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Port City Colombo wins Global Best Project Award at 8th ENR Annual Awards

Port City Colombo was awarded the Global Best Project by International Engineering and Construction News magazine, Engineering News-Record (ENR) at their 8th Annual Global Best Projects competition. This is the first time that a Sri Lankan project has been awarded and recognised at the highest level in the field of engineering and construction in the recent years. The submission for the award was made by China Harbour Engineering Company Ltd., (CHEC Ltd.) and presented to Colombo Port City Development Project Phase 1.

The award comes as a landmark achievement for Port City Colombo following their win of the Silver Award for Master Planning at the Singapore Landscape Architecture Awards 2017, the Gold Award at the Yuan Ye Urban Design Awards 2018, and an honourable mention at the International Federation of Landscape Architects AAPME Awards 2018 in the category of Analysts and Master Planning. Global Best Projects identifies and honours the project teams behind outstanding design and construction efforts of the year 2020.

This accolade has strengthened this ambitious project's position as a marvel of modern engineering.



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PORT CITY COLOMBO



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SRI LANKA
**CONSTRUCTION
TODAY**

Issue 07 - Nov - Dec 2020

4 -1/2, Bambalapitiya Drive
Colombo 4.

Tel : 011 2508139

Fax : 011 2508139

Email: constructiontodaysl@gmail.com

Web: www.ciob.lk

Board of Advisors

Prof. Chitra Weddikkara

Dr. Rohan Karunaratne

Eng. Saliya Kaluarachchi

Mr. Ruwan De Silva

Prof. Yasangika Sandanayake

Eng. Sagara Gunawardana

Mr. Kalana Alwis

Managing Editor

Chandrapala Liyanage

Writers

Subashini Samaranyake

Shanika Gamage

CIOB Coordination

Malathi Piyasena

Designer

Thilak Dunusinghe

(Professional One)

Printer

Imashi Prakashana

96 A, Wanatha Road,

Gangodawila, Nugegoda.

Publisher

Ceylon Institute of Builders

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Editor's Note

The corona virus (COVID-19) pandemic and the shutdown of areas are causing a severe blow to the economy. To overcome long term adverse effects, the developed countries and the international community can take steps to help speed recovery of the world economy after the worst of the health crisis is over.

In the long-term, the pandemic will leave lasting damage through multiple channels, including lower investment; erosion of physical and human capital due to falling sick, closure of businesses, loss of schooling & jobs and a retreat from global trade and supply linkages.

To boost long-term growth of the economy, short-term response measures will need to be addressed on the health emergency, improving governance and business environments by comprehensive policies with additional investment in education and on public health. Measures needed to protect public health, that rely heavily on global trade, tourism, or remittances from abroad; and those that depend on commodity exports which are particularly affected.

Many countries will need policies and systems that can build and retain to boost the economy during the recovery after pandemics to make future economies more resilient. Such policies and systems will need to reproduce or encourage the post-pandemic requirements for new

types of jobs, businesses and governance. According to the analysts, to build a stronger economic recovery, it is necessary to invite new investment, fast advances in digital connectivity and expansion of cash safety nets are key features suggested to help overcome the damage caused by pandemic. Enhancing transparency in financial commitments and investment would also help rebuild confidence and facilitate investment growth.

The analysts discuss the importance of allowing an orderly allocation of new capital toward sectors that are productive in the new post-pandemic structures that emerge. During the mitigation period, countries should focus on sustaining economic activity with targeted support to provide liquidity to households, firms and government essential services.

The need has also arisen for countries to introduce reforms that allow capital and labor to adjust relatively fast by speeding the resolution of disputes, reducing regulatory barriers, and reforming the costly subsidies, monopolies and protected state-owned enterprises that have slowed development.

It is our responsibility to play a conscientious role in this situation to the best of our ability; we can and must help to mitigate the economic and social repercussions of the pandemic, turning the threat to an opportunity and move forward.

Latest construction industry trends to watch in

2024



“New year is the new way of inviting transformation, abundance and prosperity to every life” – Amit Ray

In 2020, the global COVID-19 pandemic had caused unprecedented disruption. For the construction industry, trends like the rise of teleworking, requirements for social distancing, shifts of resources, breaks in supply chains, and cash flow disruption spell change at every level. Still, some trends will, against all odds, continue, if maybe a little bit changed. Here are the 10 construction industry trends we see on the horizon for 2021.

- By Shanika Gamage -

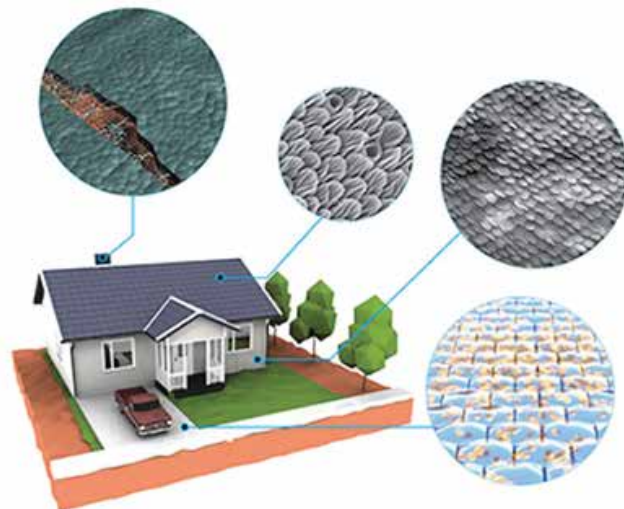




Safety

Safety is always a concern, but in the Covid-19 environment it rises to the top of the list. Adjustments to mitigate the spread of disease will focus on separation of workers and enhanced equipment and cleanliness protocols. Separation is a particularly difficult thing to achieve on a jobsite, where cooperation and teamwork are the norm. Anticipate smaller crews and the use of staggered shifts to keep job sites less crowded.

Enhanced protocols will include the expected things, like masks and hand sanitizer, as well as things specific to construction. The passing around of tools, sharing of gloves and hard hats will be curtailed. We'll all likely be writing our names on things and using only our own protective equipment.



Living Materials

One of the most exciting construction trends to watch is the development of living materials. These biological compounds literally grow themselves and are poised to move from interesting experiments to full-scale production in the very near future. The upside is just too great for these materials to remain exotic.

The most promising biological materials are built by and made of bacteria and fungi. This makes them light, strong and weirdly portable. The phrase “grown in place” might soon be as common as “cast in place.” Self-Mending Concrete refers to concrete saturated with bacteria that bind materials around them into a new structural material. This material can grow in the pores of concrete, adding to its impermeability. It can even grow into fissures and cracks, filling and repairing them – all on their own. The bacteria are also being developed as a building material unto themselves and have already been grown in usable shapes and sizes.

And then there are Mycelium Composites. Instead of bacteria, these materials are the work of fungi. Mycelium is the vast network of fungi living underground, the flowers of which are mushrooms. The largest living organism on Earth is a Honey Fungus in Oregon that’s 2.5 miles across (1,665 football fields), several thousand years old, and makes tasty mushrooms. Scientists have harvested this robust creature, growing it into all sorts of materials by feeding it farm waste.

Dell Computers packs their high-end gear in mycelium materials in place of the not-so-environmentally-friendly Styrofoam packing peanuts. And production is already under way for insulation and flooring.



Remote Technology

“Remote” is the world of the times and anything that promises that a task can be completed remotely is going to grow quickly. This is true for both building tasks and administrative tasks.

Almost no commercial jobsite now is without a Drone. Construction is the fastest growing adopter of commercial drones according to DroneDeploy, a drone surveying and mapping app. By peering down at a project from above, contractors find invaluable information. Safety issues are quickly discovered, quantities of materials on site can be accurately estimated, and orthomosaic maps can be created making even the largest job site visible. Substantial financial savings are achievable as a result. Safety information can reduce insurance claims, accurate assessment of materials and progress can lead to more timely information for Pay Requests and can help make necessary adjustments to manpower and scheduling to avoid delays.

In the office, technology is greatly enhancing the flow of information. Blockchain technology is a method of user-verified, real time input of an endless number of data points, from transactions, to payments, to completion of tasks and revisions of schedules.

This technology is becoming simpler to use and is being rapidly adopted in large-scale work, with inroads now being made even on smaller jobs.



3-D Printing

No technology reduces job site worker density (for good and bad) like 3D printing. In the field, it's essentially a big nozzle methodically laying concrete in vertical piles according to a programmed design.

This method is already in commercial use around the world and is expected to grow rapidly. Recently, a 3D homebuilding company raised \$35m after printing an entire neighborhood in Mexico.

Want to see it in action? Check out this time-lapse video of 3-D printing a 2-story building in Dubai.

In the factory, it's the same process on a smaller scale. Typically, the process is used to make small components of larger assemblies, usually out of plastic. Though it will likely never replace injection molding for mass production, 3D printing is making the manufacture of custom pieces affordable. Watch for designers to take full advantage of this.

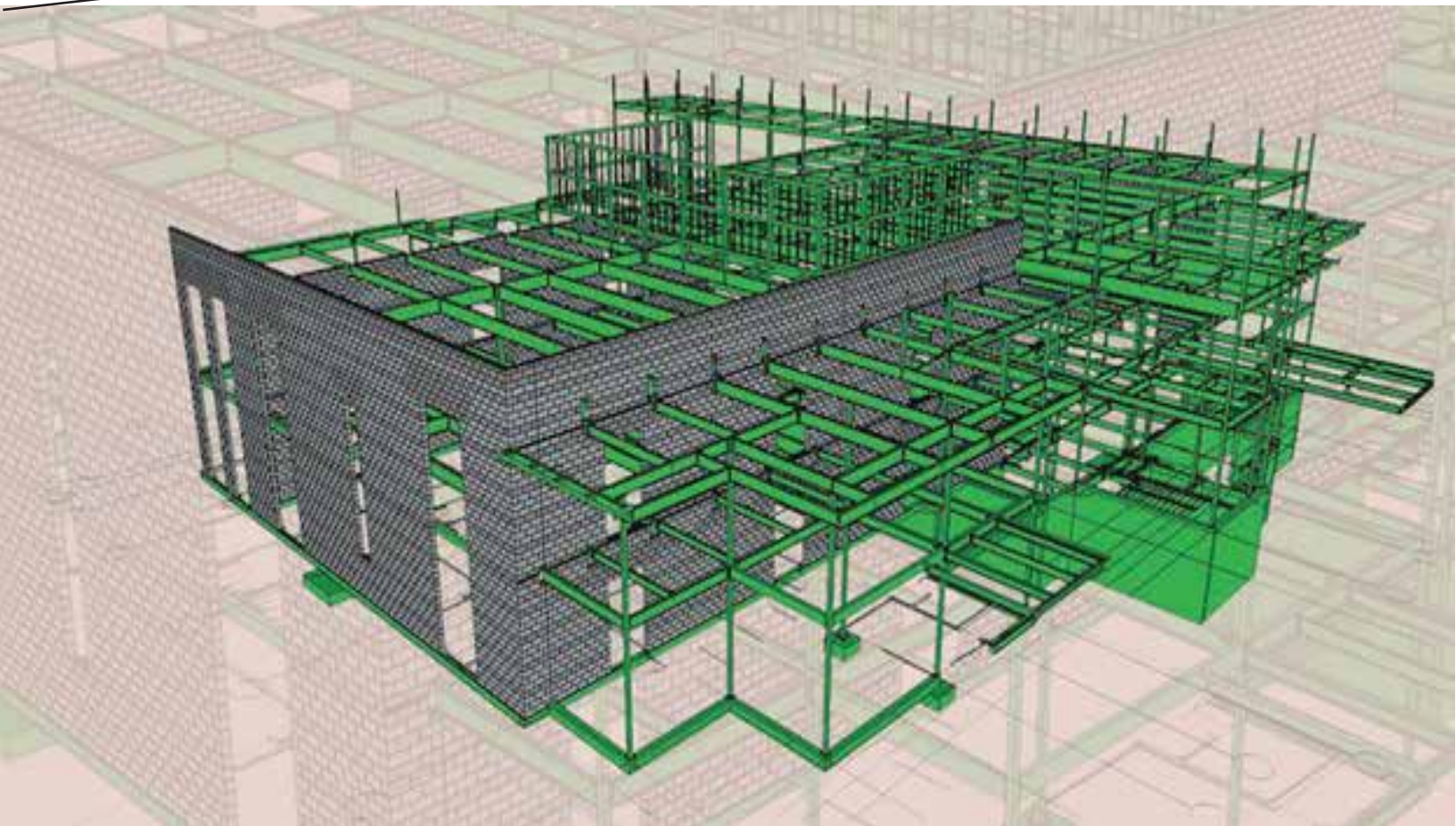


Modular Construction

Modular construction and pre-fab building, which was already steadily on the rise, should see a huge boost in interest in the post-pandemic era. Both the manufacturing process and the result are perfectly suited for the times.

Manufactured buildings are already built in a way that promotes low worker density. The manufacturing is done in enormous, airy buildings, with plenty of room for distancing. And the equipment used — ceiling cranes, conveyors, and lifts — is specifically designed to let fewer workers move larger components, reducing worker proximity and labor costs. Once manufactured, these buildings are typically small, limited by the ability of trucks to move them. As a result, they're perfect for a world where separation is required.

They are ideal if a business needs individual offices with independent systems, a remote worker needs an office at home, or a hospital needs a few additional rooms. Prefabricated buildings have the dual advantage of being affordable and potentially temporary. In times of uncertainty, a temporary solution is often the best option. This construction trend isn't going anywhere.



Design Technology: BIM & VDC

Design technology has already been a popular construction trend before the pandemic, and there's simply no stopping or disrupting it. The promise of constructing the building in virtual space before building it in real life is just too great to be ignored by either designers or contractors.

For Architects, Building Information Modeling (BIM) has taken over the industry, replacing CAD as quickly as CAD replaced pencils. Programs like industry leader REVIT are not just drafting programs, they're a fundamental re-thinking of the design and production process.

In fact, there are no drawings at all in BIM, only a model of the building in virtual space that you take images of to make the drawing set. It allows the designer to construct the building in the virtual world as a practice run for it being built in the real world.

For builders, this is even more valuable. Often referred to by contractors as VDC (Virtual Design and Construction), the principle is the same. Imagine finding all the pitfalls of a project — the difficult connections, the coordination issues, the necessary but unaccounted for components — before a shovel of dirt is turned over. The cost savings can be incredible in the field and in the office.



Work Disruptions

The work of the construction industry is tied to one thing: capital. And capital dislikes uncertainty. The current climate is making it difficult to finance projects, particularly large ones.

Overall, the AIA expects spending on non-residential buildings to decline in 2021 and the drop-off could be dramatic. As government debt at every level increases, spending on infrastructure projects will almost certainly be delayed. And in the private industrial sector, the slowdown has already begun.



Payment Disputes

It's inevitable that, when money gets tight and conditions get confusing, the flow of money will become an issue. Already we know that bankruptcies are on the rise and we can only expect this trend to get worse, with both construction companies and building owners meeting this fate.

Though there will surely be a rise in lawsuits, before that will come a wave of mechanic liens, an instrument that contractors and sub-contractors use to lay claim to a portion of the property as a mechanism for collecting payment owed. Usually even the Notice of Intent to file a lien will resolve a pay dispute and, if a lien is ultimately filed, they seldom lead to foreclosure, as there are many opportunities along the way for resolution.

However, with payment being disrupted, we can expect some fairly exotic maneuvering by contractors and owners on the lien space, including selling a claim.



Supply Chain Diversification

The disruption to supply chains has forced contractors to scramble to find alternative suppliers or to pay higher prices for materials. There's no indication that this is going to improve in the near term.

This construction trend will mean reevaluating long-term business relationships and brand loyalties and taking risks on new alliances. As usual, this risk will come at a cost, and it will take intense coordination from suppliers, subs, generals, and owners to make timely, informed decisions on alternates.

New contracts will likely put more emphasis on escalation clauses to cover unforeseen cost increases, and current contracts may need to be similarly revised. But it's also an opportunity for nimble suppliers and contractors to move into areas and clientele that might have previously been difficult to access.



Drop in Non-Residential Starts

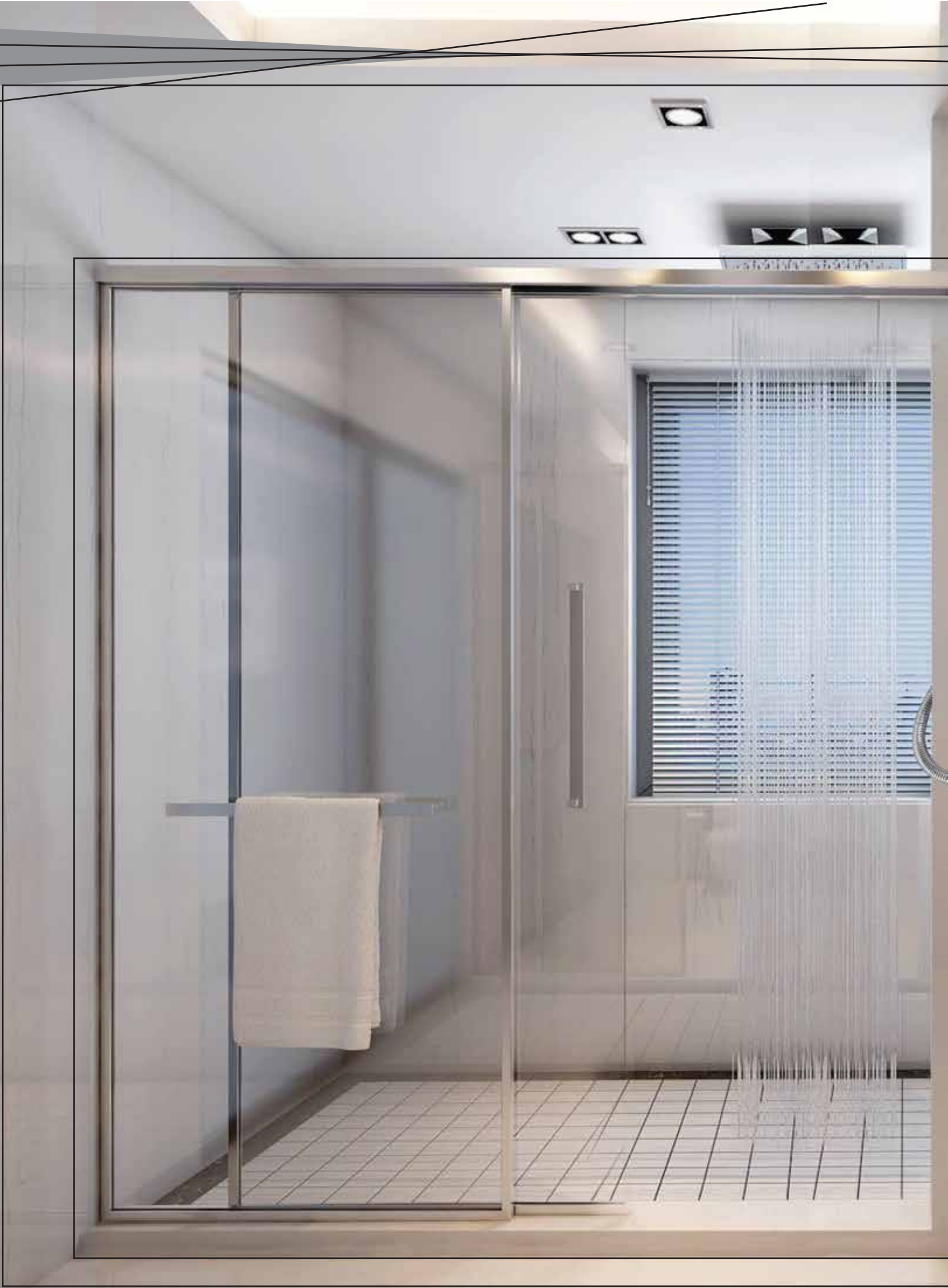
Non-residential building starts are down in 2020. Way down. According to a report from Dodge Data and Analytics, they're down 31% just from June to July. But, at the same time, residential starts were up 22.6%, the lion's share of which were multi-family projects with over five units. Much of the surge in houses is credited to low interest rates, but it seems also to be being fueled by the pandemic as people look to move to individual apartments and to move away from crowded urban centers, reversing a decades-long trend.

