Stakeholder Communication Form

(Version 01.0)

This form shall be used for any CDM-related communication with the UNFCCC secretariat or the CDM Executive Board. All the questions are mandatory unless otherwise indicated.

The completed form and any supplemental documents shall be submitted electronically to cdm-info@unfccc.int, or via fax to +49-228-815-1999 or via post to: Sustainable Development Mechanism (SDM) Programme, UNFCCC secretariat, P.O. Box 260124, D-53153 Bonn, Germany.

SECTION 1: COMMUNICATION HEADER

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Stakeholder Type: Organization		If other:

Please indicate from whom you would like to get an answer.

This communication is addressed to[1]: Chair of CDM Executive Board (normal track)

SECTION 2: PROJECT ACTIVITY OR PROGRAMME OF ACTIVITIES (PoA)

If this communication refers to a specific CDM project activity/PoA, please answer questions in this section (otherwise proceed to Section 3).

Project/PoA Ref. Number	*5-digit# format 01234*	If applicable, CPA Ref. Number: *8-digit# format 0123-4567*
Project Cycle Stage	[Choose an item]	If other:

If there is no specific CDM Reference Number, please answer the remaining questions in this section (otherwise proceed to Section 3).

Host Country(ies)		
Project/PoA Title		
Technology Type	[Choose an item]	If other:

SECTION 3: YOUR COMMUNICATION

Title/Subject *Maximum 250 characters*	Renewable Energy Source Self-Reproduction Ratio as an UNFCCC Process Tool
Communication Text *Include background, details, and conclusion (unlimited length)*	Introduction The importance of the energy efficiency of Renewable Energy Sources (RES) has been repeatedly emphasized in UNFCCC documents. However, none of its documents contains a criterion for assessing the energy efficiency of RESs. At the same time, UNFCCC documents contain recommendations and plans for a significant increase the investments in RESs production. Thanks to this, financing for RESs in the world is growing from about $ 500 billion in 2018 to about $ 1.2 trillion in 2030. The scale of financing and ongoing projects testifies to the desire of mankind to achieve a global reduction in the environmental impact of power engineering through the replacement of Fossil Fuels Systems (FFS) with RESs.

[1] In accordance with the "*Procedure: Direct communication with stakeholders" (version 02.0)*, stakeholders may address communications either (a) to the secretariat, in order to seek a fast-track technical or operational explanation regarding the implementation of existing CDM rules, or (b) to the CDM Executive Board, in order to communicate to the Board their views on CDM rules and their implementation, or to seek official clarifications of CDM rules.

Modern power engineering uses many types of FFS and RES. FFSs are called “environmentally dirty” because greenhouse gases are emitted at their places of work. RESs are called “environmentally friendly” because in their places of work there is practically no emission of greenhouse gases. This property has become a source of widespread belief that to improve the global ecology it is enough to replace all FFSs with any RESs of the corresponding power.

It follows from the presented calculation options that the proposed technology reduces the duration of replacing FSSs with RESs by approximately from 15.71% to 46.52% and increases the efficiency of investments in the UNFCCC process by the same amount. This means that the value of ineffective investments in 2018 amounted to approximately $ 78.55 to $ 232.6 billion, and inefficient investments in 2030 may be reduced by $ 188.52 to $ 558.24 billion.

The global effect that the proposed technology can provide in 2021 is in the range of $ 106.04 to 314.01 billion and averages approximately $ 263.05 billion (see table 1). The global average daily ineffective investment utilization in 2020 is approximately 0.658 billion (see table 1) compared to available opportunities.

Reducing the duration of replacing FSSs with RESs will reduce the duration of the environmental impact of FSSs. Due to this, the environmental parameters at the time of completion of this replacement will be better. This in turn will reduce investment in eliminating the harmful effects that will occur in the process of preparing for the implementation of the proposed technology and when replacing FSSs with RESs.

However, reducing the duration of the process of replacing FSS with RESs due to the efficient use of investments means reducing the duration of the associated economic growth. The proposed technology also affects the interests of all participants in the UNFCCC process because it requires a fundamental change. These circumstances will be an obstacle to technology implementation, increase the duration of its implementation, reduce the effectiveness of investments, worsen the environment and require additional investments to eliminate the consequences of increasing the duration of its implementation.

