

Before Forever; After Tomorrow

Global Warming and Climate Change

Global warming and climate change have become the focus of world concern. Governments and NGOs have been deeply involved in the studies of this complex issue. Among them, the most representative study would be the IPCC report. Currently, the international community has used the IPCC report as the basis for their attempts to grasp the context of climate change and propose response strategies. Generally, the international community has recognized the coping strategies in two dimensions-"mitigation" and "adaptation".

The Limitations of the IPCC Report

We have also taken reference of the IPCC report with an expectation to put the pieces together in terms of climate change and its impacts. However, when we compared the inferences proposed in the IPCC report to the ultra-scale composite-type disasters occurred around the world in the recent period, we found that the conclusions published in the IPCC report have virtually no explaining or predictive power. The reason may have been that IPCC has ruled out the changes in the nature right from the beginning and only locked on to the differences in carbon dioxide emissions to search for the possible outcomes from different scenario assumptions. Such result may have some reference value for the "mitigation" theory but would be rather limited for the "adaptation" strategy.

Our actions

In view of the IPCC's inadequate assumption that cannot explain the occurred phenomena, in the face of the serious issues of climate change that has been jeopardizing the lives of mankind, we are forced to use our own ways in parallel to the IPCC research for a series of studies. In 2004, we began to explore the possible causes of climate change. In 2005, we proposed the temperature fluctuation estimation model, and explored the impact of climate change on the natural environment and human society. In 2007, we began to develop the eco-city transformation procedures and discuss the direction of possible development of a new human civilization under the threat of climate change. In 2008, we put forward the timetable of climate change, assessed the climate risk for each country, and predicted the disaster types likely to occur in the different places. In 2010, the self-checking model was compared to the occurred phenomena for verification of the reliability. In the following section, we will present the results of our research arrived at this stage.

Temperature Fluctuation Estimation Model

According to the information we have collected, in the past four hundred thousand years, the concentration of carbon dioxide and temperature went through four 100,000-year cycles on planet Earth. If this phenomenon can be explained, we may be able to find the connection between CO₂ and the temperature. After discussion, we established the temperature fluctuation estimation model. This model is divided into four phases:

(1) Temperature at a low point: In this phase, the weather is rather stable, plants have the development advantage, and animals are less diversified and distributed in a smaller range.

(2) Temperature sudden surge: At this point, animals propagate rapidly and plants are consumed by animals. The concentration of carbon dioxide rises, causing the temperature to rise, resulting in ice melting at the poles. The mass of seawater increases and the mass of the Earth surface causes a displacement to the equator. This displacement changes the Earth's rotation axis and rotation torque, causing stress in the Earth's plates and affecting the movement of the tectonic plates. Earthquakes and volcanic eruptions repeatedly occur and large tracts of boreal forests are burned and damaged. This once again increases the concentration of carbon dioxide in the atmosphere and the temperature continues to rise.

(3) Temperature at a high point: High concentrations of carbon dioxide cause high temperatures. In the process of heating up, the climate becomes violent. Typhoons, volcanic eruptions, and earthquakes occur frequently. Massive amount of animals and plants die, but they leave seeds. Ultimately, the Earth will go into a desertification state.

(4) Temperature cooling off: The plants recover slowly due to the slowness in growth. The concentration of carbon dioxide decreases over time. During the cooling off process, any fluctuation even in the slightest sense may reduce or even put the animal population into extinction.

(5) Minor exceptions: In the most recent cooling off process, small fluctuations began to appear from around 10,000 years ago. The main cause is inferred to the lifestyle of the mankind. In an agricultural based civilization, human learned to utilize the forest plants and build dwellings out of wood. This practice generated extra carbon dioxide, and without being aware of it, mankind continued to maintain the carbon dioxide concentration to the scale that incurred a minor fluctuation in a cycle of around 10,000 years. Until the emergence of the recent industrial civilization, the stable concentration of carbon dioxide began to rise sharply. The temperature went passed the scale of the minor fluctuation maintained in the past and continued to surge. All these phenomena pointed to global industrialization and urbanization for the cause of throwing the temperature out of balance.

