# NOAH ECOLAND

## INNOVATIVE TECHNOLOGIES FOR SUSTAINABLE

## LAND&WATER RESOURCE DEVELOPMENT

# 01. The Globe in Danger

The Global Human Habitat is in danger in face of disastrous situations being aggravated from day to day as a result of **Global Warming** and due C**limate Change** caused by human ill practices such as;

1. Deforestation,
2. Over Urbanization,
3. Over Industrialization &
4. Over Exploitation of natural resources.

The Globe is over heated when the heavy gas emission, resulted by aforesaid malpractices, is accumulated at upper atmospheric layers like a cloud to **retain and reflect back** energy rays to Earth.

Man ought to be the **Caretaker** of the **Global Ecosystem** for **Coexistence** but when the duty is mistaken by him, the precious natural resources given such as **Land** , **Water** and **Wind** disguise all at once as disastrous earth quakes, landslides, floods, tsunamis, tornados, hurricanes etc to wipe out the human habitats from the ecosystem.

However it is the **Nature** and any natural ecosystem must be recognized as a **Living Being** which possesses a mighty power of **Reaction** and whence **Disturbances** are introduced exceeding the limits of **Resilience** and **Caring Capacity** of the ecosystem, the enormous **Natural Weapons** are aimed to wipe out the **trouble making organ**, mankind, from the system.

Things seem to have gone far enough however by now, to expect **neither excuse nor chances** from **Nature** and man has got to use **Knowledge** more **creatively and proactively** for **survival**.

## 1.1 Can disasters be mitigated?

Yes, the adverse effects from a natural disaster can be minimized by **early detection, early warning developing safety measures and improving preparedness.**


- What disasters to bring short term adverse effects?

Earth quakes, Tsunamis, Tornados and Hurricanes etc could bring adverse effects, more serious but short term upon human habitats.

- What disasters to bring long term adverse effects?

Inland Floods and Activation of Volcano could bring long term adverse effects.

- What disasters to bring everlasting adverse effects?

Rise of mean sea level of the globe, could bring everlasting adverse effects.

## 1.2 Inland Flood due to Intensive Rainfall-The most probable Danger

Intensity of rain fall is obviously at a growth and that can be considered as the biggest threat against the global human habitats. This certainly is a direct result of global warming and due increment of '**Potential Humidity**' in the bottommost layer of the atmosphere.

**Potential Humidity** in atmosphere possesses much heat energy than the normal humidity and it moreover creates **tornados, cyclones, hurricanes and rainfalls of increased intensity** as a measure of transferring excess heat energy in to the upper atmospheric layers.

- Rise of Sea Level?

Most of the scientists focus the rise of sea level as the biggest threat upon the global habitats. But it could not be so violent as much as they have exaggerated because;

i. The rate of rising of sea level is low (less than some 2mm per year) and the danger is not so imminent. Besides that the globe is at a very gradual expansion through ages and the mean sea level can also be dropped down in some periods, in which new sea lands are emerged and that is the **Natural Cyclic Behavior** of the globe. That's why we are observing some inlands which appear to be emerged from the sea long ago with all the evidences to prove. This Cyclic Behavior of Earth is well interconnected with the phenomenon **Geomagnetic Reversal** (please refer to 'Earth Mechanism' /Space Dynamics-V3/world_mysteries.com or Sciencedoubts.com or cyrilhtgamage.com)

ii. Melting of glazier would not probably be continued till the end of the polar ice profiles and even though it happens somehow, the entire water quantity produced is not adequate to submerge the lands by another 6 ft at most.

**FIGURE-1**

Let us deduce the quantity of water in glacier and the possible rise of sea level

- What is the bearing capacity of ice?

Engineers calculate bearing capacity of soils because they need it in designing structural buildings upon the land. Ice too has a bearing capacity and it decides the maximum height of polar ice columns. When you exceed that allowable height, ice at the bottom of the column would be melted

due to high pressure and it tends to preserve the allowable height. Therefore we can't expect oceanic glacier of height more than 40 - 50m, anywhere in the world, unless they are formed upon emerged rocky bases. Figure-1 shows how the top surface of oceanic glacier is leveled by the phenomenon. Even in mountain glacier you could not observe a pure ice column of height more than 40-50m but the reality is, glacier height on mountains is much lesser than that.

Ocean area of the globe = 335,258,000 sq km

Glacier area of Earth (including mountains) = 15,000,000 sq km

Average column height of glacier(supposed to be) ≈40m

It is assumed that, water is not pumped in from another planet to Earth and then we can calculate the possible maximum rise of sea level '**h**' such that;

[Glacier area] x[glacier height] = [h] x [ocean area of the globe]

h = [15,000,000] x[40m]/ [335,258,000]

= **<u>1.789m</u>**

***(The devil seems not taller than 6 ft at most and there are good innovative technologies for coastal line bank preservation (introduced at the end of this technical paper )for lowland islanders to come out of this slowly emerging danger easily).***

### 1.3 The most Devilish Disaster –Inland Flood

As a result of **global warming**, not only the **climate** but **rainfall pattern** too is at a big **change**. A flood is created moreover by intensified rainfalls and weakened drainage facilities due to human dimension in **wetland reclamation**, always aggravates water pooling. More than **70% of world population** lives in **flood plains** and therefore inland flood becomes the **biggest threat** upon the global human habitats.

**Water** at high elevation possesses **potential energy** and similarly **Humid Air** at high temperature possesses a big potentiality to create Tornados, Hurricanes and intensified rainfalls. An intensified rain fall doesn't give enough time for land infiltration and the due outcome is a **disastrous flood**.

## 02. Technologies on Sustainable Land& Water Resource Development

### 2.1 Trans Contour Conduit River(TCCR) technology for Flood Prevention, Drinking Water Supply and Renewable Energy Generation

**Reactive** measures of flood mitigation/management are good but of less significance in face of aggravated disastrous conditions to come forth and therefore, we have to think of **proactive** measures of safety.

## 2.11 Objectives:

1. 60% of the river flow is fed in to a conduit creating a speedy pressure flow, under susceptible weather conditions, giving enough room in the river to collect surface runoff from the catchment.

2. Pressure flow potentiality in the conduit is used in auto water purification for drinking water supply for downstream cities.

3. On beach hydropower production by use of the conduit river flow, by which the entire project capital is rapidly covered and cut off fossil fuel burning upon country requirement of energy.