We have called the proposed technology by “Noologistic Choosing a Renewable Energy” (NCRE). The word “Noologistic” in the NCRE name comes from the ancient Greek words νόος - noo (reasonable) and λογιτσιχη - logistics (the art of counting).

Calculation the criterion of energy efficiency the RES

Any of the energy efficiency criteria used in the energy sector, which establishes the mathematical relationship the ΣREn to ΣPEn, may be used in UNFCCC to choose the best RES. The rules for calculation of RES energy efficiency criteria are established by the relevant regulatory documents and unified in UNFCCC documents.

We applied one of these criteria to the NCRE and called it self-reproduction coefficient (Kcr). This name distinguishes Kcr to other efficiency factors used for RESs. The value of Kcr is calculated by the formula:

Ksr = ΣREn / ΣPEn … . … … … … … … … … formula 1

Symbols in the formula 1 - see above.

The value of Kcr determines the property of self-reproduction of RES - this is its ability to produce energy in an amount sufficient to replace FFS in the UNFCCC process, for example:

If Ksr <1, then such a RES cannot be used in the UNFCCC process because it produces less energy than was spent on its creation and operation. The use of such RESs requires the use of additional FFS and thereby increases the harmful effects on the environment.

If Ksr = 1, then such a RES produces exactly the same amount of energy that was spent at it. Therefore, its use does not make sense - it is impossible to replace the FFS and to provide the UNFCCC process through its use.

If Ksr> 1, then such a RES may be used in the UNFCCC process because it produces more energy than was spent at it. The larger the Ksr value, the more efficient the replacement and the UNFCCC process is faster. For example, if Ksr = 6, then for the whole time it is able to generate enough energy to produce 6 the self like RES, and if Ksr = 1.5, then 4 times less. Accordingly, the duration of the UNFCCC process at Ksr = 6 will be faster than at Ksr = 1.5.

The value of Ksr has approximate ranges from 0.4 to 9 in practice. This means that in practice

	there are cases of using environmentally “dirty” RES with Ksr < 1, environmentally neutral, with Ksr = 1, and environmentally inefficient, with Ksr < 1.5. Conclusions 1. NCRE is consistent with the objectives of the UNFCCC process. 2. There are no theoretical or technical obstacles to the implementation of NCRE. 3. The use of NCRE will increase the efficiency of investments in the UNFCCC process by tens of percent and, accordingly, accelerate it. 4. Replacing the energy efficiency criterion with economic or any other one, all other things being equal, slows down the UNFCCC process. Moreover, the UNFCCC process may continue indefinitely with an infinitely long-term environmental degradation, if instead of the most energy-efficient projects, projects with a self-reproduction coefficient Ksr of one or less than one will be used. 5. Obviously, the costs of the project will be incommensurably less than the environmental and economic effects of its implementation. 6. The main obstacle to its implementation is the transfer to the background of the economic parameters of power engineering. 7. The scale of the UNFCCC process, the size of ineffective investments and the possible degree of their global harmful environmental impact require a quick response to the proposed project. Details of the proposed technology - see the attached file “NCRE NUFCCC.pdf”.
Supplemental Documents *If applicable, list the title(s) of any attached file(s) or link(s)*	Renewable Energy Source Self-Reproduction Ratio as an UNFCCC Process Tool
This communication may be made public	Yes

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Document information

Version	*Date*	*Description*
01.0	02 March 2015	This form supersedes and replaces the following: • F-CDM-RtB: *Form for submission of Letters to the Board* (version 01.2) • F-CDM-RtB-DOE: *Form for communication on policy issues initiated by AEs/DOEs* (version 01.1) • CDM-RtB-DNA: *Form for communication on policy issues initiated by DNAs* (version 01.1)

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Renewable Energy Source Self-Reproduction Ratio as an UNFCCC Process Tool

Introduction

The importance of the energy efficiency of Renewable Energy Sources (RES) has been repeatedly emphasized in UNFCCC documents. However, none of its documents contains a criterion for assessing the energy efficiency of RESs. At the same time, UNFCCC documents contain recommendations and plans for a significant increase the investments in RESs production. Thanks to this, financing for RESs in the world is growing from about $ 500 billion in 2018 to about $ 1.2 trillion in 2030.

