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Environmental Center for Arab Towns

A Magazine for the Environmental Center for Arab Towns

Green Development For Supporting Sustainability

بلدية دبي
DUBAI MUNICIPALITY

Our Message

H.E. Mr. Dawood Abdulrahman Al Hajiri
Director General of Dubai Municipality
President of the Environmental Center for Arab Towns

Protection of environment issue from pollution and risks become of the most critical issues facing humanity, and when we look to the future, it is very complex and sensitive in nature, as well it relates to our daily living and their direct impact on many of our lives, Therefore, the issue of environmental protection is a crucial public issue and should not leave to the government alone or for professionals only for consideration and addressed, everyone in the community is responsible and involved in preventing environmental harm, from his position or location he could. We believe that the implementation of projects and eco-friendly initiatives in the frame and connected with urban development plans and strategic plans in city councils, is the key to the emergence of green cities. In our effort to practice the same and keeping with the times, the Envirocities magazine is dedicated to be an online magazine only to rise environmental awareness and to enable maximum outreach in shortest time. Dubai municipality believes in the importance of environmental awareness and wants to define its role in environmental protection and conservation to achieve sustainability and real development as we are working, which makes Dubai an excellent city that provides the essence of success and comfort living.

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President-CEO/Ghalayini for Trade and Turnkey

UNEP & HLPF Major advisory groups member

Ghalayini bldg, Hamra, Beirut,

The Emirates of tolerance, openness, humanity, development and innovation, “the Emirates of summits and glories”, homeland of Zayed the Wise of Arabs, we reached the “Year 2020 towards the next 50”; and from the legacy of the federation founders on December 2, 1971, the legacy of Zayed, Rashid and their brothers the rulers of The Emirates, heading to the “model state” on the international level. His Highness Sheikh Mohammad bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, with His Highness Sheikh Mohammad bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the Armed Forces, may God protect them, announced that 2020 will be the “Year towards the next 50” by launching the largest strategy of national work of its kind to prepare for the next fifty years at all levels of the federal and local state and also to prepare the celebration of the UAE Golden Jubilee in year 2021. His Highness Sheikh Mohammad bin Zayed Al Nahyan, may God protect him, said and assured on this occasion: “The year 2020 is the year in which we write a new chapter in the book of our economic, social and development leadership”.

In light of the new circumstances that have occurred in the whole world this year due to the spread of the pandemic Covid19, and based on the level of their resilience, awareness and their leaders wisdom insightful and sincere vision, countries and peoples demonstrate the level of their civilization by the respect for the human being first and their sustainable development in the way they face and combat the most dangerous global disasters. The UAE "has proven its economic, social and development leadership" in these difficult

days in facing emergencies and disasters through its capabilities and proactive strategies with high competencies and organized flexibility, through the tremendous efforts that have been made at all levels and by taking urgent decisive measures and wise economic development decisions, also by tightening the regional and international relations by extending a helping hand in all directions.

In adversity, men and countries are known, since its beginnings and in the midst of complicated circumstances and strict precautionary measures to confront and combat this widespread pandemic that the world is currently experiencing," the Year Towards 50" crowned the "Tolerance Homeland" for the crown of the "Humanity Homeland". Humanity is one of the foundations on which is based the sustainability of populations lives, societies and states, on the health, social, economic and human rights level. In less than 48hours, the UAE rushed to equip the "Emirates Humanitarian City" in Abu Dhabi with the necessary equipments and supplies to receive stuck citizens of Arab and foreign countries whom the Crown prince of Abu Dhabi, Deputy Supreme Commander of the UAE armed Forces, Sheikh Mohammad Bin Zayed, may God protect him, declared their evacuation from the Chinese province of Hubei the epicentre of the Coronavirus scourge of the new age, to the city where an integrated health care system by medical and service staff around the clock was provided for them conforming to the World Health Organization standards until they recover and return to their country. The city was equipped with integrated medical clinics in which all equipments are available, and its rooms contain all, and its rooms contain all the basic and recreational needs. The Humanity and Tolerance Homeland, the United Arab Emirates, has been being always a pioneer in humanitarian initiatives all over the world without discrimination and without racism, with the vision of its wise leaders and the role of its people, the sons of Zayed the generous, from volunteers associations and individuals.

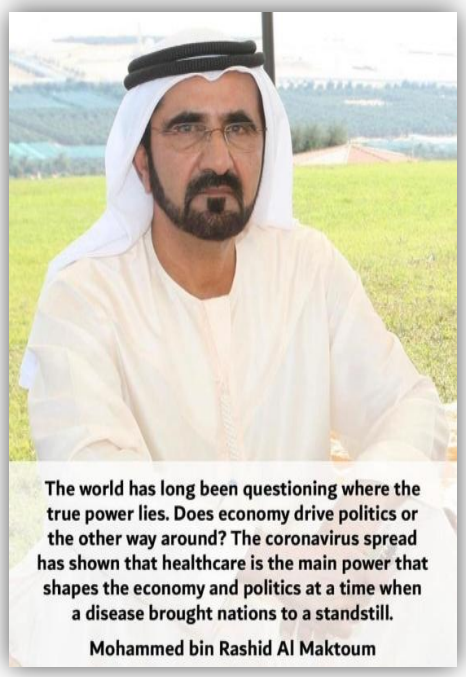
The UAE has welcomed 400 Kuwaiti evacuated students from Britain to join the quarantine in the "Emirates Humanitarian City" , and citizens from Sudan, Yemen and South Korea who were stuck abroad ; how numerous were the Testimonials in the statements of residents in this city from fraternal and friend countries and almost all countries of the world.

They praise welcoming them and the good fraternal treatment since they boarded the plane heading to their second country, the Emirates of love, tolerance and humanity until their arrival at the humanitarian city in Abu Dhabi and during the period of quarantine and the high-qualified distinguished medical services that they receive. Everyone, even children during their stay, expressed their feelings and happiness for the Emirati fraternal treatment, authentic hospitality and for the advanced medical services during the quarantine period.

The Emirati hands of charity arrived in Seychelles carrying 11tons of medical supplies as humanitarian aid to help containing the spread of the virus and sent medical supplies to China, Pakistan, Afghanistan, Uzbekistan, Colombia, Croatia, Greece, Serbia, Somalia and even Iran, and the list goes on, as well recently sent 10 tons of medical supplies to Italy. The Malaysian Foreign Minister thanked the Emirates and its leaders for their sincere stand with Malaysia in its current crisis after the UAE responded to the request for assistance to them due to a severe shortage of medicines and medical supplies in Malaysia and providing them to face Corona. An Emirati airplane aid with 13tons of medical and preventive supplies has also arrived in Kazakhstan, benefiting about 10thousands medical staff to support them in the face of the Corona virus; the examples are countless, the UAE wings of mercy continue to fly to every place in the world. It is the sustainable green development with its foundations and moral meanings to preserve human health first, so society, health, economy and life in general will equate.

His Highness Sheikh Mohammad bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, May God protect him, said on twitter: “The world has long been questioning where the true power lies. Does economy drive politics or the other way around? The coronavirus spread has shown that healthcare is the main power that shapes the economy and politics at a time when a disease brought nations to a standstill.”

And these days, in light of this global crisis of the new Corona pandemic “Covid19” where societies need sustainable green development at all levels more than ever, especially in the field of health, society and economy, the “Emirates Humanity land Fund” stands out to face this pandemic in the UAE the leader in the good and bad times and emergency crisis. Many associations, charitable foundations, individuals and companies and the private sector have gathered in the “Emirates Humanity land Fund” a distinguished initiative to provide it with contributions in kind and material donations, in addition to other contributions represented in buildings, vital facilities, cars and logistical support through the Red Crescent centers, as explained H.E. Sheikh Abdul Aziz bin Ali Al Nuaimi, “ the Green Sheikh of Emirates “, during a TV interview. It aims to serve the community healthy, economically and socially in coordination between “the National Emergency, Crisis and Disasters Management Authority” and the “Red Crescent Authority” at the state level, which reflects the wonderful image of the foundation of Zayed the generous homeland, in terms of exceptional human and civilizational values that embody the social cohesion that prevails in the Emirates community tightening each other.



In other sectors, we see that social and health sustainability and green development in society have an important role to build human thought and capability as well, by offering him the best knowledge, being one of the most important human rights for life sustainability and people's future development. For example, in the days of peace and prosperity, we find the UNESCO National Schools Project to introduce sustainable development goals by the National Committee for Education, Culture and Science in schools in the Emirates, it focuses on the fourth goal(4) of the United Nations Sustainable Development Goals " quality education". The focus of this project is on sustainable investment in future generations, achieving sustainable development, tolerance and global citizenship with best practices for sustainable education that raises societies in UNESCO affiliated schools. In light of the exceptional circumstances that arose due to the global pandemic Corona and has befallen all mankind, all countries of the world have adopted the application of the distance learning system including the United Arab Emirates, which decided to continue it until the end of the current school year 2019-2020 to ensure the continuity of education in the country and to preserve the security and safety of the students and the educational staff. The Ministry of Education adopted the new study plan for the continuity of smart distance learning in order to ensure the sustainability of teaching and learning. The exceptional health measures for protection against the spread pandemic and beating it in every country locally and globally required us to stay at home with our families, which Hindered the continuation of regular education in schools and universities for millions of generations in the world.

The internet has become the only alternative for education now in all countries, which imposed an important role for the virtual world in sustaining education by adopting it remotely in normal life and during global crisis also as a temporary urgent necessity in force majeure.

Including the entire educational curricula of schools and universities in many countries in the world due to the spread pandemic or the moving wars in purpose to gain continuously the education and knowledge for the raising generations, which is the most important pillars of sustainable and green development for them and for the advancement of populations. Thus, we find that sustainability crosses all factors, axes and sectors of all kinds to converge with green social development in order to build a sustainable society in all its segments and in all circumstances.

On the other hand, health and safety management practices play a worthy role in every sector, but practically in the food industry and the health and safety culture it is very crucial and an urgent need today. Several research studies have examined the factors that affect environmental and sustainability practices and their reflection on health and safety management practices in the developed and emerging economies of the countries.

Another aspect of green development is that "food security plays an essential and pivotal role in ensuring access to high-quality and safe food" , according to the Food and Agriculture Organization of the United Nations (FAO). On March 26th, 2020, during the extraordinary virtual summit of the Group of 20countries leaders on the 19th Covid pandemic, which was chaired by the Custodian of the Holy Mosques King Salman bin Abdul Aziz Al Saud, may God protect him , which was called to convene to formulate a coordinated global response to the Coronavirus And its human and economic impacts, the Director General of the FAO from Rome, where FAO is based, urged The G20 country leaders to take action for the continuity of the global food systems in working well, specially with regard to the poor and the world's most vulnerable access to food during the Covid19 pandemic.

In the Emirates, during peace and in light of the proactive visions of the wise leadership, as in disasters circumstances, one of the most important sustainable investments affecting green development was and still is the focus on food security. Notable achievements are made in the Ministry of Food Security through the distinguished efforts of Her Excellency the Minister of State, Maryam Hareb, as the efforts of the UAE government were embodied in the implementation of the directions and vision of the leadership to transform the UAE into a global centre for food security based on innovation and achieving the goals of the National Food Security Strategy by ensuring that everyone has access to safe food sustainably nutritious and adequate by strengthening the agriculture sector by introducing the latest technologies to develop and implement future mechanisms and technologies, which pushed the wheel of sustainable agricultural development so the UAE before Corona made a leap forward to ten ranks according to the World Food Security Index, targeting the first rank in the coming years.

