ON TARGET

e-Mag of the Institute of Certified Management Accountants
Jan Feb 2022 Vol 26, No.1

STRATEGY » FINANCE » MANAGEMENT

BACK TO THE FUTURE! REVERSING THE PLASTIC POLLUTION PANDEMIC

CMA AUSTRALIA • NEW ZEALAND Certified Management Accountants

ICMA COUNCIL

Chairman
Prof Michael Tse
BA, MCom, PhD, FCMA

President
Prof Brendan O'Connell
PhD, CA, CPA, FCMA

Vice President
Mr David Cartney
MA (Hon), CA(Scot), CA(Aust), FCMA, FCPA, FAICD

Hon. Secretary
Mr Hans Ferdinand
BBus(B&F), FCMA

Hon. Membership Committee Chair
Ms Roshani Perera
MBus (Acc), CPA, FCMA

Hon. Education Committee Chairman and CEO
Prof Janek Ratnatunga
MBA, PhD, FCA, CGBA, CMA

Hon. Treasurer and CFO, COO (Int)
Dr Chris D'Souza
BComm, PhD, FCA, FCMA, CPA

Editor and COO (ANZ)
Dr Chintan Bharwada
MBA, PhD, FCMA

Emeritus President
Dr Leon Duval
MBus (Acc), PhD, CA, FCMA

Immediate Past President
Prof Michael Tse
BA, MCom, PhD, FCMA

Web Master
Mr Jehan Ratnatunga
BEng, BCompSc

Education Advisory Board

The Institute's Education Advisory Board provides expert advice on the Professional Education; Continuing Education and Academic Education for Students and members of the ICMA.

Members of the Education Advisory Board are as follows:

Convenor:	
Prof. Janek Ratnatunga	ICMA
Australian Members:	
Prof Garry Marchant	Charles Sturt University
Prof Stewart Jones	University of Sydney
Prof Vincent Chong	University of Western Australia
Prof Nava Subramanium	RMIT University
Prof Lisa McMannus	University of Tasmania
Prof Carol Tilt	University of South Australia
Prof Chris Patel	Macquarie University
International Members:	
Dr Mohd Nor Ismail	Multimedia University, Malaysia
Prof Allen Wong	Peking University, China
Dr Thaddeus Kambani	Institute of Finance and Management PNG
Dr Paulina Permatasari	Parahyangan Catholic University, Indonesia
Prof Zhijun Lin	Macau University of Science and Technology
Dr Josua Tarigan	Petra University, Indonesia
Mr Kapila Dodamgoda	Academy of Finance, Sri Lanka

Membership Advisory Board

The Institute's Membership Advisory Board provides expert advice on the minimum experience requirements requires for entry to the: (1) MAA, CAT, RCA, RBA, GMA, AMA, CMA, FCMA membership certifications; (2) the CGBA and CIPA professional designations; and (3) the Certificates of Proficiency programs. The Membership Advisory Board also provides expert advice on: (1) membership services; (2) industry and government engagement; and (3) the development of Ethical standards.

Members of the Membership Advisory Board are as follows:

Convenor:	
Ms Roshani Perera	
Australian Members:	
Ms. Anna Stamatelatos	
Mr. Darrel Drieberg	
Mr. John Stanhope	
Associate Professor Prem Yapa	
International Members:	
Dr. Fawaz Hamidi	Lebanon
Mr. Christos Ioannou	Cyprus
Mr. Alireza Najjar Sarraf	Iran
Dr Ana Sopanah	Indonesia
Dr. Dennis Tam	Hong Kong
Professor Bambang Tjahjadi	Indonesia
Dr. Joselito Diga	Philippines
Mr. M. V. Jayafar	UAE
Mr. Asite Talwatte	Sri Lanka
Dr. Ridzwan Bakar	Malaysia
Dr. Simon Mhpeo	Papua New Guinea

CMA AUSTRALIA • NEW ZEALAND Certified Management Accountants

Contents

BACK TO THE FUTURE! REVERSING THE PLASTIC POLLUTION PANDEMIC

Prof. Janek Ratnatunga
CEO, ICMA Australia

Introduction

At first Europeans believed that black swans did not exist. When they sighted a black swan for the first time in Australia, it was seen as an extremely rare but perhaps predictable event. Today, a 'black swan event' is one that whilst being extremely rare and of severe impact, is nevertheless characterised by the widespread insistence it was obvious in hindsight. The Covid-19 pandemic was described as such an event.

Environmental damage is a swan of a different colour: a green one. 'Green swans' are the consequences of the risks we humans create for ourselves by pumping contaminants into our air and water, destroying our ecosystems, and destabilizing our climate. Some causes of an impending green swan event, like global warming are being well studied. However, other causes remain 'hidden'. The looming plastic pollution pandemic can have equally devastating consequences of triggering a green swan event as green-house gas emissions, which in hindsight will be seen as being obvious.

This paper will separate the energy and emissions issues related to plastic production and the air and water pollution issues related to plastic consumption and excessive littering. The paper recommends that we go 'Back to the Future' of the 1950s and ban all plastic single-use consumption products; and if such a drastic move is not politically feasible, then at least impose a cap-and-trade system with 'plastic-credits'; i.e., one similar to a carbon credit system, as a workable solution to curb excessive plastic pollution.

From Convenience to Curse.

The evolution of the plastic bottle – from amazing to scourge of land and sea – has played out inside of a generation.

What sets bottles apart from other plastic products born in the post-World War II rise of consumerism is the sheer speed with which the beverage bottle – now ubiquitous around the world – has shifted from convenience to curse.

Over a million plastic beverage bottles were purchased each minute in 2019. The Covid-19 Pandemic increased this dramatically to almost 2 million bottles by mid- 2021. The plastic bottle's journey from convenience to curse has played out quickly—within the living memory of all of us.

Studies on plastic bottles fall into two categories: (a) those that highlight plastic's 'green credentials' in terms of energy

efficiency in manufacturing, distribution and recycling – i.e. that plastic is a greener alternative to most materials (paper, metal, glass) and alternative bio-based materials; and (b) those that show that plastic is an environmental and social disaster in terms of its role in pumping contaminants into our air and water, destroying our ecosystems, and destabilizing our climate.

Plastic: Hero or Villain?

The moment the modern plastic beverage bottle changed the world's drinking habits is difficult to pinpoint. Since 1862, whilst there have been many iterations of 'plastic', it was probably in 1973, when engineer *Nathaniel Wyeth* patented *polyethylene terephthalate (PET)* that the world order changed. PET was used in the first plastic bottles that were able to withstand the pressure of carbonated liquids. They were also a much cheaper alternative to glass bottles. *[See Appendix 1 for a quick history that led to the development of the PET Bottle].*

In 1978, *Evian* started selling bottled water in PET bottles.

Perhaps the actual occasion that plastic was given *cult-status* was probably the day New York supermodels began carrying tall bottles of *Evian* water as an accessory on fashion show catwalks in the late 1980s. This was a signal that if it was acceptable by high society, then it was acceptable by all.

The benefits of plastic are an undisputed fact. They are very resource efficient by having a high strength-to-weight ratio, stiffness and toughness, ductility, corrosion resistance, bio-inertness, high thermal/electrical insulation, non-toxicity and outstanding durability at a relatively low lifetime cost compared with competing materials such as aluminium cans and glass-bottles.**[i]**

Plastic the Hero

Since then, billions of bottles have been sold on the promise that bottled water is good for hair and skin, healthier than soft drinks, and safer than tap water. It did not take consumers long to buy into the notion that they needed water within reach virtually everywhere they went.**[ii]**

In most western societies people seemed to think that if they did not have water at hand, terrible things will happen to them. This same mindset was then transplanted into affluent westernised societies in Asia and Africa. One can understand that in some of these countries tap water had to be boiled before drinking; but even in Asian countries like Singapore and Hong Kong, with perfectly drinkable tap water, no one left home without a bottle of water in their hand. It was both a healthy lifestyle statement and a fashion statement.

The rest is history… and we are living through the consequences of this mindset!

PepsiCo finally joined the water business and introduced *Aquafina* in 1994. *Coke* followed with *Dansani* in 1999. Both brands use refiltered tap water. Between 1994 and 2017, water sales in the United States had grown by 284 percent, according to *Beverage Marketing Corp*. data published by the *Wall Street Journal.**[iii]***

Plastic Becomes the Villian

Since the introduction of plastic, our society has taken full advantage of this material and created many purposes for it besides beverage bottles. However, now that the movement toward sustainable living has become a priority, plastic is as the enemy rather than the hero it once was developed to be.

In addition to the issue of pollution, there are studies that show that bottled water requires up to 2,000 times the energy used to produce tap water, affecting global warming.**[iv]**

This resulted in 1983, author Normal Mailer saying:**[v]**

"I sometimes think that there is a malign force loose in the universe that is the social equivalent of cancer, and it's plastic. It infiltrates everything. It's metastasis. It gets into every single pore of productive life…".

By the first decade and a half of the 21st century, this once celebrated invention had become almost like a disease that has spread to a significant number of commodities sold today, including: forks and spoons; toothbrushes; plastic wraps; plastic clamshell containers; cigarette butts; tampons and pads; shoes and tyres. In fact, hospitals were filled with sterile single-use plastic used to keep healthcare hygienic.**[vi]**

The world has now awakened to the burgeoning crisis of plastic waste. Homeowners are now struggling to rid their lives of this material in an effort to go green. The backlash against the glut of discarded plastic commodities clogging waterways, polluting the oceans, and littering the interior has been swift. Suddenly, carrying plastic bottles of water around is uncool.

Plastic bottles and bottle caps rank as the third and fourth most collected plastic trash items in the *Ocean Conservancy's* annual September beach clean-ups in more than 100 countries.**[vii]** Activists are zeroing in on the bottle as next in line for banning, after plastic shopping bags.**[viii]**

According to the *United Nations*, the developing world has 2.2 billion people who still do not have access to clean drinking water.**[ix]** However, these people cannot afford to buy sealed plastic bottles of water. Instead, they often fill used unwashed bottles with contaminated water.

In such countries it is the tourists who see sealed bottled water as the only safe option. They drink the water and throw away the container as litter. Often, as there is no proper trash collection system in these beautiful remote locations that tourists visit – these pristine sites are now littered with plastic bottles and containers. Sri Lankan heritage sites, Myanmar Temples and beaches in Bali are now littered with plastic. We all have heard of the litter on Mount Everest. We will discuss later in the article how this uncontrolled litter leads to a pollution pandemic that ultimately severely damages our environment.

Some countries in the developing world are recognising the problem of excessive litter. Kenya has announced a ban on single-use plastics at beaches and in national parks,

forests, and conservation areas – effective in June 2020.**[x]** The *South Delhi Municipal Corporation has* banned disposable water bottles in all city offices.**[xi]**

However, in most of the developing world, uncontrolled litter, caused by both tourists and their own affluent local population is rampant, and when coupled with inefficient or non-existent waste management systems, this ultimately leads to a plastic pollution pandemic that is damaging our environment.

Control the litter, or else a hidden 'Green Swan' will emerge.

The Impact of Plastics on the Environment

There are two interrelated issues that are often discussed when considering the impact of plastics on the environment:

1. *Plastic Production:* The Green House Gases (GHGs) emitted in creating, recycling, and incinerating the plastic.
2. *Plastic Consumption:* The deadly impact of littering on air and water pollution, wildlife, and the spread of disease.

Let us consider these two issues in turn.

The Plastic Lifecycle and Green House Gas Emissions

There are many studies done on the 'whole-of-life' impact of GHG emissions related to plastic. On balance, most studies show that, on a 'per unit' basis, plastic emits less GHG in its life-cycle than a similar product that uses renewable materials.**[xii]**

*This sort of reasoning has given rise to some arguments that, plastic is a greener alternative to most materials (paper, metal, glass) and alternative bio-based materials.**[xiii]***

However, the GHG emitted in the plastic life-cycle is not the big issue. The big issue is that the resultant 'litter' is piling up and causing irreversible damage to the planet's ecosystems.