In the non-housing sector, blame for the downturn goes to uncertainty. Investment in buildings as large and expensive as office buildings towers and hotels, two enormous parts of the commercial building market, are tough to make if the future of the industries they house are in question. However, there is some cause for hope.

Architects report that hospitality projects, for instance, seem to be on hold rather than cancelled. Some hotels are even planning to use their low occupancy to carry out renovations that otherwise would have been disruptive to guests.

Takeaways for Construction in 2021

Though it's obviously impossible to really predict the future, we can make educated guesses and look to history for guidance. However, with families forced to cancel their vacations and socialize outdoors, there's one type of construction that's unexpectedly booming and showing no sign of slowing: swimming pools.



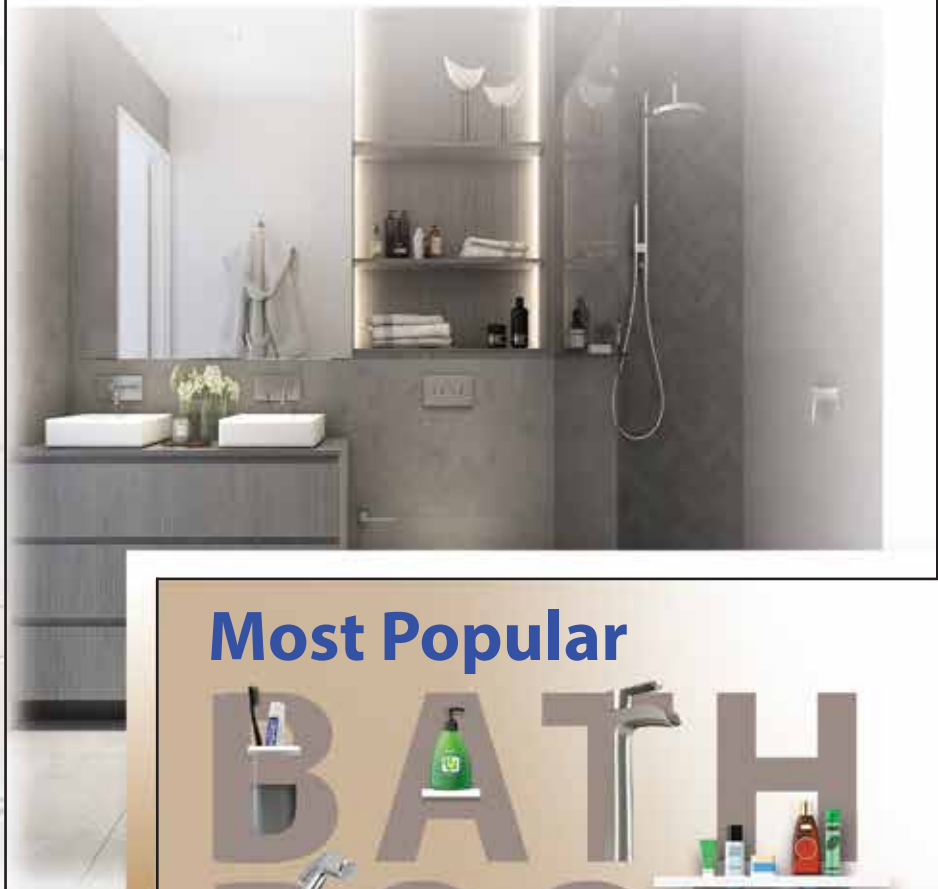
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Be kind to YOURSELF

**"Self-love is not selfish;
you cannot truly love another
until you know how to love yourself"
- Unknown**

With the new Corona Virus outbreak most of us are working home, without the normal human interaction such as going to a party, beach, cinema or going on a trip. This has caused so many psychological issues to some people. Humans are not made to work alone. We all crave the interaction of others. So, it is difficult for some to adjust to the new normal and we hope this article will help our readers to better cope the current situation and you can share this among family and friends.

You may be having a difficult day or a difficult week. It can feel like an uphill climb to get out of that emotional and mental rut and be kind to yourself, but there are, fortunately, many tools at our disposal for resetting our attitude.

When we show ourselves kindness, we start to create new habit patterns and neuron pathways in the brain [1]. These new "mentalities" take us from seeing everything as negative and grim to joyful, positive, and full of opportunity.

We understand kindness from the perspective of how we treat our family and friends. What if we were to take that same approach to how we treat ourselves? How would our health improve if we listened to our body's signals and responded with care and compassion? These are profound questions to ask. While having a bad day and feeling down is another part of life, we can start to implement tools into our routine that grow our self-compassion muscle even more.

I LOVE

1 FORGIVE YOURSELF OFTEN

This may be the best and hardest tool to implement in your life, but it is so potent! We are so hard on ourselves, and we are often our own worst critic. We can easily forgive our friends and family, but we have a harder time taking that forgiveness within.

Today, practice self-forgiveness.

When you get caught up in self-blame, pause and think about how you would react to the same situation with a friend. Often, we need the same kind of forgiveness.

At the end of the day, we're doing the best that we can.

When we know better, we can do better. In the meantime, forgiveness is key.



4 NOURISH AND TREAT YOURSELF

This may look like taking yourself out to dinner or cooking a delicious meal for yourself at home!

Often, in times of despair, one of the first things that starts to lack is our nutrition.

We either don't eat enough or we overeat, and never the right kinds of food.

Schedule a time on your calendar for treating yourself! It may be ordering food from your favorite restaurant or spoiling yourself with something that you would never order regularly.

Whatever it is, make sure it feels special, something out of the ordinary, and bonus points if it's healthy!

2 WRITE YOURSELF A LOVE LETTER

This is a simple yet precious way of writing your thoughts and feelings down on a piece of paper. If you really want to add a touch of extra love and be kind to yourself, pull out your fanciest stationary! If you're having a hard time with writing, imagine you're writing to your younger self. What would you want to say? Often, it's words of encouragement.

We hold a lot of compassion for ourselves in hindsight, after life has tested and blessed us. Writing love letters offers us perspective in which to find gratitude! If you want, you can also mail it to yourself, or save it and open it in a few months or even years.

3 TAKE CARE OF YOUR PHYSICAL HEALTH

This may look like going out for a walk every day in your neighborhood or favorite park; it may also look like taking a yoga class on a Saturday morning, or joining a favorite gym or fitness club.

When we're feeling down, our physical body hangs on to all that pent-up energy and emotion. We need to clear that energy to maintain physical health, as well as emotional and mental health.

Whatever you choose is upto you! Just make sure it feels good and you're having fun while you're at it.

5 SEEK OUT A THERAPIST

When it comes to emotional and mental health, seeking out professional health is a major win and a great way to be kind to yourself. We can't always help ourselves. We need someone to hold space for us, listen and hear us out, and offer perspectives that we wouldn't have on our own. There is no shame in asking for help.

Therapists will often challenge you to confront the way you think about various situations and experiences, so if you have a problem with negative thinking, therapy can be particularly useful. Just make sure you're ready to go into it with an open mind and lots of self-compassion.

6 BUY YOURSELF FLOWERS

This may seem like a cliché approach to self-kindness but think about the last time you bought flowers for yourself. How long has it really been? There is great power in treating yourself in the same manner as you would treat someone you loved.



7 WHEN YOU'RE IN A RUT, ASK QUESTIONS

We reflexively jump to outside stimuli when we're facing a challenge or are in a rut. You may turn to food, drugs, or alcohol; or you may keep yourself mindlessly busy, distracted, or running headfirst into emotional restlessness and poor decisions. Instead, we can ask ourselves questions to start to dig deeper into our current situation. For example, asking "What do I need right now?" can be a powerful moment of introspection. It not only brings us back to the present, but it also cuts through the noise of mental and emotional chatter.

8 SURROUND YOURSELF WITH LIKE-MINDED PEOPLE

Our loved ones have a beautiful way of pulling you out of your own funk when you don't know how to be kind to yourself. Just by being around other people, our energy can lift and shift in ways that promote a new, fresh start to our day. Make sure you find friends who will be patient with you and make space for you to be heard and loved. If you feel like your friends aren't capable of this, it may be the moment to limit the amount of time you spend with them. Remember to surround yourself with people who can lift you up versus people who can only bring you down.



10 HAVE A "SELF-CARE" DAY

This doesn't have to be fancy. You can draw yourself a bath, have a picnic outside, or choose to snuggle in for a movie night. A "Self-Care" day is all about being present with yourself and enjoying the little things with more appreciation. There are many ways of enjoying the day that won't cost you a lot of money, and all with tools already at your disposal in your home or community.

9 HYDRATE

This also may seem like a simple tool, but it is an incredibly important one! Just like food, hydration is also something we toss to the back burner when we're feeling down.

It just doesn't seem to be that important until we have a headache and don't know where it's coming from. Drinking water not only regulates our body's innate functioning systems, but it also heavily impacts our mood. Remember to stick to water and avoid high-sugar drinks, such as sodas. If you're not sure, water is your best bet!

MAKE TIME **11** FOR MEDITATION

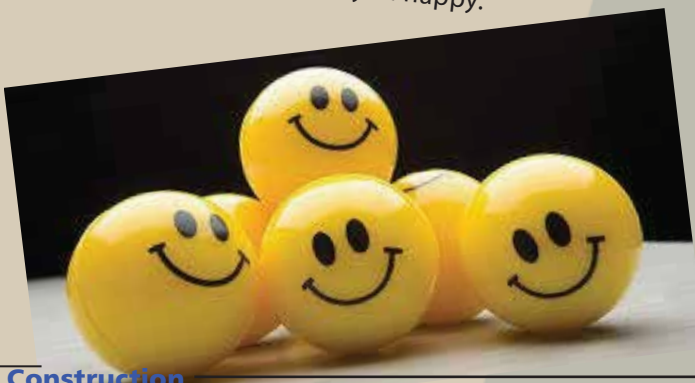
This is a wonderful practice of tuning into your mental state and works to teach you how to be kind to yourself. With so many meditation applications out there, you can find teacher-guided sessions or timers with gentle background music to ease you into meditation. Meditation teachers often say that all our answers reside within us, so starting this practice in a time when we're struggling can provide powerful insight.

GIVE YOURSELF **13** A MASSAGE

We already mentioned how the body holds on to emotional and mental baggage. This can show up in tension, tightness, aches, or pains. While it is certainly rewarding to go get a massage, you can also give yourself one. Ayurveda, the sister science of Yoga, highlights a particularly healing massage practice called abhyanga, which is an oil massage that you can do from the comfort of your own home.

STOP TOLERATING **14** WHAT/WHO DOESN'T SERVE YOU WELL

Sometimes practicing self-kindness is about cutting the cords of what no longer brings you joy in life. This may be an idea, routine, or a person. It's OK to walk away from something that brings you down. When you can let go and distance yourself in such a way, more space opens for you to fill that void with what makes you happy.



12 GIVE YOURSELF RECOGNITION

There are many successes we simply don't take the time to celebrate. Instead, we wait for others to celebrate or recognize our accomplishments. Today, think about something you'd like to be recognized for. It could be a project you've been working on or something you've devoted time and effort to in your life. Then, celebrate it. Share it with your friends and family and give yourself a pat on the back! Another fun way of giving yourself recognition is to create a "Brag Bucket." Each time you accomplish something, drop a note with what you did. At the end of the year, look at everything you've done and celebrate yourself.



15 REST AND RECHARGE

We live in a society that worships productivity. While that may be needed in some instances, it also creates the assumption that a lack of productivity makes you worth less as an employee and a person and makes it very difficult to find time to be kind to yourself. We need to get back to the flow of nature, which shows us that while much may not be going on, life is still thriving and growing. Likewise, so are we.

We are not designed to thrive in a "grind" society. We don't always need to work, move, create, and do. More often than not, we need rest! We need to simply be, and we need to know that this is more than OK. We all have days where we feel down and out. In these moments, we can either wallow in our despair and let it consume us, or we can practice simple yet effective tools to nourish ourselves. At the core of self-kindness and compassion is the fact that we're all just doing our very best, day in and day out. As the old Buddhist saying goes, "You yourself, as much as anybody in the entire universe, deserves your love and affection."



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Dr Rohan Karunaratne

Dr Rohan Karunaratne is a qualified Engineer counting over 35 years of experience in Civil engineering, Lecturer and Former Director of two leading banks in the country. He had held chairmanships/directorships in many major corporations and financial institutions in Sri Lanka.

He holds a PhD in Management and an MBA from the Sussex University (UK). A Civil Engineering Graduate and advanced Diploma holder in HIET (Chennai – India), is a Fellow of the International Institute of Management (HK) and a Fellow of the Ceylon Institute of Builders.





Global economies, including Sri Lanka, have significantly fallen due to the Covid-19 epidemic, and all social groups including governments, professionals and the general public have been crippled in face of this novel pandemic. At such a point in time, the collapse of a country's banking & financial sector is extremely hazardous, proving disastrous for some countries who, during the Covid-19 pandemic has allowed these industries to fail, prompting government to rebuild the banking and financial industries.

For Sri Lanka, our banking & financial sector has been robust throughout history and maintained its role as a pillar of strength to our nation, surviving the 30-year war, the 1989/1990 uprising and consequent hindrances to our country's prosperity.

The entirety of 24 government and private sector banks in Sri Lanka cannot satisfy all the financial needs of Sri Lanka's population (especially socio-economic groups that cannot fulfil the requirements of banks), with most of the general public preferring non-bank financial institutions (registered with the Central Bank of Sri Lanka) providing higher interest rates to their depositors and loan/leasing facilities to customers with minimal security, as opposed to banks who usually offer relatively low interest rates on savings to the public and demand higher protection from customers when granting loans and leasing.

Under this background, Non-bank financial institutions registered with the Central Bank of Sri Lanka (totalling 39 institutions) play a vital role in fulfilling the financial needs of the people of Sri Lanka. These Registered financial companies (RFC's) governed by the Finance Business Act No.42 of 2011, under the supervision and control of CB, should be supported to aid the country and its people, especially in times of this essence. In recent years however, under the influence of the now worldwide pandemic, they have taken a hit as a result of poor management and the spread of false propaganda from

Picture by Rohana Liyanapathirana

time to time throughout social media conjecturing the impending collapse of financial institutions. Similarly, the monthly loan and lease instalment payments of banks and financial institutions have dropped drastically. Simultaneously, the nonperforming loan ratio of banks have risen to over 4 percent, while that of non-bank financial institutions is around 11 percent—resulting from accumulated moratoriums and non-payments.

This amount is in billions.

Registered (non-bank) financial institutions (RFC's)

The lower- and middle-class people of the country deal with Non-bank Financial Institutions. They accommodate 62% of Sri Lanka's workforce who are unwelcomed by reputable banks and have provided them with financial facilities of around 1 trillion rupees (the assets of RFC's being around 1.5 trillion rupees). So, they perform the unpredictable business of catering to the majority of borderline, non-bankable, high-risk entrées to the market, mostly originating from rural/suburban areas and if not for RFC's many of our well-known companies today would not exist. Banks and non-banks cater different portions of society with different strategies—so they cannot be compared. It has been predicted that non-banks may overtake banks as they operate on emotional intelligence which they in turn operate on human intervention. They pay 15B cooperate taxes and cater to 7M ppl—this is 50% of the active population aged 18-70, 1M micro companies (10 or less workers)—this is 44% of labour force in the country and 70,000 SME's employing 17% of the labour force in Sri Lanka.

Non-banking financial institutions should be commended on the fact that, with income reduced to 75% and the combined threats from the Easter attacks and Covid-19, they have continued to pay depositors and employees and still proceed to run well. Some countries had to pump billions in these situations yet our government did not have to do this. At such a juncture, the type of paper article as the one published on 14-10-2020 including a list of 09 registered Non-bank financial institutions with low core capital should not be published which increase public fear and worsen the situation for all parties. In this particular case, customers of the relevant financial institutions began to withdraw their deposits. If a large number of customers withdraw deposits from any bank or financial institution at once, naturally it will be difficult to maintain that institution. The Central Bank of Sri Lanka and the Government has a great responsibility to, at this critical stage, work with organisations to protect the country's banking & financial sector, the reason being that, if this sector collapses now, the whole country will subside into a web of chaos.

Therefore it is highly unjust that in the absence of a level-playing field, with collective tragedies (Covid being the largest humanitarian crisis after WW2) and with unpopular opinions stacked against them, that these institutions continue to suffer attacks while striving to provide such a risky and unprovided service to the country. The focus here is misdirected to RFC's when the real danger lies within the numerous Non-registered financial institutions which relevant regulatory bodies should chase behind to ensure safety.



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There are many jaw-dropping structural feats around the world, each with its own interesting engineering designs. But the one type of structure that always leaves us in great awe is dams.

Their sheer dimension and immense capacity tend to have a humbling effect on anyone who comes across these structures. It often feels a bit like standing in front of a calm, reassuring giant staring at you in all its glory.

3. Monticello Dam (USA)

1. Contra Dam SWITZERLAND

2. Gordon Dam AUSTRALIA

5. Three Gorges Dam CHINA


4. Hoover Dam (USA)

8. Itaipu Dam BRAZIL


DA

And it goes without saying, dams are some of the most intricately designed structures in the world. **What is a dam?** A dam, as defined by the British Dam Society is: "A barrier or structure across a stream, river, or waterway to confine and then control the flow of water. Dams vary in size from small earth embankments, often for farm use, to high massive concrete structures generally used for water supply, hydropower, and irrigation."


6.
Tarbela Dam
PAKISTAN





7.
Almendra Dam
SPAIN



10.
Kariba Dam
ZIMBABWE




11.
Kerr Dam
(USA)


13.
Loch Mullardoch Dam
SCOTLAND

9.
Atatürk Dam
TURKEY




12.
Gariep Dam
SOUTH AFRICA

World's most fascinating

MMS

Such structures are essential and crucial for providing energy and water management to many communities around the world. Dams are usually built across or near naturally flowing water, to manage water resources for human needs.

What are some record-breaking dams?

Dams are amazing structures in and of themselves. But some among them stand out as truly outstanding works of engineering.

For example, the highest dam in the world, as recognized by Guinness World Records, is the Jinping-1 Dam in Sichuan, China. She is a whopping 1,000 feet (305 mt) tall — taller than the Eiffel Tower in Paris.

The smallest dam in the world, according to some sources, is the Inks Dam on the Colorado River. She stands at around 97 feet (29.4 meters) tall and is about 1,550 feet (472 mt) long.

The deepest dam in the world is widely considered to be the Parker Dam on the Lower Colorado Basin. Built with 380,000 cubic yards (290,531 cubic meters) of concrete, the dam has a height of 320 feet (98m), 73% of which is below the original riverbed. Only around 85 feet (26m) of the dam's structure is visible.

What are some of the world's most fascinating and famous dams?

And so, without further ado, here are but some of the world's most interesting and famous dams. Here, you will discover some of the largest and most groundbreaking dams around the globe, many of which are used to produce sustainable energy.