## 2.12 Upland Intake to the Conduit River

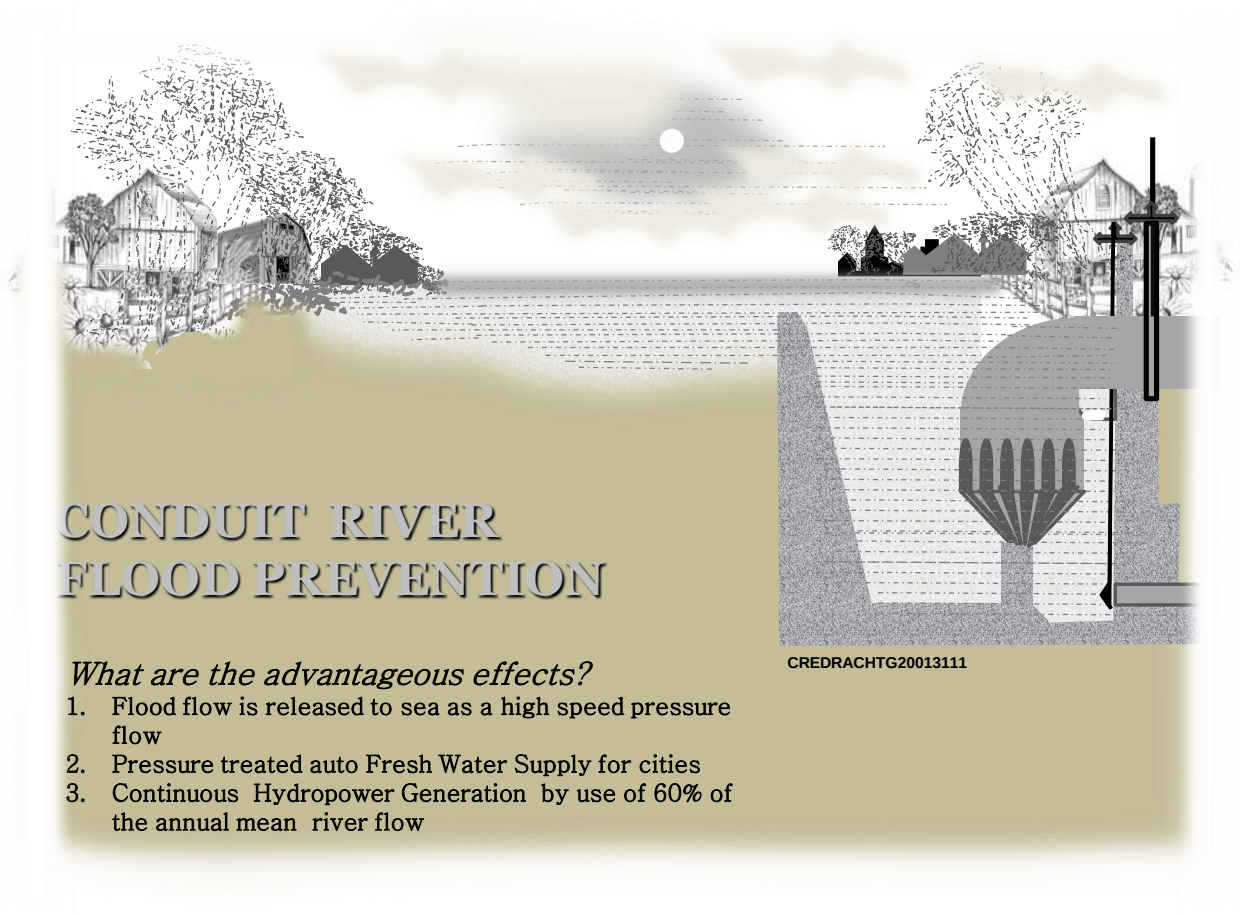



**FIGURE-2**

As shown in figure-2, 60% of the river flow is taken in to a subsurface conduit at a suitable upland altitude where water is not highly polluted. Water collecting intake structure is inverted fed to minimize

entering of the silt through the trash rack. The Trans Contour Conduit finds the shortest and easiest way possible towards the sea beach. The **TCC** should also go through city terminals of fresh water supply.

Air cushioning pressure regulators are provided at regular intervals in the conduit in order to smoothen the water hammer impulsive strokes. Silt in the sump and in the line is pressure flushed from time to time.

### 2.13 The Structure of the Trans Contour Conduit

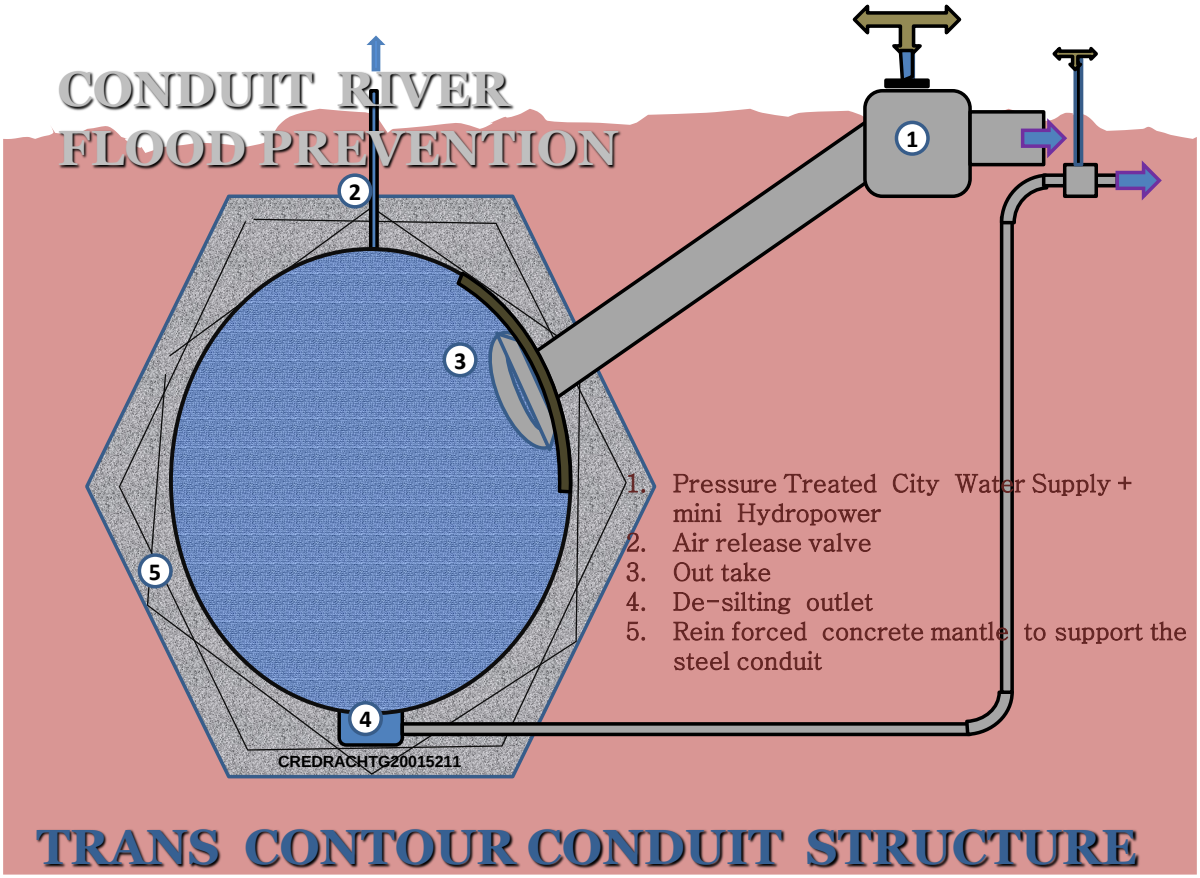



**FIGURE-3**

As shown in the figure-3, the steel conduit is surrounded by a reinforced concrete hexagonal structure and expansion joints are provided at regular intervals.