The scale of financing and ongoing projects testifies to the desire of mankind to achieve a global reduction in the environmental impact of power engineering through the replacement of Fossil Fuels Systems (FFS) with RESs.

Modern power engineering uses many types of FFS and RES. FFSs are called “environmentally dirty” because greenhouse gases are emitted at their places of work. RESs are called “environmentally friendly” because in their places of work there is practically no emission of greenhouse gases. This property has become a source of widespread belief that to improve the global ecology it is enough to replace all FFSs with any RESs of the corresponding power.

The first thing that immediately attracts attention when familiarizing yourself with renewable energy projects for the UNFCCC process is their large size and weight at relatively low power. Windmills with towers and blades hundreds of meters in size and weighing thousands of tons, solar panels with kilometer sizes and huge platforms at sea, which weigh thousands of tons at an installed capacity of up to 10 MW, are the prototypes of RESs for the UNFCCC process.

Obviously, the energy received from the FFSs was spent for the production of every kilogram of their structure! That is, the production of each kilogram is accompanied by the emission of greenhouse gases from FFSs. This is a lot of energy and greenhouse gas emissions in the aggregate, if you count them from mining to the disposal of each RES.

For example, different manufacturers spend different amounts of energy on the production of identical products. But no one calculates the exact amount of energy expended on their production. The results of one of the studies show that the amount of energy spent on manufacturing products is approximately equal to:

cement - from 0.92 to 1.39 kWh / kg,
steel - from 2.78 to 11.14 kWh / kg,
aluminum - from 48.33 to 48.67 kWh / kg,
electron silicon - from 583.33 to 694.44 kWh / kg, etc.

The various options for calculating the predicted effect that occurs when choosing RESs by energy efficiency for the UNFCCC process are below. The above data were used in the calculation.

<u>Option 1.</u> The minimum predicted effect

If we take the maximum cost of manufacturing products as the basis, then the value of the predicted effect in % is approximately:

for cement (1.39 - 0.92) * 100% / 1.39 = 34%,
for steel (11.14 - 2.78) * 100% / 11.14 = 75.06%,
for aluminum (48.61 - 48.33) * 100% / 48.67 = 0.57%,
electron silicon (694.44 - 583.33) * 100% / 694.44 = 16%.

Therefore, the minimum average value of the predicted effect in% is approximately equal (34% + 75.06% + 0.57% + 16%) / 4 = 31.41%.

The amount of energy spent on a product will obey the law of random numbers when choosing it according to economic or other criteria. Therefore, the minimum average value of the predicted effect in% is approximately half of its value calculated above: 31.41% / 2 = 15.71%.

The minimum predicted annual effect in $ will be:
in 2018 $ 500 * 15.71% / 100% = 78.55 billion;
in 2030, $ 1,200 * 15.71% / 100% = 188.52 billion.

<u>Option 2.</u> The maximum predicted effect

If we take the minimum cost of manufacturing products as the basis, then the value of the predicted effect in % is approximately:

for cement (1.389 - 0.917) * 100% / 0.917 = 51.52%,
for steel (11.14 - 2.78) * 100% / 2.78 = 301%,
for aluminum (48.61 - 48.33) * 100% / 48.33 = 0.57%,
electron silicon (694.44 - 583.33) * 100% / 583.33 = 19.05%.

Therefore, the maximum average value of the predicted effect in% is approximately equal (51.52% + 301% + 0.57% + 19.05%) / 4 = 93.03%.

The amount of energy spent on a product will obey the law of random numbers when choosing it according to economic or other criteria. Therefore, the maximum average value of the predicted effect in % is approximately half of its value calculated above: 93.03% / 2 = 46.52%.

The maximum predicted annual effect in $ will be:
in 2018 $ 500 * 46.52% / 100% = 232.6 billion;
in 2030, $ 1,200 * 46.52% / 100% = 558.24 billion.

Option 3. Average predicted effect

The average predicted effect in % between options 1 and 2 is approximately: (31.41% + 46.52%) / 2 = 38.97%.

The average predicted annual effect in $ between 1 and 2 options will be;
in 2018 $ 500 * 38.97% / 100% = 194.85 billion;
in 2030, $ 1,200 * 38.97% / 100% = 467.64 billion.

