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# The Vicious Circle of Climate Challenges with Soil in 5 Continents Caused by Low Cognitive in the Process of Agricultural Revolutions in the World

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## Abstract

The trend of increasing urban and rural population and the effect of household competition in providing the basic needs of life has caused the consumption of various resources to grow rapidly and unequally in the 5 continents of the world. In such a competitive environment, the world's agricultural soil systems, by receiving the products of agricultural revolutions, have made the climate out of the global order. So, the goal of this strategic research is to manage the cognitive deficits in creating biochemical and physicochemical soil safety in climate stability. In this way, the conventional structure of culture and different environmental civilizations of the 5 continents of the world with the system of agricultural soils and climate has led to the use of the model (**SMM**) for the purposes of our research. In the meantime, two related and interconnected statistical methods have been used to achieve the desired global results. Also, in this section, the main components of process evaluation (10 main components of soil and 730 manuscripts of scientists from the world's most prestigious journals) has been used. For the process analysis of this research, strategic thinking, Excel and SPSS have been used. According to the trend of anthropogenic effect on 10 components of the world's agricultural soils and the revelation of two effectiveness (**CPEP**=47.8% and **CPAR**=54.2%), global climate changes have appeared. In the meantime, the low cognitive effect of the components involved in the 5 continents of the world has been able to attribute 58.5% of climate changes to agricultural soils. The results of this strategic multidisciplinary research, which was associated with the identification of driving factors (strengths and opportunities) and inhibiting factors (weaknesses and threats) in the world, showed that climate change is dependent on anthropogenesis. At the end of this exhausting effort, 10 strategic suggestions along with the pragmatism paradigm were communicated to the world.

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## Definition of low cognitive

Low cognitive is a process that happens in all people of the world (ordinary people, student, engineers, doctors, professors and others) and is not full awareness of the future of their decisions and actions. This culture (**low cognitive**) is mostly in the field of agricultural revolutions and products of leading countries (new ideas, heavy tillage machines, fertilizers and agricultural pesticides) and consumers of 5 important continents of the world (farmers and other consumers of agricultural products). (**LC**), is the main cause of climate changes problems and the development of negative components of the role of agricultural soils in the world!

## 1. Introduction and process background

In general, by looking closely at the components of the climate, we realize that the climate is highly dependent on human performance among the world's creatures. And for this reason, the basic goal of this strategic multidisciplinary research is to discover the effectiveness of the anthropogenic process in the 5 continents of the world in the conventional state of using agricultural soils. Agriculture plays an important role in anthropogenic global warming, and reducing agricultural emissions, primarily methane, nitrous oxide and CO2 could play an important role in mitigating climate change. In this regard, we need to understand how the emission of these gases contributes to temperature change, to understand the role of agriculture in global warming, and to reduce the emission of harmful gases in the realm of water and agricultural soil (Lynch 2021). human influence, on a regional scale, surface air temperature over China has warmed at a rate much higher than the global average (Sun et al., 2022). Emissions of greenhouse gases produced by human activities put additional pressure on what is otherwise a self-balancing earth system (Yue and Gao 2018). Climate change is a long-term change in weather patterns in different regions of the world and is a dire threat to ensure the sustenance of the world's creatures. In addition to, global rising temperature is a significant cause of many species destroy. On the one hand, this changing environmental temperature may be causing species extinction, and on the other, this warming temperature might favor the thriving of some new organisms (Abbass et al., 2022). Therefore, climate changes are mainly related to many components, and soil plays the most important role in its change and stability among other components of the internal and external systems of the continents of the world. Adapting to climate change and its negative effects led the global community and natural ecosystems to become more important against the highly unequal distribution of water with the approach of precise agricultural methods and interdisciplinary transparency (Fróna et al., 2021). Ethiopia's economy is highly dependent on water and agricultural soil, and hydropower is an important source of renewable energy, and therefore, the current climate change has had a negative impact on hydroelectric power plants and other productions

(Orkodjo et al., 2022). The agricultural sector of the Niagara Region has experienced multiple impacts of climate change in recent years, which are projected to increase in the future (Pulkit 2020). There is a logical relationship between the stages of social development, human welfare and climate change (Ding et al., 2021). In a human perspective, with the expansion of urban civilizations and the development of less effective methods in agriculture, it is a factor for creating the event of soil erosion, deforestation and environmental changes that in turn can negatively affect the needs of human societies (Rothacker et al., 2018). In any case, the past and present world has faced a multifaceted challenge, which requires the cooperation and interaction of all the people of the world in the field of climate components to manage and control these challenges. Surveys showed that, temperature depresses current U.S. maize yields by 48%, warming since 1980 elevated conflict risk in Africa by 11%, and future warming may slow global economic growth rates by 0.28 percentage points per year (Carleton and Hsiang, 2016). Unwanted land change, land fragmentation and its impact on soil erosion, climate and farmers' profitability in a target area can be considered a serious threat to agricultural production (Zhao et al., 2021; Janus and Ertunc 2021). Meanwhile, under the influence of various natural and unnatural (anthropogenic) components, the global climate is out of its convection movement and becomes vulnerable. And one of the most unfortunate problems and vulnerabilities in the field of climate is low cognitive. The lack of human awareness and low cognitive in different sectors of the economy throughout history has affected the climate in different ways, unfortunately, the leading world governments have not been able to manage a correct and sustainable process of culture building in the meantime (Sadaty 2022). All countries are exposed to a sharp increase in temperature and high risk of drought under climate change, and North African countries are considered as a hot spot of climate change and its link with its social consequences (Schilling et al., 2020). In addition, throughout history, global climate has been influenced by various challenging components, the most important of which have been agricultural soils. Among the challenging components in the world's agricultural lands, "misplaced land use change" has contributed the most to global climate change. Land use change is one of the important factors in soil degradation and reduces soil fertility (Huang et al., 2020). The change of inappropriate land use has been able to negatively affect soil stability, renewable water, physicochemical components of soil and farmers' income in Miandorood Region of Mazandaran, Iran, during about 10 years (Sadaty et al., 2021). The growing population of the world and the basic needs of life have caused the addition of barren land (uncultivated) or forest and other places to the agricultural sector. In this path of global transformation, the purpose of which was to meet human needs, different countries have not been able to meet the standard of agricultural use components. Land-use adaptation can reduce adverse climate effects and use favorable changes, like local gains in crop yields (Molina et al., 2023). So, the low cognitive of the process that resulted in the global climate of all continents has become unstable for all creatures in the world and has opened such blind knots on mankind that it needs a new strategy to untie the knots. Analysis of 142 agricultural soil samples collected in fields across Poland aimed at assessing the level of DDT contamination resulted in more than 80% of soils containing DDT, and residues of this persistent pesticide represent a serious threat in Polish agricultural soils (Malusá et al., 2020). Toxic substance pollution is a vital environmental concern that poses a serious threat to human health and agricultural production, and interactions, synergy and antagonism between heavy metals and pesticides and combined toxic effects are a serious threat to the future of agricultural soils (Alengebawy et al., 2021). The structural and technological development of modern agriculture and heavy machinery used in agricultural land causes unfavorable soil compaction, soil degradation, economic consequences, renewable water pollution, etc., finally, the release of nitrogen oxides in the atmosphere (Gürsoy 2021). In this regard, the low of recognition of the process that originated from the history of agricultural revolutions in the realm of agricultural water and soil has contributed the most to global climate change. Glyphosate, a broad-spectrum herbicide, is rapidly absorbed into soil particles after application, and in agro-ecosystems, their impact on communities and decomposing processes in agricultural soils needs to be investigated more carefully (Hagner et al., 2019). The potential carcinogenicity, massive use, and increasing presence of glyphosate residues in drinking water sources should lead regulatory agencies to take actions such as the following to protect human health: **A**- creating process consumption levels. **C**- quantitative and qualitative standardization of process drinking water e level analyses in food and water mandatory. **B**- re-assessing acceptable daily glyphosate. In line with the use of glyphosate herbicide, the key to success in this effort is using scientific research on biological pest control, organic farming and regulatory control, etc., for new developments in food production and safety, and for environmental protection (Sang 2021). In general, the current alarming trend of climate change, which has been increasing in the past 50 years (1975 onwards) in different continents of the world, field research showed that 10 components aligned with agricultural soils are the main factors of these changes. (Sadaty 2022). In this regard, among the ten main components, land use change and the use of inappropriate agricultural inputs have contributed the most to global climate change. In this context, all the scientists and researchers of the world have a favorable opinion regarding the correlation of climate changes with anthropogenic factors in the field of water and agricultural soil, such as misplaced land use changes. Land use changes in the total of **Central Asia**, desertification and urbanization cause a decreasing trend of rainfall in about -5.3% and -4.7% respectively (Li et al., 2022). The products of agricultural revolutions in the world have caused the production of agricultural products to increase in the first few decades, especially in less developed countries, and then problems such as; soil erosion, reducing the resilience of plants, reducing biodiversity and soil porosity, and finally bring negative physicochemical effects in the soil environment (Sadaty 2022). Strategic thinking with a long-term perspective never implements decisions and actions without taking into account internal and external system components (weaknesses and threats) in the field of agricultural lands (Sadaty 2023). In this context, for a more strategic understanding of the world's agricultural soils, take a technical look at Fig. (1).

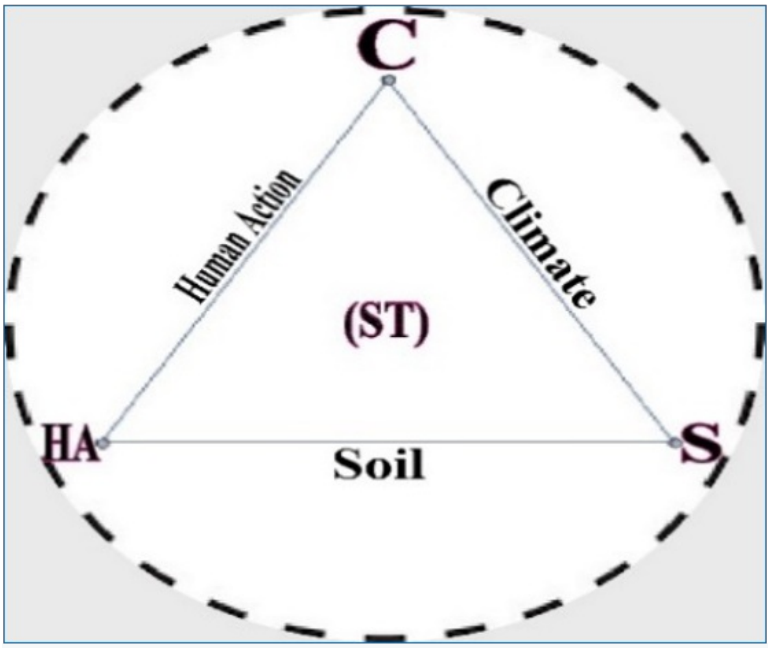


**Fig. 1.** The sustainability triangle strategy (STS) in operational decision-making in different parts of the world's agricultural soils.

