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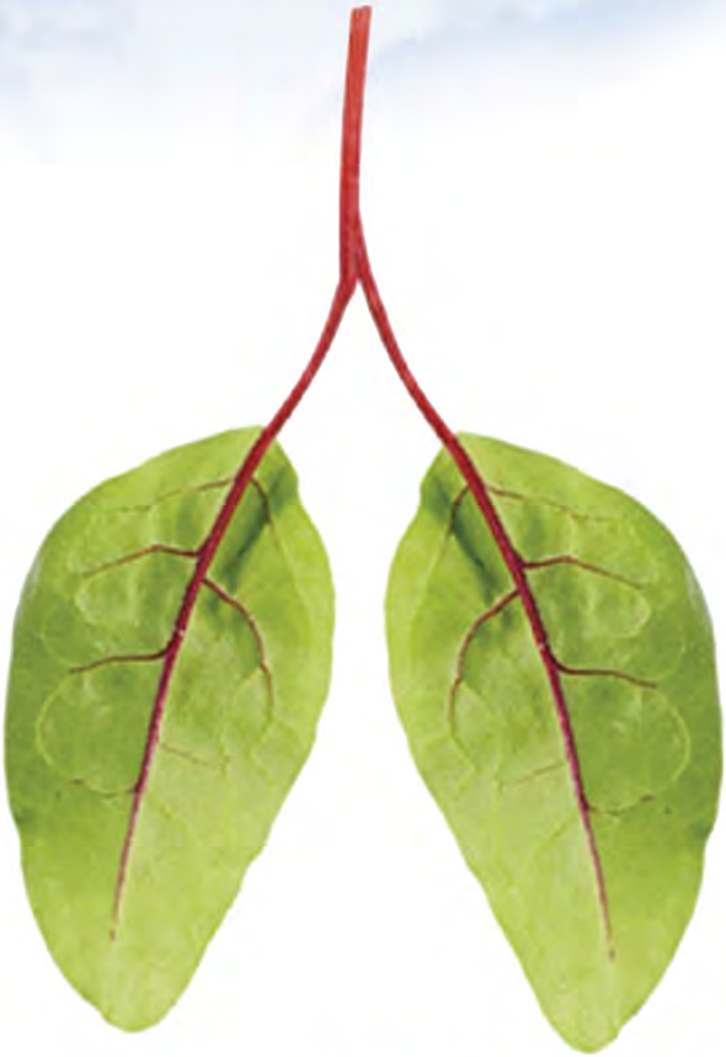


AIR OUR LIFELINE

AIR IS OUR LIFELINE

Most of us enjoy watching the blue skies with clear white clouds. Today, our heart rends as we see grey clouds of smogcover this brilliance of nature. One afternoon, as I was driving along the roads of Mumbai, my eyes were drawn to the arrangement of flowering plantsbeautifyingthe road dividers.An elderly gentleman was watering the plants, and gently tendingto the green leaves. I pulled overand approached him.

Through this conversation, underscored by the aroma of freshly watered soil mixed with thedeep floral fragrance,I learned that this gentleman has been nurturing these plants and flowers that grace our dividers for over 40 years with such caring. This got me thinking,were these flowering plants selected merely for their aesthetic beauty? Or have the hands that carefully worked this soil ever understood their vital purpose of carbon-sequestration?

I marvelled at the splendour of these flowering plants, as they endured sharp gusts caused by speeding cars, raisingdust and expelling fumes, happily withstood the air pollution surrounding it and in fact sought to reduce these contaminants from the air.Nonetheless,as I recollect the sunlight filtering through them illuminating the entire scene, this small interaction is seeded deeply in my memory. It got me thinking "Are we getting to a point where even plants require masks to breathe easy?"

Air pollution has been essentially associated to human activities and what was once cited as minor annoyancein the middle-ages, has grown into a much larger issue since the 19th century, the industrial revolution compounding its effects.

The common belief is that vehicular and industrial are the largest cause of air contamination, while this is true, in a country like India it is impossible to ignore the impact of wood fires and kerosene stoves used for cooking and warmth as well as the practice of burning the fields after harvest. In the immediate vicinity of the homes in most of rural India these practices have an impact not only on the environment but these wood fires and kerosene stoves are often burned in rooms with poor ventilation leading to generation of carbon monoxide and even particulates of carbon. These particulates and the carbon monoxide can have a terrible, sometimes fatal impact on health of those who breathe it in.

It is evident that the effects of air pollutants on the environment are substantial. Some of the obvious effects are damage to health, variations in global climate, acidification of fresh water, lossof biodiversity, corrosion of materials, erosion of cultural treasures

andreduction in agricultural yield.Air pollution is a genuine public health and environmental issue that can lead to global warming, acid rain, and the deterioration of the ozone layer. In a growing country like India, combatting these impacts of Air Pollution can place great strain on the healthcare, political and financial system of the country. Should we ignore this and spend more on curing these effects or take concrete measures to avoid them completely?

Reversals in our polluting ways are not unheard of. One of the largest contributors to CFCs largely thought to be responsible for the hole in the ozone, were released by refrigerators. In building the ultimate solution to the cooling problem the inventor Thomas Midgley Jr. created another problem which wouldn't be realised for a very long term.

However, through systematically stringent government restrictions and education of the population we have managed to come up with alternatives which are far more cost efficient and environmentally friendly.Compared to older models, new fridges annually saveupto 3 barrels of oil, 500kgs of coal, or 15,000 cubic feet of natural gas.This also means, cleaner air.

This success story is proof that if we approach the threats to clean air and by association better health holistically we can actually begin to put a dent in cleaning up the problems we have already created.

I believe that this success should propel us to seek innovative ways of eradicating this pressing problem for clean air and the use of environmentally destructive chemicals without causing economic and social problems.

It has to start with education, educating ourselves of the effects of pollution, identifying and studying their long term impacts and eventually ensuring that we don't repeat our mistakes by holding ourselves, the industries and the government accountable for the necessary action to be taken. We must apply a Value Chain Analysisto where our waste goes and its effects on our environment and take corrective measures when we can.

Few ways in which we can reduce Air Pollution, are:

- Educating ourselves about air pollution and how to combat it
- Reduce our reliance on automobiles, using fuel efficient, transport and using public transport or carpools when available
- Planting More Trees
- Conserving Energy or moving to renewable energy
- Disposing off e-waste and other toxic waste through the correct channels

> Margaret Mead, an American cultural anthropologist, once said, "We won't have a society if we destroy the environment" – The environment is in desperate need of our attention.

- Recycling to reduce waste being dumped in landfills
- Working with local authorities and industries to reduce their impact on the air quality

Air has always been a metaphor for freedom and future generations must be able to breathe air free of toxic pollutants. In fact, I believe that Clean, Breathable Air should be a fundamental Human Right and I am optimistic that if we take the necessary steps we can ensure that this comes true.

Do you think you can escape the outside pollution by remaining in-doors with your air-conditioners switched on? Do you think as long as you are indoors, outside air can be overlooked? In reality your indoor air is way more toxic than the outdoor air.

Almost 90% of our time is spent indoors. What comes to your mind when you think of air pollution? Smog, power plants and emissions from cars? But, these are instances of outdoor air pollution. Indoor air can be polluted too. Any harmful contaminants in air are pollutants. Indoor air pollution occurs when pollutants emitted from gases and particles contaminate the indoor air. Indoor air pollution exists and is far more hazardous than outdoor air, since it is much more concentrated with pollutants than outdoor air.