And in the emerging circumstances of the global spread of the pandemic19 (Corona), the National Authority for Emergency, Crisis and Disaster Management reported that the Emirates Food Security Council, the first and main reference for everything related to food, held an extraordinary online distance meeting headed by H.E. the Minister of State for Food Security Maryam Hareb with the participation of H.E Obaid Al-Shamsi, to review the latest developments in the global and local food system, her Excellency stressed that " food supply chains work with high efficiency and that local production work to upgrade its production capabilities" and "that providing food products to all society members is a top priority for the UAE.. During the meeting, we set up mechanisms for food import control systems and the movement of key goods and food products, and we discussed the developments of the diversification program of the import sources and the communication plan with various components of the food security system."On the other hand, as some parts of the world are grappling with food security brought about by the new coronavirus (COVID-19) pandemic,

The Sharjah Research Technology and Innovation Park (SRTI Park) has been developing innovative and sustainable methods of agricultural production. Even before the COVID-19 outbreak, SRTI Park adopts the strategy of relying on scientific research and innovation to achieve sustainability of natural resources. The research site specializes in developing sustainable technologies by offering a platform and infrastructure to further develop a more productive agricultural technology. It includes Agrotunnel an internal farm with an area of 150 square meters that can produce one ton of organic vegetables and fruits per month. The water that is used to irrigate the fruits and vegetables come from seawater, properly desalinated through solar energy, thus completing the development of an integrated system of sustainability solutions in natural resources. It uses very little water – about 90% less than a conventional farm and because they are based on aquaponics they produce fresh fish to harvest as well, along with a range of vegetables and fruits. H.E. Hussain Al Mahmoudi, CEO of SRTI Park Sharjah Research Technology and Innovation Park, stressed the importance of adopting and supporting all research and innovations aimed at finding advanced technological solutions for agriculture. “The SRTI Park seeks to enhance the means of agricultural and food technology in a way that suits the nature of the region's climate and meets its increasing food requirements, thus setting the agriculture and food technology a road map for food security during the next stage," H.E. Al Mahmoudi explained. He noted the current global pandemic has also brought the issue of developing a safe haven for food self-sufficiency.

The agricultural system being developed in at SRTI Park is also one of the solutions to the problems of agriculture and food production. Agrotunnels thrive even in the desert, it can work in any environment and in any weather even in the middle of the desert as it comes with advanced cooling technologies that can work on solar and can harvest water from sea or the air.

Finally, resilience and adapting to the force majeure conditions by the responsible response to the strict precautionary measures, self-censorship, sustainable social, health and economic development and the proactive planning continuity for the post-catastrophe phase upon its disappearance, God willing, are what give us constant hope and confidence that the promising green future sun will inevitably shine again despite the global economic recession produced by the disasters of the pandemic Covid19 that will be reflected in the world during the next stage after Corona. We conclude with what stated the “ Emirates Humanitarian City” guests and we say with them: “Thank you Emirates, thank you sons of Zayed” , and we cite the strong influential word of His Highness Sheikh Mohammad bin Zayed, may God protect him, which reached hearts deeply through its echo that crossed the space of reassurance, comfort and bright hope.. “Don’t worry”.. How beautiful it is..

Green Developments for Supporting Sustainability

Muneeba Shabbir[1] , Muhammad Naveed Anwar[1] ,
Mohammad Rehan[2], Nizami Abdul-Sattar Nizami[1]
[1]Sustainable Development Study Centre, Government College University, Lahore, Pakistan
[2]Centre of Excellence in Environmental Studies (CEES), King Abdulaziz University, Jeddah, Saudi Arabia
** Corresponding/Contact author; (M.N. Anwar) E-mail: naveedanwarenv@gmail.com*

Planet earth has witnessed rapid growth in the global population in the last couple of centuries. One cannot find any example of the time frame in the history of the earth planet where the population ever exceeded one billion until the end of the 18th century. The dawn of 19th century marked deviation from historical trend– that was as true in the past as directions of sunrise and sunset. It was due to the industrial revolution, allowing humanity to fight against certain life-threatening epidemics, and to achieve enhanced food yields. Besides, because of pesticides and fertilizers coupled with food preservation, the human population has crossed the 1 billion mark only to grow even more in the decades to follow.

Although both of the previous centuries witnessed population growth, however the second half of the 20th century recorded an even alarming and steep hike. This can be evident from an increase in the population of approximately 5.6 billion in the previous hundred and fifteen years. More worrying is the fact that the majority of the population now resides in urban areas with a steep increase in the urban population from 220 million to approximately 2.8 billion over the past century.

The estimates that the urban population will further increase up to 6.9 billion, 2/3rd of the world's total population, within the next three decades will further intensify the challenges.

This shift towards urbanization has come with a marked change in the lifestyle and environmental footprints of the inhabitants.

more energy and The urban population tends to use non-renewable natural resources giving birth to a plethora of environmental problems of multifaceted nature: Air pollution, Water contamination, Land pollution, Noise pollution, Climate change, Plastic pollution, Public health issues, and Lack of tolerance.

The climatic changes, for instance, have set in motion frequent natural calamities such as droughts, hurricanes, floods, cyclones, glacier melting, heat waves, and specific food security problems [1,2]. This article will try to enlighten its readers about sustainable and green developments by penning down policy measures for sustainable urban growth, mainly embarking upon the principles of the circular economy [3].

At present, the most worrisome and disastrous consequence of this unsustainable technology-dependent lifestyle is the climate crisis. This has been driven by the greenhouse gases (GHGs) emitted as a result of fossil fuel burning in different processes in general and for energy production in particular.

There are multiple GHGs such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulphur dioxide (SO2), and chlorofluorocarbons (CFCS).

However, the scientific community has unanimously labeled CO2 gas as the primary culprit behind the global warming and climatic changes because of its lion's share, almost three quarters, in the global GHGs emissions [4].

A direct relation can be marked among the increase in the CO2 concentration and population explosion during the last two centuries. One will get two parallel lines, with a steep hike, upon drawing the increase in the A direct relation can be marked among the increase in the CO2 concentration and population explosion during the last two centuries. One will get two parallel lines, with a steep hike, upon drawing the increase in the global population and CO2 concentration.

CO2 concentration has reached an alarming level of around 413 ppm. Needless to mention that before the industrial revolution CO2 concentration never exceeded 280 ppm; at least this holds for 800,000 years. Currently, 6.5 billion tons of CO2 is emitted annually across the globe [5].

Intergovernmental Panel on Climate Change (IPCC) has given a loud and clear message that to save our only habitat planet earth from collapsing, a 50–80% reduction in GHGs emissions is imperative by 2050 [6]. In the same regard, during the COP 21 meeting held at Paris, attended by 190 nations, a detailed roadmap was devised in order to curb the CO2 emissions to limit global average temperature rise to 2°C by 2100.

These measures mainly revolve around the following key themes: energy conservation and efficiency, low carbon fuels, adaption of geoengineering approaches such as afforestation and development of CO_2 capture, storage, and utilization techniques [7-9].

The quest for a green environment and sustainable development has made carbon capture, storage, and utilization the most suitable prospective approach. The fact that 65% of GHGs comprise of CO_2 emitted by fossil fuel burning further underscores the importance of carbon sequestration in the bid to meet the Paris agreement's targets. The captured CO_2 then can be converted into biofuel through two-step trans-esterification, hence converting a pollution source into an alternative fuel. The same CO_2 can be used to grow algae that can be further processed, employing biotechnology protocols, to biodiesel. The algae not only would consume the atmospheric / captured CO_2 but will also serve as a natural wastewater treatment plant by consuming nutrients from the wastewater, like food, making it pollution-free. It can absorb nitrate, phosphate, and ammonium ions from municipal and agricultural wastewaters [10]. Furthermore, once biodiesel is burnt, the CO_2 emitted can be recaptured and used to grow more algae to produce biofuel and cycle will continue yielding environmental, economic, and sociocultural benefits at the macro level [7,11,12]. Algae can also be grown for the sole purpose of biodiesel production. In contrast to terrestrial plants, algae are known to be highly efficient and productive. These have thirty folds greater oil/ land production capacity than that of oilseed land plants and occupy 49-132 times less area than soybean [10,13]. Moreover, the utilization of algal feedstock for biofuel production outweighs the conventional biofuel feedstocks in terms of offering multiple environmental paybacks: reduced GHGs, reduced water and carbon footprints, reduced land-use change, larger energy pool, and increased economic prosperity [14,15].

The aforementioned drivers, such as overpopulation, unplanned urbanization, and environmental pollution in general and climate change, in particular, have further worsened the ever-increasing freshwater scarcity [16]. Climate change, on the other hand, has led to a sea-level rise that poses grave challenges of saltwater intrusion, and coastal flooding. All these issues can be solved through single panacea: seawater desalination, ideally employing captured CO_2 [11]. For example, CO_2 emissions from a coal-fired power plant in an hour are capable of producing 8 million gallons of freshwater using seawater desalination [17].

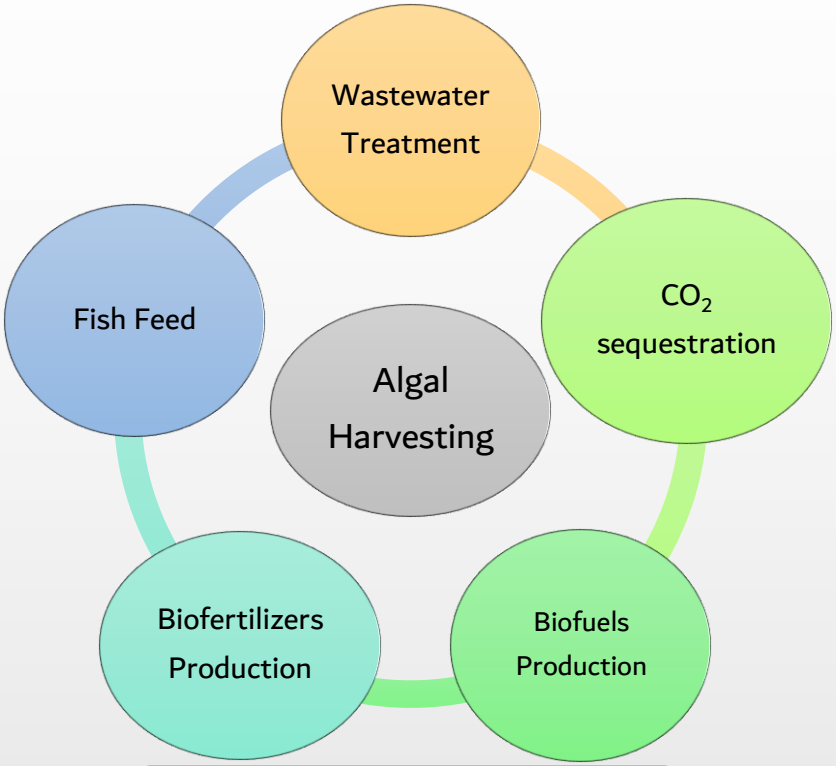


Figure 1: Benefits of algal harvesting

Desalination strategies would yield excellent commercial prospects if designed according to the geographically viable sites where industrial units are close to saline aquifers. Most of the global cities qualify for this condition. For instance, the Karachi city is situated next to the coastline at Pakistan and could be a prospective site for these desalination projects. Another possible solution could be rainwater harvesting along with cutting down the water consumption in the agriculture sector through multiple approaches. For example, the less water-intensive crops can be preferred alongside the drip/ sprinkler irrigation and efficient surface watershed management systems. Making a shift towards a greener and sustainable society inevitably necessitates better Sophistication in solid waste management as well [18]. Hence, substituting the waste reduction approach with zero-waste approach leads to a novel concept of a circular economy. For instance, a city produces thousands of tons of waste per day. Instead of transporting the waste from each corner of the city, burning fuel, and causing traffic congestion to a particular point located at one side of the city, one can divide the whole city into a certain number of blocks. The waste generated at these blocks could then be sorted out through segregation at transfer stations built at each block. The segregated waste could then be used as a precious resource to generate economic benefits.

