



KEMENTERIAN TENAGA, SAINS, TEKNOLOGI, ALAM SEKITAR DAN PERUBAHAN IKLIM

Bil	Berita	Media	Capaian Berita Penuh
1.	<u>Australia says no to taking in waste from Lynas</u>	Free Malaysia Today	Klik pada tajuk berita
2.	<u>2,300 sertai larian alam sekitar sempena Hari Bumi</u>	Berita Harian	Rujuk lampiran 1

TEMPATAN

Bil	Berita	Media	Capaian Berita Penuh
3.	<u>Katil pintar dengan 2,000 titik sensor</u>	Harian Metro	Rujuk lampiran 2
4.	<u>Semai minat STEM</u>	Utusan Malaysia	Rujuk lampiran 3
5.	<u>Banking on renewable energy</u>	The Star	Rujuk lampiran 4
6.	<u>Energy-Efficient Vehicles Race</u>	New Straits Times	Rujuk lampiran 5

ANTARABANGSA

Bil	Berita	Media	Capaian Berita Penuh
7.	<u>Innovation Contest</u>	New Straits Times	Rujuk lampiran 6
8.	<u>Separuh air di Bumi berasal daripada batu angkasa lepas</u>	Kosmo!	Rujuk lampiran 7
9.	<u>Making factories smarter</u>	New Straits Times	Rujuk Lampiran 8
10.	<u>A 'Mass Extinction Event' is Under Way</u>	New Straits Times	Rujuk Lampiran 9

LAMPIRAN 1
BERITA HARIAN (WANITA & KELUARGA): MUKA SURAT 74
TARIKH: 6 MEI 2019 (ISNIN)

2,300 sertai larian alam sekitar sempena Hari Bumi



Peserta kanak-kanak menerima baucar sempena National Geographic Earth Day Run 2019 di Shah Alam, baru-baru ini.

Kuala Lumpur: Kira-kira 2,300 pelari, termasuk kanak-kanak menjayakan larian alam sekitar sempena hari bumi National Geographic Earth Day Run 2019, bertujuan meningkatkan kesedaran pentingnya menjaga alam sekitar.

Menariknya program berlangsung di Gamuda Walk, Kota Kemuning, Shah Alam, dekat sini, bertemakan *Planet or Plastic?*, sebuah inisiatif tahunan daripada National Geographic, sebahagian usaha mengelak pencemaran plastik yang memasuki lautan.

Timbalan Ketua Setiausaha Kementerian Tenaga, Sains, Teknologi, Alam Sekitar dan Perubahan Iklim, Dr K Nagulendran, melepaskan peserta semua kategori, menandakan larian mendapat sokongan

Kementerian Tenaga, Sains, Teknologi, Alam Sekitar dan Perubahan Iklim.

Pengarah Projek Gamuda Land, Aw Sei Cheh, berkata selain larian menggalakkan kehidupan aktif, program menyatakan sokongan terhadap ikrar *Planet or Plastic?* yang sebelum itu dilakukan secara dalam talian.

Pupuk kesedaran mengenai alam sekitar

"Inisiatif bertepatan dengan ikrar masyarakat dalam mengurangkan satu bilion bahan plastik, daripada mencemari lautan menjelang 2020.

"Ia bertepatan komitmen pengeluar mewujudkan perbandaran lestari. Ini adalah tahun kedua penganjuran dalam mengukuh-

kan sokongan terhadap kempen bebas plastik," katanya dalam kenyataan yang diterbitkan di sini, baru-baru ini.

Sei Cheh berkata, usaha berterusan pihaknya mendidik komuniti ke arah kehidupan selamat, dengan menjaga kehijauan alam sekitar bersama.

Penyertaan terbahagi kepada beberapa kategori, iaitu 15 kilometer (km), lima km atau dua km bagi kanak-kanak.

Program berkenaan dimeriahkan dengan aktiviti menarik di Race Village, iaitu pengetahuan mengenai proses kompos dan penanaman benih menerusi bengkel interaktif, sambil menikmati sarapan eksklusif dan aiskrim, selain menjayakan pelbagai acara permainan.