Hospital air conditioning must accepts a more significant role than just the preferment of comfort. Surveys illustrate that patients in controlled environment usually have more speedy physical recovery than the in uncontrolled environment. To prevent infections from spreading, hospitals need to take exceptional precaution during design and conservation stage keeping Air quality as their priority.

So, what can you do as an individual? You can make a choice to support clean air in your community. A positive impact on your carbon footprint will have positive effect of air quality. Let's fervently invest in Naturally Clean Air.Air offers a dwelling where life can cycle abundantly.

Ranjit Barthakur, Chairman,
APPL Foundation

TWO TECHNIQUES TO PROMOTE AIR QUALITY AT HOME AND WORK

By Prof. Gunter Pauli

Any city in the world is rightly worried about air quality. Pollution levels have reached deadly levels. However, we often neglect the fact that everyone sleeps on average 8 hours a day, and works 8 hours a day in an office. The most important air quality is therefore not just the pollution levels affecting the outdoor, rather when we spend two thirds of our life in a few particular rooms we should be very concerned about the space we occupy when were we least suspect any negative effect.

A typical bedroom is kept rather dark during day and night, unlike a living room or a kitchen which is often designed for a better airflow. The windows have curtains on the inside and window shields on the outside. This implies that we protect the inner side from the natural cleansing power of ultraviolet that penetrates deep into any material, while the carpets laid for comfort quickly accumulate mites and their waste which cause respiratory allergies and diseases. While curtains and carpets make a lot of sense it in a sleeping and working environment,

The indoor air quality has become a challenge. This is an unintended consequence of the architects' worry about energy costs and the excessive emission of carbon dioxide. Energy efficient buildings were sealed with triple glazed windows, walls protected with a special chemical layer known as Tyvek© (made by Dupont de Nemours) eliminating any breathing of moisture and air, filling the roofs with insulation material, lacing all with fire retardants, forcing air to circulate continuously through cleansing filters that remove particles and micro-organisms through the application of bactericides which are now standard components of the air we breath. Who expected that energy savings, through insulation and triple windows would lead to bad indoor air quality, with mites defecating so much organic matter that it turns into one of the main causes of asthma and respiratory diseases?

> It has been noted by leading experts on sustainability that if we are not able to bring sustainability to our life and home, how do we expect to transform our environment into a sustainable one.

There is an urgent need to rethink

the design of home and office. The first requisite is that air flows. There design of bioclimatic homes both in hot or cold, dry or humid environments have been successfully implemented over centuries and have gained in popularity since the net plus energy buildings have been promoted, with special considerations for the health of the occupants. The well known "Termite Technology" that has been applied by pioneering architects like Anders Nyquist (Sweden) and Mike Pierce (Zimbabwe) in schools, offices, multi-story apartments, and even shopping centers. The impressive learnings from the termites which always keep their nests at the same temperature and humidity demonstrated that it is possible to apply both traditional concepts and natural system designs to modern built environments.

This technique works with great precision since the laws of physics are predictable and the results can be planned for. Warm air exits the building through a chimney, creating an under-pressure, which pulls air into the building through underground pipes that self-regulate temperature and humidity. The length and the width of the pipes are modeled through mathematics and not only eliminate the need for a thermostat, it also reduces capital investments.

Paolo Lugari and his team at Las Gaviotas in Colombia went one step further and put this know-how to work to dehumidify a surgeon's room in a field hospital in the tropics with great success. Carolina Salazar, a Colombian architect with special expertise in bamboo structures applied these principles to a farmers' house - only to receive complaints that the air in the bedroom (where the outside is on average 28-32 degrees) is too cold for comfort.

These airflows render buildings highly energy efficient and comfortable to live and frequent. Thus the first step is indeed to ensure that particles leave the building continuously and that a fresh supply of oxygen rich air fills the space ... and our nostrils.

However, particles remain an issue and a building located inside a city, next to a freeway or close to an airport is likely to accumulate an excessive amount of airborne matter which is detrimental to anyone's health. The successful approach taken to remove this micron size dust functions like Nature does: filter the minute pollen, diesel particles, plastic micro-fibers, solvents, phthalates, aerosols and complex chemicals and so many more out of the air by circulating the full volume of air in the building through humid plants.

This approach requires a shift in building maintenance where due to costs living plants have been largely replaced by paintings on the wall, or synthetic lookalikes that accumulate dust instead of pulling these out of the environment. Plants in were removed from bedrooms since these emit CO2 at night. Plants now regain their much needed space in our living environment, both at home and at work. This technique is known as "The Living Filter" or "Levande Filter" as this was first developed for NASA (USA) by a team of Swedish scientists.

The approach is not only remarkably effective, it also adds beauty to the work environment while filling the air with oxygen. The building design steers air through a dense jungle of 150 different tropical plants which are subjected to a continuous flow of light (of course only the highly efficient LED) and moisture (through

This is very much in line with the Blue Economy philosophy where we are not expecting progress by mastering costs, we wish to put business on a more competitive path through generating more value for everyone, including the community and the environment.

a 15 minute interval of moisturising water spray). The natural flow fills the space with contaminated outside air, and re-enters void of particulates into the living space enriched with freshness. When this building design was first applied at a Ford Dealership in Ume (Sweden) and then at the Airport of Sundsvall (Sweden) the results were so impressive that many thought the measurements were wrong.

This insight has resulted in the increased design of buildings with plant life under the ceiling (not on the floor), permitting oxygen to naturally flow down, and to shift the measurement of the health of the people not by the days they called in sick, but rather by the increased productivity at work.

These are only two of the basic techniques to turn our living and work space into a healthy environment, even when the outside suffers from contaminated air. We should go out of our way that the two places where we spend most of our life (at home and at the office) take air quality serious and know that if we master the immediate environment, then we can venture further away from the space we have under our control

GUNTER PAULI

Prof. Gunter Pauli is a self-styled "serial entrepreneur" author and initiator of The Blue Economy. His entrepreneurial activities span business, culture, science, politics and environment. He has also authored 15 books and 200 fables which have been published in 30+ languages.

According to the (WHO) World Health Organization, around two million people die prematurely all over the World from the effects of polluted air every single year. Air pollution is a Major problem—and not just for people living in cities.What can we do about it and Help in our Own way to Rectify It .

Air lets our living planet breathe—it's the mixture of gases that fills the atmosphere, giving life to the plants and animals that make Earth such a vibrant place.

Air pollution is a gas released in a big enough quantity to harm the health of people or other animals, kill plants or stop them growing properly, damage or disrupt some other aspect of the environment .

Since Earth's atmosphere is very turbulent—many of us live in windy countries—air pollution will often disperse relatively quickly. In less enlightened times, factory operators thought that if they built really high smokestacks, the wind would simply blow their smoke away, diluting and dispersing it so it wouldn't be a problem.

Forest fires (which often start naturally) can produce huge swathes of smoke that drift for miles over neighboring cities, countries, or continents. Giant volcanic eruptions can spew so much dust into the atmosphere that they block out significant amounts of sunlight and cause the entire planet to cool down for a year or more.

The Health Costs of Air Pollution :Exposure to particulate matter for a long time can lead to respiratory and cardiovascular diseases such as asthma, bronchitis, lung cancer and heart attacks. The Global Burden of Disease Study for 2010, published in 2013, had found that outdoor air pollution was the fifth-largest killer in India and around 620,000 early deaths occurred from air pollution-related diseases in 2010. According to a WHO study, 13 of the 20 most-polluted cities in the world are in India.