Further, even if one accepts the whole of life GHG emissions arguments in favour of plastic on a *unit basis*, when considering the sheer volume of plastic production on a *total basis*, the numbers tell a different story. Production has increased exponentially, from 2.3 million tons in 1950 to over 600 million tons by 2020. A recent report predicted that the plastics industry in the United States is on track to release more greenhouse gas emissions (GHG) than coal-powered electricity generating plants by the end of the decade.**[xiv]**

There are also many studies that show that bottled water emits GHG in many other ways. Transporting the bottles and keeping them cold also burns fossil fuels, which give off greenhouse gases. Groundwater pumping by bottled-water companies not only uses GHG, but also draws heavily on underground aquifers and harms watersheds, and this has caused significant unrest in developing countries where most citizens depend on direct access to the water table via wells and rivers.**[xv]**

Excessive Litter and Environmental Pollution

Water pollution is the release of substances into bodies of water that makes water unsafe for human use and disrupts aquatic ecosystems. Water pollution can be caused by a plethora of different contaminants, including toxic waste, petroleum, disease-causing microorganisms and in more recent times plastic and microplastic litter.

The word 'litter' originally was used to describe any rubbish that was not household waste, i.e., small things such as cans, bottles, and paper that people leave lying on the streets and in other public places. Littering in developed countries is when someone throws things like a cigarette butt or a plastic cup out of a car window. In developing countries, however, where there are no readily available trash cans, litter is simply thrown on the street or in a waterway or a beach.

This litter leads mainly to water pollution, and the disaster that can be caused by excessive litter that does not degenerate is no longer a potential threat but a real one.

Unfortunately, what each individual considers as a minor littering misdeed, when considered collectively has a deadly impact on the environment. In our oceans, which provide the largest natural carbon sink for greenhouse gases, plastic leaves a deadly legacy. It directly chokes and smothers a host of marine animals and habitats and can take hundreds of years to break down. As it does, sunlight and heat cause the plastic to release powerful greenhouse gases, leading to an alarming feedback loop. As our climate changes, the planet gets hotter, the plastic breaks down into more methane and ethylene, increasing the rate of climate change, and so perpetuating the cycle.**[xvi]**

Plastics often contain additives making them stronger, more flexible, and durable, all excellent qualities. But many of these additives can extend the life of products if they become litter, with some estimates ranging to at least 450 years to break down. Plastics can take anywhere from 20 to 500 years to decompose, depending on the material and structure.

In addition to water and soil pollution, plastic litter can also pollute the air. Researchers estimate that more than 40% of the world's litter is burned in the open air, which can release toxic emissions.**[xvii]** These emissions can cause respiratory issues, other health problems, and even be a starting base for acid rain. Further, improperly discarded trash is a breeding ground for bacteria and diseases. Litter can spread diseases, viruses, and parasites through two methods, direct and indirect contact.

The Deadly Impact of Microplastics

Microplastics originate from broken bits of takeaway containers and straws, tiny fibres from activewear, plastic shed by synthetic products that get into our waterways. Rather than breakdown, they just get smaller until they are invisible to the naked eye. These end up in our waterways, blown as wisps in the wind.

Once in the ocean, it is difficult—if not impossible—to retrieve plastic waste. Mechanical systems, to intercept litter can be effective at picking up large pieces of plastic, such as foam cups and food

containers, from inland waters. But once plastics break down into microplastics and drift throughout the water column in the open ocean, they are virtually impossible to recover.**[xviii]** Animals are innocent victims affected by litter every day. Researchers estimate that over one million animals die each year after ingesting, or becoming entrapped in, improperly discarded trash.**[xix]**

This litter leads to pollution, and the disaster that can be caused by excessive litter that does not degenerate is no longer a potential threat but a real one.

Clearly, it is excessive litter (and not GHG emissions) that is the real issue, and if not tackled, can lead to a green-swan catastrophe.

Plastic Recycling – The Big Con

The Plastics and the Chemical Industry realised in the 1970s that if governments made them responsible for bearing the cost of recycling, it would make their product uneconomical.

As a result, they put the onus of responsibility for plastic pollution on the consumer.

They financed expensive advertising campaigns on how we must all be 'good citizens' and recycle. They lobbied influencers to instil in us a *3R (Reduce, Reuse and Recycle)* mindset They introduced the *"Re-cycle" Logo*, even though they well knew that much of the plastic we 'recycle' will end up either in landfill sites or be incinerated.

The fact is, not even10% of plastic waste can actually be commercially recycled. A whopping 91% of plastic is not recycled globally. Country wise the picture is a little different. In the U.S., only 30% of these bottles are recycled whilst Norway recycles 97%.**[xx]**

According to the *World Economic Forum*, just 14% of plastic packaging is collected for recycling globally. And because of complexities in the recycling process, huge amounts of single-use plastic (as well as glass and cardboard) that consumers try to recycle ultimately end up getting burned or tossed into landfills anyway. If recyclable materials are contaminated by food waste, or if consumers misunderstand what can be recycled and where—to cite two common examples—their garbage may not end up being repurposed at all.**[xxi]**

A 2017 study in *Science Advances* estimated that, of all the plastic waste generated globally up to 2015, just 9% had been recycled, while 12% was incinerated and the rest ended up in landfills or were scattered around the natural environment. Some plastic waste is burned to create fuel or energy, but this process is itself energy-intensive and in most cases emits the GHG carbon dioxide into the atmosphere.**[xxii]**

The onus of recycling being placed on the shoulders of consumers was severely tested and found wanting during the COVID-19

pandemic. Since the coronavirus took hold, the consumption of single-use plastic grew by 250-300% (according to the *International Solid Waste Association (ISWA),* which represents recycling bodies in 102 countries).**[xxiii]**

Much of that increase was due to the demand for products designed to keep COVID-19 at bay, including masks, visors and gloves. The global disposable-mask market grew from an estimated $800m in 2019 to $166bn in 2020. The throw-away containers for all the takeaway food increased five-fold.

Lockdowns also led to a boom in e-commerce. Much of what is bought online are often packaged in plastic comprising several layers. Whilst this keeps the contents safe in aeroplane holds and on delivery lorries, it also makes it nearly impossible to recycle the plastic.

In addition to the public's increasing appetite for single-use plastic, there also appears a diminishing inclination to recycle even materials that can be reused. An unwillingness to recycle might be explained by people's nervousness about venturing out to put waste in recycling bins during a pandemic. Or it might just be that lockdowns have put more pressing matters into their minds, prompting a slip in their diligence.

COVID-19 has led to a glut in plastic waste in other ways. As the pandemic caused initially a crash in the oil price, and because petroleum is a major constituent of most plastics, they have become cheaper to produce. That in turn give firms less incentive to use the recycled stuff. Another reason for the growth of plastic rubbish has been caused by the fact that municipalities around the world curtailed their recycling schemes over fears about spreading the contagion (the virus can survive for about 72 hours in plastic). All of which means that much of the plastic produced during the pandemic ended up either in landfill sites or was incinerated.**[xxiv]**

Landfills, especially in poor countries, are often little more than open dumps. They are responsible for some of the biggest leakages of plastics into oceans, because the material is light, it is easily swept by rain or wind into waterways.

Economic Solutions to Excessive Litter

As getting the consumers to 'recycle' for ethical reasons was not working out, governments, corporations and scientific establishments need to turn to economic solutions.

The good news is that as the public's focus on the plastic waste crisis narrows, the world is awash with solutions for bottles. Generally, they fall into two categories: (1) efforts to reduce the use of plastic bottles and (2) efforts to find new ways to deal with bottles once they're thrown away.

Reducing the Use of Plastic Bottles

Efforts to reduce the use of plastic bottles abound. Constructing freshwater fountains for refillable bottles; shops and other places where you can bring your own packaging; shopping-centres banning plastic beverage bottles, clamshell container and plastic straws from their food courts in favour of glass bottles, aluminium cans, and refilling stations.

The quantity of new bottles produced can also be dramatically reduced with recycling. Beverage companies have pledged to use more recycled bottles in manufacturing – a goal that aims to reduce the production of new resin and boost recycling numbers – by adding value to bottle recovery.

PepsiCo pledged to increase recycled content in all its plastic packaging 25 percent by 2025. *Nestle Waters* vowed to make all of its packaging recyclable by 2025 and to increase recycled content in bottles to 35 percent by 2025 globally. Coca-Cola pledged to recycle a used bottle or can for every one the company sells by 2030 and increase recycled material in plastic bottles to 50 percent by 2030.

Conversely, proponents of what is known as a ***'circular economy'*** argue that, instead of feeding into the convoluted recycling process, companies should replace single-use containers with those that can be used over and over again—often a durable metal or glass vessel that can be refilled either in a store, by the manufacturer or in a consumer's own home.

The idea of reusing containers is hardly new. If you've ever bought a vat of hand soap and used it to refill various dispensers around your house; or brought your own refillable coffee cup to your favourite café – you have taken part in the circular economy.

However, there is a "payback" period associated with any reusable item, i.e., the number of times it must be reused before it is actually better for the environment than its single-use alternative.**[xxv]** Something like a reusable sandwich wrap may never break-even because the energy and resources required to make and wash it far exceed what goes into making flimsy disposable bags or cotton tote bags.**[xxvi]** However, most of the comparative 'whole-of-life' cost studies ignore the long-term littering effect of plastics and microplastics.

New Ways to Deal with Discarded Bottles

Once bottles have become trash, entrepreneurs around the world are turning them into printer ink cartridges, fence posts, roofing tiles, carpets, flooring, and boats, to name only a few items. Even houses have been constructed from bottles. A three-story modern house has been built on the banks of the Meteghan River in Nova Scotia is being promoted as able to withstand a Category 5 hurricane. It only took 612,000 bottles.**[xxvii]**

There are other solutions, including *smart design* and *smart packaging* being considered such that waste generation is significantly reduced. Here, design solutions of pre-plastic days are being actively reconsidered. In laboratories, new versions of bottles claiming to be biodegradable or compostable appear regularly; and plastic industry chemists are experimenting with "chemical recycling" that returns the polymers to their constituent monomers, enabling them to be remade multiple times into new plastic bottles. *[See Appendix 2 for a discussion of such innovative solutions].*

Controlled Incineration – The Singapore Solution

Interestingly, Singaporeans appear to have realised that advertising campaigns to encourage a 3R (reduce, reuse and recycle) mindset is just a waste of time, as 90% of material sorted for recycling goes to landfills anyway. In contrast, the government appears to be encouraging Singaporeans to *create* plastic waste so that it can be collected and incinerated in a controlled process.**[xxviii]** Singapore is one of the cleanest cities in the world.

Singapore's process of trash management involves burning the trash and filtering the smoke. First, all the trash is accumulated from all the garbage cans and trash bags. Second, the trash is incinerated in a controlled process that emits gases that are harmful to humans (pollutants) or the planet (GHGs). The harmful pollutants are filtered out so the air that is emitted from the incineration plants is very clean. In fact, it is claimed that it is cleaner than the air into which it is pumped. Third, it 'stores' safely the left over ash. This is done by mixing the ash with sea water to obtain a slurry – so that the it does not blow with the wind to the sea – which is then dumped into an artificial lake of a man-made island. As such, the plastic residue ash does not touch ocean waters, and therefore has no harmful impact on marine eco-systems. Surprisingly, this solution offers an additional benefit – the heat from the burned trash is harnessed to power thousands of homes with electricity.**[xxix]** According to the *National Environment Agency (NEA),* incineration reduces waste by up to 90 per cent, saving landfill space, and the heat recovered produces steam used to generate electricity **[xxx]**

However, a word of caution: *'Clean'* does not mean *'Green'* – often the two gas-types are confused.