LAMPIRAN 2
HARIAN METRO (BISNIS): MUKA SURAT 30
TARIKH: 6 MEI 2019 (ISNIN)

Kuala Lumpur: Slumberland Marketing Sdn Bhd (Slumberland Malaysia) memperkenalkan produk terbaharunya, Slumberland MyZmartBed iaitu katil pintar sempena sambutan ulang tahun ke-100 jenama itu tahun ini.

Katil pintar sebenar itu bakal merubah situasi industri pada masa depan kerana ia direka khusus untuk orang ramai dengan tilam yang boleh disesuaikan mengikut keperluan dan setiap pergerakan tidur penggunanya.

Pengarah Urusannya, Michael Teoh berkata, katil itu dikuasakan dengan aplikasi MyZmartBed, sambungan WiFi dan pam pintar serta lapisan sensor MyZmartBed dengan lebih 2,000 titik sensor diletakkan di setiap inci tilam bagi memastikan ia dapat meliputi lima zon utama tubuh dan disesuaikan

Katil pintar dengan 2,000 titik sensor



TEOH (tiga dari kiri) pada majlis pelancaran Slumberland MyZmartBed.

secara automatik mengikut posisi ketika tidur.

“Slumberland MyZmartBed membolehkan pengguna memilih sama ada lebih

berminat kepada tilam lembut atau lebih anjal untuk tidur atau memilih bahagian tubuh mana yang lebih memerlukan sokongan berda-

sarkan keperluan tubuh masing-masing,” katanya pada majlis pelancaran Slumberland MyZmartBed di sini, baru-baru ini.

Katil itu memiliki teknologi lapisan pintar yang dipatenkan daripada *Responsive Surface Technology (ReST)* dan memenangi dua anugerah utama iaitu Anugerah Inovasi CES 2015 dan Anugerah NSF SleepTech 2019.

Produk yang mempunyai teknologi sensor yang dilindungi lebih 20 paten antarabangsa ini memiliki pensijilan perubatan dan digunakan di hospital Amerika Syarikat sejak 20 tahun lalu.

Beliau berkata, katil itu memiliki tiga tetapan mod iaitu manual, posisi auto dan automatik bagi disesuaikan dengan keperluan sokongan dan keselesaan tubuh badan masing-masing.

LAMPIRAN 3
UTUSAN MALAYSIA (FORUM): MUKA SURAT 20
TARIKH: 6 MEI 2019 (ISNIN)



IBU BAPA dan pelajar melawat Fakulti Kejuruteraan Elektrik, Universiti Teknologi Mara (UiTM) Kampus Pasir Gudang, Johor, baru-baru ini. - GAMBAR IHSAN PEMBACA

Semai minat STEM

SAUDARA PENGARANG,

BARU-BARU ini Kementerian Pendidikan mendedahkan bilangan pelajar yang mengambil mata pelajaran berkaitan pendidikan Sains, Teknologi, Kejuruteraan dan Matematik (STEM) semakin merosot.

Malah statistik yang dikongsi oleh kementerian itu menunjukkan secara purata hanya 9% pelajar Malaysia memilih untuk menyambung pengajian dalam bidang STEM. Jumlah itu adalah sekitar 7,000 pelajar setiap tahun.

Oleh itu, pelbagai usaha perlu dilakukan bagi memberi kesedaran kepada pelajar dan ibu bapa mengenai pentingnya pendidikan STEM.

Guru adalah antara pihak yang diharapkan dapat memupuk serta membina minat terhadap aliran STEM.

Sekolah juga amat digalakkan untuk terus menawarkan kelas aliran STEM sekurang-kurangnya satu kelas pada setiap tahun dalam memastikan kelangsungan calon pendidikan ini.

Pelbagai aktiviti boleh dibuat di sekolah seperti membina prototaip daripada beberapa komponen asas seperti lampu diod pemancar cahaya (LED) dan

sensor.

Ini sekali gus mampu membantu meningkatkan penghayatan teknologi Internet Saling Berhubung (IoT) secara bermanfaat.