THE MAJOR DANGEROUS GASES IN AIR POLLUTION ARE

1. **Sulfur dioxide** : Coal-fired power plants are the world's biggest source of sulfur-dioxide air pollution, which contributes to smog, acid rain, and health problems that include lung disease. (India and China are the world's largest consumers of electricity from Coal Fired Power Plants)
2. **Carbon monoxide :** This highly dangerous gas forms when fuels have too little oxygen to burn completely. It spews out in car exhausts.
3. **Nitrogen oxides:** Nitrogen oxide pollution comes from vehicle engines and power plants, and plays an important role in the formation of acid rain, ozone and smog. Nitrogen oxides are also

"indirect greenhouse gases"

4. **Particulates:** These are the sooty deposits in air pollution that blacken buildings and cause breathing difficulties. Particulates of different sizes are often referred to by the letters PM followed by a number, so PM10 means soot particles of less than 10 microns (10 millionths of a meter or 10μm in diameter). In cities, most particulates come from traffic fumes. (This is Now regularly monitored in Various parts of Delhi and NCR as it is the Indian City with the Highest levels of Pollution During Winter Months)

5. **Ozone:** In the stratosphere (upper atmosphere), a band of ozone ("the ozone layer") protects us by screening out harmful ultraviolet radiation (high-energy blue light) beaming down from the Sun. At ground level, it's a toxic pollutant that can damage health. It forms when sunlight strikes a cocktail of other pollution and is a key ingredient of Smog .

THE 3 MAJOR CAUSES OF AIR POLLUTION ARE CATEGORIZED BELOW .

1) **Traffic :** There are something like a half billion cars on the road today—one for every two people in rich countries such as the United States. Virtually all of them are powered by gasoline and diesel engines that burn petroleum to release energy.

   Traffic congestion reduces average traffic speed. At low speeds, scientific studies reveal, vehicles burn fuel inefficiently and pollute more per trip.

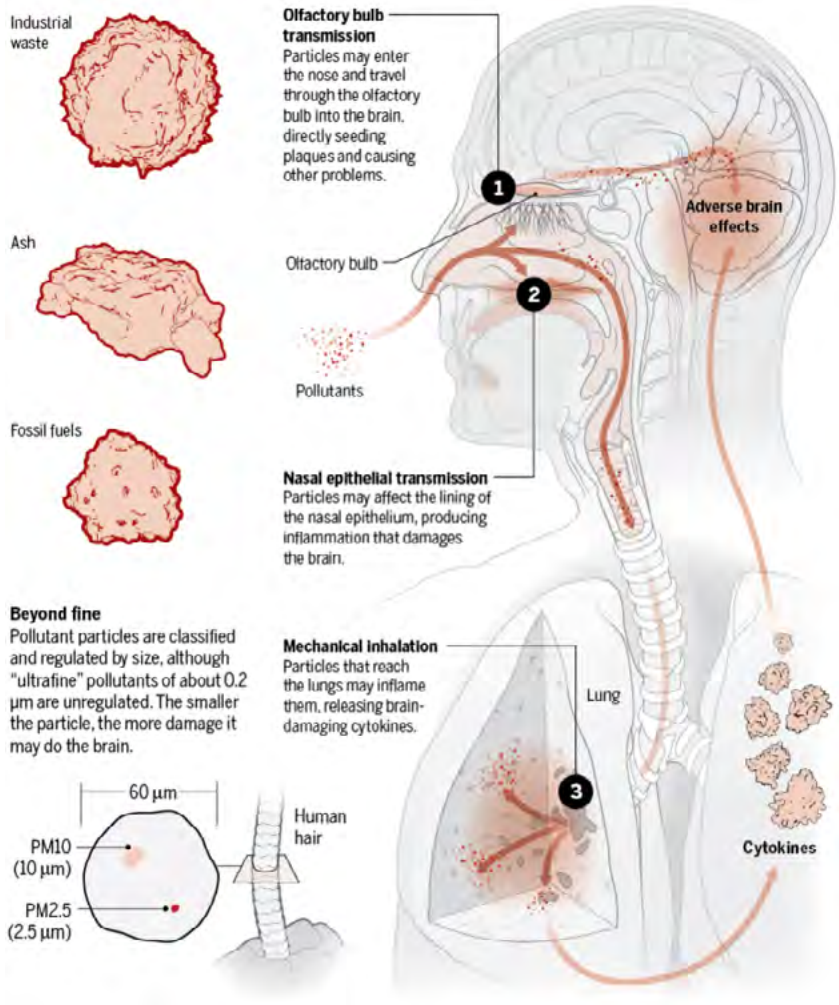
2) **Power Plants for Generating Electricity :** The overwhelming majority of electricity (around 70 percent in the United States, for example) is still produced by burning fossil fuels such as coal, gas, and oil, mostly in conventional power plants . Due to this power plants produce a range of air pollutants, notably sulfur dioxide, nitrogen oxides, and particulates.

3) **Industrial plants and Factories:** Industrial plants that produce metals such as aluminum and steel, refine petroleum, produce cement, synthesize plastic, or make other chemicals are among those that can produce harmful air pollution .

What effects does air pollution have :

Air pollution can harm the health of people and animals, damage crops or stop them growing properly .

2) **Human Health** - According to the World Health Organization (WHO), air pollution is one of the world's biggest killers : it causes around two million people to die prematurely each year. Many of these deaths happen in developing countries (over half a million in India alone),



but wealthier industrial nations suffer too: in the United States, for example, around 41,000 people a year are estimated to die early because of air pollution .

3) Deaths aren't the only human consequence of air pollution. For every person who dies, hundreds or thousands more suffer breathing problems such as asthma and bronchitis.A 2013 study on non-smokers has found that Indians have 30% lower lung function compared to Europeans.

4) The World Health Organization, claim 300,000 to 400,000 people die of indoor air pollution and carbon monoxide poisoning in India because of biomass burning and use of chullahs.

As per the British Medical Journal the Lancet , Individuals who live near Major Roads and Intersections have a Much Higher rates of Dementia (Alzheimer's Disease) due to Pollution Particles From Heavy Traffic having a Negative Impact on the Brain due to Ultrafine particles, Nitrogen Oxides and particles from Tyre wear. (This research was done from 2001 to 2012 in UK and Canada)

2) Agricultural Effects - One of the things that characterized the 20th century was the huge growth in industrial agriculture—using fertilizers, pesticides, and so on to increase crop yields and feed the world's ever-growing population . These aren't the only chemicals that crops are exposed to, however. We know that air pollution (in common with water pollution) can seriously affect the growth of plants. At one end of the spectrum, it's easy to find chemical residues (everything from toxic heavy metals such as lead to cocktails of brake fluids and other chemicals) in plants that grow alongside highways.