The triangle of sustainability in the realm of water and agricultural soil is a basic principle that we (politicians, farmers, promoters, soil scientists) must demonstrate in practice. In the following, focusing on Fig. (1), by evaluating the multidisciplinary model of the manuscript in front of (SMM), from the 5 continents of the world, which is combined with the sustainability triangle, it showed that; The average of the actual effectiveness in soil territory in the world was 54.2% and the actual deviation was 45.8%. In this context, the continents of Asia and Africa have had the greatest deviation in historical behavior with soil due to "low cognitive". Meanwhile, looking at the review research of world scientists in the field of agricultural soils operations and its impact on climate, unfortunately, due to the complexity of multi-disciplinary, the actual results of the decision are difficult. Agriculture is in a constant change of practices and new technologies, which represent impacts that are difficult to predict (Alcántara 2022). Climate change is a global threat, unpredictable as the temperature is continuously increasing with the increase of greenhouse gas emissions in the atmosphere and it is predicted to increase by 2 C by the year 2100 (Malhi et al., 2021). Meanwhile, we conclude that there is an action-reaction relationship between the components mentioned in this strategic research, which is managed with the (**SMM**) model in the field of agriculture, with global climate changes. As all thinkers and soil scientists in the world know that soil is the origin of life and soil can be considered the origin of life's destruction, even if the modern technology of the world comes to our aid in this regard, they will not be sustainable. So all of us (All the people and politicians of the world) should adhere to the sustainability triangle model (Fig. 1) in practice. In this challenging biosphere world, we (researchers) must guide the components of climate and soil through reconciliation to the sustainable side, but this was not the case until now. In this regard, the climate system, which consists of naturally stable main components, cannot be solved in a conventional way, except with the language of science. According to the feedbacks of the thinkers of the world, the soils components of the continents of this world have been placed in a steep disorderly slope due to being threatening by agricultural implementers and its role on the climate, a solution should be thought of. In general, throughout history, we have only used agricultural soils in the boom of production and consumption, but we have not been able to reconciliation the components of the soil and be safe from the indignation of the soil and the climate (Sadaty 2023).

### 1.1. Aim of the study (climate and agricultural soils of the world from a strategic view)

This multi-disciplinary strategic study was conducted for the first time due to the need assessment and lost historical opportunities in the fields of climate, soil and human action in the agricultural sector of the world. The field of study and exploration has been reviewed in this global research project with more than 753 published articles from world-renowned publications in the field of climate and agriculture components. In this strategic study, at the beginning, we have identified and selected the influencing factors that have contributed the most to global climate changes. In this global study, the agricultural soils of the world were examined in terms of human actions and reactions that were in the realm of products of agricultural revolutions. Our systematic and strategic foresight to the world's agricultural soil resources has been based on the resilience and capability of climatic and environmental components. Many articles have been reviewed in scientific databases of the world on the topic of sustainable agriculture and its effects on climate change, the results have shown that we have a long way to improve them (their environment), considering the resilience of environmental components (Chami et al., 2020). The results of the investigation are that English agricultural revolution was more a discovery than an invention, induced by a combination of climate challenges, social and institutional settings, and market incentives (Tello et al., 2017). Modern agriculture relies on heavy machinery, which has increased the risk of harmful soil compaction in agricultural fields and has a large impact on the climate (Lagnelöv et al., 2021). Fig. (2); The global territory of research studies shows the low cognitive effects of agricultural soils and climate change. Fig. (2) shows the 5 important continents of the world with the capabilities of visible and hidden components. But we seek to discover its historical missing links in this strategic research on global agricultural soils.

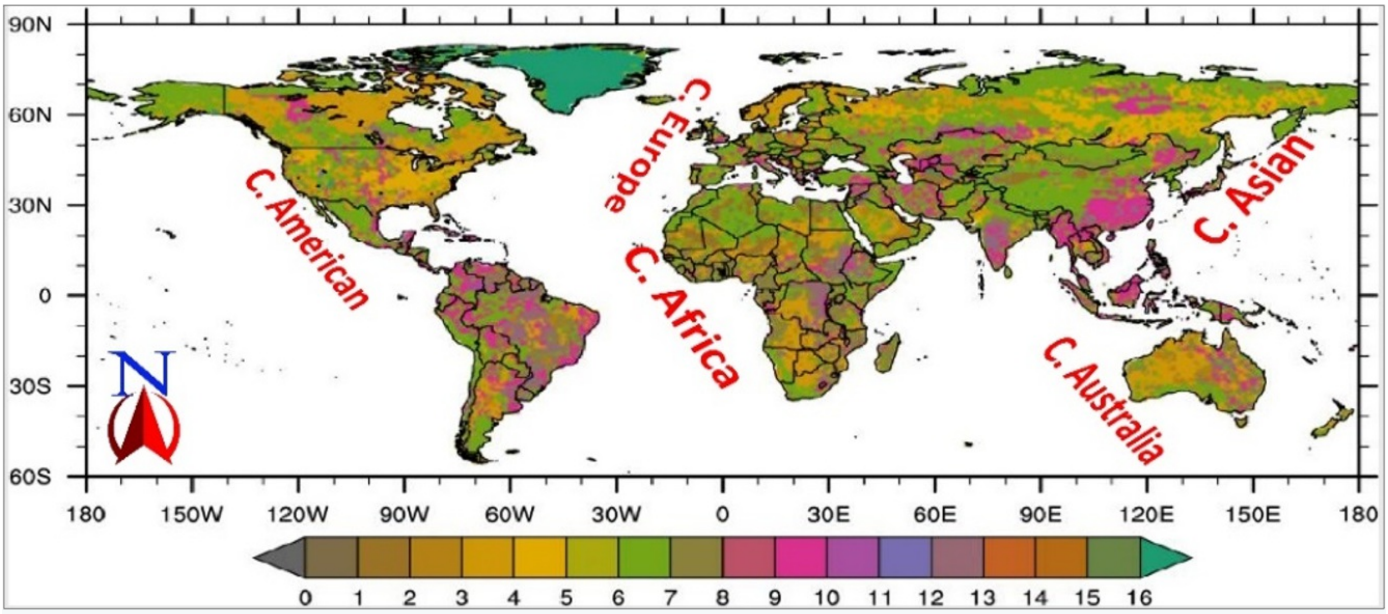


**Fig. 2.** GLDAS Soil land surface, in a strategic view to 5 targeted continents. (Source; NASA).

GLDAS- Noah 3.6 Stats Go/ FAO Soil texture: 1. Sand **2**. loamy sand **3**. Sandy loam **4**. Silt loam **5**. Silt **6**. Loam **7**. Sandy cay loam **8**. Silty clay loam **9**. Clay loam **10**. Sandy clay **11**. Silty clay **12**. Clay 13. Organic materials 14. Water 15. Bedrock 16. Other.

## 2. Materials and methods from low cognitive

The world is grappling with the multifaceted economy of the past and with today's acceleration with two intertwined structures (natural and human)! When we have a technical opinion on the structure of natural evolution (soil and its components), and the structure of human resources (human organizations and its components), we will come to the conclusion that, in the first structure, the process of historical operations was very or sometimes gradual but, in the second structure, there is a transformational and sometimes hasty movement. Therefore, researchers, thinkers and global farmers should use what method of individual and social management in front of these two structures (natural and human) so that the results of more economic decisions.

In this section (materials and methods), which is called the main sources of the process, the most important managed data of the research is considered for the analysis of the goal. Meanwhile, in order to achieve more logical results from managed data, in this biologically risky world, we have tried to use the following two related and interconnected statistical methods (parametric and non-parametric). In the meantime, to access the basic information, environmental sources (internal and external system), long-term temperature time series and anthropogenic statistics of the 5 continents were used. For this purpose, in the operation of materials and methods according to strategic knowledge, we have used the two structures of weakness and process threats. And in this valley of vision, the system of pragmatism to the agricultural soils of the world has caused a strategic model to form the main basis of the data of materials and methods. Fig. 3 and 4 show the selection of 10 important components of global agricultural soils from the author's strategic thinking, and also in Tab. 1, the average climate temperature data of the target community is managed.


**Fig. 3.** The influence of ten selected components of anthropogenic research on the structure of biodiversity, physicochemical and texture of agricultural soils of the world.


**Fig. 4.** Contrasting effect of ten selected components of anthropogenic research on the

structure of climate systems in the process of global ecosystems.

## 2.1. An in-depth look at the two main components of process changes

With our greater understanding of the main factors in climate change so far in the world, the responsibility of us thinkers for the future of soil increases. The 10 selected main components of climate changes in this strategic research include: 1- misplaced land use change, 2- type of tillage, 3- using chemical fertilizers, 4- amount of poisons used, 5- soil erosion, 6- severe reduction of crop rotation, 7- use of agricultural and household wastes, 8- soil porosity, 9- conservation irrigation method, 10- trend of small land ownership. Our main point in this strategic research is that soil is the source of life and soil can lead to the destruction of all creatures in the world. Failure to understand the importance of soil in current agricultural systems will undoubtedly have serious consequences for the entire world population living on our planet (Kopittke et al., 2019). Organic matter and soil organic carbon are the two main components that drive soil biological and physicochemical diversity. As management practices have a profound effect on shaping microbial communities, agricultural soils in Western Australia are naturally low in SOC and are a potential threat to soil biodiversity today (Khangura et al., 2023). With such a strategic multidisciplinary perspective that we have focused on the changing world (climate and agricultural soils), we have been able to manage part of the statistical process information according to the global temperature trend. Tab. (1), the statistical process is the main goal of our global temperature research in this research, and other statistical information (parametric and non-parametric) has been avoided.

