



The National Field
Research Centre for
Environmental Conservation
About innovative Environmental Research

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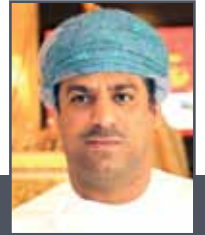
Sultanate of Oman
Diwan of Royal Court

Issue 32

Who is Responsible?!?

**Usage more than
40 million plastic
bags annually in every
major commercial
centre in the Sultanate**





point of view

Alarming numbers

Dawood Sulaiman Al Balushi
Editor-in-Chief

I was not expecting that the consumption of plastic bags in the Sultanate will increase to this level which become a real threat for environment and health. Every major commercial centre in the Sultanate consumes 40 million plastic bags every year. It means that if there will be 10 large such commercial centres in Oman, the consumption of Plastic bags will multiply to reach to 400 million. This is in addition to small retail outlets, restaurants, coffee shops and other private sector establishments. Eventually, these bags will end up in landfills, roads, seas and wadis, or burnt with some other wastes by expatriates in farms and wadis.

These figures are very scary. The real environmental threat posed to the Sultanate is plastic bags because of its negative effects on human health, environment and other organisms. This is because they are made of petroleum and chemical substances and derivatives. They pollute seas, wadis and tourist destinations. This is why, the United Nations Environment Program launched «Overcoming Plastic Pollution» as the theme of the celebration of the World Environment Day. This is in recognition of the fact that plastic has become one of the major human and environmental threats around the world.

The government in the Sultanate is making huge efforts to limit the use of plastic bags and replace them with other bags which are environment friendly. We are expecting specifications and standards so that these plastic bags do not harm humans and environment and degrade quickly. We are waiting for the decision in this regard to rescue us from the environmental problems. We also call upon private manufacturers and importers of plastic bags to join hand with government agencies in implementing the decision and adhere to the specifications and standards of the new eco-friendly bags.

Until the decision is issued to remove the fear of the threat of the alarming plastic bag consumption in the Sultanate, we on our own should be rational and reduce the use of plastic bags, and find other alternatives in the interest of our health and the environment.

Did You Know

Convention on International Trade in Endangered Species of Wild Fauna and Flora

This is an international agreement to regulate and control transportation of endangered species, their products or derivatives across the borders of countries. The Sultanate of Oman joined the convention on November 19, 2007 by Royal Decree

No. 117 / 2007. The convention was ratified in Washington D.C. on March 3, 1973 and implemented on 1st of July, 1975. This Convention is one of the most successful international conventions on the protection of wildlife. It was signed by 174 countries.



Environmental education team at the National Centre organises workshop on environment and its components



The environmental education team of the National Field Research Centre for Environmental Conservation organised an awareness event for female students of Thuraya bint Qais Al Busaidia for Basic Education about the environmental conservation. The event titled «environment and its components» was aimed at highlighting the moral values to help develop positive relationship between the human being and the environment. It was also meant for increasing awareness about the basic factors causing environmental

problems, and how to find their appropriate solutions. It was aimed at promoting positive environmental behavior of individuals to serve the eco-system and promote environmental education in the Sultanate. The activity was part of the efforts to strengthen joint work of the government organisations and academic and research institutions in the Sultanate. The activity included a lecture on environment, its elements, pollution and the efforts being made to protect environment.

Launch of 1st solar power plant connected to the network in the Sultanate

The Oman Oil Marketing Company (OOC) celebrated official launch of its first solar power plant at Al Sahwa Tower in Muscat, where the first solar grid connected to the network was installed at the filling station in the Sultanate. The

system is able to feed the station during production hours and feed the excess capacity of the network against a tariff agreed upon by the Electricity Regulatory Authority of the Sultanate to generate about 40 kilowatts of electricity per hour.