Air pollution is contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere. Household combustion devices, motor vehicles, industrial facilities and forest fires are common sources of air pollution. Pollutants of major public health concern include particulate matter, carbon monoxide, ozone, nitrogen dioxide and sulphur dioxide.**[xxxi]** Whilst these pollutants are obviously not 'clean', they are nevertheless 'green' in that they do not directly trap the Sun's heat in Earth's atmosphere and make the Earth much warmer than it would be.

In contrast, climate change is caused by *'green house gases'* which are mainly CO_2 (carbon di oxide) and CH_4 (methane). These gases are transparent to incoming (short-wave) radiation from the Sun but block infrared (long-wave) radiation from penetrating the Earth's atmosphere. However, CO_2 and CH_4 are nevertheless 'clean' gasses as they do not cause the outdoor and indoor air pollution that results in respiratory and other diseases, especially in humans.

Clearly, the Singapore solution whilst being 'clean' is by no means 'green'; i.e. whilst it is not releasing harmful pollutants to the atmosphere; it is nevertheless releasing 'green house gases'. However, given the significant damage done to our oceans due to excessive plastic litter, this appears to be the best solution to date on a 'cost-benefit' basis.

A Plastic Recovery Price?

Many of the above solutions listed above and in Appendix 2 are still not scalable to a level that would make a noticeable difference, in countries bigger than the city state of Singapore. Also, most of them—including biodegradables—still require that the most elemental and least functional part of the bottle's lifespan be performed: i.e., *someone needs to pick up the discarded bottle.*

The recovery of plastic waste will not improve much until this 'recovery' is given a greater value, achieved through charging an additional price for the product. This is where management accounting and 'life-cycle costing' comes in.

If a company chooses to sell water in a single-serving container, the consumer should have to pay the full cost of delivering that water in a single-serving container, which includes recovering that container after use.

Beverage companies would be wise to take a lesson from their own history. In the days before plastic, bottle deposit programs were established around the world. These can be re-introduced to collect single-use plastic bottles. Such a program now runs in Coke's Mexico City operations; and the company claims that it recycles virtually 100 percent of PET.**[xxxii]**

As discussed earlier, the voluntary efforts using the 3R campaign and the recycling logo are just not working. The onus for recovery must be put on the plastic's industry itself and not on the plastic consumers' ethics. The pricing-mechanism should include the recovery cost of the manufactured plastic. Management accountants have the tools and techniques of getting this pricing right.

Concluding Comments: Planet or Plastic?

In recent years the surge in production has been driven largely by the expanded use of disposable plastic packaging in the growing economies of Asia—where garbage collection systems may be underdeveloped or non-existent. In 2010, it was estimated that half the world's mismanaged plastic waste was generated by just five Asian countries: *China, Indonesia, The Philippines, Vietnam,* and *Sri Lanka.**[xxxiii]***

As individuals, there are three things we can do to be part of the solution: (1) carry a reusable bottle; (2) choose glass bottles or aluminium cans over plastic when possible, and (3) recycle all plastic bottles. Unfortunately, these ethical *'end-of-pipe' solutions* at an individual level are just not working.

It is possible that high-tech 'end-of-pipe' solutions such as Singapore's controlled incineration can be scaled up in larger countries as the cost-benefit of releasing 'greenhouse gases' significantly outweigh the looming ecological disaster of excessive plastic pollution. The reality today is however, that we need to *just collect the trash*. This is an issue for all countries, but

more so for developing countries. In most countries, trash is piling up in streets, laneways, riverbanks and beaches. This issue needs a global solution such what we had with the *Paris Accord* and COP 26 for Climate Change. Just like green house gas emissions reach all corners of the globe, so does plastic pollution.

Ideally, the United Nations must ***Ban*** *single-use plastics* worldwide. At present, 170 nations have pledged to "significantly reduce" use of plastics by 2030.**[xxxiv]** Most of the pledges focus on banning six items that are often found in the environment, are often not recycled, and that have readily available alternatives. These are plastic grocery bags, straws, stir sticks, six-pack rings, cutlery and food take-out containers that are hard to recycle. The timelines for these bans range from 2017 to 2030. However, such unilateral bans, whilst helpful, are of little value if excessive plastic litter continues to enter our waterways and then are taken globally via the ocean currents.

If such an across-the-board ban is not politically feasible in some countries (the plastics industry lobby is very strong) then at least institutionalise *controlled waste management* in all countries. Trash needs to be collected on a regular basis and landfilled, recycled, or burned in a controlled way so that it does not end up on top of mountains or the bottom of oceans. Every country needs to be provided with enough garbage trucks and other waste management equipment.

How can Global Waste Management be Financed?

One way is to tax the consumer through higher prices, and use the extra funds generated to finance cost of collecting of used bottles centrally. This will be as ineffective as a carbon tax was – as the companies will pay the tax and keep on littering – and can pass the tax on to the customer. Also, it will be difficult to police back-yard small-scale manufacturing companies to pay the tax, with plastic items being so easy to manufacture.

A better way is the impose a tax at the at the source of the problem, the Plastics Industry. A worldwide tax of two US cent for every kilo of plastic resin manufactured has been estimated to raise roughly six billion US dollars a year into a global fund that could be used to finance garbage collection systems in developing nations.**[xxxv]**

However, the best way is to impose a *cap-and-trade system* with 'plastic-credits'; i.e., one similar to a carbon credit system. A 'Plastic-credit' can be defined as (say) one kilo of plastic resin that is either recycled or saved from being manufactured (by using alternative materials). Companies can be given a cap, and if they reach it, they can trade with a company that has excess plastic credits.

There are other 'end-of-pipe' solutions that are being developed once the plastic rubbish has been collected and brought to a processing station. Ultimately, however, it is the *'start-of pipe' solutions* such as *Smart Design* and *Smart Packaging* – essentially low-tech solutions that takes design 'back to the future' of pre-plastic days – that holds the best hope in preventing the hidden 'Green Swan' event from eventuating.

APPENDIX ONE: A Quick History of Plastic

Alexander Parkes invented the first manmade plastic in 1862, which was derived from cellulose and named *Parkesine*. The goal was to replace common materials such as ivory, rubber and shellac. Although Parkesine could be manipulated into various shapes, investors lost interest since the raw materials to produce the plastic were so expensive.

Later in the 19th century, *John Wesley Hyatt* developed *thermoplastic*, which was used in photographic film. The next milestone in resins came in 1907, when New York chemist *Leo Baekeland* created *Bakelig*ht. The military found this material helpful in the production of weapons, and it was also used for electrical insulators, radios, cups, buttons, false gums and silverware handles. These early applications saved wildlife as they replaced ivory and other animal-based materials.

In 1891, *Louis Marie Hilaire Bernigaut* developed *Rayon* – a modified cellulose. About 10 years later, *Dr. Jacques Edwin Brandenberger* discovered *Cellophane.* By the 1940s*, nylon, acrylic, neoprene, styrene-butadiene rubber (SBR), and polyethylene* were becoming widespread. Between 1940 and 1945, the demand for plastic in America grew immensely and tripled in production due to the war, public funding, and the material's versatility.

All of these inventions and discoveries gave way to further different types of plastic, including: *polyvinyl chloride (PVC) or vinyl, polyvinylidence chloride (Saran), Teflon, high-density polyethylene (HDPE), low-density polyethylene (LDPE), polypropylene (PP) and polystyrene (PS).*

PVC is found in vegetable oil bottles and food wraps; HDPE is used in the making of milk and detergent bottles; LDPE helps to create plastic bags and shrink wrap; PP is found in margarine and yogurt containers; and PS makes egg cartons and disposable utensils.

In 1973, *Engineer Nathaniel Wyeth* patented *polyethylene terephthalate (PET)*; which was used in the first plastic bottles that were able to withstand the pressure of carbonated liquids. They were also a much cheaper alternative to glass bottles.

This was the start of the ubiquitous plastic bottle we encounter daily.

APPEDIX TWO: Innovations in Plastic Recycling

End-Of-Pipe Solutions

These are solutions suggested *after* the plastic is discarded as waste. Such solutions go hand in hand with efficient waste management systems to collect and transport the trash to a processing station.***[xxxvi]***

AI Sorting: Artificial Intelligence (AI) is the perfect solution for garbage recycling due to the highly irregular and unpredictable nature of garbage. A sensor may only be able to identify a material's composition,

but AI can identify its composition and configuration in varying circumstances using deep-learning algorithms that go far beyond simple if > then logic.

Plastic-munching Bacterial Species: There are several different bacterial species that have been observed to eat non-degradable plastic and turn it into polyhydroxyalkanoate (or PHA). PHA is a polyester that is biodegradable. Unfortunately, the bacteria are limited in how much it can produce PHA up to a certain percentage of its cell weight. Scientists are working on developing genetically engineered bacteria strains that offer no compromises.

Depolymerization: As plastic comes from petroleum, what is to stop the process from being put in reverse? It turns out it's already happening. A company aptly named "Recycling Technologies" is utilizing a chemical process called thermal cracking to do so. It is still under testing, but if successful it could potentially be used to power vehicles like heavy tankers. With one Recycling Technologies machine capable of processing 7000 tons of plastics per year, the potential to catch up with the world's enormous production of plastic waste is no longer completely out of sight.

Microemulsion: Mixed materials present a notoriously difficult problem for recyclers. They are composed of multiple types of materials (eg cardboard and aluminum foil) that can't be recycled unless they are separated. A company named Saperatec is attempting to use a technology for recycling materials like lithium-ion batteries, LCD panels, plastics composites and more. Using microemulsion substances to separate materials at the molecular level can make otherwise landfill-bound materials recyclable.

Start-Of-Pipe Solutions

These are solutions suggested *before* the plastic is manufactured as a product.

Smart Design: A price on the recovery of single-use plastic will force manufacturers to first consider the design of their products. Engineers and industrial designers must redesign their products. Many of the daily throwaway products we use, such as toothbrushes, sanitary pads, baby nappies, cigarette butts, tyres, and footwear, can easily go back to pre-plastic designs without any loss of utility. There are edible forks and spoons that have been developed in India. They will probably cost more to manufacture than with plastic, but the consumer needs to pay this to save the planet. Hospital equipment needs to be redesigned not only to keep healthcare hygienic, but also to safely recycle the equipment if plastic must be used.

Smart Packaging: Manufacturers should consider if their products require any packaging at all, and if they do, if plastic can be avoided. The use of glass and paper should be re-introduced. Even with paper, knowing the impact it is having on our climate due to deforestation, bamboo (which is a form of grass) should be considered instead of cutting down trees. Packaging should not have styrofoam or plastic inserts between the cardboard. Even if a company decides to stick with plastic containers and packaging, it should be designed without the peel-out plastic coverings that become trash immediately the container is peeled open. Cling-wrap and single-use plastic clamshell containers must be banned, and consumers forced to use recyclable containers to store food.

Bio-degradable Plastic: Biodegradable plastics are one set of materials that are becoming a popular replacement as consumers demand green alternatives. Rather than remaining stable for hundreds of years – the quality for which we prized plastic when we first began using it – biodegradable plastics can be broken down by microbes, chewed up and turned into biomass, water and carbon dioxide (or in the absence of oxygen, methane rather than CO2). A subset of them are compostable, which means that not only are they broken down by microbes, but they can be turned – alongside food and other organic waste – into compost. However, only a minority of these plastics are home compostable, so, the label "compostable" most often means industrially compostable; and this requires a well-managed waste system to ensure that this actually happens. If products made from these plastics are discarded into conventional waste streams such as landfill or find their way into the open environment such as rivers and oceans, potential environmental benefits are not realised and evidence indicates that this can actually worsen, rather than reduce, the problem of plastic pollution.**[xxxvii]**

Triggerable Smart Polymer Material Systems: Much like microemulsion, one of the purposes of "smart polymers" is to make materials and textiles with plastic coatings or elements more effectively recyclable. However, this method approaches the problem from an even more fundamental standpoint – by enhancing the material itself from the outset in such a way as to make it triggerable by a designated means instead of adapting the processing mechanism to an existing material type. The type of trigger can come in the form of various means, including chemical, heat, microwave, the intensity of light or even humidity.**[xxxviii]**

References

[i] Balint Simon, Mourad Ben Amor, Rita Fold (2016), "Life cycle impact assessment of beverage packaging systems: focus on the collection of post-consumer bottles", *Journal of Cleaner Production* 112: 238-248.

