

Issue 08 - Mar - Apr 2021

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CONSTRUCTION
TODAY

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Editor's Note

In the present scenario, to build more resilient cities & give 'Urban' a different meaning is the major task ahead of us. But what is the meaning of a resilient city? Resilient cities are cities that can better handle natural and human-made disasters, protect human life, absorb the impact of economic, environmental and social hazards and promote well-being and inclusive and sustainable growth.

The cities and communities of today are already struggling with the impact of natural and human challenges. On the one hand, there are human conflicts, economic challenges that reduce people's quality of life and governance and political failures and environmental degradation & economic shocks have affected people.

According to the estimates from the World Bank that if cities don't get more resilient by 2030, natural disasters may cost cities all over the world around US\$300 billion and climate change alone could push 77 million people back into poverty.

There is no magic formula on how to build sustainable and resilient cities, especially because changes in cities are ongoing and non-stop and we can't just stop and freeze the whole life in a city, rebuild and fix it with the authorization of all the players involved and the with someone else's money and press play again. However, the UN has pointed some guidelines for the advancement with the resilient cities.

Those plans are focused on diversifying the economy (e.g betting more on circular economy models), creating business and employment opportunities and engaging with the

private sector are good ways of protecting cities against economic shocks; Cities need to be planned in order to minimize their overall effect on the environment, infrastructures need to be strengthened and big efforts must be placed at public education in order to build climate and environment resilience; Educating citizens to act democratically, sustainably and inclusively and encouraging them to have an active voice on local and national decision making is the way to build socially cohesive societies; and Responses to disasters in urban areas can promote greater resilience to future crises and support long-term development goals.

Furthermore, transforming cities and making them more resilient can be a complicated task. New and innovative tools, methodologies and ideas that can develop cities and citizens, backed up with the support of governmental policies, are urgently wanted. But in fact, these solutions aren't as hard to find as one might think. We could start by introducing car-free zones to improve with great air quality preserving land in order to protect its soil, water, and biodiversity, building water facilities to fight the risk of floods, adding greenery to prevent the possibility of droughts.

On the technological side, smart integrated solutions are also being developed and implemented and promise to revolutionize the way we manage our waste, parking, and traffic. This kind of solutions can also improve the air quality of cities, which would be of great value in a time as the world's population is exposed to high levels of household air pollution.

Coronavirus disease (COVID-19): Vaccine access and allocation

By the World Health Organization

As safe and effective vaccines for COVID-19 are approved, who should be the first to receive them?

WHO believes that everyone, everywhere who could benefit from safe and effective COVID-19 vaccines should have access as quickly as possible, starting with those at highest risk of serious disease or death. WHO's Strategic Advisory Group of Experts on Immunization (SAGE) has released two key documents to help guide the allocation and prioritization of populations to receive COVID-19 vaccines.

- The Values Framework for the allocation and prioritization of COVID-19 vaccination, which offers high-level guidance globally on the values and ethical considerations regarding allocation of COVID-19 vaccines between countries, and offers guidance nationally on the prioritization of groups for vaccination within countries while supply is limited.
- The Roadmap for Prioritizing Population Groups for Vaccines against COVID-19, which recommends public health strategies and target priority groups for different levels of vaccine availability and epidemiologic settings. Examples of target priority groups include frontline health and care workers at high risk of infection, older adults, and those people at high risk of death because of underlying conditions like heart disease and diabetes.

In addition, WHO led the development of a Fair Allocation Framework that aims to ensure that successful COVID-19 vaccines and treatments are shared equitably across



all countries. This framework a key part of the Access to COVID - 19 Tools (ACT) Accelerator, a global collaboration to accelerate development, production, and equitable access to COVID-19 tests, treatments, and vaccines. The framework advises that as safe and effective COVID-19 vaccines are authorized for use, all countries should receive doses in proportion to their population size to immunize the highest- priority groups.

In the second phase, vaccines would continue to be deployed to all countries so that additional populations can be covered according to national priorities.

What is WHO doing to ensure that COVID-19 vaccines will be allocated fairly?

WHO is one of the leaders of a global alliance known as COVAX, the vaccine pillar

ethicists, scientists, and other health experts and vetted by WHO's Member States. Under this framework, COVID-19 vaccines will be rolled out in two phases. In the first phase, they will be allocated according to population size to all participating countries at the same time, so as to protect those people at greatest risk of infection and of severe disease.

WHO's Strategic Advisory Group of Experts (SAGE) has provided recommendations about which populations should be prioritized first. These include frontline health and care workers at high risk of infection, older adults, and those people at high risk of death because of underlying conditions like heart disease and diabetes. In the second phase of the roll-out, as more doses are produced, vaccines can go to groups less at risk of being infected or of suffering badly.

COVAX aims to provide at least 2 billion vaccine doses by the end of 2021. The Facility has achieved that goal and additionally has the possibility to increase those doses by another 1 billion as right of first refusal for several candidates in clinical trials supported by CEPI. Although these doses are not enough for everyone in all countries, it may be enough to end the acute stage of the crisis and put the world on the road to ending the pandemic.

How is WHO helping countries prepare for COVID-19 vaccines?

Along with accelerating COVID-19 vaccine research and helping scale up manufacturing capacity, WHO is working in close partnership with countries, regional colleagues, and other partners to develop needed policies, strengthen regulatory capacity, training courses, and guide countries in all the needed preparations for a programme to

of the ACT-Accelerator collaboration, which is working to accelerate the development and manufacturing of COVID-19 vaccines and ensure that there is fair and equitable access to these vaccines for all countries. COVAX will allocate vaccines across countries according to a framework developed by a group that includes

deliver COVID-19 vaccines. WHO, UNICEF, and partners are supporting countries in preparing for COVID-19 vaccine introduction.

The Country Readiness and Delivery workflow – which is part of the ACT Accelerator – has developed a toolbox with guidance, tools, and trainings. For example, WHO's Strategic Advisory Group of Experts (SAGE) has issued interim policy recommendations for the rollout of the first COVID-19 vaccine approved for emergency use, the Pfizer-BioNTech COVID-19 vaccine.

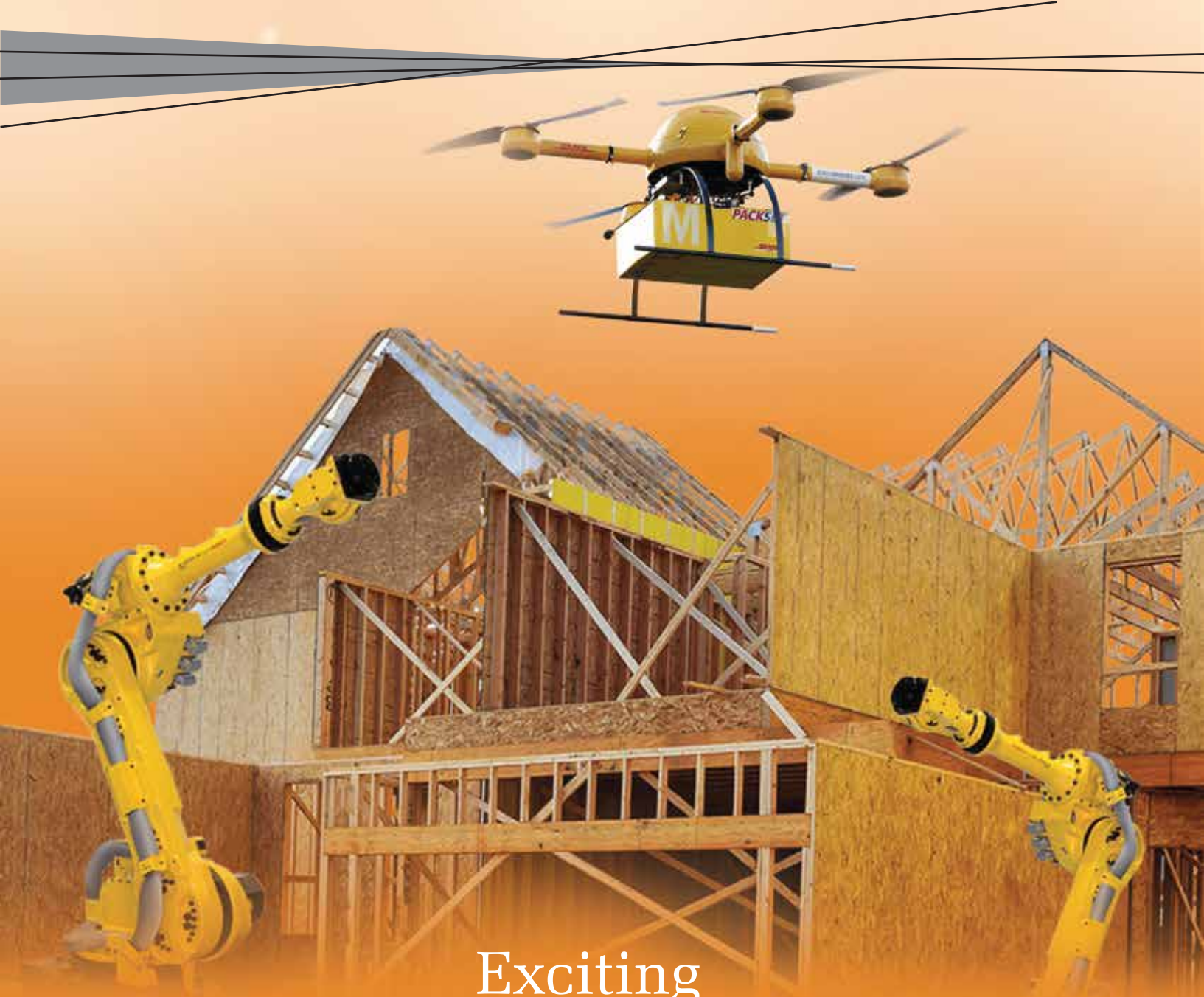
These recommendations can guide and support country decision-making bodies, such as the National Immunization Technical Advisory Groups, on the optimal use of existing COVID-19 vaccines. SAGE is expected to review other vaccines in the coming months.

WHO has also developed detailed technical guidance and adaptable planning tools and templates to help countries plan for COVID-19 vaccines considering the many aspects of readiness that need to be put in place. These areas include planning and implementation, data and monitoring, supply and logistics, and acceptance and demand. To support initial preparations, a vaccine introduction readiness assessment tool (VIRAT) has been developed and disseminated. It provides countries with an integrated roadmap of milestones and a framework for self-monitoring progress in preparing for vaccine introduction. This will help ensure that COVID-19 vaccines reach those in need as soon as they are available.

WHO advises every country to develop a National Deployment and Vaccination Plan (NDVP) for COVID-19 vaccines. Having one plan in each country, that comprehensively describes all elements of the country's approach to COVID-19 vaccine rollout will be crucial for a coordinated effort. Guidance on developing that plan is available from WHO, including all elements that a country needs to consider.

Courtesy : The World Health Organization





Exciting construction trends to look forward to...

By Shanika Gamage

Over the last twenty years, technology has led the way for major transformations in almost every industry. Some of the most notable examples of this include Uber's use of technology to transform the taxi industry and Netflix's continuous innovations in the movie rental industry.

One of the few industries that are yet to see many significant technological transformations is construction; the least digitized sector in Europe according to McKinsey's digitization index.

The good news is that it doesn't seem like this will be a problem for much longer. Individuals, university research teams and global companies alike are taking it upon themselves to create all sorts of technological innovations, trying to combat some of the most common day-to-day challenges that workers face, as well as more complex problems that are holding back the industry as a whole.



Communication

Smartphones and instant messaging services have completely transformed the quality of communication across all industries. But even so, the sheer volume of communication channels to choose from can cause miscommunication between teams all too often. Real-time project management tools will provide your team with one central system to manage all forms of communication, whether that be a quick message to a colleague or a full brief for an upcoming project. From a management perspective, these project management tools can be crucial for keeping an eye on the progress of a project and any ongoing problems that may have been reported. With software available across desktops, iOS and Android devices, it's easier than ever to communicate with your team no matter where you are. And as time goes on, this technology will only continue to advance.



Drones

Drones are no longer seen as a new technology for the construction industry. Offering a fast, precise, and cost-effective way to get a complete aerial view of a construction site, they're now one of the most popular tools for carrying out accurate surveys and mapping a site. Whereas in the past it could take days or even weeks for a surveyor to carry out an accurate reading, this can now be done in minutes. With professional drones we are able to reach heights of 4500m, offering a maximum transmission distance of 5km, you can see why drones have rapidly become the go-to solution for surveyors.

As the drone industry continues to grow, you can expect to see an increase in the number of advanced technologies coming to the market. You can expect drones to be used for a much wider array of tasks as time goes on, such as transporting heavy goods and machinery to the top of skyscrapers or taking materials to projects in remote locations that would otherwise be difficult to access.



Augmented reality

Augmented reality is another technology that has already been used in the construction industry for several years. It's most used by designers to put together 3D versions of their blueprints, allowing them to step inside the building before it's even been built. As you can imagine, this gives designers a much better idea of how the final project will look, which in turn makes it easier to pinpoint any potential miscalculations or structural errors.

Another innovative way that AR is being used within construction is as a replacement of paper blueprints or CAD designs. Instead, the contractor can wear an AR headset and see precise details of where to place certain objects or materials in a mixed-reality environment. AR and VR solutions are also becoming highly popular to train staff, allowing people to get to grips with specialist equipment without having to handle it in real life.



Exoskeleton Suits

Although this might sound like something out of a sci-fi movie, exoskeleton suits are very real, and they're set to revolutionize the construction industry. In brief, these wearable suits help people to walk and lift heavy objects with minimal effort, reducing required muscle force by as much as 60%. Early models reportedly have a strength amplification of 20 to 1, which means that a 90kg object feels like it's less than 5kg. In an industry that's notorious for back injuries, it doesn't take much imagination to realize just how much of an impact this will have on health and safety within the industry.



Data

With more data available to us than ever before, architects are increasingly using data to design structures that would simply not be possible through traditional methods. One of the most well-known examples of this is the engineering masterpiece that is the Marina Bay Sands hotel in Singapore. The main obstacle that required consideration in the early design stages was the impact that strong winds and wind-induced vibrations would have on people visiting its "Sky Park" – a large park that sits 200m above ground, boasting an incredible 151m infinity pool and connecting the hotel's three towers. Using data and rigorous testing, this was an issue that the design team managed to combat fairly easily.

Whilst this example is on a much larger scale than most construction projects, the use of data will become crucial for projects of all sizes over the next few years. This will make it far easier for site managers to monitor budgets in real-time, predict how long a project will take, and pinpoint any issues that may not be immediately obvious without the use of technology. Eventually, even small tools will be connected to the Internet of Things, feeding data back to any connected apps and allowing for workers to perfect even the smallest of tasks.



Robotics

Over the next few years, robots will become increasingly popular for any task on a construction site that can be automated. Existing examples of this include autonomous bricklayers, dump trucks and earthmovers, which can significantly speed up the construction process. In fact, an early model of an autonomous bricklayer, named SAM 100, reportedly works five times faster than humans.

As technology advances, robots will be able to carry out more complex tasks – possibly even taking over the whole assembly process over time. Back in 2014, an academic from Harvard announced that her team had built small construction robots based on termites; working together as a swarm to rapidly put together structures based on genetically programmed rules of behavior. Whilst "robot swarm construction" is still quite a long way from being commercially available, it's a very exciting project that demonstrates just how much of an impact technology could have on the construction industry.



3D printing

3D printing is another technology that is rapidly becoming prevalent in the construction industry. In fact, in 2018 a French family became the first people in the world to move into a 3D-printed home. From a cost perspective, the benefits of 3D printing are clear, offering the ability to create building materials in less time and with minimal manual labor. 3D printing can also be used to create precise objects and parts in a fraction of the time that it would take a human; this is especially useful when complex shapes are required, giving architects a lot more flexibility when designing structures.



Advanced materials

In recent years we've seen countless new materials popping up on the market, including many that seem futuristic or near-impossible. One of the most widely-discussed examples of this is self-healing concrete – a new type of concrete that repairs its own cracks and holes. This is achieved through the insertion of self-activating bacteria that produces limestone, which in turn fills any cracks as and when they appear in the material.

Another material that has featured a lot in the press recently, likely due to Tesla's involvement, is solar roof tiles. These are roof tiles that look identical to their traditional counterparts, however, they're highly durable and feature photovoltaic cells to produce solar energy. As sustainable solutions become increasingly popular, similar technologies such as solar bricks will become more widely available.

Another materials that are set to revolutionize the construction industry include carbon nanotubes – a 1 nanometer-thick material that has the highest strength-to-weight ratio of any material on earth – and transparent aluminum – a transparent metal that looks exactly like glass but is significantly stronger. Who knows what other new construction materials will reach the market over the next few years?