| Global Land May Temperature Anomalies- Units: degrees celsius- base period: 1901-2000. Source; NCEI | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1850** | -0.49 | 1870 | -0.26 | 1890 | -0.35 | 1910 | -0.24 | 1930 | -0.14 | 1950 | 0.01 | 1970 | -0.03 | 1990 | 0.74 | 2010 | 1.23 |
| **1851** | 0.02 | 1871 | -0.6 | 1891 | -0.19 | 1911 | -0.34 | 1931 | -0.23 | 1951 | 0.2 | 1971 | -0.05 | 1991 | 0.59 | 2011 | 0.81 |
| **1852** | -0.01 | 1872 | -0.42 | 1892 | -0.33 | 1912 | -0.12 | 1932 | -0.1 | 1952 | 0.15 | 1972 | -0.1 | 1992 | 0.43 | 2012 | 1.32 |
| **1853** | -0.34 | 1873 | -0.6 | 1893 | -0.58 | 1913 | -0.52 | 1933 | -0.28 | 1953 | 0.34 | 1973 | 0.31 | 1993 | 0.25 | 2013 | 0.98 |
| **1854** | -0.29 | 1874 | -0.28 | 1894 | -0.09 | 1914 | -0.11 | 1934 | 0.22 | 1954 | -0.13 | 1974 | -0.05 | 1994 | 0.34 | 2014 | 1.39 |
| **1855** | -0.3 | 1875 | -0.25 | 1895 | -0.21 | 1915 | 0.1 | 1935 | -0.33 | 1955 | -0.19 | 1975 | 0.18 | 1995 | 0.35 | 2015 | 1.06 |
| **1856** | -0.26 | 1876 | -0.48 | 1896 | -0.17 | 1916 | -0.27 | 1936 | 0.12 | 1956 | -0.51 | 1976 | -0.21 | 1996 | 0.38 | 2016 | 1.49 |
| **1857** | -0.64 | 1877 | -0.45 | 1897 | 0.37 | 1917 | -0.92 | 1937 | 0.15 | 1957 | -0.25 | 1977 | 0.45 | 1997 | 0.41 | 2017 | 1.33 |
| **1858** | -0.26 | 1878 | -0.35 | 1898 | -0.25 | 1918 | -0.71 | 1938 | 0.19 | 1958 | 0.15 | 1978 | 0.06 | 1998 | 0.9 | 2018 | 1.17 |
| **1859** | -0.34 | 1879 | -0.25 | 1899 | -0.26 | 1919 | -0.3 | 1939 | 0.17 | 1959 | -0.1 | 1979 | 0.06 | 1999 | 0.39 | 2019 | 1.29 |
| **1860** | -0.35 | 1880 | -0.19 | 1900 | -0.04 | 1920 | -0.27 | 1940 | 0.16 | 1960 | -0.34 | 1980 | 0.49 | 2000 | 0.56 | 2020 | 1.51 |
| **1861** | -0.36 | 1881 | -0.26 | 1901 | -0.06 | 1921 | -0.03 | 1941 | 0.2 | 1961 | -0.14 | 1981 | 0.42 | 2001 | 0.84 | 2021 | 1.22 |
| **1862** | -0.6 | 1882 | -0.63 | 1902 | -0.37 | 1922 | -0.21 | 1942 | 0.05 | 1962 | -0.13 | 1982 | 0.02 | 2002 | 1.01 | 2022 | 1.34 |
| **1863** | -0.22 | 1883 | -0.37 | 1903 | -0.31 | 1923 | -0.41 | 1943 | 0.34 | 1963 | -0.31 | 1983 | 0.18 | 2003 | 0.97 | 2023 | 1.25 |
| **1864** | -0.36 | 1884 | -0.79 | 1904 | -0.36 | 1924 | -0.08 | 1944 | 0.12 | 1964 | -0.34 | 1984 | 0.57 | 2004 | 0.41 | | |
| **1865** | -0.48 | 1885 | -0.8 | 1905 | -0.19 | 1925 | -0.26 | 1945 | -0.14 | 1965 | -0.47 | 1985 | 0.27 | 2005 | 1.08 | | |
| **1866** | -0.52 | 1886 | -0.43 | 1906 | -0.02 | 1926 | -0.35 | 1946 | 0.06 | 1966 | -0.29 | 1986 | 0.66 | 2006 | 0.6 | | |
| **1867** | -0.76 | 1887 | -0.35 | 1907 | -0.62 | 1927 | -0.17 | 1947 | 0.08 | 1967 | 0.52 | 1987 | 0.27 | 2007 | 1.18 | | |
| **1868** | -0.18 | 1888 | -0.45 | 1908 | -0.19 | 1928 | -0.05 | 1948 | 0.21 | 1968 | -0.49 | 1988 | 0.75 | 2008 | 0.84 | | |
| **1869** | -0.43 | 1889 | -0.04 | 1909 | -0.58 | 1929 | -0.31 | 1949 | 0 | 1969 | -0.01 | 1989 | 0.19 | 2009 | 0.85 | **174 Years** | |

**Tab. 1.** Global monthly temperature time series statistics for strategic research purposes. Earth's global temperature anomalies (target month of May), units: (°C).

As we know, agricultural soils of the world play the most important role in climate change. Meanwhile, agricultural soils are a science, but we have not been able to have a good relationship with the language of soil over time. Meantime, the world's agricultural soils have faced a decrease in organic matter, biodiversity and density due to mismanagement! Gradual soil compaction, mostly influenced by heavy agricultural machines, is a serious threat in a large part of Belgian agricultural land (Dimitri and Destain 2016). The change of land uses (urban and rural), and the density of agricultural soils in Mazandaran plain, Iran has caused the groundwater to decrease drastically (Sadaty 2022). In this way, the agricultural soils of the world have been affected by inappropriate urban and rural land use changes, and this strategy has forcefully affected renewable water and climate. The effect of land use management practices under different slopes has an effect on the physicochemical characteristics, soil moisture, porosity, specific gravity, silt, clay ratio, etc (Assefa et al., 2020). As well as, the type of tillage operations in terms of contour (perpendicular to the slope of the land) and non-contour agriculture (along the slope of the land), by using the management of contour analysis, soil texture destruction, erosion, reduction of productivity and other negative changes can be prevented (Lima et al., 2021). Land use determines the surface water heat and material balance, which cause climate change and affect water quality (Cheng et al., 2022). From the point of view of strategic management on the effectiveness of the world's agricultural tillage process, unfortunately, the sustainability system has not been observed in all the agricultural sectors. Such a lack of historical understanding with the main components of the soil has created such a complex problem in the climate that the change should be felt as fundamental.

### 2.2. Evaluating the effect of research articles in the world's agricultural soils system

When an effort is made in a target area, but the effectiveness of the target community is not satisfactory, we conclude that either the goal of researchers is not real, or our personal interests are involved. In this valley of knowledge, the top scientists and researchers of the world have come to the conclusion that why research articles on the effectiveness of agricultural soils is not a process in sync with climate stability and is more effective in personal improvement. Since the purpose of this strategic multidisciplinary research is managed by the model (SMM), it is necessary to evaluate the works of researchers and its effect on agricultural soils. Since the formation and evolution of the soil civilization and its relationship with the climate is a natural process, efficiency and effectiveness should be accompanied by natural language. Climate change is considered a big threat in European agricultural systems, but it is possible to minimize soil threats by studying win-win convergence policies and by supporting the components of compatibility (Hamidov et al., 2018). Sixty percent of Pakistan's population is directly or indirectly dependent on agriculture (wheat, rice, cotton, sugarcane, corn, etc.) and global climate change affects agriculture and its effects seem to be increasing every day (Syed et al., 2022). Based on a systematic review of 224 studies worldwide, the global assessment showed that human influence in the decision-making process of land use change has the greatest impact on soil erosion and climate change (Eekhout and Vente 2022). In order to become more familiar with the process of effectiveness of global researchers and thinkers, we have managed 730 research articles of reputable journals in the field of soil and climate in table (Tab. 2). In this regard, unfortunately, such discussions in history have received less attention. Therefore, this strategic research requires multi-purpose intelligence to be well understood.

| Traditional Conditions / Component type | Conventional Trend Stats | Number of review articles | Number of research articles | Number of references | Process effectiveness percentage |
|---|---|---|---|---|---|
| Corresponding author (Supervising professor) | 510 | 411 | 99 | 5210 | 31.5 |
| Corresponding author (PhD student) | 151 | 45 | 106 | 111 | 44.5 |
| Corresponding author (All) | 69 | 33 | 36 | 421 | 24 |
| Sum | 730 | 489 | 241 | 5742 | 100 |
| **(AEERAS)** | - | - | - | - | **33.3** |

**Tab. 2.** The conventional state of science production through the acceptance of joint articles by professors and PhD students in world universities in international prestigious journals.

**Note**: one of the reasons for evaluating the effectiveness of process in the field of agricultural soils and climate is to show the status of research conducted by professors and doctoral students worldwide. In this research field, the internal and external components of the global target society have been managed with the strategy of the model (**SMM**). Formulas 1, 2, 3, 4, 5, 6 were used to set the goals and conclude the effectiveness of the process. In our strategic research for the desired result, the following 4 main components are involved in the soil realm:

1. Components of the global strength of agricultural soils.
2. Components of global weakness of agricultural soils.
3. Components of the global opportunity of agricultural soils.
4. Components of the global threat of agricultural soils.

$$\mathrm{IFE(S)} = \sum_{i=1}^{21} (S1 \times R1) + (S2 \times R2)\ldots.(Sn \times Rn) = +4.02 \text{ Main objective (SA)} \quad (1)$$

$$\mathrm{IFE(W)} = \sum_{i=1}^{19} (W1 \times R1) - (W2 \times R2)\ldots.(Wn \times Rn) = -1.31 \text{ Main Objective (SD)} \quad (2)$$

$$\mathrm{EFE(O)} = \sum_{i=1}^{22} (01 \times \mathrm{R}1) + (O2 \times R2)\ldots.(On \times Rn) = +3.6 \text{ Main objective (SA)} \quad (3)$$

$$\mathrm{EFE(T)} = \sum_{i=1}^{23} (T1 \times \times R1) - (T2 \times R2)\ldots(Tn \times Rn) = -1.01 \text{ Main objective (SD)} \quad (4)$$

$$\mathrm{S} + (-\mathrm{W}) > 0 = 4.02 + (-1.31) = (+2.71) \text{ And } \mathrm{O} + (-\mathrm{T}) > 0 = +3.4 + (-1.01) = (+2.39) \quad (5)$$

$$\mathbf{C.I} = \mathrm{IFE(S)} - \mathrm{IFE(W)} \Rightarrow \mathrm{P.E} = \frac{\mathrm{C.I}}{\mathrm{Sn}} \times 100 = \%\ \text{Process effectiveness} \quad (6)$$

Unfortunately, the impact of the research articles of scientists and process researchers in the world, especially in the less developed countries, has no real effectiveness. In this regard, when we global researchers have a low process effectiveness, the natural components of the "**threats arenas**" will be the climate changes process and natural disasters. For this purpose, the global climate with the actions and reactions of the components involved in the anthropogenic process will create the effect of environmental disorder as natural disasters. Global warming, climate change, and industrial pollution could result in an increase in the frequency, complexity, and intensity of multifactorial stress combinations impacting plants, soils, and microbial communities (Zandalinas et al., 2021). When there is a logical relationship between wilderness, plain and climate agricultural soils, we conclude that there is a negative and positive relationship between rainless soils and green spaces in climate change. (Sadaty and Nazari 2023). So, methods of basic solutions (MBS) of the world are such thoughts.