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**Two colors to protect
from blood-soaking flies**



**Environmental
Study**

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Scientists are looking for evolution of zebra to white and black lines



by Saeed Al Rashdi:

The subject of the development of zebra to have white and black lines has been controversial among scientists for decades. In a report published in the Journal of Experimental Biology, some Hungarian and Swedish scientists have confirmed that the zebra developed these lines to keep blood-sucking insects away. Researchers pointed out that these lines made the zebra unattractive for blood-soaking flies. Researcher Susan Akison of the Lund University who is a member of the team which studied the these lines said that the study began with observation of horses with black or brown skin. It reflected the horizontal lights in the form of waves resembling snake-crawling. This makes dark-colored horses attractive to flies, while the waves which is reflected from white horses are non-polarising making it less attractive. White horses suffer less than the dark horses.

The team then proceeded to study the zebra and its lines. It made a variety of paintings in different shapes. Some of these paintings had white and black lines of different sizes in length and width. All of them were placed in a horse farm in Hungary. Some adhesive were put on these paintings to count the number of flies. The results showed that the number of blood-soaking flies was very little on the portraits with black and white lines, less than those which were on white plates and the darker plates. The experiment was done on four groups of horses of the size of Zebra. Colours were put on them along with adhesive. The result was the same. The lines which were similar to the zebra had less blood soaking flies than in the case of other groups.

Save 10.3 million jobs in 2017

Renewable energy is expected to generate 28 million jobs by 2050

The number of employees in the renewable energy sector, including large hydropower projects, has exceeded 10.3 million worldwide. «The renewable energy sector is contributing to the growth of the global economy and the creation of 28 million jobs in this sector by 2050,» said Renewable Energy and Jobs Review 2017 released by the Abu Dhabi-based International Renewable Energy Agency (IRENA). The renewable energy sector generated 500,000 new jobs in 2017, up by 5.3 percent from 2016. The countries with

the highest employment rates in renewable energy sectors are China, Brazil, the United States, India, Germany and Japan which provides more than 70 percent of the total jobs of this sector in the world.

The solar power sector is considered largest contributor to job creation in the renewable energy sector. It added 3.4 million jobs globally, which up by 9 percent from the previous year, after these facilities started producing 94 gigawatts of power.

It is estimated that China had two-third of the jobs offered by the solar photovoltaic

sector, which is 2.2 million jobs. It is a growth of 13 percent over the previous year.

Despite the growth in the number of countries which enjoying social and economic benefits of renewable energy, the report said that most of the renewable energy industries were concentrated in a relatively small number of countries and there was stark difference in the volume of the markets which adopt these industries. It said that 60 percent of the jobs offered by the renewable energy sector were concentrated in Asia.



The problem of plastic pollution has become one of the biggest issues and challenges being faced by the Sultanate and the world recently. There are indications that the rate of plastic bag used only in major malls have reached to extreme high. There are 40 million bags used in one commercial centre per year. It is most frightening that more than 400 million plastic bags are used in every ten malls annually. This is apart from their use in other sectors such as restaurants and other such outlets in the retail sector. It indicates that the Sultanate's consumption of these bags is more than the global rate of use.

Who is Responsible ?!

Usage more than 40 million plastic bags annually in every major commercial centre in the Sultanate

Enzyme eats plastics

Scientists in Britain and the United States have said they have developed an enzyme that eats plastics that could help fight pollution in the future. The enzyme is capable of digesting ethylene trifluoate, a form of plastics developed in the 1940s and is currently used in millions of tons of plastic containers. Plastic products made from this material can survive for hundreds of years in the environment and currently contaminate large areas of land and seas around the world. Researchers from the University of Portsmouth and the US Department of Energy's National Renewable Energy Laboratory discovered the enzyme during a natural enzyme structure that is believed to have developed into a recycling centre in Japan. «Once the enzyme has been shown to help bacteria break down or digest the plastics made from multiple ethylene trifluoates, the researchers decided to» modify «its structure by adding some amino acids, said John McGhehan, a professor at the University of Portsmouth who co-led the research team. This has resulted in a change in enzyme processes to allow its ability to eat plastics faster. The results of the discovery were published in the Proceedings of the National Academy of Sciences. The team is currently working on improving the enzyme's performance to see if they can make it able to analyze plastics on an industrial scale.