Sustainable solutions

With the UK Met Office predicting that temperatures could exceed the 1.5 degrees target set at the 2015 Paris Climate Agreement in the next five years, sustainable solutions are no longer just a trend but a necessity for all construction projects. Alongside solar roof tiles, you can expect countless renewable energy solutions to reach the market over the next few years. Materials that increase the life of existing building supplies such as self-healing concrete will also become a lot more popular.

You can also expect to see the prevalence of low-carbon housing projects, such as the Climate Innovation District in Leeds. These projects feature communities of zero-emission homes, car-free zones, and public green spaces, and they seem to be rising in popularity fast. Another type of sustainable housing solution that's becoming popular is "vertical forests" – high rise apartment blocks that feature thousands of plants and trees to reduce air pollution in major cities. There are already several vertical forests in places like Milan, Vietnam, and China, with plans to build countless more around the world. China has even shared plans to build an entire "forest city" that features a total of 40,000 trees and almost 1,000,000 plants.

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Modular Homes

The newest concept in building homes

A modular home is a prefabricated house that consists of several sections called modules. “Modular” is a method of construction that involves putting together separate compartments or components into one single structure. However, there are still many details to pay attention to when constructing a modular home.

Modular homes are homes with prefab being an umbrella term for anything that is created offsite. Homes are primarily created by all materials being delivered on site in an unconstructed form.

The main difference between manufactured and modular homes is that manufactured homes are built to the national HUD code, while modular homes are built to all applicable state and local building codes. The HUD code is a US national standard that overrides all local building codes. HUD codes also have requirements that are designed to make manufactured homes safer in the event of a fire. This is similar to the way traditional site-built homes are constructed.

Modular structures consist of several parts that are prefabricated offsite and then brought on-site either in easy-to-assemble parts or in a completed state. Once they're transported to the desired location, they're placed on a permanent foundation and assembled, following local building codes.

While modular homes can be cheaper to build, you'll typically find that their appreciation and resale value is much lower than a stick built home. On this same note, modular homes are typically lower cost compared to stick built homes since they are often built in bulk and shipped out to customers across the country.

As Modular homes are made in an assembly line process, modular homes are not as easy to customize as a stick built home. Your custom home builder should be able to design your home around your lifestyle and needs. A reputable builder will customize your floor plan to make your dreams a reality.

There are two main structural materials used in any type of modular construction:

- Standard, wood-frame (Type V-B) construction (built with standard lumber)
- Steel and concrete (Type II-B non-combustible) construction.



The major difference between manufactured, mobile, and modular homes is the way that they are constructed. Manufactured homes are completely constructed in a factory and then transported to the home site. Modular homes are either built on a permanent chassis or on a temporary one.

Modular homes get built in home building facilities in multiple pieces, unlike manufactured homes that get built in one piece. The completed two to five pieces of the home get transported to the home site, where they are then joined on top of a solid foundation. Once all the pieces are joined, these homes look similar to site-built homes. These homes must adhere to local and state codes, depending on where the building is located.

Sometimes the quality can actually be better when compared to some stick builders. Modular homes are built in a factory setting, on an assembly line, which means the building process for all the pieces is under intense quality control.

Because modular homes are built in a factory and then assembled on-site, buyers know what they're getting as long as they're familiar with the builder. There's a level of quality control that happens in a factory setting that doesn't necessarily happen with a stick-built home. Weather conditions, the particular builder for the home, and whether things are done incorrectly (perhaps from a rushed build) can all affect the final product of a stick-built home. Modular homes, on the other hand, are immune to those issues.

As modern lifestyles change to become increasingly more flexible, the way we define a home is also shifting. Manufactured homes and modular homes give people looking for the stability and comfort of a single family home the chance to invest in that dream without sacrificing their lifestyle.



5

Construction Trends you want to look out for in 2021

Written by - Anastasios Koutsogiannis

As 2020 is now history, it's time to look ahead. Here are some of the most eye-catching construction trends in 2021

Construction is one of the biggest sectors in the world in terms of value, but maybe even bigger in terms of its impact on our lives.

We live and work in buildings, and the output of this industry surrounds us at almost all times.

Very few can deny, though, that 2020 has been a year full of challenges not only for construction but for the entire world.

The Coronavirus outbreak pushed for a lot of readjustments on the way we work and communicate with each other. Business activities had to continue with limited face-to-face contact, and some processes were a bit slower or even interrupted, because of precautions.

Under such circumstances, the need for seeing exactly what is happening on site, preventing loss of time, detecting mistakes early, and delivering successful projects faster has become bigger.

This is why understanding what 2021 has in store for the industry is important. Despite its ongoing transformation, construction is still haunted by cost and time overruns, excessive admin burden, and a strong culture of blame.

On the bright side, construction is maybe for the first time among the industries that actively drive digital transformation.

As a result, new trends are emerging and pave the way for a more agile and data-driven way of working.

More specifically, here are the top five trends you want to look out for in 2021.

1. Implementation of construction-specific tools
2. The use of a single source of truth
3. More sustainability and standardisation
4. Increased focus on quality and safety
5. Integrated planning

It quickly becomes clear, then, that the new year has just begun and many exciting opportunities are waiting for those who are ready to transform their construction processes and push for more visibility and better communication on the site

A breakdown of the top 5 construction trends for 2021

Now that you have a first taste of where your focus should be for 2021, it's time to dive a little deeper into each of these five trends and understand the impact that they can have on the industry moving forward.

Construction-specific tools are taking over



Back from the beginning of 2020 even, we have repeatedly referred to the importance of finding the right tools for your construction projects. It is no secret that the industry is addicted to Excel and WhatsApp. And we get why. They are both very useful tools that can make your daily life much easier and allow you to connect with different people just in a few clicks.

However, when it comes to managing a construction project they are not enough. And the reason is simple. They can't connect the planning to the updates that you receive from the site. More and more players in the industry start to understand that and they are actively looking for digital solutions that are tailored for construction. If you want to keep up with the competition, now is the time for you to do the same.

A single data source for the entire project



A single source of truth is a single source of proof. By collecting all project information in one place, you are able to see more and communicate better. Knowing what's happening on the field at all times is one of the main keys to regaining control over your project and avoiding time-consuming claims.

Furthermore, by centralising all project communication you can considerably reduce admin workload.

Project managers tell us they have to spend up to 40% of their time every day attending meetings, making phone calls, or writing reports that are outdated the moment they have been issued.

Nevertheless, it is essential to remember that the success of implementing a single data source is vastly

dependent on the tools you are using. In other words, construction-specific tools are again of paramount importance if you want to improve the communication between your teams and deliver faster and cheaper without compromising on quality.

Sustainable and standardised processes under the spotlight



Moving towards a greener industry is another ambitious goal for 2021. In the fight against climate change, construction has to offer a lot by reducing waste and by supporting projects that can pave the way for more sustainable societies.

Tivoli GreenCity in Brussels is an excellent example in that direction. As of December 2020 is officially the world's most sustainable neighbourhood! Located in Laeken, close to Brussels harbour, Tivoli GreenCity has been awarded a BREEAM (Building Research Establishment Environmental Assessment Method) certification with a score of 95% which is the highest that has ever been awarded anywhere in the world so far.

At LetsBuild, we are extremely proud of this project as we had the opportunity to support companies like CERAU, Boydens Engineering, and BPC through their remarkable effort to bring this green neighbourhood into life.

Minimising waste during production is another big challenge for 2021. This is where standardising (or at least industrialising some parts of the process) could play a decisive role. By adding the element of repeatability, you can now add more predictability to the way your projects unravel and avoid wasting time and resources.

Bigger focus on quality and safety



Quality and safety have always been two of the biggest buzzwords for the construction industry. In 2021, this focus is expected to increase as more project managers will try to find ways to connect their quality and safety processes directly to the planning.

In that manner, they will be able to detect critical problems quickly and resolve non conformities as they go. That can help in a number of ways such as improving the quality of the build, making handovers smoother, and minimising waste and delays.

When it comes to safety, mental health is another area that is attracting growing attention on the site. As discussed in our recent virtual town hall, studies show that construction workers are six times more likely to die by suicide than from a workplace accident.

In the UK, two construction workers take their lives every day. In Australia, one commits suicide every other day. Construction claims the highest number of suicides in any profession. And that's something we need, as an industry, to talk about more during this year.

Integrated planning to reduce downtime



Integrated planning is expected to be one of the main areas of interest for 2021 in construction. But what do we mean by integrated planning?

96% of the project managers we are talking with, tell us that they have to deal with more than 3 different, non-connected plannings in MS Project or Excel such as procurement planning, 3-6 week look-ahead, and document approvals.

This serious fragmentation of data opens the way for excessive administrative workload and, even worse, significant downtime between activities. As a result, both budget and waste increase fueling disputes and a toxic culture of blame across the supply chain.

For that reason, it is believed that those who will be able to start integrating their different plannings will immediately be in an advantageous position against their competition. Simply put, they will be able to always maintain an accurate overview of all project activities and plannings.

For instance, by connecting their procurement and their short-term plans to their master schedule they will have all the information they need to act fast and fix problems (e.g. reordering materials that have been damaged) with a few clicks instead of getting lost in a sea of disconnected information.

So if you are aspiring for a year with fewer delays and budget overruns, integrated planning is definitely something you want to look out for.

Kick off 2021 with the right tools on your hands!

That's all folks! Here are the top five construction trends you need to keep an eye on during 2021 so that you can deliver successful projects faster and cheaper without compromising quality.



4 ways the Circular Economy can help heavy industry reduce Emissions

- The majority of industry emissions comes from 4 material groups: Steel, cement, aluminum, chemicals.
- Global demand for the 4 focus materials is expected to increase – exacerbating the emission challenge.
- Getting to a 1.5°C pathway requires significant emissions reduction in all 4 material groups.
- There is still a large potential to improve circular material flows for all focus materials.
- Individual companies face several challenges when implementing circular economy solutions.

The world must reach net-zero emissions by 2050 to avoid the worst effects of climate change. This is no easy feat, but one clear solution could lie in industry emissions.

Globally, industry emissions are responsible for 27% of our CO₂ emissions, second only to the power sector. Four materials are responsible for up to 60% of these industry emissions - steel, cement, chemicals and aluminum - reaching a total of 7.1 Gt CO₂ per year.

Given that demand for these materials is expected to increase over the coming years under a 'business as usual' scenario, successfully decarbonizing these materials is critical to solving the climate crisis. In this effort, the circular economy can play a key role.

Even for steel and aluminum – which are in principle infinitely recyclable – around 15% to 25% of materials are not collected for recycling at their end of life. Additionally, only 8% of concrete is collected for recycling with most discarded as construction or demolition waste. Furthermore, closed loop recycling is still rare in all materials as significant down cycling reduces their value.

Demand for these materials is focused on just five industries: construction/infrastructure; transportation; consumer goods; machinery; and packaging. In fact, these industries account for more than 90% of the consumption of global steel, aluminum, cement and chemicals. It is therefore crucial to involve them in implementing and scaling circular economy solutions for hard-to-abate materials. Four materials - steel, cement, chemicals and aluminum - are responsible for up to 60% of global industry emissions.

Four major levers will enable emissions reduction from circular economy approaches when it comes to these materials and heavy industry overall. Understanding these strategies - and what will make them successful - can help focus efforts and speed global efforts to mitigating the effects of climate change. These levers include:



1. Increasing product utilization.

Maximizing the use cycles of products or their components or increasing the intensity of use to reduce the amount of new products needed.



2. Replacing materials or products.

Considering circular alternatives can help preserve resources and the availability of materials while creating a more circular, resilient system.



3. Reducing material per product.

Rethinking how materials are used can optimize product design and make production more efficient.



4. Recycling material for new products.

Such an approach can protect virgin material while promoting the trade and circulation of recyclables.

Of course, these strategies are not simple to deploy. While circularity has gained momentum in recent years, many solutions are not yet implemented at scale. Additionally, individual companies looking to put circular solutions in place face a range of challenges, including a lack of access to materials and even a lack of capability. Complexity is its own challenge as many circular solutions involve a range of players along the value chain, often with companies and stakeholders that have limited interaction with one another.

To scale such approaches, industry collaborations will be key. For the four focus materials, this means bringing together material producers with large industrial users of these materials (namely from the built environment/infrastructure, transportation, consumer goods, packaging, and machinery/mechanical engineering sectors). Platforms that bring these actors together, that provide guidance, can help leaders bridge capability gaps and develop new processes.

Policy makers also play an important role. These leaders have a range of tools at their disposal to support the implementation and scaling of circular solutions. These tools can include financial incentives, market regulation or even public procurement targets.

In addition to industry collaborations, technological innovations can scale change. Technology can ensure that solutions can be implemented on a wide scale and are not held back thanks to prohibitive

investment or a lack of cost competitiveness. Through these collaborations between innovators, industry leaders and policy makers, leaders will develop new standards and new processes that will make circularity a reality.

To this end, a new joint initiative - “Circular Economy for Net-Zero Industry Transition” - was launched to raise the decarbonization ambition for harder-to-abate materials (steel, cement, chemicals, and aluminum) towards a 1.5 degree pathway through catalyzing scalable circular economy solutions. The initiative - launched by the World Economic Forum and the Mission Possible Partnership - will mobilize a core group of champion companies who will commit to a joint declaration of intent regarding the importance of the circular economy in their decarbonization strategy.

Following these declarations of intent, the initiative will bring together industry champions from both the supply and demand sides with other relevant stakeholders around defined focus topics in dedicated Action Tracks. In facilitated workshops, stakeholders will develop strategies for scaling circular solutions and then jointly commit to collaborate on their implementation for emission management.

The outcomes of these Action Tracks will be showcased at high-level events, such as the World Circular Economy Forum (WCEF) and COP26, to recognize the work of industry champions and inspire further action.

Source : Internet

source

15 Apr 2021, 1. James PenningtonLead, Circular Economy & China Partnerships, World Economic Forum 2. Eric HannonPartner, McKinsey & Company

<https://www.weforum.org/agenda/2021/04/4-ways-circular-economy-help-heavy-industry-reduce-emissions-wcef>



TRAINING OF YOUTH FOR EMPLOYMENT IN CONSTRUCTION INDUSTRY

Ceylon Institute of Builders & Horizon College of Business and Technology collaboratively established “Training and Research Academy for Construction Solution”. TRACS at CIOB Academy.

Main objective of the TRACS is Training the human resources for construction field of the country. Specially produce highly qualified competent Technologists, Technicians, and craftsmen for the huge human resource demand of building construction sector, Apart from the training after one of the major objective is quality and productivity development of the building construction sector. Therefore, TRACS will do building construction research with CIOB partner member industries.

Last two decades, country infrastructure development has been advanced rapidly. One of the main contribution factor of the huge development rate of the GDP Growth of the country from 2010-2015 was construction sector. Despite of the unstable development of construction sector in the latter part of the last decade, and current COVID - Pandemic situation, building

construction sector gradually started to move and nowadays it's demand comes in highest stage.

According to the labour market trends in the country (ILO,2017), indicated huge labour demand for building construction sector in the country and in abroad, especially in the Middle East and other developed countries. Therefore, overall trends on demand and skill level. One of the major tasks of the TRACS is fill the skill gap of the building construction labour force and upgrade and update their quality according to the industrial demand and fast moving technological changes.



To achieve the above targets, CIOB and Horizen College have planned our activities in short-term and long-term basis.

Short-term targets:

- ▲ To immediately fulfill the skill requirement of non-skill workforce, currently attached to the construction industry- Trainings in Apprentice Training Mode.
- ▲ To fulfill the skill gap of craft level labour force, we provide locally accepted NVQ 3/4 levels and internationally accepted Training programme for youngsters on work based learning training mode with construction industries.
- ▲ To fulfill the skill gap training and professional certification for the migrating labour force in construction industry. One of our main tasks is not to send non-skill workers abroad anymore. (This directly affects to their monthly income and indirectly affect to the country foreign income.)
- ▲ To provide continuously required skill labour force at craft level and high quality competent technicians to the fast growing building construction industry in Sri Lanka.
- ▲ To plan special training programmes to attend minimizing the NEET (No education, No Employment, and No Training) situation at the current pandemic situation. Provides trainings at formal, non-formal and semiformal levels.
- ▲ Provides special training opportunities for 3-wheeler drivers, school-dropouts, etc. to enter indirectly into the building construction sector to fulfill the sectoral labour demand.

Long-term targets:

- ▲ Research programmes, building construction industrial park as a Builder's Construction Technology Hub of the country.