(6) Divergence from the IPCC's conclusions: The causes of fluctuation in the temperature and carbon dioxide concentration are attributed to the physical phenomena of the Earth and the cycle of animal and plant growth, especially the development of the big arbors. The IPCC's concern lies mainly in the carbon emission resulted from human behaviors, especially the behaviors emerged after industrialization. This is seen by the IPCC only as an exception which broke the balance in the agricultural era, and the temperature and carbon dioxide concentration continues to move back to the trend of continuous rising. However, if this is not controlled, the Earth will regress back to its primitive state and the process will constitute violent weather and aggravation of desertification until mass amounts of animals die and become extinct. The temperature will then go pass the extreme high point and a sudden cooling will kick in until another ice age begins. The plants will regain the dominance on Earth and the human will apparently become the obsolete species.

Estimation of the Time of Temperature Sudden Surge

We found that the reason why we have not seen a sudden temperature surge in mid-2010 is that the natural temperature balancing mechanism has not taken effect. There are three major temperature balancing mechanisms: (1) Through the weather system; (2) through thermohaline circulation and (3) through polar ice melting. From our tracking, we found that, after mid-2010, a global temperature surge seems to have begun. The main arguments are (1) polar ice melting caused the slowdown in thermohaline circulation; (2) slowdown of thermohaline circulation caused extreme winters in Europe and (3) a comparison of the North Atlantic sea temperature indicated a fluctuation. The snowstorm of the century that occurred in England in 2010 is concrete evidence of the failure of the temperature balancing mechanism. However, we have compared the temperature in England to the same period in 2011 and the statistics indicated a comparatively higher temperature. This implies that violent temperature will occur on a non-regular sense.

Duration of Climate Change

Through our relative experience in history and an inventory on the changes in the ancient African vegetation, we found that continuous violent climate will bring desertification. From the archaeological experience, ancient Egypt experienced the first wave of desertification around six thousand years ago. Continuous drying of the Sahara region forced the people to migrate eastward to the shores of the Nile. This prompted the development of the Egyptian civilization. The second desertification is dated back to 4,200 years ago. This desertification changed the Nile Valley, which once enjoyed fertile black soil brought about by regular flooding. The dryness and diminishing water resources brought famine, which led to the collapse of the Old Kingdom. Based on the above, we made an initial comparison in history and estimated that the duration of violent climate and desertification lasted for at least a whole generation. The cycle can be divided into three stages. The Early Stage: Disasters emerged in scattered incidences and the frequency increases over time. The Mid Stage: Disasters emerged in high frequency and extreme violence. The Late Stage: Disasters occurred in high frequency.

Possible Forms of Climate Change Related Disasters

What types of disasters may be brought by climate change? After a series of discussions and comparison, the Ten Plagues documented in the Old Testament may have been triggered by desertification and the incidents occurred in a systematic manner with a certain order. First of all, the Ten Plagues were first caused by damages to the environment; following which, the ecology was thrown out of balance and infectious diseases and natural disasters began to emerge, and finally the security of human life became threatened. We believe that global warming has begun in 2010 and scattered incidents are revealing the signs of violent weather and desertification. The degree of damages on ecology and human civilizations has far surpassed any identifiable records in the history of the affected areas. According to our national climate risk assessment, over 70% of the population on Earth is living in severely threatened environment.

Constructing a Climate Moderation Mechanism

According to statistics, the CO₂ concentration in the atmosphere in 1900 was 280ppm, big arbors covered 50% of the Earth surface, efficiency of internal combustion engine was 26%, and the total population was 1.650 billion. In 2010, the CO₂ concentration in the atmosphere was 389ppm, big arbors covered 30% of the Earth surface, efficiency of internal combustion engine was 30%, and the total population was 6.83 billion. If we wish to return to the carbon emission level of 1900, based on the efficiency of the internal combustion engine, the Earth can only contain a population of 1.9 billion. When the ecology and human civilizations are damaged on a massive scale, the population will begin to drop sharply until a swinging balance emerges. Therefore, if we wish to keep more people on Earth, we must actively restore the scale of the green vegetation and lower the concentration of CO₂. A more effective way would be using the symbiotic cycle to construct a regenerative society, economy, and environment and modify the human behaviors to come as close as possible to the structure designed by the nature.