For example, organic waste can be used as raw feedstock to produce compost and biogas through aerobic and anaerobic digestion, respectively. Similarly, combustible waste can be burnt to recover heat energy to generate electricity through turbines. This will not only allow the better waste management, hence making it a potential tool in the war against environmental pollution and climate change, but would also curb air pollution and land pollution coupled with revenue and employment generation [19,20].

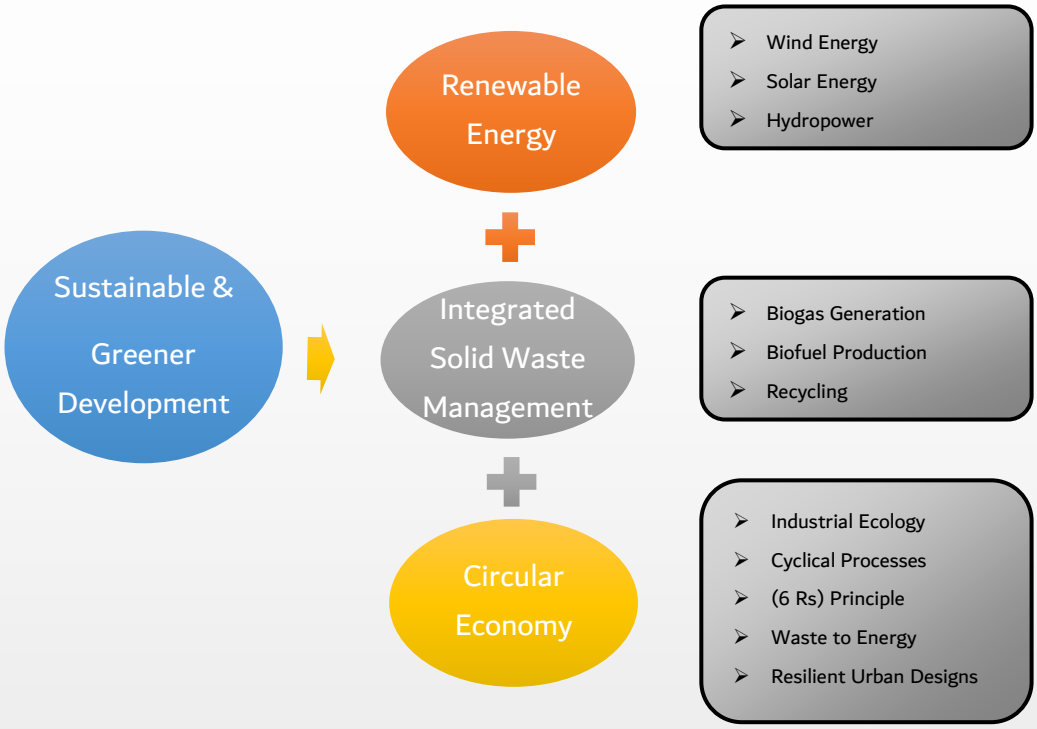


Figure 2: Approaches that lead to sustainable and greener development

Another major threat faced by urban areas is vehicular emissions posing a severe threat to planet earth's survival and causing local effects like smog. We can look into how Loss Angeles solved its vehicular pollution crisis by implementing multifaceted reforms: introduction of air filters, electric vehicles, hybrid vehicles, low carbon fuels, and less congested roads. One can easily witness the indirect trend among the decline of air pollution at Loss Angeles and an increase in the traffic density, only due to well thought out reforms. Another example could be Europe, where buses burn fuel produced from organic waste. The same can be implemented in other urban areas of the globe to achieve sustainability [21].

In the same context, replacing non-renewable energy resources with alternative, renewable, energy resources such as solar power, nuclear energy, wind energy, and hydropower can go a long way in addressing the climate crisis and natural resource exploitation. It is about time, we make decisive efforts, keeping in mind the theme of individual efforts with a collective goal, to help our planet win the battle of its survival. Since the planet would remain there irrespective of whether or not we take these actions, it is us who are at risk of extinction in the hands of climate change.

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Economical Ethics for Supporting Green Development and Sustainabilitv

AISHA MASOOD,

Environmentalist/EHS Specialist and

Former Postgraduate from the University of Auckland, New Zealand.

The human search for love, power, happiness, beauty and truth is usually enabled by human activities which require the consumption of energy along with the generation of a huge amount of waste. With an increase in human population, human consumption patterns ultimately give rise to an era of 'climate change'. It can be defined as a period of transition that seems to be a regrettable exit from an era of climate stability in which human societies evolved (Brown, 2012).

Intense human activities have caused drastic changes in our current environment. Physical sedimentation has been changed in rivers because of agriculture and construction activities. Humans' activities cause an increase in the atmospheric temperature as a result of high emissions of greenhouse gases. Human activities are also responsible for the extinction of many plant and animal species (Zalasiewicz et al., 2008). As Gibson-Graham stated, "Now we are suddenly considering ourselves not just billions of individuals and millions of collectivises but a single species just like other species on earth, one whose survival is threatened by its own behaviour" (Graham et al., 2010, p. 321). It is just like we-human beings are lost. We exit in a stormy present without having proper ethical guidance about other species and ecosystems.

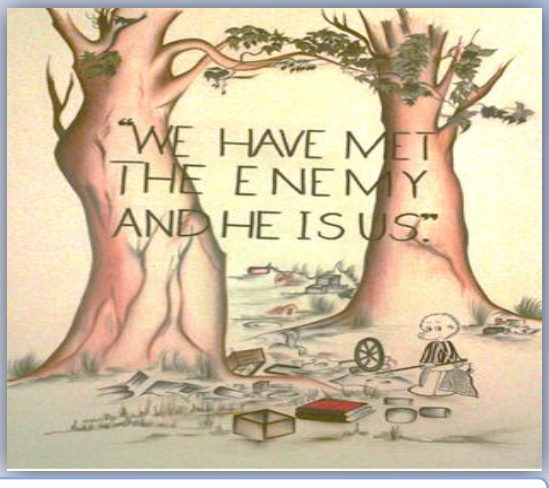

Figure 1: Pictorial representation of human guilt

In the last 150 years, many scientists have tried to provide sufficient infrastructure for building an ethical economy. Humans are not the master of everything on earth, they are members of this planet just like every other species (Brown, 2012). Our decisions and actions have shaped our economy. Though there is a set of natural rules and principles which help us to understand how economies operate, still many people just criticise the decisions and actions taken by governments and various organizations in shaping up our current economy.

Some of the concerns which must be taken into consideration are: ***How do we survive well, how do we distribute surplus, how do we encounter others as we seek to survive well, what do we consume, how do we care for our commons,*** **and** ***how do we invest for the future? (Gibson-Graham et al., 2013, p. 13; 14).***

Graham et al. (2010) suggest four ethical coordinates (Commons, Consumption, Necessity, Surplus) for building an interdependent economy in their attempt to rethink economy. These coordinates are distinct but related to each other.

They believe that by applying changes in these areas, what results is a more ethical economy.

They demonstrated these coordinates with real world examples. In September 2008, Ecuador voted to include nature in their constitution.

As a result, nature is acknowledged as having the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes in evolution and it mandates that the government take precaution and restriction measures in all the activities that can lead to the extinction of species, the destruction of the ecosystems or the permanent alteration of the natural cycles. Another example is the the emergence of the eco village concept in which people are connected and dependent to their environment as much as they are on each other. This eco village concept can be applied to the modern cities. When it comes to consumption many communities recognize that the effects of human consumption extend further than human economy. Individuals and community efforts to address the responsibility we have as a waste producers has led to the creation of the concept of recycling, reuse and reduce. Authors described a cooperative in Manila that collects juice containers to turn them into purses.

Figure 2: Green Consumption

They also use another example of an Australia Capital Territory which became the first government in 1996 to set a goal of “NO WASTE”. By 2005, residents were recycling or reusing 75% of what used to be trashed. This shows the possibility sustainable consumption.

Furthermore, they discuss the reorganization of food production system in response to people concerns about animal treatment standards in factory farms. As people start to care more about other species, their consumer behavior changes to a more conscious consumer behavior. They concluded that it is necessary to enhance the value of experimental knowledge instead of criticizing such ethical projects.

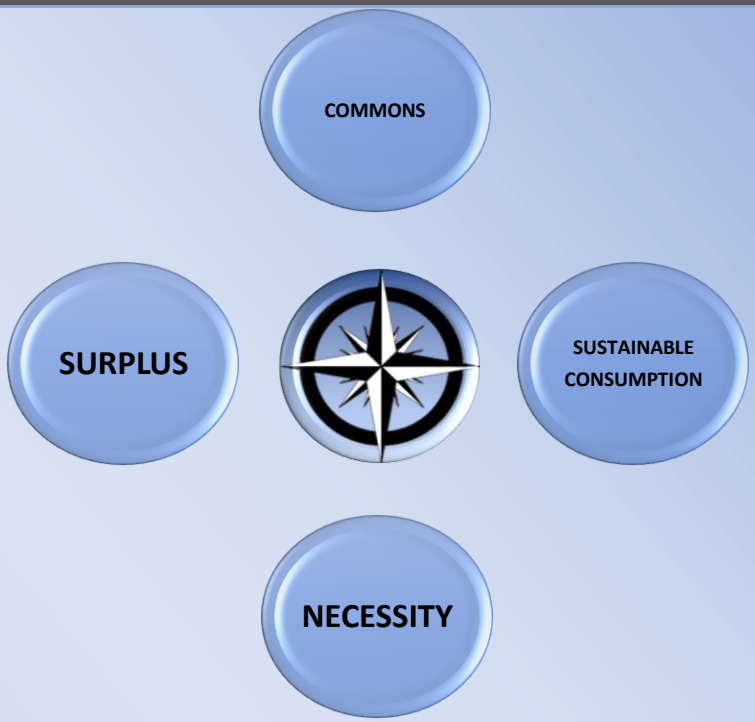

Figure 3: Ethical Coordinates for Building an Interdependent Economy towards Green Development and Sustainability

New economic world could be through an ontological perspective of economic difference.

Many businesses are becoming more concern of the environmental aspects and impacts within their organizations. This movement of environmental change can happen by simply accepting and pursuing a goal of sustainable development. We need a sustainable shift towards market as well. (Dinah & Cecily, 2001). A new economy will need a new economics, which goes beyond the calculating, self-interested, individual to take account of community, compassion, and cosmos." (Brown, 2012, p. 10).

To address the global environmental crisis and the uncertain recovery of the global economy, many governments, international organizations, civil societies and academia have tried to work on the concept of a green economy or green growth. These terminologies can also be linked to low-carbon economies (Barbier, 2012) which are based on innovative and competitive markets. This can bring tremendous changes in the eco industries by shifting from downstream environmental protection technology to resource saving technologies, or the sustainable use of natural resources (Jänicke, 2012).

In diversifying our economy still, we need an advancement in performative practices. A great diversity of arguments exist around the framing of the global economy. Discussion of possibilities provides opportunities to explore heterogeneous economy and to theorize Dynamics of growth, however, the problem remains that a new academic discourse is needed (Gibson-Graham, 2008).