The New Kelani Bridge Project:

A look into the past, present, and future of Advantis Projects & Engineering with Janitha Jayanetti

- By Shanika Gamage -





**“Strive for perfection in everything you do.
Take the best that exists and make it better.
When it does not exist, design it.”**

Sir Henry Royce -



Year 2020 has been the most challenging year we have faced in the recent history of mankind. The pandemic that is spreading like wildfire throughout the world has brought us to a difficult and grave era. But as humans have always done, we are adjusting and surviving. This has always been the key to human evolution. We are all trying to continue our lives as safely as possible.

Amidst the pandemic another giant construction project is slowly but steadily making its way to completion. Anyone who travels through the Paliyagoda area in Colombo would witness this. It is the New Kelani Bridge project and unknowingly to many, Advantis Projects & Engineering, a subsidiary of Hayleys Advantis Limited has been a key player of this project. We at 'Sri Lanka Construction Today' was able to talk to Janitha Jayanetti of Advantis Projects & Engineering (closely following guidelines provided by the health authorities) about their contribution to the project and was able to look into the past, present and future of Advantis Projects & Engineering.

The Company

Hayleys PLC, with a history spanning over 143 years, is one of the largest multinational conglomerates in Sri Lanka with a diversified portfolio of globally competitive core businesses in eco solutions, hand protection, purification, textile manufacturing, construction material, agriculture, plantations, transportations and logistics, leisure, aviation & travel, industrial solutions, retail, BPO services and tea exports. Hayleys Advantis, the transportation, logistics and engineering arm of Hayleys PLC, has over 60 years of experience in providing services in Sri Lanka and many international markets.

Advantis Projects & Engineering (Private) Limited is a subsidiary of Hayleys Advantis Ltd. With nearly 20 years of experience, they have a refined service offering that includes project logistics, heavy-cargo transport and heavy-cargo lifting solutions, electrical, mechanical and civil engineering and consultancy, PESB (Pre-Engineered Steel Buildings) and light-steel design & fabrication, erection, and installation services. With a proven track record, technology driven approach and adherence to industry best practices, they have made their name in their respective spheres of business, in Sri Lanka.

The company has a team of dedicated professionals who possess a wealth of experience in the engineering and logistics arenas, and the expertise to positively meet a diverse range of demands by providing logical engineering solutions, which are

strategically designed to effectively maximise productivity.

With their extensive experience in design, engineering, erection and installation of heavy and specialised cargo, their engineers are some of the best in the industry at designing custom solutions through systematic processes to meet their client's requirements.

They have developed capabilities and infrastructure to simultaneously take up multiple projects of varying complexities, without compromising on delivery schedules and cargo safety. In line with the group's core values, service excellence, safe and sustainable practices are included at all levels of operations and have paved the way for Advantis Projects and Engineering to be recognised as a brand known for reliability and quality.

Accredited with ISO 9001:2015, by Lloyd's Register Quality Assurance (LRQA) and ISO 45001:2018 Occupational Health and Safety systems by DNV GL, registered with the ICTAD and being a subsidiary of Hayleys Advantis Group; a company amongst the 40 best places to work for in Sri Lanka, bear testimony to their exceptional safety and people practices that further cements their position as the market leader in the industry.

Contribution to the New Kelani Bridge Project

In 2012, the Government of Sri Lanka commenced an ambitious project to improve the traffic flow and congestion around the new Kelani Bridge. According to a preparatory study conducted by Japan International Cooperation Agency (JICA), Oriental Consultants Co. Ltd, and Katahira & Engineers International, it was established that the project is technically and economically feasible and environmentally sound. By November 2016, the Road Development Authority under the Ministry of Ports and Highways commenced the project. The mammoth scale project consisted of two packages, the first package was to construct an elevated highway from Peliyagoda to Colombo Fort, which also connected to the bridge at the interchange at the Bandaranaike roundabout, with a steel elevated roadway of 922 meters consisting of interchanges and ramps of 1,407 meters.

The second package focused on the construction of a 380-meter-long six lane bridge with interchanges at Orugodawatte, Ingurukade and Kelanitissa junctions. The new bridge extends south

ward from the Colombo-Katunayake Expressway and divides to the Port Access Road and Baseline Road, which totals 1,185 meters of concrete work.

The first package of construction of the elevated steel highway was handled by the JMT Joint Venture (JV) – JFF Engineering Corporation, Mitsui Engineering & Shipbuilding Co. Ltd. and TODA Corporation. The total erection and installation work was divided into four sub-sections. Out of which two were handled by the JMT JV and the remaining two sections were handled by Advantis Projects & Engineering (Private) Limited.

The erection & installation of the first package consisted of three parts: erection technical services, equipment & machinery and supply of skilled & unskilled labour.

In addition to the two sections managed by Advantis Projects & Engineering, the company also provided expertise and equipment, by providing heavy lift cranes and other machinery for the two sections handled by the JMT JV.

For this project, Advantis Projects & Engineering provided a total lifting capacity of more than 1,500 tons, making it the first organisation in Sri Lanka to provide such capabilities. Furthermore, the organisation was the first Sri Lankan company to provide international level engineering expertise in erection and installation, surpassing many international competitors.

The project is one of the largest infrastructure development projects in the recent past of Sri Lanka. The project consists of the single largest suspension bridge and the longest elevated steel highway in Sri Lanka.

At the height of the erection and installation work of sections 02 & 03 of the elevated steel highway, Advantis Projects & Engineering, had organised a team consisting of 120 staff members and an additional 15 management staff members.

Advantis Projects & Engineering deployed an array of their own heavy lift equipment and machinery for the main erection and installation work of sections 02 & 03. Additionally, they provided equipment for the entire elevated highway erection and installation work, including sections 01 & 04.

The heavy lift equipment and other machinery required for the project, led to the largest deployment of equipment by a single company in Sri Lanka, consisting of the machinery and equipment mentioned below.

- 01*260T Crawler Crane
- 03* 250T All Terrain Cranes
- 01* 160T All Terrain Crane
- 01*70T Rough Terrain Crane
- 05*50T Rough Terrain Cranes
- 07*15m to 20m Aerial Platforms
- 03* Boom Trucks
- 01* Forklifts
- 05* Lowbed Trailers

Advantis Projects & Engineering had approached the project owners and the consultants back in 2012, when the project was first announced. From then on, the company had performed multiple tasks for the project. First as a logistics consultant, thereafter for import customs clearance and transportation and for open yard storage.



With these initial roles, Advantis Projects & Engineering had showcased its professionalism, expertise, and experience to the main contractors. Their attention to detail and commitment to achieve precision in operations had provided the company with the opportunity to bid and secure the heavy lift equipment and other equipment rental contracts. The company won these contracts amongst regional competition from countries such as Singapore, India, and Japan, to secure the valuable equipment hire contract for the entire elevated highway project. From then onwards, the company continued to serve the Japanese main contractors consistently with superior service levels, which eventually led to the opportunity to bid for the main erection and installation of sections 02 & 03. Against all odds and difficulties, the company was successful in securing this valuable contract over other specialists in the region.

The involvement of Advantis Projects & Engineering as one of the main subcontractors of the New Kelani Bridge Project propelled the Advantis brand to new heights, whilst establishing the company as an erection and installation specialist in the region.

In conversation with the Hayleys Advantis GMC/Director in charge of Advantis Projects & Engineering, Mr. Janitha Jayanetti



I had the opportunity to talk to Mr. Janith Jayanetti (BSc. Eng.), He has over 20 years of experience and expertise in Inland Depot, Engineering, Construction and Project Logistics management. He is currently the GMC/Director of Hayleys Advantis, who is in charge of Advantis Projects & Engineering Private Limited. This is what he had to share with Sri Lanka Construction Today.

Like any other company in Sri Lanka, Advantis Projects & Engineering was affected by the pandemic. However, this was mainly due to the initial shock and not having prior experience of facing a similar situation. The shutdown was

novel to almost every one of us, but as a logistics services provider, Advantis Projects & Engineering had increased demand as the need for logistics suppliers was doubled due to the lock down and as it was considered an essential service.

During this time most of their staff were scattered around Sri Lanka and they did not have a way of getting back to Colombo. Therefore, the main task for the company was to get their employees back to Colombo and provide accommodation under the health and safety guidelines provided by the authorities. By the end of the first wave, Advantis Projects & Engineering was in business as usual. When the second wave hit, they were already well equipped and prepared.

However, the import, export and the automotive segments of the business were indeed affected by the pandemic. Nevertheless, the management took all efforts and developed strategies to ensure that remuneration of their employees were not impacted.

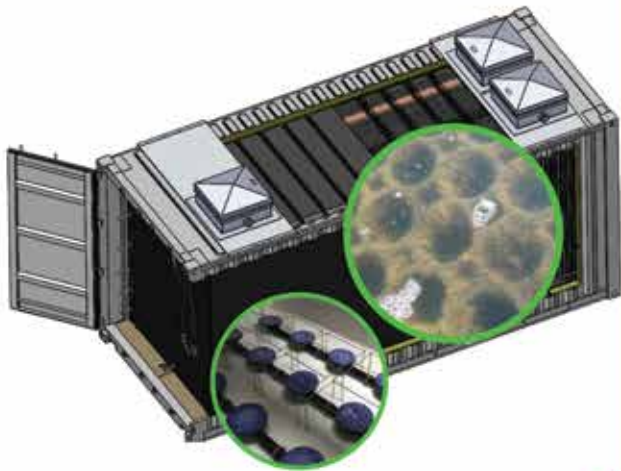
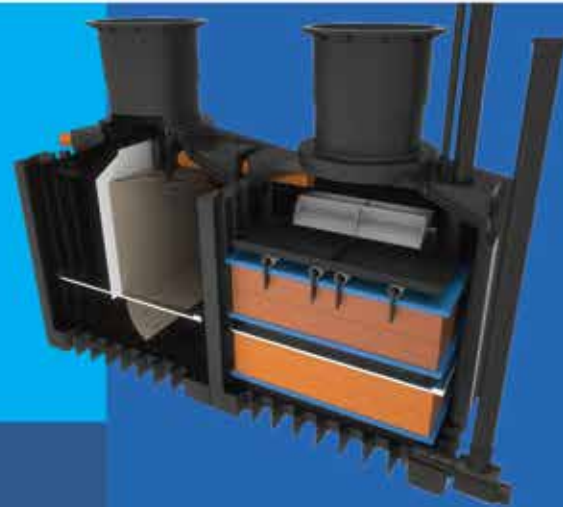
Advantis Projects & Engineering has recently moved into niche segments in the construction industry, such as steel erection and installation etc. They have a competitive advantage amongst other similar companies in Sri Lanka owing to their special erection and installation equipment and expertise.

Hayleys PLC has a global presence in countries such as Australia, Bangladesh, China, Hong Kong, Italy, India, Indonesia, Japan, Maldives, Myanmar, Malaysia, Netherlands, Thailand, USA and UK. Furthermore, Hayleys Advantis has presence in nine countries in the Asian region. The company has also established its self as the number one logistics and shipping company in the Maldives. In terms of project logistics, Advantis Projects & Engineering has exciting plans to follow in their parent company's footsteps by entering international markets.

At Advantis Projects & Engineering, they firmly believe that opportunities are provided to the 'right people'. As a company they have also faced the problem of not having enough skilled workers. However, after COVID-19 and with many migrated skilled workers returning to the country, this gap is steadily being filled. With the right opportunities, superior skills and a strategic management team the sky is the limit. Advantis Projects & Engineering has proven this fact to all.

Nature

- ✓ The Nature is totally non electric wastewater treatment plant for 4-50 persons. It is sold in over 20 countries worldwide.
- ✓ The Nature uses natural ventilation to treat sewage without the need for any electricity. This means no maintenance or replacement parts.
- ✓ No odour or noise pollution
- ✓ Biofilter material never needs to be replaced
- ✓ Plug and Play



Fixed Bed Reactor (FBR)

- ✓ The FBR is the most efficient and robust biological wastewater treatment process on the market. It also produces less sludge than conventional biological wastewater treatment processes.
- ✓ The FBR can biologically treat municipal and industrial wastewaters.
- ✓ The ecological footprint of our fixed bed biological treatment unit is much smaller compared to conventional systems.
- ✓ FBR has a fully automated operation and does not require any chemicals for operation and
- ✓ Suitable for fluctuating wastewater flows, consumes less electricity, expandable, mobile, produces less noise, highly efficient, and needs no building to house the plant

Sequential Bio Reactor (SBR)

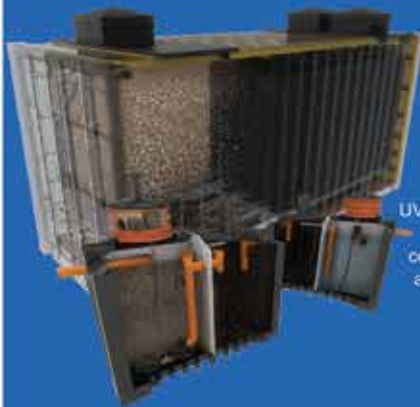
- ✓ A low energy single chamber SBR system that can be used to treat sewage from domestic applications from 5-50 persons.
- ✓ Plug & Play, odour free, with whisper quiet operation.
- ✓ The SBR uses a unique sequential aeration process to treat sewage better effluent quality towards a parameters which are much lower than the regulatory standards.



Fluidised Bed Bio Reactor (FBBR)

A containerized (plug&play) biological treatment step for further treatment of DAF effluent or separate biological treatment of industrial wastewater

In the fluidised bed container there are free floating support media (small plastic parts) or particles (produced from UV-stabilised polyethylene), on which bacteria grow. A biological layer (micro-organic colonisation) forms on this medium after a start-up period. The biofilm which consists mainly of aerobic organisms, transforms the organic contaminants contained in the wastewater into sedimentary and mineral substances. The wastewater is aerated intermittently and the aeration system installed in the tank, supplies the organisms with sufficient oxygen. The aeration also causes a current that moves the fluid containing the biofilm medium and the entire content of the reactor is blended.



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Top 10 Weird and Crazy Facts

Within the Construction Industry

I love reading facts and conspiracy theories. I find these videos so intriguing and interesting that I can't resist the temptation. So, for this issue of Sri Lanka Construction Today, I've decided to write about the top 10 weird and crazy facts within the construction industry.

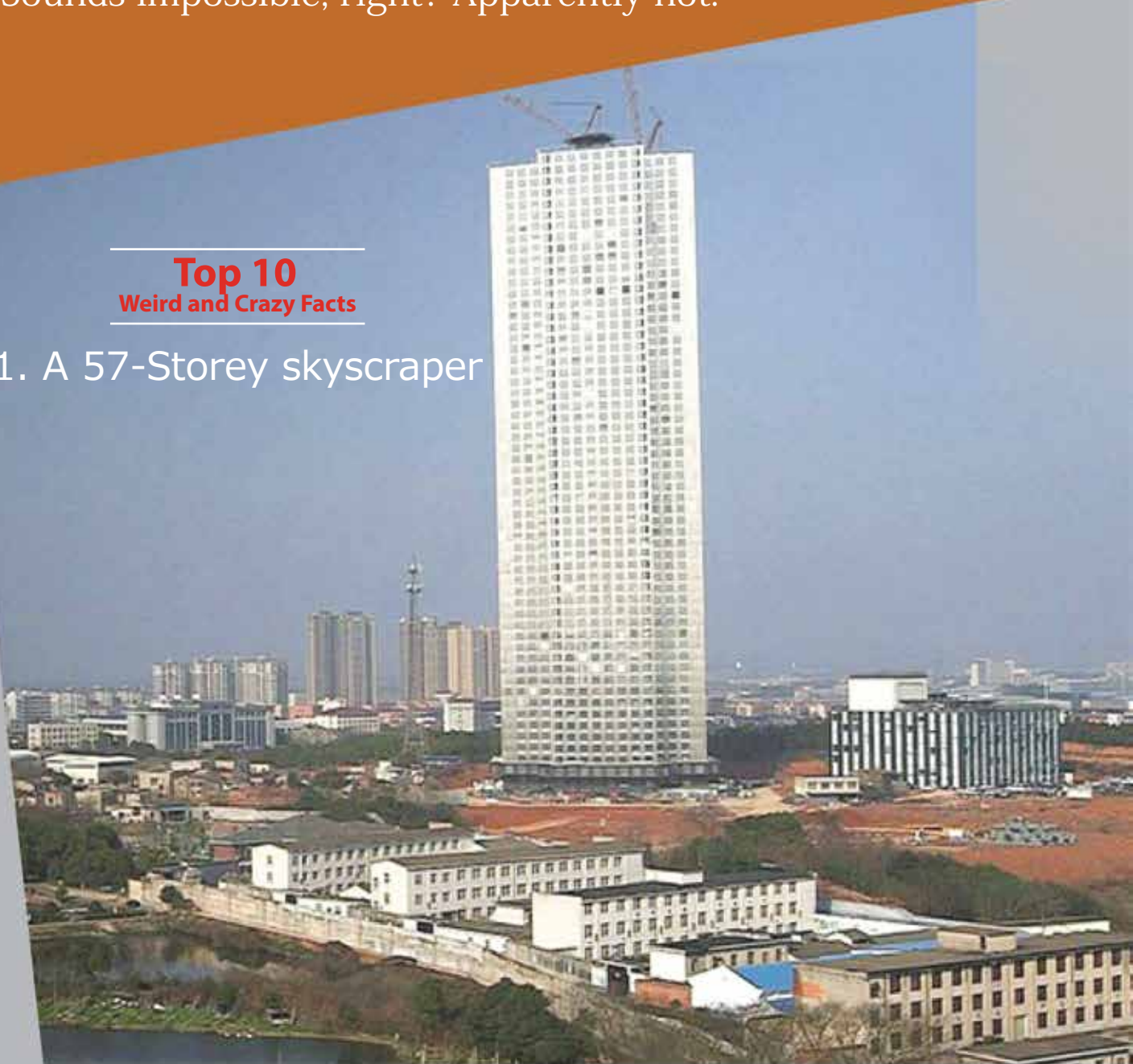
by Shanika Gamage



This building was built just in 19 days In China, A construction company has claimed to be the fastest builders within the construction industry after building a 57-Storey skyscraper in just 19 days. The companies engineer stated, “With the traditional method they have to build a skyscraper brick by brick, but with our method, we just need to assemble the blocks”. This company is now trying to build the world’s tallest skyscraper, building around 220-stories within 3 months. Sounds impossible, right? Apparently not.