Hasil daripada aktiviti seperti ini membolehkan pelajar dan guru berfikir, menyiasat dan bertukar-tukar fikiran terutamanya semasa pengaturcaraan *FlowLogic* dilakukan.

Aktiviti seperti ini dapat merangsang minda pelajar sekali gus bagi membolehkan mereka bersedia menghadapi Revolusi Perindustrian Keempat (IR 4.0).

Pihak universiti juga perlu memainkan peranan bagi menarik minat pelajar terhadap STEM.

Antaranya seperti Fakulti Kejuruteraan Elektrik, Universiti Teknologi Mara (UiTM) Kampus Pasir Gudang, Johor yang menganjurkan lawatan pelajar ke universiti.

Lawatan itu membolehkan mereka melihat alatan makmal dan memahami fungsinya, melihat hasil projek mahasiswa di sini dan sekali gus memahami cara hidup sebagai pelajar di universiti.

**MASHITAH
MOHD. HUSSAIN**

Pensyarah UiTM Pasir Gudang

LAMPIRAN 4
THE STAR (SMEBIZ): MUKA SURAT 9
TARIKH: 6 MEI 2019 (ISNIN)

Banking on renewable energy

Strong policy drive needed to help players with funding needs

By ROYCE TAN
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ALTHOUGH it was one of the earlier companies to have completed and launched a small hydro plant under the Sustainable Energy Development Authority (Seda) scheme, Pancore Power Sdn Bhd is showing no signs of slowing down.

In fact, its hands are full with four other projects. The company recently launched the 6 megawatt (MW) capacity Sungai Slim Small Hydro Scheme and it is now in the process of completing a 5.25 MW project in Sungai Kampar.

There are three other hydroelectric projects in Pahang with a combined capacity of around 48 MW where works are expected to commence once the company has obtain its financing needs.

Managing director Datuk Ahmad Sufian Abd Majid sees vast opportunities in the sector – touted as a sunrise industry globally – and he aims to steer Pancore Power to be among the leading renewable energy (RE) companies in Malaysia.

Pancore Power came into the RE scene about five years back as it felt the industry is a by-product of what the company has already been doing – infrastructure projects.

“This is more of a vertical integration for us. We’re looking at something really sustainable.

“And hydro is something that aligns best with our expertise in infrastructure. The fact that we’re able to execute rather difficult projects in the country has actually helped us to figure out that this is what we’re comfortable in and that we feel we can succeed,” he says, adding that the company is on the right track with its strategy after delivering a project and with another one nearing completion.

While there are other RE methods such as solar, waste to energy and fruit bunch, Ahmad Sufian says Pancore Power decided that hydro would be its edge after evaluating the setbacks, risks and benefits involved.

The long-term concession was also a deciding factor as the company can look at generating reve-



Great potential: Ahmad Sufian (centre), flanked by CEO Manjeet Kaur and vice-president of business development and technical support Zuhaimi Abdul Hamid, says there is big potential in the RE industry.

nue for the longer term rather than be on the constant hunt for new contracts.

All-round benefits

Money aside, what Pancore Power strives to do is to promote and spread the social and environmental benefits and the efficiency of RE while preserving sustainable growth.

“Many asked me why am I in this business. This industry is good for the soul. Hopefully, you make a bit of money out of it, too.

“When you help the environment, it resonates well with everyone. It gives you a good feeling,” says Ahmad Sufian.

Unlike large scale hydroelectric plants, small hydro has little to almost no impact on the environment, he adds, noting that it is also a clean and domestic source of energy, allowing each state to produce their own energy without being reliant on international fuel sources.

“Our small hydro in Sungai Slim small hydro project, for example, is basically a run-of-river hydroelectric scheme, which needs little or no water storage.

“It only requires low diversion weir and very minimal pondage area to ensure that there is enough water entering the penstock pipes that lead to the lower elevation of turbines,” he explains.

Generally, the run-of-river plants divert some of the river’s flow through a pipe leading to electricity generating turbines and then return the much cleaner water back to the river downstream.

Pancore Power also stresses on preserving nature. Trees that are required to be taken down will be relocated, and the company will also replant double the amount of trees taken down.

