, ET Initiators invest $\approx 45\%$ of all investments mentioned above $\approx \$ 111$ trillion in environmental degradation, which will amount to $\approx \$ 50$ trillion. Elimination of its consequences will require additional investment and time.

3. An obvious fact: the duration of ET, according to the plans of its Initiators, will be tens of years, and with low energy efficiency of RES, it will be hundreds of years or more. All this time, mankind will continue to use TES. Applying the [technology to save 6-10% of fuel](#) in TES during this time could accordingly reduce global greenhouse gas emissions. And [saving 6-10% of energy](#) in other industries could accordingly reduce its production. This would require less RES, accelerate ET, and cut costs and emissions by 12-20%. However, the European Commission in 2012 refused to make sure of the effectiveness of [this technology](#)

free of charge (!) under the pretext of the lack of relevance of saving energy resources. Thanks to this refusal, the EU has wasted about 264-440 billion m³ of natural gas and ≈ 148-246 million tons of coal in 8 years to harm the environment. Wasted emission of greenhouse gases in the EU for 8 years amounted to ≈ 256-426 million tons in CO₂ equivalent.

4. An obvious fact: the [impact of energy and other industries on the environment](#) does not only consist of greenhouse gas emissions. Therefore, the [strategy of long-term struggle with one type of impact](#) is unreasonable if there is a [scientific base](#), [technology](#), technical and financial capabilities to systematically minimize all impacts simultaneously and in all sectors. All types of impacts are most fully reflected by the [Environmental Impact Assessment](#), which is technically impossible to apply to minimize all types of impacts simultaneously without the [technology of taking into account harmful environmental impacts](#). However, the ET Initiators abandoned [this technology](#) without explanation.

5. A [group of researchers](#) has compared all types of TES and RES in terms of the overall economic efficiency of investments. The most effective investments for all mankind have turned out to be ones in nuclear energy. However, the ET Initiators abandoned nuclear energy in their [strategy](#).

The actions of the ET Initiators described above in paragraphs 1 ... 5 are aimed at reducing its effectiveness from the point of view of the interests of all mankind, because they increase its harmful impact on the environment, duration and cost. However, these actions are economically beneficial for investors and governments of countries, despite the damage to the environment: they increase the volume and economic efficiency of investments, as well as the amount of taxes collected through increased business activity. Increasing business activity is also in line with the economic interests of humanity.

The above-described contradiction between the economic interests of the ET Initiators and the environmental interests of all mankind is not fundamental; it concerns the technical details of the ET implementation. Elimination of this contradiction is possible by using the technologies mentioned in paragraphs 1 ... 5. They will increase the environmental performance of the strategy for all of humanity. The preservation of the economic interests of the ET Initiators may be reached by an agreement between them on the amount of investment, ROI and other rules, and humanity in any case will be forced to pay them the same \$ 144-167 trillion for ET.

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