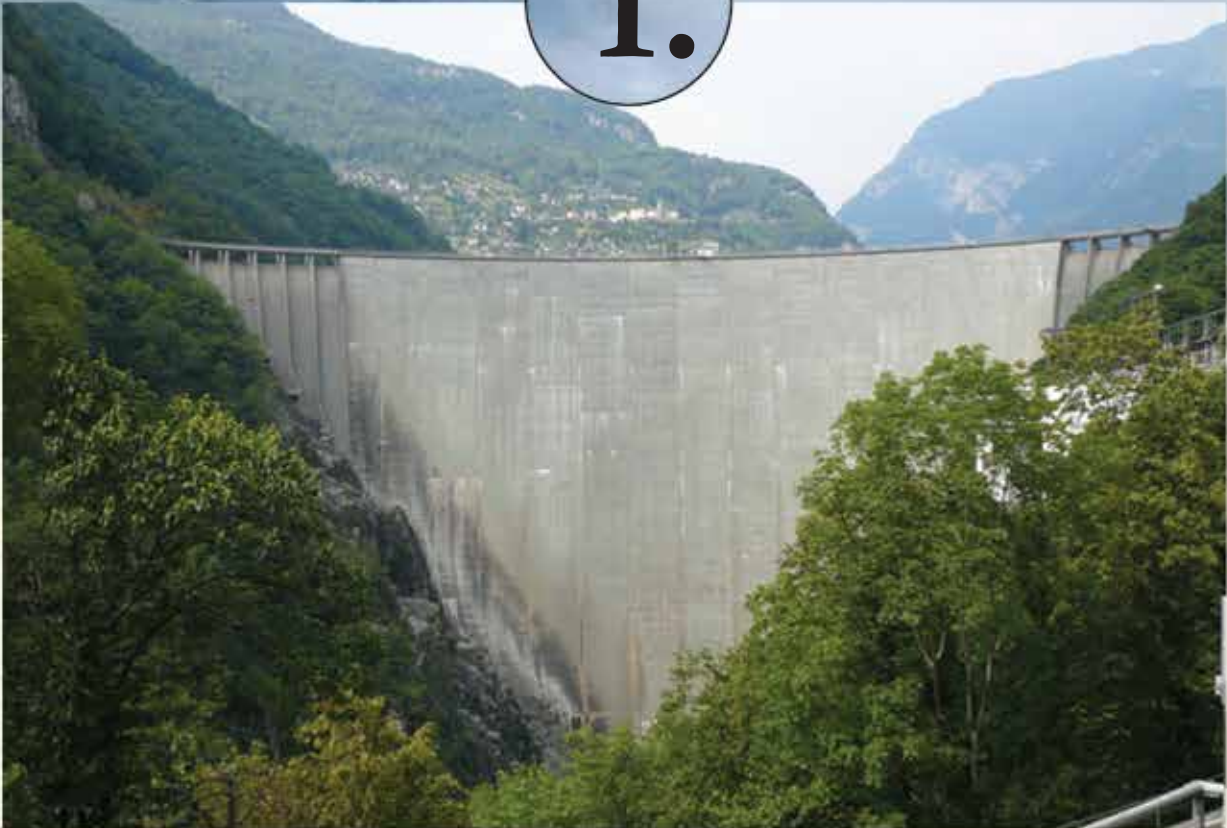
The Jinping-1 dam is the tallest in the world.



World's most fascinating D A M S

Contra Dam in **Switzerland**

1.



First on our list of fascinating dams would have to be the Contra Dam, most commonly known as the Verzasca Dam, in Ticino, Switzerland. It is perhaps one of the most famous dams, for its epic appearance in the opening scene of the 1995 James Bond movie Golden-Eye.

Contra Dam is a slender concrete arch dam standing at a height of 722 feet (220 mt), with a crest length of 1,247 feet (80 mt). Because of the dam's slender design, the volume of concrete required to construct it was reduced, which consequently cut down the cost of construction.

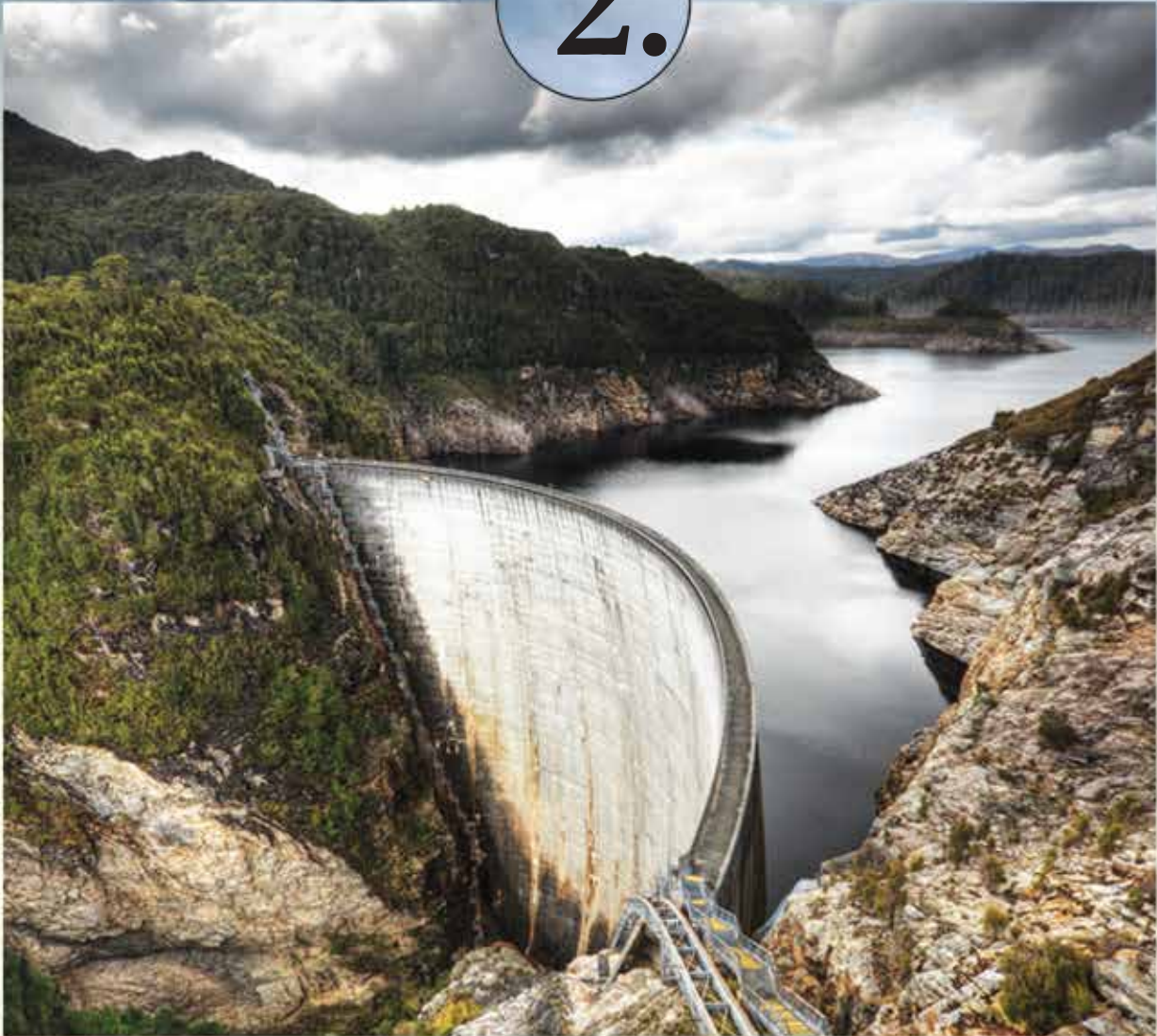
The dam's base is 292 feet (8 mt) in width and gradually tapers up to 723 feet (7 mt) at the crest. Two spillways were incorporated at each side of the structure, which has a maximum discharge capacity of 1,300 cubic meters per second. Contra Dam also produces power through its 105 MW power station, which uses 3x35 MW Francis turbines to generate an average of 234 GWh per year.

The Lago di Vogorno reservoir was created by the dam's construction between 1961-1965 and is now impounded by the dam. This reservoir has a maximum capacity of 105,000,000 cubic meters of water and a surface area of 400 acres.

World's most fascinating D A M S

Gordon Dam in **Australia**

2.



Located in southwest Tasmania in Australia, Gordon Dam is a double curvature concrete arch dam. One of the dam's amazing features is that it's curved both in the vertical and horizontal directions to resist large hydraulic pressures coming from the 12,359,040 megaliters of water in Lake Gordon, the largest lake in Australia.

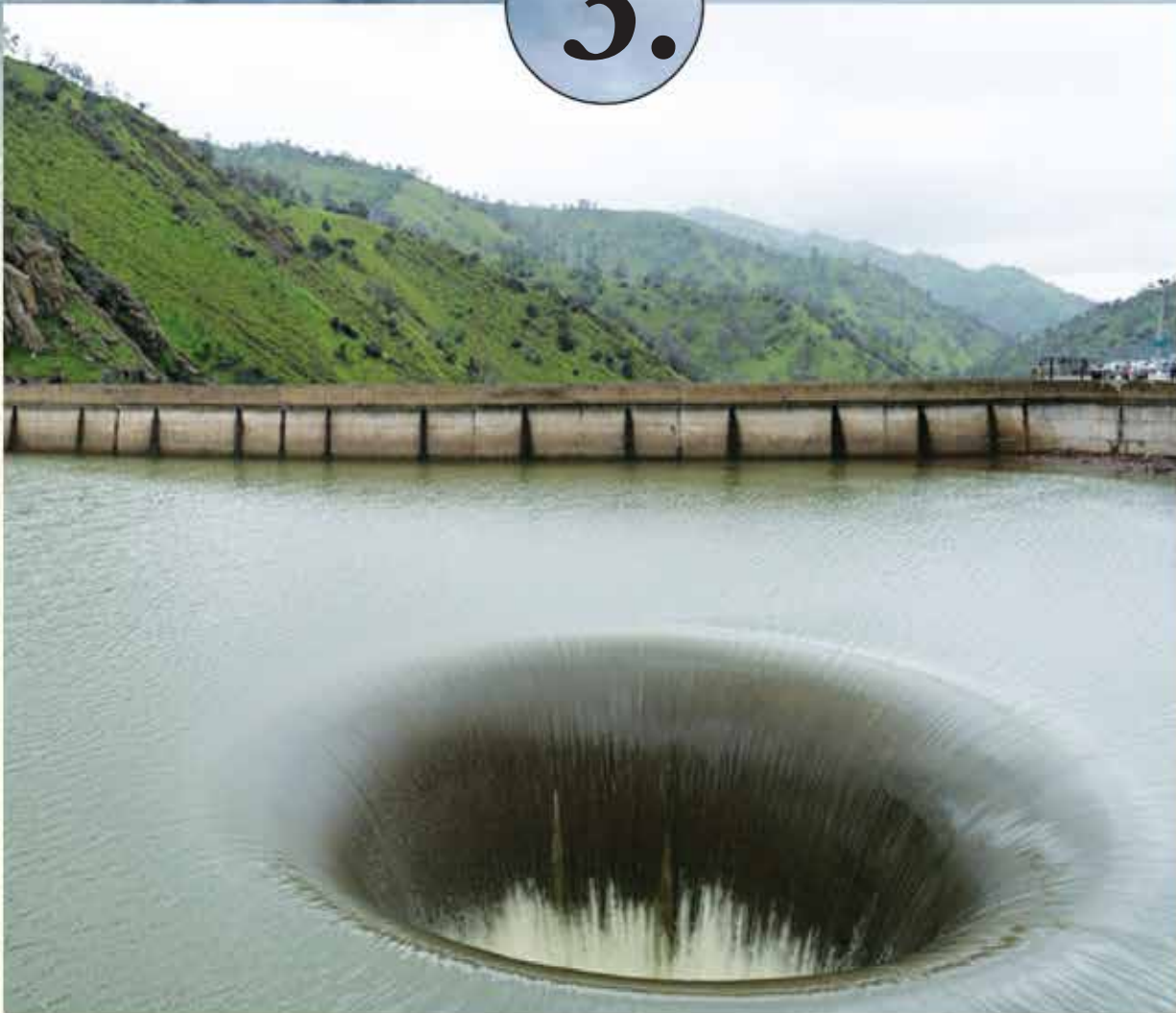
The immense volume of water is diverted 600 feet (183 mt) to the underground power station, where three hydro turbines can generate up to 432 MW of power. Approximately 13% of Tasmania's electricity demand is provided by the Gordon Power Station.

Out of the 48 arch dams that have been built in Australia, Gordon Dam is one of the only nine that is designed as a double curving dam.

World's most fascinating D A M S

Monticello Dam in **USA**

3.



This 305 ft (93 m) concrete arch dam in California, USA is one of the coolest dams in the world because of its mesmerizing spillway sometimes referred to, unfortunately, as "the Glory Hole". The spillway is an uncontrolled morning glory type with a tip diameter of 72 feet (22 m), and sits within the perimeters of Lake Berryessa, the seventh largest man-made lake in California.

It can drain 48,400 cubic feet per second of water during the lake's peak level, which occurs when the lake rises to 15 feet (4.7 m) above the spillway's lip. The exit end of the spillway is also famous as a full pipe for skateboarders.

Monticello dam impounds the Putah Creek and can generate 56,806,000 kWh of power annually using 2x5 MW and 1x1.5 MW turbines.

World's most fascinating D A M S

Hoover Dam in the **USA**

4.



Hoover Dam is one of the most iconic dams around the world, stretching between the American states of Nevada and Arizona. Originally called the Boulder Dam, this colossal structure stands at a height of 726 feet (221.4 mt), with a base width of 656 feet (200 mt) and a crest width of 46 feet (14 mt).

It's a concrete gravity-arch dam that was constructed with the purpose to control floods, provide irrigation water, produce hydroelectric power, store water, and create a recreation area. The hydropower station houses various turbines, including a 1x61.5 MW Francis turbine and 2x2.4 MW Pelton turbine, which produce an annual electrical output of 4.2 TWh.

One of the most involved preparations made for the construction of Hoover Dam was the diversion of the Colorado River away from the site. To make this happen, four diversion tunnels were bored through the canyon walls — two on the Nevada side and two on the Arizona side.

On the 1st of February, 1935, a few years after the Colorado River was diverted, a steel gate was lowered down to allow the water to take its natural course again. That was the first time in history when the Colorado River was fully under human control.

The dam impounds the Colorado River, which consequently forms Lake Mead, the largest artificial reservoir by volume in the United States when full.



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Bringing the attention of the world to Sri Lanka once again, Port City Colombo was given the title of a Global Best Project by international engineering and construction news magazine Engineering News-Record (ENR) at their 8th Annual Global Best Projects competition. With a record number of submissions entering the

PORT

wins

GLOBAL BEST PROJECT AWARD AT 8TH ENR ANNUAL AWARDS

competition this year, Port City Colombo was evaluated against a diverse mix of projects from around the world, and takes a prominent place on the list of 30 winning projects featured- from 21 countries on 6 continents. Other categories that were evaluated include Residential/Hospitality, Road/Highway, Power/Industrial and so on.



CITY

COLOMBO

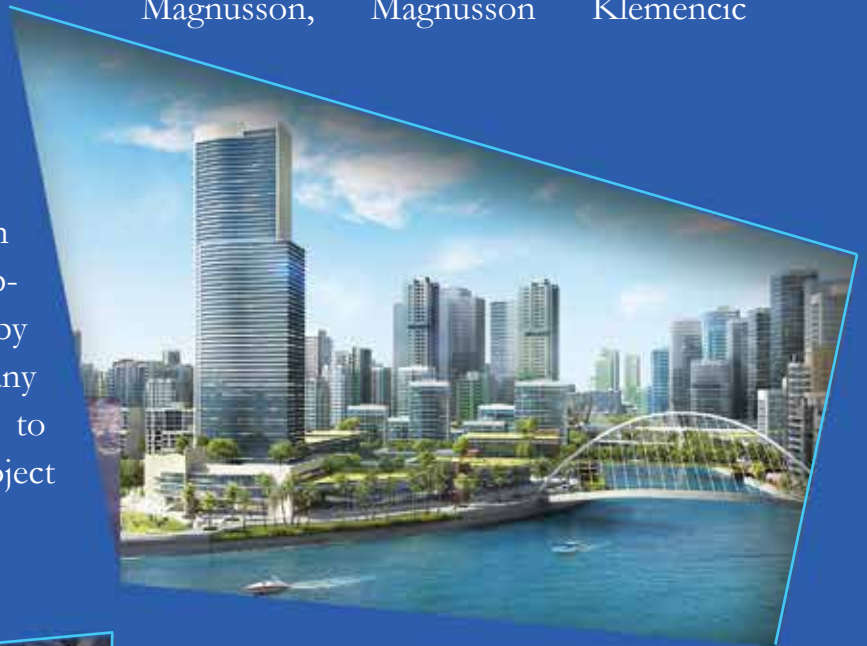
This is the first time that a Sri Lankan project has awarded and recognized at the highest level in the field of engineering and construction in the recent years. Due to the prevailing condition, this year's award ceremony was held as a virtual event on the 17th of September.





Global Best Projects identifies and honors the project teams behind outstanding design and construction efforts of the past year, standing apart with the distinct rule that at least one firm involved in the project must be working outside of its home country. Adhering to the condition that construction had to be complete between January 2019 and April 2020, the submission for the award was made by China Harbor Engineering Company Ltd. (CHEC Ltd.) and was awarded to Colombo Port City Development Project Phase 1, located in Colombo, Sri Lanka.

With Engineering News-Record (ENR) being one of the most prominent news networks in the United States of America, judging the contest were a panel of globally renowned judges inclusive of Erleen Hatfield, Hatfield Group; Jon Magnusson, Magnusson Klemencic



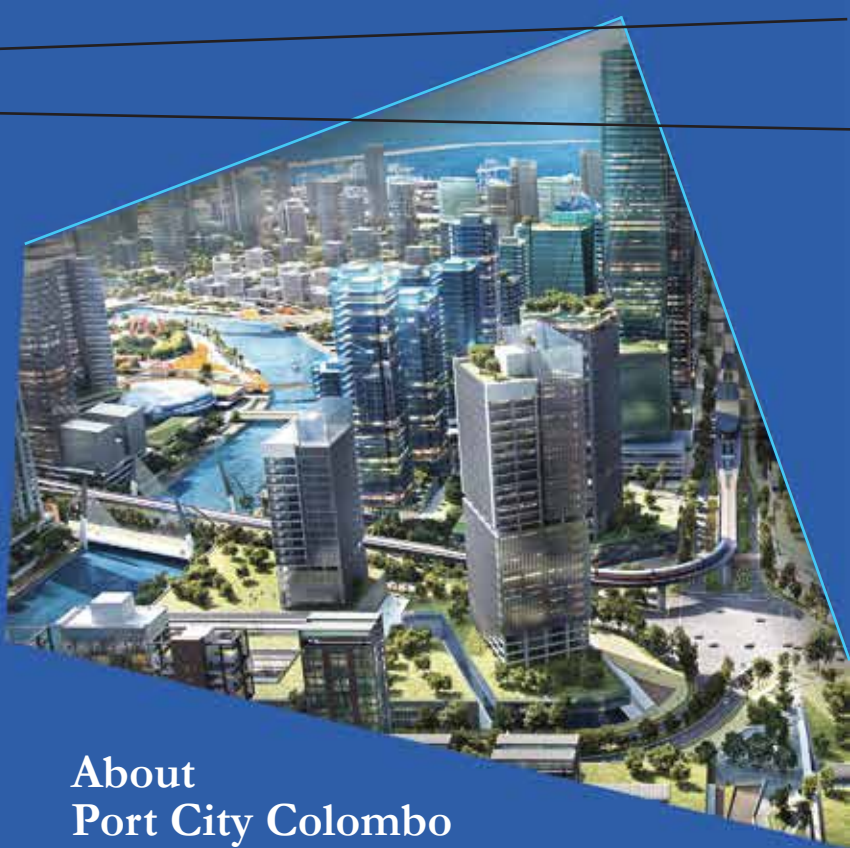
Associates; Kit Miyamoto, Miyamoto International; Allan Montpellier, PAE; Patrick Natale, Mott MacDonald; Bob Prieto, Strategic Program Management LLC; Hans Van Winkle, Van Winkle Consulting; and Peter Zuk, formerly of Metrolinx. The evaluation categories included safety performance, innovations, challenges, and design and construction quality - with a special emphasis on the diversity of global project teams and



their collaboration. The judges also considered how the project benefits the local community and/or the domestic construction industry.