How air pollution works on different scales

Air pollution can happen on every scale, from the local to the global. Sometimes the effects are immediate and happen very near to the thing that caused them; but they can also happen days, months, or even years later—

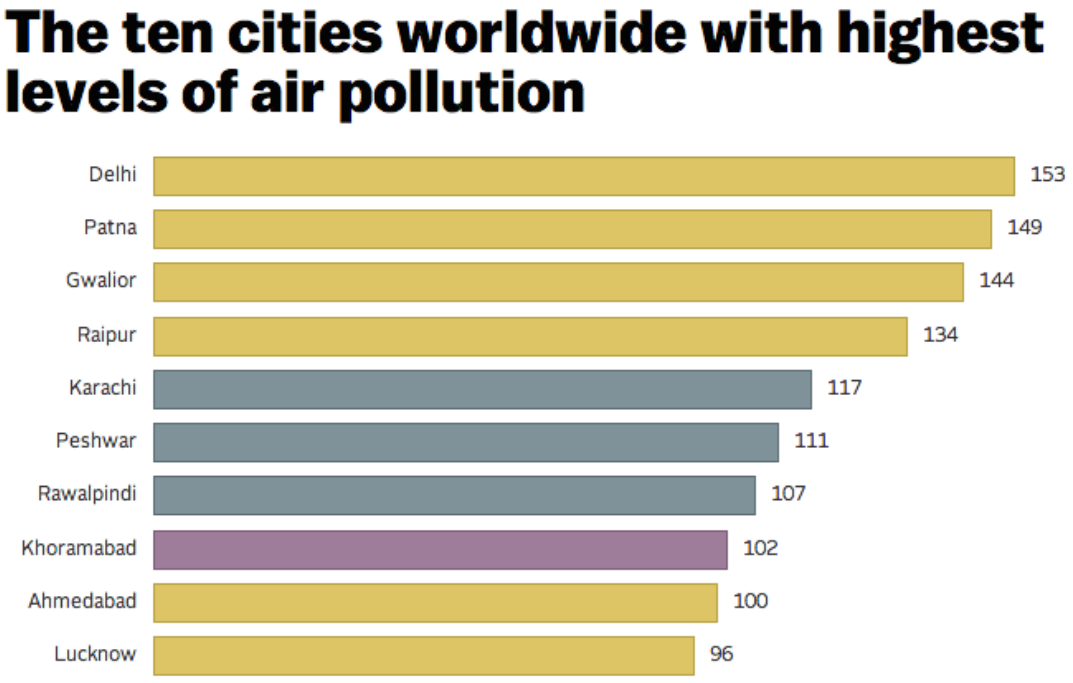
Indoor Air Pollution :

If you live in a city, you might think your home is the cleanest place you can be—but you're probably wrong. Outside, though the air may seem polluted, it's constantly moving and (in theory at least) pollutants are continually being diluted and dispersed.Inside .

1) Detergents and household cleaners, aerosol sprays, shoe polish, hair wax, paints, and glues are just a few of the everyday chemicals that can release air pollution into your home.

2) If you have a coal- or wood-fired stove and it's not properly ventilated, it will generate dangerous and toxic (but colorless and odorless) carbon monoxide gas.

3) Your new Bathroom shower curtains could be releasing VOCs if it's made from a plastic called PVC .



NEIGHBORHOOD AIR POLLUTION

How clean your air is depends on where you live : Air is generally far cleaner in rural areas than in urban areas , for example, where factories , chemical plants, and power plants are more likely to be located and traffic levels are much higher.

GLOBAL WARMING

Every time you ride in a car, turn on the lights, switch on your TV, take a shower, microwave a meal, or use energy that's come from burning a fossil fuel such as oil, coal, or natural gas, you're almost certainly adding to the problem of global warming and climate change: unless it's been produced in some environmentally friendly way, the energy you're using has most likely released carbon dioxide gas into the air.

Raising awareness and changing behavior

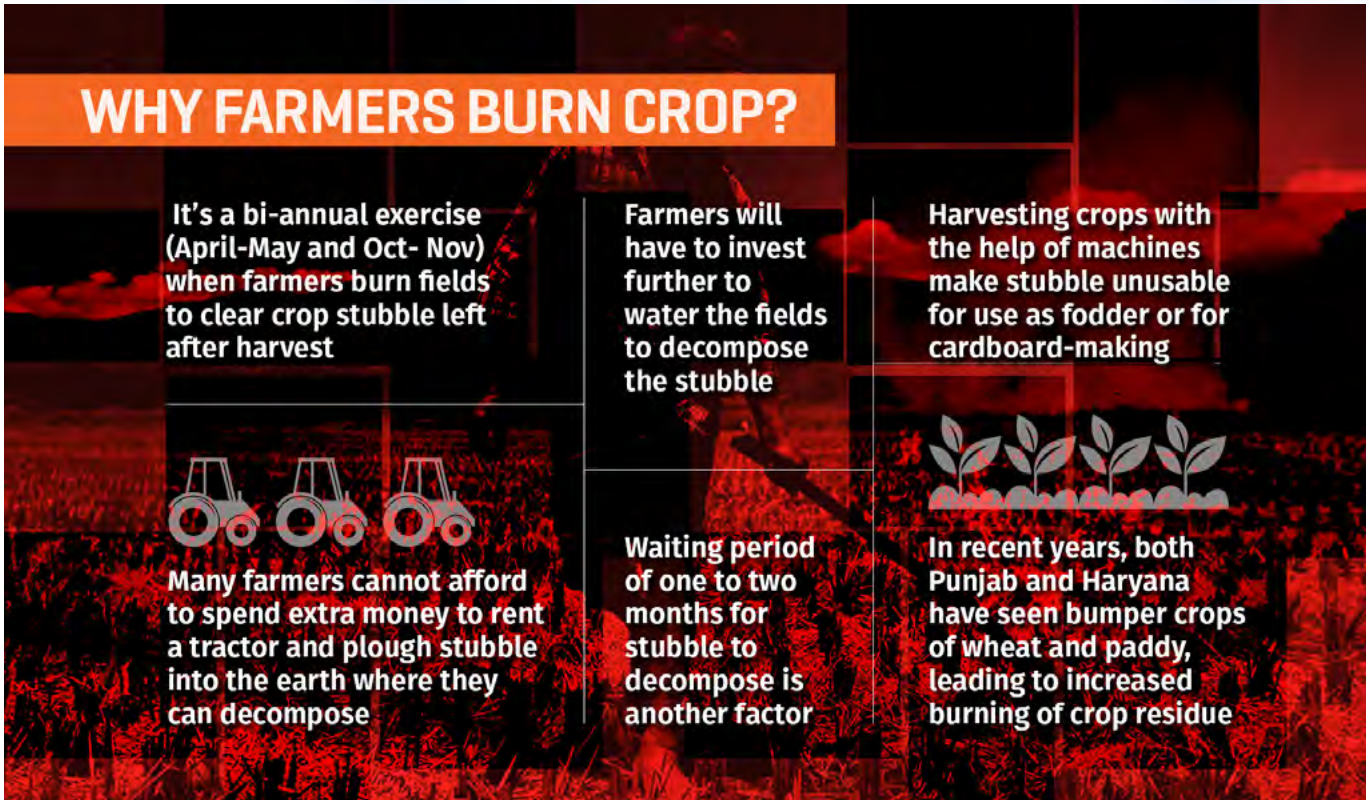
Clean technologies can tackle dirty technologies, and laws can make polluters clean up their act—but none of this would happen without people being aware of pollution and its damaging effects. Sometimes it takes tragedies like the Chernobyl Nuclear power plant catastrophe in Ukraine in 1986 , to prompt action.

Air pollution isn't someone else's problem: all of us help to cause it and we can all help to clean it up.

What can I and My Family do to Help Reduce Air Pollution

So now you know the problems, but what's the solution? Here are 7 simple things you can do as an Individual that will make a difference (however small) to the problem of air pollution.

1. **Save energy:** Making electricity in conventional power plants generates pollution, so anything you can do to save energy will help to reduce pollution (and global warming as well). Switch to low-energy lamps (LED Bulbs), use a laptop computer instead of a desktop, dry your clothes outdoors, and Set your air-conditioning to a Higher Temperature. Sounds too worthy? Just remember this: every bit of energy you save also saves you money you can spend on something better!
2. **Cut the car:** Sometimes we have to use cars, but often we can get



a bus or a train or (for shorter distances) walk or cycle. Cars are now the biggest source of air pollution in most urban areas, so traveling some other way through a town or city helps to keep the air clean.