Challenges in the industry

As with most cases, financing is a main challenge for the company and the industry, particularly so because banks do not understand the RE industry well enough to properly weigh its risks and benefits.

Many companies have obtained licences from Seda but were unable to kickstart their works because they could not get the funds needed.

“Other challenges are geographi-

cal limitations, access to remote areas and that of actually executing the job but that is not as big as a challenge when it comes to financing,” says Ahmad Sufian, adding that commercial banks typically shy away from the sector due to little or no knowledge of the industry.

He urges Bank Negara to play a bigger role in promoting RE funding as there is a need to create an interest within the finance industry.

Future in RE

Mestec has set a target of 20% of the country’s power to be generated from RE by 2030 and this spells out a lot of opportunities for companies such as Pancore Power.

“This is in fact one of the better ways of generating electricity and this is why countries like Germany have set their target at 80%. China is also huge, targeting something like 50% to 60%.

“We are targeting 20% but progressively, we’ll be moving up the ladder. So that’s why this is a sunrise industry.

“The future is there, but it’s not for the faint-hearted. You’ve got to put in your everything to succeed in this industry,” Ahmad Sufian states.

From the economic perspective, he adds that RE is seen as a growth sector that will help propel Malaysia towards a high-income economy.

He says the industry is expected to generate RM70bil by 2020, which translates into tax revenue of at least RM1.76bil for the government.

Moving forward, Pancore Power welcomes the move to tie-up with strategic partners to undertake bigger capacity projects.

“We have been approached by several parties. We will weigh our position. We have also identified several projects that will be undertaken soon and are also contemplating tie-ups with foreign partners,” he says, adding that the company is also exploring opportunities in waste to energy.

Asked if Pancore Power would consider going public, Ahmad Sufian replies that with the huge loans required for the business to grow, a corporate exercise is inevitable and it is something the company is working towards, maybe in three years.

LAMPIRAN 5
NEW STRAITS TIMES (BOTS): MUKA SURAT 52
TARIKH: 6 MEI 2019 (ISNIN)

ENERGY-EFFICIENT VEHICLES RACE ↓

SHELL Eco-marathon Asia 2019 (Sema) took place at the Sepang International Circuit (SIC) from April 29 to May 2 as part of Make the Future Live Malaysia. The race not only features bright students and their innovative, ultra energy-efficient cars, but also the Shell Eco-marathon Access (Sem Access) event, which is supported by the Ministry of Higher Education, and is open to all Malaysian university students, industry partners and corporations.

Sema 2019 offered a different experience, not only for student participants but all involved in the event, as it was the first ever night races held in the 30-year history of Shell Eco-marathon. Representing Malaysia were teams from Monash University Malaysia, Universiti Teknologi Mara, Universiti Malaysia Pahang, Universiti Tunku Abdul Rahman and Multimedia University. — PHOTO BY MOHD KHAIRUL HELMY



LAMPIRAN 6
NEW STRAITS TIMES (BOTS): MUKA SURAT 52
TARIKH: 6 MEI 2019 (ISNIN)



LAMPIRAN 7 KOSMO! (DUNIA): MUKA SURAT 41 TARIKH: 6 MEI 2019 (ISNIN)

Separuh air di Bumi berasal daripada batu angkasa lepas



ASU/JAXA

SALAH satu daripada 1,500 sampel yang dikutip daripada asteroid Itokawa oleh kapal angkasa Hayabusa pada 2010.

PHOENIX, Arizona – Sekumpulan saintis Universiti Kebangsaan Arizona telah mengesan petanda air wujud pada debu asteroid yang dahulu dianggap kering kontang, mengukuhkan lagi teori lebih separuh air di Bumi datang dari angkasa lepas, lapor akhbar *Daily Mail*.

Siswazah doktor falsafah universiti tersebut, Ziliang Jin memaklumkan impak daripada asteroid serupa ke permukaan Bumi ketika peringkat awal pembentukan

planet ini membawa bersama kebanyakan air yang ada sekarang.

"Kami mendapati sampel yang kami uji kaya dengan air berbanding objek-objek sistem solar lain yang biasanya kering," katanya.