### 2.3. Perspectives on the agricultural soils of the world with a culture of guesswork

Based on the principle of unity of procedure for the sustainability of global soil and climate components, targeting the operational path to the conclusion has been determined. In this complex world path, 4 smart predictions are considered as the best guess or hypothesis. These 4 Best guess are managed in tab. (3).

| Best guess 1 | Best guess 2 | Best guess 3 | Best guess 4 |
|---|---|---|---|
| Continuing the global trend | Culture strategy of governmental powers | State subsidy strategy to the conventional process | Operationalize the model (SMM) |
| **Polluting industry 1** | **Polluting industry 2** | **Polluting industry 3** | **Polluting industry 1** |
| Consumer process industries | Service industries | Agriculture industries | Other industries |

**Tab. 3.** The best strategies proposed in today's polluting industries, which have been managed with low cognitive in the shadow of weak government around the world.

### 2.4. Soils of the world as a very strong component of the climate system

When we look at agricultural soils as a system, we always think of environmental threats that will change in response to our behavior (climate). For this reason, the basis of our application model in this global research is the dynamic system strategy with the support of environmental management. Fig. (5) is the first decision-making algorithm in the fields of internal and external system components of agricultural soils based on the managed model (SMM).

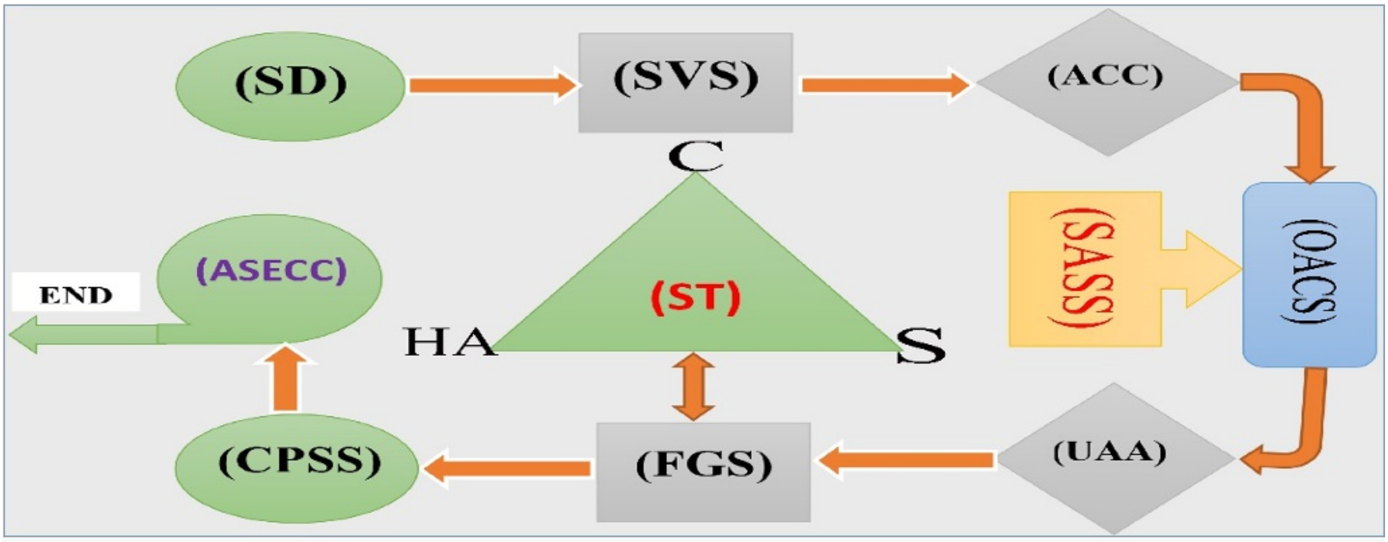


**Fig. 5.** Intelligent algorithm for the reconstruction and empowerment of agricultural soils according to environmental components (IAREAS).

## 3. Global information outcomes and controversy

Biodiversity and physicochemical structure of agricultural soils are actually considered the driving force behind the development of agricultural products on earth in the world. However, without the three main structures (biodiversity, physico-chemical) in agricultural soils production of agricultural products and life on earth would be very difficult. Looking at the management of global statistical data in this strategic research and the works of thinkers around the world, we conclude that the alarm of climate change was sounded more than a hundred years ago. But the politicians and planners of advanced and backward countries have not been able to manage the process of climate change and agricultural soils. In this stage of the process, we divide the countries of the world in terms of financial power and cognitive power into three categories: advanced, intermediate and backward. The argument that is raised in this is that there is a logical relationship between the agricultural soils of these three countries and the climate. Therefore, the lower the knowledge and financial power of the countries, the more vulnerable they are. The poorest countries face the greatest risks from climate change and require international support to finance adaptation (Georgieva et al., 2022). Refer to Fig. 6.

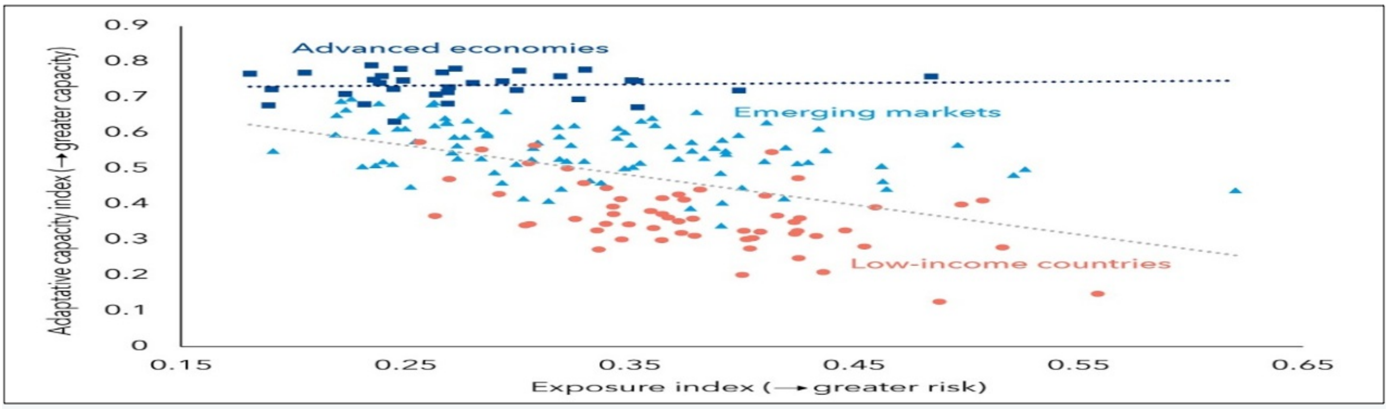


**Fig. 6.** In this form, dashed lines show estimated linear relationships for advanced economies, and for emerging market and low-income countries combined, respectively. In other words, thesynergies between development components and climate (climate vulnerability) can be found in Fig. (5).

**Source:** IMF staff calculation based on 2015-18 data from the European Commission, the United Nations University Institute for Environment and Human security, the University of *Notre Dame*, and the April 2020 world Economies outlook.

Low cognitive of the process and its relationship with climate in different parts of the world is one of the effective factors that reveal themselves in this fig. (6) and others. In this context, the more unstable the climate becomes in this world, the greater the gap between the rich and the poor. Climate change has a devastating impact on food security gaps and inequalities in Africa (Tamasiga et al., 2023). The process of global class differences among the three strata of society (poor, middle, rich), anthropogenic effect on climate change, the poor are the first front line victims of such a process. With the continuation of such a process of climate change, which is managed by humans with ignorance, the climate with its natural intelligence mercilessly attacks vulnerable continents (natural disasters). In the **Middle East** anthropogenic air pollution (dust, etc.) is a leading health risk and an important climatic factor (Lelieveld et al., 2022). This world is really strange! Any positive action will have a positive reaction from nature! And every negative action, nature will react negatively. In the past decades, the scarcity of water resources has become increasingly severe in many parts of the world, including the (Huai River Basin), which is associated with the effects of climate change, population expansion, and inappropriate land use change (Girma et al., 2023). Further, with the extraction of underground water, with the change of water demand, it has also affected the redistribution of water, and finally these two demands significantly affect the moisture content of agricultural soils. Process researchers have studied the distribution of 34 transboundary aquifers in Central Asia and have shown that groundwater is vital for supporting socio-economic development due to its hidden connection, but in recent decades due to rapid population growth and economic development in all over the world, they have experienced a gradual decline (Liu et al., 2021). All these process discussions in the realm of climate change and increasing demand for renewable water in this environmentally stressed world, only go back to our low levels of wisdom (academic environment, governmental environment, agricultural soils environment) of environmental resources.