### 2.14 City Terminals of TCCR for Drinking Water Supply

Water intake from polluted urban rivers at cities is a general mal practice all over the world which requires much global attention upon public health. Treatment processes consume much energy which again increases the **Carbon Budget** for the environment from the habitats. Instead, if water is drawn

from an upland altitude of the river, before being much polluted, treatment aspects need less energy and labor. Besides that pressure of the intake flow can be effectively used for auto water purification.

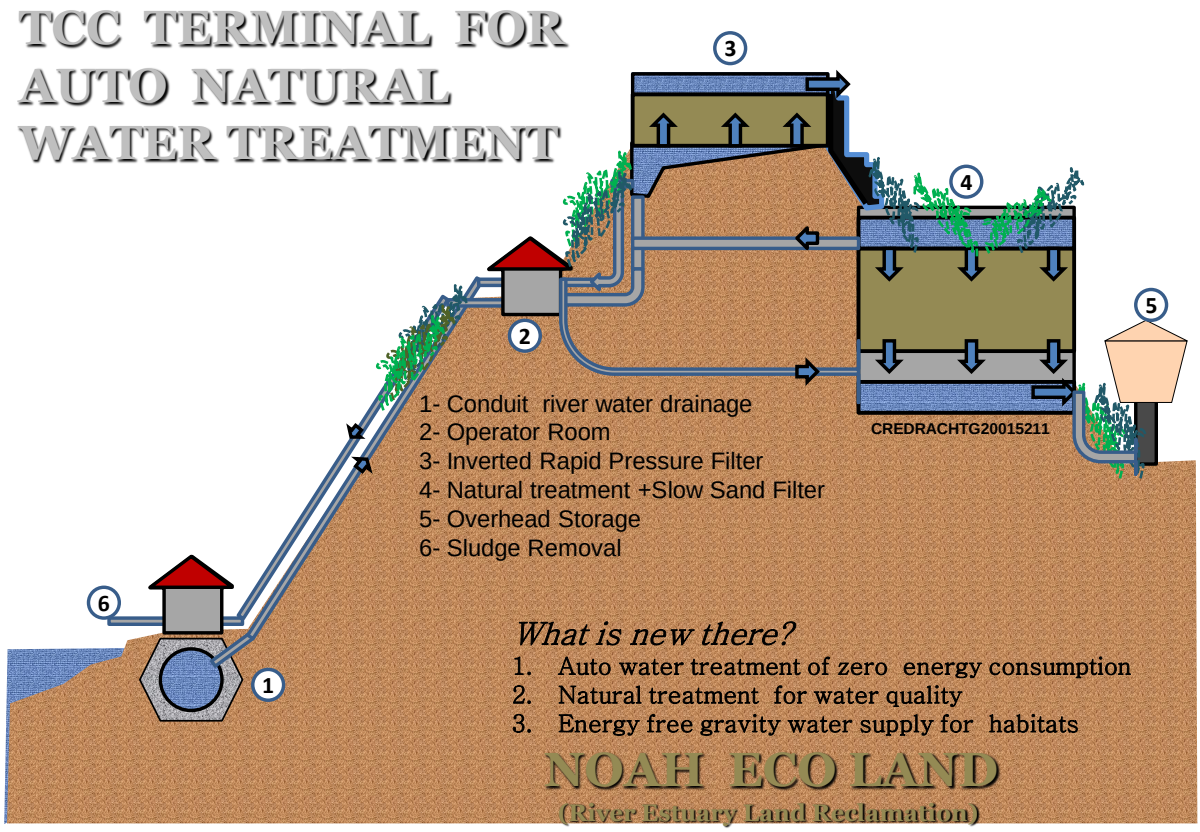



**FIGURE-4**

As shown in figure-4, the TCC terminal for drinking water supply is aimed to operate water treatment functions by pressure and potential energy of the flow. Besides that a mini hydropower production too is possible if pressure in TCC is high enough at the site.

### 2.15 Beach Hydropower Plant

As shown in figure-5, a continuous power generation is expected by use of 60% of the annual mean river flow. The remaining 40% would be more than enough for co existence of the river ecosystem throughout the year, if not contaminants and impurities from habitats are dumped in to the river.

The power plant comprises two power turbines such that one is for the continuous power generation and the other is to be operated only at flood situations.

Besides that there is a direct sea fall also to release bulk flood flow without power generation in case of a more disastrous situation.