Penyelidik universiti itu menjalankan ujian ke atas sebahagian daripada 1,500 sampel yang diambil kapal angkasa Hayabusa milik Jepun daripada asteroid Itokawa pada tahun 2010.

Penemuan itu menunjukkan

Pelik



ASU/JAXA

IMEJ partikel yang ditunjukkan bersaiz separuh ketebalan sehelai rambut manusia.

kemungkinan lebih banyak asteroid yang penuh dengan air wujud dalam sistem solar kita, menjadikannya sasaran terbaik

bagi membina pangkalan atau pusat melombong sumber asli untuk pengembaraan angkasa lepas. – Agensi

LAMPIRAN 8
 NEW STRAITS TIMES (BOTS / INNOVATION): MUKA SURAT 48
 TARIKH: 6 MEI 2019 (ISNIN)

Making factories smarter

Industry 4.0 enables facilities to be more efficient and save operational costs, writes **Balqis Lim**

INDUSTRY 4.0 is a hot topic these days. However, not many understand what it means and how it will benefit the nation. The term, Industry 4.0 is the intervention of automation and machinery through smart systems using machine learning and artificial intelligence.

Technically, automation and computer interference are in Industry 3.0, creating new market opportunities in the process.

Simply put, Industry 4.0 is where industry players let computers connect and communicate with each other to finally make decisions without human involvement. The combination of Internet of Things (IoT) and Internet of Systems makes it possible and makes smart factories a reality.

Energy management and automation company France-based Schneider Electric is at the forefront in taking organisations in Asia on their first step towards IoT.

Schneider Electric has two smart factories in the region, namely Indonesia and the Philippines while factories in Thailand and Vietnam are undergoing similar upgrades.

To date, the company has 40 smart factories worldwide.

WORKING SMART

Like many manufacturing facilities, equipment downtime can have a detrimental effect on operations and loss of materials.

At Schneider Electric's smart factory in Batam, Indonesia, scores of smart sensors are used to transmit data at every step of the production line.

Schneider Electric utilises EcoStruxure solutions, its own IoT-enabled, plug-and-play, open, interoperable architecture and platform.

These solutions include EcoStruxure Machine, EcoStruxure Power and EcoStruxure Building.

EcoStruxure provides more value in terms of security, reliability, efficiency, durability and connectivity.

The solution leverages advancements in IoT, mobility, sensing, cloud, analytics and cybersecurity technologies to deliver innovation at every level, from connected products to analytics and application services, through edge controls.

Schneider Electric Indonesia Country President Xavier Denoly says Batam's implementation of the EcoStruxure solutions has led to between five and seven per cent energy efficiency, reduction of production scrap by 44 per cent and increased productivity by about 17 per cent.

"We strongly believe in the value of smart factories and ensure our factories are equipped with the latest IIoT technologies to spearhead Industry 4.0. Our smart factory



(From left) Sirichai, Denoly and Fadli. PICTURES COURTESY OF SCHNEIDER ELECTRIC



The integration of big data, cloud and IoT technology will pave the way for organisations in Asia to work towards their smart factory vision...

Xavier Denoly

in Batam is a testbed for machine learning, AI, predictive and digital maintenance, connected machines and processes.

"The integration of big data, cloud and IoT technology will pave the way for organisations in Asia to work towards their smart factory vision, become more energy efficient and sustainable in the long term."

Utilising cutting-edge technology, Schneider Electric's Batam smart factory is both a working factory and a showcase for customers and partners to witness how digital transformation can help them make informed, data-driven decisions that bring about improved profitability, asset management performance, operational efficiency



Internal quality checks for plant equipment can be made by employees in real-time.

and a smarter productive workforce while keeping the operations secure, agile and environmentally sustainable.

The smart factory in Batam has become an IIoT showcase for companies in Asia, proving to its customers and partners that it is easy to get started on their digitisation journey.

More than 150 customers and partners from Indonesia, China, Singapore, Vietnam, Malaysia, Myanmar and the Middle East have visited the factory since it began its digital journey in 2017.