Shocking numbers

The plastic bags used for shopping or food preservation and all household needs are classified into 20 of the most dangerous substances. According to Dr. Hamad bin Mohammed Al Ghailani, Director of Community Affairs and Environmental Awareness at the Environment Society of Oman, commercial centres of the Sultanate only 40 million plastic bags per year. He said that consumption rates of plastic bags in the Sultanate of Oman exceeds sometimes the world's average consumption.

The world consumes 60,000 plastic bags every 6 seconds, two million plastic bottles every 5 minutes and 100,000 food packets every 30 seconds in the world. He said that the annual plastic production ranges between 500,000 and one billion tons annually. Dr. Al Ghilani said that these bags are made of petroleum derivatives

and chemicals, therefore, they heavily damage human health and environment. He pointed out that there was no means to contain the damaging effects caused by the trillion bags consumed by the world annually, according to the World Health Organisation.

Awareness efforts

Dr. Hamad Al Ghailani called for the use of eco-friendly bags, which are available in many shopping

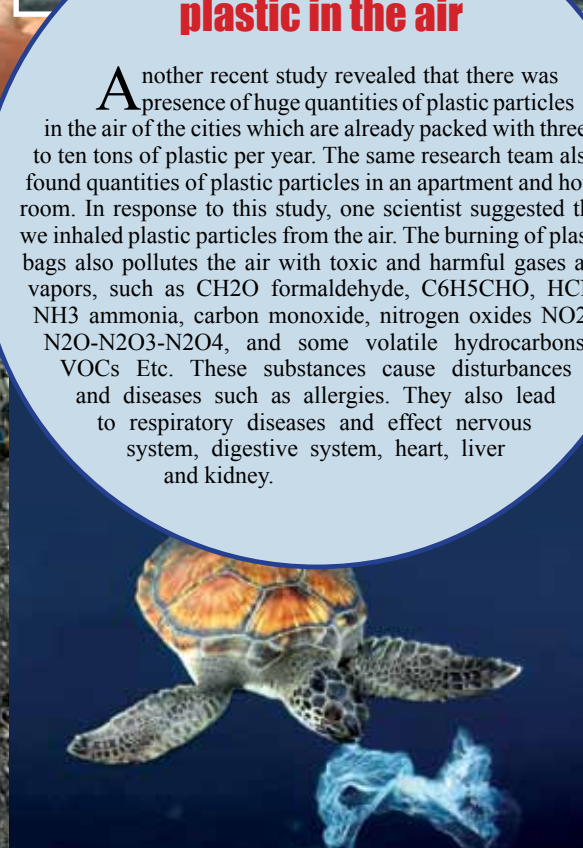
centres and can be reused and have no effect on the environment. He also urged for minimising the use of bags as much as possible.

He pointed out that the Environment Society of Oman was printing a large number of eco-friendly bags and distributing them in important shopping centre. It also carries out continuous awareness programs about the effects of plastic bags on the environment and human being in schools, women's associations and the society in general. It is also organising training programmes and workshops to recycle plastic.

Under waiting

The government has dealt with the dangers caused by plastic bags and has formed a national team to study the effects of using plastic bags from all relevant bodies such as the Ministry of Environment and Climate Affairs, the Ministry of Commerce and Industry, the Environment Society of Oman and Be'ah, of the field studies, and study the effects of using plastic bags on the environment and how to reduce them, and find appropriate solutions to reduce the use of these bags, in addition to the study of Gulf standards for the preparation of standard Omani standard, and so far, the issuance of the «Integrated Waste Management» bill, the issuance of a regulation on the use of plastic bags to reduce their risks to the environment, human health, the sustainability of ecosystems and biodiversity, and the commitment of commercial centres to use bio-degradable bags to reduce their risks to the environment and human health; Ecosystems and biodiversity, and we do not know how long we will wait for this regulation despite the risks these bags cause to human health, organisms and biodiversity in the country.