The award comes as a landmark achievement for Port City Colombo following their win of the Silver Award for Master Planning at the Singapore Landscape Architecture Awards 2017, the Gold Award at the Yuan Ye Urban Design Awards 2018, and an honorable mention at the International Federation of Landscape Architects AAPME Awards 2018 in the category of Analysis and Master Planning.

CHEC is a wholly-owned subsidiary of China Communication Construction Company CCCC which ranked 04th in ENR Top International Contractors list of 2020, with advantages in capital, technology, marketing, talent, and equipment, providing first-rate services to customers around the world and has constructed many landmark projects with international influence. CHEC has won many significant awards, including the "ENR Outstanding Project Award" previously.



About Port City Colombo

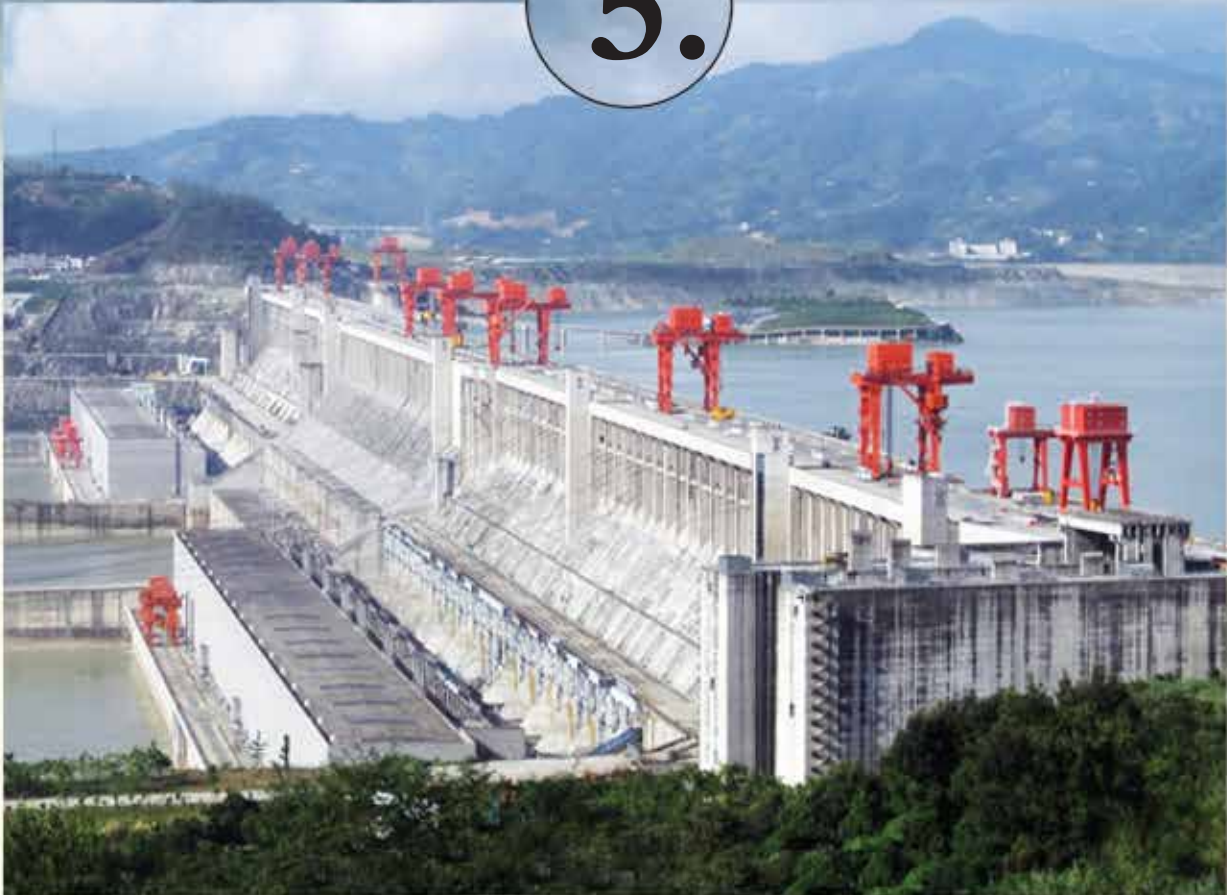
Port City Colombo is a brand new city development built as an extension of the existing Colombo CBD with an initial investment of US\$1.4 billion and an expected US\$15 billion overall investment when completed. Spanning 269 hectares, it is a sea reclamation project joined to the current central business district. Port City Colombo is made up of 5 different precincts which comprises of Financial District, Central Park Living, International Island, The Marina and Island Living. When completed, Port City Colombo is estimated to have some 5.7 million square metres of build up space, boasting some of the best in design in terms of Grade A offices, Medical Facilities, Educational Facilities, Integrated Resort, Marina, Retail Destinations, Hotels and various Lifestyle Developments. Using the latest sustainable city design and smart city concepts, Port City Colombo will be the hub of South Asia.



World's most fascinating D A M S

Three Gorges Dam in **China**

5.



Known as the world's largest hydropower dam, the Three Gorges Dam stretches out 1.4 miles (2.3 km) to span and impound the Yangtze river in the Hubei province in China. Capable of producing 87 TWh of electricity per annum, this hydropower dam uses 32x700 MW and 2x50 MW Francis turbines. Its structural profile is designed with a large base width of 377 feet (115 m) and it tapers to 131 feet (40 m) at the crest.

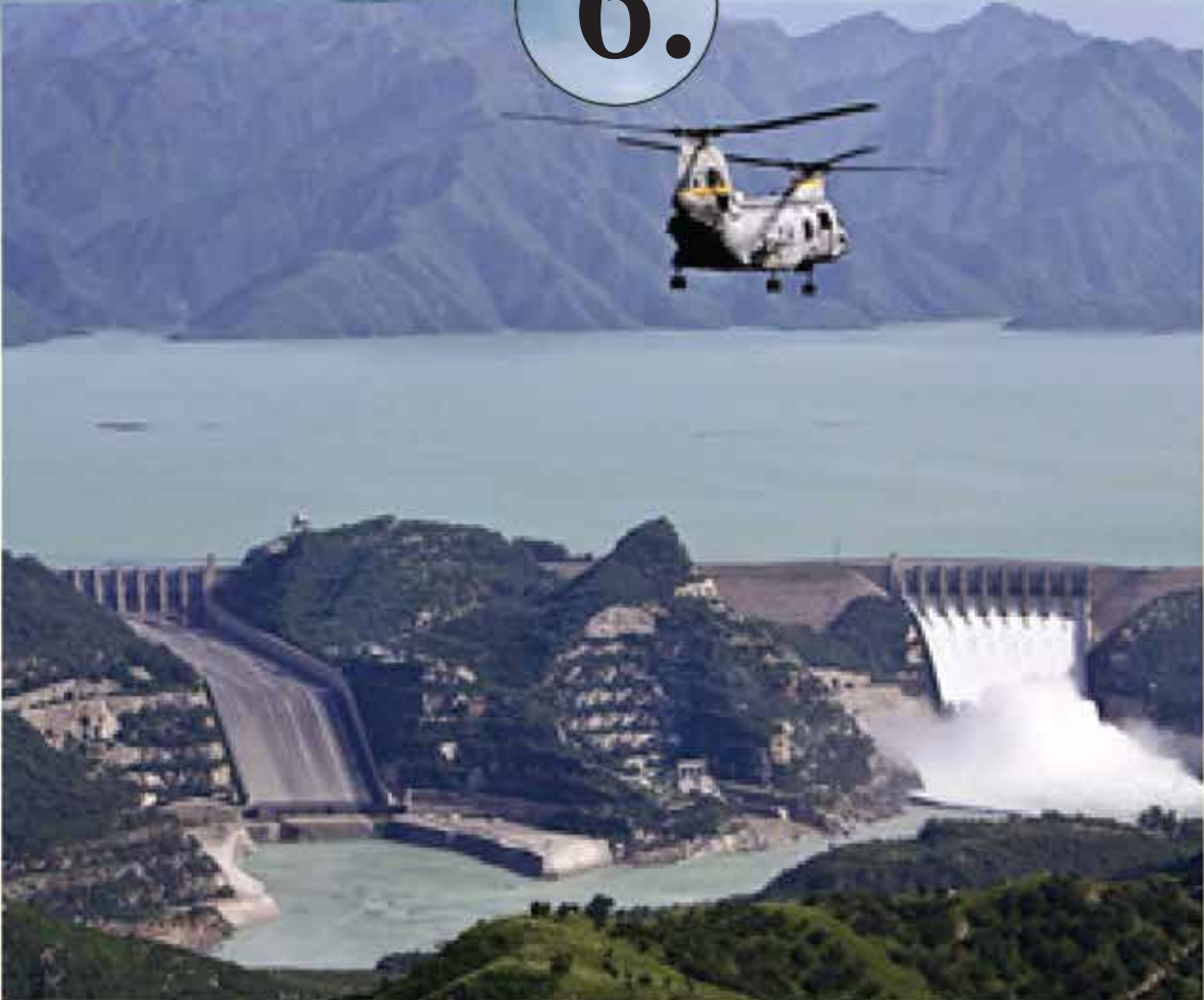
Intended not only to produce electricity, the Three Gorges Dam was also constructed to increase the shipping capacity of the Yangtze river and mitigate the chances of flooding downstream by providing large water storage space.

The most mind-blowing fact about this dam is that when it was built, it flooded a total area of 156,171 acres (632 square kilometers) of land with water weighing more than 39 trillion kilograms (42 billion tons). This was a large enough amount of water that it increased the Earth's moment of inertia and slowed the planet's rotation by an estimated 0.06 microseconds. This, in turn, made the Earth very slightly more round in the middle and flat on the top, shifting the pole position by about 0.8 inch (2 cm).

World's most fascinating D A M S

The Tarbela Dam in **Pakistan**

6.



Considered the largest earth-filled dam in the world, the Tarbela Dam in Pakistan impounds the Indus river and serves as irrigation supply, flood control, and to produce hydroelectric power.

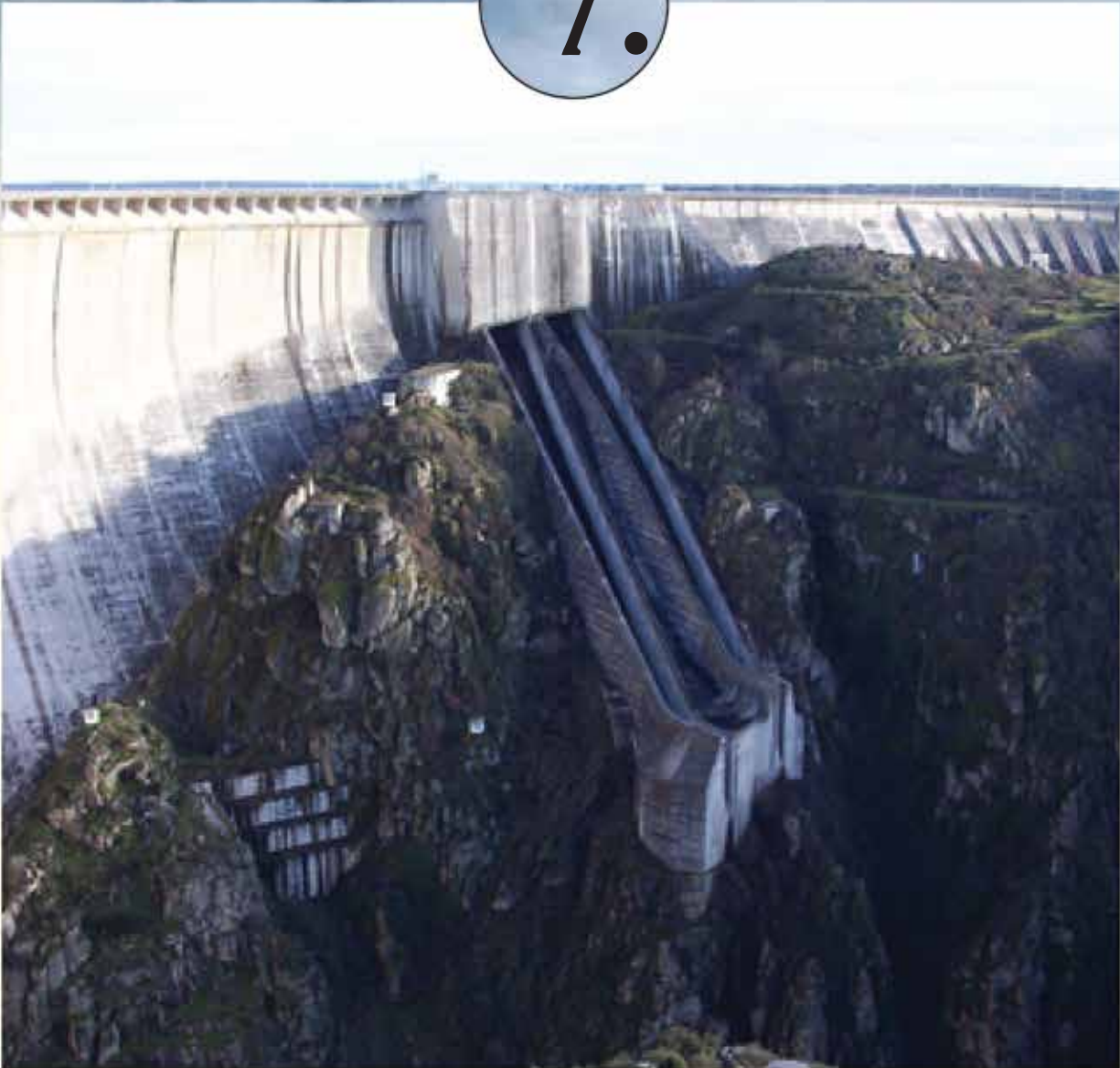
In order to properly divert the Indus river, the dam's construction had to be done in three stages, where large tunnels were constructed to act as diversion channels. The dam's main wall was built with earth and rockfill that spans 9,000 feet (2,743 mt) from the island to the right-hand side of the river. Two concrete auxiliary dams span the river from the island to the left-hand-side.

Equipped with 10x175 MW and 4x432 MW of turbines, Tarbela Dam can produce 14.959 billion kWh of electricity per annum.

World's most fascinating D A M S

Almendra Dam in **Spain**

7.



One of Spain's tallest structures, the Almendra Dam, also known as Villarino Dam, is located in the country's province of Salamanca.

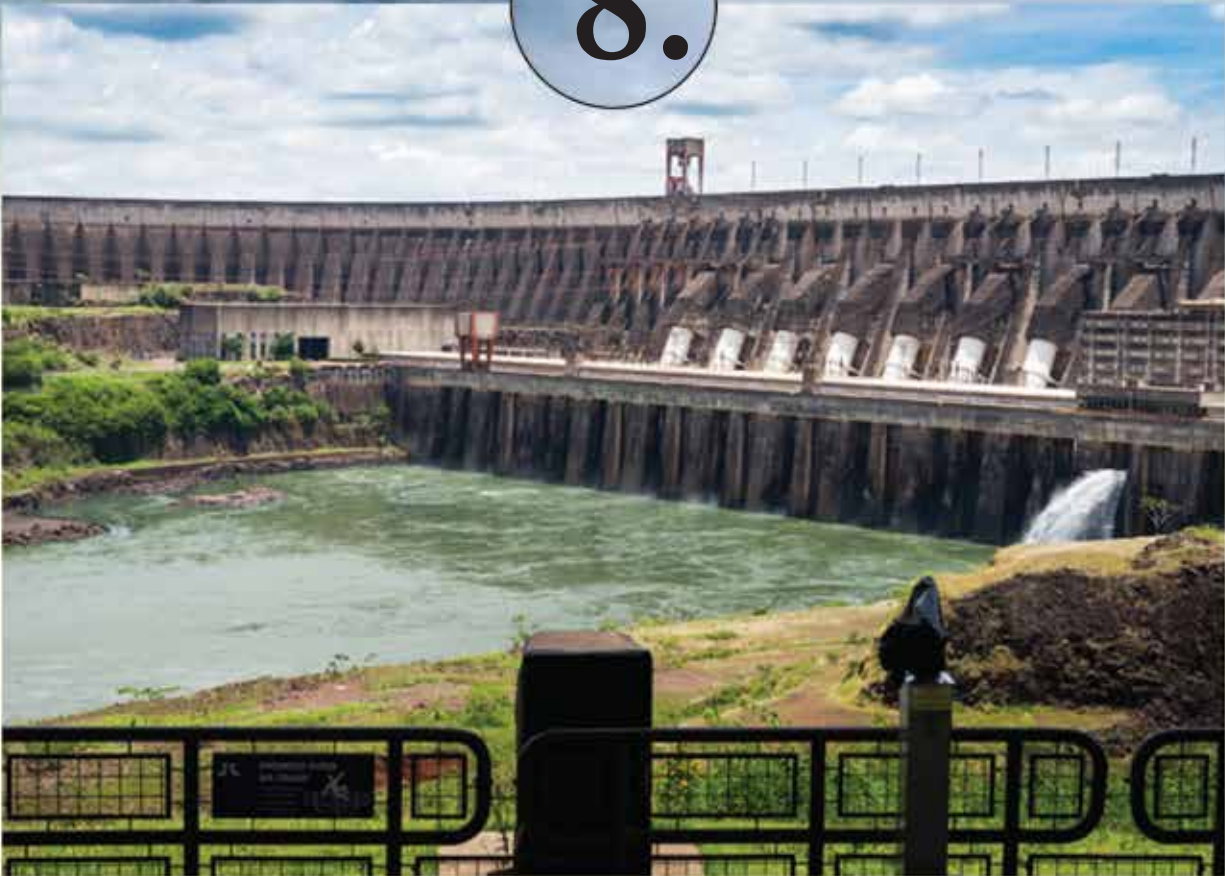
Impounding the Tormes river, this concrete gravity arch dam is part of the hydroelectric system known as the Duero Drops. The Duero Drops system is composed of five dams from Spain and three other dams nearby Portugal.

The spillway seen in the photo below can disperse water at a rate of 3,039 cubic meters per second.

World's most fascinating D A M S

The Itaipu Dam in **Brazil**

8.



This fascinating hydroelectric dam stretches 25,981 feet (7,919 mt) along the border of Brazil and Paraguay, impounding the Parana river.

It beats the Three Gorges Dam in terms of power output at an average of 89.5 TWh per annum by using 20x700 MW Francis turbines. Ten of the turbines generate power for Paraguay, while the other ten bring power to Brazil.

Itaipu Dam is, in fact, a series of four dams: a concrete wing dam, a main concrete dam, a rock-fill dam, and an earth-fill dam.

Impressively, the immense volume of concrete used in constructing the dam was properly cured using large refrigeration units equivalent to 50,000 deep freezers.