BENEFITS OF DIGITISATION

According to its Digital Transformation

LAMPIRAN 8 (SAMB.)
 NEW STRAITS TIMES (BOTS / INNOVATION): MUKA SURAT 49
 TARIKH: 6 MEI 2019 (ISNIN)



Digital transformation has helped the company make informed, data-driven decisions that bring about improved profitability, asset management performance, operational efficiency and a smarter productive workforce.



Denoly (right) together with Sirichai (left) and Fadli explaining how Schneider Electric's smart factory in Batam has comprehensively deployed a wide range of IoT technologies and introduced digital tools such as virtual and augmented reality.

senior manager, Fadli Hamsani, digitisation unlocks a new level of benefits, helping companies go from reactive to proactive, from on-site to mobile and remote, site by site to enterprise, and limited to a new scale of computing and artificial intelligence.

By integrating innovative technologies, IT solutions, and data analytics into manu-

facturing operations, digitisation helps companies reduce unscheduled downtime and maintenance costs.

Predictive analytics can be used to forecast and diagnose problems before they occur, using advanced pattern recognition and machine learning.

"Besides that, thanks to the use of virtual

reality goggles, maintenance workers can work through the process of fixing faulty machinery with the supervision of person-in-charge remotely. The headset is also used for learning through our e-modules," he says.

At a unit level, internal quality checks for plant equipment can also be made by

employees in real-time. Managers can now operate remotely with better visibility of plant operations without having to be on-site and being relieved of the need to prepare weekly reports.

Batam's smart factory also utilises augmented reality where upon receiving an alert on its dedicated tablet, a maintenance worker can identify the point of interest without coming into contact with the machine. The worker can then press on the error notification and procedures as well as fixing guide will be prompted on the screen.

CHALLENGES

For Schneider Electric, its biggest challenge in the transformation into a smart factory is the workforce skillset.

Supply Chain Performance East Asia Japan Pacific vice-president Sirichai Chongchintaraksa also dispelled the perception that the company will be cutting its manpower.

"Smart factories need smart workers. Therefore companies need to go beyond digitising their plant operations and invest in their talent to equip them with more knowledge.

"When employees are upskilled, they become more competent and focus their energy on strategic works that create new opportunities for the business rather than spending time on repeated tasks."

Denoly adds that the problem is not that traditional jobs are disappearing therefore people are going to be laid off but because it involves a lot of bureaucratic and administrative processes.

"The job scope is now changing, and the challenge for all is to follow that change. It's about intelligent decision-making and willingness to change the way of thinking, only then companies can fully leverage the benefits of smart factories."

AHEAD OF THE GAME

Schneider Electric Batam smart factory was recently acknowledged as a "lighthouse" to drive Indonesia's Industry 4.0 implementation.

As a role model, Schneider Electric Batam will provide a more real picture for industry players in Indonesia regarding the process of industrial digital transformation journey and its benefits for business.

"Empowering local competencies and nurturing talents are also key success factors in Batam factory's digital transformation. The Schneider Electric team in Batam has successfully designed, developed, tested and deployed several digital solutions across the company's global manufacturing network.

"Moreover since 2017, Schneider Electric has provided vocational students and Batam Polytechnic students opportunities to participate in developing Batam's Smart Factory applications through its Digital Internship Programme, says Denoly.

In Batam, Schneider Electric employs 2,900 people across its network of plants manufacturing a wide range of products which are distributed globally. The three sites have also been certified with international standards ISO 9001, ISO 14001 and OHSAS 18001.

LAMPIRAN 9
 NEW STRAITS TIMES (OPINION): MUKA SURAT 56
 TARIKH: 6 MEI 2019 (ISNIN)



ZAKRI ABDUL HAMID

UN ASSESSMENT OF BIODIVERSITY

A 'MASS EXTINCTION EVENT' IS UNDER WAY

Direct causes of species loss include shrinking habitat, land-use change, illicit trade in body parts, climate change and pollution

BARELY a week after the demise of the Sumatran rhino was highlighted in this column, a major United Nations assessment to be released today in Paris is expected to spell out the possible extinction of up to a million species, many within decades.

Conducted over the last three years, the assessment of nature was carried out by 800 experts assembled by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). They painstakingly catalogued how humanity undermines the natural resources which its very survival depends upon.