Option 4. Predicted decrease in the duration of the UNFCCC process.

The Enercon E-126 wind turbine, installed near Hamburg in Germany, has a productivity of 18,000 MWh / year. Approximately 1,530 tons of cement was spent on the manufacture of a foundation weighing 2,500 tons and a supporting tower weighing 2,800 tons for it. Consequently, approximately from 1457.5 to 2208.3 MWh of energy were expended in the production of this cement, according to the above studies. In addition, approximately from 1944.4 to 7797.2 MWh of energy was expended in the manufacture of steel for the generator nacelle, rotor and blades of a total weight of 700 tons, according to the above studies.

The wind turbine Enercon E-126 should work from approximately (1457.5 + 1944.4) / 18000 = 0.189 years to (2208.3 +7797.2) / 18000 = 0.556 years for the reproduction of energy spent on the manufacture of the above cement and steel. Therefore, a possible reduction in the duration of the reproduction of energy spent on the manufacture of cement and steel for the wind turbine will be approximately (0.556 - 0.189) = 0.367 years. This corresponds to a decrease in the duration of energy reproduction by (0.556 - 0.189) * 100% / 0.556 = 66%.

The amount of energy spent on the cement and steel will obey the law of random numbers when choosing it according to economic or other criteria. Therefore, the maximum average values of the predicted effect are approximately half of its values calculated above: 0,367 / 2 = 0,184 years and 66% / 2 = 33%.

Option 5. The global effect of the proposed technology at the UNFCCC from 2018 to 2030.

Table 1 shows how investments, the annual effect, and the daily average effect change from 2018 to 2030. The calculations in table 1 have been performed by interpolation with a proportional distribution of investments by years.

It follows from the presented calculation options that the proposed technology reduces the duration of replacing FSSs with RESs by approximately from 15.71% to 46.52% and increases the efficiency of investments in the UNFCCC process by the same amount. This means that the value of ineffective investments in 2018 amounted to approximately $ 78.55 to $ 232.6 billion, and inefficient investments in 2030 may be reduced by $ 188.52 to $ 558.24 billion.

The global effect that the proposed technology can provide in 2021 is in the range of $ 106.04 to 314.01 billion and averages approximately $ 263.05 billion (see table 1). The global average daily ineffective investment utilization in 2020 is approximately 0.658 billion (see table 1) compared to available opportunities.

Reducing the duration of replacing FSSs with RESs will reduce the duration of the environmental impact of FSSs. Due to this, the environmental parameters at the time of completion of this replacement will be better. This in turn will reduce investment in eliminating the harmful effects that will occur in the process of preparing for the implementation of the proposed technology and when replacing FSSs with RESs.

Table 1

Years	Annual investments	Effect			Annual effect			Daily average effect
		min.	max.	av.	min.	max.	av.	
	$ billion	%			$ billion			
2018	500	15.71	46.52	38.97	78.55	232.60	194.85	0.534
2019	558.33				87.71	259.74	217.58	0.596
2020	616.67				96.88	286.87	240.32	0.658
2021	675.00				106.04	314.01	263.05	0.721
2022	733.33				115.21	341.15	285.78	0.783
2023	791.67				124.37	368.28	308.51	0.845
2024	850.00				133.54	395.42	331.25	0.908
2025	908.33				142.70	422.56	353.98	0.970
2026	966.67				151.86	449.69	376.71	1.032
2027	1025.00				161.03	476.83	399.44	1.094
2028	1083.33				170.19	503.97	422.18	1.157
2029	1141.67				179.36	531.10	444.91	1.219
2030	1200				188.52	558.24	467.64	1.281
Total	11050.00				1735.96	5140.46	4306.19	0.908

However, reducing the duration of the process of replacing FSS with RESs due to the efficient use of investments means reducing the duration of the associated economic growth. The proposed technology also affects the interests of all participants in the UNFCCC process because it requires a fundamental change. These circumstances will be an obstacle to technology implementation, increase the duration of its implementation, reduce the effectiveness of investments, worsen the environment and require additional investments to eliminate the consequences of increasing the duration of its implementation.

The proposed technology provides answers to many questions that have arisen in connection with the obvious facts given above, including:

1 question: "How to accurately calculate the real energy costs of RES?"