- When the regulation of use of plastic bags will be completed to reduce the risks to the environment and human health
- Regulations will regulate use of biodegradable bags, proposal to manufacture bags convertible into fertilizers
- Plastic bags classified among 20 most dangerous materials

Strong decisions

There is an increased awareness about the dangers of the use of plastic bags, their serious negative effects on human health and other living organisms as well as on the safety of the environment. A number of countries have taken strict measures to gradually control the use of plastic bags, try to develop new industries in this area, and change the existing plastic industries. These countries have taken into account all health, environmental, economic and social considerations.

Use of Plastic bags banned in Kenya since 2008:

Bangladesh, Taiwan, Uganda, South Africa and most of the Indian cities have banned the use of thin plastic bags.

In the European Union, Austria, France and Germany have banned the use of plastic carry bags used for storing food and other edible materials

Ireland imposed a tax of EUR 0.15 on each plastic bag. It helped in reduction of the use of these bags to about 95%. Hong Kong also imposed a tax of 6 US cents per plastic bags. It led to the reduction of the use of plastic bags to 403 in just two days, compared with 2,742 during the same period before taxation.

In 2015, Australia put a complete ban on the use of plastic bags and started giving incentives for the manufacture of paper bags and their recycling.

Yemen Standardization, Metrology and Quality Control Organization has released Yemeni Standard Specifications for Biodegradable Plastic Bags.

In United Arab Emirates, its Ministry of Environment and Water has taken a number of decisions to reduce the use of non-biodegradable plastic bags and has announced mandatory standards for plastic bags as of January 1, 2012.

In Qatar, the Ministry of Environment announced technical requirements for packing of some food items and other such materials. It has also prohibited the use of plastic bags for packing Arab and the country breads. It has also banned plastic bowls and plates for drinks and hot food items.

The European Commission has also proposed banning of disposable plastic products such as cotton bars, beverage dispensers and dumping of wastes in sea. The proposal is regarding prohibition of single-use plastic products for which sustainable alternatives are available and they do not harm the environment. The proposal obliges EU countries to collect 90 percent of disposable plastic water bottles by 2025 and requires producers to help cover the cost of cleaning and waste management.

Damage caused by plastic in the air

Another recent study revealed that there was presence of huge quantities of plastic particles in the air of the cities which are already packed with three to ten tons of plastic per year. The same research team also found quantities of plastic particles in an apartment and hotel room. In response to this study, one scientist suggested that we inhaled plastic particles from the air. The burning of plastic bags also pollutes the air with toxic and harmful gases and vapors, such as CH₂O formaldehyde, C₆H₅CHO, HCN, NH₃ ammonia, carbon monoxide, nitrogen oxides NO₂-N₂O-N₂O₃-N₂O₄, and some volatile hydrocarbons VOCs Etc. These substances cause disturbances and diseases such as allergies. They also lead to respiratory diseases and effect nervous system, digestive system, heart, liver and kidney.

Risks of plastics on the sea

The plastics used in the manufacturing of goods cause pollution of marine environment, as many plastic waste ends up in the middle of the seas and oceans, affecting whales, birds and turtles and harming the fish on which they depend for food. This is leading to their depletion and death. According to a report published by the Journal of the National Academy of Sciences, 99 per cent of seabirds are susceptible to ingesting plastic particles along with food until 2050. The researchers relied on studies which were published between

1962 and 2012 and included 186 species of birds, as reported by the German website Tecite Online. Plastic waste has many risks. Waves' movement and ultraviolet light affect the plastic in the water, leading to its rupture into small pieces which can not be seen with the naked eye. Most of the plastics present in the oceans are seen only by microscope. The smaller the plastic particles, the greater the risk to marine organisms. Plastic wastes secrete their original constituents, which remain in the water for a long time.

Sultanate celebrates international days of migratory birds, turtles and biodiversity

The Ministry of Environment and Climate Affairs of the Sultanate of Oman celebrated International Day of Migratory Birds, which falls on May 9 every year. It also celebrated World Biodiversity Day on May 22 and World Turtle Day on May 23. These are Sultanate's participation in the international celebrations related to environment. The International Day of Migratory Birds was celebrated this year under the theme of Uniting Voices for Birds. It was aimed at increasing awareness about the threats faced by the birds which are one of the most important components of biodiversity. Similarly, the International Biodiversity Day was celebrated to mark the 25th anniversary of the entry into force of the Convention on Biodiversity, which was signed by the Sultanate in 1994 under Royal Decree No. 119 / 94. The Sultanate of Oman is considered as best region in the

world where half a million birds come every year. More precisely, the exact region in the country where these birds is Bar Al Hakman. According to the latest survey, this is one of the 25 sites in the world which are destination of these migratory birds. There are almost half a million birds of 42 species in the region.