Our Efforts

Taiwan has a comparative advantage for disaster avoidance and construction of a balance self-restoring mechanism for the Earth. We strive to build Taiwan into a cradle of a new civilization. Therefore, we will work to provide timely advises for policymaking and help the government to build a strong response mechanism.

(1) The Framework of National Sustainable Development Policies <http://nsdn.epa.gov.tw/>

We will supplement the previous research findings with the "Ecosystem Abnormality Disaster Mitigation Strategies" and "Epidemic Prevention and Remedy Measures". At the same time, we will review the strategies and goals in the different dimensions planned in the framework, including the environment, society, and economy, based on the symbiotic concept, propose relevant action plans to the relevant authorities, and verify whether the policies conform to the sustainable development indicators.

(2) The Framework of National Climate Change Mitigation Policies (Draft): <http://www.cepd.gov.tw/>

Based on the forecast of the disaster occurring schedule with emphasis on the urgency, we will send out warnings for the possible impacts and challenges in each area of mitigation; we will pay attention to the possibility of composite catastrophes built up by the regularly occurring disasters. We should isolate incidents of regularly occurring disasters to prevent prolonged impacts. In addition, we should also make an attempt to reserve certain level of energy for the challenges of unknown disasters in the future.

(3) Eco-City Transformation

For the part that is closer to the lives of the general public, we are currently developing the "Seven Steps to Eco-City Transformation" based on "The Framework of National Sustainable Development Policies" and "The Framework of National Climate Change Mitigation Policies". We picture the seven steps as seven steps of a stairway, and each city is placed on a different level of this stair to indicate their different needs in the process of transformation. Cities with more intact ecosystems may need only three steps to successfully transform into eco-cities. However, the ecosystems of most cities have been completely destroyed, so they may need up to seven steps to achieve the goal. The following is a brief description of the seven steps:

A. Preservation of water and trees: The main cause of repeated fluctuation in temperature and CO₂ concentration is the increase of animals in relation to plants, especially big arbors. Therefore, in the face of climate change, the key strategy would be to preserve water resources and trees. A good foundation is built with a healthy system of water resources and tree ecology and diversified species. We aim to construct a comprehensive net of green plants and water resources and increase the coverage of big arbors. The goal is to achieve a common denomination of symbiosis.

B. Biodiversity: The second step involves reviewing the previous step to verify whether the foundation ecosystem has come to maturity. A mechanism is developed to control the ecology levels, and organisms tolerable to the city environment are selected through the testing points. Eco-activities in city will be increased in this step, and a symbiosis ecology cycle will be built to cover the area of human development. An effective ecological footprint system and the photosynthesis sum will be used to assess the transformation of the city and reconstruction of the ecology.

C. Environmental engineering: Engineering methods will be used to solve and control the problems caused by pollution and increase the comfort of living, such as environmental protection engineering, transportation, and water systems. Promoting recycling and reuse will also be implemented to create a comfortable living environment for the human population.

D. Environmental surveillance: A general testing index, including air and water quality, recycling and reuse, and the work efficiency of the human habitat, will be set up to closely monitor the living environment and ensure its quality.

E. Urban design: The urban design will incorporate nature and culture into every base of city development to ensure that the ecological and human service will reach the living standard of comfort.

F. Green building: This will be implemented through the SB=GB+Symbiosis model, that is, green building incorporated with symbiotic living, to create a living environment connected to the nature and build structures that are energy-saving, healthy, and zero carbon emission.

G. New civilization: Through self-moderating and self-sufficient living, digitalized communication, and self-fulfillment values, collective change can be developed into norms generally practiced in a society.

The seven steps form a full process and completion of the seven steps will bring the mankind into the age of a new civilization.