[ii] Laura Parker (2019), "How the plastic bottle went from miracle container to hated garbage", *National Geographic*, August 23 **https://www.nationalgeographic.com/environment/2019/08/plastic-bottles/**

[iii] Saabira Chaudhuri (2018), "Plastic Water Bottles, Which Enabled a Drinks Boom, Now Threaten a Crisis", *Wall Street Journal,* December 12. **https://www.wsj.com/articles/bottled-water-americas-most-popular-drink-has-a-plastic-problem-11544627923**

[iv] Ken Fullerton (2018), "Welcome to Bundanoon, Australia: the world's first bottled water free town" *Sense & Sustainability (International Development Journal),* January 16. **https://www.senseandsustainability.net/2018/01/16/9801/**

[v] Elizah Leigh (2011), "The History of Plastic Bottles", *RecycleNatio*n, March 17. **https://recyclenation.com/2011/03/history-plastic-bottles-recycle/**

[vi] Sarah Gibbens (2019), "Can medical care exist without plastic?", *National Geographic*, October 4. https://www.nationalgeographic.com/science/article/can-medical-care-exist-without-plastic

[vii] Op. cit. Parker (2019). August 23.

[viii] Sarah Gibbens (2019), "See the complicated landscape of plastic bans in the U.S*.", National Geographic*, August 16. **https://www.nationalgeographic.com/environment/article/map-shows-the-complicated-landscape-of-plastic-bans**

[ix] United Nations (2019), "1 in 3 people globally do not have access to safe drinking water", *UNICEF & WHO*, June 18. **https://www.who.int/news/item/18-06-2019-1-in-3-people-globally-do-not-have-access-to-safe-drinking-water-%e2%80%93-unicef-who**

[x] The Star (2019), "Uhuru announces ban on single use plastic in Kenya", *Star News*, June 5. **https://www.the-star.co.ke/news/2019-06-05-uhuru-announces-ban-on-single-use-plastic-in-kenya/**

[xi] Times of India (2019), "No plastic bottles in SDMC offices", *Times of India*, July 24, **https://timesofindia.indiatimes.com/city/delhi/no-plastic-bottles-in-sdmc-offices/articleshow/70356760.cms**

[xii] Kate Ng (2021), "Cotton tote bags not environmentally-friendly due to overproduction, says report", *The Independent*, August 26. **https://www.independent.co.uk/climate-change/sustainable-living/cotton-tote-bags-sustainable-shopping-b1909035.html**

[xiii] Chris De Armitt (2020), "The Plastics Paradox: Facts for a Brighter Future", *Phantom Plastics LLC*, 30 April. P. 188.

[xiv] Maya Yang (2021), "US plastics to outstrip coal's greenhouse gas emissions by 2030, study finds", *The Guardian*, October 22. **https://www.theguardian.com/environment/2021/oct/21/plastics-greenhouse-gas-emissions-climate-crisis**

[xv] Solvie Karlstrom & Christine Dell'Amore (2010), "Why Tap Water is Better Than Bottled Water", *National Geographic's Green Guide*, March 13. **https://www.nationalgeographic.com/science/article/why-tap-water-is-better**

[xvi] Kerri Major (2021), "Plastic waste and climate change – what's the connection?", *World Wildlife Fund*, June 30. **https://www.wwf.org.au/news/blogs/plastic-waste-and-climate-change-whats-the-connection#gs.ebm9ff**

[xvii] Andrea Thompson (2014), "For Air Pollution, Trash Is a Burning Problem", *Climate Central*, September 2, https://www.climatecentral.org/news/where-trash-is-a-burning-problem-17973

[xviii] Op. cit. Parker (2019), June 7.

[xix] United Nations (2009), "Facts and figures on marine pollution", *UNESCO*, http://www.unesco.org/new/en/natural-sciences/ioc-oceans/focus-areas/rio-20-ocean/blueprint-for-the-future-we-want/marine-pollution/facts-and-figures-on-marine-pollution/

[xx] Op. cit. Parker (2018), December 21.

[xxi] Jamie Ducharme (2021), "Reusable packaging is the latest eco-friendly trend – but does it actually make a difference?, *Time Magazine*, Sept 28. **https://time.com/6101846/is-reusable-packaging-sustainable/**

[xxii] Roland Geyer, Jenna R. Jambeck & Kara Lavender Law (2017), "Production, use, and fate of all plastics ever made", *Science Advances*, July 19, 3(7).

[xxiii] The Economist (2020), "Sea of troubles-Covid-19 has led to a pandemic of plastic pollution", *Economist Magazine*, June 22. **https://www.economist.com/international/2020/06/22/covid-19-has-led-to-a-pandemic-of-plastic-pollution?**

[xxiv] Ibid.

[xxv] Hannah Fetner & Shelie A. Miller (2021), "Environmental payback periods of reusable alternatives to single-use plastic kitchenware products", *The International Journal of Life Cycle Assessment*, Vol. 26, pages1521–1537.

[xxvi] Op. Cit. Ng (2021).

[xxvii] Tina Comeau (2019), "The Ultimate recycling project in Nova Scotia: Meteghan River house built with around 612,000 recycled plastic bottles", *The Chronicle Herald*, Dec 18. **https://www.saltwire.com/halifax/business/indepth-the-ultimate-recycling-project-in-nova-scotia-meteghan-river-house-built-with-around-612000-recycled-plastic-bottles-326276/**

[xxviii] Trang Chu Minh (2021), "Five facts about unsustainable waste management in Singapore", *Eco-Business,* Jan. 11. **https://www.eco-business.com/opinion/five-facts-about-unsustainable-waste-management-in-singapore/**

[xxix] Vrishak Vemuri (2021), "How Singapore Deals with Trash: And why other countries should take inspiration from this method", *Medium*, August 20. **https://medium.com/techtalkers/how-singapore-deals-with-trash-d12e236f81fe**

[xxx] Op. Cit. Minh (2021).

[xxxi] WHO (2021) "Air pollution", *World Health Organisation Health Topics*, **https://www.who.int/health-topics/air-pollution#tab=tab_1**

[xxxii] Op. cit. Parker (2019).

[xxxiii] Laura Parker (2018), "We Made Plastic. We Depend on It. Now We're Drowning in It", *National Geographic*, June. **https://www.nationalgeographic.com/magazine/2018/06/plastic-planet-waste-pollution-trash-crisis/**

[xxxiv] Victoria Masterson, (2020), "As Canada bans bags and more, this is what's happening with single-use plastics around the world", *World Economic Forum*, October 26. **https://www.weforum.org/agenda/2020/10/canada-bans-single-use-plastics/**

[xxxv] Op. cit. Parker (2018).

[xxxvi] Mario Honrubia (2020), "25 Innovations In Plastic Recycling That You May Not Already Know About", *Ennomotive*, March 9. **https://www.ennomotive.com/innovations-plastic-recycling/**

[xxxvii] Kelly Oakes (2019), "Why biodegradables won't solve the plastic crisis", *BBC Futures*, 5th November. https://www.bbc.com/future/article/20191030-why-biodegradables-wont-solve-the-plastic-crisis

[xxxviii] Op. cit. Honrubia (2020).

AUSTRALIAN FINTECH INVESTMENT REBOUNDS

According to the Pulse of Fintech H2'21 – a bi-annual report published by KPMG highlighting global fintech investment trends – Australia fintech saw a rebound in investment activity in 2021 with US$1.5 billion in fintech M&A, PE and VC over the second half of the year. Total investment for the year reached in excess of US$2.5 billion, nearly equaling the pre-COVID highs seen in 2019 (US$2.6 billion) and up from US$2.2 billion in 2020.

Investment took place across a wide range of sub-sectors, with notable investment continuing in the payments space through Airwallex and Till Payments who raised a total of AU$415 million and AU$125 million respectively over the period. Neobank activity also continued off the back of the acquisition of 86 400 by NAB in H1'21, with Judo Bank successful listing on the ASX and Alex Bank finalising an AU$20 million investment on the back of securing its restricted banking license (RADI).

Dan Teper, KPMG Australia Head of Fintech said: "The fintech sector continues to mature and rebound in Australia – investments are taking place across a range of sub-sectors and from a broad set of investor groups. As well as the increase in overall investment in 2021, we also saw a significant shift in deal volume, with 134 deals recorded across the year, compared to 84 in 2020 and 72 in 2019."

"This would indicate that we are continuing to see investment in start-up and scale-up businesses, as well as significant M&A activity for more mature players in the space. We expect this momentum to continue and predict that 2022 will be a record year for fintech investment in Australia," he added.

Whilst corporate investment in Australia was less prominent than H1'21, strategic M&A remains a priority, with Latitude acquiring digital consumer lender Symple Loans and deals announced for the acquisition of Afterpay by US-headquartered Block (formerly Square) and Society One by MoneyMe. While both were announced during 2021, they are only expected to complete in H1'22 and as such were not included in these figures.

Globally, total global fintech funding across M&A, PE and VC reached US$210 billion across a record 5,684 deals in 2021. Fintech funding in H2'21 accounted for US$101 billion of this total – down slightly next to H1'21's US$109 billion.

The largest fintech deals of H2'21 included the US$9.2 billion acquisition of Denmark-based payments processor Nets by Italy-based Nexi, the US$3.75 billion merger of fintech cloud platform company Calypso Technology and regtech AxiomSL to form Adenza in the US, and the US$2.7 billion acquisition of Japan-based Paidy by PayPal. H2'21 also saw 4 VC funding rounds over $1 billion, including a US$2 billion raise by US-based Generate, a US$1.1 billion raise by Brazil-based Nubank, a US$1.1 billion raise by US-based Chime, and a US$1 billion raise by Bahamas-based FTX.

Payments continued to attract the most funding among fintech subsectors, accounting for US$51.7 billion in investment globally in 2021 – up from $29.1 billion in 2020. A continued surge in interest in areas like 'buy now, pay later', embedded banking, and open banking aligned solutions has helped keep the payments space very robust. Blockchain and crypto was also a very hot sector, attracting a record US$30.2 billion in investment – up from US$5.5 billion in 2020 and more than three times the previous record of US$8.2 billion seen in 2018. Cybersecurity (US$4.85 billion) and Wealthtech (US$1.62 billion) also saw record-levels of investment.

"2021 has been an incredibly strong year for the fintech market globally, with the number of deals soaring to record highs across the board," said Anton Ruddenklau, Global Fintech Leader, KPMG International. "We're seeing an incredible amount of interest in all manner of fintech companies, with record funding in areas like blockchain and crypto, cybersecurity, and wealthtech. While payments remains a significant driver of fintech activity, the sector is broadening every day."

2021 key global highlights

Global fintech investment was US$210 billion across a record 5,684 deals in 2021 – up from US$125 billion across 3,674 deals in 2021.