Gibson-Graham et al. (2013) also described an idea in their book titled "Take Back the Economy" through which human beings can reshape the economies in which they live. In order to take back the economy people need to think deeply about that can begin to create a planet suitable for all species. It is crystal clear that we humans are not paying proper attention towards these concerns. Living on this finite planet does not authorize us to consume all the non-renewable resources and destroy the renewable ones. As an individual, we are always looking for individual preferences and desires, a very few among us think about others' needs and values. If we want to take our economy back, we should address the issues regarding commons, consumption, survival, surplus, necessity and futures collectively. Both individuals and communities must play their equal parts in reshaping the earth.

Most economic actions are generated through traditional thinking and beliefs. Many people consider economic growth as a tool to improve everyone's future. Beside this, they also believe in developing the private enterprises through which people generate enough wealth for themselves and for their families. Ultimately, it strengthens the private enterprises by giving legal ownership of resources, land and properties. However, this system pays a prices in terms of environmental degradation. People are lost in this economic growth as they do not have any sense of care and responsibility towards other species and ecosystems. We humans are facing this problem and it is on us whether we just ignore it and follow this present bitter reality of our world or try something new. There is a need for ethical action that involves thinking and acting in the current economic situation in a way which shows concern for others along with ourselves. It is not to put down our desires but to consider the fact how an individual decision affects the whole community. Ethical action involves adopting new habits that reflect our relationship with other species and ecosystems. It involves people learning how to face the uncertainties of the future together and learning to conquer our fears through creative behaviour. Solutions for these problems are not easy and do not assure us certain or immediately successful results, but still they can change the way we act through ethical thinking. An economy of our world which depends upon such ethical consideration can be known as community economy— "a space of decision making where we recognize and negotiate our interdependence with other humans, other species, and our environment. In the process of recognizing and negotiating, we become a community" (Gibson-Graham et al., 2013, p. 18). Just as we think its unethical for people to be exploited so other people can make money of their work. It's just as unethical to exploit the non-human world for the same reason.

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Sustainable Investment in Environmental Decision Support, Monitoring and Forecast Systems

Oleksandr Nesterov and Dr. Marouane Temimi

Civil Infrastructure and Environmental Engineering

Khalifa University

Abu Dhabi – United Arab Emirates.

marouane.temimi@ku.ac.ae

"*The wise find pleasure in water; the virtuous find pleasure in hills.*" (Confucius, 551–479 BC).

Over the past century, the quality of human's life has dramatically increased: cars, airplanes, variety of foods, comfortable homes, computers, mobiles, internet, medical services, and so on. But all this come at a 'hidden' cost of consumed energy, depleted natural resources and environmental pollution. It is getting more and more evident how small and fragile our world is: sea level rise, which is a subject of concerns of low-lying cities and even whole countries like the Netherlands; nearly doubled concentrations of CO_2 in the air compared to the pre-industrial era, which exhibit a steadily growing trend according to the data reported by Scripps Institution of Oceanography; plastic found in remote nearly inaccessible locations, such as at the bottom of the Mariana trench; extinct species of animals and plants; increased frequencies of storm events, such as dust storms and flash floods (figure 1**Error! Reference source not found.**), which sometimes lead to devastating economic consequences.

In particular, the flood event captured by the satellite (figure 1**Error! Reference source not found.**b), which occurred in Rio de la Plata (Argentina), led to at least 54 casualties, a disaster that could have been averted should a properly designed storm water management system has been put in place.

(a) (b)

Figure 1: Satellite images of the (a) dust storm in the Gulf Region on 2 April 2015, and (b) devastating flood event in La Plata

In this context, it is essential to have a good understanding of the links between man-made developments and possible environmental consequences.

It is impossible to conduct large-scale experiments to draw conclusions about climate change or other global impacts of human activities on the environment, but thanks to the developments in computational hardware and sensing equipment, it is now possible to automatically collect and analyze huge datasets comprised of terabytes of data. Furthermore, it became possible to predict impacts by the means of numerical modelling of relevant physical and bio-chemical processes. For instance, various coastal developments, such as ports and harbors, desalination and power plants, may alter the natural marine environment and often introduce undesirable sources of pollutants during both the construction and operational phases. Typical examples include thermal and brine pollution, pollution by various bio-chemical substances discharged from waste water treatment plants, oil spills, radionuclides, suspended sediments, acoustic noise, and so on. This not only causes unnatural stress on a local ecosystem, leading up to a whole extinction of biological species, but this may also bring down economic efficiency, occasionally leading to temporal shutdowns of industrial or recreational facilities. One may recall that just a year ago the Philippines announced a six-month closure of the popular tourist destination of Boracay Island over concerns that the island's beaches and adjacent marine waters have been transformed into a "cesspool" due to sustained environmental damage. Severe pollution may also occur due to accidents, whereas oil spills are perhaps the most well-known examples.
Sample aerial photograph of an accidental oil spill in the Arabian Gulf, and controlled mud plume generated by dredging at Vousari in Finland are depicted in Figure 2

(a) (b)

Figure 2: Aerial photographs of the oil spill near Kuwaiti southern Ras Al Zour area on 12 August 2017 (Source: The Associated Press) and controlled mud plume at Vousari in Finland (Source: PIANC Report No. 100).

The development and improvement of instruments for sensing and computational hardware for data analysis, as well as advances in numerical modeling of respective processes has opened new ways to predict, avert or minimize various negative consequences of human activities on the environment.

A good engineering practice these days is based on the science, and it typically includes various feasibility studies, environmental impact assessments, environmental monitoring and management.

Environmental feasibility studies aim to predict impacts by the means of computer modeling (or even simple high-level desktop studies in the past), identify hazards at early stages and recommend optimal solutions. Environmental impact assessment (EIA) studies are more detailed in terms of field surveys, historical data analysis, numerical modeling, and potential impact analysis. Environmental monitoring and management aim to assess post-development conditions, and assess changes to the environment. At this phase a decision-support system may be developed to mitigate negative impacts and support operations. It is worth noting that a proper design and continuous monitoring, which take into consideration environmental priorities, may also help to bring down future operating costs, and take preventive measures if needed.

Generally environmental monitoring can be split into the following groups: remote sensing, in-situ measurements, and ex-situ measurements. Remote sensing, such as satellite and airborne imagery, echo-sounding, etc., is focused on measuring certain characteristics within a medium (i.e. air or water) by an instrument placed outside of it. For instance, the Coastal and Environmental Sensing and Monitoring (CESAM) Lab at the Masdar Institute of the Khalifa University (https://earth.masdar.ac.ae/) monitors certain meteorological quantities such as vertical temperature and humidity profiles with the help of ground-based microwave radiometers (MWR). A photograph of such an instrument installed in Masdar Institute is shown in figure 3. It is worth noting that satellite imagery may also be helpful to detect many other surface phenomena, such as thermal plumes, algal blooms, mud and oil spills, etc.

In-contrast, in-situ measurements are conducted by instruments placed within a medium, and interacting with it. For instance, a so-called “Conductivity, Temperature, Depth” (CTD) instrument allows for the measurements of seawater conductivity and temperature, simultaneously recording depth of a sample based on pressure. The conductivity is used to derive salinity. A sample photograph of CTD in the CESAM Lab is shown in figure 3b. Sensors installed on floating marine buoys typically measure various meteorological quantities, surface wave characteristics, currents, water temperature and conductivity, Chlorophyll-A concentration (phytoplankton), concentration of hydrocarbons, radioactivity, acoustic waves, etc. These buoys are often equipped with solar panels, which provide power to instruments, and GPS to track location; measured data can be streamed to a land-based station in the real-time either through ground-based cellular network if available, or through a satellite.

A plethora of other sensors and instruments have been developed and significantly improved over the past two decades, particularly those using optical sensors. Sequoia Scientific Inc. (http://www.sequoiasci.com/), a US-based company, has relatively recently developed an instrument, which can in-situ analyze grain size distribution of suspended sediments, a type of measurement that was previously done only in a lab. This instrument may find potential applications to monitor characteristics of suspended sediments in proximities to marine water intakes, as well as close to the places of dredging, reclamation or offshore drilling works. Finally, for ex-situ measurements respective samples are collected in the field, and subsequently analyzed in a lab. This kind of measurements requires more sophisticated lab equipment, and hence parameters of interests cannot

be instantly measured in the field. In certain countries, such as Singapore, operators of waste water treatment plants take samples of their effluents for subsequent lab analysis with respect to specific sets of bio-chemical contaminants and nutrients, such as phosphates, nitrates, heavy metals, coliforms, etc., on daily basis.

(a)

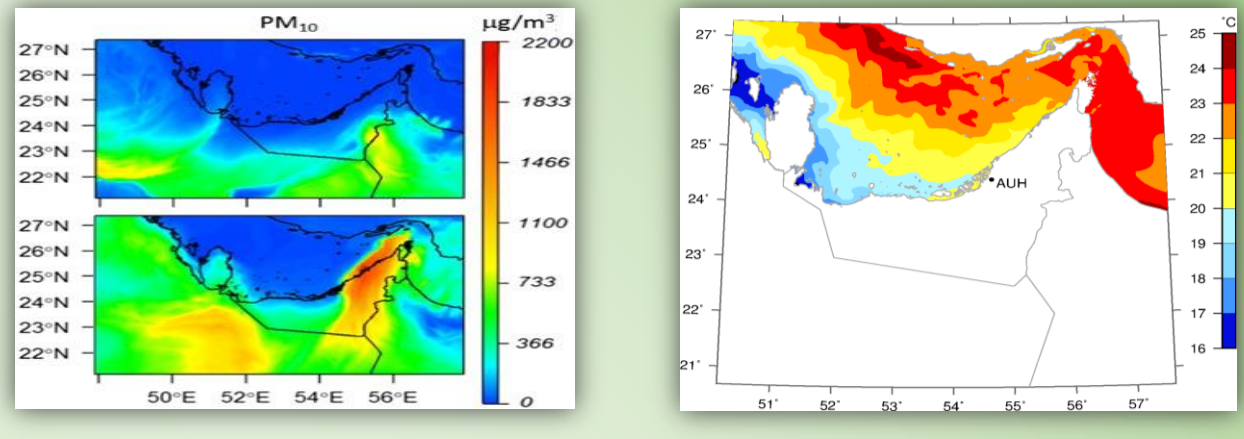
(b)

Figure 3: Photographs of: (a) the MWR placed on the roof of a building within Masdar Institute (Source: CESAM), and (b) the CTD instrument in the CESAM Lab.

Numerical modeling can be split into the two groups, namely hindcast (modeling of a past situation) and forecast. The former is normally used for the purpose of model validation and calibration, as well as for validation of the assumed relationships between state variables. The latter is typically used to provide support for decision-makers.

Numerical models for the simulation of atmospheric and oceanic processes rely on scientific and engineering software programs, which are developed or being developed by various institutions or groups of institutions, and then applied to specific problems. These numerical models are based on mathematical equations, which describe relevant physical or biochemical processes, and they differ from each other by processes taken into consideration, discretization methods and computational algorithms.

The CESAM Lab has adapted Weather Research and Forecasting (WRF; www.wrf-model.org) system, which was originally developed by the US National Center for Atmospheric Research and the National Oceanic and Atmospheric Administration (represented by the National Centers for Environmental Prediction), for the high-resolution atmospheric modeling in the Arabian Gulf region (4 km horizontal resolution over the UAE). This model is used to forecast certain meteorological and air quality parameters, such as the concentrations of particulate matter in the air. The CESAM Lab has also established an operational model of the currents, temperature and salinity in the Arabian Gulf based on the Regional Ocean Modeling System (ROMS; https://www.myroms.org). Application of so-called unstructured grid models in the future, which would allow to increase numerical resolution where needed, is being considered as well. To run numerical models the CESAM Lab utilizes a shared computational cluster of the Khalifa University, comprised of nearly 2,000 Intel Xeon cores. Typical outputs from WRF model and ROMS are demonstrated in Figure 4



(a) (b)

Figure 4: Sample snapshots of (a) dust concentration in the air modelled with WRF model, and (b) sea surface temperature modelled with ROMS.