### 3.1. Complementary strategies of soil vs climate

In general, the climate changes of the world can be divided into two types (negative role and positive role). Its positive role is related to the best state of natural and human action and reaction, which causes climate stability. But most importantly, they include the negative role of climate components, most of which are anthropogenic processes. Climate change has negatively impacted the duration and intensity of seasonal changes e.g., a reduced winter season with less snow fall followed by abrupt run off in early spring, subsequently resulting in flood inundation in different areas of the world (Ullah et al., 2021). Research conducted in Australia, Anthropogenic climate change is leading to the intensification of extreme rainfall due to an increase in atmospheric water holding capacity at higher temperatures as governed by the Clausius-Clapeyron (C-C) relationship (Magan et al., 2020)! Human activities and related land use changes are the main cause of rapid soil erosion, reduction of soil productivity, socio-economic tensions in the world and it is predicted that the countries of sub-Saharan Africa, South America and Southeast Asia will become more vulnerable (Borrelli et al., 2017). However, our main discussion in this strategic multidisciplinary research is the negative components of the process role. Agriculture is an important part of the economy of different countries of the world, depending on the opportunities for products and soil strength. Meanwhile, agriculture and fisheries are highly dependent on the weather. An increase in temperature and carbon dioxide (CO2) can increase or decrease some products in different parts of the world. But to understand these advantages and disadvantages, nutrient levels, soil moisture, water availability, and other conditions must also be considered in the soil environment. The more the unity of practice in agricultural operations between the 5 main continents of the world becomes more positive, the more active the underground biodiversity, the more productive and sustainable the crops become. The agricultural soils of (Germany and Europe) are highly dependent on the essential ecosystem services of active and diverse soil life that contribute to soil fertility (Nabel et al., 2021). Therefore, the global data of tables (1 and 2), which are the result of anthropogenic operations, confirm such cases. Unfortunately, the evolving biological world with such climatic results is very strange for an agricultural productions specialist! In such a global situation, from the COVID-19 pandemic to the increasing impacts of climate change, bio-health issues, various water-food crises are developing around the world, and in such a complex process, the risks to all of us in life will increase. Next, when we conclude that anthropogenic factors have a negative impact on climatic components and agricultural soils, we reach the stage of determining global effectiveness, which will be very important for us. In this regard, the two very important components of our target (**CPAR**) and (**CPEP**) which have had profound effects on global climate changes are summarized as follows:

$$\text{Percent of effectiveness ( CPAR )} = \frac{S.E}{S.S} \times 100 = \%E \Rightarrow \%E = \frac{2.71}{5} \times 100 = \%54.2$$

$$\text{Percent of effectiveness ( CPEP )} = \frac{S.E}{S.S} \times 100 = \%E \Rightarrow \%E = \frac{2.39}{5} \times 100 = \%47.8$$

When the effectiveness of one or more systems is low, their productivity will definitely be down. Low global productivity shows the bitter reality that the agriculture of the countries of the 5 main continents of the world are not using the right approach in consuming the products of agricultural revolutions. For example, when the density of the world's agricultural soils increases, that is, we did not act scientifically in the consumption of the products of agricultural revolutions, such as (chemical fertilizers, dangerous toxins, heavy equipment, etc.). With such anthropogenic culture and civilization in the historical process, which has faced low effectiveness, they are strongly related to climate changes. In Fig. 7 to 14, the trend of historical changes in global temperature with low effectiveness (environmental mismanagement) in the incorrect use of inputs (products of agricultural revolutions) is directly related to the academic education of agricultural soils in the world, which unfortunately has received less attention in the world. Since most of the ideas, consumption of inputs and products of the agricultural revolutions (from around 1900 onwards) are related to the lack of knowledge of all politicians and implementers of the agricultural process, the results of the trend of global threats of the present and future evening in Fig. (7-14) was shown.