3. **Cut out garden bonfires:** A garden bonfire can contain up to 350 times as much of the cancer-causing chemical benzpyrene as cigarette smoke . Compost your garden refuse, bury it, or dispose of it some other way.
4. **Never burn household waste:** If you burn plastic, you release toxic chemicals into the local environment, some of which will be sucked up your own nose!, Recycle your trash /Waste instead .
5. **Cut the chemicals:** Do you really need to spray an air freshener to make your home feel nice? You fill your room with perfume, but you're also choking it with chemical pollution. Why not just open a window instead?
6. **Don't smoke:** Cigarettes contain an addictive chemical called nicotine that makes you want to go on smoking them. They cause all kinds of health problems, but they also cause much localized air pollution. Once again you're first in line.

Hopefully the above 6 small Contributions from You and Your Family, will help in Reducing Pollution .

Areas in which Individuals and Organizations are moving to focus the Public's awareness on Reducing and Monitoring Pollution .

1) Mr. Shivanandan of Greenpeace India (A global NGO) had developed an Mobile App (Clean Air Nation App) which can help many Individuals in Monitoring the Pollution Levels in their Cities. As per WHO India has 13 of the 20 Most polluted Cities in the world . This mobile App takes data from the National Air Quality Index (NAQI).The App provides recommendations and data on 16 Cities in India to Children , Pregnant Woman and the elderly who are the most Vulnerable Groups . This App is presently available for Android Users.In 2015 the government in the center with the Ministry of Environment, Forest and Climate Change, Government of Indialaunched National Air Quality Index to the public involving IIT Kanpur. The same can be tracked at http://envfor.nic.in/content/national-air-quality-index .

2) Heavy Smog in 62 Cities in China has forced many Chinese citizens on Smog Escape travel plans or Lung Cleansing Holidays to cities like Phuket in Thailand , Bali in Indonesia and Jeju in South Korea . This has also led to A fall in Domestic Tourism within China and Chinese Tourists visiting Beijing has dropped by 24 % as compared to the Previous year .

As per a data from the State of Global Air Report2017 the number of Deaths attributed to PM 2.5 Exposure for the Year 2015 in India and China is as Follows

CHINA- 11. 08 Lac Deaths in 2015

INDIA – 10.94 Lac Deathsin 2015

China and India Together Accounted for 52 % of the Total Global Deaths attributed to PM 2.5 . Bangladesh and India have experienced the steepest Rise in Air Pollution levels since 2010 . Globally There was 60 % Rise in Ozone Attributable deaths , With a Striking 67 % of This increase occurring in India .

Let us all take a Pledge to Preserve our Environment and Strive to improve Air Quality for the well Being of the Future Generation which will inhabit the Earth -This is the Core Thought of Sustainability .

Arvind Awasthi

Arvind Awasthi has 34 Years' Experience in the Tea Estates of Kerala , Dooars (West Bengal) and Assam and Joined Tata Finlay in 1983 . He is at Present Senior Manager sustainability & Certifications with Amalgamated Plantations PvtLtd based at Guwahati.

He spends his free time in reading and Trying to Decipher (Though Without Much Success) the Indian Equity Markets.

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Interview with Prof. Sanjeeb Kakoty

by Arvind Awasthi

Q1 What can the Indian Central Government and Different State Governments do to Improve the Air Quality in India.

Professor Sanjeeb Kakoty (SK)

The first step would be to recognize that deterioration of Air Quality is one of the leading factors responsible for the phenomenal rise in a wide range of ailments, some of which are fatal especially for children and the old.

- Air quality has to be flagged as a major health concern for all citizens.
- Ambient air quality monitors has to be placed in all cities and towns and the readings be constantly broadcast, so that it becomes a talking point for people.
- Air quality levels of other places and countries need to be broadcast so that benchmarks can be set.
- What people can do to improve air quality also needs to be highlighted.
- Planting of tress and other foliage has to be encouraged in every nook and corner. The example of JadavPayeng who single handedly created a huge forest in Assam needs to be showcased.
- Put in stringent laws to ensure minimum pollution form vehicles and industries.
- Encourage shift to greener energy solutions by giving tax incentives if need be.
- Improve public transport systems.
- Reduce size of ministerial cavalcades
- Encourage car pooling among officials

Q2 What should be The role of the Individual Citizen in Improving Air Quality ?

Prof. SK

- Go green. Use renewable sources of energy such as solar
- Recycle and reuse whatever possible.
- Pool vehicles
- Walk
- Grow shrubs, trees and even grass to reduce dust and improve oxygen content in air.
- Force government to go after polluting industries and practices.

Q3 India and China which are still not part of the Developed Western World but are Blamed by the climate change Environmentalists as being the 2 largest contributors to pollution as thePower generated by them is from Coal Fired Thermal Plants . Both Countries are Trying to Pull a Large population from Poverty to The middle class level and have to some extent been largely Successful, But The technology they use might not be very Efficient .

Prof. SK

- **The argument that in order to make omelette you have to break eggs can be countered by saying maybe we don't want to eat that omelette!**
- In other words the development paradigm needs to be reexamined. Development and bringing people out of poverty essentially means a better quality of life and not a necessary deterioration of environment. There can be and there are sustainable and better ways of ensuring development that would avoid making the mistakes the west made in their quest for development.

Q4 How can the private Sector can use its CSR funds to Help In Climate Control ?

Prof. SK

- CSR funds could actually help transition to a greener energy use , be it by sharing a part of the costs of switch over technologies.
- Help research new areas of technology and social impact
- Use industry experience to design and implement green schemes that would be implement in the project mode with fixed time frame and clear deliverables.

SANJEEB KAKOTY

Prof. Sanjeeb Kakoty was born and educated in Shillong. After Post Graduation in history, he did a PhD from NEHU and completed the 3 TP programme of management from IIM Ahmedabad. He is a teacher, writer and a documentary film maker.

TAKE A DEEP BREATH FOR CLEAN & GREEN

by TinaTeucher

Every day, we eat around 1kg of food and drink around 2,5 kg of liquids. But we absorb 15kg of air every day! We survive 3 months without solid food, 3 days without water, but only 3 minutes without air. It invisible, light, and yet so weighty: The air is one of our most important viands.

Pollutions creates health impact

Air pollution is the world's largest single environmental health risk. According to the World Health Organization (WHO), ambient air pollution contributes to 5.4% of all deaths worldwide. Around 7 million people die each year as a result of air pollution exposure. That equals to one in eight of total global deaths. The main pathologies are ischaemic heart disease, stroke, chronic obstructive pulmonary disease (COPD) and lung cancer. Bad air can also cause numerous diseases and allergies like hay fever, that lead not directly to death but diminish life quality and shorten life expectancy.

China and India are the countries where most people die from air pollution. In India alone, more than 860.000 deaths are attributed to ambient air pollution. But also in Europe with its environmental regulations, 479.000 people die every year. Poland is Europe's country with the thickest air: In some South Polish cities, the pollution is higher than in Peking or New Delhi. One of the reasons is the poor isolation of houses and thus inefficient heating fostered by a strong coal sector. Especially in private households, coal ovens are used for heating. But they are rather old and of bad quality. During the long winters, poor people heat with everything that burns, including waste, even if it is forbidden and causes dangerous smoke. In Germany, the agricultural sector with its ammoniac emissions is the main responsible for air pollution. The ammoniac from fertilizers and intensive livestock farming transforms to fine dust particles. As a result, the agricultural sector is responsible for 40% of deaths caused by air pollution in the country where the nitrogen fertiliser was invented.