Another mind-blowing fact about this dam is that the Guaira Falls, once known as the world's most amazing water feature, was submerged underwater when the Itaipu reservoir was filled. The Guaira Falls stood twice the height of Niagara Falls and surged twice as much water.

World's most fascinating D A M S

The Atatürk Dam in **Turkey**

9.



Located on the Euphrates river, the Atatürk Dam is the largest in Turkey and ranks sixth among the largest earth-and-rock-filled embankment dams in the world. It is the centerpiece of the 22 dams that exist on the Euphrates and the Tigris, which comprise the integrated sectors of the Southeastern Anatolia Project, or GAP in Turkish (Güney Doğu Anadolu Projesi).

The Atatürk reservoir has a capacity of 48.7 cubic kilometers of water and equipped with 8x300 MW Francis turbines, which generate 8,900 GWh of electrical power per annum. The construction of the dam wiped out many important historical sites, including the birthplace of the Ancient Greek poet Lucian.



CIOB Presented New Opportunities in the Construction Industry

**Ceylon
Institute of
Builders a premier
construction institution
and service provider in the
construction industry organized
an awareness seminar for decision
makers, professionals and other industry
stakeholders on the new opportunities
available with the new Government. The
seminar titled “New opportunities in
the Sri Lankan Construction
Industry” was held on the
25th August at the
Hotel
Taj Samudra.**

Dr. Priyathbandu Wickrama, Secretary, Ministry of Water Supply, Mr. Ananda Samarasinghe, Dy. General Manager - Consultancy, Urban Development Authority, Mr. Ranjan Sibera, Director - Infrastructure and IT, Board of Investment, Dr. Rohan Karunaratne, President, CIOB, Eng. Saliya Kaluarachi, Hon. Secretary, CIOB joined as presenters of the programme. In the keynote speech, Dr. Priyathbandu Wickrama stated that the Government will act as a catalyst to support the construction industry and will make the payments due to the construction companies through the proposed interim budget. He further stated that there are plans to develop 4 main cities i.e. Hambantota, Trincomalee, Jaffna and Colombo with 9 economic corridors. A port and an airport will also be developed in these main cities.



Dr. Priyathbandu Wickrama, Secretary, Ministry of Water Supply, addressing gathering.



Dr. Rohan Karunaratne, President, CIOB, addressing gathering.

He also said that the Government will use the overseas construction companies for foreign investments and offer sub contracts to local companies in mega projects. Local construction companies will be the builders for local investments.

Dr. Priyathbandu Wickrama informed the participants that the Government expects to spend about Rs.790 Bn on various water projects developments in the next few years. He said that they need skilled construction contractors. The Government believes that there are many opportunities available for the construction industry in a framework made under a national policy.



Part of audience



Head Table



Mr. Ananda Samarasinghe,
Dy Director General
Consultancy, Urban
Development Authority

Mr. Ranjan Sibera stated that the Government has decided Construction as a main Industry to achieve its goals. They have called for international players to undertake international projects. BOI hopes to contribute 5% to the GDP through the construction industry. Strategic Development Act can be used to streamline the approval process. UDA was instructed to release lands swiftly.

The building with 5 towers for Colombo International Monitory Centre in the Port City has already been planned with an investment of USD.1 Bn. This has been approved by the Cabinet of Ministers and the BOI in the gazette issued last month..

Dr. Rohan Karunaratne stated that he wish to support the CIOB membership and the industry in particular with the new opportunities available for them under the new development plans in Sri Lanka. He said that the industry was badly affected during the last few years. With the mandate given by the majority of people, the country has acquired a strong leadership. He said that they are hopeful for the industry to reach its golden era once again. To achieve the expected development and financial stability, CIOB intend supporting the industry stakeholders by disseminating information through seminars and forums from time to time.

CIOB members representing all major and specialist construction companies and branded suppliers, professionals, academics and other interested parties from the industry participated at this successful seminar.



Eng. Saliya Kaluarachchi,
Hony. Secretary, CIOB



Mr. Ranjan Sibera,
Director - IT & Investment,
Board of Investment of
Sri Lanka

Part of the gathering





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Webinar on 2021 Budget and the Construction Industry

Presented by : **CIOB**



Dr. W. A. Wijewardena
Former Deputy Governor
Central Bank of Sri Lanka



Mr. Sujeewa Rajapakse
Chairman
Peoples Bank



Eng. Major Ranjith Gunatilleke
Chairman
Sanken Construction (Pvt) Ltd
President - CCI



Mr. Nissanka Wijeratne
CEO
Chamber of Construction
Industry S L



Capt. M.G.Kularatne
Chairman
Maga Engineering (Pvt) Ltd



Prof. Chitra Weddikkara
Advisor
Ceylon Institute of Builders
M.D - Q Serve (Pvt) Ltd



Dr. Rohan Karunaratne
President
Ceylon Institute of Builders



Mr. Ruwan De Silva
Vice President
Ceylon Institute of Builders



Eng. Saliya Kaluarachchi
Hon. Secretary
Ceylon Institute of Builders

9th December 2020 5.00 pm to 7.00 pm

Ceylon Institute of Builders arranged the above Webinar to discuss about the Budget 2021 and its impact to the Construction Industry in Sri Lanka.

Professor Chitra Weddikara was the moderator of this Webinar and Dr. W.A Wijewardena, Former Deputy Governor of Central Bank was the key resource person to explicate the proposed budget and its impacts to the major construction industry resource persons and to the onlookers of the webinar who represented the stakeholders.

In his speech he indicated that the most important thing he would focus on in his brief presentation would how the budget 2021 specifically influences the Industry. He went on to say that the construction industry throughout the post independent period had a very high hope of developing the country's infrastructure facilities and that had been the responsibility of the construction industry. "You must be interested in knowing, how the construction industry has been affected by the budget and what type of incentives have been offered there and how as a trade body you would be able to exploit those incentives."

He pointed out that in the Budget it was very clearly said that all the construction work relating to government institutions, that means the construction of buildings, roads, and also the bridges and so forth, would be handled by Government owned Construction Institutions.

He said that the construction companies will have to now immediately develop their capacity to become a sub-contractor to all these institutions, because the government's policy has been to entrust all the construction work relating to the government to governmental institutions for the government works. "which, I don't think should be done. But if that is the decision of the government, the decision of the cabinet, unless you would make representation on your behalf, to make a change in the policy and also allow the private sector to also participate in the construction work of the country, that will be the official agenda of the government for the next 3 – 4 year time period".

Eng. Ranjith Gunatilleke, Managing Director, Sunken Construction (Pvt) Ltd and Chairman, Chamber of Construction questioned about this decision of the budget document and asked for more clarification. Referring to the Page No. 32 of the Budget, Mr. Wijewardena explained it further reading out from the budget proposal "Public institutions should refrain from under-estimating the procurement process by carrying out the intermediate role of providing sub contracts to the private sector." After a detailed explanation on the lines mentioned in the Budget, he also said that "have to go by the Budget. The Budget has been approved by the Cabinet and will be implemented by the Government".

Eng. Gunatilleke explained how these things are presently being implemented and was of the view even after the Budget is, "there are Government authorities who have got the funds like Water Development Board, UDA and Road Development Authority, and they are the Government Agencies carrying out the Government allocated funds. And they are the people who call for the tenders".

Capt. M.G. Kularante stated that he was happy to join the webinar and commented on Mr. Wijewardena's explanation. He said that he is unaware about it, "So what we see up to date, is that all the government contracts are very competitively bidded except for a very few. So in the companies we are in, we are competing with other contractors as well as with other government organizations. For instance, there are now 8 affordable housing for middle income earners and these projects are going to be given to 8 contractors and there are 10 more projects. And in the midst there are also two government organizations. Of course they are handling a lesser amount of work. The biggest projects are given to Sanken, Maga, Access, ICC, Tudawe and all these companies etc. So I think I still cannot understand, or I not fully conversant or aware of this new position if it is the correct one."

Apart from that, speaking of the budget, generally what my view is, the government has to open up the country and create space and

opportunity for the construction industry either private or public sector, for the construction companies to do work and progress. Before I go to do the budget, what is our country, it has a stable government, macroeconomic fundamentals to be met, and consistent government policy, and ease of doing business. Now today, until recently, there is a big pride from the government side to do business in Sri Lanka, to get the government organizations to respond quickly and also grant approvals and permits for doing business. There is some interest taken on that line. Regarding macroeconomic fundamentals Mr. Wijewardena can teach us and give us a lecture on this theme. It is not an easy thing. Policy consistency we see some good progress. They removed VAT, but for condominiums it still exists, tax they have reduced, corporate tax they have reduced from 24 to 14 is still there. Some sort of policy consistency from government is confirmed in this budget. So this is one good thing in the budget. So the state has to decide on the policy, and the private sector has to do the business. As it is often said, it is the 'engine of growth' in any country. So this is the general thing that I have to say. Even now, the local construction industry, and foreign direct investment all these are dependent on consistent government policy".

He also spoke of removal of VAT and benefits given to the construction industry such as bulk import of raw materials to be duty free and import of construction machinery, with modern technology to be free of tax. I think the future seems to be quite promising. It is up to us, to take it on and see what best we can do. So this is all what I have to say. At this point, Prof. Chitra Weddikkara questioned, "Are you going to say we are going to have a very rosy construction industry in the future?" To which Capt. Kularatne responded and the discussion went on as follows.

Capt. Kularatne: During the last several years, the economy has been going down. And, the industry has also been badly affected. And added to that we are now saddled with Covid 19, and with that we have more difficulties. So with all this, I think, we have to find ways and means to overcome and work in places where it

is possible and do our best to be prepared when Covid 19 goes down, to take the industry forward and do our work better.

Prof. Weddikkara: " Captain, I want to ask you, because you said, the government of Sri Lanka, in the budget there is going to be tax concessions for new technologies and things like that. In the construction industry, are big companies like yours also looking at new technology so that at the moment with Covid 19, there is a shortage of people not coming for work? The workforce is very limited. Are you saying that the government of Sri Lanka, with these tax concessions, if you do decide to have new technologies, to improve the construction time and the quality in the future. How are you, as a big company looking at these new technologies?"

Capt. Kularatne: " I think the only way out is to try and see and do whatever possible work with this Covid pandemic. And then if you improve your productivity, efficiency during this time by innovating and embracing new technologies of ways and means of improving productivity, then once we overcome the pandemic, we can take these and definitely improve our efficiency in the industry and also the total turnover and also the quality of the production services that we offer to the community or to the country".

Prof. Weddikkara: "Thank you very much Captain. There are two schools of thought. Mr. Wijewardena was saying that the government policies are not that positive to the private sector because we have to become sub-contractors. But you have given us a little bit of a rosy picture. For young people who are in the construction industry, a rosy picture is quite good. Now I'm going to ask...."

Capt. Kularatne: "One more thing, Professor, now even as Engineer Ranjith said, now even if the government has the desire to or wants to give more work to the government organizations, the SOE's, it is not practically possible because they are a small minority, because they are about 5% of the total industry. So it has to be the private sector that can drive the industry forward and not the SOE's at this particular time of development of the country's situation"

Prof. Weddikkara: “ Who is going to give the investment? Is it the government or the private investor? Because at this moment as you state, the private sector is the ‘engine of growth’ in any economy. A long time ago, the government was the facilitator of construction and they did a lot of funding and things like that. Now, today, please correct me if I am wrong, they are not going to fund so much, because it is the private investor who will provide the investment. Are you saying the government is creating an environment for private investors to come and invest?

Capt. Kularatne: “ So, as I said, a stable government and policy consistency and ease of doing business can attract foreign investors. But it is not yet time because of this pandemic, and of course if the government maintains this policy stance, the situation could definitely be better. But right now the private sector investments are few and far between. But right now the government is ‘throwing’ a lot of money into the industry for a lot of jobs, so that the industry is not without work”.

At this point Prof. Weddikkara spoke to Mr. Sujeewa Rajapakse, Chairman, Peoples Bank for his views.

Prof. Weddikkara: Sujeewa is the Chairman of the People’s Bank at the moment, so welcome Sujeewa. Can you talk about the Budget and the construction industry? You have been involved in the construction industry a long, long period of time. So now, may I invite you to say something about the industry?

Mr. Sujeewa Rajapakse: “Thank you Ma’am. Thank you Ceylon Institute of Builders, and special thanks to Dr. Rohan Karunaratne who really invited me and I always never say no. I was watching the whole thing from A - Z up to now. And my friend, Mr. Wijewardena took us through a very, very important aspect and also Ranjith had a few important issues. Because I know Ranjith, and as Wije was talking about pages 31 – 33, I too was reading while he was talking about that. It says there are certain things. But the question here is whether they can build up the capacity within a very short

period of time, to gear up and compared to the private sector. And page 31, just for your information, of the participants, the last line says -” I propose to implement various development programs through public enterprise amounting to at least twice as the budget provision allocated to them”. -That is what it says. So those institutions will have to look and see what the budget allocations are. But again I also have a question, which probably you also have, whether they have the capacity to do that now? I think it is their responsibility, but they will have to compete with giants like, you know, Captain, and Ranjith and all the others, so that is important. Having said that, I have been asked to speak about a few matters. One is the budget, or rather tax. Captain touched on those areas. I will have a few things to say, and also looking at this from the Banking side. Since, I am wearing different hats here as a Chairman of a Bank, Managing Partner of a Firm, and many things”.

“Just to tell you, I have met so many contactors, over the last one year, I need to say there are different categories of contractors who are participating. I can see there are about 55 plus I believe, You need to understand about handling your funds. That is absolutely important because I am not a typical banker, but of course as a financial consultant, auditor, when I ask a few questions, I feel that, it appears to me, pardon me for saying this, whether it is mismanaged or whether you have taken money from one project to finance another project, maybe due to obvious reasons. I don’t say I don’t find fault with that, but the question here is that, when you obtain a loan, you must make sure you must utilize it for that particular project. If not what happens is, there are going to be massive working capital issues. Then when you get back to the bank and say, - “I need some money”- then they are also maestros in the game, like Wije, they will say sorry, we can’t do that. But again, the banker can’t always say no, because the banker should somehow recover what they have given. Then what happens is, the banker is compelled to offer some more facilities, whether they like it or not. To make sure that that contractor is going to complete that particular project. But again there are certain instances, where my own bank, the People’s

Bank, has said -“No”- because they take a calculated kind of risk. Even in the recent past, I know that RDA had quoted a bid, and a lot of people wanted to bid, and they came behind and wanted to see they are given this letter to them, to produce to RDA to say that look here, my banker has backed me, for whatever billion rupees. But we have declined a couple of these things, purely because, of the fact that it was based on past performance. So, I like to say that upcoming contractors who are here, make sure you maintain an excellent rapport and goodwill with your banker, and if you have any issue, don't hide yourself, go and talk to them and tell them the exact problem and make sure you get them engaged. That is very important. Otherwise what happens is, when you are in difficulty, you always try to keep away from your banker or your financier which is not a good thing, because your brand is the important asset for your organization. Because bankers go behind collateral, but for me as a banker and as a financier, if I have an excellent Brand Image, a Brand Loyalty, like let us say Capt. Kularatne's Maga, the moment I see that, I say trustworthy, confidence, many things. I think 90% of the work is over. So that is how you have to look at when you are dealing with a Bank or banker “.

“Having said that even recently when they come to us, when they discuss, we feel that OK, whether they are in fact going to do these contracts or whether they are just getting this and trying to sub contract to another person having kept some margin I think, that kind of things are also happening. Construction Industry, or Association, I think Ladies and Gentlemen, you will have to stop that kind of thing. Because what happens is, bankers will not have any faith. It will be very hard for you to re-establish the goodwill, so therefore, looking at this from a bankers point of view, please understand that is also important “.

“Again, Corporate Greediness or Corporate Greed had led a lot of people, not only the construction industry but also to cause corporate failures, massive failures. Even global if you take, this is so. You undertake something which you are not capable of, undertaking something which you do not have the capacity, and this is

like the rat race. Because so and so is doing, I also would like to do. We have seen that and people have got into trouble. Now even my MPL, which people are talking about massive billions people are talking about, some of those includes some of the contractors. I don't think we should get into that. That is what I can tell you from banker's point of view “.

“Looking at tax proposals, it is very important. The Prime Minister as the Minister of Finance, categorically mentioned, there is no change in tax policy. For anybody, foreign investor or contractor or any investor, you need to have a consistency in tax policy, which is important. And VAT, is not going to change, which is 8%. This is also important. You need to really look at the REITS, Real Estate Investment Trusts. We have been really looking forward, now it has become to a reality. So capital gain, when I was a commissioned member of SEC, (Securities Exchange Commission) we started 10 projects, out of 10 one was REITS. Now it has become a reality. Now ladies and gentlemen, you have to seriously look at and see how best you all could get into this, because, REITS, you will have to read a lot, it another 2 hour lecture in itself. Capital gains and dividend from REIT is going to be exempted from tax. This is very important, because, this was a debate we have had for the past couple of years.

“And stamp duty is going to be only 7.5%. Otherwise it was originally 4%. That's another important thing. Another thing is maximum interest rate from mortgage backed housing loans. Why I am telling you is, this will be another boost for the economy and for the construction industry. Because now the government has announced, the budget proposals have announced condominium property can be bought at 7% interest rate. This is again important. That is for salaried employees in the private and public sector. Obviously, this will have a huge boost for you ladies and gentlemen. And banks have already received monetary board report directive dated 4th December, that has already been implemented. So therefore, you all could think about this, which is another one. There are other tax proposals, income rate applicable to the construction industry you

know that it is from 28 to 14. What else do you expect? I think everything has already been given what you have been looking for. And withholding tax, 10% on rent and 5% on individual has been removed with effect from 1st January 2020. I think this will also be another boost. These are the things I can tell you”.

“Of course, I believe that as construction contractors you all could have gone through the massive, I think Captain touched on that, because the amount of work that are going to be offered to you all is something unbelievable, within the next one year, if, if everything goes well. I think you know about the Kelaniya Central Expressway, Ruwanpura, is already about to be implemented, Kelaniya Bridge to Athurugiriya, Marine Drive extension to Moratuwa, bridges and roads in Colombo and suburbs, there are proposals, towns and community water projects, I think, imagine, government has already allocated, prior to the budget, 125 Billion and another additional allocation, 75 Billion. Imagine Water Bard is going to give you, 200 Billion worth of work if everything goes well. And then improvement to railway, middle class apartments 5000 in Colombo and suburbs, and rural houses about 40,000 by 2025 that extends up to 2025. Allowing foreigners to buy luxury apartments in foreign currency, that’s another thing that for people like Ranjith Gunatilleke, will be benefitted through this, I am sure. No duty for between imports that you all would have seen”.

“Facilities to obtain 90% of the value of Credit Bills from Banks, in respect of government sector projects that are another welcoming note. Import duty exemption on imports of machinery with modern technology, I think Captain touched on that. Likewise, there are loan schemes and many more things. There are also 10 year tax holidays for investment on selected recycling sites. That’s another important thing. So, you ladies and gentlemen, please think of those. I think within a short given time, I have touched on all those. For me, when I went through the whole thing, I feel it is the construction industry that has got the maximum benefit. I think I can tell you provided that you utilize it properly. Thank you very much”.

Prof. Weddikkara: “ Sujeewa, what you are saying is there is a bit of a mismanagement of finances by the contractors in their day to day work, in their day to day carrying on of their businesses. I am interested, as an academic, do you think we should do some training for these guys so that they can understand the aspects of their work ?