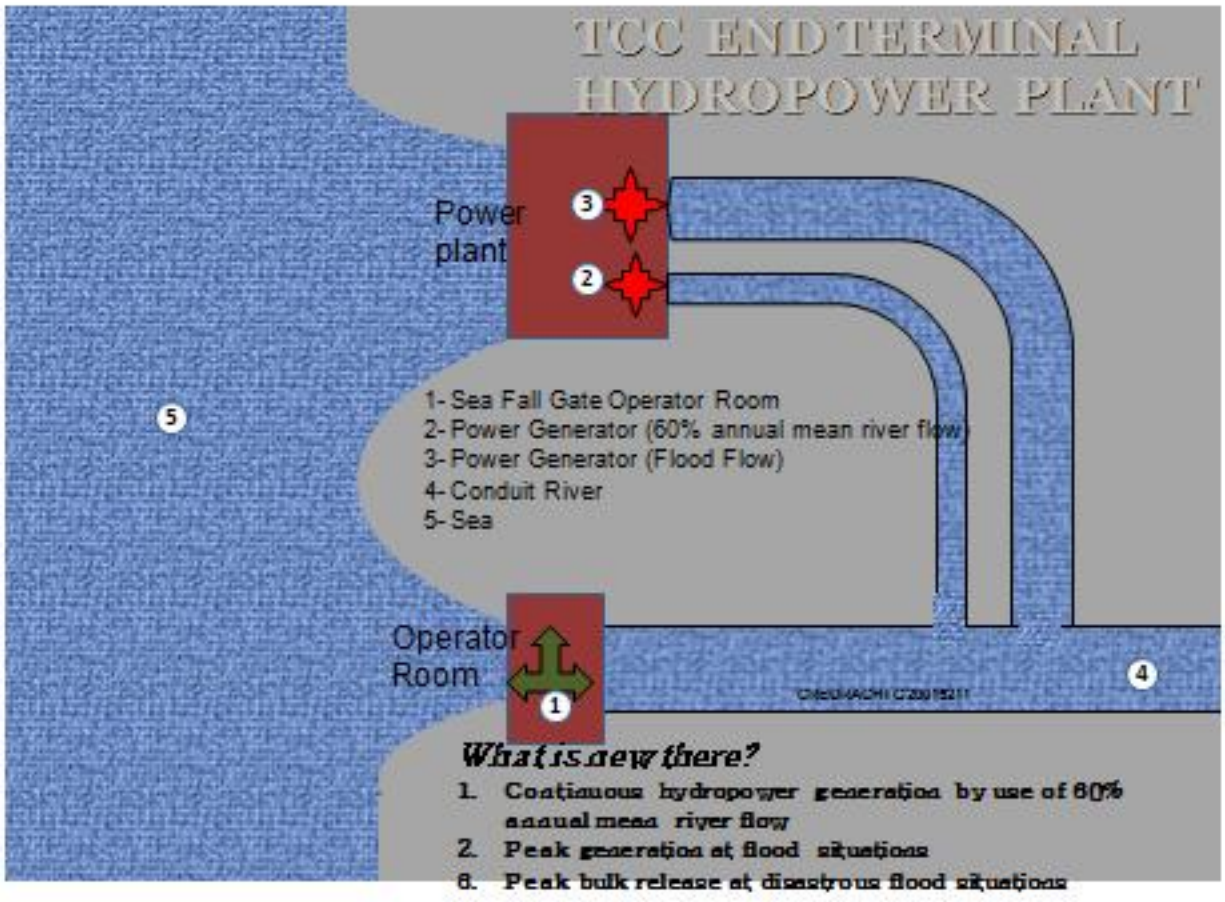



**FIGURE-5**

## 2.16 Advantageous effects of the TCCR technology

i. The **Global Human Habitats** are in danger at present on all accounts of forecasting and **inland flood** must be the most disastrous among all other probable **natural disasters**. The flood prevention ability of the new technique TCCR is therefore the biggest advantageous effect.

ii. Auto treated fresh **drinking water supplying** ability for cities is the second advantageous effect of the TCCR technology.

iii. Beach hydropower production is the third advantage because it can cover the big capital of the project no sooner and cut off fossil fuel burning and minimize the **carbon budget** to the environment.

## 2.17 Free Accessibility and Applicability of the TCCR technology

***The writer of this technical paper, being the inventor and agent as well, for the innovative technique registered as 'Conduit River Flood Prevention', received a patent in 2005 (IPC: E02B3/10) and with this declaration on 08th October 2011, it becomes exposed and free for everybody of the Global Community to practice for survival from the forth coming biggest threat of inland flood.***

## 2.2 Flood Plain Reclamation

***2.21 The Declaration***

***These innovative technologies introduced below are formed in the period of 2010-2011 by the writer(also the inventor) but did not apply for patents because, as it was understood that, the patent process badly compromises the right of the Global Community to access for new technologies whence they are badly in need.***

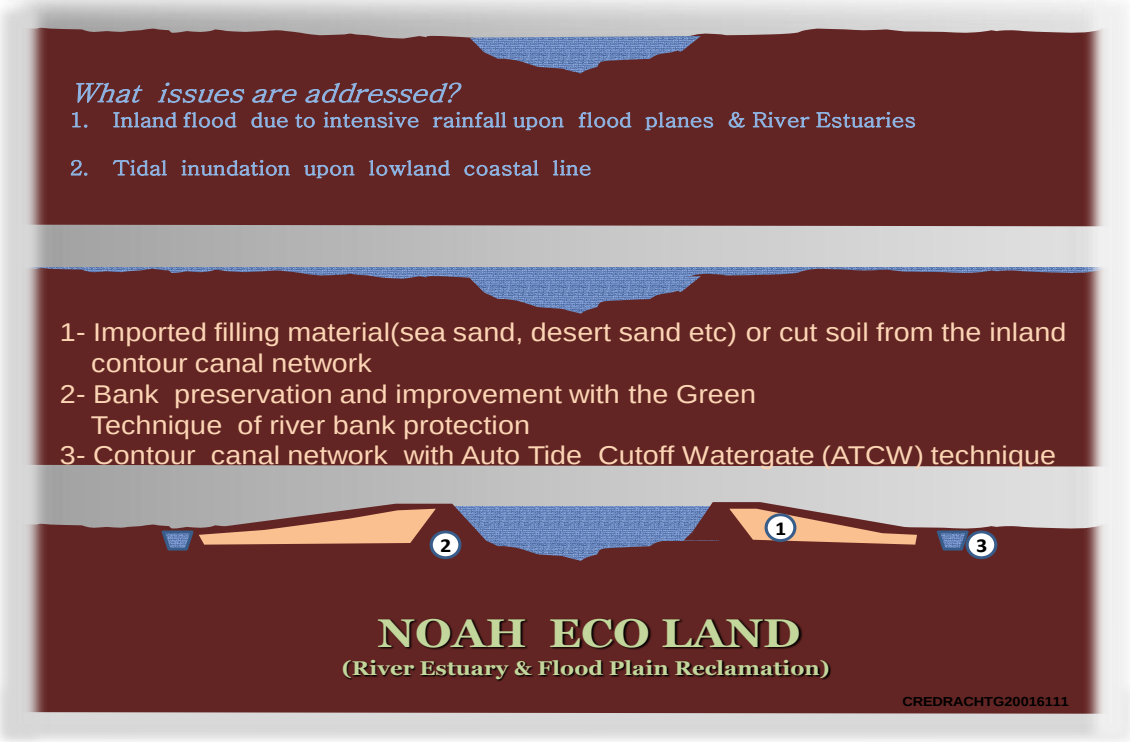



**FIGURE-6**

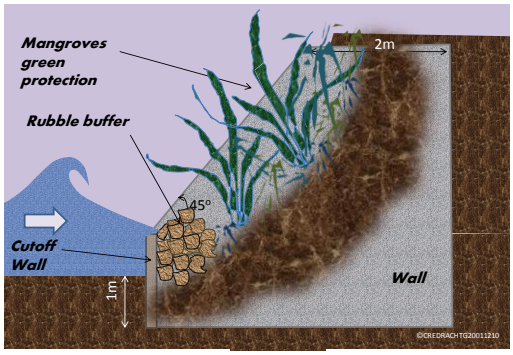
As shown in figure-6, flood plains near to rivers or tide affected low level sea lands have to be reclaimed by a sustainable bank preservation strategy. The main issues to be address in this are;

1. What is the best technique for earth bank preservation?
2. How to find the filling materials to raise the banks?
3. How to release inland pooling of water in to river/sea?

### 2.22 Wall Rake Technique for River/Sea Bank Preservation

Any linear application of retaining wall type bank protection could not be long lasting in face of impulsive strokes of waves and currents. As shown in figure-7, the '**Wall Rake Technique'** for River & Sea Bank Preservation comprises perpendicular walls inter connected by a short cutoff wall of which holes are provided for inland water to seep.