Nitrogen Oxide (NOx) is one of the most dangerous forms of air pollution. As a precursor to smog, it has been known to cause respiratory illnesses and contribute to acid rain. Especially cars, motorcycles, busses, trucks, and airplanes produce it when they burn fuels at high temperatures. With the growing urbanization, people are more and more exposed to particulates in the air, that end up in the lungs.

Study links outdoor air pollution with 2.7 million preterm births per year

Fossil energies and deforestation threaten the air

The decline of air quality mainly goes to the account of fossil energies and deforestation. With less and less trees and plants that can absorb and transform harmful substances, the latter just stay in the air, soil or water. In addition, industries, transport and private consumption produce emissions. Diesel fuel has a high impact on the environment, as the professor for researching pollution's effects on children at Queen Mary University of London, Jonathan Grigg, states: "If you're going to design something that would effectively deliver a toxic substance into the lungs, you couldn't do better than the diesel soot particle". Coal also heavily pollutes communities all over the world. Mostly poor women and children pay the price from indoor air pollution, because they breath the smoke and soot from leaky coal and wood cook stoves in their homes. Another threat to health, also in industrialized countries, are chemicals evaporating from carpets, paint and furniture in the rooms. Around half of the deaths due to air pollution are caused by indoor pollution. All this leads to one conclusion:

If we reduce air pollution, millions of lives can be saved.

Policy makers react slowly

Policies in sectors like energy, transport, waste management and industry can change the game. In the long term, healthier strategies are also more economical due to health-care cost savings as well as climate gains, as confirms Dr. Carlos Dora, WHO Coordinator for Public Health, Environmental and Social Determinants of Health.

In order to raise awareness for the threats of health and climate, the World Health Organization (WHO) and the Climate and Clean Air Coalition have recently started the campaign BreatheLife. With the Sustainable Development Goals (SDG), the United Nations have set the vision to significantly reduce the number of deaths and diseases caused by dangerous chemicals and polluted air, water and soil. In fact, policy makers can influence a lot in this area. Where coal plants are closed and renewable energies are used, enhancement of air quality can be stated. In Germany, the trend do dying forests that gained public awareness in the 1980's could be stopped with regulations for SO2 emissions. The promotion of renewable energies worldwide brings alternatives to the use of fossil energies. In the near future, upcoming technological innovations

Next generation of air conditioners to be more energy efficient and climate friendly

Green City Solutions

Green City Solutions

can lead to higher efficiency: Autonomous cars, the internet of things and digitalized production make industry and transportation processes less pollutant. A trend to sharing goods and services entails less ownership of heavy duties and thus an orientation towards functions, not products.

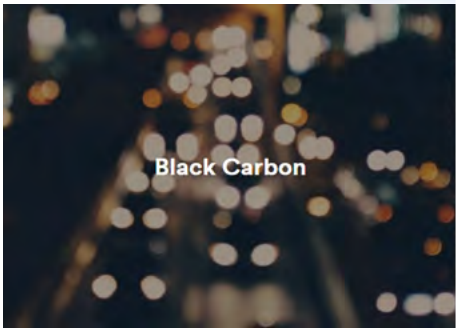
In China, where more than 1 million people per year die from air pollutions, regulations against this development are on their way. Beijing limits the number of cars by using licence plate restrictions, so that old and most polluting vehicles are excluded from traffic when air pollution is high. The country has also become the world's biggest investor in renewable energies and stops plans for some of the new coal-fired power stations.

In India, clean air efforts make slow progress. In December 2016, the 20 million inhabitants of Delhi experienced the worst smog of the last 17 years, according to the Centre for Science and Environment. A coal-fired power plant was temporarily shuttered, construction and demolition work was halted, many diesel power generators were shut down.

Cities suffer the most and incubate solutions

Most people suffering from air pollution live in cities. Whereas they may have the biggest problems, they also find ideas to solve them. Thanks to their size, cities can scale solutions quickly.Yet, their responses to pollution are very different. In London, inhabitants were advised to avoid exercise when the smog hit the city this winter. In Paris, public transport was offered for free. The mayor of the French capital plans together with officials from Mexico City, Madrid and Athens to stop the highly polluting diesel vehicles with their emissions of nitrogen dioxide and particulate matter that can cause heart attacks and cancer. In the German city Munich, a public petition for clean air just achieved the approval of the city council. Until 2025, a "traffic revolution" will take place so that 80 percent of all ways in Munich can be covered by bike, walking, with public transport or electric vehicles. The German capital Berlin installed pollution filters on buses and garbage trucks and imposed rules on heavy goods vehicles. Older diesel vehicles cannot enter the strict emissions zone and the public transport is easy, efficient and comparatively cheap. Hence, the car use rate dropped even more than before and the proportion of ultrafine particles in the air fell 70% in just three years. For a long time already, a Central American capital suffers from the image of being "Mexsicko": The metropolis Mexico City is making people sick from air pollution. In the 1980's, the government began to act: It allowed only lead free fuel, closed most of the toxic factories and imposed one car-free day per week. Still, Mexico City is one of the places with the worst air quality. So citizens took the lead and built the initiative VerdMX. With financial support from industry sponsors, they grow vertical gardens on the house fronts and put breathing sculptures at the highways that filter the dirt from the air.

To tackle the huge pollution problems, innovations and entrepreneurship are needed. One award winning solution is the Green City Trees: The four meters high and 3 meters wide



greened walls are staffed with up to 1700 mosses and plants. One of them can reduce particulate matter like 275 normal street trees can do. The City Trees already are deployed in Norwegian Capital Oslo, Paris, Dresden (Germany) and Hongkong. The supply of the plants is secured by internet of things technology: For optimal hydration of the mosses, sensors analyse the environment and the need is calculated. Solar energy and rain water make the City Trees independent from external connection.The innovation cools the air (17°C), cleans the air (-15% NOx, -25% PM, 240 t CO2e) and has a water retention capacity of 10.000 liters per year.

Paint the pain away

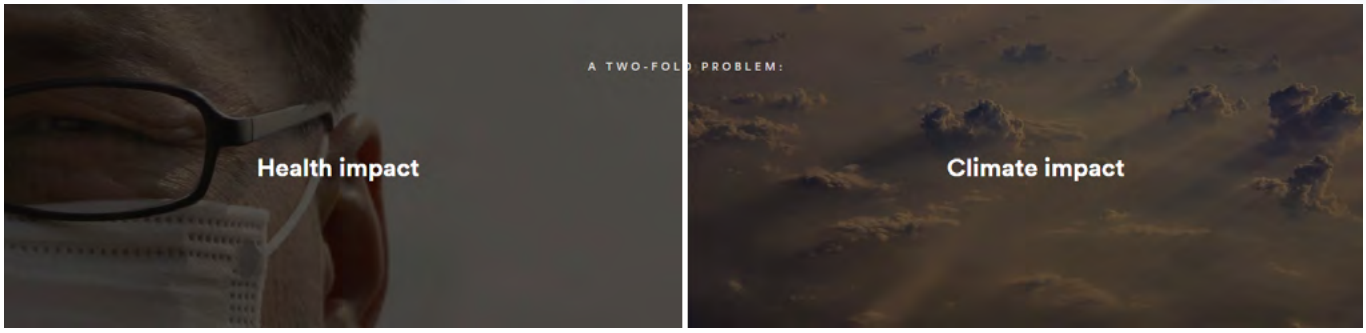
In highly polluted Manila, a lot of people suffer from Bronchitis and Asthma. A Philippine innovation tries to clean the city: The paint KNOxOUT reacts with light and water vapour to filter out nitrogen oxides from the air. According to the first projects, one square meter of paint has the same effect as one tree. In the EDSA Project (Everybody Deserves Safe air) several artists embellished street walls with massive murals. The smog-eating graffitis are expected to purify the emissions of 10,000 cars everyday. With the technology, the NOx gets converted into less harmful substances that can simply be washed away by the next rainfall.