In general, the continuous efforts are being made by the CESAM Lab to enhance the numerical models to the operational level in order to provide stakeholders and end-users with advanced web-based monitoring tools and decision support systems, such as:

- The marine portal aimed to address the hydrodynamic of the Arabian Gulf and associated issues, available at https://earth.masdar.ac.ae/marine;
- Weather portal, established to provide various meteorological quantities, which is available at https://earth.masdar.ac.ae/Weather;
- A dust tracking system, which receives satellite images of the Arabian Peninsula region with the frequency of 15 minutes, available at https://earth.masdar.ac.ae/air_quality.

A proper design and monitoring imply considerable investments in instruments, computational resources and man-power, but development of these systems is essential for sustainable management of ecosystems, disaster management, and climate change prediction. Costs of instruments and auxiliary equipment to monitor characteristics of water and air and stream data to land-based processing facilities may vary in a wide range: from several thousand UAE dirhams to several millions for complex systems; man-hours spent to develop, test and apply numerical models may also be huge, totaling in years of tedious collaborative work of multi-national organizations.

One may ask: is it worth such investments? At the Khalifa University we believe, yes, it is. If we want the next generation to enjoy a greener environment, if we want to improve future economic conditions, then the sustainable investment into the environmental decision support, monitoring and forecast systems is essential. If we do not support the environment now, the environment will stop supporting us soon.

Green Development - Be Green for Sustainable Environment

Dr. Heba Elbasiouny

Lecturer of Environmental Sciences, Al-Azhar University, Egypt.

Hebaelbasiouny@azhar.edu.eg

Dr. Fathy Elbehiry

Central Laboratory of Environmental Studies, Kafrelshiekh University, Egypt.

Fathyelbehiry@gmail.com

The development of environmental movements

Industrialization preceded at a breakneck pace with amazing results in their breadth, alarmed many with the havoc they wreaked. Nuclear fallout from atomic tests, air pollution caused by millions of cars and factories spewing chemicals into the atmosphere, the destruction of once-pristine rivers and lakes, and the disappearance of farmland and forests under suburban developments were a concern to many citizens. In1962, Rachel Carson published a "Silent Spring", a devastating argument against the reckless use of the pesticides that were wiping out populations of birds, insects, and other animals. Following the publication of Silent Spring and books like Paul Erlich's, some political leaders joined many others in adding environmental protection to their platforms. And in 1968, NASA astronaut William Anders, while orbiting the moon with the Apollo 8 mission, snapped a photograph that many people credit with providing a foundation for the modern green movement.

Thus, In the middle of the 20th century, we saw our planet from space for the first time... From space, we see a small and fragile ball dominated not by human activity and edifices but by a pattern of clouds, oceans, greenery, and soils. Humanity's inability to fit its activities into that pattern is changing planetary systems, fundamentally. Many such changes are accompanied by life-threatening hazards. This new reality, from which there is no escape, must be recognized - and managed (From One Earth).

Like many social and political movements, the green movement has been strengthened by the forces that oppose it. Today, the green movement is again defined and stimulated by its political commands to meet environmental issues like global warming and climate change, wetlands preservation, nuclear proliferation, fisheries depletion, species extinction, and other important environmental concerns.

Sustainable Development

Sustainable development concept first been introduced and defined by the World Commission on Environment and Development in 1987 as "Development which meets the needs of the Present without compromising the ability of future generations to meet their own needs. Many governments have committed themselves to meet sustainable development through aligning economic welfare, environmental quality, and social coherence. The concept of sustainable development is concerned with the quality of economic growth, human well-being, and the environment. Hence, it connects environmental, economic, and social issues (Figure 1). An approach towards sustainability requires that all elements related to sustainability are considered simultaneously. Thus, the main goal of sustainability is to completely integrate the three above-mentioned elements into one system. In environmental sustainability, the main issue to be highlighted is the impact of human activities on the environment.

To operationalize the concept of sustainable development, the list below contains 15 guiding principles, sorted into five helpful categories. They are included to stimulate thought as well as provide advice for environmental professionals and others.

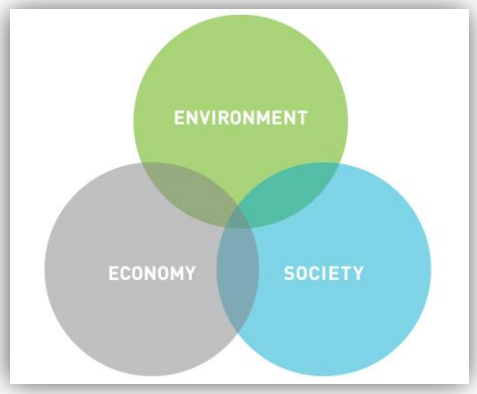


Figure 1: Environmental sustainability

1. **Societal Needs**
   - ❖ Producing nothing that will require future generations to maintain watchfulness.
   - ❖ Designing and delivering products and services that lead to a more sustainable economy.
   - ❖ Supporting local employment
   - ❖ Supporting fair trade.
   - ❖ Reviewing the environmental features of raw materials and making environmental sustainability a main requirement in the selection of ingredients for new products and services.
2. **Preservation of Biodiversity**
   - ❖ Selecting raw materials that preserve the biodiversity of natural resources.
   - ❖ Using environmentally responsible and sustainable energy resources and investing in improving energy efficiency.
3. **Regenerative Capacity**
   - ❖ Keeping harvest rates of renewable resource inputs within regenerative capacities of the natural system that generates them.
   - ❖ Keeping depletion rates of nonrenewable resource inputs below the rate at which renewable substitutes are developed.
4. **Reuse and Recycle**
   - ❖ Designing for reusability and recyclability.
   - ❖ Designing (or redesign, as appropriate) manufacturing and business processes as closed-loop systems, reducing emissions and waste to zero.

5. Constraints of Nonrenewable Resources and Waste Generation

- The scale (population x consumption per capita x technology) of the human economic subsystem should be reduced to a level that is at least within the carrying capacity and consequently sustainable.
- Keeping waste emissions within the assimilative capacity of receiving ecosystems without unacceptable degradation of its future waste absorptive capacity or other important ecological services.
- Developing transportation criteria that prioritize low-impact transportation modes.
- Full consideration of the environmental impacts of the product when making all decisions of product development and product management (Morelli, 2011).

Green Consumption

Encompasses a broad range of consumption activities focused on protecting and preserving the natural environment.

Green Production

Is a business strategy that focuses on profitability through environmentally friendly operating processes such as saving and investing in resources, improving utilization efficiency, clean production, and the repeated use and recycling of materials.

In order to achieve sustainable development when the world has limited resources, establishing sustainable patterns in consumption and production is a necessary requirement.

In this context of sustainability of the environment, the word 'Green' is often used as a general term to describe environmental sustainability or eco-friendliness.

"Be Green" means to pursue knowledge and practices that can lead to more environmentally friendly and ecologically responsible decisions and lifestyles, which can help protect the environment and sustain its natural resources for current and future generations

Going green is defined according to your dictionary (https://www.yourdictionary.com) as making more environmentallv friendlv decisions such as to "reduce. reuse and recvcle."

Reduce, Reuse, and Recycle "3 Rs hierarchy"

Reduce means "less" as in "use less" or "make less of" such as:

- Turning off the tap while brushing teeth, thus REDUCING water use
- Walking or riding bikes, thus REDUCING fossil fuel use, and emissions
- Turning off or unplugging electrical appliances when not using, thus REDUCING electricity use and savings money
- Composting green waste like kitchen scraps or lawn trimmings, thus REDUCING garbage in a landfill, creating a usable product for later
- Switching to energy-efficient light bulbs and appliances, thus REDUCING energy and saving energy costs.
- Making double-sided copies, thus REDUCING paper use
- Going electronic—emails, document sharing, online bill pays, thus REDUCING paper use
- Buying in bulk or purchase products with minimal packaging, thus REDUCING waste

Reuse means using a product once again for the initially planned purpose. Reusing elements also contributes to the "reduce" principle. Reusing reduces the necessity to purchase a newer version of a product. Reusing such as:

- Using a refillable beverage container
- Switching out plastic baggies for plastic containers that can be washed and reused
- Using plastic grocery bags as trash bags for small trash cans
- Purchase/making reusable grocery bags
- Donate clothing, furniture, and other household goods to others in need.

Recycle means collecting and processing materials that would then be eliminated as a trash and turning them into new products such as:

- Glass: new glass bottles/jars, and fiberglass
- Plastic bottles: sleeping bags/ski jackets insulation, polar fleece fabric, new plastic bottles and containers
- Paper: new paper, paper towels, egg cartons, phone books, paper plates.
- Metal/aluminum cans: new aluminum cans, bike/car parts, appliances.

Benefits of Reducing, Reusing, and Recycling

1. Reducing greenhouse gas emissions that contribute to global climate change
2. Helping sustain the environment for future generations
3. Allowing products to be used to their fullest extent
4. Saving money
5. Reducing the amount of wastes sent to landfills and incinerators
6. Conserving natural resources such as timber, water, and minerals
7. Increasing economic security by tapping domestic materials
8. Preventing pollution
9. Saving energy
10. Supports manufacturing
11. Helping create jobs in the recycling and manufacturing industries

"Green" and "Sustainable"

In the Oxford English Dictionary (1989) the term "green" is defined as "pertaining to, or supporting environmentalism".

While, the term "sustainable" relates to "forms of human economic activity and culture that do not lead to environmental degradation, esp. avoiding the long-term depletion of natural resources".

"Green Development" and "Sustainable Development"

Sustainable development requires adapting to the constraints of nature, while green development requires humankind to launch programs that are in harmony with nature.

Sustainable development is based on anthropocentrism, whereas green development is an integrated system of humanity and nature.

Sustainable development is based on convergence, while green development can support expansion.

Sustainable development means not passing on a depleted environment to future generations, whereas green development means "planting trees at the present now to provide shadow for future generations," i.e., adding of more inputs and passing on enriched ecological assets.

The implementation of green development relies on many factors such as:

1. It needs a road directing to an ecology-oriented civilization. Traditional style development, distinguished by high consumption, pollution, and emissions, is basically motivated by capital and built on free competition and self-interested markets; sustainable development is a partial amendment of this traditional form of development, whereas green development marks a fundamental change from the traditional developmental paradigm.
2. Green development is characterized by self-discipline and based on green markets and reasonable consumption. While, traditional pathways of development, still focus on adjustments to government and the market. In contrast, green development remains outside the traditional model of development and emphases on the processes of humanity and nature, and moving from economic centrism and the importance of pure economic interests to comprehensive eco-socio-economic integration and respect for *- society, humanity, and nature.

Reasons for Going Green:

- ❖ Environmental problems such as, endangering animals, deforestation, global warming and increasing landfills, are having a damaging effect on the Earth planet, and in the future may make the planet a very unpleasant place to live.
- ❖ Minimizing the damage by humans; to live an environmentally responsible life, and to help preserving the earth and its non-renewable resources instead of destroying them.
- ❖ By eating natural, organic, locally produced foods, you reduce carbon emissions, limit the use of dangerous pesticides and have a healthier meal.

Examples of going green:

- Switching light bulbs to compact fluorescent lamps
- Recycling and buying recycled products

Green stands for ecological sustainability and covers many different concerns such as air, water and land pollution, energy usage and efficiency, and waste generation and recycling (as in Figure 2). Thus, green actions aim to minimize the impact of human activities on the environment.