On August 31st 2002, President Lin Chun-Shin of Archilife Research Foundation and President Judy, Huang Chin-Ying of Taiwan Society of Sustainable Built Environment led Archilife research team to Symbiosphere 1 Center. Professor Chiang Che-Ming from Cheng Kung University, Deputy Principal of Taipei Medical University Su Ching-Hua, and Principal of Central Taiwan University of Science and Technology Li Hong-Mo are invited to experience a symbiotic meal (nucleic acid meals) and the SB=GB+Symbiosis living.

For more information, please refer to <http://www.archilife.org/>; <http://www.iisbe-taiwan.org/>



From August 1st to 5th 2011, Archilife organized a summer camp at Symbiosphere 1 Center. For digitalization, the Archilife Research Foundation continued the "Digital Software Creativity" program set up by the new generation member Mr. Lin Rong-Sheng. This program illustrates how to use simple programming language to create fun game apps for phones and leads the participants to experience digitalized living.

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來自台灣的訊息 給 SASBE 2012

永續之前 明天之後

全球暖化與氣候變遷

全球暖化與氣候變遷是全世界關注的焦點，各國政府、民間組織對此複雜議題皆投入相關研究。其中，最具代表性的是IPCC報告，國際社會即依據IPCC報告，試圖掌握氣候變遷脈絡並提出因應策略。目前普遍被國際社會所認知的因應策略，概分為「減緩」與「調適」兩大面向。

IPCC報告的侷限性

我們原本也參考IPCC報告，期望藉此掌握氣候變遷及其影響的全貌。可是，當我們用IPCC的推論比對近期世界各地陸續發生的超尺度複合型災難，發現IPCC報告幾乎沒有解釋與預測功能。考其原因，IPCC一開始就排除大自然的變化的部分，只鎖定人為二氧化碳排放量的差異，導出不同情境假設的可能結果，這對「減緩」或許有些參考價值，但對於「調適」就顯得效用有限。

我們的行動

有鑑於IPCC不當的假設前題，無法解釋已發生的現象，面對氣候變遷，此嚴重危及人類生存的重大議題，我們被迫用自己的方式，平行於IPCC，進行一系列的研究。我們在2004年開始探討氣候變遷的可能成因；在2005年提出氣溫升降推估模型，並探討氣候變遷對自然環境、人文社會的影響；在2007年起，研擬生態城市轉化步驟，探討氣候變遷下，人類新文明的可能發展方向；在2008年起，提出氣候變遷的時間表，並評估各國的氣候風險、預測各地的災難類型；在2010年比對已發生現象，自我校驗模型的可信度。接下來，向各位說明我們階段研究的成果。

氣溫升降推估模型

根據我們收集的資料發現，地球在過去四十萬年間，二氧化碳濃度與氣溫呈現四個約十萬年週期反覆升降的現象，只要能解釋此一現象將有助於釐清CO₂與溫度間的關連性。經過討論結果，我們建立氣溫升降推估模型。模型區分為四個階段：

- (1) 氣溫低點：此時氣候穩定、植物佔優勢、動物少且分布範圍小。
- (2) 氣溫陡升：此時動物快速繁殖，植物遭到動物啃食，二氧化碳快速升高，使得氣溫上升，造成兩極與陸冰融解，海水質量增加，地表質量向赤道位移，導致地球自轉軸與旋轉力矩發生改變，引發地球板塊內應力變化影響板塊運動，地震、火山爆發反覆進行，大片寒帶林被燃燒毀損，提高大氣二氧化碳濃度，使得氣溫不斷攀升。
- (3) 氣溫高點：高濃度二氧化碳引發高溫，升溫過程氣候暴烈化，颱風、火山爆發、地震頻繁，動物因而大量死亡，植物亦會死亡，但會留下種子，最終進入沙漠化狀態。
- (4) 氣溫緩降：植物逐漸恢復，因植物生長慢，二氧化碳濃度緩慢下降，緩降過程中，每次的小幅震盪，都使動物族群減少或滅絕。
- (5) 微小例外：最近一次地球回溫的過程中，約從一萬年前開始出現小幅震盪。根據推估，主要原因為農業文明時期的人類學會開墾森林種植物並以此木材建居所，產生額外固二氧化碳的效果，人類在無意識的情況下，讓二氧化碳濃度保持約一萬年的小幅震盪，直到最近的工業文明出現，原本平穩的二氧化碳濃度開始陡升，溫度超越過去小幅震盪區間轉而向上攀升，這指向全球的工業化與都市化正是打破平穩溫度的主要原因。
- (6) 異於IPCC的結論：地球氣溫及二氧化碳濃度反覆升降的理由，係因地球物理現象及動物相對於植物之間的消長，尤其是大喬木的演化。IPCC所關注的人為排碳，尤其是工業文明之後的人類行為，只是將農業文明時期的穩態平衡打破的例外，重新走向上升的趨勢而已。如不加以控制，將回歸自然原本演化的情境，就是氣候暴烈化，沙漠化擴大，直到滅絕發生，動植物大量死亡後，才能走過氣溫高點，進入氣溫緩降，直到另一個冰河期出現，植被重獲優勢，而人類顯然就是這波被淘汰的動物了！