These statistics also indicate that there are 18 species of coastal birds in Bar Al Hakman which are more than 1% of the total number of migratory birds of the world. These are the indicators of Bar Al Hakman's being on the biggest regions of the world in terms of biodiversity. The number of migratory birds in the wetlands of Al Wusta governorate and in the Bar Al Hakman peninsula during the spring of this year was 300,000 of 80 different species which had taken refuge on the coasts of Oman for resting and food during its annual migration. Al Wusta governorate is a haven for migratory birds which come to the region every year to escape the cold weather in Europe. This region offers bird watchers an opportunity to see more than 130 species of birds, including those migrating from Europe. Bar Al Hakman is famous as a resort of these migratory birds including flamingo.



UAE

Free parkings for eco-friendly vehicles

The Roads and Transport Authority (RTA) has provided 70 free parking spaces as a first stage for environmentally friendly vehicles in 40 tariffed places of Dubai. This is part of its Green Mobility campaign of Dubai aimed at reducing carbon emissions and encouraging people to opt for environmentally friendly vehicles. Engineer Maitha bin Adawi, executive director of traffic and roads, said that 70 free parking spaces were identified in 40 locations in different parts of Dubai and that they were commissioned.

Bahrain

Solar panels on the roofs of 30 bus stops

The Ministry of Transport and Telecommunications of Bahrain has signed an agreement with the company Intergreen Technologies, which specialises in the production of power generation systems in Bahrain. The agreement stipulates that the company will install high-quality solar panels approved by Bahrain on the roofs of newly built 30 bus stations. The signing of the agreement showed the keen interest of the government in achieving sustainable development and its efforts to promote the use of renewable clean energy and benefit from natural and renewable resources for electricity generation and environmental conservation.

Saudi Arabia

Preliminary talks to finance solar project

The Softbank Group and the Saudi Public Investment Fund are in early talks with local and foreign banks to finance a potential multi-billion dollar solar energy project in Saudi Arabia, informed sources said. The talks came in response to an agreement signed in March between the Public Investment Fund and Softbank to create the 2030 Solar Plan, the largest project of its kind in the world. Saudi Arabia is making huge efforts to transform its economy and reduce its dependence on oil as it considers solar energy a way to reduce the amount of oil consumed by the country in generating electricity.

Qatar

Planting of 3,000 seedlings at camping sites in 4 months

The Ministry of Municipalities and the Environment of Qatar has distributed 3,000 seeds' packets and seedlings of country's wild environment plants in the winter camps, as part of the first phase of its "together for most beautiful desert" campaign. The campaign was launched by the ministry in mid-February. It is aimed at distribution of 12,000 seedlings in the camps. The campaign had a huge response from the citizens who own desert camps. They received seedlings and seeds of trees and local wild plants. It shows the success of the campaign and increase in the environmental awareness of the Qatari citizens.

KUWAIT

Smart mosques conserve energy

Kuwait has begun to experiment smart mosques, to reduce its large consumption of electricity and water. The plan is based on the use of clean energy and modern technologies to regulate consumption.

Purest water in Europe

The purest water in Europe can be found in Austria, Cyprus, Greece, Luxembourg and Malta, the European Environment Agency said on Wednesday. A report released by the European Commission and the Copenhagen-based European Environment Agency before the European holiday season showed that the five countries recorded «excellent» rates for at least 95 percent of their water. In Malta, about 99 percent of bathing places were of the highest quality, in Cyprus it was 97.3 percent, in Greece it was 96 percent, and Luxembourg in 100 percent. About 1.4 percent of bathing waters – a total of 306 – were found to have poor water quality, posing a risk of illness such as diarrhoea, but fewer than the 316 sites reported in 2016.