WALL RAKE TECHNIQUE
FOR SEA BANK PROTECTION



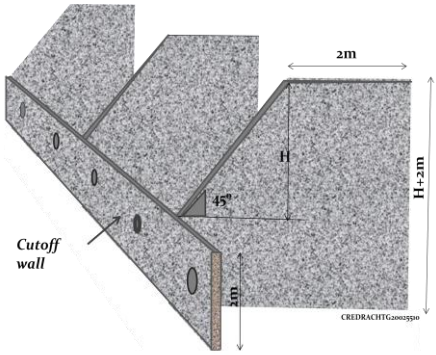
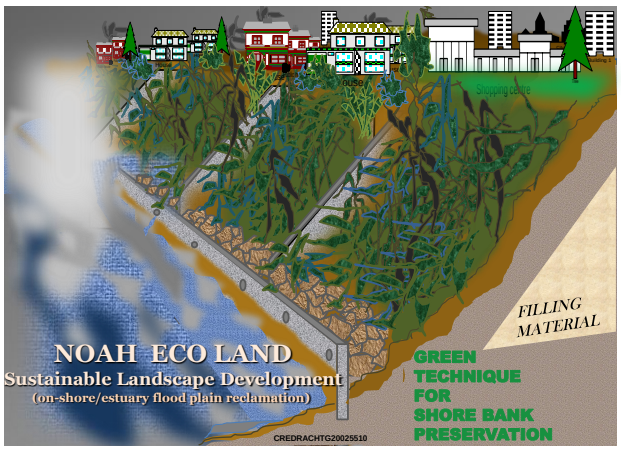




**FIGURE-7**

This also creates an aquatic ecosystem in the bank to be a Green Protection for long lasting sustainability of the bank preservation.
But the problem is how to find **filling materials** for this bank preservation technique at river estuaries.

Countries with majority of low lands must have a developed network of inland canals just like in the Dutch country, the Netherlands. The cut soil in forming the inland canal network can be used as the filling material for bank preservation to protect the lowlands from flood entrances.

The other so far unidentified biggest natural resource in the world is the **desert sand** if it could be pumped somehow to the countries, scarce of filling materials. In return, deserts would be converted gradually in to fertile green lands if the thick cover of sand could be removed.



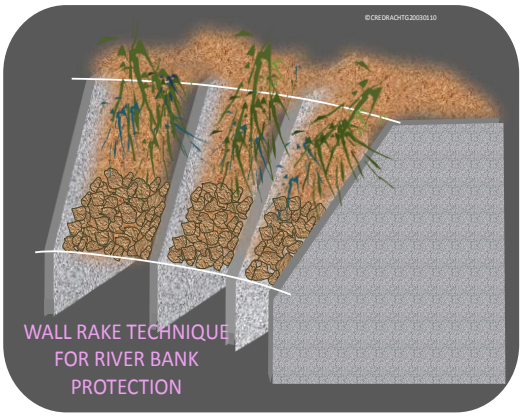




**FIGURE-8**

When the lowlands are protected by construction of such dykes, inland water can be pooled within the land creating another big problem. Therefore a network of inland contour canals is necessary to be constructed to collect and release inland water to sea or river.

The outfalls of the canals must be provided with gates or otherwise outer flood or tide can invade in to the protected land. Therefore an auto operated Tide Cutoff Watergate is introduced herein for long lasting sustainability of the process.

### 2.23 Tide Cutoff Watergate

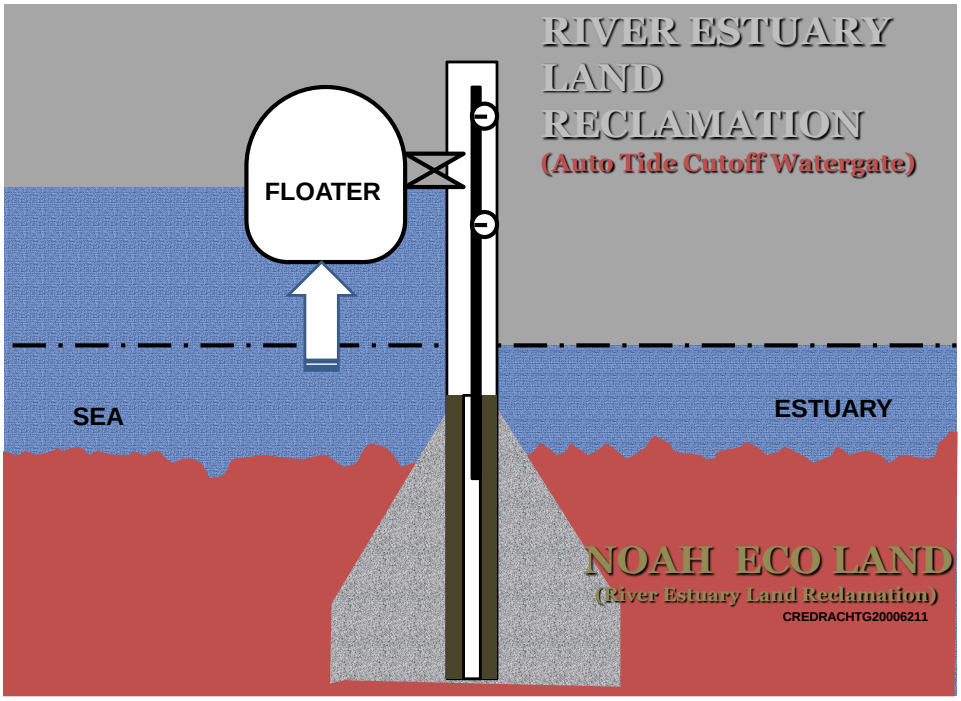



**FIGURE-9**

The '**Tide Cutoff Watergate'** technique, introduces herein, is to protect the inland canal network from the tidal raise of seawater or flood flow or the river. The floater can close the watergate automatically without intervention of an operator.

There is a free board in canals so that inland water is gradually collected during the flood period. Whence the flood seems to be continued and also if the level of inland canal network rises to the full supply level, in such cases water has to be pumped out mechanically to prevent inland pooling.

When the flood in the river or tidal rise of the sea is gone, the gate automatically starts releasing canal water out as shown in figure-9.

Gates are provided for the canal network at each sea fall or each river fall. The gate structure must be strong enough at sea falls to block even a Tsunami tidal wave. Therefore Tsunami susceptible lowland

countries must build higher dykes in bank preservation. The dyke ashore is not expected to be of the same height of the maximum possible tide, but a dyke at least half of the height would certainly dissipate devilish energy of the wave by 90% and the damage should be minimal.