- Payments remained the hottest area of fintech investment in 2021, with US$51.7 billion in investment globally
- Record levels of investment were seen in blockchain and crypto (US$30.2 billion), cybersecurity (US$4.85 billion) and wealthtech (US$1.62 billion) in 2021.
- Other fintech areas also saw robust funding in 2021, including insurtech (US$14.4 billion), regtech (US$9.9 billion).
- Cross-border fintech M&A deal value more than tripled year-over-year – to $36.2 billion. Total fintech-focused M&A deal value rose from US$76 billion in 2020 to US$83.1 billion in 2021.
- PE funding to fintechs more than doubled from its previous high – with US$12.2 billion in investment in 2021 compared to a peak of US$5.2 billion in 2018.
- VC investment in fintech globally more than doubled year-over-year – from US$46 billion in 2020 to a record US$115 billion investment in 2021. Median VC deal sizes grew significantly for all deal stages between 2020 and 2021, including Angel and Seed US$1.4 million to US$2.2 million), Early Stage (US$4.6 million to US$7 million), and Late Stage (US$12.7 million to US$24.6 million).
- Total fintech investment in the Americas reached US$105 billion in 2021, including a record US$64.5 billion in VC funding. The US accounted for US$88 billion of total funding and US$52.7 billion in VC funding. EMEA saw US$77 billion in fintech investment in 2021, including a record US$31.1 billion in VC funding. Fintech investment in the Asia-Pacific region

almost doubled – from US$14.7 billion in 2020 to US$27.5 billion in 2021.

- Corporate VC investment in fintech was incredibly robust in 2021 at US$50 billion, with both the Americas (US$29.7 billion) and EMEA (US$11.3 billion) seeing record levels of investment.

Crypto and blockchain space sees biggest surge in 2021 – with US$30 billion in investment

Global investment in the crypto and blockchain space rose dramatically from US$5.4 billion in 2020 to a record high of US$30 billion in 2021, while the number of deals rose from 627 to 1,332 over the same period. The sector also saw numerous large deals, including the US$1 billion raise by Bahamas-based FTX, a US$767 million raise by US-based NYDIG, and a US$750 million raise by Celsius Network. The surging investment and deal activity reflects growing recognition for the potential role of crypto and its underlying technologies in modern financial systems.

Both cybersecurity and wealthtech also reached record high levels of investment in 2021, with US$4.85 billion and US$1.62 billion respectively.

Cross-border M&A sees strong rebound with US$32.2 billion in deal value

After falling to a seven-year low of US$10.7 billion in 2020, cross-border fintech M&A deal value more than tripled year-over-year to US$36.2 billion in 2021. The number of cross-border M&A deals also reached a record high of 275 deals during the year. Both H1'21 and H2'21 saw robust activity. During H1'21, the London Stock Exchange acquired US-based Refinitiv for US$14.8 billion and US-based Nasdaq acquiring Canada-based Verafin for US$2.7 billion, while in H2'21, Italy-based Nexi acquired Denmark-based Nets for US$9.2 billion and PayPal acquired Japan-based Paidy for US$2.7 billion.

VC funding in the Americas more than doubles to record US$64.5 billion

Total fintech investment in the Americas rose from US$83.5 billion in 2020 to US$105 billion in 2021 (US$53.7 billion in H2'21). VC funding accounted for US$64.5 billion of 2021 investment – more than double 2020's record US$24.8 billion. The US continued to attract the largest portion of fintech investment in the Americas, accounting for US$88 million in total investment during 2021 (US$44.4 billion in H2'21). In the Americas more broadly, total fintech investment soared in 2021, with investment rising to record highs in Canada (US$7 billion) and Brazil (US$5.2 billion).

Europe sees record-breaking VC investment even as M&A dries up

Overall fintech investment in the EMEA region rose to a record US$77 billion in 2021 (U$29.8 billion in H2'21). VC investment in EMEA also reached a new high of US$31.1 billion, including a US$900 million raise by Germany-based N26 and an US$800 million raise by UK-based Revolut during H2'21. Fintech investment was incredibly robust across the region, with record levels of investment in the Nordic region (US$18.5 billion), Germany (US$5.4 billion), Ireland (US$1.6 billion), Africa (US$1.8 billion), and Israel (US$900 million).

Total fintech investment in the Asia-Pacific region grows year-over-year to US$27.5 billion

After dropping to US$14.7 billion in 2020, fintech funding in the Asia-Pacific region grew to US$27.5 billion in 2021 ($17.4 billion in H2'21). VC funding also bounced back – rising from US$11.5 billion in 2020 to US$19.6 billion in 2021. India (US$7.2 billion) and South Korea (US$3 billion) both saw record high fintech investment during 2021, while investment in Singapore (US$4 billion) and Australia (US$2.6 billion) remained very robust.

More growth on the horizon, including significant M&A

Heading into 2022, fintech investment is expected to remain very robust, with activity growing in less developed fintech markets, including Africa, Southeast Asia, and Latin America. M&A activity is also expected to rise, with deal values growing as both corporates and fintechs look to grow and build scale. There is also expected to be growing interest in fintech-focused ESG solutions and banking replacements able to address the need for modernization of core banking platforms. There will also be an increasing number of fintechs looking brand themselves as data companies rather than simply fintechs

"Cryptocurrencies and blockchain are expected to remain very hot areas of investment in 2022, with more crypto firms looking to regulators

FATF REVISED GUIDANCE – NEXT STEPS FOR FINANCIAL INSTITUTIONS ACCORDING TO BDO

Over the last few years, virtual assets (VA) have moved from the preserve of early adopter enthusiasts to the mainstream. As this shift to the mainstream occurs, the decentralised nature of virtual assets, the anonymity that many of the platforms provide and the comparative lack of regulation has also proved attractive to criminals.

The Financial Action Task Force (FATF) first introduced guidance in 2018 indicating how virtual assets and virtual asset service providers (VASPs) should be regulated, supervised and how others in the AML regulated sector should manage their risks in dealing with them.

This article covers key points of the FATF guidance. Further articles will look at the regulatory position in key jurisdictions.
How are VAs and VASPs regulated?

The focus of regulation is around the perimeter of activities relating to VA rather than the virtual assets themselves. Regulation under the FATF model is aimed at those persons (legal or natural) who by way of business carry out the exchange of fiat currency into VAs or of one type of VA to another type of VA, those who facilitate the transfer of VA, those which provide safekeeping or administrative services in respect of VA and those who participate in or provide financial services in relation to the issue or sale of a VA.

This regulatory framework still has gaps in regulation and oversight (for example peer to peer transfers), and this limitation is something that financial institutions should be alert to.

FATF recognises that the VA landscape is subject to constant rapid change. It therefore has highlighted its three main principles in the guidance.

- Functional equivalence and objectives-based approach

This means that countries should adapt the FATF guidance in a way which meets the objectives of the relevant Recommendation and fits the local legal system.

- Technology neutral and future proofed

This should mean that regardless of the platform used or the technology behind the VA or VASP, the provisions should be applied.This will allow for changes in technology as well as catering for different technological models

- Functional treatment

This element means that businesses which essentially have the same functions – that is provide the same or similar services and pose the same risks – should be regulated in the same way.This also means that VASPs which provide the same function in a transaction as a financial institution should be subject to the same regulatory framework and compliance obligations as that financial institution. Also that a business which in effect carries out the services that a VASP performs should be deemed to be a VASP.

These tests should ensure a degree of future proofing as new entrants, technologies and products come into the market.

Regulation and supervision

The guidance sets out the expected approach and standards of national risk assessment, regulation and supervision. However, it also recognises that not all countries will move at the same pace. This means that different jurisdictions may be at different stages in their regulatory journey, which increases the risks, particularly in relation to cross-border transactions.

Travel rule

As has been well-publicised, the guidance extends the so-called "travel rule". This imposes an obligation to obtain, hold and submit originator and beneficiary information in respect of VA transfers so that those involved can take appropriate action to identify suspicious transactions, screen for sanctions or other required regulatory actions. This mirrors the requirements for wire transfers of fiat currency. However, the guidance also points out that as noted above, not all countries will implement the regulatory

changes at the same time (the so-called "sunrise issue") which means a counterparty in a jurisdiction which has implemented the requirements will have to obtain the relevant information as part of the contractual discussions if its counterparty is in a jurisdiction where these provisions are not yet law.

Additionally, since not all transactions require both parties to be a VASP or financial institution (e.g. one side could be an unhosted wallet), any contractual arrangements should ensure that the obliged entity counterparty can obtain the necessary information to meet its obligations. If the transferor is the obliged entity, it should not be required to send this information to the transferee, but should keep it on its own files.

For transfers involving intermediate parties, each party in the chain must comply with the requirements to provide and retain the relevant information about the originator and beneficiary of the transfer.

What does the guidance mean for you?

The guidance focuses firmly on the risk-based approach. It is for each jurisdiction to assess and understand the risks applicable to its territory. This could relate not only to VASPs established within its jurisdiction but also those which carry out transactions within the jurisdiction. Depending on where such VASPs are established and the maturity of the regulatory framework in that jurisdiction, the risks will differ and this should be reflected in national risk assessments and related guidance.

For financial institutions which engage with VASPs, the first step is also to understand the risks posed by the relationship or transaction. The guidance emphasises the importance of applying a risk-based approach in deciding whether to accept or continue a business relationship with a VASP. Financial institutions should consider whether the risks identified can be properly mitigated or managed rather than taking a "de-risking" approach and denying services to all in the VASP sector.

Therefore, in addition to considering the "macro" risks of the sector included in any available national risk assessment or other intelligence on how and the frequency with which VASPs are used to launder money, the regulatory framework applicable to the sector and the maturity of its supervisory regime and any other general risks, financial institutions should consider the specific risks posed by the VASP seeking services, having regard to the resources, controls and knowledge that they have to manage such exposure.

How should obliged entities manage their exposure to VASPs and VAs

As noted above, financial institutions are discouraged from taking a de-risking approach and avoiding rather than managing the risks. It will therefore be important to consider the risks applicable to the specific VASP. The relatively recent development of VA technology and VASP businesses, combined with the complexity of blockchain and other DLT applications can mean that a business overlooks the need to apply the basic tools of economic crime risk assessment. These basic tools, adapted to take account of specific identified risk factors, allow relevant information to be gathered and assessed and the documentation of the onboarding or continuance decision taken and the reasons for it.

- As is always the case, there is an obligation to identify and verify the ownership and control structure and key management of the VASP.
- What products and services does the VASP provide? Does it have exposure to tumblers or mixers or other tools which appear to be designed to facilitate anonymity or prevent tracing transactions?
- How does the VASP itself carries out its due diligence obligations – what is the profile of its customer base, how does it verify identity and set the parameters for the normal operation of its accounts, establish the client source of funds, how does it monitor for unusual activity?
- Are the services of the VASP being promoted in an unusual manner (e.g. in high-risk jurisdictions with which it has no clear connection).
- What information does the financial institution have from its own operations – for example, is there any evidence that existing (or former) customer accounts suspected of criminal activity have carried out transactions of concern with this VASP? This might raise concerns of poor controls at the VASP
- How does the VASP conduct its business? What is the average size of its transactions and are these limited in size or geographic location? Which is its target market segment? Does it facilitate in any way peer to peer transactions? Are its transactions predominantly online or is there any in person element?
- Which jurisdictions is the VASP established or does it carry out business or engage in activity? What is the status and maturity of the regulatory framework in those locations? This might include consideration of where data is stored or the location of beneficial owners or other funders of the business.

Whilst these standard tools may have to be adapted to reflect the technological nature of VAs and VASPs, FATF reminds financial institutions not to lose sight of these core risk building blocks.

Ongoing monitoring

The guidance focuses more on ongoing monitoring for VASPs rather than those who transact with them, but as for client due diligence, the normal requirements apply. This will include screening of parties to transactions, ensuring that unusual transactions are identified and reviewed as well as ensuring that the account is used in accordance with the financial institution's understanding of the nature and purpose of the client relationship. This would include those customers who act as intermediaries for VASPs.

Conclusion

The FATF guidance inevitably will develop over time as the sector expands and develops. As VAs are more commonly used and become more popular, it is unlikely that financial institutions will be able to ringfence their activities from those who hold VA or are VASPs. The FATF guidance provides the framework to manage and mitigate this risk.

Financial institutions should engage both with industry bodies, supervisors and use any existing public private partnerships to develop intelligence on actual use and misuse of VA and VASPs and adapt their approach accordingly. Since the guidance explicitly discourages "derisking" as a strategy, a focus on understanding the risks, setting a risk appetite and adapting procedures and controls to manage risks within that appetite should be the next step.