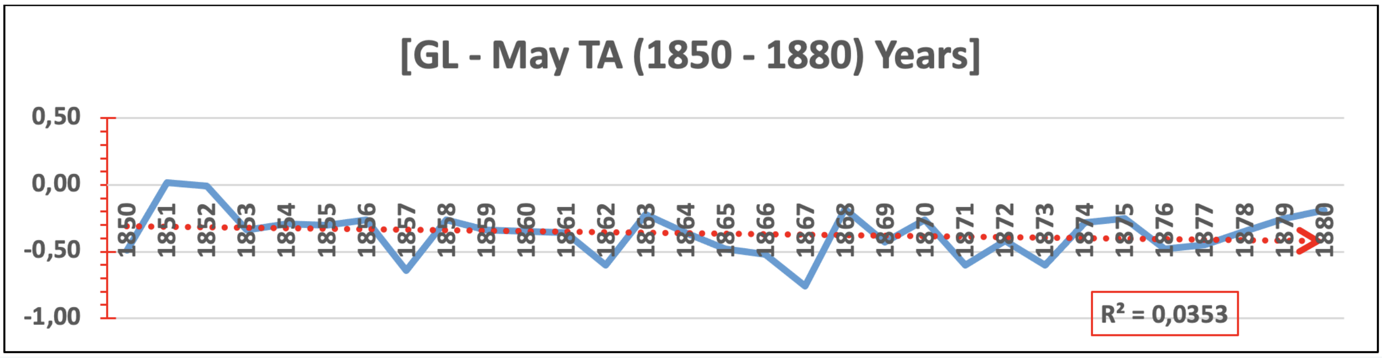


**Fig. 7.** World temperature (about thirty years) in May in a strategic view (Low temp, low correlation).

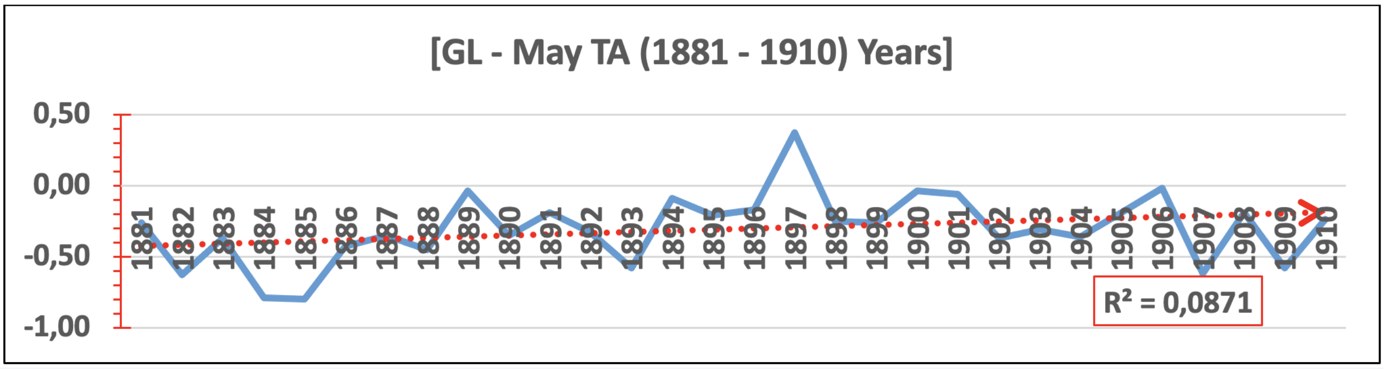


**Fig. 8.** World temperature (about thirty years) in May in a strategic view (Low temp, low correlation).

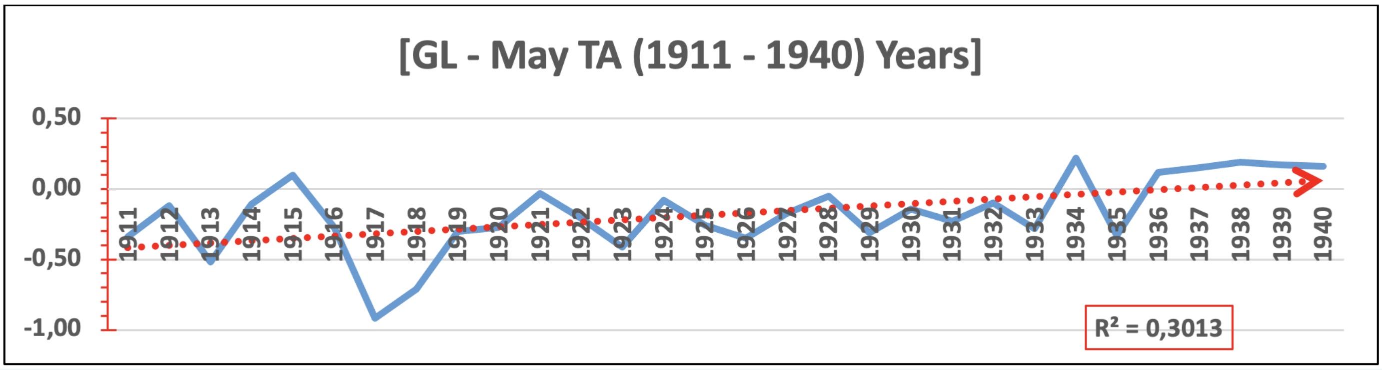


**Fig. 9.** World temperature (about thirty years) in May in a strategic view (Low temp, low correlation).

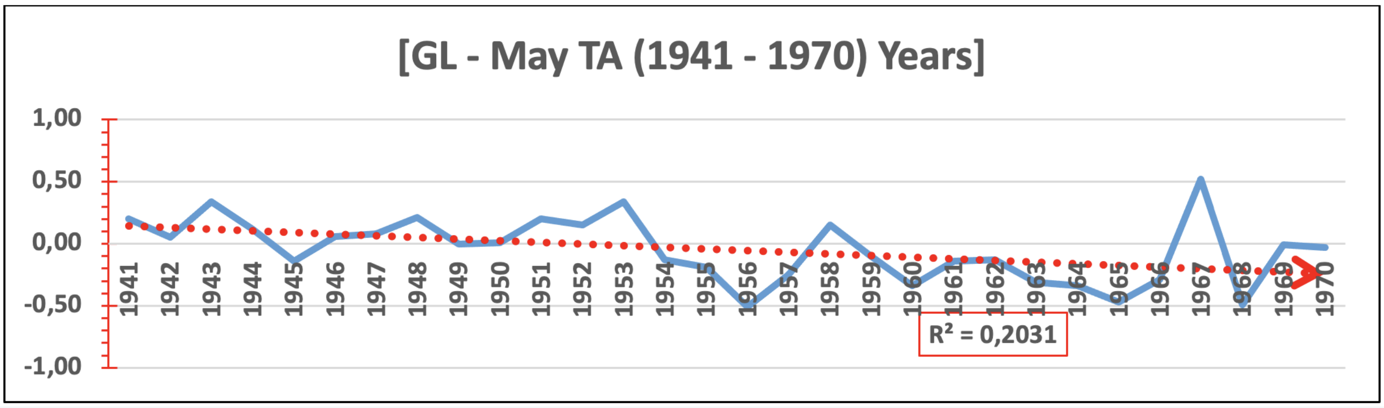


**Fig. 10.** World temperature (about thirty years) in May in a strategic view (Low temp, low correlation).

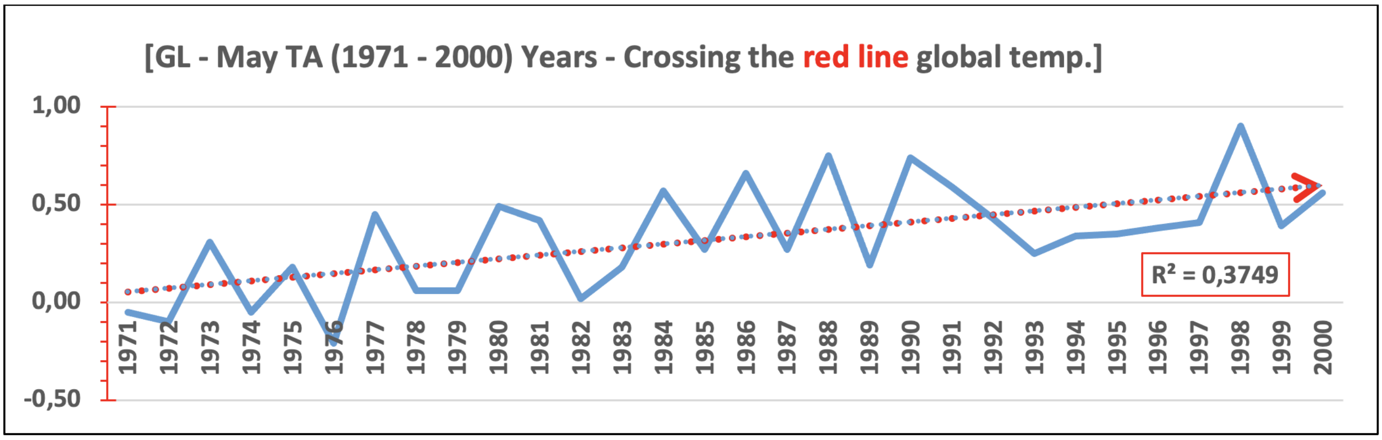


**Fig. 11.** World temperature (about thirty years) in May in a strategic view (high temp, high correlation).

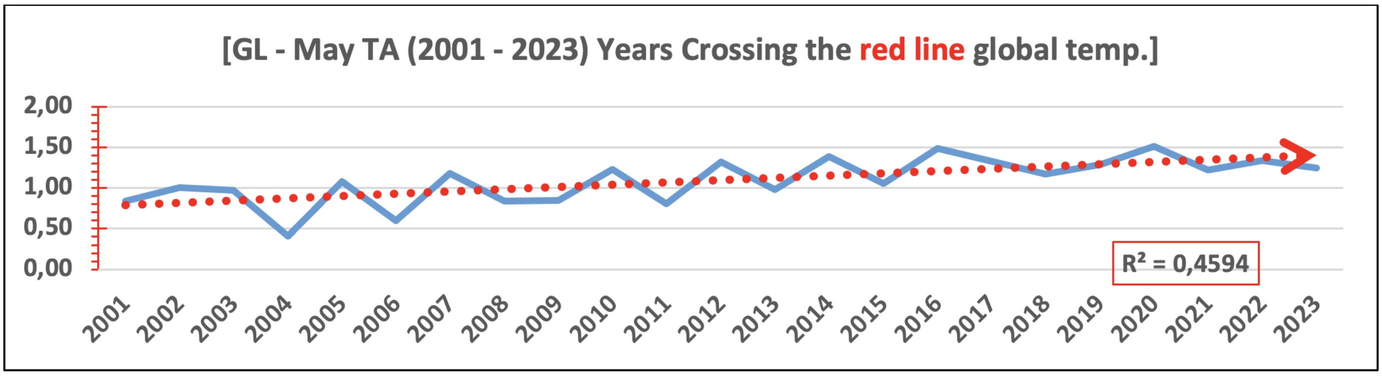


**Fig. 12.** World temperature (about thirty years) in May in a strategic view (high temp, high correlation).

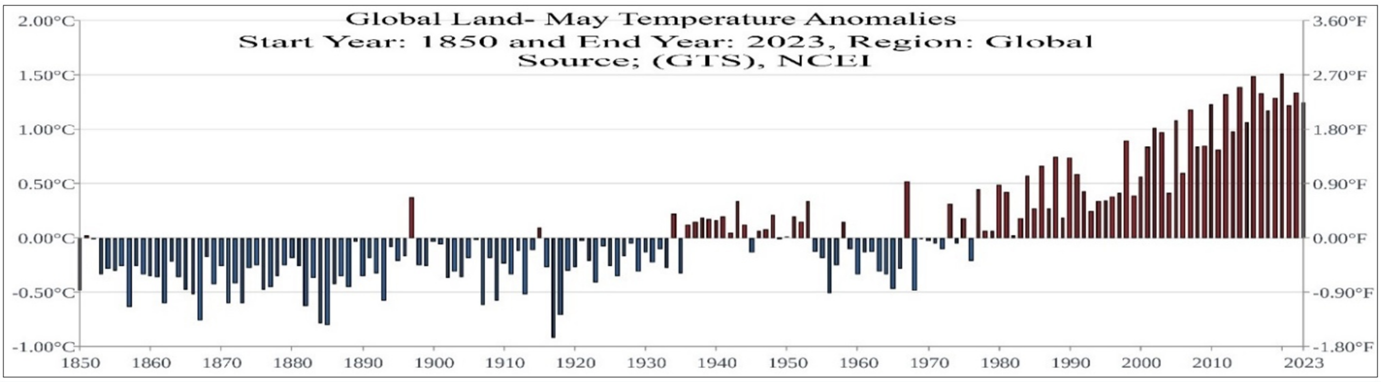


**Fig. 13.** The world's temperature in May at a glance. Global monthly mean time series of temperature estimation for the purpose of the research. (global land temperature anomalies. Units: Degrees celsius, Base period: 1901-2000). Source; National centers for environmental information.

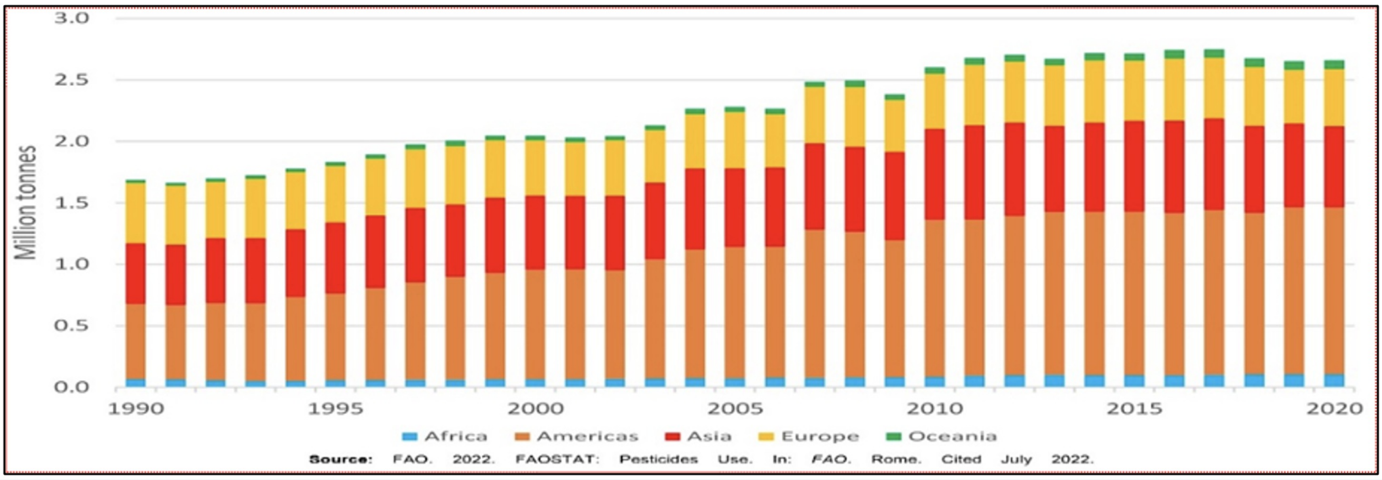


**Fig. 14.** During the time period, trends in the use of agricultural pesticides at each level of agricultural land, separated by the 5 major continents of the world (source; FAO).

Natural soils that are used in annual preparation operations by farmers with technical principles, the average soil temperature has a balance process on the climate and soil due to the increase in organic matter, biological diversity, soil pH adjustment and other components) Francaviglia et al.,2023; Sadaty 2022). In this period of the time analysis process, the low cognitive of consumption of products of revolutions has been able to create global climate changes. Tab. (4) shows the status of correlations, importance and decision-making process for the custodians of agricultural soils in the 5 continents of the world. Such an exploratory topic of the agricultural soils system is of great importance for global climate experts and researchers. In this valley, the world needs a new perspective on the soil.

| MR<br>MC | PCC, (r) | (CIDM)<br>Score limit of 4 | (PLUCC) % |
|---|---|---|---|
| 1- MLUC | .982** | 4 | 12.8 |
| 2- TT | .901** | 3.5 | 7.4 |
| 3 - UCF | .890** | 3.3 | 6.1 |
| 4 - APU | .858** | 3.3 | 5.0 |
| 5 - SE | .853** | 3.1 | 5.0 |
| 6 - SRCR | .850** | 3.0 | 4.8 |
| 7 - UAHW | .849** | 2.7 | 4.8 |
| 8 - SP | .839** | 2.7 | 4.2 |
| 9 - CIM | .590* | 2.0 | 4.2 |
| 10 - TSLO | .509* | 1.6 | 4.2 |
| Sum | - | - | 58.5 |

**Tab. 4.** The ten main components of the world's agricultural soils that contribute to climate change have been presented along with a process and targeted analysis. Pearson correlation coefficient, level is %1.

The process correlations of column 2 in tab. (4), and the percentage of the main components of column 4 in the 5 continents of the world, about 58.5 percent of climate change is due to the low cognitive of the consumption of agricultural revolution products. The revelation of such a process in the world has been a sign of the wrong way of agricultural soil and water management.

### 3.2. Conclusion and strategic decision-making in the world

When we look at the research statistics of world scientists in the field of agricultural soils, we realize that climate change is dependent on human activity. The decrease in rainfall and the increase in temperature in the world are two vital components that play an important role in the life expectancy of communities in the world. In this regard, if the amount of rainfall in the world decreases, the amount of temperature components will definitely increase, and the thirst of the climate for water will increase. The analysis of temperature time series (1988-2019) in Diamar showed that the temperature in the target area is increasing and partly with the rapid drying of vegetation, soils, rivers and surface water sources due to It reveals high evaporation and transpiration and low rainfall (Ntali et al., 2023). This second-millennium–BCE megadrought marks the mid-to late holocene transition, during which regional forests declined and enhanced aeolian activity affected northern Chinese ecosystems (Yang et al., 2021). Impact of low cognitive of the products of agricultural revolutions on the agricultural soils of the 5 continents of the world, about 58.5% of global climate changes have been caused by soils.