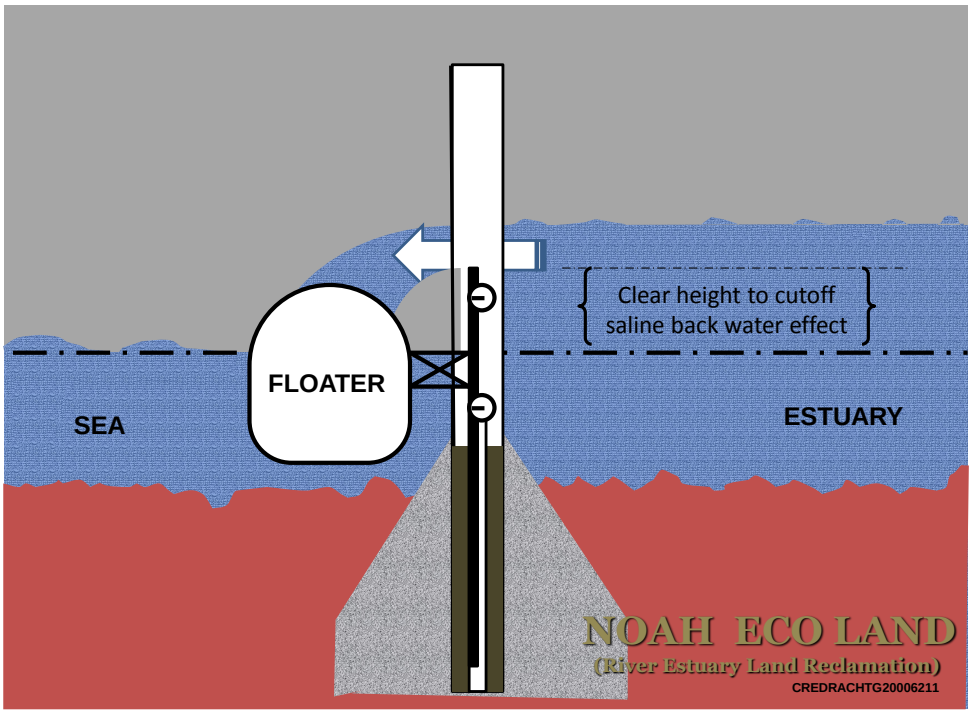



**FIGURE-10**

## 2.3 Lowland Isle Reclamation

2.31 Bio reef isles just like of Maldives, don't face the danger from inland floods because there are no rivers and also rainwater can be easily drained to the sea.

2.32 Bio reef isles don't face earthquakes because bed rock in the ground is deep below the surface. (it should be understood that the rigidity of the bed material below the ground, accounts for the easy transfer of massive energy stock of an earthquake, through geo waves)

2.33 Isles don't create tornados because **potentially heated humidity** above land area is not grown when it is surrounded by sea.

2.34 Tsunami waves cannot make a big damage to a bio reef isle because energy of the wave is heavily dissipated by other coral reefs in the surrounding.

2.35 Bio Reef isles can therefore easily be developed as Noah Eco-lands through sustainable land &water resource development strategies for survival against forthcoming disasters by improved level of self sufficiency in water, food and energy.


**FIGURE-11**

2.36 Landscaping is done so that a rainwater harvesting lake is created at the center and the cut soil is used in raising the banks ashore. Bank must be preserved by the 'wall rake technique' or any other suitable technique to protect the land from tidal rise of seawater.

2.37 As shown in the figure-11, hamlets are planned upon the filled outer circle and the land is gradually sloped towards the inland lake, providing space for agriculture.

2.38 Water in the lake is naturally treated and pumped for drinking purpose. The sewer and liquid waste from the habitats is naturally treated by anaerobic degradation processes and the out flow, which is rich of nutrients, is used for agriculture. The novel technique '**Subsurface Textured Irrigation**' is introduced herein for cost effective mini agricultural projects.

## 2.4 Subsurface Textured Irrigation

2.41 This is an integrated process which combines Liquid Waste Management and Habitat Agriculture together.

2.42 The liquid waste & sewerage from the habitat is naturally treated by anaerobic degradation and the nutrients rich out flow is mixed with irrigation water to feed the agricultural land from the bottom.

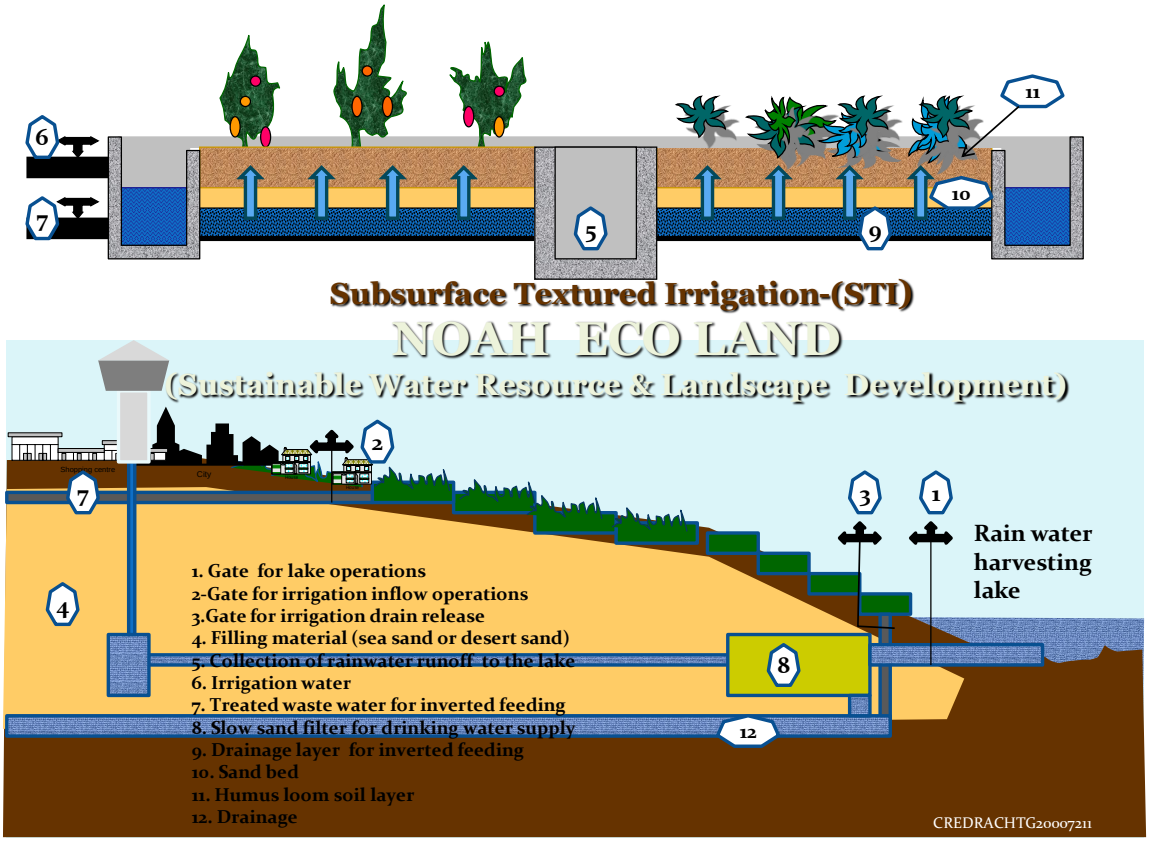



**FIGURE-12**

2.43 In this innovative technique the subsurface is textured in such a way that, water mixed with organic fertilizer is fed inverted to the root zone of the vegetation as shown in the figure-12.