FISHING FOR GLOBAL TALENT: WHAT AUSTRALIA NEEDS TO DO NOW TO LURE SKILLED IMMIGRANTS

Highly skilled global talent follows economic opportunities. What policies should Australia adopt to attract these foreign workers?

Attracting global talent is not as easy as hanging a shingle on the immigration door and hoping skilled workers from other countries will simply respond.

Enticing foreign-born workers whose skills are in high demand is a globally competitive playing field.

Australia is competing with many other countries vying for highly prized ICT skills, (IT and computer skills) which many believe will form the basis of the fourth industrial revolution and future labour markets.

It's important that as a country, we get it right.

What skilled immigrants want

Migrants have many choices, so what policies are more likely to lure them to our shores?

A **new study** from Monash Business School and the ETH Zurich look at what entices skilled workers when choosing where to locate.

In short, letting firms and workers choose as freely as possible is the answer, at least in a stable, competitive economy that adopts new technology quickly.

This is key not only for local employees but also for migration decisions.

Research fellow at Monash's Centre for Health Economics, Dr Johannes Kunz explains why they set out to determine which levers work to attract global talent.

"In the last decades, most developed countries experienced rapid growth in the demand for skills and an increase in wage inequality as a consequence of the widespread adoption of information and communication technology," Dr Kunz says.

"When attracting global talent, it is important to consider these changes in the labour market as a result of the increased globalisation and digitalisation of the world."

Do we need to attract talent? Can't we just train people?

Dr Kunz explains it can take many years to train people with the skills required in the industry.

"Instead, immigration can be used as a rapid lever to plug the holes that companies are demanding when there is a shortfall in the local talent pool," he says.

Skilled immigrants look for economic opportunities

The paper finds that newly entering immigrants are a selected group of individuals who strongly react to a change of economic opportunities in national labour markets.

In other words, people with these skills are looking to exploit them to their best advantage; but it's not always just about money.

Structural changes such as the adoption of ICT (Information and Communications Technology) by firms lead to changes in economic opportunities that strongly affected the choices and ultimately the decisions of migrants.

This leads to a pronounced upgrade in the skill mix of immigrants and particularly affected the service sector.

“Previous research has focused on documenting the effects of ICT on skill-specific employment within the US and, separately, on how higher levels of inequality are correlated with the distribution of college-educated immigrants across countries,” Dr Kunz says

“Yet, there was no evidence informing policymakers of whether and how newly entering immigrants respond to these structural trends in the labour market and how immigration policies might affect this response.”

How immigrants respond to policy

In this study, the researchers were able to look at data for different local labour markets in Switzerland, where new immigrants settled.

They found that highly skilled new immigrants choose predominantly regions that experienced stronger ICT adoption which increased the economic returns for highly skilled labour in terms of income and employment opportunities.

“We found that the skill mixes of newly settling immigrants strongly responded to these changes in local economic opportunities,” Dr Kunz says.

“The **regions with a higher initial routine specialisation**, and a larger potential for ICT-adoption, attract stronger inflows of immigrants with a college education while the inflow of immigrants with an intermediate, secondary education was much weaker between 1990 and 2010.”

Open borders did not lead to an influx of low skilled immigrants

Switzerland experienced a boom in highly-skilled immigration between 1990 and 2010.

A gradual abolishment of all migration restrictions in Switzerland, starting with the Free Movement of People treaty with the EU around the 2000s, had no adverse influence on the skill mix of immigrants and fears of a massive influx of lower-educated immigrants after the policy change did not materialise.

In contrast, and also consistent with the insignificant change in relative economic opportunities at the bottom of the wage distribution.

There was no obvious inflow of middle relative to low educated foreign-born. In other words, highly skilled workers were attracted to the economic opportunities provided: middle to low-skilled foreign workers were not.

“These findings are robust, even when we looked at a range of alternative explanations. What we found was that these effects are considerably more pronounced in the service sector, compared to the manufacturing sector,” Dr Kunz says.

“And it is strongly consistent with the hypothesis that newly entering immigrants are a selected group of individuals in strong pursuit of economic opportunities.”

Australia’s current policy may not be enough

While the policy increased the total inflow of immigrants from EU countries (relative to those from other countries) it did not affect the relative size of different education groups at the national level.

“Contrary to fears expressed in the public debate, the opening of borders did not lead to a massive influx of lower-educated immigrants nor did it lower the response of immigrants to skill-demand,” Dr Kunz says

“If anything, it allowed regions with strong ICT-induced demand for skills to attract even larger numbers of highly educated foreign workers.”

In light of these findings, **recent attempts of the Australian government** to encourage people to move to rural or declining areas through the use of visas linked to the location might not be enough to encourage highly skilled migrants.

“Policies that improve local business conditions that create or improve economic opportunities are better suited to fill local skill demand,” Dr Kunz says.

AUSSIES' SAVINGS KEEP FINANCIAL WELLBEING ELEVATED THROUGH THE PANDEMIC

A report published by the Melbourne Institute: Applied Economic & Social Research and Commonwealth Bank today shows the financial wellbeing of Australians has declined slightly year-on-year, but remains elevated compared to two years ago – before the pandemic hit.

The continued high level of financial wellbeing is due partly to accumulated saving balances that remain elevated compared to pre-pandemic – with the median savings balance in December 2021 being 42 per cent higher than December 2019.

"These increased savings represent Australians hedging against uncertainties – uncertainties related to COVID-19, as well as rising inflation and returns on savings, both of which may make longer term impacts on people's financial wellbeing," Professor John de New from the Melbourne Institute said.

The latest **Australian Consumer Financial Wellbeing report** relies on unique methodology from the Melbourne Institute and CBA that analyses aggregated transactional data of more than five million CBA customers to better understand the current financial wellbeing of Australians.

Speaking about the latest research, Professor de New said: "Based on the underlying data there have been high levels of financial wellbeing during the pandemic, with the latest research showing Australians are continuing to fare well overall."

The research combines five major indicators of financial wellbeing to produce a single score, from zero (low) to 100 (high) calculated on 12 months of data. In December 2021, the average observed financial wellbeing score was 49.9 out of 100, down 0.8 points year-on-year; however this is still 2.4 points higher than two years ago.

CBA's Head of Financial Wellbeing, Ben Grauer said: "Our long-standing research partnership with the Melbourne Institute helps us to deeply understand the financial wellbeing of our customers and what factors impact people's financial wellbeing over time. This research provides valuable insights that help us design digital experiences and features to make it easier for Aussies to manage their finances and improve their financial wellbeing.

"Despite the hardships of the pandemic, it is encouraging the research suggests the majority of Australians have better financial wellbeing than two years ago. A range of macro and micro economic factors, such as Government support, and the ability to access financial support, such as deferring loans and small businesses accessing reduced lending rates, can all help to explain this."

Financial wellbeing remains improved across the distribution of financial wellbeing outcomes, including: 'having trouble', 'just coping', 'getting by' or 'doing great', in comparison to before the pandemic hit.

"When we look at the distribution of financial wellbeing there is a slight increase of people experiencing negative outcomes year-on-year, but compared to pre-pandemic we are seeing a positive change for the majority of Australians, with a large proportion better off. There are more people doing better and less people doing worse compared to before the pandemic started," Professor de New said.

The latest data also highlights the median "inflows and income" for the year to December 2021, which increased by $1.6k compared to the prior year. This was outpaced by a $3.6k increase in the median "outflows and expenditure" for the same comparison period, partly reflecting the lower expenditure base given the response to the pandemic in 2020 and the rebound in consumption during 2021.

"The data shows Australians started to spend more towards the second half of the year – likely due to pent up demand from earlier lockdowns. While this contributed to the slight year-on-year decline in financial wellbeing, the increased spending speaks to the high consumer confidence reported at the end of last year," Professor de New said.

Since the overall record peak in March 2021, financial wellbeing has been falling across all states and territories.

"This decline was halted and reversed in NSW and ACT from the middle of 2021, with financial wellbeing increasing in these two states and territories, despite the continued decline in all other states and territories. This is likely due to forced savings and precautionary savings directly related to the COVID-19 Delta variant outbreak, predominantly in NSW (and by geographical proximity, ACT) at this time," Professor de New said.

In regards to the impact on generations, older cohorts continue to have higher levels of financial wellbeing than their younger counterparts. However, and potentially surprisingly, all generations appear to be impacted by the pandemic evenly.

TALENT AND DIGITAL TRANSFORMATION: TOP TWO ISSUES FOR BUSINESS SAYS KPMG

Survey respondents call out key social hope for future: 'Embracing the economic opportunities that climate change and the energy transition present.'

We are in the era of talent. That is the clear message from ***Keeping us up at night: The big issues facing business leaders in 2022***. Conducted in November 2021, KPMG's annual survey of over 400 Australian CEOs, emerging business leaders, and Non-Executive Directors, defines the key challenges facing their organisations and Australia in 2022, and also, in the next 3 to 5 years.

Top three concerns for 2022

1. **Talent acquisition, retention, and re/upskilling to meet a more digitised future – 69 percent**
   Overwhelmingly talent acquisition, retention, and re/upskilling to meet a more digitised future was seen as the biggest challenge for the year ahead, with 69 percent nominating this issue.

2. **Dealing with cyber vulnerability – 50 percent**
   Today, the risk associated with digital transformation has moved into a different phase as many organisations have been forced to embrace new technologies and ways of working to navigate COVID 19. This has also placed cyber vulnerability in the spotlight.

3. **Challenges and benefits of employees working remotely – 48 percent**
   In third place for this year was the challenge (and benefits) of remote working (48 percent), while digital transformation – optimisation and extracting organisational value from it – came in fourth at 44 percent.

"Overwhelmingly, the top three concerns for Australian leaders next year are about responses to a post COVID world," said Alison Kitchen Chairman KPMG Australia.

"We see this reflecting what can be characterised as 'the Great Renewal' – a time when businesses will be focused on people and the environments in which they operate. The survey results strongly indicate that is about both seeking and developing talent as well as staying abreast of the risks and opportunities in a rapidly digitising workplace."

Ms Kitchen said these themes were also reflected in the mid to longer term findings of the survey where there was a refocus on growth and innovation.

Top issues for the next 3 to 5 years

"Looking further ahead, the notable trend is in the longevity of the respective top four issues," said Ms Kitchen. "While digital and talent remain the top two concerns among executives for the next three to five years, it's interesting that cyber vulnerability fell to 35 percent and the remote working issue plummeted in priority list to just 10 percent in the medium term."

Other top ten issues for the forward 3 to 5-year period included ESG, purpose, diversity, and agility. Interestingly, none of these were placed in the 2022 top ten list.

Ms Kitchen added: "It is clear that as Australia starts to emerge fully from the lockdowns of the last two years, having enough skilled talent to meet customer needs is the key challenge concerning all businesses – and they don't see this changing in the next few years. The challenge of digital transformation, which was top in our previous survey two years ago, is still a key issue and will remain so in the next 3 to 5 years. The two issues are inter-connected, given that upskilling to meet a more digitised future was one of the planks of the concern over talent."

When respondents moved from a focus on their own organisations to their broader views on society's challenges as a whole, the skills gap was second highest nomination, with Australia facing a lack of data scientists and technology specialists.

"One of the most intriguing findings is that 'identifying opportunities for growth' came in at only 11th place for 2022," Alison Kitchen said. "It did however rise to third place in 3 to 5 years from now. This suggests that companies – possibly concerned by the skills shortage – are more focused on meeting current demand in 2022, rather than sourcing opportunities they may not be in a position to fulfill in the future."

While the survey did group respondents into current and emerging leaders, there was no noticeable difference in responses between the two cohorts. This suggests there will not be any radical change of emphasis ahead unless circumstances force such a response.