2 question: “Is the energy that RES generates over the entire time of its operation sufficient for its self-reproduction?”

A positive answer to this question does not guarantee that the use of this RES will not worsen the state of the environment. If the answer is no, the use of this renewable energy will worsen the environment and should be justified by urgent need.

3 question: “What RES is the best for replacing FSS from the UNFCCC point of view?”

4 question: “How to evaluate the effect of using the best RES for the UNFCCC process?”

5 question: “How does the choice of RES for replacing FSS in economic parameters affect the UNFCCC process?”

The answers to these and other possible questions are given below in the description of the technology, which we called the “Noologistic Choosing a Renewable Energy” (NCRE). The word “Noologistic” in the NCRE name comes from the ancient Greek words νόος - noo (reasonable) and λογιτσιχη - logistics (the art of counting).

Noologistic Choosing a Renewable Energy

It was shown above that the nature of the UNFCCC process in the energy sector and the chosen method of its implementation by replacing FFSs with RESs put the energy efficiency of the choosing projects in first place. Therefore, the economic efficiency of the choose projects was in second place. It will be shown below that any attempt to prioritize the economic efficiency of a project or any other criterion will negatively impact the UNFCCC process.

The essence of NCRE is to choose RES of maximum energy efficiency. It consists in performing operations, the scheme of which is presented in Fig. 1. NCRE operations are described below.

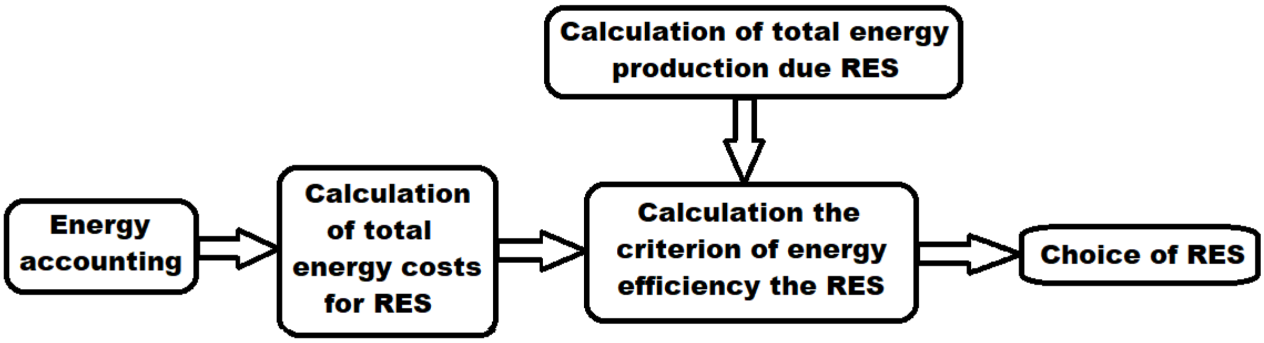

Fig. 1

Calculation of total energy production due RES

The total energy production through RES is calculated by the project developer as the sum of the total energy amount that it will generate for the entire time it works. It is labeled ΣREn below. The rules for ΣREn calculation are established by the relevant regulatory documents and unified in UNFCCC documents.

Energy accounting

Energy accounting at NCRE is similar to accounting in economics. Its basis is the accounting of fuel - energy resources costs, which already exists in the accounting records, for example, for settlements to suppliers. Mankind's 500 years of accounting experience and many years of experience in creating automated accounting are the basis for its quick implementation. Energy accounting will provide accurate information for calculating the energy efficiency of RES.

NCRE takes into account all the costs of energy spent on an RES throughout its entire life cycle, including: on raw materials, materials, manufacturing, transportation and construction works, maintenance, repair, commissioning, routine maintenance, its disposal, as well as energy fuel, including energy spent on its transportation and storage. The importance of energy accounting for the Energy Transition is as important as the importance of accounting for the economy. The rules for energy accounting are established by the relevant regulatory documents and unified in UNFCCC documents.

Calculation of total energy costs at RES

Calculation of total energy costs at RES is performed similarly to the calculation of the total costs in the economy associated with their use for the entire duration of their work. It is labeled ΣPEn below. The basis of ΣPEn calculation is the energy accounting described above.