氣溫驟升時間起點的推估

我們發現2010年中前氣溫尚未陡升的原因，是自然調溫機制尚能發揮作用。調溫機制主要有三個：(1) 天氣系統 (2) 溫鹽環流 (3) 極地融冰。追蹤比較發現2010年中後，全球氣溫驟升似乎已開始。主要的論證是：(1) 極區融冰導致溫鹽環流減緩。(2) 溫鹽環流減緩導致歐洲冬天降溫。(3) 比對北大西洋海溫變化。2010年世紀暴雪冰封英國的現象，即可視為調適機制已經失去作用的具體事證。不過，檢視2011年同樣的時間區段，發現英國出現相對較為高溫的現象，暗示未來氣候暴烈化的過程，將會以跳動的方式呈現。

氣候變遷持續期程

我們藉相對的歷史經驗，檢索非洲古植被的變化，發現持續暴烈化將造成沙漠化。就考古歷史經驗而言，古埃及第一次沙漠化發生在距今約六千年前，由於撒哈拉地區日益乾燥，引發人群往東移往尼羅河兩側，促成埃及文明的興起。第二次沙漠化則發生在距今約四千兩百年前，此次沙漠化，改變定期氾濫帶來肥沃黑土的尼羅河谷地，氣候乾燥與水量減少，引發飢荒，導致古王國崩潰。藉此，我們初步比對考古歷史，概算氣候暴烈化、沙漠化的延續期間最少跨一整個世代，大致分成三個時期：前段時期：災難將以跳動的方式呈現，逐漸由疏轉密；中段時期：災難則呈現密集、暴烈的現象；後段時期：災難逐漸由密轉疏。

氣候變遷災難類型推估

氣候變遷可能造成哪些災難類型？我們藉舊約聖經沙漠化的災難—埃及十災，經過討論與比對後，認為「沙漠化」是誘發十災的主要原因，且災難的發生是有系統的、有先後順序的。首先，它會起源於環境破壞；之後，造成生態失調；緊接著，導致傳染病發生並衍生自然災害；最後，危及到人類的生命安全。我們相信全球暖化在2010年已經開始，正以跳動的方式呈現氣候暴烈化與沙漠化，生態、人文社會造成的破壞，在發生地區幾乎都將超越過去有文字記載的歷史紀錄。根據我們進行的國家氣候風險評估結果，全球將近70%的人口都處於嚴重威脅的環境！

氣候緩降機制的建構

根據資料顯示：1900年大氣CO₂濃度含量為280 ppm，大喬木覆蓋率佔地表面積50%，內燃機效率為26%，總人口數為16.5億人；2010年大氣CO₂濃度含量為389 ppm，大喬木覆蓋率佔地表面積30%，內燃機效率為30%，總人口數為68.3億人。若要回復至1900年的碳排放量，試以內燃機效率估算，地球僅可供養約19億的人口！如果生態、人文社會遭受具大破壞，將使人口急遽遞減，一直到新的水平震盪期出現。因此，我們若要保全較多的人口，就必須積極回復地球綠覆率，降低大氣CO₂濃度，更要以共生循環為手段，建構循環型的社會、經濟、環境，讓人類的行為更貼近自然結構。