2.44 In this technique soil is always kept loosely compacted so that there is no need to plough because the entrapped air in the drainage layer (when the field is dry) comes up through the soil when inverted watering is started.

2.45 The fields are washed to remove increased salinity seasonally by surface runoff of rainwater and the lake at the down is well established with a balanced aquatic ecosystem for **natural water purification** through bio manipulation between plant and fish species.

## 2.5 Multi Watershed Contour Irrigation

2.51 This technology is for mega irrigation projects by which mild sloppy dry/semi arid/ arid zones can be developed for community settlements. **Surface rainwater harvesting and storing between contours** of the land to create **multi watersheds** is the theory behind the technology.

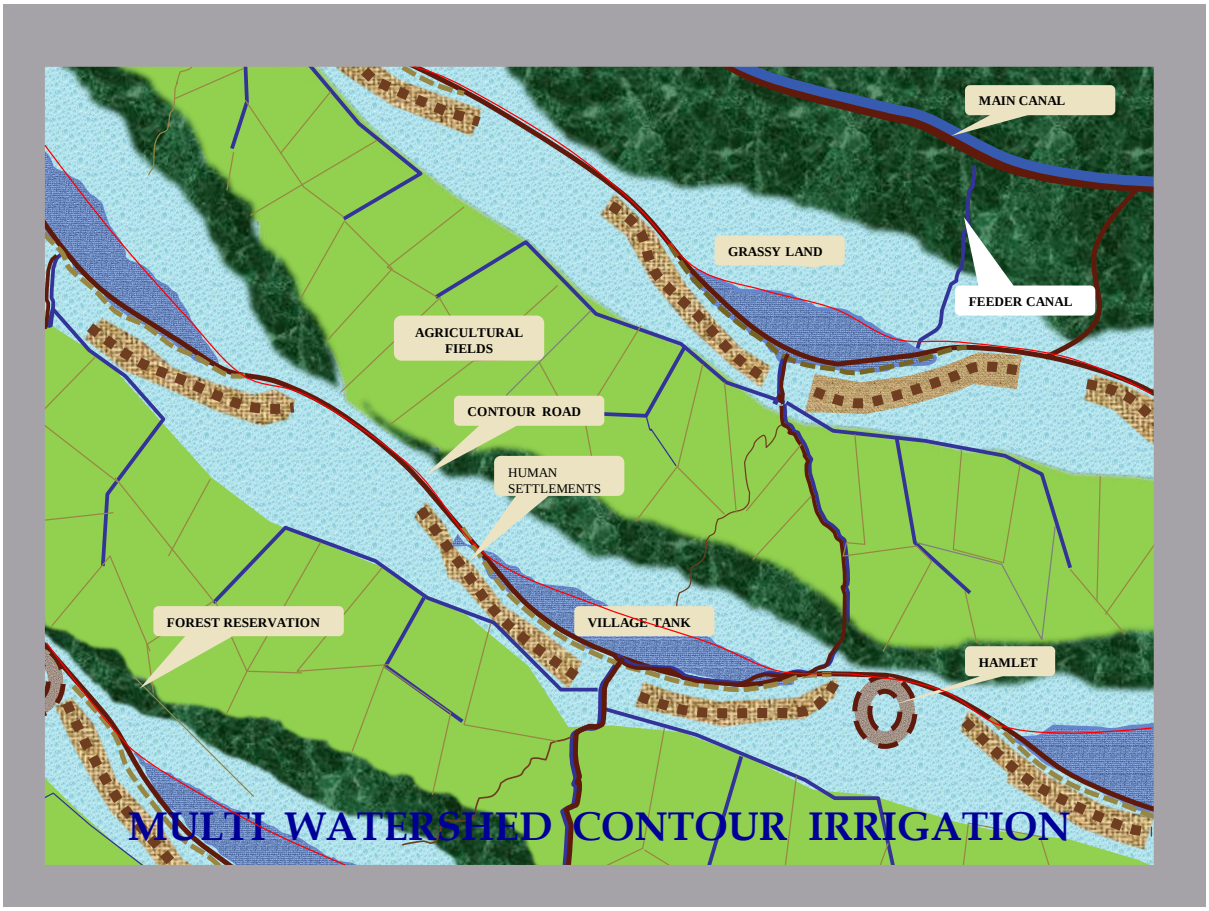



**FIGURE-13**

2.52 A series of contour bunds(also used as roads) are built and where there is a need for a storage then the bund deviates the contour a little bit as shown in the figure-13, creating small line reservoirs to catch hold rainwater runoff.

2.53 Human settlements are established adjacent to the bund road and just below the village tank so that drinking water must be available in shallow percolation wells.

2.54 Agricultural fields are coming below the settlements and fed by a canal network driven from the village tank

2.55 A strip of forest and a grassy land is reserved beyond the fields to be a buffer zone for surface runoff and saline water from fields of which salts are up taken by plants and naturally purified water is gradually drained in to the next reservoir bellow.

2.56 This technology creates a sustainable balanced ecosystem with interaction of human beings, animals, plants and fish species.

***2.57 This innovative technology is formed by extracting some important features from the ancient cascade irrigation system, of 17,000 storages, established between 4th century BC and 8th century AD in the North Central dry zone of Sri Lanka. Sustainability of that ancient socioeconomic system is well proven by the still standing irrigation network and the related eco friendly habitat culture.***