Polluted or not: Air can also heat and cool houses. The energy from sun-warmed house fronts has not been used until now. Tata steel has developed a front that protects the building and serves as a heat collector. Behind the steel plates flows the air that is warmed by the sun. The warm air than arrives in the rooms. With this simple technique, the front system Colorcoat Renew SC shall save up to 50 per cent of the heating demand in the rooms. During summer, the sun air collector can be used for cooling: A refrigerating medium evaporates in a cooling unit and is absorbed by salt. To release the medium from the salt and continue the cooling process, the thermal energy of the front is used.

Stop burning, start planting

According to the WHO, indoor air pollution results in 4,3 million deaths every year, mainly for cooking over wood, coal and biomass stoves. More and more social businesses are providing cleaner cooking solutions that dissipate smoke through chimneys and vents to the outside and work with natural gas instead of dung and burning wood. The Magazine The Guardian proposes to invest in improved cooking stoves for the poorest. Its calculation: £7bn a year of investment lead to £103bn of annual benefits from avoided deaths to time and money spent on inefficient fuel technology and collecting wood. Thus, every pound spent on air improvement generates

Chile launches demonstration of alternative refrigeration technology



almost £15 of good.

In western countries, people spend 90% of their lifetime in closed rooms – so they consume mainly room air. In the house, the air quality is influenced by factors like mould and volatile organic compounds (VOC). The young social business Hawa Dawa (meaning "air medicine" in Hindi, Arabic and multiple other languages) aims to empower citizens, cities and organisations in working towards healthier air. With open data, the founders want to raise individual awareness of the air quality in rooms and cities. Also indoor, plants can clean the air, mainly with their roots. The potted plants system "Airy" multiplies the effectiveness of plant's ability to clean air by eight.

Reforestation and organic farming help grow new hope

In rural areas, air pollution often does not become visible. Nevertheless, measures here can have a great environmental impact. Natural habitats should be protected and reforestation be supported, because trees and plants provide clean air. In Las Gaviotas (Colombia), a huge reforestation project does not only provide better air and drinking water quality, but also jobs, biodiversity, biofuels and social capital. The canary island of El Hierro also applies these Blue Economy principles (systemic thinking) to become cleaner: Polluting Diesel generators are now widely substituted by a combination of wind and water power, the energy storage will soon be provided by electric vehicles.

Agriculture and food processing also have an influence on the air quality. The gas emissions of factory farms are harmful, when particles like methane and hydrogen sulfideaffect the health of the workers and neighbours. They also contribute to global warming. Mismanagement of manure, irresponsible feeding practices and overuse of machinery characterize industrial farming and result in air pollution. The use of pesticides and chemical fertilizers also affects the farm workers as well as people living nearby and can lead to respiratory diseases. Consequently, organic farming that works without harmful chemicals provides solutions also for air problems.

In the ever faster deterioration of the planet's resources, it sometimes may seem as if we are rvunning out of breath. But there is a lifeline: Every citizen, consumer, entrepreneur, policy maker, worker and neighbour is, in her or his environment, a decision-maker. With everything we do, we have a choice to decide for the more sustainable solution. So, let's take a deep breath and let us clean and green.

TINA TEUCHER

Tina Teucher inspires with lectures, presentations and panel discussions about corporate success through sustainability, Corporate Social Responsibility (CSR) and Sustainable Entrepreneurship. The communications specialist is a graduate of the MBA Sustainability Management of the University of Lüneburg (Germany). Ms. Teucher was managing editor of the decision-makers'-magazine "forum CSR" from 2009 to 2014. She publishes on CSR communications, energy transition and green innovations.

ORGANIC NEWS

World Scenario

Global Organic Food and Beverage Market Expected to Nearly Triple by 2022

http://www.organicauthority.com/global-organic-food-and-beverages-market-expected-to-nearly-triple-by-2022/

- The global organic food and beverages market is expected to reach $327.6 billion by 2022, according to a new report by Allied Market Research. This projection would nearly triple the 2015 market, valued at nearly $116 billion.
- The organic beverages market accounted for about three-fifths of the 2015 market, according to the report, and this trend is expected to be maintained through 2022.
- Organic nondairy beverages are projected to grow particularly rapidly within this sector.

1. Record growth in US organic farming

http://www.thescottishfarmer.co.uk/news/record-growth-in-us-organic-farming.28829681

- ORGANIC farming is booming in the United States - helped along by around $1billion of investment by the US Department of Agriculture.
- The latest USDA figures show another significant increase in the number of certified organic operations in the US, which now stands at 21,781, continuing the sector's recent trend of double digit growth.

2. In Kenya, organic macadamia nuts provide a cushion against drought

http://news.trust.org/item/20161209091813-u1nea

- Since 2010, the Kenya Organic Agriculture Network (KOAN) and experts from Kenya's Egerton University have been training rural communities on organic farming, as part of a project funded by macadamiafans GmbH, a German-Kenya company that promotes organic farming and new markets for Kenya.
- The aim was to create a new sustainable market system around the nuts, from cultivating them to processing and exporting them.
- Macadamia are good at tolerating drought, said Rhoda JeropBirech, a professor from Egerton University, because "their leaves lose little water regardless of the temperature and sunshine".

3. Organic Market To Grow Up To 7.6% Yearly

https://www.esmmagazine.com/organic-market-to-grow-up-to-7-6-yearly/36984

- The market for organic products in Europe and the US is expected to grow until 2025 at a compound annual growth rate of between 6.7% and 7.6%.
- This percentage corresponds to about three times the rate of growth expected in general for food consumption, according to research by Italian dairy consulting firm CLAL.it based on Rabobank data.

4. Organic farmer optimizes packaging

https://www.packworld.com/machinery/bagging-formfillseal/organic-farmer-optimizes-packaging

- With a workforce of 500, Riverford Organic Farmers deliver some 47,000 boxes of organic vegetables, salad, and fruit to households in England every week. The products are sold only in England and Wales. Until recently, everything was weighed by hand. Three employees were able to manage up to 15 packs/min.
- Now that has changed rather significantly. After analyzing a number of suppliers offering combination scales, Riverford opted for a Model MP-14-9600-2500-H-UL system from MULTIPOND.

5. Florida growers take on challenge of organic tomatoes

http://www.thepacker.com/shipping-profiles/florida-tomatoes/florida-growers-take-challenge-organic-tomatoes

- Growing conditions in Florida are not particularly conducive to producing organic tomatoes, but a handful of companies are giving it a try.
- In fact, organic yields are about half those of conventional tomatoes, he said.
- Organic growers can't use conventional pesticides, which is a major hurdle in Florida, where pests and disease are not uncommon.
- The key to a successful organic deal in Florida is having good employees at all levels and making a strong commitment to the program

6. Conference focuses on growth of organic farming sector

https://www.abqjournal.com/943395/conference-focuses-on-growth-of-organic-farming-sector.html

- The New Mexico Organic Farming Conference, to be held Friday and Saturday, Feb. 17 to 18, at the Marriott Pyramid North in Albuquerque, is the Southwest's premier conference for organic and sustainable agriculture.
- The event is organized by New Mexico State University's Cooperative Extension

Service, New Mexico Department of Agriculture, New Mexico Farm & Livestock Bureau and Green Tractor Farms.