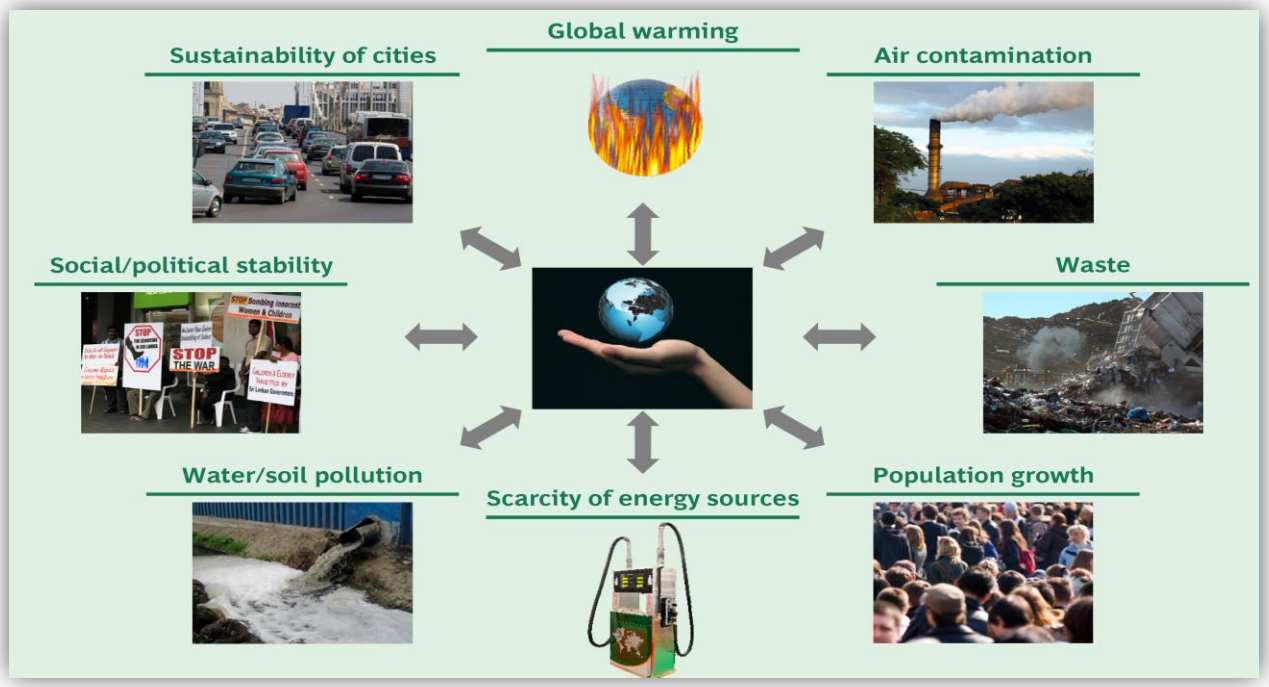


Figure 2: Green encompasses many different concerns

The rising concerns for Green can be grouped into three broad categories:

1. **Rising emissions and associated climate change:** Greenhouse gas (GHG) emissions have increased rapidly in the recent past and their growth is further accelerating. This has led to increasing global temperatures by 0.74°C over the last century —the fastest-warming observed in the history of Earth. At the current rate, emissions will double by 2050, compared to the 2000 levels (figure 3). This could mean corresponding temperature rise of 4–6°C over pre-industrial levels by the end of this century. This unprecedented change is expected to have a grave impact on the global ecosystem, hydrological system, sea level, and crop production and related activities.
2. **The fast depletion of scarce natural resources:** With ever-increasing population and industrialization, the consumption of natural resources (such as wood, coal, oil, food, water, etc.) is rapidly increasing, while their availability is shrinking. This has led to periodic mismatches in demand-supply and highly fluctuating prices, impacting both corporate margins and consumer spends. Hence, there is an urgent need to (a) adequately manage the use of these resources and (b) find and develop alternatives that are less scarce (such as sun and wind).
3. **Growing waste generation and pollution:** Increased industrialization and urbanization have led to significant growth in waste generation and environmental pollution. Industrial chemical wastes can be potentially dangerous to health, and its disposal without treatment is causing land and water pollution. The release of industrial effluents in rivers and water bodies is destroying local habitats. As the demand and use of electronic products increase, e-waste is also becoming a major source of environmental pollution.

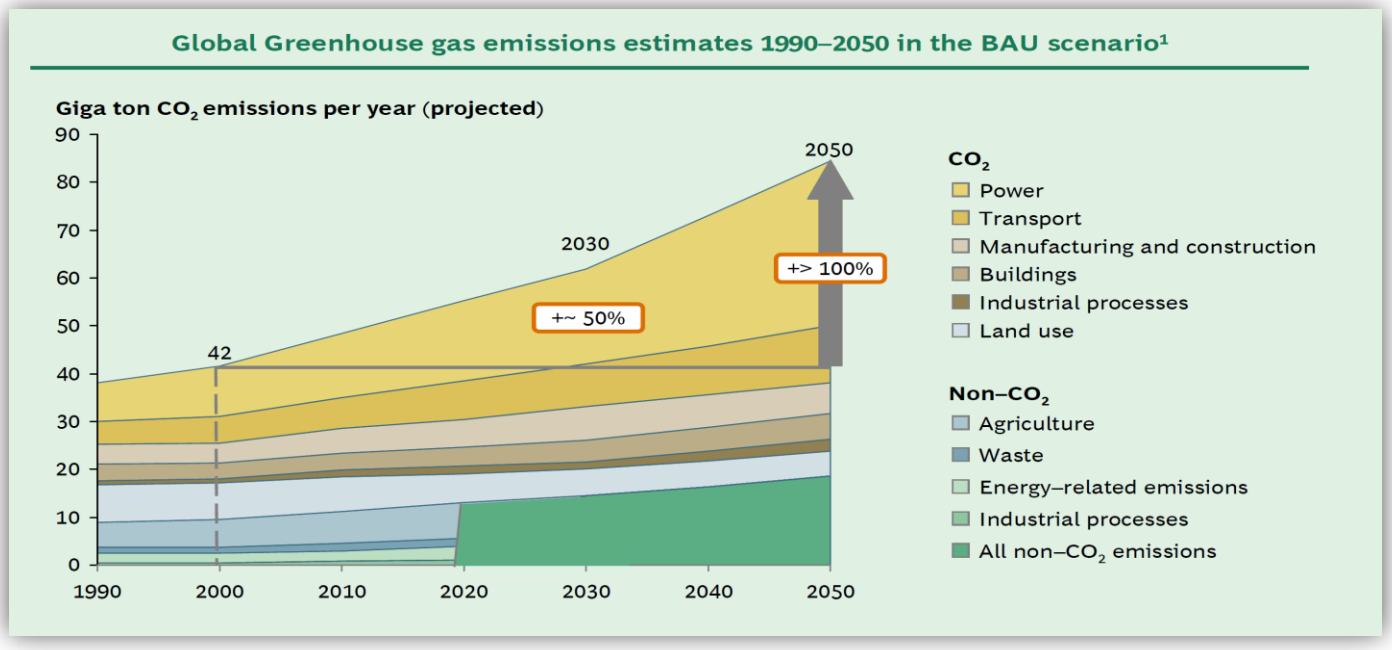


Figure 3: Greenhouse gas emissions will increase twofold by 2050 if there is no action.

Zero wastes

Zero wastes mean designing and managing products and processes systematically for avoiding and eliminating waste, and for recovering all resources from the waste stream.

Working towards zero waste has become a worldwide movement that inspires changes in design that make it possible to untie and recycle products.

Simply, zero wastes mean no needless and unwanted wastes from a product at any stage of its life cycle.

The scope of zero waste includes many concepts that have been grown for sustainable waste management systems, such as avoiding, reducing, reusing, recycling, repairing, reselling, redesigning, regenerating, remanufacturing, and re-distributing waste resources.

Consequently, a zero-waste strategy is growing in popularity as the best practice. It not only encourages recycling of products but also restructuring their design, production, and distribution to avoid waste emerging in the first place.

At the end, there are some simple actions at the personal level to be not only greener and eco-friendlier but also save money and heath:

1. Change your means of transport through Leaving the car aside, choosing bikes, taking Public transports, and walking.
2. Choosing, maintaining and even renovating your house: The second most polluting resource for many countries is housing through heating and electricity consuming. Thus, it is really important to consider the environmental impact of housing.
3. Reducing your consumption of meat and dairy to reduce greenhouse gas emission and carbon footprint.
4. Going on holiday closer to home to reduce carbon footprint and pollution
5. Be an active member of your community through sharing, exchanging, reducing and sorting, recycling .... etc.

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Can Classic CSR Support Bridge The SDGs Investment Gap?

Dr. Monaem Ben Lellahom
Group CEO / Founding Partner
Sr. Sustainability & Social Impact Advisor
SUSTAINABLE SQUARE - www.sustainablesquare.com

The UN Sustainable Development Goals (SDGs) were launched in 2015 under widespread guise that the global community, comprising of all nations indiscriminately, are at the mercy of the private sector when it comes to creating and sustaining viable solutions to critical issues. Subsequently, both companies and institutional investors are being prompted to recognize and contribute to the SDGs through their business activities, asset allocation and investment decisions. The precedence of the SDGs are entirely novel to the modern sphere. Its closest counterpart, the Millennium Development Goals (MDGs), has enjoyed a similar level of buzz yet has been faulted for its lack of campaign for a dynamic process of investment in sustainable development and resilience in the face of economic, social or environmental shock.

Another demerit of the MDGs was that the concept required significant financial resources on focused development programmes. The SDGs, in turn, earn a shiny gold star for its capacity to hone and facilitate Financing efforts pertaining to investment in economic upgrade, in areas such as basic infrastructure, clean water, sanitation, renewable energy, and agricultural production.

In reality, sans the achievement of SDGs, we are beating a dead horse – beating reflecting a continued use, and the dead horse being emblematic of present and stagnating models of socioenvironmental considerations. Bridge the investment gap to ensure the ambitions of equity we're pining for in 2030 would be wishful thinking during the last few years, myself and my colleagues at Sustainable Square have been advising private sector organizations on new and innovative mechanisms to push for impact whilst generating profitability through the design and implementation of a shared value agenda. In doing so, we have noticed that the pace of change is dramatically slow.

Unfortunately, this does translate to the private sector failing with regards to trend uptake, opting for a classic way of deploying CSR, community and charitable funds in communities where they operate. More often than not, these funds are calculated as percentages of net profits, which vary from 1 – 2.5% in most of the case.

Linking a statistic of net profit to altruistic monetary support does illustrate commitment and dedication towards 'giving back', the following table clearly depicts the massive crack to be filled in between available community funds and needed annual investments to ensure complete usefulness of the investment.

To examine this occurrence, I chose to analyses the capacity of the top companies in a handful of key industries to channel 2.5% of their net profit towards covering the **$2.5 trillion annual investment gap needed in the developing world** to achieve the SDGs by 2030.

I have gathered data on the 2017 net profit of the top **10 – 50 companies** operating in the biggest industries and calculated **2.5% of their net profits**. The results were... well, you better take a seat.