# 3.0 Conclusion

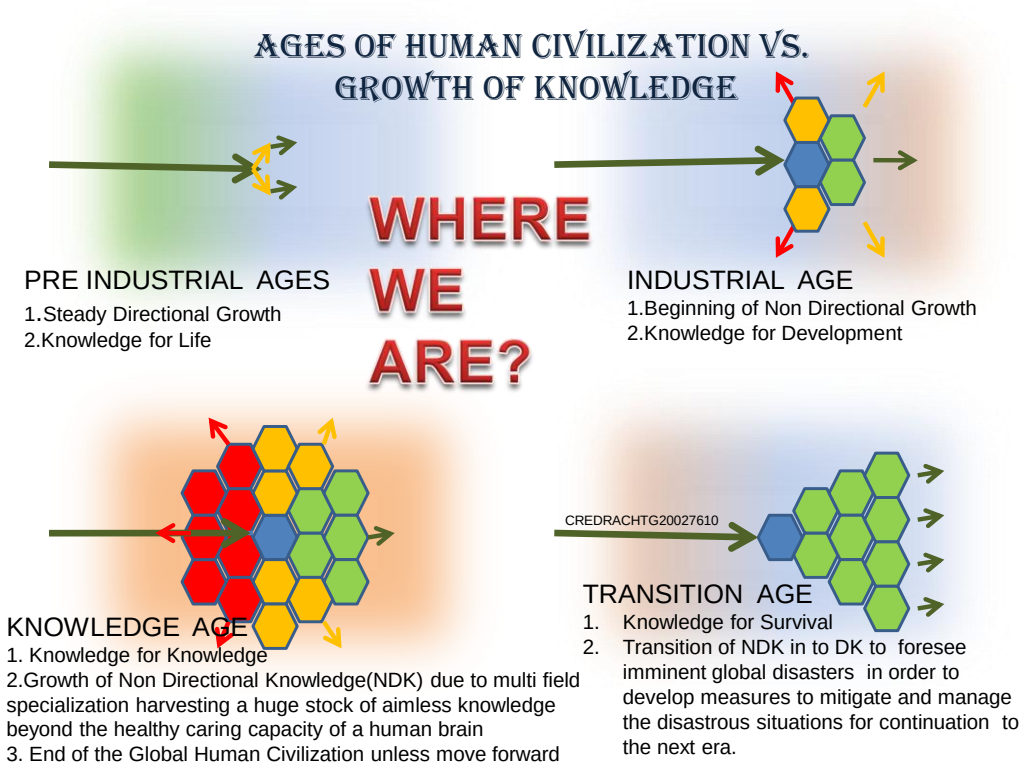
## 3.1 Gaps and Voids

3.11 Subject fields have been developed up to Himalayan heights, as it seemed by the 21st century, leaving lots of **gaps and voids** within or otherwise how the **virgin ecosystem** was wronged by man by name of Development, inviting a so destructive **climate change?**

3.12 The majority of disastrous situations that we face today, are naturally born but can be identified as **manmade** in analyzing of the root cause.

3.13 **Knowledge** in present day is rapidly grown but it doesn't seem to have a proper **Direction** and as a result**,** a **Non-Directional Knowledge (NDK)** bomb has been created to **end up** the global human civilization.

**3.14 Knowledge for Knowledge***(extracted from the publication 'Where We Are?/Space Dynamics-2010)*

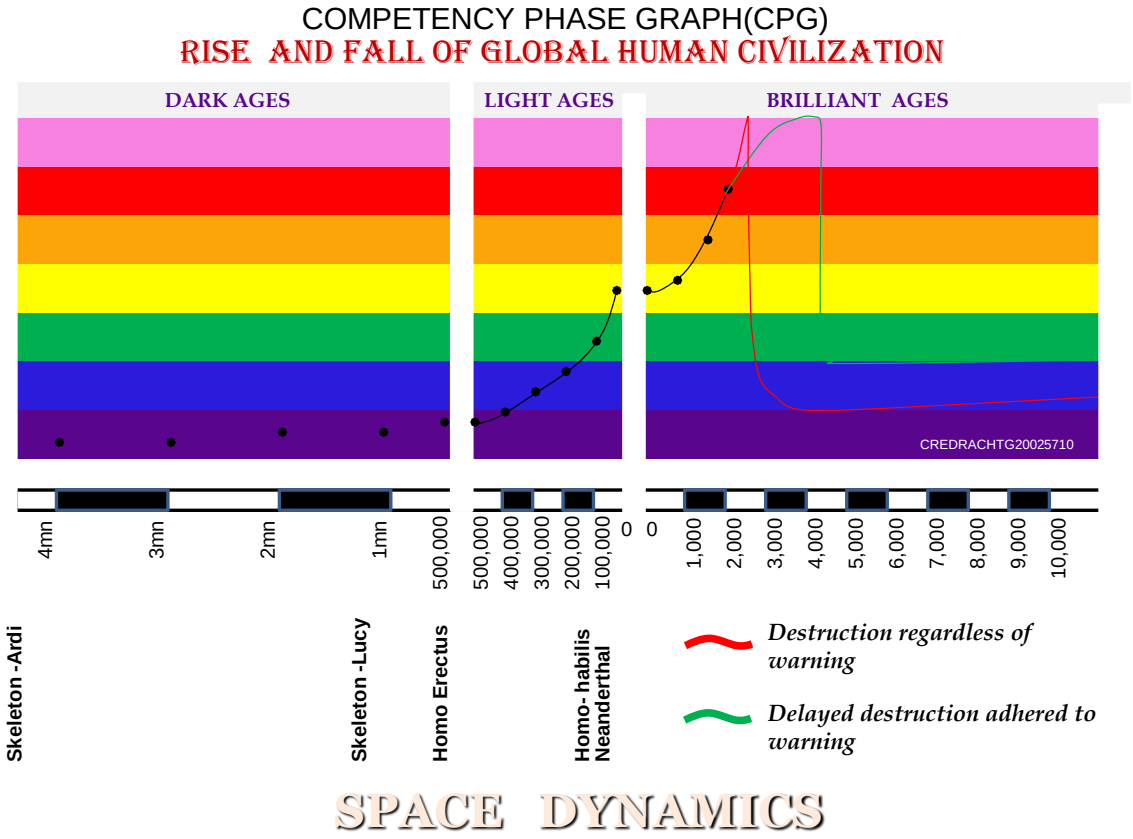


*Obviously in the ages before the industrial age,* ***Knowledge*** *has had a clear inclination towards* ***Life.*** *Also there born* ***philosophers*** *and* ***universalists*** *by whom new angles were shown to direct mankind for* ***betterment of Life*** *and* ***destinations.*** *There was only one subject called '****Natural Philosophy****' by the time of* ***Aristotle.***

*It was the* ***Industrial Age*** *at which Knowledge starts to be branched in different inclinations by name of* ***Development****. Today we live in a world where* ***knowledge dominates*** *and it is branched in thousands and one different field expertise as if to say, this is the* ***Age of Knowledge.***

***Specialists*** *are busily engaged in* ***experiments*** *and harvested new knowledge all the time but the turnover is moreover* ***Non Directional*** *and* ***aimless****.*
*That is because, the prime objective of one subject could perhaps be directly opposite to another and as a result, knowledge is only* ***expanding violently*** *like a bomb but* ***not moving in any direction****.*

*3.15* **What is the End?***(extracted also from the publication 'Where We Are?'-2010)*



***Growth of NDK due to Multi Field Specialization*** *without setting of a* ***mission*** *under a g****lobal vision*** *has obviously made this damage and the steady march of the* ***great human civilization*** *is obviously reaching towards a* ***steep fall.***

3.16 The above extraction, from the experimental monograph published in 2010, is made just to draw reader's attention upon the gravity of the forthcoming disastrous situation. ***Time and Tide wait for no man*** and however, what we have got ultimately is to prepare ourselves to face the situations.

END

*by*
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