All costs of energy spent on equipment manufacturing, materials, transportation and construction works, maintenance, repair, commissioning, routine maintenance, and also fuel energy, including energy spent on its transportation and storage, are taken into account when calculating the ΣPEn value. The rules for calculation of total energy costs at RES are established by the relevant regulatory documents and unified in UNFCCC documents.

Calculation the criterion of energy efficiency the RES

Any of the energy efficiency criteria used in the energy sector, which establishes the mathematical relationship the ΣREn to ΣPEn, may be used in UNFCCC to choose the best RES. The rules for calculation of RES energy efficiency criteria are established by the relevant regulatory documents and unified in UNFCCC documents.

We applied one of these criteria to the NCRE and called it self-reproduction coefficient ($\mathbf{K_{cr}}$). This name distinguishes $\mathbf{K_{cr}}$ to other efficiency factors used for RESs. The value of $\mathbf{K_{cr}}$ is calculated by the formula:

$$\mathbf{K_{sr} = \Sigma REn / \Sigma PEn} \qquad \text{formula 1}$$

Symbols in the formula 1 - see above.

The value of $\mathbf{K_{cr}}$ determines the property of self-reproduction of RES - this is its ability to produce energy in an amount sufficient to replace FFS in the UNFCCC process, for example:

If $\mathbf{K_{sr}}$ <1, then such a RES cannot be used in the UNFCCC process because it produces less energy than was spent on its creation and operation. The use of such RESs requires the use of additional FFS and thereby increases the harmful effects on the environment.

If $\mathbf{K_{sr}}$ = 1, then such a RES produces exactly the same amount of energy that was spent at it. Therefore, its use does not make sense - it is impossible to replace the FFS and to provide the UNFCCC process through its use.

If $\mathbf{K_{sr}}$> 1, then such a RES may be used in the UNFCCC process because it produces more energy than was spent at it. The larger the $\mathbf{K_{sr}}$ value, the more efficient the replacement and the UNFCCC process is faster. For example, if $\mathbf{K_{sr}}$ = 6, then for the whole time it is able to generate enough energy to produce 6 the self like RES, and if $\mathbf{K_{sr}}$ = 1.5, then 4 times less. Accordingly, the duration of the UNFCCC process at $\mathbf{K_{sr}}$ = 6 will be faster than at $\mathbf{K_{sr}}$ = 1.5.

The value of $\mathbf{K_{sr}}$ has approximate ranges from 0.4 to 9 in practice. This means that in practice there are cases of using environmentally “dirty” RES with $\mathbf{K_{sr}}$ < 1, environmentally neutral, with $\mathbf{K_{sr}}$ = 1, and environmentally inefficient, with $\mathbf{K_{sr}}$ < 1.5.

In fig. 2 shows for comparison projects of 25 various RES_i and their approximate values K_{sri}, which were calculated by formula 1. Presented in Fig. 1 $\mathbf{K_{sri}}$ values are extremely inaccurate and are intended only to demonstrate the technology of choosing. The use of these values for practical comparison of RES will become possible only after the organization of the energy accounting mentioned above.

Fig. 2

Methods of generating Renewable Energy, shown in Fig. 2:

RES_1, RES_2, RES_3, RES_4 and RES_5 - use the energy of sunlight;

RES_6, RES_7, RES_8, RES_9 and RES_{10} - use wind energy;

RES_{11}, RES_{12}, RES_{13}, RES_{14} and RES_{15} - use the energy of water flows;

RES_{16} and RES_{17} - use dissipated thermal energy;

RES_{18} and RES_{19} - use geothermal energy;

RES_{20}, RES_{21}, RES_{22} and RES_{23} - use the energy of the tides;

RES_{24} and RES_{25} - use the energy of sea waves.

Choice of RES for UNFCCC process

The rules for choice of RES are established by the relevant regulatory documents and unified in UNFCCC documents.

The best project for the UNFCCC process of the ones shown in Fig. 2 according to NCRE is a RES_{16} project. It has the largest value of $\mathbf{K_{sr16}}$ = 8.792.

The worst project for the UNFCCC process is RES_5: it has $\mathbf{K_{sr5}}$ = 1.182.