Industry	Number of companies	Industries	Net Profit 2017 Unit: $, billion	2.5% Net Profit 2017 Unit: $, billion
Automotive	20	Car manufacturers in 2017	74.04	1.85
Chemicals	50	Chemical companies	102.12	2.55
Construction & Materials	10	Contractors	27.84	0.70
	20	Construction companies		
Financial Services	20	Financial services companies	318.38	7.96
Food & Beverages	25	F&B, Tobacco companies	127.96	3.20
Forestry & Paper	20	Packaging Companies	9.77	0.24
Healthcare	50	Healthcare service and hospital & clinic providers	128.54	3.21
	50	Pharmaceutical companies		
Industrials, Manufacturing & Metals	10	Metal Producing Companies	48.18	1.20
	20	Aerospace Companies		
Mining	50	Mining Companies	133.28	3.33
Oil & Gas	25	Oil&Gas Companies	103.59	2.59
Personal & Household Goods	15	Household and Personal Products Companies	34.36	0.86
Retail	25	Retail Companies	500.10	12.50
Technology, Media & Telecommunications	25	Tech Companies	250.14	6.25
Transport & Leisure	10	Airlines	68.64	1.72
	15	Transportation Companies	59.71	
Utilities	10	Utility Companies	29.14	0.73
Total number of companies	470			
			Total Sum	50.39

If **470 of the largest companies** in the world dedicate **2.5% of their net profit to community impact,** we will be able to cover **a mere 2% of the total amount required annually** to achieve the SDGs by 2030. **Pause for gasps!**

Could this takeaway be enough for the private sector to acknowledge that their tried and tested systems are broke? Will this be sufficient to usher in an **organized shift toward impact investing?**

First and foremost, it is important for companies to reconcile existing assets with global goals; but, in actuality, there is not enough new capital being channelled into resolutions. Public pessimism surrounding current investment capacity's ability to cover the investment gap needed for the SDGs is rampant to say the least.

The **Global Impact Investing Network (GIIN)** has since found that more impact investors are aligning their portfolios to that of global goals and are utilizing them as a model framework for measuring the effectiveness of their impact investing activities. The GIIN's 2018 Annual Impact Investor Survey revealed that more than half of impact investors surveyed reported tracking some or all of their impact performance against the SDGs, showcasing the potential for impact investing to catalyse progress towards the goals and cover the investment gap.

The United Nations Development Programme (UNDP) released for comment and consultation a new set of standards to guide private fund managers toward investments that advance the Sustainable Development Goals (SDGs) with the intention to provide practical guideposts that make it easier for the private sector to operationalize the SDGs and shorten the runway from interest in to adoption of good impact practice.

Hence, it's critical that companies and investors breach present horizons and go beyond alignment. Focus must orient itself towards **raising and directing new capital in the direction of true progress with the SDGs at its core**. Increases in investment of this scale are tough, and much of the supplementing amount need to come from the private sector. Therefore, an increasing number of companies and investors *should* be actively seeking opportunities that will **generate not only a financial return, but also have a positive social and environmental impact** through means such as the **Impact Investment**. Impact investment not only catalyses private sector financing to address the SDGs, but also brings pioneered approaches to the table to leverage socioenvironmental remedies and outcome accountability.

Consider this a call to all private sector groups to review the way in which they are allocating budgets for classic CSR donations, and evolve their model towards impact investing.

The Action Face to the Emergency

Amine AHLAFI
FEE Vice President and FEE Executive Board member
Email: Ahlafi.amine@gmail.com

In an era where the climate crisis now requires urgency hands-on and action, it seems that any sustainably-driven investment can only be led towards corrective and mitigation projects and actions aiming to clear and effective responses that mitigate the impacts of this climate crisis on the social area as well as on the environmental one (Fauna & flora, Eco-systems, ...)

The oceans and the coastal zones do not escape this diagnosis and are apprehended both as a vulnerable ecosystem and as an indicator of the ecological health of this receptacle space reflecting the symptoms of our planet disasters.

I- THE OCEAN, A CLEAR INDICATOR OF THE CLIMATECRISIS

The impacts of climate change are becoming more and more devastating and do not spare any geographical area: sometimes pest fires, sometimes uncontrollable floods. The episodes of droughts and heavy precipitations are more frequent, shorter but more intense and destructive affecting human lives, biodiversity, territorial balances, economy, ...

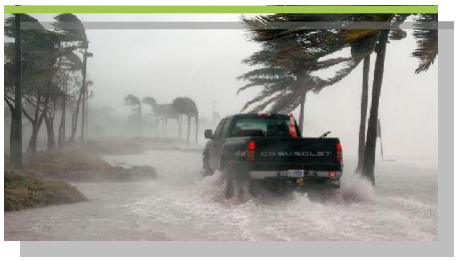
The oceans bear the full brunt of all these impacts and are perceived as a "PH" of the vulnerability of our planet, being places of life and sources of life. "The oceans are sending us so many warning signals that we need to get emissions under control "Said Hans-Otto Portner, a marine biologist and a lead author of the latest IPCC report on "Oceans and Glaciers" published and presented to the United Nations in September 2019.

The situation manifests itself in particular through the following main axes, as established by this report:

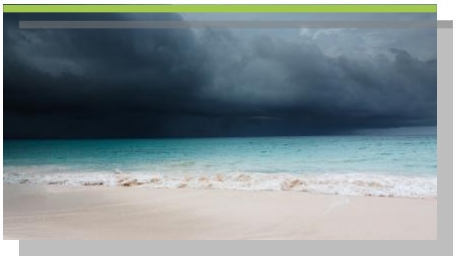
Sea-level rise is accelerating because the Greenland and Antarctic ice sheets are melting at an increasing rate;

The oceans, while still basic, are becoming more acidic, which will have serious consequences for coral reefs and shell-building marine species;

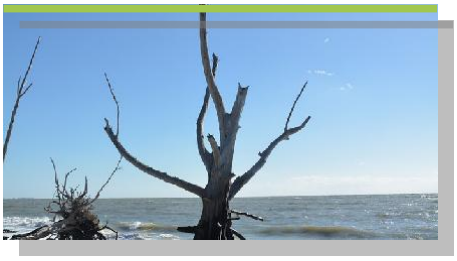
The oceans are warming rapidly, leading to more frequent marine heatwaves, which also damage coral reefs;



Researchers are beginning to see more of the most intense hurricanes, those in Category 4 and 5, which in combination with higher sea levels and increased precipitation pose increasing risks and damages to coastlines;



Melting of permafrost could become a major feedback, adding carbon emissions and global warming in energy scenarios with significant continued fossil fuel burning;



Ocean oxygen levels are declining, which in combination with rising temperatures drives marine species away from the equator toward the poles, and, in concert with algal blooms, could lead to reduced seafood catches at fisheries.

II. SO WHAT:

The motto is clear: Take hands on action to deal with this alarming situation: targeted and multi-target action and sustainable investment.

It is no longer a question of theories and debates around the diagnosis and on the urgency of the action. All the stakeholders (Governments, Corporate, Civil Society, ...) working directly and indirectly on the oceans and on the coastal zones are required to act by changing the paradigm and the Business as usual: in the approach of investing, of designing the programs and the projects, of unifying the forces and of implementing the actions.

ONE OF THE EXAMPLES OF THE ACTION TAKEN TO FACE THE CLIMATE CRISIS BY AN INTERNATIONAL NGO: THE FOUNDATION FOR ENVIRONMENTAL EDUCATION.

FEE Response to the Climate Crisis

https://www.fee.global/newsstories/2019/10/3/fee- response-to-the-climate-crisis

The latest IPCC Special Report on the Ocean and Cryosphere in a Changing Climate clearly states our fragile Earth is now in perilous danger and that we humans are a major contributing factor. The clear consensus is we have less than a decade to wholeheartedly address the climate crisis to stay within the 1.5 degree temperature rise.

Since 1981, the Foundation for Environmental Education has been working on a solution-based approach for creating a more sustainable world. Through our five programmes, we have empowered people to take meaningful and purposeful action to look after our valuable finite natural resources by enhancing global environmental education.

FEE is galvanised into action by this latest IPCC report and we are committed to sharing our knowledge and experience, so we can play our part in offering positive actions and solutions to the current climate crisis.

We can, and will do more, and will now sharpen our own focus on three key themes: climate change, loss of biodiversity and pollution.

"There is a pressing need to prioritise FEE's limited resources to focus on these three main themes that are intrinsically linked. We have an important role to play in addressing the urgency of the situation and to commit to a strategy and approach that puts these critical issues at the heart of our programmes and our organisation," says FEE President Lesley Jones.

For the last thirty eight years, FEE has been educating millions of people around the world to become leaders of sustainability and positive change. Now, together with the right knowledge and know-how, we can increase our contribution and push even harder as positive agents of change.

Our educational programmes, Eco- Schools, LEAF and Young Reporters for the Environment utilise a solution- based approach for empowering young children, youth and young adults to take meaningful action to protect our planet. And, our Green Key and Blue Flag initiatives promote sustainable business practices within the tourism industry.

Lastly FEE's Global Forest Fund, to be re-launched in its upgraded form this November, will be a powerful tool for all to compensate travel-related emissions through our educational projects focused on school and community tree planting, providing further positive solutions to the climate crisis we are facing.

Together we can all make a positive change on a global scale.

DIRECT INVESTMENT

Rising temperatures and changing patterns of precipitation would be expected to have direct impacts on agriculture and fisheries but they may also affect other sectors such as energy, tourism construction and insurance.

To act on the direct investment is to integrate it under the sign of the sustainable development by changing our approach to apprehend the investment:

» Upstream through the reduction and the replacement of the investment in polluting products that are found ended up in the ocean, in this case plastic becoming a global scourge. (see the examples below relating to the plastic waste campaigns)

» Through the regulation of the investment affecting coastal zones and marine eco-systems (sustainable tourism, sustainable fisheries....)

» Through encouraging R&D for sustainable alternatives reducing negative impacts and maximizing positive externalities of every single investment

» .....

THE EXAMPLE OF THE SUSTAINABLE TOURISM

Inverting in Sustainable Tourism as an alternative to a mass seaside tourism to sustain the positive impacts of the tourism, while anticipating, reducing and offsetting its damage:

» At the programmatic phase of the investment, make sure to choose the site where the project is to be implemented and to study its impact on the environment and surroundings.

» At the project implementation phase, minimize negative impacts on resources, generate local employment and encourage local production.

» In the managing phase, opt for responsible purchasing policies, prioritize and strengthen the capacities of the local communities, respect the local culture and heritage,

» At the level of marketing and sales, privilege and value the responsibly-driven approach, respect the critical thresholds of the hosting capacities of the sites, ...

» .....

THE PLASTIC WASTE CRISIS

Every single piece ever made in this earth ends up in nature and particularly in the ocean damaging the landscape of the coastal zones and the marine biodiversity.

The plastic waste crisis is becoming an indicator of the ocean's alarming situation. Tons of plastic debris is discarded every year, everywhere, polluting our surroundings, coats, beaches and oceans.

Our attraction to plastic combined with a behavioral propensity of increasingly over- consuming, discarding, littering and thus polluting, has become a combination of lethal nature.

https://noplasticwaste.org/

Every year, 8 million metric tons of plastic end up in our oceans. It is equivalent to 5 grocery bags filled with plastic for every foot of coastline in the world. In 2025, the annual input is estimated to be about twice greater, or 10 grocery bags filled with plastic for every foot of coastline. So the cumulative input for 2025 would be nearly 20 times the 8 million metric tons estimate- 100 bags of plastic per foot of coastline in the world!

— Study conducted by a scientific working group t UC Santa Barbara's National Center for Ecological analysis and Synthesis (NCEAS); published in the journal Science in February 2015 —

Several stakeholders started to act to face this crisis trough different means, projects, programs and campaigns idealy

before a tipping point when the ocean turns, irretrievably and for centuries to come, into waves of plastic.

» European Union formally adopted a plan to ban a longer list of items including plastic straws, plastic cutlery and plastic plates by 2021.