Mr. Rajapakse: “ I can certainly come and do a lecture or anything for your people who are upcoming entrepreneurs and there are many more things. I will be very happy. I don’t need to charge. I can do it free of charge. Financial management, working capital management, forecasts, stress management that is very important, those are all soft skilled programs we should have”.

Prof. Weddikkra: “Thank you once again, Sujeewa, you have given us a rosy picture, for the construction industry if everything goes well. So we’ll have to wait and see. I hope these things will take place for the construction industry at least in 2021. Any questions Ranjith, before Sujeewa goes?

Capt. Kularatne: “I wish to thank Sujeewa for his very important analysis. Added to that, the construction contractors should be disciplined. That also should be added to what you said.”

Eng. Ranjith Gunatilleke joined the webinar discussion again at this point and expressed his views on the Budget 2021.

Eng. Ranjith Gunatilleke: “Added to what Sujeewa said, I’m very happy the bank CEO’s and chairmen understand the construction industry and the budget proposals very clearly. At the same time, what he is saying is that the facilities given to the public and private sector employees to buy their first home, the incentive, the proposal given in the budget is very good. Sujeewa you have understood this and all other commercial banks have understood this. This is a very big boon to the industry. Thank you very much.”.

Mr. Rajapakse: “Even from yesterday Ranjith I can tell you, young people consultants, doctors

and professionals were lining up in my office also, expecting these things. That is all very good. You will all have to make use of those opportunities”.

Prof. Weddikkara: Sujeewa one little thing. Everybody talks of the construction industry and only of the contractor and nobody says anything about the consultant. So, I hope in the future, they will say something. I always argue with Ranjith and everyone that they must talk of the construction industry in total. Suppliers, manufacturers, contractors, consultants and so on. So Sujeewa, I hope when you come and talk about the budget next time, you will have a little bit about the consultants also. Thank you so much”.

Eng. Gunatilleke: “Thank you very much for inviting us. It has been one of the most effective seminars. Basically I agree with what Captain said. And what Sujeewa said was plus points for the construction industry. Also I understand what Mr. Wijewardena said in the correct spirit. But my interpretation has been little different as Captain said, because what the budget proposal tries to say because simply all these billions cannot be handled by these government institutions immediately. Maybe they have to get their actually project management resources and they have got to improve”.

“Having all these professionals, what you talked about Chitra, the consultants should be in their house to handle all this work. For example some years back, around the yearly ‘70’s, the Buildings Department did a lot of work in managing the building sector work of all these departments. The department of Highways did a lot of work on the roads and Water Board. That is they did their own project management which now only done by CCB, and SEC which is less than 1% of the total ongoing construction work. All the other work is done by the private sector. But authorities like the Road Development Authority and Urban Development Authority, they are using the consultants. Mostly what Chitra was worried about”.

“The Chamber, being the apex body we are looking into the interest and the welfare and all

the other facilities and future of all sectors. Whether they are the consultants or the architects or the engineers or the quantity surveyors, we are looking into all that. But this budget, I should say, has been very very fruitful. This budget has proposals which have created a lot of scope for the country.

“If you take the infrastructure, that big ‘if’ is there on the funding, that I’m not going to talk because I’m not person Airport Development and other building work. If you take buildings alone, national housing construction, National Housing Development Authority, assisted by Asian Development Bank and middle income is doing work jointly with government and little private. Because the private sector can put 20% and the upper level housing, like luxury housing is being done by the private sector. So that with these projects, let’s hope and be clear that definitely..... The issue is that resources that are available in the country. Machinery and equipment, yes no problem, government will give concessions, no taxes, so, we can import machinery & equipment. But human resources, there won’t be sufficient human resources in the industry, because His Excellency the President expected us to train. But unfortunately, our people don’t want to come to this industry so that there is a big problem because today a casual laborer in the industry is getting about Rs. 60,000 whereas a graduate engineer is getting less than that. But, still we can’t get the people. That is one major problem everybody has to address”.

“Then the last is, local material required for all this development, now we have to see who will manage our imports? If you take metal and sand, and the contractors what they have to go through to resource these materials, subject to various situations, not only the difficulties they are undergoing from various government authorities. Now if you believe this rock blasting. You have to stop. Even the quarries they have to close.Now a country has to be developed and all these materials have to be there. Otherwise these prices would skyrocket and normal individual house builders won’t be able to do anything”.

“And the last thing, I want to bring is the private sector investment and the worries. At the moment, with the Covid situation, private sector investment has been a bit lull and hope that will be OK in the future. If the private sector investors work with architects, quantity surveyors and other professionals, because the government sector is already been issued with work? That is what I say. As Captain said, and Sujewa also touched, this is important to the industry and it is important the proper use public finance. All of us must get together and do that. Thank You”.

At this point Capt. Kularatne wanted to leave the webinar discussion as he got to attend another meeting.

Prof. Weddikkara : “I was going to have a question and answer session from members. But people who are there, maybe we can ask. But anyway, Captain, thank you very uch for your important contribution to this budget. We are recording it. So we can put our thoughts on paper and then distribute it. So that we can all see what is necessary to overcome for the Sri Lankan construction industry. Thank you very much Captain”.

Prof. Weddikara invited Eng. Nissanka Wijeratne to the webinar discussion to speak on his views about the Budget 2021.

Eng. Nissanka Wijeratne: “Thank you very much for inviting me to speak to the construction sector on the budget 2021. As all of us would know, the budget is the economic road-map of this government. 2021 – 2025. It flows from His Excellency. More importantly this budget is presented at a time, when according to the rating of several international and donor agencies; it can be in the order of 6% of the GDP. Even the Central Bank is crediting a much lesser amount. Prior to this budget, Public Finance Circular No: 3, of 2020, were issued on the 9th October detailing the policy concerning the domestic construction industry. But the following important changes or guidelines or procurement interventions were strongly advocated by our chamber”.

* Tenders for projects financed by consolidated funds, schools relief from domestic contractors registered was less or more than 15% of engineers estimate, to avoid unrealistic bidding.

* Contractors should sub subcontract at least 25% of the total working load to be contractors to support this main sector.

* Main contractors should not sub contract more than 10% to foreign contractors.

* Contractors should use exclusively 18 categories of locally produced building material whenever needed for these works.

*Allow a 15% preference to state institutions when tendering for construction works. However, the chamber has never agreed to this 15% preference. We have agreed only to a 5% preference as considered reasonable.

*Allowing a 15% preference will give an undue advantage to SOE’s over the private construction companies, when they are tendering

* The government must realize that 97% of the construction workforce, is made up by the private sector.

“Now here, I will come to Mr. Wijewardena’s contention. I have the budget speech here with me. Here from page 31 (I think he started reading from page 32, unfortunately). From page 31 if we read, it says: “It is expected that with public investment rating over Rs. 1000 Billion, that construction and service entities will also be participating in the implementation of the envisaged work, which will reduce the transfers of both recurrent and capital nature to the public enterprises”. (I think reduce government sector into these enterprises). “Propose to implement various development programs through public enterprises amounting to at least twice the provision allocated to them”.

“Then of course in page 32, it says, “Public institutions like, government factories, Department of Buildings, State Engineering Corporation, SD & CC, CCB, Railways Engineering Bureau, SLNC, can implement construction

projects of the government Therefore I entrust public enterprises with the task of implementing the public investment program instead of allocating recurrent and capital expenditure for 2021”.

“The intention is to give works to the tune of twice the allocated amount the government has to give to these for the subsistence of these institutions. “Institutions should refrain from underestimating the procurement process by carrying out the intermediate role of providing sub contracts to the private sector”.

“So I don’t think it is as black as what it seems, the government has to give double the vote allocation; they have to make for the benefit of these institutions. Earlier when I was secretary, we were always thinking that SLDC should be given at least Rs. 5000 million for their projects and SEC Rs. 7500 million. So I think even now it might happen at that level. But I think it is expected that quite a lot of work entrusted to these corporations by the government. But still there will be more remaining to attract the private sector”.

Following up from the President’s manifesto the government has prioritized the following important construction works:

* Develop 100,000 kilometers of highways for rural roads and this will cost at least Rs. 1500 billion.

*Develop 177 kilometers of expressways including expressway from Dambulla, Pothuhera, Galagedera extension, as Section 1 to Ingiriya. This will involve some Rs. 655 Billion.

* Construct Port access and expressway from Kelani Bridge to Athurugiriya

* Increase the drinking water supply from the present 54% level to 78% level of the population. This includes 1000 community water projects, 171 major projects, and Drinking water supply from 2.1 million cubic meters to 4.4 million cubic meters per day. This will involve at least 1000 billion.

* Construct 5000 middle income flats, construct rural housing, rehabilitate 5000 small and medium size housing to bring back to life the ancient ‘en lanka’ irrigation project

“Now, these are projects that are derived from the president’s manifesto. In addition, to that there would be several other projects and power sector they are going to construct new power houses, So according to the program, the total estimated infrastructure cost of the development for the next years is going to be Rs. 5000 million. But of course there will some caveat. We must realize that even the previous government in 2015, announced a working plan worth Rs.6000 billion. With this government they announced a total capital development worth Rs. 5000 Billion. In the budget 2021, the total provision for development work is Rs. 813 billion, under each department and ministries. But it doesn’t look that bad. When you compare 5000 Billion total investment expected”.

“During the last regime, 6000 Billion worth of work the total estimated construction workforce of 1 million, with the assistance of Professor Weddikara. At that time the total available workforce was something like 650,000 which has not varied much even now. So with present this present 5000 billion workload, there could be a shortage of workers”.

“Then, even with the present government, there is a risk of not being able to achieve the target of 5000 billion, in the budgetary estimates we can see that expecting a total revenue of 2019 Billion for 2021. Annotated July 2020, the total has been 670.4 Billion. The projected revenue for 2020 is 1200 – 1300 billion. In this situation we have to think how practical it would be to expect to reach a target of 65% in year 2021. So if the government is not able to realize that revenue target, the problem is they will have to cut down on the capital expenditure”.

“The other issue that can hamper the development program is the ability to raise the planned borrowings from international markets. This is from the backdrop of ratings downgrades provided by Moody and Fitch. Earlier when the government was unable to raise the expected

revenue, then what happens is there would be a cut on the capital expenditure rather than the recurrent expenditure. Most recurrent expenditure is salaries and various benefits like Samurahi benefits and all that. So this can be a repeat scenario of what happened in 2019. In the year 2019, most of the construction companies, could not get paid for work done. As a remedy in this budget, it is possible to offer bill discounting through the banks up to 90% of the certified amounts. But the difficulty in this will be is that is it would be taken as additional borrowings by the respected companies. They will only allow only up to loan facilities that can be not Due to this even the earlier such facilities authorized by Central Bank was not successful”.

“The other issue is will the Clients pay the total interest charge? They are liable to pay only 1% of the lending rate of Central Bank to Commercial Bank which is about 5.6% or something. A good measure announced is to hand our pits quarries to RDA, so that the supply of gravel and other rock material to construction companies can be implemented. But the question is can the RDA undertake this on a large scale? In my personal view, it would have been better if all these rock sites are managed by the Army. They have enough personnel trained in handling explosives, and purchasing these explosives would be no issue. The Army should supply the boulders as required to the Construction Companies at a reasonable price. So that they can supply fresh material to the construction sector”.

“There is also a proposal to import certain construction materials not voluntarily but on a duty free basis. Another new proposal is the announcement of a 10 year tax holiday for the recycling of construction debris. Despite the fact that we are in a foreign debt crisis with limited earnings and stringent import restrictions even affecting certain international rating agencies doubt our ability to make these payment commitments. In this scenario the government should encourage the FDI’s and funding by international donors”.

It is rather ironic to note the cancellation of the following projects developed after so many years. That is:

- Colombo suburban railway project including the development of KV line up to Avissawella, main line up to Rambukkana, coastal line up to Kalutara, Puttalam line from Ragama to Negombo.

- The first project that is the KV line development up to Padukka is restricted, and with funds pledged by ADB. Total cost is 1.2 billion dollars. And this project has a good ERR. Equal rate of return.

- Then the LRT project which is a network of 6 lines interconnected with the Railway Network. First section from Colombo Fort to Malabe is ready to tender. With a total cost of US Dollars 1.8 billion repayment within a period of 40 years with a grace period of 12 years with an interest of 42 1/2 %. The loan covers rail lines, document With this loan, repayment will start only in 2032.

“To attract FDI’s we need to create an enabling environment. Even though some steps are already taken, a lot more needs to be done. In particular these are important:

- Fast Track Approval. The mechanism to grant planning approval within 3 weeks is yet to be done. There have been many instances of potential investors withdrawing action by politicians and officials. Taking a cue from the development story of Singapore, which started with Lee Kwan Yieu, which is summarized by MPH. Meaning, Pragmatic Policy & Honesty to achieve production. After getting Independence this policy was adopted rigorously in Singapore. We can see the results.

- Fitch downgrading of BOC yesterday. This should be another eye opener for the policy makers. Sri Lanka is radically changed in government’s policy to overcome crises and move forward. Thank you very much”.

Prof. Wedikkara: Thank you Nissanka. That was a very valuable analysis and informative discussion on the 2021 budget. You said the budget is

an economic roadmap for the construction industry. I am wondering whether this roadmap, should the CIOB and chamber look at this roadmap and identify the priorities so that the industry can benefit from that. I really don't know. There is priority generation, revenue generation. Is there something that can be done? I know the government has taken housing projects,.....

Eng. Wijeratne: "One good thing is that with this government, decisions are made very fast. No dilly dallying of making decisions, that we can be sure of. And I think all these ministries are ready to go ahead with all the announced construction work, I think within the next three months. You can see now even out of the 5000 middle class housing, I think already 9 projects have been awarded. Roadwork's, I think the 100,000 kilometer road networks, I think this year they are going to do something like 10,000 kilometers and all other work will be awarded within the next two to three months. I think they are working on a standard rate and to hand it to the nearest contractor. That is what they are planning to do. So, I think there will be enough work to go around, if the government distributes this evenly among the contractors. But the issue can be shortage of labor".

"Prof. Wedikkara: "That is why I am saying the Chamber and the CIOB must start looking at innovating methodology of labor, where this construction can be done quicker and faster than in the past. I think the old technologies must be replaced by new technology. Of course I saw that Sujeewa talked about giving incentives to bring down machinery and things like that. Maybe things like that the Chamber and the CIOB should now start looking at, getting our contractors the finances. I think very importantly the financial management of contractors; these are the things in which the Chamber and the CIOB should improve the construction industry must look at getting this work done quicker and faster. I think Mr. Wijewardena do you want you have something to say about it?"

Dr. Wijewardena: " Yes, I think what Mr. Nissanka Wijeratne mentioned about the likely overestimation of the revenue of the government for 2021 that has been the trend through

out ever since Sri Lanka became independent. And there is a good reason for that. I think I will have to disclose the reason also here. That is because the government gets a free overdraft from the Central Bank, up to 10% of the estimated revenue for the next year, from the Central Bank, its free, an interest free overdraft. So as a result always the Minister of Finance overestimates the revenue, because based on that they will get the overdraft. For example, from January 1st 2021, a letter will be addressed by the Deputy Secretary of the Treasury to the Central Bank Governor, asking him to increase the overdraft facility, which will be about say Rs. 200 Billion for the government which is free money. But the problem with Sri Lanka's budgetary management is there is no posting. At the end of the year you never check whether the targets have been achieved. It is being done only by these private sector think tanks like Verite Research, they publish a report saying that the government was short of funding, say 20% or 30% . So this is the game that has been played by all the governments in the past. So that is why I think Mr. Nissanka Wijeratne was very skeptical about raising the revenue by 65% in 2021, which is correct Mr. Wijeratne, because we have to increase the revenue estimate to get the biggest overdraft facility from the government. This is not known by many people and this is a trick they are playing every year. That's No1."

"No2. About this Capital Budget, this time what the Minister of Finance has done is, they have reduced the Capital Expenditure program of the government in order to maintain the proper budgetary resources. They want to maintain the budget deficit at the projected level of say 8%, so that as what Mr. Wijeratne very correctly mentioned, they had cut down the Capital Expenditure program from the Consolidated Fund. But instead, they expect the government sector enterprises, not the construction enterprises but all the enterprises to go for a Capital Expenditure program which they call the Public Investment Program, where those enterprises will have to find money. That money will be raised by issuing debentures, bonds".

"For example you were mentioning about this LRT, so the Railway Department can issue a

bond in the name of the LRT and get the private sector, people like us to invest in the bond. So that the monies will not come from the Central Government's Consolidated Fund, monies will come from investments which will be made by people like us. Now most likely institutions that would be investing in these bonds, Prof Weddikkara, is the Employees Provident Fund, the Employees Trust Fund, Insurance Corporation which are known as the Captive Sources of the government. In addition to that our good friend Sujeewa Rajapakse also will also have to bear part of the responsibility. He will also have to fund most of the Bonds that are to be issued. So therefore, the money will not be coming from the Consolidated Fund, but the money will be raised by the respective institutions. So that is where you have to correctly interpret what has been announced in the Budget. What would happen is they have to go through the normal procurement processes, if they do it with the private sector also. So from government to government they will hand it over to a public sector corporation. From that one you could get the sub contract. That is what has been mentioned there. So that is what I said, you are very correct those institutions do not have the capacity to do it but at the same time they will be following their normal internal procurement procedures and they will subcontract it to you and your people are still getting the contracts. So that is what would happen in the future”.

“And, about these other things, there is a big ‘hole’ in the budget. Right now, the revenue is lagging behind, because of these tax incentives which have been announced before the budget in January, as Sujeewa said, the total loss of revenue for 2020 alone has been estimated to be around 600 Billion Sri Lankan Rupees. The same things will be carried forward for the next 3 – 4 year time period as well. So as a result, they can't either borrow from the overseas market also as Mr. Wijeratne has very correctly mentioned, you can't go to International Sovereign Bond markets because already the rating agencies have downgraded us and if we are to go to International Sovereign Bond Markets we have to pay a higher premium. So that means the interest rate yield will also be higher. Right now we are borrowing at a rate of 6 – 6 1/2% from

the international markets, probably the interest rate for a 10 year international sovereign bond would be 10 – 12%. I don't think the government will want to risk that. So therefore the monies are obtained by the government right now by getting the Central Bank to print money. This is an aspect, as builders, you are totally unaware because so far, up to the end of September, already the government has borrowed from the banking sector, that is from the Central Bank plus the commercial bank is 1.8 Trillion Rupees. Public Corporations have borrowed another 600 Billion Rupees. So total borrowing by the public sector is about 2.4 Trillion Rupees. Of that, 700 Billion has come from new money printed by the Central Bank. And Central Bank will do it, will continue to do it. That is why there is excess liquidity in the banking sector. Already 200 Billion is excess liquidity. I don't know. Sujeewa Rajapakse does not know what to do with his money. So that is where the private sector contractors you will have, as Sujeewa says, improve your ability to borrow money from commercial banks and maintain a good track record as a borrower and tap that money”.

“And also, I suggest, you also issue your own debentures. If the RDA can issue a debenture, a bond relating to a development fund, for example if you get a contract, say a 5 year contract for developing the railway line, if you get the contract, just like the railway lines were developed in the USA, in the 18th or 19th century, issue bonds. You can raise money, and then you don't have to worry about borrowing from the banking sector. Because what I have noted, in my experience at Central Banking, that you do contracts from the government, expecting the consolidated fund to pay you, and borrow money from the local banking sector. But the Treasury does not deliver because the Treasury has a cash problem. It is not because they don't have revenue, they have a cash problem. Therefore they don't deliver the money to the user in time. So as a result you have to pay back to the commercial bank and at the same time, commercial banks are insisting on that that is why, some of these contractors in the past, they had borrowed money from the Sarva Mudalali and Sakviti Ranasinghe at high interest rates, pending the release of money by the Treasury.