Top 10
Weird and Crazy Facts

1. A 57-Storey skyscraper



Top 10
Weird and Crazy Facts

2. The Great Pyramid of Giza



The Great Pyramid of Giza is one of the most well-known architectural feats of its time. From 2560 BC to 1311 AD, it was the tallest building in the world. However, it was soon replaced by Lincoln Cathedral in England. Ever since the Lincoln Cathedral took the crown for the tallest building, no other building has been the tallest building for longer than 250 years, just give Burj Khalifa another 237 years.

Top 10
Weird and Crazy Facts

3. The Smallest Skyscraper



The New by-McMahon is the smallest skyscraper to this day, measuring to about 40 feet tall. In 1919, a man called J.D. McMahon was able to raise about £200,000 so he would be able to build a 40ft tall building in a small town called Wichita Falls in Texas. J.D was able to do this because he never stated how tall the building was going to be. On the blueprints, he wrote 480", meaning 480 inches, not feet. Sneaky, right? The investors never noticed it or questioned J.D., they just assumed that they were going to get a beautiful 480ft skyscraper.

The Burj Khalifa building is the biggest building to be built to this very day, and because it's the biggest building in the world, it took quite a lot of people to help build it (the population of a small city in the U.S to be exact). There were over 12,000 people working on the Burj Khalifa every day. How do I know that it took the population of a small city in the U.S ? Because over 80% of small towns in the U.S have a population of 10,000 people or under. So yes, it literally took the population of a small city in the U.S to build Burj Khalifa.

Top 10
Weird and Crazy Facts

4. Burj Khalifa





The 9th World Construction Symposium

Reshaping construction: Strategic, Structural & Cultural Transformations towards the 'Next Normal'



8th - 10th July
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(CIOB) SRI LANKA**



**DEPARTMENT OF BUILDING ECONOMICS
UNIVERSITY OF MORATUWA**

Since 2012, each year the World Construction Symposium has been bringing together academics, researchers, industry practitioners and students to Colombo from all over the world to share their knowledge, experience and research findings in the area of sustainable built environment through a wide range of activities such as Keynote address, Technical Sessions, Investor Forums, Industry presentations and Panel Discussions.

The Symposium is the premier Construction related conference in Sri Lanka and is looked forward to by the Sri Lankan academics and industry practitioners. The Symposium will be promoted extensively nationally and internationally through government, private sector and other related authorities and organizations including Sri Lankan missions abroad, foreign missions in Sri Lanka, related government agencies, Chambers of Commerce and Industry Associations. In addition, our International Partners, Sponsors and Supporters will also promote the Conference through their own networks.

Past Events

Symposium	Theme	Date	Venue
1 st World Construction Symposium	"Global Challenges In Construction Industry"	28 – 30, June 2012	Cinnamon Grand Hotel, Colombo
2 nd World Construction Symposium	"Socio-Economic Sustainability in Construction: Practice, Policy & Research"	14 – 16, June 2013	Cinnamon Lakeside Hotel, Colombo.
3 rd World Construction Symposium	"Sustainability & Development in Built Environment: The Way Forward"	20 – 22, June 2014	Galadari Hotel, Colombo
4 th World Construction Symposium	"Sustainable Development in the Built Environment: Green Growth & Innovative Directions"	12 - 14, June 2015	Galadari Hotel, Colombo.
5 th World Construction Symposium	"Greening Environment , Eco Innovations & Entrepreneurship"	29 - 31' July 2016	Galadari Hotel, Colombo.
6 th World Construction Symposium	"What's New and What's Next in the Built Environment Sustainability Agenda"	30 June – 01 July, 2017	Galadari Hotel, Colombo.
7 th World Construction Symposium	"Built Asset Sustainability: Rethinking Design, Construction and Operations"	29 June - 01 July, 2018	Galadari Hotel, Colombo.
8 th World Construction Symposium	"Towards a Smart, Sustainable and resilient built environment"	8 -9 Nov. 2019	Galadari Hotel, Colombo

Ceylon Institute of Builders



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Common Errors

made in construction industry and suggested solutions for them

A research article by : Shanika Gamage



The greatest mistake is to imagine that we never error – *Thomas Carlyle* –



It would be unrealistic to expect a construction site to be without errors throughout a project, however, a competent Main Contractor understands that taking precautions to minimize these errors/ risks will reduce the likelihood of delays and ultimately ensure a project is as profitable as possible. Outlined in this article are some of the most common main contractor errors and how they can be avoided

Error/issue:

Construction projects are usually unique every time and involve a vast number of individuals from different disciplines working together to produce the final product. Understandably these individuals frequently will not have worked together previously, and this often leads to communication breakdowns. Effective communication between all parties lacks, this leads to inefficiencies in a multitude of ways. Working on different platforms/software and different geographical locations fuels the problem.

How to manage/ avoid:

Subsequently more Main Contractors are opting to manage their projects using cloud-based technology, a platform that all components of the wider team (Architects, Sub-contractors, and clients) can access despite location. In turn, improving collaboration through greater visibility and real-time updates. Surprisingly, we have seen a 15-20% increase in uptake of cloud-based storage within the construction industry in recent years.

Error/issue:

Main contractors are known for their rapid growth reporting increased workloads year on year, subsequently, there are a few knock-on effects.

Failing to adapt their processes to suit and adapting to effective technology in the change process is common, with so much on their plate this becomes a reactive task rather than a proactive one. Arguably it is common sense if a business is doubling in size and continues to execute its processes by the same means it always has, there will be a huge increase in pressure on the process and this is not going to be the most effective method.

How to manage/ avoid:

In order for these businesses to grow at such an alarming speed they require systems in place that can aid this process



and many will find by having them in position earlier it will aid the growth of the organization. Technology doesn't have to be over-complex, but it is vital to have a CDE (common data environment) to support everyday processes. Having technology in place demonstrates a proactive attitude to the future of construction and is seen as an added bonus by potential clients, this will set Main Contractors apart from the competition, enabling them to win tenders they potentially wouldn't have previously.

Error/issue:

Inadequate planning, failing to adhere to a project schedule and missing regular deadlines, can result in failure to reach completion dates and perhaps the biggest issue being

the large cost implications. Even in circumstances where planning is carefully considered as a project commences, unexpected events are not always sufficiently considered. Additionally, to the schedule, the progress of the schedule must be regularly monitored/updated and shared effectively between the wider team.

How to manage/ avoid:

Having the correct software in place allows you to plan and notice problems before they arrive, offering real time project updates. Ideally a cloud-based solution, this will allow the program to be shared with the wider team and ensure everyone understands what is trying to be achieved.

Utilizing an employee agent who has already completed the vetting process for you can save significant amounts of time and labor is ready to go.

Error/issue:

Failing to manage costs adequately and poor estimating during a bid. Likewise, maintaining communication with project managers as the project progresses to ensure cost implications due to program changes are also captured. Overestimates will lead to bids not being won from the outset, whereas underestimates will prompt surprise costs during the project.

How to manage/ avoid:

Moving away from manual, paper-based



Error/issue:

Failing to recruit the most appropriately skilled individuals for the job, is a rapidly growing issue in the industry. Demand for skilled workers is rising and there are insufficiently skilled workers to fill this requirement. The benefits of a career in construction are no longer being highlighted, therefore millennials are no longer moving into the industry when they finish school.

How to manage/ avoid:

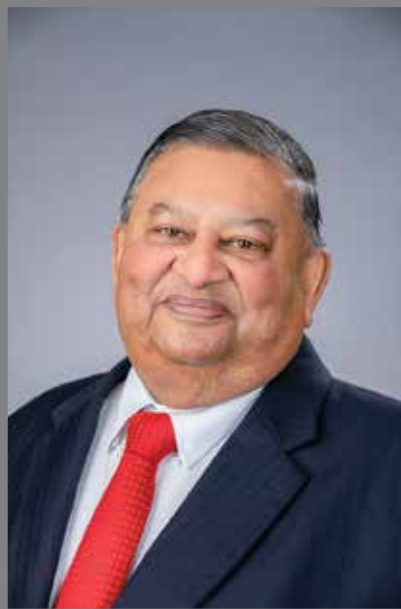
Thoroughly vetting employees in the first instance is vital to achieving the widest skills set and minimizing staff turnover where possible, by ensuring company morale remains high. Expanding on point one, good communication with all members of staff will assist in this instance.

estimating and utilizing technology to track and review costs is necessary to estimate accurately and identify recurring cost patterns. This will also ensure that each time a new project is estimated it should become more accurate. Having the ability to estimate effectively will enable bids to be won and projects to stay on budget, avoiding any surprises.

Project management software is a great way to assist the main contractor, aiding everyone to work collaboratively on one platform, enhancing effective communication, improving efficiencies for everyday processes, and reducing the risk of these errors occurring in the future. It is no surprise that project management software is, therefore, leading the way as one of the most implemented pieces of software alongside accountancy packages.

In Conversations with Manilal Fernando the enigma behind Hasthi Cement

By Shanika Gamage



Yes, lawyers do head multimillion-dollar companies and this lawyer does it with a vision and a panache. This is in conversation with Manilal Fernando, the enigma behind Hasthi Cement. On a rainy Wednesday morning I went to meet this charismatic personality at his office in Flower Terrace. Even though he keeps humbly suggesting that he is not a titan, when it comes to the cement industry in Sri Lanka, after in conversation with him, I beg to differ. It was never his intention to become a renowned businessman, or start his own cement brand, all this was an accident, he says, but after seen his journey and achievements, I felt, was it an accident? Wasn't it meant to be? Read ahead to find out about this lawyer turned, businessman.

Manilal Fernando is a humble soul who values his roots. He is an Attorney-at-law by profession who hails from a family of lawyers. In 1996, he undertook some assignments which directed him towards Holder-Bank. Which eventually resulted in him being selected as the Chairman of Holcim. His professional way of handling legal matters and charismatic personality must have been contributing factors to this decision. From 1996 to the year 2013, he made Holcim one of the giants in cement industry through his logical way of approaching tasks as a lawyer. He brought Holcim from 250000 tons a month capacity to 2.2 Million tons a year capacity.

In 2016 he came up with his own cement brand "Saviru", which was a good quality

cement from India. Later he parted ways with his partner.

His take on the market is as below, he said, and I quote, “Even with the giants in the cement industry, all their collective capacity comes up to a maximum of 70% only. The growth of a country is always determined by its growth of the construction industry. Unfortunately, at the present juncture, due to the restrictions of the dollar, several limitations have been put on the cement industry. In my opinion its misconception, the value addition formula, which is adopted by the CAA, consumer affairs authority, and the state is little old, its about twenty years old, today environmental conditions as you would see in newspapers, is taking a different cause, that also must be taken in to this value addition formula, in which case according to me, if a company has invested for an integrated plant that is a definite value addition to the nation. Importation of raw material & grinding is similar as importing the end product, as for the production process local scarce resources such as electricity is utilized.”

He believes that the customer should be in mind of all when taking any kind of action. The availability of more cement brands means more choices to the customer. He said, and I quote, “Having no choice and having it blocked is not the proper way to prosperity. Today we are in a global market and people want to have their own choice, If a person wants to have Italian marble and he has earned his money to bring it and if the government is charging a high duty and he is ready to pay, he shouldn't be deprived of it because we are worried about some dollars are going out.”

With his intense experience about the industry, he felt he needs to come with a different product to the market. He came up with a cement that is the highest strength in the market. It is much more environmentally friendly. He said and I quote “There is niche in the market and always room in the market. The market grows, every year 300K to 350K tons requirement gets added. I predict 8.5-million-ton market requirement by 2023 if government policies get accepted. There should be more players in the market.”

The current government is supported strongly by Mr. Manilal, he requests them to have their fundamentals right, at the moment they are still struggling, they have too many advisors, he said and I quote, “I believe in the current government and I know they will get their fundamentals right. When you take certain decisions, you become unpopular. We have only one limestone reserve in the country, which is occupied by the Puttalam Cement, Insee. They do about 1.2million tons every year, in the last 20 years, they have not initialized developments to increase the conversion capacity from limestone to cement. The msg I want to give to the government is that, let healthy competition ensure that customer gets the best quality product and increase the quality of construction industry. That is the theme of my message”

Mr. Manilal had a great message to up and coming young generation “Success of an engineer is working and getting experience, unfortunately the apprentice programs, has got reduced, because companies are not investing in training, my advice is where ever they can get training get trained, do not only look at the employment benefits, whatever knowledge you get is never lost. And for construction companies, I would like to humbly request to make good training programs for the young blood. I want to wish them all the best and luck.”

“I am a person who is proud of my roots. Anybody can achieve everything in Sri Lanka provided that you have a better knowledge of English. The only difference me and rest was that I had a better knowledge of English. Not knowing English is a little bit of drawback in this country.”

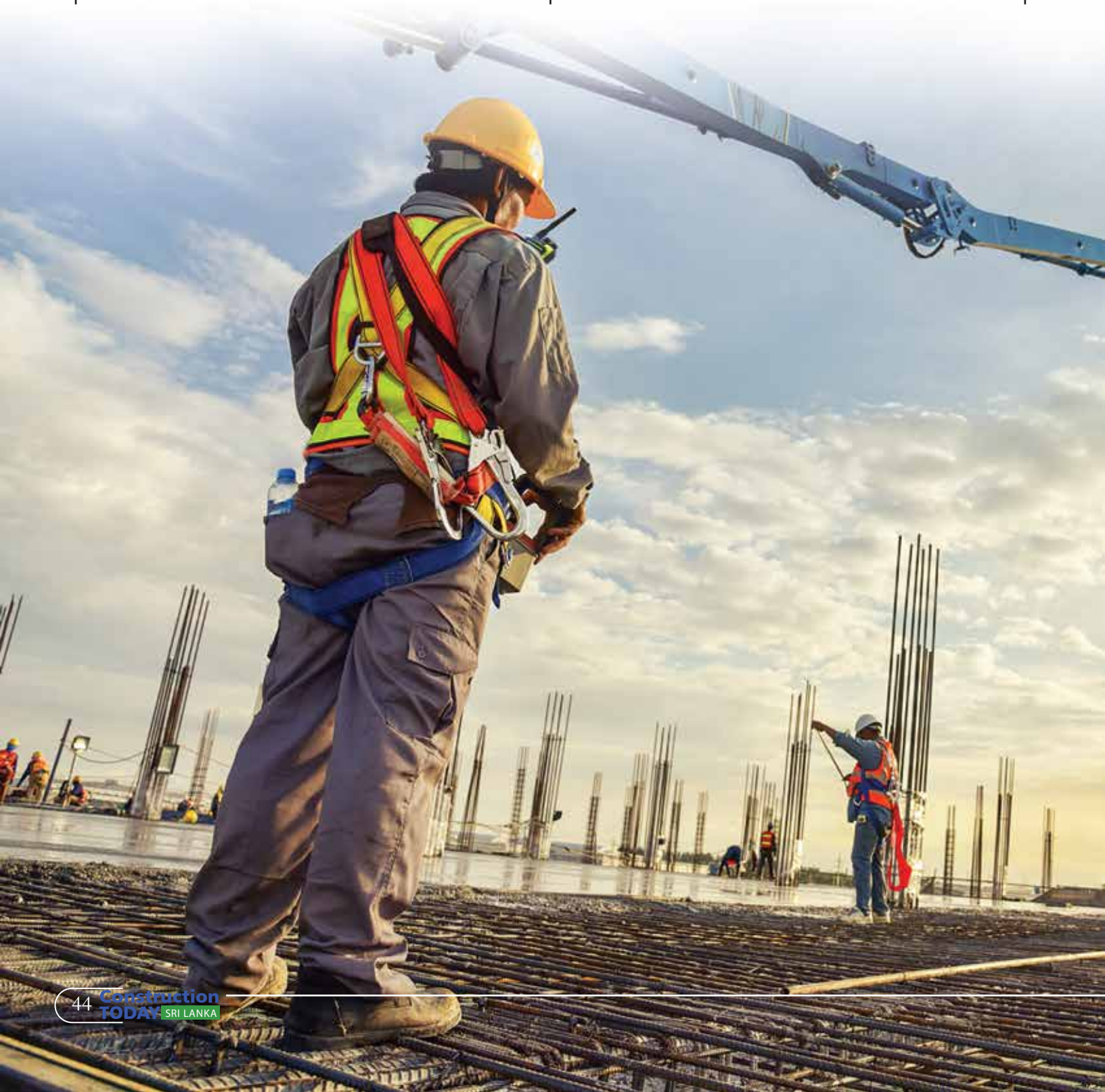
Further this enigma, shared that he has Two sons, eldest is an orthopedic surgeon who is married to a doctor and has two children, second son is an accountant who is again married to an accountant and has one child. He is extremely proud of his children and their achievements, he further expressed that our future generation is what we are going to leave behind, and it is our responsibility to leave our mother earth on responsible hands.