In addition, it appears business leaders believe that the present fears over cyber-security would be at least partly resolved over the next few years. At the same time, the current debate over flexible working and the degree to which staff will come back to the office will be answered one way or the other by 2026.

In other notable findings, designing and implementing an ESG strategy was in 6th place, both now and in 3 to 5 years. This would seem to suggest that it is now accepted as an important issue facing executives.

"ESG strategy will continue to be an ongoing key priority for all companies in future year," Alison Kitchen said.

New social change dimension – hopes and challenges

For the 2022 edition of the survey, KPMG added another dimension. Rather than focusing solely on the key risks seen by business leaders, respondents were asked to tell KPMG what areas of social change

Top ten issues % of all respondents

	Top 5 challenges in 2022	Top 5 challenges in 3-5 years
Talent acquisition, retention and re/upskilling to meet a more digitised future.	69%	47%
Dealing with cyber vulnerability.	50%	35%
The challenges and benefits of employees working remotely.	48%	10%
Digital transformation & optimisation and extracting organisational value from it.	44%	48%
Dealing with evolving regulatory processes, reporting changes and impacts.	34%	30%
Designing and implementing an ESG strategy that will deliver benefits in short and long term.	32%	33%
The need for greater agility and flexibility in your organisation to meet opportunities and challenges.	32%	29%
Balancing short term versus long term value creation in your organisation.	26%	25%
Building diversity into leadership and talent mapping.	25%	29%
Building greater purpose into organisational culture.	24%	24%

they are hoping to see develop to have a positive effect on the economy and society. The clear top response was: 'Embracing the economic opportunities that climate change and the energy transition presents.'

Dr Brendan Rynne, KPMG Chief Economist, said: "The great existential threat of our lifetime – global warming and climate change – is seen by business leaders as an opportunity to contribute to improving the outlook, via transformation and reversal.

Not only is working on climate change and energy transition seen as a social benefit but it is also recognised as a key area for potential economic opportunities."

Dr Rynne said that researching and developing new technologies, bringing electricity costs down as renewable energy becomes more cost effective, and implementing adaptive behaviours are viewed as catalysts for change. He noted that these are also likely to provide economic stimulus for those supplying and consuming the 'new world' services.

"While preparing for a future skills gap was the second biggest societal issue (after climate), it was notable that "shifting levels of regional/global tension" was regarded as the third biggest challenge facing Australia," he said, "Given that international co-operation will be crucial in meeting decarbonisation targets, that was a sobering finding."

Management Accounting Frontiers
The Research Journal of the Institute of Certified Management Accountants

Call for Papers: *Special Issue on Unethical Behaviours and Management Controls: Issues and Challenges to Management Accounting*

Guest Editors:
Vincent Chong (University of Western Australia, Australia)
Zuraidah Mohd Sanusi (Universiti Teknologi MARA, Malaysia)
Jan Alpenberg (Linnaeus University, Sweden)

Organizations continue to face issues and challenges on unethical behaviours such as corruption, fraud, and/or misreporting among their managers. Understanding how unethical behaviours occur and how they can be prevented is an essential managerial issue. This Special Issue aims to provide a research forum for scholars to contribute and/or investigates how an organization's formal and informal management controls can be used to prevent or control unethical behaviours.

All research methods are welcome, and topic areas of interest include but are not limited to:

- Issues and challenges of management controls on unethical behaviours;
- The impacts of performance measures and reward systems design on unethical behaviours;
- Issues and challenges of unethical behaviour and management control research in public and/or not-for-profit sectors;
- Unethical behaviours and management controls: Implications of organizational culture;
- The effect of leadership style and management controls on unethical behaviours
- Individual differences, unethical behaviours, and management controls;
- A cross-cultural investigation of the relationship between management controls and unethical behaviours.

Any other topics related to the Special Issue theme can also be considered.

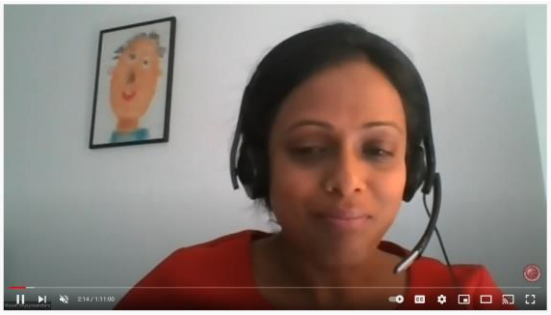
Important Dates:

31 May 2022	Deadline for Initial Submissions
15August 2022	First Editorial Decisions
30 Setpember 2022	Due date for Revised Submissions
15 November 2022	Final Editorial Decisions

Submission of Manuscripts:
Submission implies that the content of the manuscript has not been published elsewhere or currently under consideration by another journal or publisher for publication. All submissions are subjected to a double-blind review process. Potential contributors should submit manuscripts by email: editor@cmaaustralia.edu.au.

REGIONAL OFFICE AND BRANCH NEWS

WEBINAR: CIRCULAR ECONOMY – THE ROLE OF MANAGEMENT ACCOUNTANTS

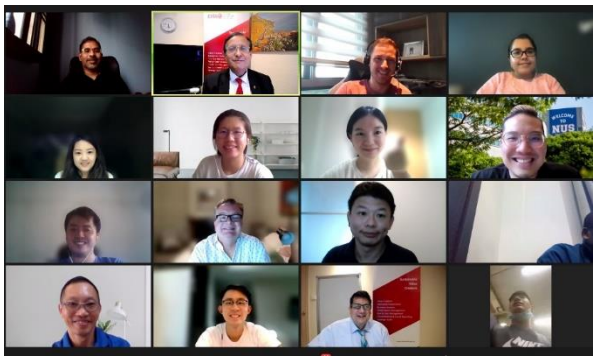


Throughout the Covid-19 pandemic, ICMA Australia has continued its commitment to bring world-class seminars to its members. On February 9 2022 Dr. Mayuri Wijayasundara delivered a webinar titled "Circular Economy – The role of Management Accountants", which focused on what circular economy is about, how would it transform businesses, and how circular economy thinking will need to be integrated into managerial decision making.

She explained that a Circular economy is an alternative economic model to the current linear economic model we are in. In a linear economy, we manufacture, distribute, and consume products leading to generation of waste. This model leads to degeneration of the environment not only through resources extraction, but also with the disposal of waste. In the alternative model, which is called a circular economy, we consciously redesign resource cycles (or nutrient cycles) at the time of design of products, components, and materials, so that options to regenerate these are proactively mapped out, before they are manufactured.

Dr. Wijayasundara highlighted that a circular economy is a business and economic proposition as much as it is an environmental proposition, therefore awareness of business leaders is crucial to transition to the new model. The webinar introduced the principles of circular economy to management accountants and discuss how planning transition will have an impact on key knowledge areas of managerial decision making.

SINGAPORE



On 8-10 & 21-24 January 2022, the fourth full Zoom program was completed with Professor Janek Ratnatunga, Professor Brendan O'Connell and Dr. Chris D'Souza successfully delivering the course from their homes in Melbourne. If the lockdown continues, it is envisaged that the next CMA program will be delivered online as well in January 2023.

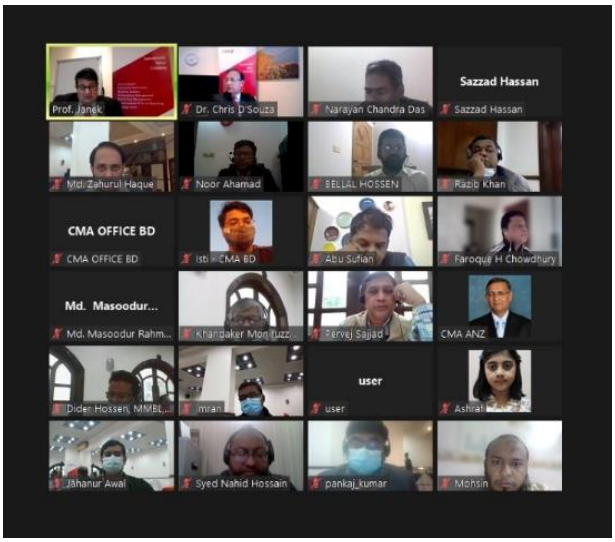
In the screen shots below, the three presenters, as well as many of the participants are captured.

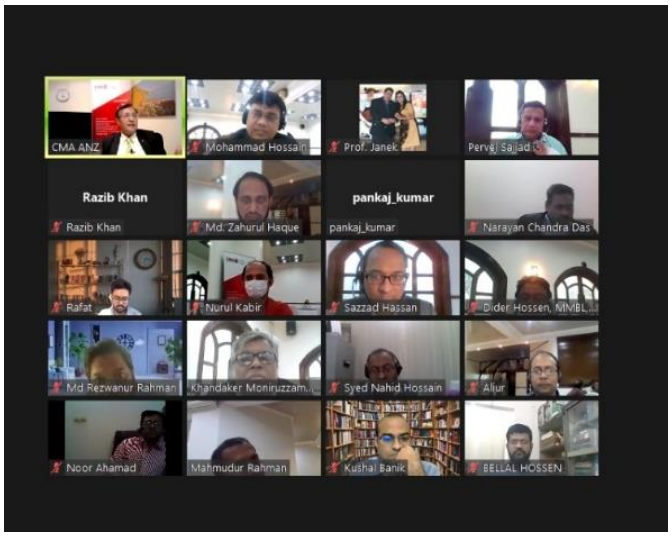
SRI LANKA

On January 12, 2022, Amitha Gamage presented a professional webinar on "Leveraging LinkedIn as a Professional". He showed how to identify your personal brand, build a great LinkedIn profile, Network and how LinkedIn can provide growth opportunities. The Seminar was organised by the CMA Regional Office, the Academy of Finance.

BANGLADESH

On January 13-15 and February 11-12 and 18-19, ICMA successfully delivered the 7-Day CMA Program in mixed-mode (online plus face-to-face teaching) with Professor Janek Ratnatunga and Dr. Chris D'Souza successfully delivering the course from their homes in Melbourne



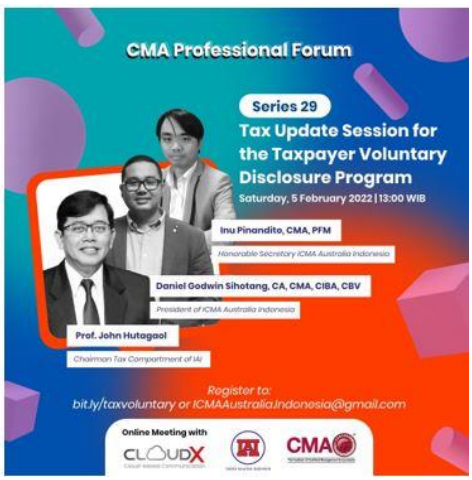


using the Zoom platform.

INDONESIA

Zoom Webinars

Throughout the Covid-19 pandemic, ICMA Australia Indonesia Branch continued its commitment to facilitate the capability development for CMA Members, professionals and academics in the fields of accounting and finance. In the December-February 2022 period, 2 more webinars were held. ICMA facilitated the events, which were moderated by ICMA Australia's Indonesia President, Mr. Daniel Godwin Sihotang, Dr Ana Sophana, Mr. Nursakti Niko Rosandy, the Branch Treasurer.