» Green groups from civil society are investing to do more to reduce plastic consumption and increase recycling rates through impacting our daily behavior. 2 best practices could be raised to show examples of awareness campaigns targeting a tremendous behavior change worldwide

"A WORLD FREE OF PLASTIC WASTE IT'S POSSIBLE. BUT WE NEED YOUR HELP!" Plastic waste crisis campaign

https://noplasticwaste.org/

"Clean Beaches" programme and campaign by the Moroccan NGO; The Mohammed VI Foundation for environmental protection

https://www.fm6e.org/fr/b7ar-bla-plastic

On the Path towards a Greener Economy for a more Sustainable Future

Abdulrahim Sultan,
Director General, World Green Economy Organization
https://worldgreeneconomy.org/
Dubai - UAE

The World Green Economy Organization is driving the transition to a greener economy for a more sustainable future through its platforms, programs and offering opportunities for collaboration at key events.

Given rising global development and the associated exponentially expanding energy demand, there's never been equivalent pressure on the resources of the planet. The impacts of this pressure are increasingly visible, from sea level rise and changing weather patterns to unprecedented increases in pollution around the world. To tackle the ongoing crisis, climate change and sustainability are currently rising on the agenda of governments across the globe and the private sector is considering ways to transform their business operations and impacts to more sustainable solutions whilst maintaining economic viability.

The Middle East is at the forefront of the global sustainability mission, launching several sustainability strategies such as the UAE Vision 2021, the UAE Green Growth Strategy , the Dubai Integrated Energy Strategy (DIES) 2030, and the Dubai Clean Energy Strategy 2050, which all contribute to encouraging companies to support the Middle East's sustainability goals further advancing the UAE's sustainablilty agenda, Dubai Based international organization, the World Green Economy Orgnization (WGEO) is providing systematic and holistic support to both local, natinaol and global orgnizations and companies to help facilitate their efforts in transitioning towards a greener economy.

Founded in response to the concerns identified at the Rio+20 United Nations Conference on Sustainable Development in 2012, WGEO's mission is to promote the widespread adoption of a green economy within the context of sustainable development. Its focus is on sustaining economic growth, enhancing social inclusion, improving human welfare and creating employment opportunities, whilst maintaining a balance of the planet's ecosystems, and preventing serious negative implications of environmental degradation on human health and welfare.

Launched in 2016 by the United Arab Emirates (UAE) government, represented by His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, and in partnership with the United Nations Development Programme, WGEO is operationalizing its mission by facilitating public and private sector partnerships and promoting international cooperation and knowledge-sharing to support an increase in the adoption of green economy.

WGEO, as a multilateral membership organization, with membership offered to both state and non-state actors, offers a unique modality of partnership between the public and private sector in providing both a comparable position in decision-making processes and an equal share in leveraging membership benefits. The organization's vision is to become the leading source of knowledge, innovation, technology, finance and capacity building to enable green economy growth and expansion in close cooperation with its members.

Moreover, WGEO recognizes the crucial role that regional collaboration plays in achieving the transition to green economies and has recently partnered with the UNFCCC to host one of six global UN Climate Change Regional Collaboration Centers (RCCs) in Dubai. The network of RCCs extends across Bangkok, Kampala, Lomé, Panama and St. Georges and now, Dubai. By establishing visionary partnerships with the UNFCCC and the UN Global Compact, among others, WGEO's aim is to create greater impact globally through collaborative initiatives, projects and programs which complement and support the green economy agenda.

WGEO's membership supports organizations and entities all over the world by sharing information and avenues for green economy action, thereby providing enhanced opportunities for governments, investors, and businesses to address environmental sustainability and economic growth challenges.

Covering the water, energy and infrastructure sectors, to name a few, WGEO's service offering facilitates member access to technical and financial assistance, knowledge and technology prospects, outcome-oriented dialogue on green economy policies, strategies and methodologies, and the creation of employment opportunities, all key tools to greatly enhance organizations' engagement in the global green economy movement.

The mechanism for implementation of WGEO's activities, events and programs around the world are its platforms - public, private and financial sectors, cities, academia and youth, civil societies, and international organizations. These platforms operate as a framework for cooperation and collaboration between the organization's state and platform members. These form the foundation for the multiple programs and events that are being implemented by WGEO this year, in alignment with both local and international green agendas and the organization's mission to support the transition to a green economy by educating, spreading awareness and supporting multisectoral collaboration, including private sector engagement.

WGEO operationalizes its platforms and activates its membership benefits by creating targeted projects and programmes in capacity-building, green investment and engagement opportunities, among others, to optimize cooperation, collaboration and coherence to facilitate the green economy transition on the ground.

Providing Capacity-building

WGEO's capacity-building programs act as innovative catalysts for knowledge sharing and revolve around the objective of providing the tools and trainings needed to create and strengthen capacity among diverse stakeholders to facilitate the transition to a greener economy.

The **Academy for Green Global Youth Leadership Empowerment (AGYLE**) has been designed with the objective of empowering youth on green economy, climate change, and finance to facilitate youth-led climate action. AGYLE is a holistic training programme composed of face-to-face training sessions, practical activities, mentoring and online trainings.

A digital platform that allows access to green products and services, WGEO's **Green Explorer** program unlocks the digital revolution for sustainable development. The Green Explorer is a gateway to a wealth of information about capital providers, mentors, capacity-building, events, facts, experts, knowledge, and a growing selection of digitized information on the green economy.

WGEO's **Smart Green Campuses** program seeks to finance green initiatives, align curriculums to ensure sustainability is covered and execute a campus retro-fitting process across universities and schools by targeting the main structural components of the campus buildings in an integrated manner to increase energy performance and ensure eco-friendliness.

The **Green Economy in the Context of Sustainable Development Training** program has been created with the aims to equip participants with a sound understanding of the key principles, dimensions, and trends in the process of transitioning to a green economy at national, regional and global levels. Participants will additionally become familiar with the tools and methods to catalyze proactive green action. The training has already supported capacity-building of over 300 high-level public and private sector participants around the world.

Facilitating Green Investment

The **Smart Green Cities Investment Workshops** have been designed by WGEO with the concrete objective of identifying and promoting investment opportunities and strategic projects that can offer demonstrable green growth potential. Participants in these workshops will have the opportunity to consult with representatives of WGEO state members, international organizations, the private sector, universities, impact investment funds and international cooperation institutions and will learn more about financing for sustainable development.

In addition, **WGEO's Social Sustainability - Cities Program** is another initiative to engage with smart cities and is designed to provide support to member cities

through holistic, sustainable solutions and tools that enable green growth and foster livable conditions for a growing population.

The **Social Sustainability programs** from WGEO include trainings on leadership in advancing responsible corporate citizenship, producing practical solutions to sustainable development challenges and enhancing corporate responsibility in a multi-stakeholder context while improving corporate/brand management, employee morale and productivity, and operational efficiencies.

The **Green Dialogue for Action program** leverages the seven platforms of WGEO, and engages various regions, through the modality of outcome-oriented dialogues around selected thematic areas, topics and issues. Through this program, identified project ideas are developed into investment-ready projects suitable for the implementation of green economy action.

WGEO has additionally developed the annual **World Green Economy Report** which is targeted towards global decision makers and green economy practitioners who drive the transformation at the global, regional and national levels. These reports highlight opportunities for channeling long-term green finance investments towards innovative businesses and green infrastructure, showcase pathways to creating market opportunities for private investments and place a spotlight on facilitating the transition of economies and societies to sustainable development and greener growth.

Platforms of Engagement

In addition to WGEO's programmatic activities, the organization's event line up for 2020/21 includes an array of inspiring and impact-oriented events that attract world leaders, heads of countries, ministers, high-level representatives from international organizations, policy makers, representatives from financial institutions, solution providers and solution seekers, as well as world-class experts and speakers from around the globe. The events shine a light on green economy, international best practices and status of implementation locally. They are an invaluable opportunity for attendees to network and connect with likeminded individuals and businesses, engage in panel discussions with high-level speakers, create collaborative solutions for green economy enhancement and offer a platform to showcase and exhibit their work and innovative climate action ideas.

Announced last year on the sidelines of the UN Climate Change Climate Conference (COP25) in Madrid, the World Green Economy Organization is one of the host entities for the first ever **MENA Regional Climate Week 2020** which is being organized in collaboration with UN Climate Change, the UAE Ministry of Climate Change and Environment and Dubai Electricity and Water Authority. Part of the umbrella of the regional climate weeks that are held annually in Africa, Asia-Pacific and Latin America and the Caribbean regions, the MENA Regional Climate Week to be held in Dubai is an important platform for bringing together regional stakeholders and supporting climate action at the regional level. The event allows regional and global stakeholders the opportunity to showcase climate action in the MENA region, to recognize global and regional efforts in combating climate change, and also offer a platform for institutions to advance their work by engaging with key stakeholders in the region from the finance, technology and capacity-building sectors.

A key WGEO event is the **Global Green Tech Hackathon** which will be the world's largest tech hackathon. The event is the culmination of an international series of events hosted by WGEO that bring together more than 10,000 attendees from 15 cities across six continents for the two-day event. A vehicle for innovation, the event is ideal for private sector organizations, governments, universities, non-profit organizations and the global community to acquire the knowledge and skills required to participate and thrive in the green economy. The event will empower attendees with the knowledge and skills needed to contribute towards the goals of the 2023 Sustainable Development Agenda and engineer ways to fast-track innovative ideas and practices. Based around a whole host of themes that include sustainability, health, education, waste management and finance, attendees to the two-day hackathon will learn about scaling up green tech innovation, how to create feasible green solutions for SDGs, how to mobilize finance for green startups and is an invaluable networking opportunity for enterprising youth.

Other events in WGEO's roster include one of the leading global forums on green economy, the **World Green Economy Summit**, bringing together world-class experts from around the world to directly focus on advancing the global green economy and sustainability agendas. The key themes of this year's summit include financing for sustainable development, international cooperation towards a green economy system and financial architecture and the adoption of green innovative solutions and financial instruments. Showcasing innovative solutions and leading practices to inspire change, the summit aims to align stakeholders with policymakers to create a facilitative environment and ecosystem for sustainable green growth.

Get Involved

WGEO's programs, project activities and events offer a vibrant opportunity to public and private sector entities to collaborate on design, development and execution aligned with the needs and priorities of partners and members. For more information about WGEO, its event line up for 2020/21, membership options and for more information about the programs, please visit https://worldgreeneconomy.org/ or at partnerships@worldgreeneconomy.org

Khalid Mohammed Badri

Director of the Environmental Center for

Arab Towns

The environment forms the zone in which we are living and surrounding us, it includes soil, water, air, food and energy, where we influence and affects. In order to strive on the importance of protecting our environment, the Environmental Center for Arab Towns (ECAT) works to raise environmental awareness through many environmental initiatives, including the issuance of this Envirocities e-Magazine. The magazine is one of the tools for education and environmental awareness to preserve our environment and natural resources, and to refine the human dimension of environmental issues, through the empowerment of people and get them to play active roles in order to achieve sustainable development. I addition, it plays a role in knowledge exchange and knowledge transfer and transfer of best practices on local, regional and international levels. It shows the importance of the role of society in changing behavior patterns and negative habits in dealing with the environment. Please note that the Environmental Center for Arab Towns works under the umbrella of Dubai Municipality and belongs to Arab Towns Organization. ECAT objectives to raise environmental awareness, environmental education, capacity building and transfer of best practices on environment and sustainable development among Arab Towns.

The Environmental Center for Arab Towns is pleased to invite the professionals and interested persons in environmental issues to send their articles that we believe will enrich the Envirocities e-Magazine and helps raise environmental awareness and education. Please send your contribution to

nedalma@dm.gov.ae or ecat@dm.gov.ae