Indian Scenario

1. Jaipur hosts fair to promote organic way of life

http://indiatoday.intoday.in/story/jaipur-hosts-fair-to-promote-organic-way-of-life/1/869510.html

- With a view to promote organic farming, a fair was organised here, showcasing organically produced food products and vegetables.
- With a theme to go organic, the fair witnessed participation of 250 people, including organic product farmers who showcased their products at around 20 stalls.

2. 'Organic vegetables to be sold at Central Prison

http://www.thehindu.com/news/cities/Thiruvananthapuram/Organic-vegetables-to-be-sold-at-Central-Prison/article17063340.ece

- The Central Prison at Poojappura has established a sales counter at its entrance for selling organic vegetables that have been cultivated by the inmates.
- According to Jail Superintendent S. Santhosh, while vegetable cultivation has been undertaken within the prison premises for long, it was for the first time that a proper mechanism is being set-up for selling the produce. The facility will function on Monday, Wednesday and Friday from 10 a.m. onwards.
- The organic vegetables will be sold at lower amounts than they are at other places. The rates will be decided in accordance with those fixed by the Horticorp," he said.

3. Promote organic farming: Vasundhara Raje

http://timesofindia.indiatimes.com/city/jaipur/promote-organic-farming/articleshow/56901281.cms

- Farmers and cattle herders in the state laid emphasis on paying attention to rearing of cows in order to shift towards organic farming.
- Claiming that the two are co-related, representatives from the communities, who were part of the pre-budget meeting on Tuesday, requested the state government for a favourable environment for cow rearing in the districts. The meeting was presided over by CM VasundharaRaje, who had advised the farmers to shift towards organic farming.

4. Haryana to help set up training centre for organic farming: CM

http://www.dnaindia.com/india/report-haryana-to-help-set-up-training-centre-for-organic-farming-cm-2311378

- Haryana government will provide all assistance for setting up of a centre to train farmers in organic farming at Gurukul, Kurukshetra.
- This would also help them in enhancing their income, Chief Minister ManoharLalKhattar said while addressing farmers at 'SwarnaJayantiKisanSammelan on organic farming' at village Mirzapur, Kurukshetra today.

5. Telangana State Seed and Organic Certification Authority to improve marketing opportunities for organic produce

http://www.thehindu.com/news/cities/Hyderabad/Taking-organic-farming-to-next-level/article17113788.ece

- Ramana Reddy from Nagarkurnool has adopted organic farming 15 years ago.
- His 30 acres include the 10 acres he had sold long ago unable to bear the costs of chemical farming, and bought again after he started making profits from organic farming.
- "In the year 2000, I had grown 200 quintals of cotton, and after the costs of pesticides and chemical fertilisers, I was left with 11 in my hands," he recalled.
- With advice from friends and officials, he took to organic farming, and now he grows paddy, cotton, and chillies, all in organic way.
- He has not even opted for BT Cotton, yet reaps 180 to 200 quintals of it, besides 25 to 30 quintals of chillies.

6. Sri Sri Ayurveda looks to launch home care items, organic food

http://www.dnaindia.com/money/report-sri-sri-ayurveda-looks-to-launch-home-care-items-organic-food-2303074

- Sri Sri Ayurveda, the FMCG arm of Sri Sri Ravi Shankar's Art of Living Foundation, is planning to scale its business by launching masala, home care items, organic food and staples.
- The company currently has 30-35 products ranging from shampoos, creams, toothpaste, soaps, honey and ghee among others.

7. How organic farming helped optimize productivity in Pirla

http://timesofindia.indiatimes.com/city/goa/How-organic-farming-helped-optimize-productivity-in-Pirla/articleshow/56073837.cms

- A septuagenarian farmer from Usgalimol, Pirla in the Quepemtaluka has successful demonstrated that organic farming can be economically viable if carried out with dedication and devotion.
- VithalRamchandraKhandeparkar, 72, has transformed 15 acres of once barren land into a productive farmland by simply following the principles of organic farming and not using any pesticides, fertilizers, genetically modified crops, antibiotics or growth hormones.

8. **Over 5000 Organic Farmers Are Reviving Traditional Crop Varieties. Thanks to One Organization.**

http://www.thebetterindia.com/81830/traditional-farming-organic-food-sahaja-samruddha-karnataka/

- Did you know that India once used to have over 100,000 varieties of rice? Some fifty years ago, these varieties abounded in the country.
- Now, however, only 6000 odd local varieties remain and not all are grown. This diversity can be experienced when one visits remote rural corners of the country.
- This is why the community initiative to bring back the cultivation of many of these indigenous varieties of Indian crops, along with traditional and organic cultivation methods, is a welcome change.

9. **FSSAI to bring new regulations for organic foods**

http://www.moneycontrol.com/news/business/fssai-to-bring-new-regulations-for-organic-foods_8462401.html?utm_source=ref_article

- Food regulator FSSAI will soon come out with a draft regulation for organic foods to ensure safety across the value chain through proper certification of such products, a top official said today.

Northeast Scenario

1. **Sikkim became India's first fully organic state in 2016**

http://economictimes.indiatimes.com/news/politics-and-nation/sikkim-became-indias-first-fully-organic-state-in-2016/articleshow/56270491.cms

- 2016 turned out to be a great year for Sikkim as it became India's first fully organic state besides being adjudged the cleanest state, overall best in education and tourist destination while the famed Kanchenjunga National Park was inscribed in the UNESCO World Heritage List.
- Around 75,000 hectares of agricultural land were gradually converted to certified organic land by implementing practices and principles as per guidelines laid down in National Programme for Organic Production.
- It took the state 13 years to fully implement organic farming since the idea was mooted way back in 2003.

2. **Assam to provide loan for setting up organic industries: CM**

http://www.moneycontrol.com/news/economy/assam-to-provide-loan-for-settingorganic-industries-cm_8259361.html

- Stating that the state has huge natural resources for promoting the growth of organic industry, the Chief Minister stressed on its balanced use for maintaining ecology.
- Assam government will provide loan to young entrepreneurs for setting up of organic industries in the State, Chief Minister SarbanandaSonowal said.
- He was inaugurating the Ayurveda Panchakarma Training Institute set up by Santhigiri Ayurveda and Siddha Hospital in the city.
- Stating that the state has huge natural resources for promoting the growth of organic industry, the Chief Minister stressed on its balanced use for maintaining ecology.
- The Chief Minister further stated that Ayurvedic medicine has regained its popularity in recent times and at present there is a need of 90,000 trained Ayurvedic practitioners in the country.

3. **State organic tea catches global attention**

http://www.assamtribune.com/scripts/detailsnew.asp?id=jan1217/at056

- Assam's organic tea, especially the green tea produced by small tea growers, has been able to make its presence felt in the international market, and given the current encouraging trend, it could make substantial forays into the global market in the next couple of years.
- "While several big growers of the State are already doing well in the global arena, the practice of organic cultivation is gradually picking up among the small growers. The trend is encouraging and by next year we are expecting a substantial amount in fully organic certification from the small growers," sources in the Tea Board told The Assam Tribune.

4. **Jorhat woman sets example in organic farming**

http://www.assamtribune.com/scripts/detailsnew.asp?id=jan0617/state055

- A deeply motivated and confident young woman, Nabanita Das, who hails from the city, has set an example in self-employment on the one hand and providing livelihood avenues to many unskilled workers on the other through organic farming at Potiagaon, located at a distance of 9 km from the heart of urban Jorhat.
- Leaving the secure job of a nurse at a private hospital here, Nabanita started a farm at Potiagaon to produce rice, horticultural crops, vegetables and flowers a few months back. The produce from her fields has already generated high demands from consumers here as organic vegetables carry better food value and nutrients.

ENVIRO ATLAS ECO-WHEEL

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