



# Climate Change

## Climate change challenge – photosynthesis vs. hydro-electrolysis principle

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### General Note



Article is recommended to print as color version in recycled paper. [Save Plants, Save Climate](#).

### ABSTRACT

In the past 50 years, we did many things in the name of innovation, and we changed our climate as much as possible. In order to solve this kind of problem, we must rectify it and thereby we get a solution. This paper describes more specifically climate change in world and a solution by means of Hydro-Electrolysis.

**Keywords:** Automobile emission gases, Photosynthetic effect, Hydro-Electrolysis principle.

### 1. INTRODUCTION

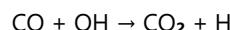
Everyone knows climate change occurs due to so much of innovation. In 19<sup>th</sup> century and 20<sup>th</sup> century human race wiped off our environment by increasing number of automobiles, factories, refrigerators etc., These things spoil our environment and bring some

climate changes, by means of emission of gases like carbon-dioxide, carbon methane, CFC etc. When these gases are overloaded, it will be very harmful to human race. The artificial climate change was majorly caused by automobiles. It challenges us in many ways and it is just asking us "HOW CAN YOU SURVIVE WITHOUT ME?" .We know, without automobile transportation, we will be in old world. At the same time, if we use more number of automobiles, it again challenges us and just asks "HOW CAN YOU SURVIVE WITH ME?" It will bring climate changes and warm our world as much as it can! This will be considered to be major impact for Human prototype annoying. So, we have to increase oxygen instead of carbon-dioxide.

## 2. REPORT OF CARBON EMISSION

The transport sector is major contributor to carbon monoxide and carbon dioxide (Table 1). Figure 1 represents the report about emission of carbon monoxide all over the world.

The effect of the reaction is oxidizing of CO to CO<sub>2</sub> by hydroxyl radical OH (Lixin FU, 2009).

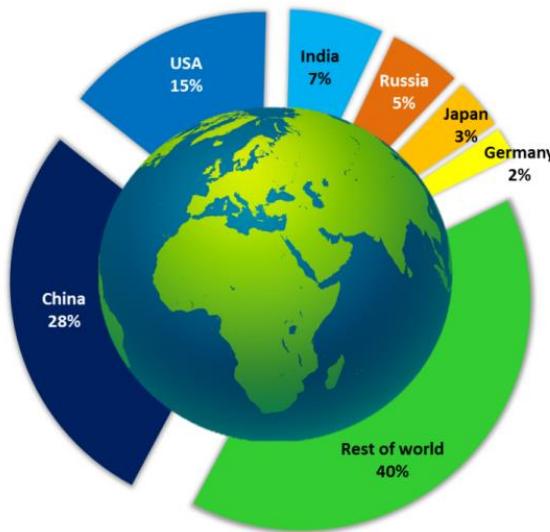


Thus, carbon monoxide is easily converted into carbon dioxide.

**Table 1**

Gas release worldwide by automobiles

GAS PER DAY	PERCENTAGE
CO & CO <sub>2</sub>	68.9
SO <sub>2</sub>	7.1
N <sub>2</sub> O	12
NO <sub>x</sub>	5
NH <sub>3</sub>	3
OTHER	4



**Figure 1**

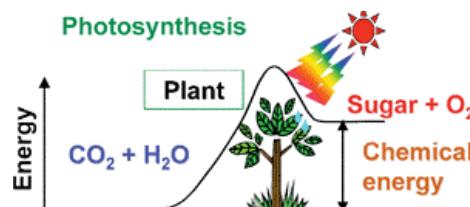
Statistical Work Report of world - Carbon Emission

### 3. PHOTOSYNTHESIS EFFECT

Photosynthesis is a very big process yet we can simply explain through Calvin cycle Short equation:



All we know is that oxygen is produced by a Natural process (that is done by plants). We think plants convert carbon-dioxide into oxygen in day time. Even further during night time plants convert oxygen into carbon-dioxide, but it is absolutely wrong." PLANT NEVER CONVERTS CARBON-DIOXIDE INTO OXYGEN [or] OXYGEN INTO CARBON-DIOXIDE". A plant does photosynthetic process to make their own food but, we say during photosynthetic process plants consume carbon-dioxide and emit oxygen (Figure 2).



**Figure 2**

Short form of Calvin Cycle (Photosynthesis process)

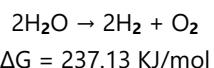
Photosynthesis is basically a two step process, and in the first step water is converted into oxygen. The first step directly requires LIGHT ENERGY, which is captured by the photosynthetic pigments, mainly chlorophylls. The chlorophylls convert LIGHT ENERGY (photon) into chemical energy, in the form of high energy electrons. The chemical energy is used in photosynthetic reaction centres to split two molecules of water, producing four electrons, four protons and two oxygen atoms, which combine to form oxygen gas. In the second step of photosynthetic process, the above chemical energy converts carbon-dioxide into carbohydrate (food for plants). This was explained at Calvin cycle and the process is called carbon fixation. Hence, O<sub>2</sub> is produced before photosynthesis is completed, just by using an almost 'electrolysis' process.

In 1941, RUBEN (M.Randall, 1941) reported that his team used an isotope of oxygen-18. The oxygen-18 isotope is non-radioactive, and water contains this oxygen-18 (Harmon Craig, 1961 ;). This oxygen-18 was found in first step process NOT in second step process during photosynthesis. Thus, it was confirmed by Ruben that a type of electrolysis process is done by plants to produce oxygen. This paper specifically describes Hydro-Electrolysis to produce O<sub>2</sub> directly.

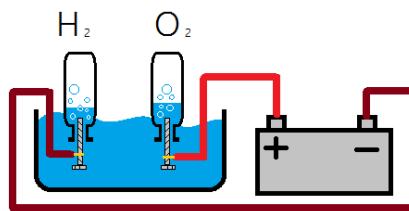
### 4. METHOD AND DISCUSSION

#### Hydro-Electrolysis

We know that if electricity is used for decomposing a substance, then it is called 'Electrolysis'. Similarly, Hydro-Electrolysis is decomposing of water (H<sub>2</sub>O) into Hydrogen (harmless gas) and oxygen due to an electric current passed through water (Figure 3).



Minimum potential of battery = 1.23 volts

**Figure 3**

Hydro-Electrolysis Process (See text specification of  $\Delta G$  and potential)

$\Delta G$  is Gibbs free energy (Themis Matsoukas, 2012;), which is required energy to decompose a substance ( $H_2O$ ) and Graphite (or) Copper (or) Bronze rod can be used as electrodes for anode and cathode (Romdhane Ben Slama, 2013;). Thus, from this point to view we can produce  $O_2$  artificially.

Here, there may be an advantage in production of  $O_2$  without photosynthesis.

## 5. CONCLUSION

The Climate change is mainly due to innovation of automobiles that produce CO and  $CO_2$  in our atmosphere. Through Hydro-electrolysis method we cannot convert  $CO_2$  into  $O_2$  but we can increase sufficient amount of Oxygen in our atmosphere. The increasing level of  $O_2$  in our atmosphere may lead to change our climate in a Good manner.

## FUTURE ISSUES

Scientists have to develop methods to produce oxygen through modified electrolysis procedures. This will increase level of oxygen in atmosphere to control climate changes.

## DISCLOSURE STATEMENT

There is no special financial support for this research work from the funding agency.

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