I know, because most of the contractors who had contracted to do the buildings for the Institute of Sri Jayawardenapura, it's not that much, only some 150 million Rupee worth of buildings, Treasury didn't release money and they were in big trouble and I have seen the Vice Chancellor himself speaking with the Director General of Treasury Operations to get the money. So that is why, I would suggest to you, you change your model. Instead of borrowing from commercial banks, if you get a long term development contract, just like as the railway system in the USA was financed, issue your own development bonds. Get the capital. I think MARGA and Sanken can always, you know issue bonds in the market. I mean if John Keells can issue Global Depository Reports in the International Market, you also can do that. So develop that. And to develop that you must get technical assistance from people like Sujeewa Rajapakse. How to develop the model for issuing those bonds. Because they have their People's Leasing Company and People's Merchant Bank, all these banks will help to issue those bands in the market. So that is what I think you must do".

Prof. Weddikkara: "I think these big timers like Maga and ICC can do that, having a development program or whatever, so I suppose Mr. Wijewardena, that was a very interesting lecture. I'm sure Ranjith and Maga and all these other contractors will be able to make use of this new kind of model, rather than waiting on the old models all the time. Thank you so much for that kind of advice. Now at the moment since it is ten to seven, we want to open to the participants. Because I can see some people from Oman and some people from Dubai and places like that are also here. Mr. you are from Oman. Thank you for joining us. Do you have any questions about the budget 2021 of Sri Lanka? Because you are all Sri Lankans and I think you are interested in the budget. Any questions? We can open the seminar for questions? We have only 10 minutes left. Saliya I can see you have some back. Saliya do you want to say thing to say about the budget".

Eng. Saliya Kaluarachchi: "I was at another meeting. Basically I think the problem that the industry has come out in these last stages.

Where it is essentially cash based industry. The structure. Construction. Of course you get credit. But it is a cash based industry. So companies need cash. Companies need money. One of the best solutions that was proposed was what Mr. Wijewardena said, whether the (rich, didn't want to use that word) whether the capable company who can win the confidence of investors like Softlogic. I just want to clarify one matter, within the limited financial knowledge of mine, does it really mean things like debentures or when you say risks.....?"

Dr. Wijewardena: "Debentures. Those are unsecured debentures can be floated by any of these companies in the market just like ..."

Eng. Kaluarachchi: " Yes I understand these debentures, only the terminology. Fundamentally we are talking about debentures, but apart from the construction companies, issue that which is in my mind is the companies which wish to invest in construction they could also go for the same process. Couldn't they? You form a company as a holding company, for example, let us say this 'Homelands' which does a large amount of condominiums. Can they too do this? So they raise the monies and they can pay the contractors?"

Dr. Wijewardena: "Yes they can. This is actually funding no? Sujeewa says, either you capitalize by using your own capital or you issue shares in the market so you that you have to dilute your own assets. Most of the companies do not want to do that. But you can raise long term funding, even the land development companies like that can issue debentures in the market, but of course they have to go through the processes in the Colombo Stock Exchange, they have to issue a prospectus, they have to go through an investment manager and it's a process, But there are all the institutions like Merchant Bank of Sri Lanka is part of the Bank of Ceylon, People's Merchant Bank and Commercial Merchant Bank. Now merchant banks can actually manage the issue. And you have to pay just a little commission on that. Try to do that".

Eng. Kaluarachchi: Yes, this is what I really appreciated, or these financial instruments are not very much known by the people of our

trade. Only a few people understand most of the people don't understand this. So what is the frame work or forum we can create awareness. So instead of going for a government tenders all the time, develop a differed network within, to raise funds for the industry?"

Dr. Wijewardena: "Well Mr. Kaluaratchchi I think Sujeewa had already offered these services to you free of charge. Let him come and educate you. This is a new area of financing".

Eng. Kaluarachchi: "This is another thing that is coming into the market that is Crypto money. Crypto financing. Is there any opportunity for the Construction industry to go in for crypto currency?"

Dr. Wijewardena: "Well as far as Sri Lanka is concerned, the monopoly power of issuing currency in Sri Lanka, has been vested with the Central Bank of Sri Lanka. Central Bank has so far not allowed the trading of currencies like bit coin and all that in Sri Lanka, and therefore, if you try to do it, you will violating the provisions of the monetary act and you will be taken to courts.

But the Central Bank is now in the process of issuing its own crypto currency. They have appointed a committee there and they will issue instead of this physical currency note that we are having in the future, they will have, because they want to cut down on the cost of printing of currency, goes up every year. Now already the Central Bank of Indi has decided to issue its own crypto currency, Luxmi and Central Bank of Sri Lanka has appointed a committee which is now working on a version of a similar crypto currency. What would happen, the model is like that".

"Right now the Central Bank of Sri Lanka cannot have accounts for the private individuals. It can have accounts for only commercial banks with the Central Bank. But once the crypto currency is issued, a person like myself can have an account with the Central Bank of Sri Lanka. So when I am paid my salary by whatever the institution, what happens is that company's account is debited and my account is credited in the Central Bank. And when I want to pay

Cargill's or Keells supermarket, my account in the central Bank will be debited and Cargills or Keells account is credited. So that is how it will work. And Central Bank is onto that project Mr. Kaluaaratchchi and I hope that it will take off.

Eng. Kaluarachchi : "The big question mark is between India and Sri Lanka the Central Banks have not got involved in this".

Dr. Wjewardena : "No, the Bank of Sweden, the Bank of England etc."

Eng. Kaluarachchi : "Oh is that so, then I am subject to correction I thought this was totally handled by the private sector. Then Bit coin".

Dr. Wijewardena: "The problem with Bit coin, there are two problems".

Problem No 1: There is no limit. They have the aqua rhythmic system which will limit the issue of the bit coins. Then what would happen is there will be shortage of coins. That is why the price has increased. In 2009 when the Bit coin was first issued, its value was 10 US cents. But because of the limitation, through the aqua rhythmic system the price has now gone up to even 19,000 US Dollars. Today its about 12,000 US Dollars.

Problem No 2: You have to do the trading through a private exchange. However much you say it is safe, there are instances those private exchanges have been raided by hackers and most of the hackers.

Problem No 3: There is no audit trail. And as a result the Central Banks are frowning on that because it is fertile ground for people to do money laundering and terrorist financing. That is why Central Banks want to issue their own cryptocueency. I have suggested to the Central Bank, since we have this 'masurang' in the good old days, we call our cryptocurrency 'Masurang'. Like India is going to issue this 'Luxmi'.

Eng. Kaluarachchi: Thank you Sir, for the education.

Dr. Wijewardena: I won't advice you to go for the private one is because No1, It is against the

laws of Sri Lanka. No 2. There is no security. But of course you might be caught by the Sri Lankan authorities for money laundering, and terrorist financing, and all these problems are there.

Eng. Kaluarachchi: Thank you very much. I think There are some of the broader areas I was thinking of I'm not a person who is directly involved with construction, I am professional engineer. Apart from that if I may make a comment, I hope you would pardon me; I personally don't see a rosy picture like what Captain Kularatne was trying to paint. Nothing personal though!

Dr. Wijewardena: In my life, at the Central Bank, I have overseen more than 50 budgets. At the time of presenting the budget you always talk about a rosy picture. End of the year, you all have noted why Sri Lanka remains a developing country. We have not been able to meet the budgetary targets at any particular point of time. We have failed.

Eng. Kaluarachchi: Thank you very much. Basically those are the comments and observations I would like to make, I think this has been a very good process of education and for us to move forward in a more unorthodox or different models. Thank you once again.

Prof. Weddikara; I have been asked by the Administrator to request you please put your videos on so that they can take a snapshot of the webinar. So make sure you are smiling and looking pretty.

..

Mr. Pasarath: Mr. Wijewardena what do think this Moody and Fitch have downgraded the country. They have downgraded the banks and downgraded the financial institutions.

Dr. Wijewardena: Well, we went for this international sovereign rating in 2007, and ever since we got the international sovereign rating Sri Lanka has not been rated a high level. We have been rated at Level B. Level B means it is below the investment rate, which the market actually categorizes as 'junk bonds'.

Whatever we have issued in the international

markets they are called 'junkies'. So what has happened is that you are sleeping on the bed and now you are thrown onto the floor. That is what has happened. It doesn't make a difference to Sri Lanka's outlook in the international market. What would happen is, Mr. Karunaratne, you are very correct, the Bank of Ceylon one is not due to the fault of bank of Ceylon. It is because when a sovereign government gets a rating, any institution within the country will also get that same rating. They cannot get a better rating. But what has happened here is that Fitch ratings downgrading Bank of Ceylon, this time it's a very critical one. I hope Sujeewa Rajapakse would be taking that factor into account because next time his bank will be downgraded.

In the past, when the rating agencies downgraded a commercial bank in Sri Lanka, they downgraded only their foreign borrowings. The local borrowings, they were actually rated at a very high level. Actually Bank of Ceylon was rated at AA. Which is a very good investment rate. But this time, the Fitch rate has downgraded local long term borrowings to CCC, on the ground that they are pretty much exposed to the government sector No1. That is why I think Mr. Wijeratne will be happy to know about it because they have said that the Bank of Ceylon is overexposed to back the government, they are overexposed to public corporations, and those corporations and the government have no means of repaying that money except by printing money. So as a result, the credit portfolio of Bank of Ceylon has been eroded, in the mind, according to the analysis of Fitch rating. So, from AA they were brought down to CCC. Which is a very bad thing and People's Bank will also get the same treatment in due course. But of course it's not the problem of Bank of Ceylon. It's a problem of the government of Sri Lanka. The government of Sri Lanka will have to improve its budget, improve its revenue, and improve its governance and everything so that the rating agencies will view it positively. But remember, we went for the rating in 2007 and ever since we were 'junks', or we were 'junkies'. Mr. Wannigama: This is to the former Governor. I just want to know, former Governor proposed to issue develop bonds by a private limited companies or by the private sector to the public.

Recently we have seen that Central Bank has listed certain micro finance companies as you know, risk companies. Now what is the assurance that the regulatory bodies can give to the general public, in case of issuing these development bonds to the general public because the companies are not into finance. They are doing construction and some other activities. They are not specialized in finance. So what is the regulatory mechanism in such a case?

Dr. Wijewardena: Thank you very much for asking that question. You are not actually under the regulatory structure of the Central Bank. The issue of bonds by any private company is a borrowing, just like you borrow from the People's Bank, or Bank of Ceylon. It's a borrowing. You are regulated when you issue bonds by the Securities and Exchange Commission, and you have to go through the regulatory structure of the Securities and Exchange Commission and also you have to issue them, if you want to issue them to the public, it will have to be done through the Colombo Stock Exchange. So there is a process.

The process is first you have to get the approval from the SEC, then you have to appoint an Issue Manager, then of course there are the Underwriters because the underwriters will underwrite it if the private sector doesn't subscribe to the bond issue the underwriter will buy it, the unsubscribed part. But you have to pay a little commission for that. Then you have to issue a prospectus, just like an IPO. When you issue an initial public offering, you have to prepare a very lengthy prospectus and the prospectus will contain why you have to borrow it, the track record of your previous borrowing and your accounts will have to be disclosed and your lawyers, your auditors, and also the risk factors of the public if they invest in your company. And all these things will have to be presented in the form of a prospectus, and the prospectus will have to be approved by the Securities and Exchange Commission and also it will have to be approved by the Colombo Stock Exchange. And after that you go to market. I mean already Companies like John-Keells, companies like Hayleys, they issue bonds in the market. I mean, presently they have issued this commercial paper, which is a very short

term one. But what I would suggest is if you are not willing to capitalize, put your own capital into these companies, you operate your company with borrowed money. As Mr. Kaluaaratchchi said, you have to change the model now. You are not subject to Central Bank's regulations. So, you are free. Pro. Lukshman will not come behind you. Don't worry. But of course the SEC is the regulatory body.

Mr. Wannigama. Yes, thank you Professor. Will that be another burden to the companies like handling all these things?

Dr. Wijewardena: No it's not a burden. Mr. Kaluaaratchchi said you should not mention the names of these companies, but I know large construction companies they have their own reputation and these well known companies can capitalize on their reputation that is what you have to do. Now, John Keells is doing that. John Keells, is not only issuing debentures in Sri Lanka they are issuing Global Depository Reports in the international markets. Just like the government of Sri Lanka. And imagine the fact that John Keells has been rated higher than the government of Sri Lanka by the rating agencies in the international market. Because John Keells is a public sector corporation and therefore they get a higher rating.

Mr. Wannigama: Thank you Professor.

Prof Weddikkara: Thank you so much, it was very interesting seminar. And I would like the Hony. Secretary Saliya, to give the vote of thanks. I was going to do it, now that Saliya is here, let me ask him. Because I think we have gone only 5 minutes later than what we promised. And we had some very interesting questions, and I think Mr. Wijewardena you started it with a kick start, which I think Ranjit picked it up and kept talking about it. So everybody was very interested in the 2021 budget. Captain gave a rosy picture of it, then Nissanka gave a rosy but a different picture, so I think all in all the budget proposals are good but it is in the implementation of the budget proposals that counts. I think the 'proof of the pudding is in the eating'!. I, being an academic I think it is a rosy picture for all my construction industry students that in the future, in the next 2-3 years

there will be so much of construction. There will be a need for engineers, architects, construction managers, quantity surveyors, project managers; I think there will be a big demand for them. On that note I'm going to ask Saliya, Secretary of the CIOB to propose the vote of thanks. Thank you.

Since Saliya I cannot see him, I would like to conclude this webinar, of the 2021 budget and the construction industry, presented by CIOB. And it has been a wonderful discussion by very eminent people, starting with Dr. Wijewardena, then Mr. Sujewa Rajapakse, who gave an excellent talk about the various aspects of the construction taxes, mismanagement and various things, both the ups and the downside of it. Then we had Ranjit. Ranjit I'd like to say thank

you very much as the President of the Chamber of Construction Industry, your contribution was excellent, thank you so much. And then Mr. Nissanka Wijeratne, that is engineer Nissanka who gave a very good analysis of the construction industry, with its pros and cons and the of course Captain Kularatne who spoke of the major aspects of the construction industry and then Rohan who is the President of the CIOB.

2 hours so of your precious time you all gave to the CIOB and the construction industry for a very good discussion and this current topic of 2021 budget. I hope the CIOB and the Chamber will take these forward, this roadmap and make it very possible in the year 2021. From me, as the coordinator thank you all so much and have a good night.

We thank all the resource persons and participants who helped CIOB to make the Webinar a success.

Special appreciation to Mr. Ruwan De Silva, Vice President & Managing Director, Sripalie Contractors (Pvt) Ltd for sponsoring the webinar arrangements, recording and transcription of the 2 hour discussion.

Administrators :

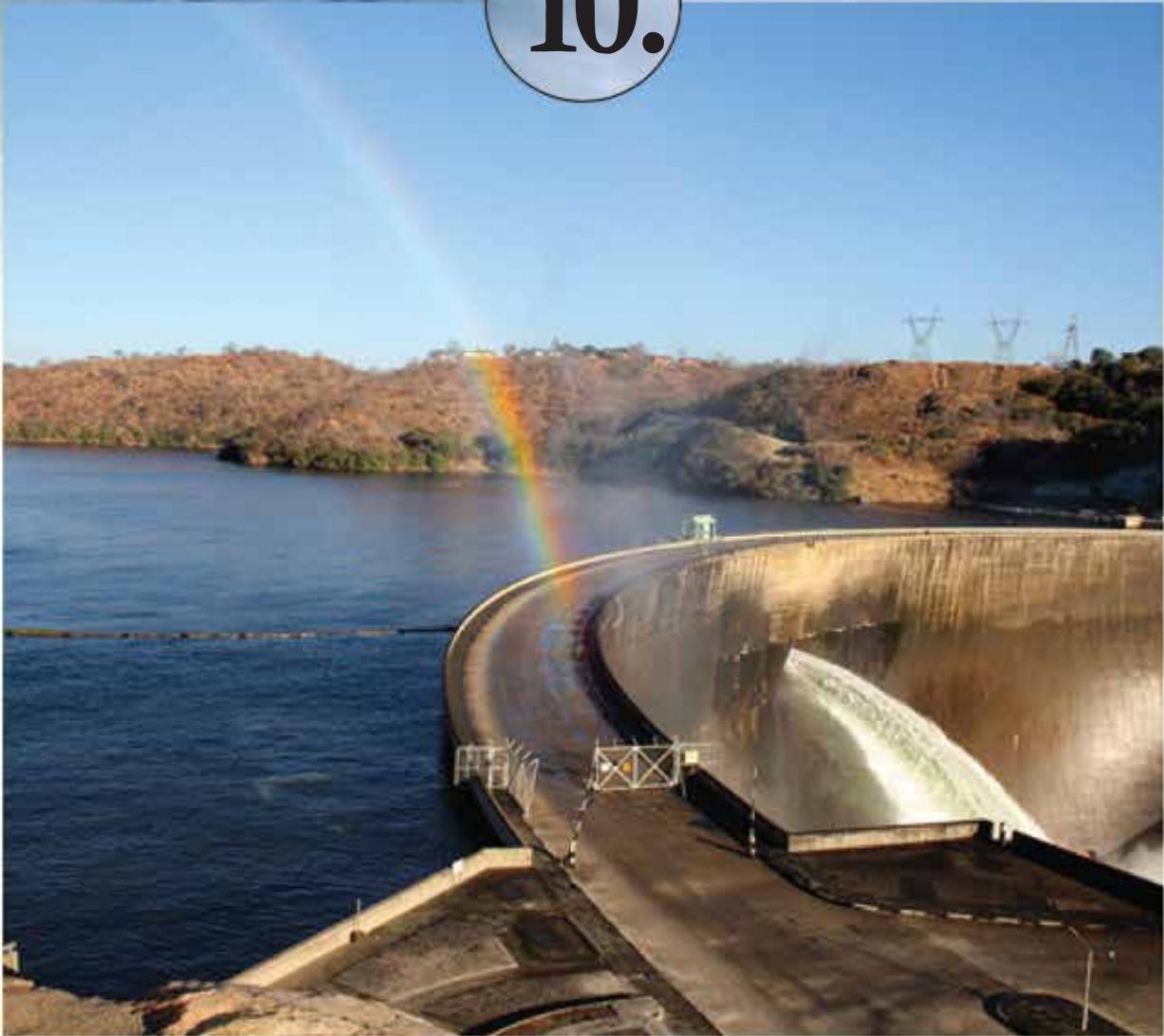
Mr. Randika Nanayakkara of Sripalie Contractors (Pvt) Ltd

Mr. Packiam Vinoth of Techone Global (Pvt) Ltd

World's most fascinating D A M S

Kariba Dam in **Zimbabwe**

10.



One of the largest in Africa, the Kariba Dam supplies 1,626 MW of power to the Copperbelt areas of both Zambia and Zimbabwe.

Impounding the Zambezi river, the Kariba dam is outfitted with 10 types of Francis turbines capable of outputting an average of 6,400 GWh of electrical power per year.