Calculation the effect of using the NCRE

For the calculation, it is accepted that:

- An UNFCCC process will be carried out over a period of TET_{16} = 5 years by replacing all FFS with RES_{16}.
- Organizational, economic and technical barriers to replacing all FFS with RES_{16} for 5 years do not exist.

Obviously, any other RES_i, for example RES_5 or RES_{18} may be the best for the economic parameters. Therefore, we compare them to RES_{16} under the same amount of annual increase in renewable energy power and other conditions being equal. To do this, we calculate the absolute duration of the UNFCCC process TET_5 and TET_{18} in years, as well as their relative duration increase $\Delta T_{\%5}$ and $\Delta T_{\%18}$ in % compared to TET_{16} using the formulas:

$T_{ET18} = T_{ET16} * \mathbf{K_{sr18}} *(\mathbf{K_{sr16}} - 1) / \mathbf{K_{sr16}} *(\mathbf{K_{sr18}} - 1)$ = 4.987 * (8.792 – 1) / 8.792 * (4.987 -1) = 5.54 years. - formula 2

$\Delta T_{\%18} = (T_{ET18} - T_{ET16}) * 100\% / T_{ET16}$ = (5.54 - 5) * 100% / 5 = 10.85% - formula 3

$T_{ET5} = T_{ET16} * \mathbf{K_{sr5}} *(\mathbf{K_{sr16}} - 1) / \mathbf{K_{sr16}} *(\mathbf{K_{sr5}} - 1)$ = 1.182 * (8.792 – 1) / 8.792 * (1.182 -1) = 28.78 years. - formula 4

$\Delta T_{\%5} = (T_{ET5} - T_{ET16}) * 100\% / T_{ET16}$ = (28.78 - 5) * 100% / 5 = 475.58%. - formula 5

Symbols in the formulas 2, 3, 4 and 5 - see above.

Similar calculations were performed for all other RES shown in Fig. 2, the calculation results are shown in table 2 and in Fig. 3.

Table 2

Parameter	RES_1	RES_2	RES_3	RES_4	**RES_5**	RES_6	RES_7	RES_8	RES_9	RES_{10}	RES_{11}	RES_{12}	RES_{13}
$\mathbf{K_{sri}}$	4.353	1.499	5.304	5.621	**1.182**	7.207	2.133	6.572	2.767	4.036	2.45	8.158	4.67
T_{ETi}, years.	5.75	13.31	5.46	5.39	**28.78**	5.15	8.34	5.23	6.94	5.89	7.49	5.05	5.64
$\Delta T_{\%i}$, %	15.06	166.23	9.22	7.8	**475.58**	2.9	66.85	4.53	38.78	17.82	49.75	1.01	12.77

Continuation of table 2

Parameter	RES_{14}	RES_{15}	**RES_{16}**	RES_{17}	RES_{18}	RES_{19}	RES_{20}	RES_{21}	RES_{22}	RES_{23}	RES_{24}	RES_{25}
$\mathbf{K_{sri}}$	1.816	5.938	**8.792**	3.085	4.987	7.524	6.255	3.402	6.89	7.841	8.485	3.719
T_{ETi}, years.	9.86	5.33	**5**	6.56	5.54	5.11	5.27	6.26	5.18	5.08	5.02	6.06
$\Delta T_{\%i}$, %	97.24	6.57	**0**	31.13	10.85	2.21	5.49	25.52	3.67	1.58	0.48	21.22