1. Utilize existing measures

In almost every industry sector, a physical return to work has been dependent on social distancing measures being put in place. Before workers have set foot on a site, many employers have implemented one-way systems and markers or physical barriers to separate areas of activity. Whilst following a set path around a site helps to ensure that distance is maintained, using digital technologies to create a detailed inspection checklist can ensure that all of the risk or problem areas are covered, and establish if the routes need to be changed to account for them.

2. Schedule out-of-hours visits

Staggering shift patterns is one way that project and site managers have addressed the risks of contact on sites. In a similar way, conducting inspections outside of normal working hours can further reduce these risks. Additionally, it helps to minimize any disruption. This can also be a positive factor where there are confidentiality issues surrounding an inspection. The access control features offered by digital inspections also help in this respect, ensuring that the information gathered during an inspection is only available to those who need to see it.



3. Streamline workflows

Whenever inspections are conducted, it's more important than ever that they are performed quickly and efficiently. There are online applications that allow for workflows to be customized and refined, to make sure that less time is needed to be spent on site. Even with construction slowing down or pausing, regulations have continued to emerge and change – again, the modules available in such applications allow for workflows to be quickly changed to factor these in.

4. Virtualize visits

Wherever possible, it is advisable to keep the number of people physically onsite during an inspection to a minimum. Key to doing so is the ability to collaborate effectively with people back at the office, either in real time or after the on-site inspection has been completed. There are software that allows both approaches – able to work live in real time, or offline in areas of poor connectivity, synching whenever Wi-Fi or 4G coverage is available.

How to bring Social Distancing to inspection?

A research article by : Shanika Gamage

**"Without great solitude,
no serious work is possible." – Pablo Picasso**

Inspections are a fundamental aspect of any construction project. QA and QC inspections are critical to preventing and identifying defects and preventing snagging, whilst Health & Safety inspections are essential in identifying and eliminating risks and hazards. Frequent and detailed inspections contribute significantly to the smooth running of a project.

The changed circumstances of the last few months have altered how inspections are undertaken. Many construction projects were paused because of COVID-19, but with work now resuming, social distancing needs to be factored into QA/QC and health & safety inspections. This presents several challenges to construction professionals – here are a few of the ways that you can overcome them.



ALLOWING PRICE FLUCTUATIONS & WAIVING OFF LIQUIDATED DAMAGES (LD) - REQUEST FOR A POLICY LEVEL DECISION



Dr. Rohan Karunaratne, President and Mr. Ruwan de Silva, Vice President of Ceylon Institute of Builders (CIOB) together has highlighted a serious of issues the industry is facing and looking for the assistance from the government on the current financial predicament encountered by local construction contractors under the present economic climate.

We would like to emphasise the issues and problems continue to be faced by the contractors are aggravated by the outbreak of COVID-19 pandemic and due to other global and local economic factors.

We acknowledge the fact that state sector projects largely contribute to keep the local construction industry alive and continue to provide a constant work flow to the local contractors.

Within this context, we have persistently noted that certain provisions in the standard forms of construction contracts applicable and pertaining to the state sector projects are not in the best interests of the project and its major project stakeholders. This is indeed

not due to the deficiency in the contract or its constituent provisions contained in standard forms, but due to their constant application as a generic practice in these peculiar economic circumstances. We, on behalf of the members of the Ceylon Institute of Builders, together with other industry associations and chambers, have undertaken extensive discussions and sessions with a variety of project participants, including the Consultant Engineers who play a vital role as the “Engineer” in administration of respective contracts. The Consultant Engineers, amongst others, candidly acknowledged and accepted the fact that mechanical application of such provisions is patently prejudicial to the contractors and thereby adversely affecting the overall performance of the contracts. It was equally accepted that the Engineer to the contract does not have the authority to amend the provisions of the contract since the applicable standard forms of contracts expressly forbids in doing so. In other words, unlike private sector projects, extra-contractual considerations are not readily possible to implement in contracts governing state sector projects.

In this respect, we have identified underlying contractual stipulations that affect the contractor’s financial position under state sector projects in general.

(1) Pertaining Contractual Provisions

(a) Price Fluctuations/Adjustments for Changes in Cost [Sub-Clause 13.7]

A sizeable amount of contracts were entered into between the parties (the Contractor and any state agency as the Employer) without operative provision for price fluctuations or in the form of Fixed Price Contracts. Since we are operating in a macroeconomic environment not particularly conducive to business and high inflation regime (due to exchange rate fluctuations), the absence of such a provision permitting the contractors to redress the undesirable financial effects of escalation of cost of construction inputs have become extremely prejudicial to the contractors.

Notwithstanding the fact that the parties entered into contracts with such basis of without fluctuation costs, it would appear that it is grossly unreasonable and unfair to allow the sole burden only upon the contractor. This is since the current unprecedented global and local events are not at all within the reasonable expectation and contemplation of a reasonably experienced contractor. It is also noted that in some instances, certain items subject to high cost escalations are not covered in the CIDA formula qualifying for price adjustment. Addressing of this issue became more critical by reason of consequences of outbreak of COVID -19 pandemic.

(i) Naturally, project delays occurred due to lockdowns and other impacts associated with COVID-19 thereby prolonging and protracting the material procurement schedules. As a result of extension of procurement schedules and delay caused to ordering and purchasing led to price escalations,

(ii) Further cause of project delays triggered by the enforcement and enactment of Quarantine Act and freshly imposed health guidelines under the Act. This legislation change caused severe productivity losses, change in work practices and resource utilization patterns at sites primarily due to measures such as maintain social distance while working, temperature checkups, restraints on common welfare facilities and public transport, poor attendance of labour/staff to sites and offices due to imposition of localized lockdowns and declaration of isolations, etc., In addition, severe labour shortages occurred due to psychological factors such as sustaining fears and panic reactions.

While the contractors are obliged to procure materials/components, labour and other construction inputs pursuant to the respective contracts, the unprecedented price levels (coupled with further complications engendered by import restrictions), the contractors find that their ability in performing these obligations are seriously inhibited as a result.

(b) Waiving off Liquidated Damages [Sub-Clause 8.7]

All contracts, without exception, contain a Liquidated Damages provision. In the absence of Extension of Time, this entitles the Employer to recover such liquidated sums from the contractor in the event the contractor fails to complete the Works by the Time for Completion stated in the contract. In this connection, we notice that the granting of formal extension of time has become a time consuming process predominantly by reason of complex contractual and technical process and internal approval processes of the governmental agencies.

In other circumstances, the contractors are genuinely not entitled to Extension of Time grants and thereby exposed to Liquidate Damages in full or in part depending upon the liability for the delay.

In any event, the contractor’s financial strain in the project and the contracting organisation as a whole would be enormous in the event the Engineer/Employer elects to strictly exercise the right

of recovery of Liquidated Damages. Without denying the right of the Engineer/Employer in doing so, we are concerned over further financial burden placed upon the contractors who are already in dire situation due to other economic misgivings which neither party is responsible.

Again, as described in preceding paragraph, even though other project participants acknowledge and accept the undesirability of strictly applying Liquidated Damages, the Engineers and other officials representing the state sector employer organisations are bound to apply them mechanically as they have no authority to make amendments to the contract.

2) Likely Impact and Consequences of the Current Situation

Whilst above both phenomena, prima facie, places a significant and unwarranted financial strain upon the contractors, we have recognised certain other direct and indirect adverse impacts as well. As part of major industry players of the construction industry, we wish to outline and draw your kind attention to them as below;

- direct effect upon the contractor's cash flow, working capital, repayment capacity of bank loans, liquidity and solvency and thereby the threat to the contracting organisation to operate and continue as a commercially viable going concern in the short run,
- potential bankruptcies or insolvencies in the long run,
- probability of contracting organisations be terminated on the grounds of the contractor's default, since the contractors might fail to perform certain key obligations under the contract due to reasons beyond his responsibility facing the risk of blacklisting the contracting organisations or otherwise attracting adversarial performance conclusions by the industry regulators, bankers, various election / recommendation committees, etc.,
- facing the risk of accumulating undesirable points affecting future pre-qualification processes,
- risk of downgrading of CIDA registration and thereby limiting future capacity of the contracting organizations,
- debilitating of contracting organisation's contribution towards employment generation, investment capacity, training capacity (construction professionals and skilled workmen),
- losing the competitive edge in competing with regional counterparts such as from India, China and Singapore,
- knock-on effects on the performance of industry supply chain (such as material suppliers, manufactures, labour suppliers, plant hirers),
- limiting the capacity of modern and state of art processes, digitalization, automation, engagement in research & development (R & D) and adoption of other innovative and sustainable practices and processes,
- inhibiting the overall development of the industry and thereby affecting the capacity in promoting the industry image to attract newcomers,
- likely delays to on - going and new projects die to financial constraints of the contractors thereby depriving the government by achieving its policy objectives in development projects, particularly in building projects,
- entry discouragement to new entrants who wish to engage as local contractors in the future.

(3) Proposal and Appeal

After careful review of the issue, its causes and consequences, in order to prevent or mitigate their detrimental effects, we wish to furnish our proposal and appeal as below;

Consider policy level decision in,

- Consider determination, certification and payment of price fluctuations in accordance with CIDA stipulations for contracts where no price fluctuation applies,
- allow a review and adjustment of existing fluctuation clauses where significantly cost escalated items (due to exchange rate fluctuations) are stated in the contract as "non-adjustable items" in the CIDA formulae, waiving liquidated damages imposed on state contracts for last three years, in whole or in substantial part,
- expediting the process of granting and approval of Extension of Time in due consultation with Consultant Engineers and internal approval decision makers.



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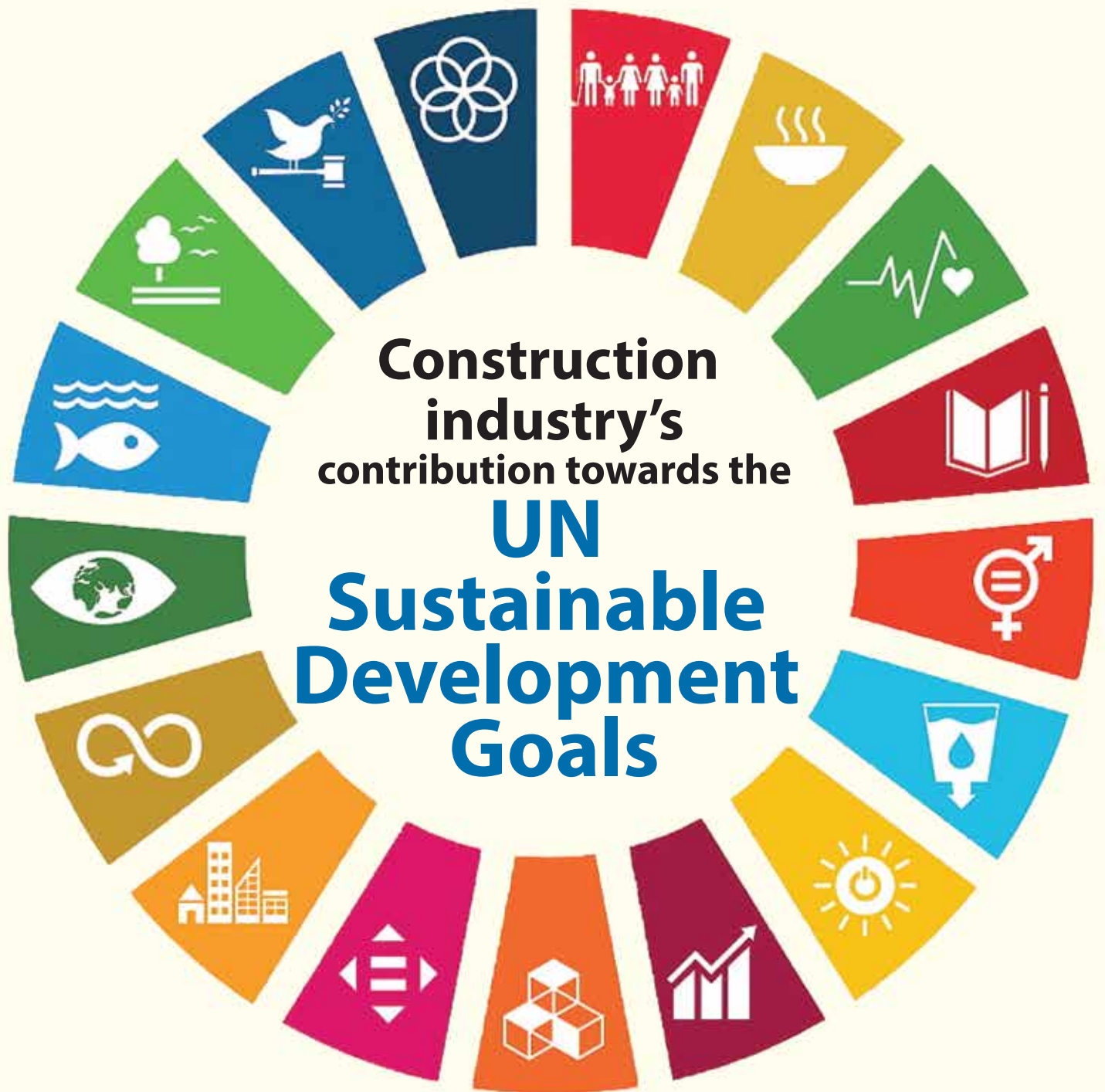
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**Construction
industry's
contribution towards the
UN
Sustainable
Development
Goals**



Dr Ashan Senel Asmone is a building professional and a researcher in construction and facilities management; with expertise in property development, building maintainability, and construction safety. Dr Ashan graduated from the University of Moratuwa with a first class in B.Sc. (Hons.) Facilities Management and from the University of Colombo with a Master in Environmental Management. He completed his PhD in building sciences from the National University of Singapore, before joining the University of Moratuwa as a senior lecturer.

With the aim of eliminating discrimination, inequality, and poverty as well as overcome climate change by 2030, the 193 member states of the United Nations (UN) formulated the Sustainable Development Goals (SDGs) on September 25, 2015. Consequently, the 17 Sustainable Development Goals (SDGs) enshrined in the 2030 Agenda for Sustainable Development adopted at the United Nations by the 193 Member States represent a new global development compact (Kumar, Hammill, Raihan, & Panda, 2016). Encompassing three core dimensions of economic, social and environmental development, the Agenda has become the centre of a renewed development framework for countries of the world, including South Asia, to meet the changing development priorities and development gaps that previous strategies have been unable to close (Ahmed, Abbas, & Ahmed, 2013). Several environmental, economic and social development concerns, such as health and well-being, poverty, hunger, quality education, gender equality, climate action, water, sanitation, energy and environment and peace and social justice have been covered by the UN 2030 Agenda (McArthur & Rasmussen, 2018). The research related to SDGs significantly appeared in various disciplines in the academic domain.