Environmental Vocabulary

Rocky Silk

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Hides from human eyes under the waves of the sea, constructs an independent colonized world in many places in the sea. It became a famous by its name through the times. Its rocky threads are woven like a spider net, but they are stronger and solid, turning into solid calcareous rocks different in shapes and colors. A soft animal secretes its calcium carbonate substance to protect its body and provide a safe haven amidst currents of water and marine organisms of various sizes and shapes. Over time and before it dies, leaves behind an important legacy of netrock formation, like a silk woven by a spider.

Coral reefs are formed at depths below 50 meters under sea level and flourish between 25 and 29 degrees Celsius. However, their growth is very slow, not more than 7 mm per year and in vertical direction. This indicates that the world's 660,000 square kilometers of coral reefs are not the product of today, but have a long history of geological and scientific history.

Coral reefs provide safe protection for many fish and other marine organisms. They hide from the power of the mighty, eat from abundant food like the rich, and have the opportunity to meet and reproduce with the least effort. How exquisite these coral reefs attract people hearts, and are meant by tourists and divers from all sides. Some of them intended to make his proficiency in photography, and some of them study for research and enlightenment, and some of them to extract medicine and cure. Its importance has known for all eyes, as God almighty mentioned in the holy Quran (From both of them emerge pearl and coral) and said Almighty (as if they were rubies and coral). Economic significance was associated with a divine speech. That red coral penetrated into the hearts of people, and they make from it rings and necklaces like sapphires and diamonds.

This great importance may be exploited by many who do not give the environment less attention, those whomess around with these coral reefs with the destructive hands or accidentally damage by fishing nets. Unlicensed fishing tools and methods can also make damage to the coral reefs. All threats were noticed by environmental bodies in the Sultanate and enforced laws and legislation to protect coral reefs and punish those who cause damage. Some threats may exist, especially when the eye of observation is sometimes dormant. Coral reefs, especially those of the Omani seas, are of a special scientific and aesthetic nature. We all have to develop self-control to preserve them as scientific and environmental sites, giving them the sanctity of science and knowledge.

Beginning of 1st global bee day after warnings of its extinction

The United Nations has chosen May 20th as the International Day of the Bees. It is aimed at highlighting the importance of bees to our environmental and economic system and to warn of the threat of its extinction. More than half of the



wild species of total bees of 600 species in Germany are threatened with extinction. This is mainly due to bee diseases and other factors such as nutritional status and the use of chemical pesticides in agriculture, according to the chairperson of the Bee Breeders Association. According to the World Biodiversity Council, the value of food which is pollinated by bees and other insects annually is about 500 billion euros. To highlight importance of bees in pollinating many plants and its role in our environmental and agricultural system, Slovenia launched an initiative to dedicate a global day for bees

in December 2017. It was accepted by the United Nations which chosen May 20 2018 as the world's first day of bees. The resolution got the votes of 115 members of the United Nations, including all countries of the European Union, United States of America, Canada, Russia, China, India, Brazil and Australia. Current discussions on bees and activities organised in this regard show the level of concern and apprehensions about the risk of extinction of bees. In Hanover, Germany, on the night of May 14th, a supermarket suddenly emptied its shelves of 60 percent of the materials it offered, from apples to cotton socks. All these products depended directly or indirectly on insecticides according to the management of the departmental store. «The absence of bees is equal to empty shelves,» it wrote on empty shelves in the supermarket

Edible plates to protect the environment

Polish company Buterm manufactured first edible dishes and plates in the world for which it uses wheat bran. One ton of wheat bran is enough to prepare 10,000 plates. It can be used both hot and cold food items. The idea came to the manufacturers' minds when they attended a festival and saw the amount of plastic wastes of used dishes. They decided to add edible dishes or plates to the list of what they manufacture as their contribution to the preservation of environment. Unlike environmentally harmful plastic dishes, edible

dishes decomposes in just one month. The company is currently developing spoons and forks made of edible materials to reduce the large volume of plastic waste. These dishes are ideal solution for those who hate dishwashing.