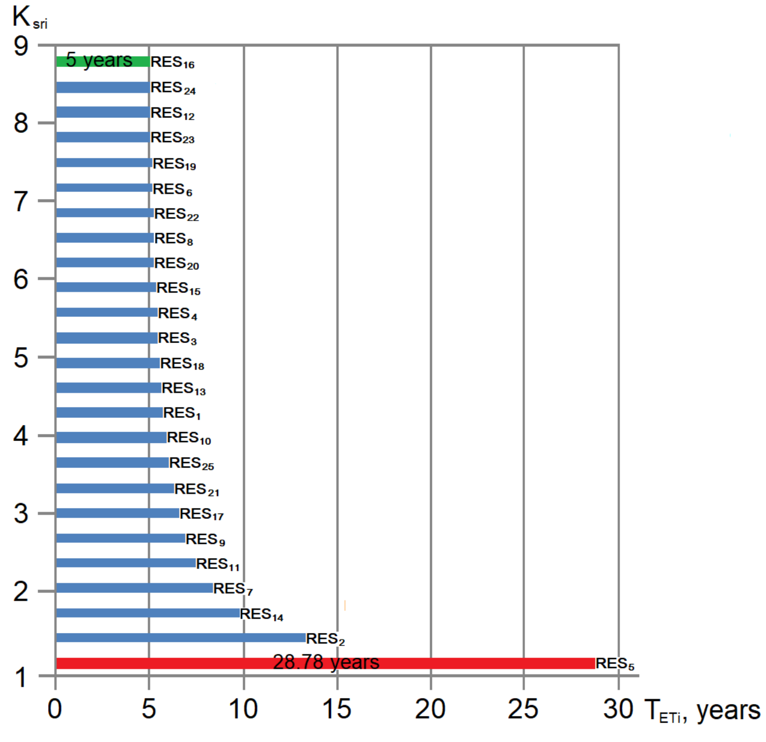

Fig. 3

NCRE implementation

We have been developing and implementing large-scale industrial facility management systems for over 40 years. The Noologistic Control Technology (NCT) is the basis of our systems - see https://noologistics.ru/intro and https://noologistics.ru/boxed_software. One of its features is extreme management. It provides the extreme of any parameter characterizing the quality of the facility's management, including the minimum of its environmental impact.

NCRE, proposed in this project, is one of many operations in NCT. We did not notice the possibility of its application for the UNFCCC process for a long time. We investigated its importance for reducing the environmental impact of energy in May 2020. We calculated that approximately 39% of the investment in replacing FFSs with RESs is not efficiently used - see table 1. Therefore, the UNFCCC process will continue for a very long time and will not give the desired result.

We decided to immediately publish the results of our research so that participants in the UNFCCC process could take advantage of them and increase the effectiveness of their efforts. Because every day of the global delay in implementing NCRE in 2020 corresponds to approximately $ 658 million of inefficiently used investments (see table 1) out of a daily approximately $ 1,687 million. For example, 36 days have passed since publication and, therefore, approximately $ 658 * 36 = 23,668 million investments worldwide have been inefficiently spent! These data reveal the scale of the real possibility of using a large part of the investment in environmental damage. And the value of inefficient investments will increase by 2030 to a daily approximately $ 1,281 million - see table 1.

We have made the first publication on May 29, 2020 and at the same time sent it to all our contacts in order to draw the attention of the maximum number of specialists to this problem - see https://www.linkedin.com/pulse/choosing-best-systems-based-renewable-energy-process-valery-matveev-1f. Then we have published a more detailed description of the problem - see https://www.linkedin.com/pulse/calculation-energy-transition-parameters-when-choosing-valery-matveev.

We paid special attention to large investment projects. We informed the OSOWOG project participants in India of the possibility of increasing its effectiveness and reducing the danger to the environment. We reported on the possibility of increasing the effectiveness of investments to project participants in Australia - see https://www.linkedin.com/pulse/energy-efficiency-australias-economic-recovery-valery-matveev. However, we are not sure that our information has been taken into account.

Therefore, we hope that the application of NCRE in the UNFCCC process will provide the energy efficiency of all energy projects in the world without our requests. We are ready to provide all the information we have and to take part in the implementation of NCRE ourselves.

Conclusions

1. NCRE is consistent with the objectives of the UNFCCC process.
2. There are no theoretical or technical obstacles to the implementation of NCRE.
3. The use of NCRE will increase the efficiency of investments in the UNFCCC process by tens of percent and, accordingly, accelerate it.
4. Replacing the energy efficiency criterion with economic or any other one, all other things being equal, slows down the UNFCCC process. Moreover, the UNFCCC process may continue indefinitely with an infinitely long-term environmental degradation, if instead of the most energy-efficient projects, projects with a self-reproduction coefficient $\mathbf{K_{sr}}$ of one or less than one will be used.
5. Obviously, the costs of the project will be incommensurably less than the environmental and economic effects of its implementation.
6. The main obstacle to its implementation is the transfer to the background of the economic parameters of power engineering.
7. The scale of the UNFCCC process, the size of ineffective investments and the possible degree of their global harmful environmental impact require a quick response to the proposed project.

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