The 17 SDGs have been presented as separate goals, but they are interrelated to each other systematically and they can affect each other positively or negatively (Harris, Riley, Dawson, Friel, & Lawson, 2018; Russell, Lee, & Clift, 2018). The SDGs have become a challenge for all countries as the achievement of these goals and targets requires the establishment of an advanced and determined system at a country level, thus it will increase the demand for technology, innovation and resources to build such system (Bebbington & Unerman, 2015). However, governments and their related bodies have the major responsibility to initiate rules and regulations and also to follow-up and review the implementation of these goals at local, regional, national and global levels (Yin, Li, & Xing, 2019). The various goals and targets will be associated with a different degree of challenge for different countries depending on the existing development condition, for instance, the country's economic and urbanization growth are determined its ability to achieve SDGs and to move towards sustainability (Osborn, Cutter, & Ullah, 2015).

South Asia's investment in growth, infrastructure, inclusion and urbanization will act as the engine that drives sustainable development (Kumar, Hammill, Raihan, & Panda, 2016). Construction industry contributes significantly to most economies in terms of GDP and employment. The construction industry critically affects the three elements of social development: social progress, economic growth, and successful environmental protection (Sev, 2009). However, on the other side construction activities have several negative impacts on the society and planet itself these include: carbon emissions; pollution (noise; air; water quality); and waste generation. There is an increased pressure on construction companies to broaden the accountability of companies beyond economic performance, for shareholders, to sustainability performance for all stakeholders (Pagell & Gobeli, 2009). Consequently, sustainability has become an important agenda to strategic decision making related to construction industry.

Sustainability is an overarching concept that affects, and can be affected by, every aspect of infrastructure development (Sev, 2009). The construction industry, which is important to quality of life in terms of housing, workspace, utilities and transport infrastructure, is of high economic significance and has serious environmental and social consequences (Burgan & Sansom, 2009). On the other hand, the expected growth of urbanization and large cities in the coming decades will be associated with significant production of raw materials and consumption of natural resources and economic movements (Ribeiro & Gonçalves, 2019). Hence, this can cause serious environmental and social impacts, and indeed, will increase the need for green building materials for constructing new building and infrastructure to accommodate these expansions and to achieve the overall sustainable development.

Until now, there is insufficient information at the national construction industry-level, addressing the information about SDGs and concerns about the sustainability by construction industry. Further, any positive contributions by construction industry towards the UN SDGs and their targets has not been excessively clarified. However, it is not hard to believe that the construction industry of a country, especially in a developing country such as Sri Lanka, has considerable contributions to be made towards attaining the

UN SDG targets. Therefore, the Sri Lankan construction industry needs to further examine how it can positively contribute to achieving the SDG targets regarding the implementation of 2030 agenda. This introspection would require taking a long and a hard look at the practices of the industry, as well as the policies and regulations governing it. Questions such as how can our construction industry come together in contributing towards the sustainable development goals (SDGs) to make it a reality? and what are the alternative options to achieve long-lasting sustainability in our built environment? should be raised and solutions must be sought after; with potential

reforms both at the policy levels, as well as at the site levels. Current solutions at hand in making our construction industry more sustainable, such as the certification of green buildings and sustainable construction materials; and acknowledging and celebrating sustainable developers and contractors, plays a significant role in supplementing these efforts. As pointed out earlier, there is a lack of information and insight on this substantial topic. But one thing is clear, that the time is now to search for these solutions to stay on-course for achieving these goals by 2030.

**Menoli Kaushalya and
Dr Ashan Senel Asmone**

The 17 Sustainable Development Goals (SDGs):



GOAL 1: No Poverty

GOAL 2: Zero Hunger

GOAL 3: Good Health and Well-being

GOAL 4: Quality Education

GOAL 5: Gender Equality

GOAL 6: Clean Water and Sanitation

GOAL 7: Affordable and Clean Energy

GOAL 8: Decent Work and Economic Growth

GOAL 9: Industry, Innovation and Infrastructure

GOAL 10: Reduced Inequality

GOAL 11: Sustainable Cities and Communities

GOAL 12: Responsible Consumption and Production

GOAL 13: Climate Action

GOAL 14: Life Below Water

GOAL 15: Life on Land

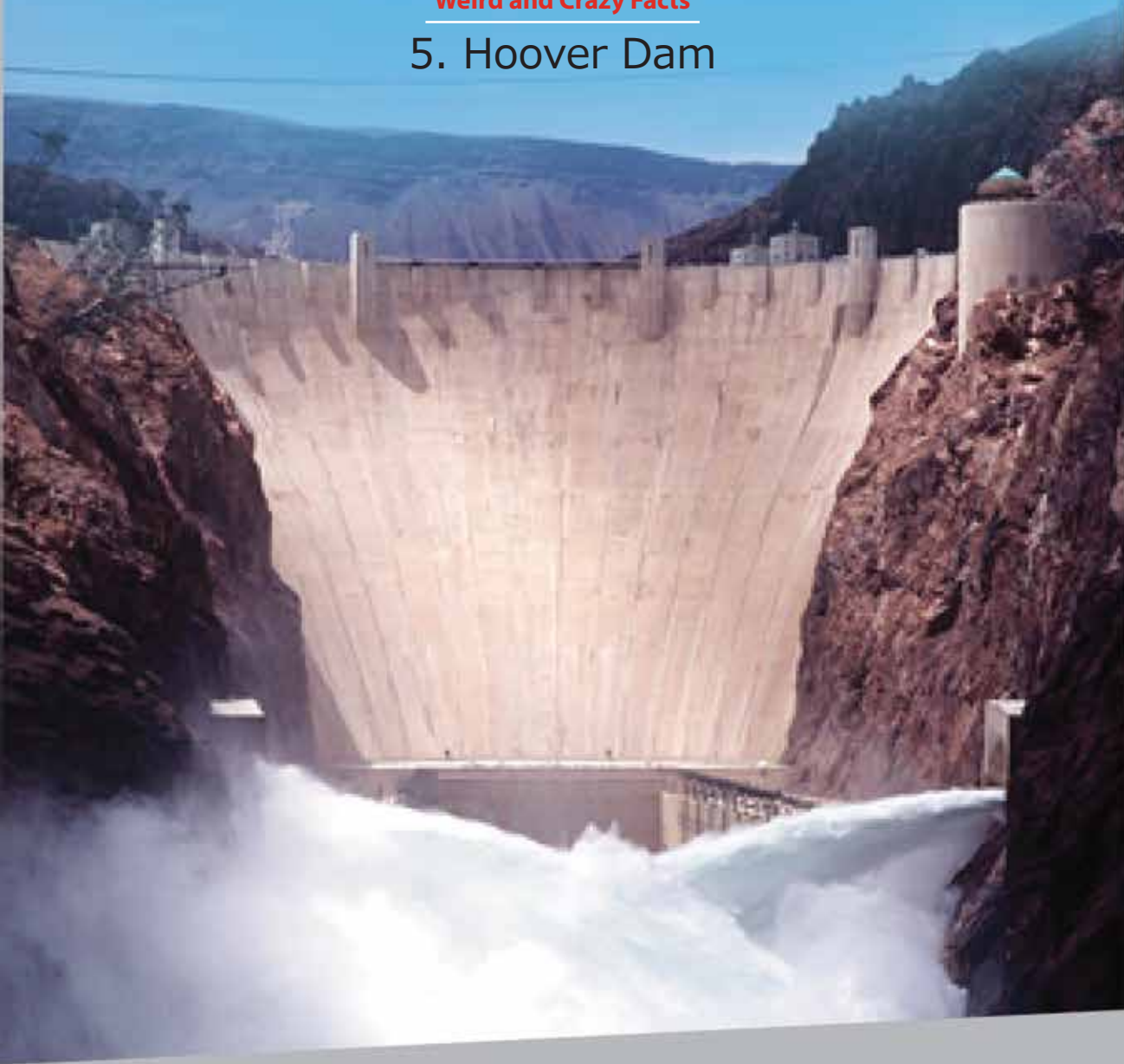
GOAL 16: Peace and Justice Strong Institutions

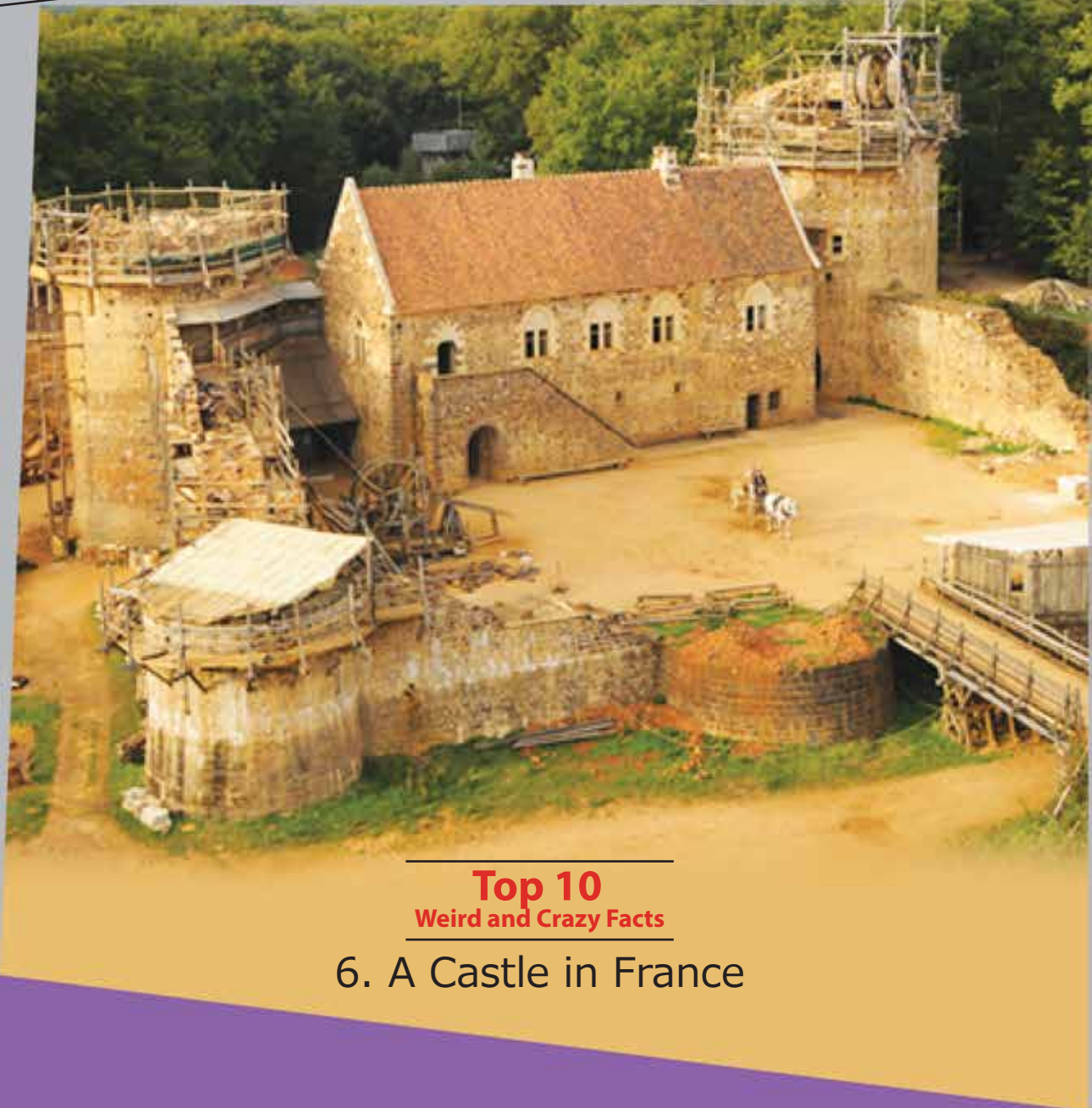
GOAL 17: Partnerships to achieve the Goal

Did you know that Hoover Dam could take you from California to New York? I bet you didn't. Hoover dam is a beautiful dam that could literally take you from California to New York (2,912.6 miles). You're probably wondering how the hell a dam could take you from California to New York, so here's your answer: it required 3,250,000 cubic yards of concrete to build Hoover Dam, which would be enough to build a 3000-mile-long two-lane highway between New York and San Francisco. Don't believe me? Look it up.

Top 10
Weird and Crazy Facts

5. Hoover Dam





Top 10
Weird and Crazy Facts

6. A Castle in France

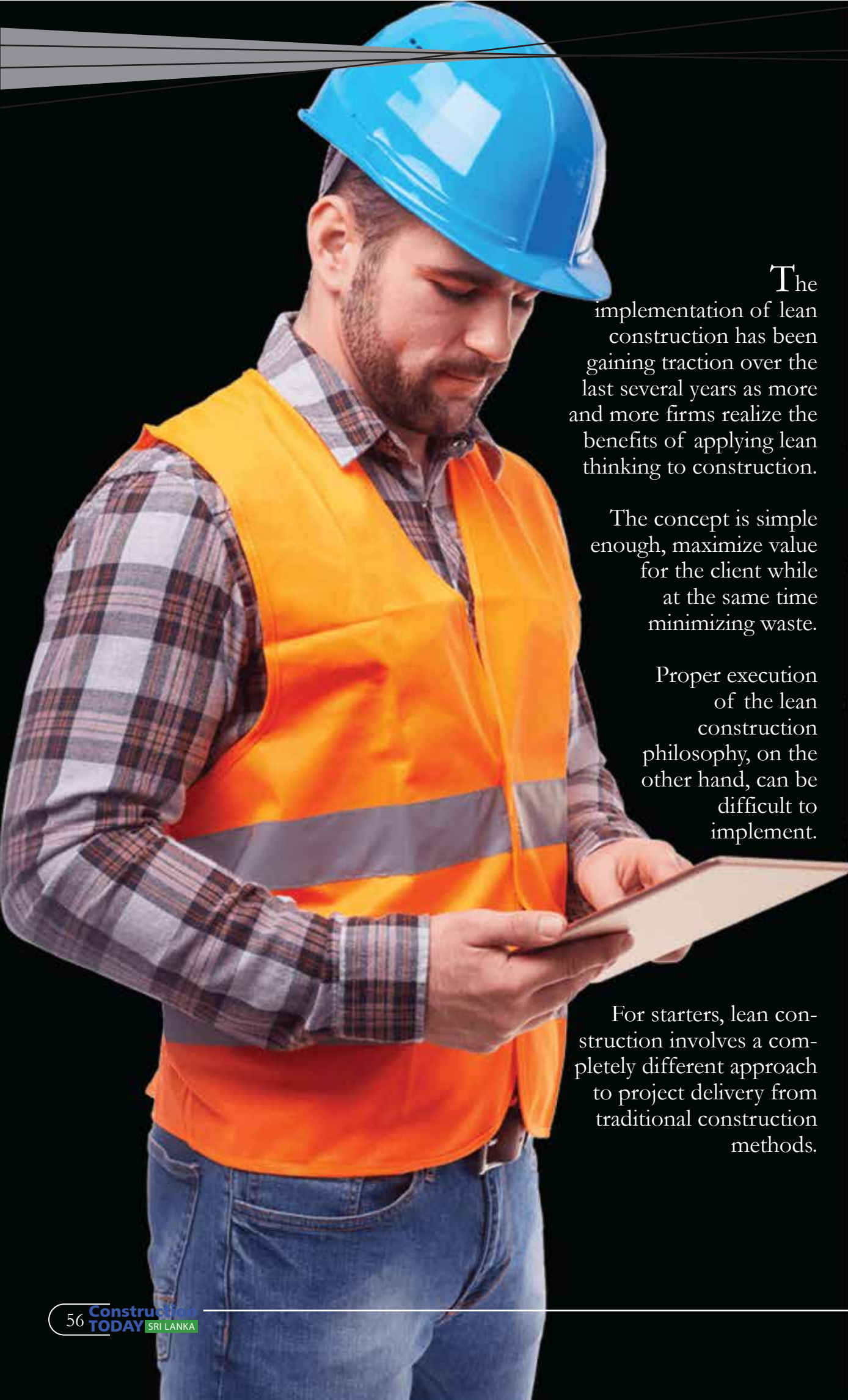
In 1997, a group of enthusiasts began to build a castle in France, using only materials, tools and techniques that were available in the 13th century (800 years ago) and the project has been scheduled to finish sometime in 2021.

In 1983, hundreds of workers broke the world record of building a 3-bedroom house in just 3 days. It was soon sold to a family – but they didn't tell the family about the home's origin. The home became an instant nightmare, the family began to find uneven slabs, burst pipes, flawed roof, mismatched paint, buckled walls, crooked doors, faulty sewer – you name it, they probably found it. You would've thought that the family looked at the house before buying it... apparently not.

Top 10
Weird and Crazy Facts

7. Instant Nightmare





The implementation of lean construction has been gaining traction over the last several years as more and more firms realize the benefits of applying lean thinking to construction.

The concept is simple enough, maximize value for the client while at the same time minimizing waste.

Proper execution of the lean construction philosophy, on the other hand, can be difficult to implement.