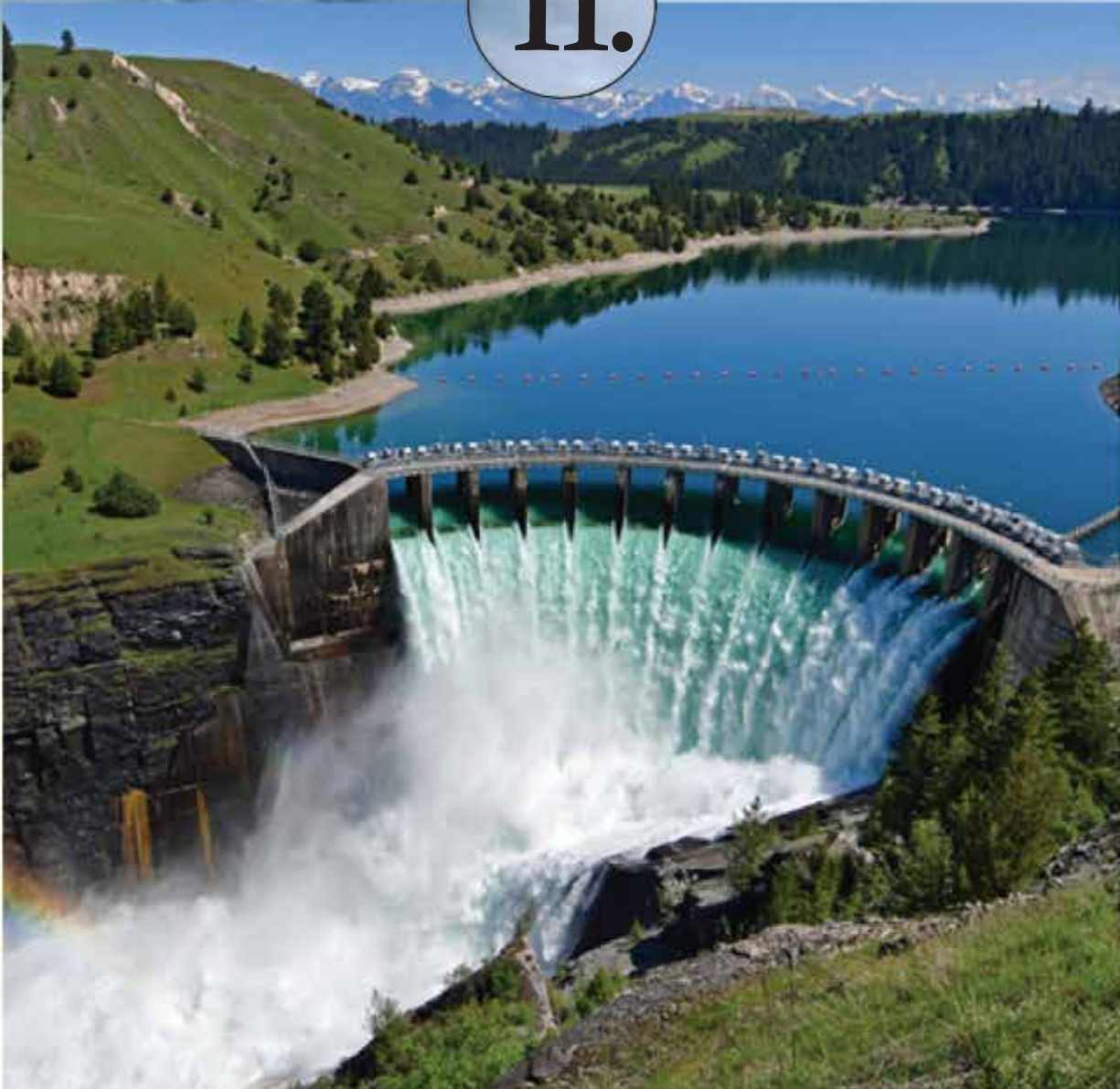
The dam was designed as a double curvature concrete arch dam to effectively resist the 180 cubic kilometers of water pressing against it.

Because of the immense volume of water from the created Kariba reservoir, more than 6,000 animals had to be rescued by Operation Noah as the Kariba Gorge was flooded.

World's most fascinating D A M S

The Kerr Dam in the **USA**

11.



Designed for producing hydroelectricity, the Kerr Dam also serves wildlife resource, forest conservation, and public recreational uses.

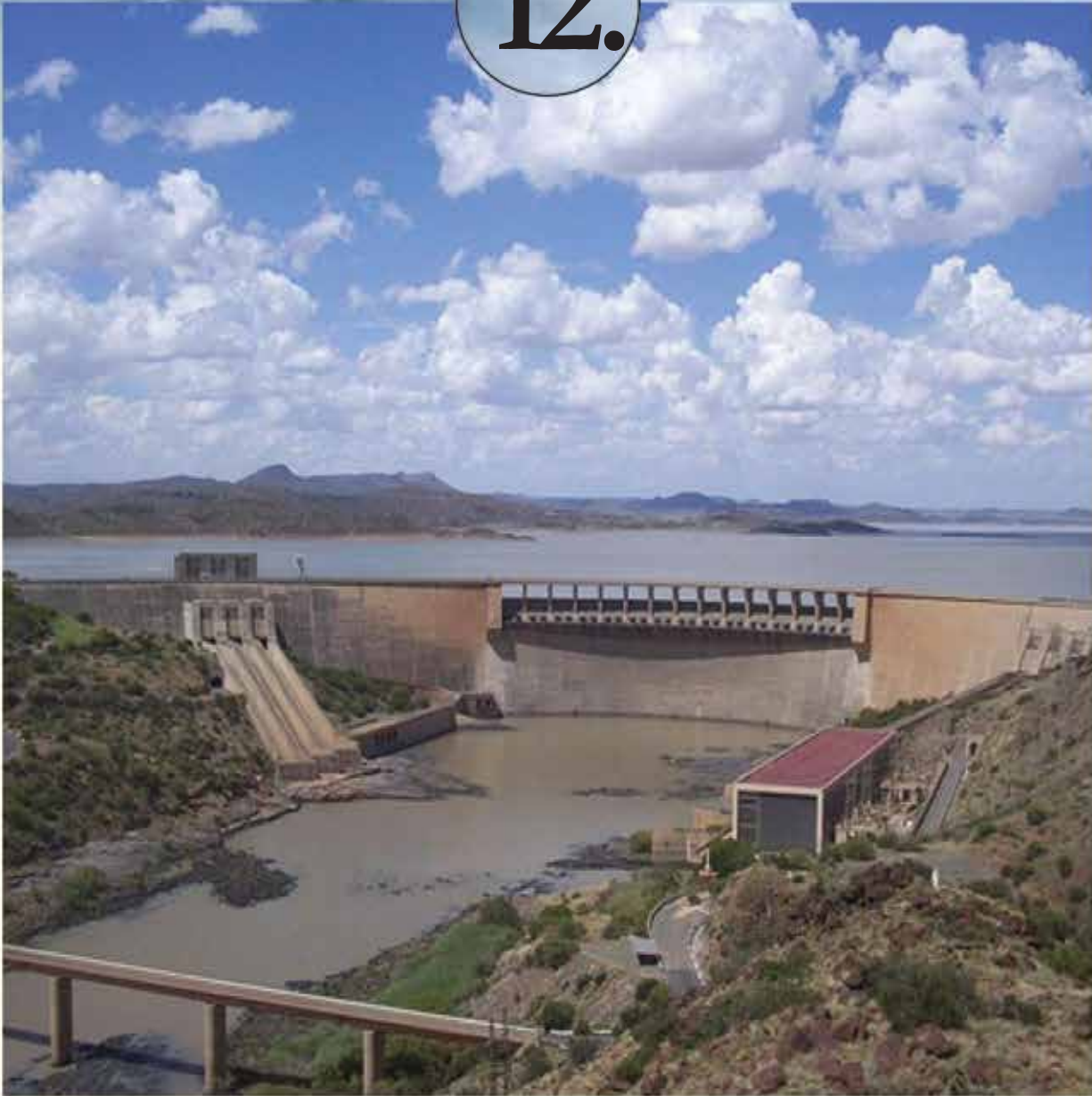
By impounding the Flathead River, the dam can produce 426 GWh of electricity per annum. It is one of the two PPL Montana dams located west of the Continental Divide, where the Flathead river empties into the Clark Fork River, which subsequently empties into the Columbia River.

Finally, the Columbia River empties into the Pacific Ocean.

World's most fascinating D A M S

Gariep Dam in **South Africa**

12.



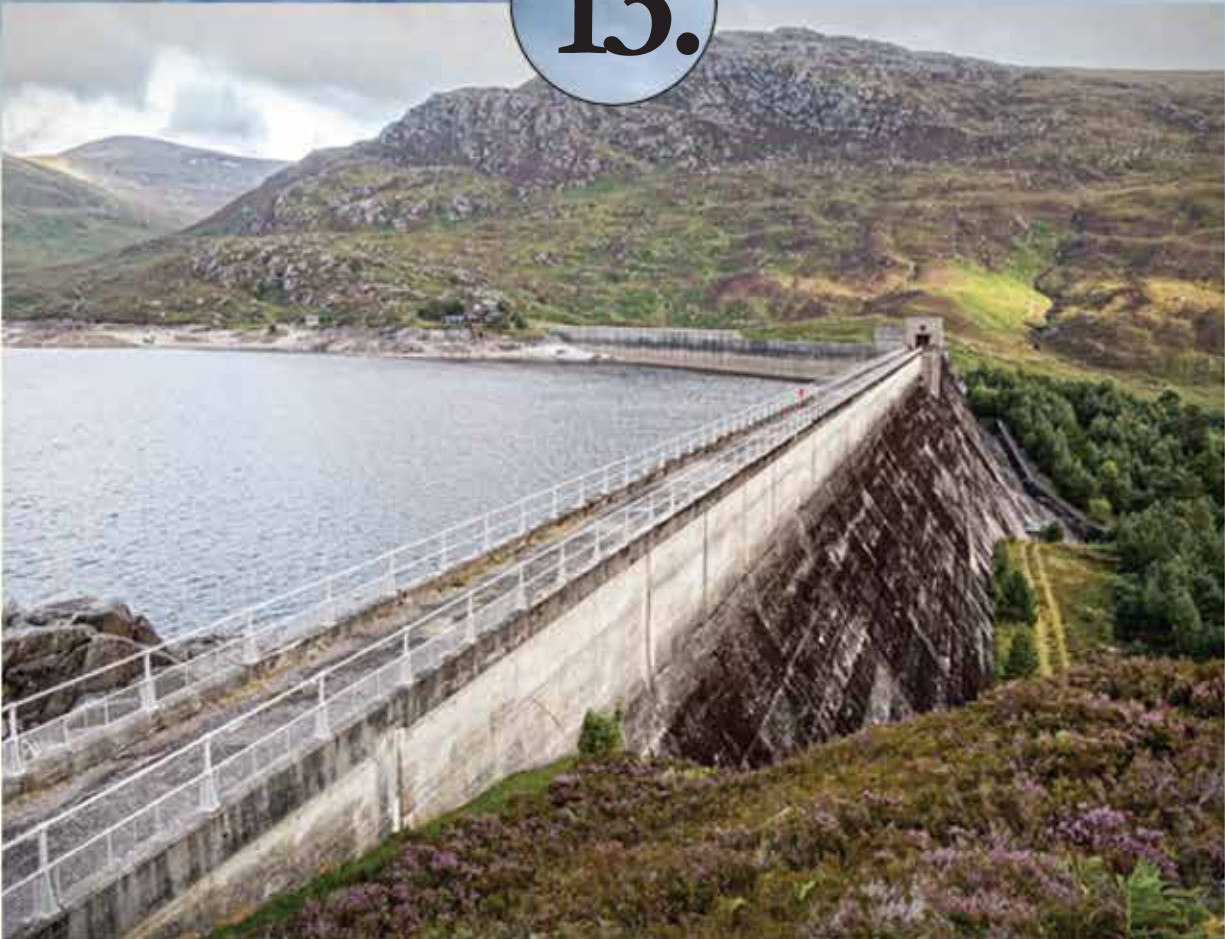
The Gariep Dam was designed to be a hybrid gravity-arch dam as the gorge is too wide for a full arch.

Gravity abutments are formed using flank walls then the design gradually arches at the center of the dam. It impounds the Orange river and creates the Gariep reservoir with a maximum capacity of 5,340,00 megaliters. 899 GWh of electrical power is produced by the dam annually using 4x90 MW turbines.

World's most fascinating D A M S

Loch Mullardoch Dam in **Scotland**

13.



And last, but by no means least on our list of fascinating dams is Loch Mullardoch Dam in Scotland. Forming a major reservoir in Glen Cannich in the Northwest Highlands, this amazing dam was built in the early-1950s.

Forming part of the Affric-Beauty hydro-electric power scheme, the dam's reservoir extends for around 8.7 miles (14 km) westward. The dam is the second largest in Scotland and it has a seemingly counterintuitive v-shape with the pointy end of the "v" facing downstream from the reservoir.

The dam is of a mass gravity design (a form of masonry dam) and measures at 157 feet (48 mt) tall. Mass gravity dams rely on their sheer mass, rather than structural form, to hold back the weight of water in its reservoir.

The dam was subject to stabilization works in the 1980s after it was discovered that it was beginning to crack.

Tips for working safely in construction during the COVID 19 pandemic



The construction industry, like many others, may be considering additional requirements and steps to help protect workers from SARS-CoV-2, the virus that causes COVID-19. This novel coronavirus is currently believed to spread from person to person when an infected person's respiratory droplets, perhaps from coughing, sneezing, or talking, land in others' eyes, nose, or mouth. Being within 6 feet for more than 15 minutes of an infected person's respiratory emissions increases others' chances of receiving enough virus to potentially be infected. Another possible route of infection is airborne transmission. According to the authorities, "there is evidence that under certain conditions, people with COVID-19 seem to have infected others who were more than 6 feet away." Another route, though not thought to be the main way the virus spreads, is contact with infected surfaces and then touching the eyes, nose, or mouth.

Many internationally recognized organizations such as OSHA, WHO, the European Agency for Safety and Health at Work (EU OSHA), and American Industrial Hygiene Association (AIHA) have also published updated guidance.

The OSHA, and AIHA have created guidance specifically addressing the construction industry.

- Encourage sick workers to stay home.
- Encourage workers who are well with sick family members to follow CDC precautions.
- Limit close contact with other people.
- Develop and implement a social distancing plan to maintain at least 6 feet of separation.
- Clean and disinfect frequently touched objects, including shared tools, machines, vehicles, ladders, portable toilets, etc.

including shared tools, machines, vehicles, ladders, portable toilets, etc.

- Limit tool sharing.
- Practice proper hand hygiene.
- Provide training on symptoms, risks for severe illness.
- Provide proper training on handwashing and make available hand washing stations or hand sanitizer with at least 60 percent strength alcohol.
- Encourage the use of face coverings in addition to social/physical distancing. Note that face coverings do not replace respiratory protection, where hazards dictate respirator use.

Additional engineering and administrative controls for construction sites may include:

- Installing posters encouraging staying home if sick and demonstrating cough and sneeze etiquette as well as proper hand hygiene, hand washing.
- Designate a COVID-19 safety and health officer responsible for responding to COVID-19 concerns.
- Install shields and barriers where possible.
- Restrict access or limit capacity in enclosed areas such as elevators, trailers, small spaces, shared vehicles, and break areas.
- Modify work schedules to stagger trades or minimize mixing of shifts.
- Limit in person meetings or ensure people can spread out 6 feet or more between attendees.
- Conduct hazard assessments to determine any additional PPE required and provide the related training.
- Understand your site's local health requirements and levels of community outbreaks.

Recently published guidelines from AIHA, "Focus on Construction Health: COVID-19", provide additional

construction specific guidance. These further guidelines include strategies to help reduce and control COVID-19 related hazards in construction environments. This guidance includes the following:

- How to develop a COVID-19 site control plan.
- How to incorporate the key elements required in the plan (source reduction and screening, social distancing controls, engineering and administrative controls, hygiene stations and disinfection measures and PPE.)
- How to conduct a COVID-19 specific job safety analysis.

U.S. OSHA Risk Levels

OSHA has provided additional guidance on exposure risk levels for COVID-19. In OSHA's "Guidance on Preparing Workplaces for COVID19," a control banding approach is provided based on levels of risk exposure to SARS-CoV-2. Levels include Low, Medium, High, and Very High. OSHA anticipates that most construction work will be low or medium risk, with some opportunities for high risk tasks.

OSHA applied these risk categories in their construction specific guidance. Low risks tasks include those that allow workers to maintain 6 feet of separation and have little contact with customers, visitors, or the public. Medium risk tasks include tasks where workers may need to work within 6 feet of each other or have contact with visitors, customers, or the public. High risk tasks include "entering an indoor work site occupied by people such as other workers, customers, or residents suspected of having or known to have COVID-19, including when an occupant of the site reports signs and symptoms consistent with COVID-19." High risk activities could include work in hospitals with known or suspected cases of COVID-19. Very high risks involved in health care procedures are not likely to occur in construction.

Additional Personal Protective Equipment (PPE) considerations for Construction Job Sites

For low risk tasks, OSHA recommends, "Most construction workers are unlikely to need PPE beyond what they use to protect themselves during routine job tasks. Such PPE may include a hard hat, gloves, safety glasses and a face mask." For medium risk tasks where administrative and engineering controls may not adequately protect workers, adequate PPE should be provided. This may include gloves, eye protection, and/or face shields. For close contact tasks within 6 feet of someone suspected or confirmed with a case of COVID-19, respiratory protection may be needed. The Center for Construction Research and Training's (CWPR's) COVID19 Standards for US Construction Sites recommends an N95 or higher respiratory protection for close contact in enclosed spaces.

When workers need PPE, employers must comply with all applicable workplace standards and regulations on selection and use of PPE. One example is OSHA's standard for PPE in construction (29 CFR 1926 Subpart E), which requires employees to use gloves, eye and face protection and respiratory protection when job hazards warrant it. OSHA's Respiratory

Protection standard 29 CFR 1910.134 mandates that when respirators are necessary to protect workers, employers must implement a comprehensive respiratory protection program.

As the CDC recommends face coverings as a public health measure, employers may want a better understanding of the differences between cloth face coverings and respirators. It is important to note that according OSHA, "Cloth face masks are not considered personal protective equipment (PPE) and are not intended to be used when workers need PPE for protection against exposure to occupational hazards."

To help maintain at least 6 feet of separation, safety managers and employers may also want to consider communication devices which protect hearing and have integrated radios for communication that can help workers to communicate while maintaining their distance from each other.

Social distancing graphics can help provide important visual reminders. Employers may want to expand the use of floor graphics, signs, and stickers to help promote physical distancing on worksites.

Disinfection, Decontamination and Cleaning of PPE

Per the Center for Disease Control & Prevention (CDC) guidelines for construction, disinfection of reusable PPE is recommended at least at the beginning and end of each shift.⁹ Training should be provided to workers on cleaning PPE according to the manufacturer's instructions. You should always check with the PPE manufacturer about all cleaning, disinfection, and decontamination methods for reusable PPE. There is guidance available from the U.S. CDC for cleaning and disinfection practices in the workplace.

Additionally, employers should consider using or switching to disinfectant cleaners that meet the U.S. EPA's Emerging Pathogen Policy. These sanitizers may be considered for use against the virus which causes COVID-19 on non-critical, hard, non-porous surfaces that may be found in the workplace. Employers should be aware that common sanitizers and disinfectants could contain hazardous chemicals. Where workers are exposed to hazardous chemicals, employers must comply with OSHA's Hazard Communication standard (29 CFR 1910.1200) or other applicable regional/local regulations, Personal Protective Equipment standards (Ex. 29 CFR 1926 Subpart E in construction or 29 CFR 1910 Subpart I in general industry) and other applicable OSHA chemical standards. Employers should also consult OSHA's Guidance on Preparing Workplaces for COVID-19 for more information.

There are many factors that need to be considered when it comes to COVID-19 and protecting your workforce. Seek out a reputable PPE manufacturer that can help you select the right products and solutions to help maintain a safe workplace for all the different tasks being performed on your jobsites.

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