Online CPDs

Business Valuation

Enterprise Risk Analysis

International Business Analysis

Project Finance Analysis

Project Management Analysis

(Special Promotion Members get 90% off for a limited time)

www.cmaaustralia.edu.au/ontarget/online-cpds/

A WARM WELCOME TO NEW MEMBERS (Dec 2021 & Jan 2022)

Adriano, Angelique Marie
Adrianza Rizali, Muhammad Akmal
Agsalud, Marie Jean
Ahammad, Mohammad
Ahmad, Furqan
Ahmed, Fahim
Ahmed, Mohammad Shafique Uddin
Alam, Shah
Andina, Cecilia
Ando, Augentine
Angelin, Marcella
Antipasado, Dyrelle Mauren
Arguelles, Lizdel Angela
Arieza, Lola
Baldonasa, Dave
Baray, Novel
Barua, Sujan
Bejison, Cherry
Benitez, Rachael Leigh
Bhuyan, Abul
Bui Thi Hong, Thuy
Calokerinos, Nicholas
Caoleng, Gerard Michael
Cerbolles, Jelyn
Chakraborty, Shuvra
Chanda, Probir
Cheng, Lai Wan
Chowdhury, Md.Shakhawat Hossain
Chu, Chi Yuen
Come, Amândio
Dayon, Laiza Hans
De guzman, Joana Michelle
De Nava, Kristine
Dedy
Defensor, Romeo Jr
Dela Cruz, Michael
Duong Hoang, Anh
Espiritu, Jansce Diovell
Esternon, Jocelle
Fabella, Dean
Ferdyant, Ferly
Forhad, Shahariar
Fu, Samuel Che
Gregorina, Susana
Guo, Vivien
Hardy, Clair
Hasan, Md.
Hasan, Mohammad Kamrul
Hassan, Sameh
Herdiyanto, Hary
Hermawan, Arief
Hernanda, Luky
Ho, Ka Win
Hoque, Md Morshedul
Hossain, Md Altaf
Hossain, Mohammad Shahadot
Hossain, Riad
Hui, Wing To
Indriastomo, Herly
Irawan, Andri
Irawan, Dhani
Isais-Santiago, Madeleine
Islam, Md. Johurul
Islam, Sheikh
Islam, Tarikul
Jalanti, Niftira
Jauhar, Zaki
Jovellana, Jill Anna
Kawiworo, Jalu
Kearney, Philip
Khan, Masud
Kurniawan, Jermy
Landarica, Bingky
Lau, Kin Chung
Lawita, Ivan
Lazar, Noor
Le Thi Thu, Van
Lee, Ching Hang
Leung, Yik Fung
Li, Wing Yee
Linda
Macuha, Catherine
Magdael, Ana Liza
Magdael, Ana Liza
Maguddatu, Jerome
Mak, Chi Keung
Mangay-ayam, Virginia
Mazo, Joanne
Mazo, Joanne
Mendoza, Ana
Mendoza, Carol Anne
Mercado, Katrina
Mizanur Rahman, Abu Saleh
Mohammad, Golam
Moukandjo, Rubin
Mulyanti, Chaterina
Murshed , Md Monzur
Musnit, Emmalyn Jhoy
Nabiul Alam, Mohammad
Naser, Abu
Nurenza, Fitriandika
Ogedengbe, Fowokemi
Olano, Mark Jerico
Oshaki, Mohomed
Pagente, LJ Faith
Parakkodan, Abdul Rahim
Parekh, Aashish
Perera, Chinthaka
Pham Thi Kim, Ngan
Pham Tuan, Hung
Prabowo, R. Adi
Prasetio, Bayu
Qurba, Glen
Ramirez, Maridel
Rasel Ahammad, Mohammad
Razi, Mohammed
Ridwan, Mochammad
Romero, Wilfredo
Rusli, Bernardus
Sabiniano, Anne Margreth
Saheer, Ahammed
Saifullah, Muhammad
Salarza-Gasatan, Annie
Sanchez, Mary Grace
Saquing, Zyrah Ann Mari
Sawiri, Ichwan
Septiawan, Budi
Setiawan, Budi
Shahed, Salim
Shanti, Adriana
Simbolon, Francis
Singh, Sheryl
Songcuan, Rommel
Soomro, Ahmed
Sultana, Rifat
Sumon, Md. Ruhul Amin
Support, Agileware
Talukder, Muhammad Shajedul Hoque
Terrado, Francesca Nicole
Theresia, Maria
Tong, Serena
Tonthawi, Anne
Trivedi, Chinmay
Tse, Michael
Tusa'diah, Siti Mirza
Vidyan, Yogashwara
Vo Lam Thanh, Nhan
Wickramasinghe, Asela
Widjajanti, Suprihatin
Wijaya, Raden Ryan
Wong, Yuen Ting
Yangyang, Emma Angelica
Yeung, Chee Kit
Yohanes, Yohanes

CMA EVENTS CALENDAR

January 8-10, 2022: Certificate of Proficiency in Strategic Cost Management, SMU Academy, Singapore (7th Intake). (Online).

January 8-10, 2022: Webinar in Strategic Cost Management, Hassan Associates, Bangladesh. (Online).

January 21-24, 2022: Certificate of Proficiency in Strategic Business Analysis, SMU Academy, Singapore (7th Intake). (Online).

February 9, 2022, Webinar by Dr. Mayuri Wijayasundara titled "Circular Economy – The role of Management Accountants".

February 11-12, 2022: Webinar in Strategic Business Analysis (Part 1), Hassan Associates, Bangladesh. (Online).

February 18-19, 2022: Webinar in Strategic Business Analysis (Part 2), Hassan Associates, Bangladesh. (Online).

February 19-21 & 24-27, 2022: Second Sri Lanka Zoom CMA Program organised by Academy of Finance, Sri Lanka. (Online).

March 5-7 & 12-13 & 26-27, 2022: Fourth CMA Global Zoom Program in Strategic Cost Management & Strategic Business Analysis, Syme Business School, Australia. (Online).

July 16-18, 2022: Certificate of Proficiency in Strategic Cost Management, SMU Academy, Singapore (8th Intake).

July 29-31 & Aug 1, 2022: Certificate of Proficiency in Strategic Business Analysis, SMU Academy, Singapore (8th Intake).

August 18-20, 2022: Webinar in Strategic Cost Management, Hassan Associates, Bangladesh. (Online).

August 26-27, 2022: Webinar in Strategic Business Analysis (Part 1), Hassan Associates, Bangladesh. (Online).

September 2-3, 2022: Webinar in Strategic Business Analysis (Part 2), Hassan Associates, Bangladesh. (Online).

September 10-12 & 17-18 & 24-25, 2022: Fifth CMA Global Zoom Program in Strategic Cost Management & Strategic Business Analysis, Syme Business School, Australia. (Online).

Private Providers

Wharton Institute of Technology and Science (WITS), Australia

Syme Business School, Australia

Academy of Finance, Sri Lanka

IPMI (Indonesian Institute for Management Development), Indonesia

Singapore Management University Academy (SMU Academy)

Business Sense, Inc. , Philippines

HBS for Certification and Training, Lebanon

SMART Education Group, UAE

Institute of Professional and Executive Management, Hong Kong

AFA Research and Education, Vietnam

Segal Training Institute, Iran

Business Number Consulting, Indonesia

Inspire Consulting, Indonesia

ManAcc Consulting, New Zealand

STRACC Learning LLP, India

Hassan Associates, Bangladesh

Ra-Kahng Associates Ltd, Thailand

Academy of Management Accountancy, Nepal

Blue Globe Inc, Japan

FFR Group APAC, Malaysia

Unnayan Educational Services, India

New Zealand Academy of Management

ICMA Australia & NZ

Global Head Office
CMA House
Monash Corporate Centre
Unit 5, 20 Duerdin Street
Clayton North, Victoria 3168
Australia
Tel: 61 3 85550358
Fax: 61 3 85550387
Email: info@cmaaustralia.edu.au
Web: www.cmaaustralia.edu.au

OTHER CENTRES

New South Wales
Professor Chris Patel, PhD, CMA
Branch President
Macquarie University

Tasmania
Professor Lisa McManus, PhD, CMA
Branch President
University of Tasmania

South Australia
Prof Carol Tilt, PhD, CMA
Branch President
University of South Australia

Western Australia
Dr. Vincent Ken Keang Chong
Branch President
UWA Business School

Queensland
Dr. Gregory Laing, PhD CMA
Branch President
University of the Sunshine Coast

OVERSEAS REGIONAL OFFICES

BANGLADESH
Mr. Sazzad Hassan, CMA
Regional Director – Bangladesh
Email: sazzad.hassan@gmail.com
Website: http://www.cmaaustralia-bd.org

CHINA (including Hong Kong and Macau)
Prof. Allen Wong, FCMA
Regional Director and CE - Greater China
Email: info@cmaaustralia.org
allen.wong@cmaaustralia.org

CYPRUS
Mr. Christos Ioannou BA (Hons), MBA , CMA
Regional Director-Cyprus
Email: chioanou@cytanet.com.cy

EUROPEAN UNION
Mr. Rajesh Raheja CMA, Branch President
9, Taylor Close, Hounslow, Middlesex TW3 4BZ, United Kingdom
Tel: +44 208 582 0025
membersservice@cmaaustralia.edu.au
http://www.cmaeurope.net

FIJI
Dr. Chris D'Souza, CMA
Country Head – Fiji (Pro-Temp)
New Zealand Institute of Business
Website: http://www.cmafiji.org

INDIA
Mr N Muralidharan, CMA
Country Head – India
Email: muralidharan@unnayan.co.in
Website: http://unnayan.co.in/portal/

INDONESIA
Special Capital Region (Jakarta) Regional Office
Ms. Arum Indriasari – Jakarta Centre
IPMI Business School
E-mail : arum.indriasari@ipmi.ac.id

West Java Regional Office
Ms. Paulina Permatasari, FCMA
Regional Director - West Java
Email: paulinapssj@gmail.com

East and Central Java Regional Office
Dr. Ana Sopanah, CMA
Regional Director - East Java
Email: anasopanah@gmail.com

IRAN
Mr. Alireza Sarraf, CMA
Regional Director- Iran
Email: sarraf@experform.com

JAPAN
Mrs. Hiroe Ogihara
Country Head – Japan
Email: y.al.ogi999@gmail.com
Website: http://www.cmajapan.org

LEBANON
Dr. Fawaz Hamidi, CMA
Regional Director - Lebanon
Email: hbs@cmamena.com
www.cmamena.com

MALAYSIA
Mr. Jensen Tan, CMA
Country Head – Malaysia
Email: j.tanjensen@gmail.com
Website: http://www.cmamalaysia.com

West Malaysia Regional Office
Dr. Ridzwan Bakar, FCMA
Deputy Regional Director - **West Malaysia**
Email: ridzwan.bakar@mmu.edu.my

CAMBODIA
[To be Appointed]

NEPAL
Mr. Kumar Khatiwada, CMA
Regional Director – Nepal
Email: kumar_kha@hotmail.com
Website: http://www.cmanepal.org

NEW ZEALAND
Mr. Richard Miranda
New Zealand Academy of Management (NZAM)
Regional Director – New Zealand
Email: info@cmanewzealand.org
Website: www.cmanewzealand.org

PAPUA NEW GUINEA
Dr Thaddeus Kambanei, CMA
Regional Director - PNG
Email: Thaddeus.Kambanei@yahoo.com
http://www.cmapng.com

PHILIPPINES
Mr. Henry Ong, FCMA
Regional Director - Philippines
Email: hong@businesssense.com.ph
http://www.cmaphilippines.com

SINGAPORE
Dr Charles Phua, CMA
Country Head – Singapore
Email: charles_phua@solarisstrategies.com
Website: http://www.cmasingapore.com

SRI LANKA
Mr Kapila Dodamgoda, CMA
Regional Director - Sri Lanka
Email: kapiladodamgoda@yahoo.com
http://www.cmasrilanka.com

THAILAND
Mr. David Bell, CMA
Regional Director – Thailand
Email: david.bell@rakahng.com
Website: http://www.cmathailand.org

UNITED ARAB EMIRATES
Mr. Shakeeb Ahmed, CMA
Regional Director - U.A.E. & GCC Countries
Email: shakeeb@smarteducationgroup.org
Mobile: +971-55-1062083
Website: www.cmadubai.org

VIETNAM
Mr. Long Phan MBus (Acc), CPA, CMA
Regional Director- Vietnam
Email: longplt@afa.edu.vn

CMA AUSTRALIA Certified Management Accountants