So, climate change affects the increase in soil temperature, soil gas composition, biodiversity, acidity, soil salinity, erosion, and finally the thirst and drying up of renewable waters. Following the analysis of the internal and external factors of the agricultural soils system of the 5 continents of the world, the percentage change table and fig. (15) reveals the main anthropogenic component. In the mentioned figure of various climates of the world number (15), the gradual drying of lakes, springs, landslides, storms, dust and other natural disasters such as (COVID-19) are anthropogenic factors.

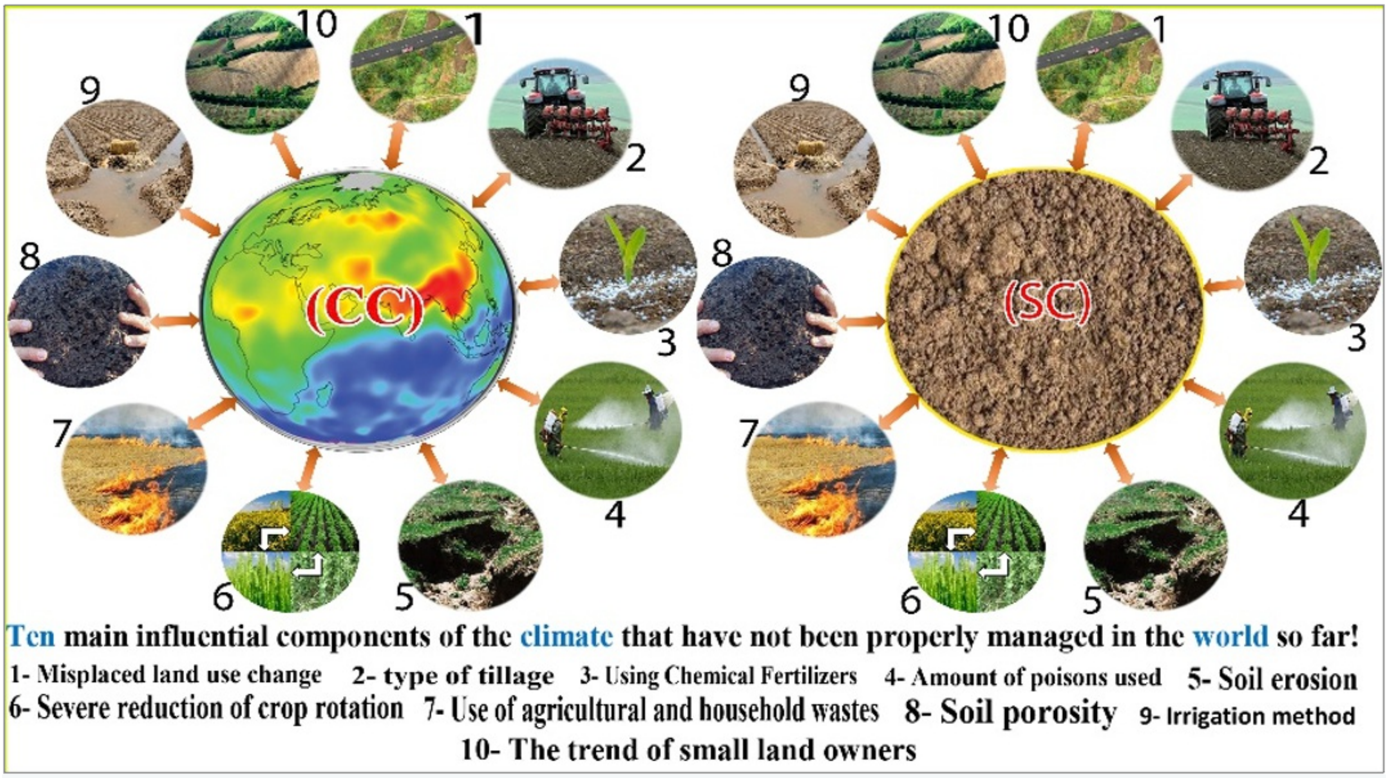


Fig. 15. Ten important global components (the process of environmental disaster) that play an essential role in climate change through synergism

**Fig. 15.** Ten important global components (the process of environmental disaster) that play an essential role in climate change through synergism and antagonism with the products of agricultural revolutions over time and space.

This world is really strange, the anthropogenic action made the climate impatient! The thirst of the climate is the worst component of the changes. When the thirst of the global climate moves towards an increase, the convergent and synergistic components become impermanent and the realm of biological diversity is in trouble. In the meantime, two very important vital components that play a role in global climate change and environmental sustainability (biodiversity under the ground and on the ground) suffer nutritional deficiency and die one after the other. The main factor of such a historical process in the passage of time and space are the products of agricultural revolutions and, in the wake of that, the low cognitive of the process. The components involved in Fig. (16) are considered as the main factor with the greatest role in global climate change with low effectiveness (54.2 and 47.8%). In such a situation, the share of the 5 continents of the world in global climate changes from agricultural soils was about 58.5%. This is a law of nature, which unfortunately was ignored in the process.

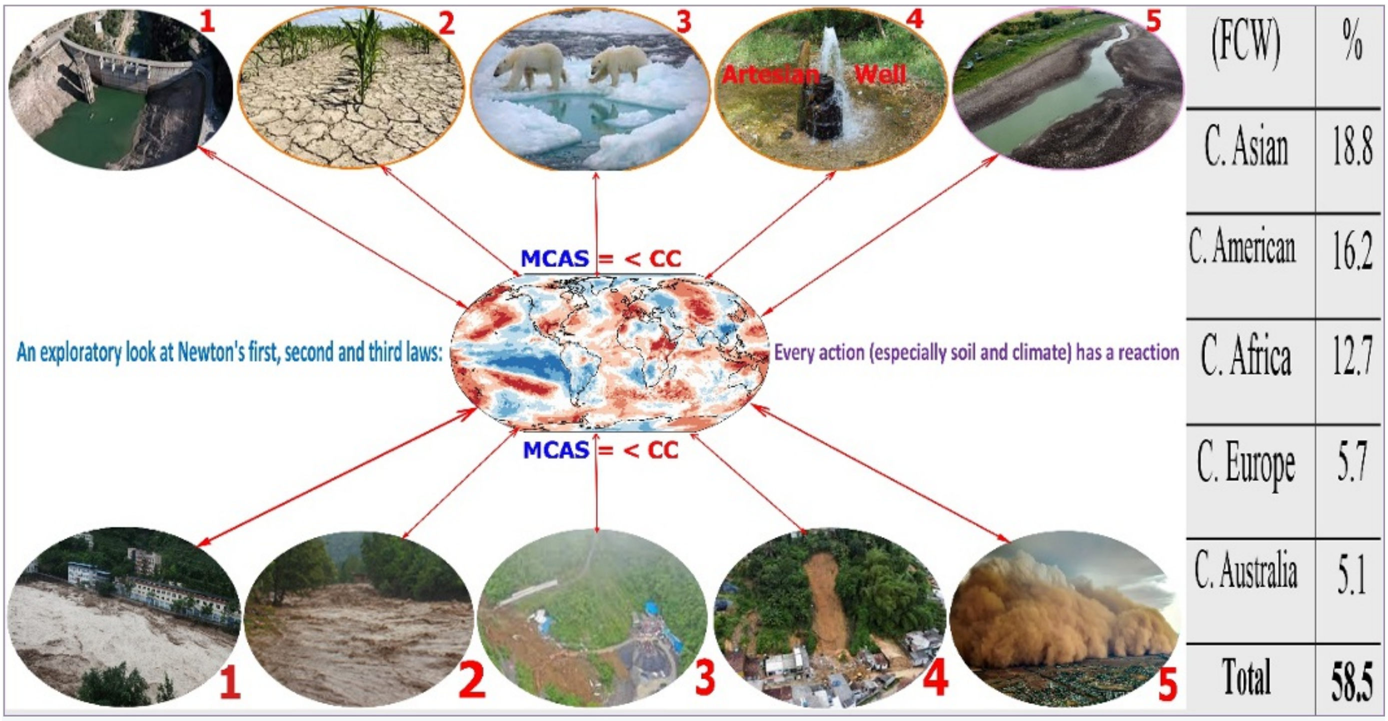


**Fig. 16.** The combined display process of the percentage of climate changes of 5 continents that are managed by unnatural human actions (anthropogenic), we see some expected natural disasters (excessive heat, landslides, dust, storms, etc.).

In the meantime, in fig. (16), in addition to the contribution of each continent in the current state of the climate system in the occurrence of natural disasters, misplaced land-use change is at the top of global climate changes. Also, the exploratory and field results of global agricultural revolution products consumption, which has been managed by the (**SMM**) model, have been mostly negative anthropogenic related to**misplaced training** in educational and extension places. When the environment of the soil is affected by anthropogenic factors (as opposed to the climate components), climate and soil will collude and cause heavenly disasters. Today's world is dealing with natural disasters (hurricanes, torrential rains, environmental diseases, soil erosion, etc.). In 2022, China experienced widespread drought conditions, 50% of crops have experienced drought, 35% in the form of heavy rains and floods, 11% in the form of hail, 3% in frost and 1% hurricanes (Wang et al., 2023). One of the most important scientific discoveries of the anthropogenic process that happened for the first time in history is the change in the texture of agricultural soils and natural resources in about 27.4% of the upstream areas of the 5 continents of the world. The fig. (17), is one of these historical transitions.