For starters, lean construction involves a completely different approach to project delivery from traditional construction methods.

Breaking Down the Principles of **Lean Construction**

By: Kendall Jones



Lean construction is based on the lean manufacturing popularized by the Toyota Production System developed by Taiichi Ohno after World War II. One of the difficulties in applying lean thinking to construction is that unlike manufacturing, construction doesn't always take place in a controlled environment, which can lead to greater variations making predictable and reliable workflows difficult to achieve.

One of the other hurdles to lean construction is that there isn't one set method or process to achieve lean. There are a number of tools, methods, and systems that have been developed in an attempt to translate lean thinking to construction.

Many of these can be used independently or jointly to implement lean practice in construction projects. You've got everything from the Last Planner System, Building Information Modeling, Integrated Project Delivery, Kaizen Events and the 5s process. These are just a few of the tools and systems used in applying lean principles to construction.

Cutting costs, reducing construction times, increasing productivity, and efficiently and effectively managing projects can all be achieved through successful implementation of lean principles. These principles should drive and guide you to discovering and developing the tools and methods to achieving the goals

of lean construction and taking a more holistic approach to project delivery.

Identify Value from the Client's Point of View

What your client truly values in a construction project typically goes beyond delivering what's laid out in the plans and specs. It's more than just the quality of your work or completing a project on time and within budget. This requires a customer-focused approach that can best be achieved by building a relationship with the client. In lean construction, this should include all stakeholders: owner, architect, engineers, general contractor, subcontractors, and suppliers.

Eliminating Waste

Lean construction is accomplished by cutting out waste. The eight major types of waste in construction are easy to remember because they result in **DOWNTIME**.

Defects

This is anything not done correctly the first time which results in rework. This wastes time in having to make the repairs and materials needed to correct the work.

Overproduction

In construction, this type of waste occurs when a task is completed faster than scheduled or before the next task in the sequence is ready to start.

Waiting

This is wasted time where workers are stuck waiting for materials to be delivered or for preceding work to be completed. This disrupts the workflow and results in workers waiting for work.

Not Utilizing Talent

You wouldn't hire an electrician to fill a construction laborer position. It would be a complete waste of their talents, skills, and knowledge.

Transport

This can be the transportation of equipment, materials, and workers to a jobsite before they are needed or it can refer to the transmission of information with no added value.

Inventory

In lean construction, you want to move toward "just in time" inventory as opposed to "just in case" inventory.

Motion

This is any unnecessary movement that can be eliminated, such as having to make multiple trips across the jobsite to get more tools or materials.

Excess Processing

Excess processing is typically generated when having to deal with too many instances of other waste such as defects or inventory. Double-checking or adding extra processes to try and eliminate other areas of waste will involuntarily lead to more waste from over processing.

Achieving Flow of Work Processes

The goal in lean construction is to achieve a continuous workflow that is reliable and predictable. Each stage of production is done in sequence. For example, you wouldn't start hanging drywall in a room until all of the electrical and plumbing was roughed in. In order to achieve flow all parties have to communicate and work together to avoid interruptions.

You want to avoid workers waiting for work or vice versa. Dividing a project up into separate production zones can help contractors ensure they have the capacity to finish each task on schedule. If one stage of production gets behind or ahead of schedule, it's important to communicate and make adjustments to avoid the workers waiting for work scenario.

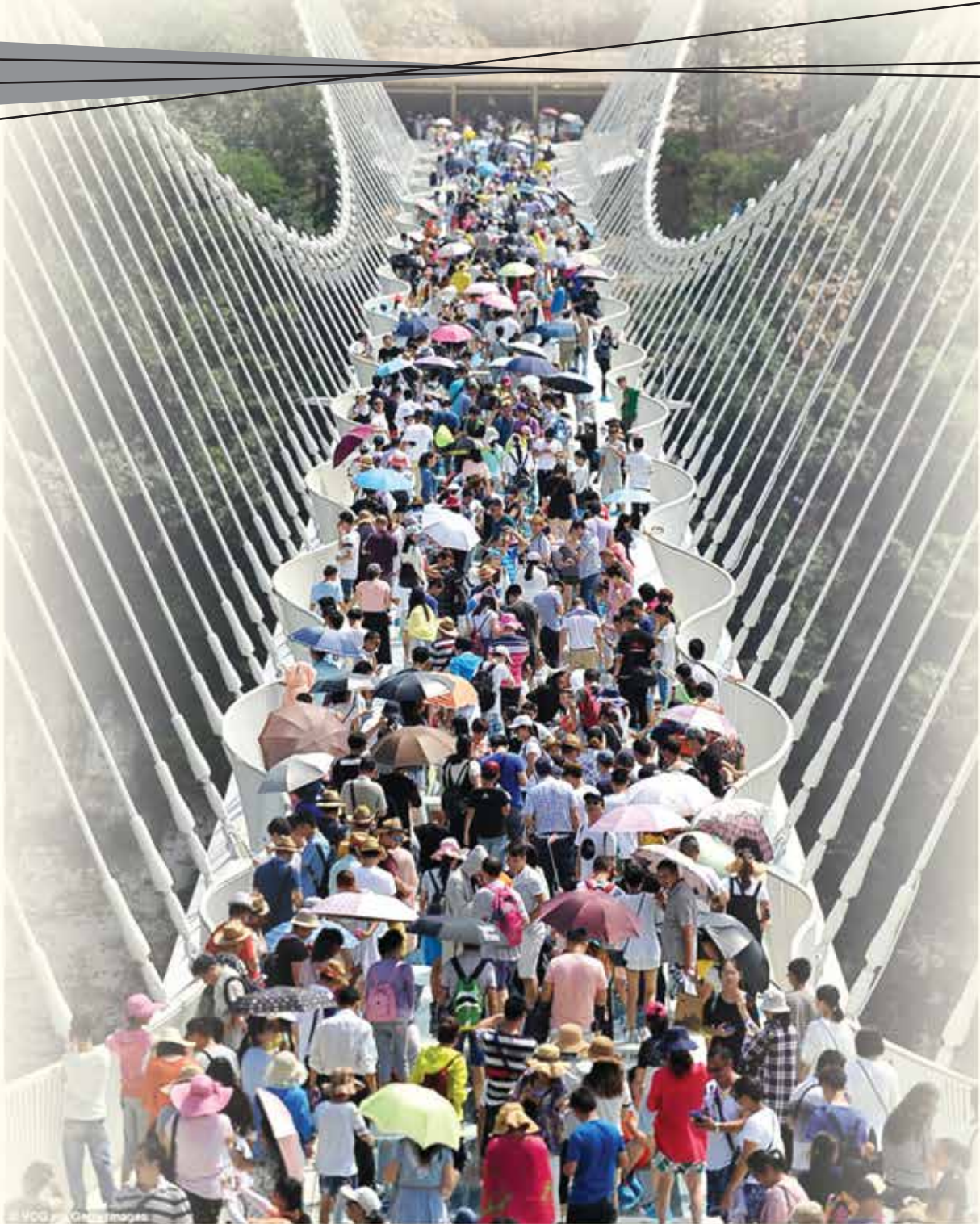
Using Pull Planning and Scheduling

When using pull planning or scheduling the work is released based on downstream demand in order to create reliable workflows as work is done sequentially and the completion of one task releases work on the next task. This requires starting from a specific milestone or target completion date and working backward to schedule work when it can be performed.

In lean construction pull planning is done by those performing the work, typically the subcontractors, through communication and collaboration with each other to dictate the schedule of tasks. This is because they are best suited for determining their capacity for performing a given task. They can work with the next subcontractor, or customer, downstream to coordinate schedules and handoffs.

Perfecting the Processes through Continuous Improvement

Continually making improvements to further eliminate waste and add value is critical in order to perfect your lean construction processes. Not only should adjustments be made throughout the individual project to identify and reduce waste but taking what you learn from project to project will allow you to continually innovate new ways to add value and eliminate waste.



**World's
longest and highest
GLASS
BRIDGE
in China's
'Avatar' mountain**

- **The bridge located in Zhangjiajie park, central China's Hunan province, is a definite tourists attraction.**
- **Only 8,000 people are allowed to visit each day and ahead of its opening many visitors queued overnight**
- **Developers behind the bridge had previously asked people to smash its glass to demonstrate its safety**



If you're addicted to heights, China's glass-bottomed bridge is a thrilling spot that's not to be missed.

The structure, which was officially unveiled to the public crosses two peaks in the mountains of Zhangjiajie. It is said to be the world's highest and longest glass-bottomed bridge.

Thousands of tourists queued up for the grand opening of the bridge and as the pictures show, the attraction became so busy that you can barely see the sheer drop below.

The bridge spans approximately 430 metres (1,400 feet) across two peaks and is suspended 300 metres (984ft) above a sheer drop.

It crosses a canyon that divides two mountain cliffs in Zhangjiajie Park, in China's central Hunan province. The structure is six metres (19ft8in) wide and made of some 99 panels of clear glass.

It can carry up to 800 people at the same time, an official in Zhangjiajie told China's state news agency Xinhua. Tourists can walk across the bridge, designed by Israeli architect Haim Dotan, and the more adventurous will be able to bungee jump or ride a zip line.



They organised a string of media events, including one where people were encouraged to try and smash the bridge's glass panels with a sledge hammer, and another where they drove a car across it.

Tourists are to book their tickets a day in advance and only 8,000 people each day are allowed to cross the bridge and only 600 at any one time.

Cameras and selfie sticks are banned, and people wearing stilettos will not be allowed to walk on the bridge

Local authorities have said that one of the summits in Zhangjiajie Park- inspired the floating mountain which appears in the American blockbuster Avatar.

Source by QIN XIE FOR MAILONLINE



THE COMPONENTS OF A CIRCULAR ECONOMY

Sustainable development is the idea that human societies must live and meet their needs without compromising the ability of future generations to meet their own needs.

It requires disruptive changes in the way our societies and businesses are organized. The circular economy (CE) model offers a new chance of innovation and integration between natural ecosystems, businesses, our daily lives, and waste management. Find out below the definition, meaning, principles, advantages, and barriers to a circular economy model.

Simple definition of the Circular Economy

In the linear economy, raw natural resources are taken, transformed into products and get disposed of. On the opposite, a circular economy model aims to close the gap between the production and the natural ecosystems' cycles – on which humans ultimately depend upon.

This means, on one hand, eliminating waste – composting biodegradable waste or, if it's a transformed and non-biodegradable waste, reusing, remanufacturing and finally recycling it. On the other hand, it also means cutting off the use of chemical substances (a way to help regenerate natural systems) and betting on renewable energy.

The World Economic Forum's definition of the Circular Economy

“A circular economy is an industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse and return to the biosphere, and aims for the elimination of waste through the superior design of materials, products, systems, and business models.”

Ellen McArthur Foundation's Definition of the Circular Economy

“Looking beyond the current take-make-dispose extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles: design out waste and pollution; keep products and materials in use; regenerate natural systems.”

The Principles of the Circular Economy: Energy and resources are Gold At its core, a circular economy model has the intention of designing out waste. In fact, a circular economy is based on the idea that there is no such thing as waste. In order to achieve this, products are designed to last (good quality materials are used) and optimized for a cycle of disassembly and reuse that will make it easier to handle and transform or renew them.

In the end, these tight product cycles differentiate the circular economy model apart from disposal and recycling, where large amounts of embedded energy and labor are lost. The ultimate goal is to preserve and enhance natural capital by controlling finite stocks and balancing renewable resources flows.

The Principles of the Circular Economy: Following Nature's Cycles and Designs

The circular economy model makes a distinction between technical and biological cycles. Consumption happens only in biological cycles, where biologically-based materials (such as food, linen or cork) are designed to feed back into the system through processes like anaerobic digestion and composting.

These cycles regenerate living systems, such as soil or the oceans, which provide renewable resources

for the economy. By their turn, technical cycles recover and restore products (e.g. washing machines), components (e.g. motherboards), and materials (e.g. limestone) through strategies like reuse, repair, remanufacture or recycling.

Ultimately, one of the purposes of the circular economy is to optimize resource yields by circulating products, components, and the materials in use at the highest utility at all times in both technical and biological cycles.

The Principles of the Circular Economy: All in with Renewable Energies

The last principle of a circular economy has to do with the fact that the energy required to fuel this cycle should be renewable by nature, with the purpose of decreasing resource dependence and increasing systems' resilience. In this sense, this principle is about developing the systems' effectiveness by revealing and designing out negative externalities.

Benefits of the Circular Economy Model

Since the industrial revolution, humankind has been following a linear model of production and consumption. Raw materials have been transformed into goods that are afterward sold, used and turned into waste that has been many times unconsciously discarded and managed.

On the opposite, the circular economy is an industrial model that is regenerative by intention and design and aims to improve resources' performance and fight the volatility that climate change might bring to businesses. It has benefits that are operational as well as strategic and brings together a huge potential for value creation within the economical, business, environmental and societal spheres.

Fewer Greenhouse Gas Emissions – Environmental Benefits of the Circular Economy

One of the goals of the circular economy is to have a positive effect on the planet's ecosystems and to fight the excessive exploitation of natural resources. The circular economy has the potential to reduce greenhouse gas emissions and the use of raw materials, optimize agricultural productivity and decrease the negative externalities brought by the linear model. When it comes to reducing greenhouse gases, a circular economy can be helpful:

- Because it uses renewable energy that in the long run is less polluting than fossil fuels.
- Thanks to reusing and dematerializing, fewer materials and production processes are needed to provide good and functional products.
- Because residues are seen as valuable and they are absorbed as much as possible in order to be reused in the process.
- Since the preferred choices will be energy-efficient and non-toxic materials and manufacturing and recycling processes will be selected.

costs such as the increase of fertilizer use, loss of biodiversity and loss of unique landscapes – a circular economy could prove to be really useful for both the soils and the economy. In reality, a circular economy model has the potential to decrease 80% of the use of artificial fertilizer and therefore contributing to the natural balance of soils. Following the circular economy’s principles, negative externalities such as land use, soil, water and air pollution are better managed, as well as the emission of toxic substances and climate change.



As a matter of fact, a study found out that a circular economy development path could halve carbon dioxide emissions by 2030, relative to 2018 levels.

Healthy and Resilient Soils – Environmental Benefits of the Circular Economy

The principles of the circular economy on the farming system ensure that important nutrients are returned to the soil through anaerobic processes or composting, which softens the exploitation of land and natural ecosystems. In this way, as “waste” is returned to the soil, besides having fewer residues to deal with, the soil gets healthier and more resilient, allowing a greater balance in the ecosystems that surround it. As well, since soil degradation costs an estimated US\$40 billion annually worldwide, and has hidden

Increased Potential for Economic Growth – Economic Benefits of the Circular Economy

It is important to decouple economic growth from resource consumption. The increase in revenues from new circular activities, together with a cheaper production by getting products and materials more functional and easily disassembled and reused, has the power to increase GDP and therefore economic growth, according to a McKinsey report.

More Resources Saved – Economic Benefits of the Circular Economy

When compared with the raw material extraction that’s common on the linear approach, the circular economy model has the potential to lead to a bigger (up to 70%) amount of material savings.

Considering that the total demand for materials will increase due to the growth of the world population and middle classes, a circular economy leads to lower material needs, as it skips landfills and avoids recycling, focusing on making materials' cycles last longer. On the environmental side, it also avoids bigger pollution that extracting new materials would represent.

Employment Growth – Economic Benefits of The Circular Economy

According to the 'world economic forum', the development of a circular economy model, together with a new regulation (including taxation) and organization of the labor markets, can bring greater local employment in entry-level and semi-skilled jobs.

Another study conducted by the Ellen MacArthur Foundation and McKinsey also concluded on the changes in employment growth in case of a shift to a circular economy model. The study says that these new jobs will be created through increases in:

- Recycling and repairing practices, where one could add new designers and mechanical engineers to make lasting and easily disassembled products and materials at the transformation/production stages;
- An increase in new businesses (and niches) due to innovation processes and new business models;
- An increase in consumption and spending by lower prices.

New Profit Opportunities – Benefits of The Circular Economy On Businesses

Lower input costs and in some cases create entirely new profit streams that can be achieved by businesses that move to the circular economy model. In this circular sphere, profit opportunities may come from playing in new markets, cutting costs off with waste and energy reductions and the assurance of continuity of supply.

Volatility Reduction And Safeguarded Supplies – Benefits Of The Circular Economy On Businesses:

Moving towards a circular economy model means reducing the number of raw materials used. Instead, more recycled (or even reusable or easily transformed) inputs that have a higher share of labor costs would be used, leaving companies less dependent on the volatility of the price of raw

materials. This would also protect companies from geopolitical crises and safeguard them regarding their supply chains – whose probably to be destroyed or damaged because of climate change events is increasing every day. In the end, the circular economy model would turn businesses more resilient, or in other words, make them more resistant and prepared to deal with unexpected changes.