我們的努力

基於台灣相對優勢的避災條件、讓地球恢復自我平衡的機能，以及以台灣做為新文明搖籃的願景，我們將努力的成果，在政府相關政策擬定時，適時提供建言，強化政府的應變機能！

(1) 國家永續發展政策綱領：<http://nsdn.epa.gov.tw/>

我們依研究成果，補入「生態系異常減災策略」與「疫病災害防救措施」。同時以共生循環概念，檢視綱領中，環境、社會、經濟各個面向的策略、目標，以及各部會提出的相關行動計畫，並檢視其是否符合永續發展指標的良性趨向。

(2) 國家氣候變遷調適政策綱領（草案）：<http://www.cepd.gov.tw/>

我們依據研究推估的災變時間表，強調災變的緊迫性，提示在各調適領域的衝擊與挑戰，尤其應留意常態性災害釀成複合巨災的可能性；應將常態性災害孤立化，避免災害時間拉長。此外，亦應設法保留適度的能量，以因應未知災害的挑戰。

(3) 生態城市轉化

在貼近民眾生活部分，我們正依據長期的研究成果，參照「國家永續發展政策綱領」及「國家氣候變遷調適政策綱領」，研擬「生態城市轉化」的七個步驟。我們將七個步驟，想像成七個階梯。每個城市所處的階梯位置或有不同，所需的轉化過程也就有差異。生態維持較佳的城市，或許只需三個步驟便可轉化成功；但是，大部分的都市環境已被破壞殆盡，可能就需要透過完整的七個轉化步驟才能達成目標。七個步驟依序為：

A. 保水與保樹：地球氣溫及二氧化碳濃度反覆升降最主要的理由，就是動物相對於植物之間的消長，特別是大喬木的演化。因此，面對氣候變遷，最重要的策略就是保水與保樹，藉保水保樹提供生態基底，以多層次生態種植，建構完整綠網與水網，增加大喬木綠覆率，以達共生常數為目標。

B. 生物多樣性：檢證前一步驟，掌握生態基底是否成熟，以建構生態層級的控制機制，透過檢測點篩選城市能容忍的生物。增加城市生態活動，以共生生態環包被人類發展區，並以有效之生態足跡 (Ecological footprint) 及植物光合作用總和評估生態重建之轉型。

C. 環境工程：採用工程手法解決和控制環境污染所造成的問題及增加生活舒適度，包含環保、交通、水利等公共設施，並促進物質循環再利用，提供人類適宜的居住環境。

D. 環境監控：建構綜合檢測指標，包含空氣、水的品質、循環物質、人居的工作效率等，嚴密監控人居環境，以確保品質。

E. 都市設計：考量如何將自然及人文環境導引到每塊基地，確保生態及人文服務可達的居住條件，並開創怡人的居住空間。

F. 綠建築：以SB = GB + Symbiosis的方式進行，亦即綠建築加上共生化條件，營造與自然結合的生活環境，符合節能、健康、零碳排放之綠建築構築住居體。

G. 新文明：透過生活約束，以自給自足概念，數位化溝通傳輸及實踐自我價值方式，將整體改變化約成為文明教化，並實踐於生活之中。

這樣七個步驟才算全部完成，人們才可能展開永續的新文明！



2002年8月31日在林俊興董事長、黃晉英理事長的帶領下，邀約成功大學江哲銘教授、台北醫學大學蘇慶華副校長、中台科技大學李宏謨校長等研究團隊，共同參訪共生圈一號（綠建築）並以共生餐（核酸食譜）餐敘，體驗SB=GB+Symbiosis的共生化生活。



2011年8月1日至5日於共生圈一號（綠建築）舉行暑假生活體驗營，在數位化方面由祐生研究基金會接續世代林容生先生開辦「數位軟體創意」課程，詳細說明如何運用簡易的程式指令，做出有趣的手機遊戲，教導學員體驗數位化的生活。

台灣永續建築環境促進會最高顧問
祐生研究基金會董事長
行政院永續發展委員會委員

林俊興