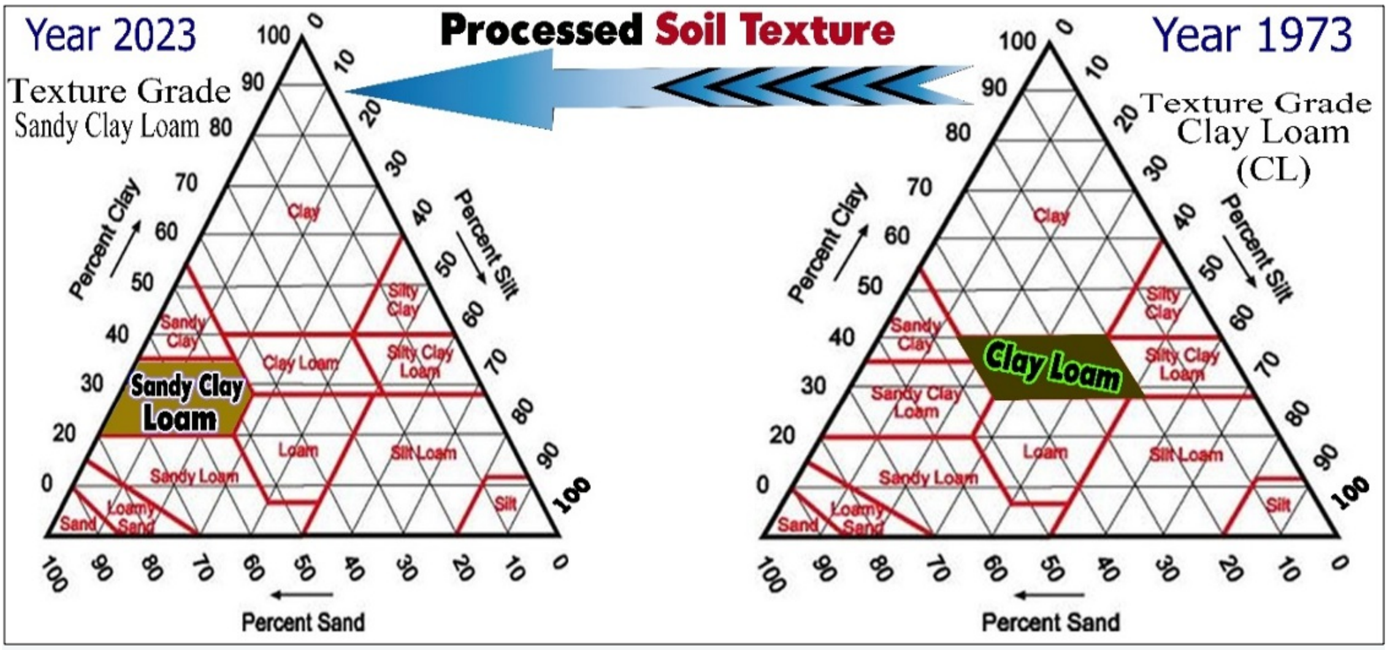


**Fig. 17.** The historical impact of the anthropogenic process on the change of the texture system of process soils in some upstream Regions of the world.

Such findings of strategic research (anthropogenic process) which until now have assumed the stability of soil texture (unchangeable) have lost their credibility in the world. Agricultural soils are not inherently stable, the anthropogenic factors that originated from the products of agricultural revolutions on the soils of the upstream areas of Mazandaran province, Iran, have been able to change the texture of agricultural soils during 10 years (Sadaty 2022). The trend of increasing the use of chemical fertilizers in agriculture is inevitable, in this regard, the findings of scientists' studies show that yield uncertainty caused by extreme rainfall variability leads to high rates of fertilizer use by Chinese farmers, which is more effective in mountainous areas (Guo and Chen 2022). In this strategic research, the foothill regions of the Asian continent have had the most structural changes in the texture of the process soils. Earth's landscape is the product of natural processes such as earthquakes, floods, storms, hurricanes, fires, volcanic eruptions, and landslides, and disasters occur when these processes interact with human settlements and/or human economic activities (Chaudhary and Piracha 2021). The African continent is home to more than one billion people, most of whom live in semi-arid and drought-prone regions, and the annual rainfall trend is declining in most regions (Nicholson et al., 2018). One of the basic sources of economic-social development of a country, which are effective in providing the basic needs of life such as food, health and environment, is the annual rainfall of that country. In this context, the higher the annual rainfall, the more stable the climate-soil components that play a role in the development of above ground vs underground biodiversity. The gradual reduction of biological diversity in the agricultural soils of the 5 continents of the world, which has been associated with the **misplaced** consumption of the products of the agricultural revolutions, has had a great negative impact on the biophysical, biochemical and climate components. The research estimate of thinkers in the field of land resource consumption, as the land of the countries of the world gets older (human life), due to the use of agricultural soils components in the global low cognitive, more climate changes and renewable resources in the 5 continents of the world are less prominent. In this context, in order not to be pessimistic about the future trend of the global climate, we must take seriously the 58.5% role of climate change by the world's agricultural soils. In completing the smartening operation, from Tab. 3, from the third column [operationalize the model (**SMM**)] and from the fourth column (agriculture industries) the forecast of environmental opportunities is selected.

### 3.3. The view of environmental management on the sustainability of agricultural soils

Currently, climate change is a global threat, depending on the geographical conditions of the countries, the range of natural disasters depends on its strengthening components. Unfortunately, the scope of these strengths depending on the geography of the countries, is not due to low cognitive of the opportunity-generating process and also the environmental threats such as; Viral diseases (CoV-19), digestive diseases, economic-social problems, etc. will mark this historical world. ultimate sentences of decision-making of this strategic research in reducing the speed of global climate change and preventing natural disasters, the following actions should be managed by developed, developing and underdeveloped countries.

Firstly; Every practice that is managed in the territory of soil for agricultural products should be accompanied by the model of sustainability triangle (climate, soil and standard practice) Fig. (1) and (5). With this strategy, we can establish a relationship with the soil language. **Secondly;** Soils are renewable throughout history in line with the climate, while they are not changing with current climate changes and are decreasing. In this regard, the view of all of us must change fundamentally to agricultural soils. **Thirdly;** The change of land use (**forest**, **agriculture** and **pasture**) in the world has caused the most damage to the global climate changes, but the governments of the countries of the world must take a principled action in standardizing the land use operations. Unfortunately, throughout the history of agricultural revolutions, the selected technical staff of the agricultural soil systems of the governments of the 5 continents of the world has become weaker and weaker and they have not been able to manage the consumption process of input products with soil components. Otherwise, with such a trend of climate change in the world, natural intelligence will make it impossible for living organisms in the natural world by introducing natural disasters in the future. **Fourthly;** The management of the historical type of tillage in the world after the change of land use has caused the greatest damage to climate change, low tillage in the type of use of the products of agricultural revolutions should be properly implemented and guided according to the sustainability triangle. **Fifthly;** There is always a relationship between the upstream (mountainous) and downstream (flatlands) agricultural soils components, we should not weaken such important relationships that play a role in climate change. Sixthly; There is a positive relationship between natural **anomalies** and climate change. For example, there is a positive relationship between storms, dust, soil erosion and landslides, environmental thirst and climate change. As the climate changes increase, the negative components become more important. **Seventhly**; In order to reduce environmental thirst, watershed management of agricultural lands upstream and downstream of the world, as well as in urban and rural construction for renewable water, it is very necessary to look strategically at underground aquifers. **Eighthly**; Positive thinking in the will and decision making of agricultural science experts should be managed based on the unity of approach in the components of climate and soil sciences. In this regard, avoid negative thinking in decision-making processes in the field of soil science due to sensitivity. **Ninthly**; In order to prevent the trend of scorching heat waves in the continents of Asia, Africa, America, Australia and Europe, it is very necessary to develop the green space of native plants per capita. **Tenthly;** Other than such a strategy (10 component), we will make it impossible for biodiversity and life on the soil and under the soil. Despite such cases of the reflection of the world's agricultural soil, which has happened with two factors of effectiveness and low cognitive of all of us, it is very necessary to change the thinking towards the implementation of 10 suggestions. Finally, with such a scientific process, we can transform the current climate situation (the most terrifying natural disasters), the selected components of the global agricultural soils of this strategic research (58.5 percent of anthropogenic) into a stable and low-risk situation.

**↘ A spiritual address to all the respected researchers of the world, Good universal prayer**

This scientific-research article in today's world is a review-basic and fundamental. Because of this; This global strategic research is presented to researchers who have done valuable work in the field of basic science development and agricultural soil sustainability and are not alive now.

## Abbreviations used in the text of global research

| | |
|---|---|
| **AARW** | Average annual rainfall of the world |
| **AATW** | Average annual temperature of the world |
| **ACC** | Anthropogenic climate change |
| **ACC** | Are the components correct? |
| **AEERAS** | Average effectiveness of educational resources in agricultural soils |
| **ASECC** | Agricultural soil executive completion certificate |
| **BUGG** | Biodiversity under the ground and on the ground |
| **CBW** | Challenging biosphere world |
| **CC** | Climate change |
| **CIDM** | Coefficient of important of decision making |
| **CIM** | Conservation irrigation method |
| **COVID-19** | Coronavirus disease 2019 |
| **CPAR** | Consumption of products of agricultural revolutions |
| **CPEP** | Consumption of Products of educational places |
| **CPSS** | Confirmation of the promotion of soil science |
| **CS** | Climate System |
| **DOM** | Dissolved organic matter |
| **EFE** | External factor evaluation |

| | |
|---|---|
| EFE | External factor evaluation |
| EH | Exceeding heat |
| EN | Environmental management |
| ER | Environmental reactions |
| FGS | Fulfilling the goals of the strategy |
| FSR | Fundamental and scientific-research |
| GCC | Global climate changes |
| GIOC | Global information outcomes and controversy |
| IFE | Internal factor evaluation |
| IPB | Introduction and process background |
| LCWAS | Low cognitive of the world of agricultural soil |
| MA | Misplaced Anthropogenic |
| MCAS | Misplaced changes in agricultural soils |
| ML | Mudslides & landslides |
| MLUC | Misplaced land use change |
| OACS | Operation adaptation to the climate system |
| PAR | Products of agricultural revolutions |
| PBGS | Perspective of the best global state |
| PE | Process Effectiveness |
| PLUCC | Percentage of land use change on climate |
| PSAS | Physicochemical structure of agricultural soils |
| SA | System accelerator |
| SASS | Strategic assessment of the soil system |
| SBA | Soil biodiversity alarms |
| SD | System deterrence |
| SD | Start the decision |
| SEE | Soil erodability (erodibility) and erosion |
| SMM | Strategic multidisciplinary model |
| SOM | Soil organic matter |
| SRCR | Severe reduction of crop rotation |
| SSTAS | Strategic system thinking to agricultural soils |
| STM | Sustainability triangle model |
| SVS | Strategic view of soil |
| TSLO | Trend of small land ownership |
| UAA | Unity of action accord |
| UAHW | Use of agricultural and household wastes |
| UCF | Using chemical fertilizers |
| WAO | World's agricultural operations |

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## Availability of data and materials

The main source of data and information used in this manuscript, sources of field research and strategic experience of water, soil, environmental components, econometrics is the responsible author.

## Unity of action and materially and moral responsibility of this strategic manuscript:

1. The researcher and the author declare that they do not have any known competing financial interests or personal relationships, etc., which may seem to influence the work process reported in this strategic manuscript.
2. This strategic research has not received any specific funding from funding organizations in the public, commercial or non-profit sectors.

And finally, this strategic multidisciplinary research, which has been explored with the (SMM) model, has been managed by the responsible author (in 2022-2023) in Sari region, Mazandaran, Iran.

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