The loss of clean air, drinkable water, carbon dioxide-absorbing forests, pollinating insects, protein-rich fish and storm-blocking mangroves, to name but a few of nature's services, poses no less of a threat than climate change, and indeed the two issues are closely linked, according to Sir Robert Watson, my successor to the IPBES Chair.

Delegates from 130 nations, including Malaysia, have been in Paris since April 29 — they have vetted line by line a 44-page summary (for policymakers) of the 1,800-page assessment of scientific literature and indigenous and local knowledge, citing 15,000 references.

Parties to the UN Convention on Biological Diversity look to the report as the central scientific basis for new, post-2020 biodiversity targets to be set next year in China.

"We need to recognise that climate change and loss of nature are equally important, not just for the environment, but as development and economic issues as

well," said Watson.

"The way we produce our food and energy is undermining the regulating services that we get from nature and only transformative changes can stem the damage," he added.

Scientists estimate that the earth is today home to some eight million distinct plant and animal species, a majority of them insects. Many are being crowded, eaten or poisoned out of existence. The pace of loss "is already tens to hundreds of times higher than it has been, on average, over the last 10 million years", according to early reports on the draft IPBES document.

Many experts think a "mass extinction event" — the sixth in the last half-billion years — is under way. The drop in sheer numbers is even more dramatic, with wild mammal biomass — their collective weight — down by 82 per cent. Humans and livestock account for more than 95 per cent of mammal biomass.

The direct causes of species loss include shrinking habitat and land-use change, hunting for food or illicit trade in body parts, climate change, pollution, and species transported to new homes, invading the habitat.

"There are also two big indirect drivers of biodiversity loss and climate change — the number of people in the world and their growing ability to consume," said Watson.

The shift in the distribution of species will likely double if the average temperature rises between 1.5 and 2.0 degrees Celsius — an improbable optimistic scenario, some experts believe, given the level of efforts so far to curb greenhouse gas emissions.

Under the 2015 Paris Agree-



A skeleton of a fish lies on the dry bed of Lake Peñuelas outside Santiago, Chile. Scientists believe that the planet is undergoing a sixth mass extinction. REUTERS PIC

ment, nations committed to actions to cap emissions so that the temperature rise is limited to "well below" 2.0 degrees Celsius. A UN climate report in October, however, warned that even that rise would still be enough to boost the intensity and frequency of deadly heatwaves, droughts, floods and storms.

Other findings expected in the report include:

THREE-QUARTERS of land surfaces, 40 per cent of the marine environment, and 50 per cent of inland waterways across the globe have been "severely altered";

MANY of the areas where nature's contribution to human wellbeing will be most severely compromised are home to indigenous peoples and the world's poorest communities that are also vulnerable to climate change;

MORE than two billion people rely on wood fuel for energy, four billion rely on natural medicines, and more than 75 per cent of global food crops require animal pollination; and

SUBSIDIES to fisheries, industrial agriculture, livestock raising, forestry, mining and the production of biofuel or fossil fuel energy encourage waste, ineffi-

ciency and over-consumption.

The report cautioned against climate change solutions that may inadvertently harm nature. The use, for example, of biofuels combined with "carbon capture and storage" — the sequestration of carbon dioxide released when biofuels are burned — is widely seen as key in the transition to green energy on a global scale. But the land needed to grow all those biofuel crops may wind up cutting into food production, the expansion of protected areas or reforestation efforts.

Often described as the "IPCC (Intergovernmental Panel on Climate Change) for Biodiversity", IPBES is the global science-policy forum tasked with providing the best available evidence to all decision-makers for people and nature.

We can only hope that the world's conscience will be pricked to set ambitious new targets in 2020 and to take on their accomplishment with a sense of urgency that befits the catastrophic future outlined in this benchmark IPBES report.

The writer is the founding chair of the IPBES (2013–2016) and the 2018 Midori Biodiversity Prize laureate

6 Scientists estimate that the earth is today home to some eight million distinct plant and animal species, a majority of them insects. Many are being crowded, eaten or poisoned out of existence.