The Demand For New Services – Benefits of the Circular Economy on Businesses

A circular economy model has the potential to create demand for new services and new job opportunities such as:

- Collection and reverse logistics companies that support end of life products being reintroduced into the system
- Product marketers and sales platforms that facilitate longer lives or higher utilization of products
- Parts and component remanufacturing and product refurbishment offering specialized knowledge

These new services can be both identified by the top management decision-makers, or as well, in a well-developed green by employees from all levels and departments.

Getting To Know Clients Better – Benefits Of The Circular Economy on Businesses

The circular economy model seems to foster business models where products are rented or leased by customers during different periods of time, depending on the type of products. This gives businesses the chance to learn about their customer's usage patterns and behaviors, as they get to interact more often with them.

Ultimately, this new relationship might just improve customer satisfaction and loyalty, and contribute as well for the development of products and services that suit clients better. In a market where suppliers remain responsible for the product supplied for a longer period, communicating well and understanding the clients' preferences and needs is more important than ever.

Barriers to the implementation of a Circular Economy Model

Implementing a circular economic model would have several benefits for the environment, economy and businesses, as we've discussed

above. Nevertheless, there are some reasons that explain why this model has been growing slowly.

Economic Barriers to a Circular Economy Model

In our current economic system, there are some barriers to the implementation of a circular economy model, such as:

- Social and environmental externalities are not considered in prices, privileging financial market signals instead of people and nature when economic decisions are made;
- Prices of raw materials are fickle and at low prices alternative, good quality secondary resources are not competitive;
- Circular economy business models are harder to develop, as most investors are still working under a linear economy logic and sometimes upfront investments are required;
- The demand for circular products and alternatives is still small,
- There aren't still many qualified professionals with technical or 'information and communication technology' (ICT) knowledge.

Institutional Barriers to a Circular Economy Model

When it comes to implementing and developing the circular economy, many different barriers might need to be overcome, such as:

- The fact that our current economic system is geared towards the demand of the linear economy and aren't yet prepared to deal with circular economy entrepreneurs;
- New business models may be challenging to implement and develop because of laws and regulations that aren't prepared for this kind of innovations;
- Plenty of businesses rely on old and/or strong alliances, making it harder to create new alliances and therefore to close loops;
- Many companies still have goals and appraisal systems that focus on short-term value creation, whereas the circular economy model is a long-term value creation model;
- The GDP index doesn't consider social and environmental externalities, discouraging the creation of value in both these areas;

A Broad Perspective On The Barriers To A Circular Economy Model

The main barriers to moving towards the circular economy model can be divided into financial, structural, operational, attitudinal and technological.

The first barrier has to do with the challenge of measuring the financial benefits of CE and its profitability. The 'structural' barrier that follows has to do with being unclear of gets responsible for CE within companies. By their turn, 'operational' challenges represent the difficulty of dealing and staying in control of processes within the value chain. The fourth barrier, 'attitudinal', has mostly demonstrated the lack of knowledge about sustainability issues and also a big risk aversion – it shows that disruptive changes aren't the best way to develop circular strategies.

The last barrier to a circular has a technological origin and it has to do with the need for changing and re-designing products and production/take-back systems. These needs end up creating concerns about the ability to do this and still being competitive and having quality products.



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DID YOU KNOW

A research article by **Shanika Gamage**

The fact that the construction industry represents 14% of the worldwide GDP is quite unsettling. Undoubtedly it is one most profitable important sector in the world. However, in the last decades, some of the world powers have faced financial crisis, slowing down economic growth, and experiencing setbacks in the development of the industry.

Unprecedented challenges are foreseen in the close future. Eco-friendly materials, management software, efficient heavy machinery and change from fossil fuels are only a handful of currently disruptive areas. Let alone free-trade and globalization, both pushing companies to embrace better practices.

Due to the complexity of the construction industry, it is tricky to follow up trends around the world to identify which would be convenient and more profitable to adopt. And yet, it is the sophistication and interdependence of

branches in the sector that makes it an interesting challenge to undertake.

A bullet-proof way to stay safe in the relatively unstable construction industry is by looking at evidence of behavior in the past years. While some developing countries are beating world powers in green infrastructure, turning them into an ideal place to invest – cities in developed countries are leading the real estate market.

Companies and investors planning to make a move in the future, should be aware of the ups-and-downs in the industry to get an educated guess on the behavior in the coming years. I have gathered information from reports and put together 35 interesting insights about the development, safety, software, work gender, materials, and heavy machinery trends in the sector. I have also mentioned the source of the information too for further reference.

1. Construction rates in Europe have been fluctuating in the past 10 years. Although the financial crisis faced in the past years, the construction industry in 2019 is expected to grow, interest rates will remain low and unemployment will decrease. (Euroconstruct)

2. The UK government committed to boosting the Housing Infrastructure Fund by £500m. Norway is the country in Europe where construction generate more jobs, while Germany is the least. (Europa)

3. The United States Spent \$1.3 trillion in construction only in 2018. (Statista)

4. By 2016, Spain and Italy were the countries in Europe with a greater number of enterprises and employees, while Malta was the least. (Europa)

5. China is the country with more skyscrapers, followed by the United States and Japan. (The Skyscraper Center)

6. Construction wise, Singapore is the fastest growing country in South East Asia region. They are also the country planning to invest more in this industry. On the other hand, Indonesia is lacking good management process (Business Insider)

7. There is a global increase in the use of environmental-friendly techniques in the construction sector. (ILO)

8. Latin American countries spent \$4.31 billion on heavy equipment or construction in 2016. (Allied Market Research)

9. Despite the conflicts with the US, México keeps leading the construction market in Latin America. (Market Watch)

10. Lack of construction labor in the US could lead to an increase in profitability for construction workers. (Business Insider)

11. Ireland is facing a shortage of experienced construction workers to face housing shortages. (The Journal)

12. In 2014, North America had the biggest market for heavy construction machinery. (Statista)

13. IDC forecasts that smart cities will spend \$158 billion in connected infrastructure by 2022. (IDC)

14. Asia and the Pacific Region will account for 42% of global spending in 2018 in smart infrastructure. (IDC)

15. Data and analytics are one of the most predominant trends in the construction industry as they enable companies to become more efficient and reach business goals. (Deloitte)

16. In the US, women only comprise 9.9% of construction workers. More than 86% of these positions are in the office. (Bigrentz)

17. The number of women in the construction industry is expected to double in the US by 2020. (Bigrentz)

18. The UK has the lowest percentage of female engineering professionals in Europe. Only 11% of the engineering workforce are women. (The Guardian)

19. Buildings and construction account for 39% of the total greenhouse emissions worldwide, and 36% of the energy use. Improving the performance of the equipment may cause a significant decrease in greenhouse emissions. (Worldgbc)

20. Only in the US, there were 4,674 fatal accidents in the construction industry. This is approximately 21% of all work deeds. The major cases were falls, struck by object and electrocution. (OSHA)

21. Scaffolding, Hazzard Communication, and Fall Protection are three of the most overlooked standards by construction workers. (OSHA)

22. In a 45-year career, a construction worker has a 75 % chance of experiencing life-threatening and disabling injuring. (safetyandhealth-magazine)

23. 75% of all non-fatal work injuries in the European Union were in the construction sector. (Europa)

24. The US reported around 150,000 accidents on the construction site. (Bureau of Labor Statistics)

25. Forecasts show by 2060 there will be required 167 Gigatons of raw materials for construction purposes. Sand, gravel and crushed rock are led the list of most wanted materials, followed by metals and coal. The extraction and manufacture process, alongside with energy supply (fossil burning) will bring serious environmental consequences. (OECD)

26. China remains by far as the country with more production of cement, with 2370 million metric tons. Followed by India with 290 and the US with 88,5 million metric tons. Turkey is the only country in Europe producing large amounts of cement. (Statista)

27. 69% of crude steel is produced in Asia (1,164,070tons) followed by the European Union and North America. China, Japan, and India are flagship producers. (World-steel)

28. By 2100 and once the population reaches approximately 11,2 billion people, the world will need to build more than 2 billion new homes. (The Conversation)

29. Toronto, Vancouver, and Montreal are the trendiest spots for real estate investment in Canada. In Europe, Dublin, Madrid, Amsterdam, Frankfurt, Helsinki, and Munich are on top of the list. Ho Chi Minh City, Melbourne, Singapore, Sydney, Tokyo, and Osaka are booming the real estate industry in the Asia Pacific. (PWC)

30. China, the US, India, Indonesia, and Japan are predicted to be the countries investing more in construction by 2030. (PBCtoday)

31. Client demands, environmental regulations, and healthier buildings are the top 3 triggers for construction companies to engage with green building activities. On the other hand, the top social reasons to start with these practices are promoting improved occupants' health and well-being, encouraging sustainable business practices, increase worker productivity, creates a sense of community, and supports domestic economy. (World GBC)

32. Australia is the country reported with most green projects, followed by Brazil, Canada, China (Hong Kong), China (Mainland), Colombia and Germany. (World GBC)

33. Technology trends are taking over the construction industry. Managers in the market for software look for future such as project tracking, job costing, project estimating, improved accuracy and process standardization. User-friendliness and functionality are two of the clinchers to make a purchase. (Project Manager)

34. Based on sales, Vinci (France) was the largest construction company in 2017 with 40.25 billion euros in 2017. ACS (Spain), Voyage (France), Skanska (Sweden) and Eiffage followed with 34,9, 32,9, 16,39 and 15,26 billion euro. (Statista)

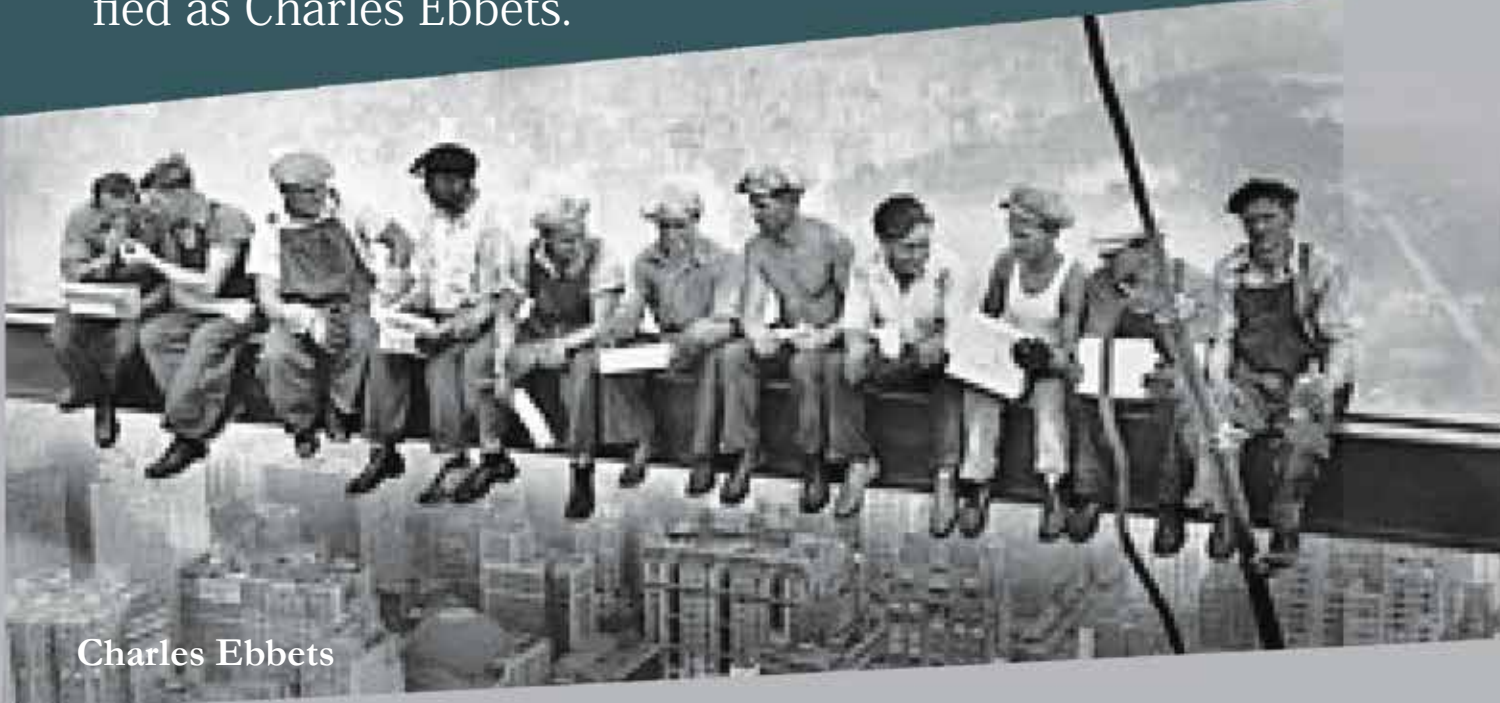
35. In 2018, around 11 million people were employed by the construction industry in the United States. This is around 3 times less than the number of people working in Education and Health Services. (Statista)



Top 10 Weird and Crazy Facts

8. Lunch atop a Skyscraper

The photo of 11 men eating lunch atop of a skyscraper in 1932 became incredibly famous and commercialized – with no Photoshop or editing. The photo was taken on the 69th-floor months before the construction of the skyscraper was completed. It wasn't until 2003 that the person who took the incredibly famous photo was identified as Charles Ebbets.



Charles Ebbets



Top 10
Weird and Crazy Facts

9. Chrysler's Building Spire

In the 1920's in New York, skyscrapers were being built left, right and center. It created a lot of competition within the construction industry and one of the most interesting rivalries was between two men named William Van Allen (Chrysler building) and H. Craig Severance (40 wall street building). Because William Van Allen was so obsessed with winning this competition between his rivalry, he added a 180ft spire to the top of his building to ensure that his building would be taller. Not only did he win the competition, but it gave him bragging rights for the tallest building in the world – or for 11 months... until the Empire State building snatched the crown.

Top 10
Weird and Crazy Facts

10. The Ideal Palace



A French post-man names Ferdinand Cheval spent 33 years of his life picking up and collecting stones whilst he was delivering mail. With the stones he collected throughout the years, he decided to create 'La Palais Ideal' in Hauterives. The building is now considered a piece of 'naïve art' and was made a cultural landmark in 1969.



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China's Liuzhou Forest City

The new city will be connected to Liuzhou with a high speed rail line



World's first forest city is expected to come up in China's Liuzhou region as the Chinese authorities plan to begin its construction next year.

In 2020, China plans to begin the construction of the world's first Forest City in Liuzhou, Guangxi Province, China. The brain behind the plan is an Italian designer, Stefano Boeri, and his firm

its 30,000 residents which will absorb almost 10,000 tons of carbon dioxide and 57 tons of pollutants, and produce approximately 900 tons of life-giving oxygen annually. The forest city will also be self-sufficient and will help to decrease the average air temperature, improve local air quality, create noise barriers, generate habitats, and improve local



The diffusion of vegetation over the building facades intends to improve air quality

who are famous for their vertical forest designs all over the world.

The Liuzhou forest city is planned to house more than 40,000 trees; 1 million plants of more than 100 species, for

biodiversity in the region. The whole city will run on renewable energy especially solar and geothermal, according to its planners.

The Liuzhou authorities want to build about 70

buildings cascading with foliage which will have homes, hospitals, hotels, schools and offices will be built on a 340-acre site.

The forest city is the country's first attempt to control notorious pollution as well as accommodate its rising population. Chinese authorities have to balance both these factors while planning any more cities as it currently has over 160 cities with over a million population and all face deadly smog due to coal power plants or vehicular pollution.

The Liuzhou forest city is a pilot in a series of mini sustainable cities that could become a template for future Chinese cities. The first will be at Liuzhou, a mid-sized Chinese city of about 1.5 million residents in the mountainous southern province of Guangxi, and a second project is planned for Shijiazhuang, an industrial hub in northern China that is consistently among the country's ten most polluted cities.

Boeri reckons Chinese officials have finally come to terms with the need to embrace a new, more sustainable model of urban planning that involves not "huge megalopolises" but settlements of 100,000 people or fewer that were entirely constructed of "green architecture".

"They have created these nightmares – immense metropolitan environments. They have to imagine a new model of the city that is not about extending and expanding but a system of small, green cities."

In fact, China is the world's country with the highest rate of urbanisation, with 14 million inhabitants migrating each year to cities. This is why Boeri plans to use his famous skyscraper design they accommodate more people in a given geographical footprint than low-rise homes and thus spare agricultural land and countryside.

Source : I am Renew Image courtesy: Stefano Boeri Architetti



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