

Seminar on For Construction in Sri Lanka, What Next?

Report



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Galadari Hotel Colombo 07
From 1.30 p.m to 6.30 p.m
- followed by fellowship cocktails -

Organized by



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1. Welcome Address



Eng. Col. Nissanka N. Wijeratne

M.Sc (Construction Management) Loughborough, UK

B.Sc Eng.(Sri Lanka) MICE, C.Eng

Secretary General/CEO

Chamber of Construction Industry Sri Lanka

Eng. Col. Nissanka N. Wijeratne, Secretary General/CEO of CCI Sri Lanka welcomed Resource Persons namely Dr. Jagath Munasinghe, Mr. Jong Seok Han, Eng. Chaminda Ariyadasa, Prof. Ranjith Dissanayake, Archt. H K Balachandra, Mr Jinwoo Kim and Dr Chamila D. Ramanayake for being present to make valuable contributions.

Next, he extended a warm welcome to participants and speakers of the day on the theme “For Construction in Sri Lanka, What Next...?”

Eng. Col. Wijeratne affirmed that the audience was representative of member institutions of Chamber, Consultants, Construction Professionals, Contractors linked to both public and private sectors and other stakeholders in Construction Industry. Eng. Wijeratne recalled that previous Seminar which was held in August this year was on “Future of Condominium Living in Sri Lanka’. However, as the Chamber was anxiously considering the next theme, CCI received many requests from construction sector with the consensus opinion that the construction industry was not performing too well and as such to have a seminar on the future of Construction Industry after Presidential and Parliamentary elections. In this context the current theme was given priority by the Chamber, he explained.

Eng. Wijeratne also extended a special welcome to Mr Jinwoo Kim of Hyundai Engineering and Dr Chamila D. Ramanayake who came all the way from Korea and Australia respectively. Concluding the welcome address he expressed confidence that all participants would enjoy a pleasant evening listening to interesting and important set of topics.

2. Opening Address



Eng. Maj. Ranjith Gunathilleke

M.Sc. (Eng). B.Sc(Eng.) C.Eng.,M.I.C.E(Lond), M.I.E.(S.L.),
M.S.S.E.(S.L.)

President

Chamber of Construction Industry Sri Lanka

Eng. Maj. Ranjith Gunathilleke thanked the speakers listed for the seminar for taking their special time to be present giving due respect to the construction – community and the Chamber, coming from various places and even from foreign countries. He also extended a warm welcome to all participants.

❖ **CCI Sri Lanka**

Eng. Gunathilleke addressing the audience expressed the view that Chamber of Construction Industry Sri Lanka is the apex representative body consisting the best team of professionals, institutions and organizations of construction industry in Sri Lanka. Elected council members and the Board make a superior cross section related to construction industry, he said.

He explained that what is discussed at monthly Council and Board meetings comes out as activities like exhibitions, workshops, News Bulletins and seminars of this nature. The Chamber is always engaged with the policy makers, planners and the executors and keeps them as a team for the betterment of construction industry. Moreover, all in the industry like professionals, engineers, architects, quantity surveyors, valuers and contractors will make use of this seminar for better performance.

Eng. Gunathilleke also stated he did not want to speak about the history, but we should learn from history to plan for the future.

❖ **Next 10 years**

Eng. Gunathilleke elaborated that country needs more and more development and we should know at least for the next 10 years, where our construction industry is going? How the money is going to come? In comparison to others in South Asia region, Sri Lanka marks the lowest place of development. So we should not sleep. The others in the region would not allow us to sleep. Be it India, Bangladesh or Maldives, they are recording a higher growth in development.

Whatever the political changes coming after Presidential and Parliamentary elections are of no concern to the Chamber. The Chamber was always concerned about the construction industry and its continuance for the future. That was why this Seminar on What Next..? he stated. The Chamber feels it important that construction sector should be revived and its sustainability be maintained whether in building construction or infrastructure development.

❖ **Major Concerns.**

Reflecting on contractors suffering due to financial issues experienced by developers he stated that some developers commenced their projects not with 75% or 80% of estimated expenditure in hand but with an amount as low as 10% anticipating the balance from forward sales. The Chamber is struggling to take up two major issues with the government and two main presidential candidates. One is the implementation of a payment guarantee scheme for consultants and contractors in order to receive the due payments from owners without delay. It should come as an Act. He hoped it will be realized in the near future. He commented the representations made by the Chamber to two presidential candidates for establishment of a development bank for construction sector has been positively taken up by them.

The second concern expressed by Eng. Maj. Gunathilleke was on the delay in granting approvals for foreign direct investment projects due to various reasons including land issues. He proposed that approval for new projects be granted within a maximum period of 03 months. He also requested the Construction Industry Development Authority (CIDA), in the instances where unresolved issues persisted, to give the green light to commence construction by way of pending final approval on the certification by a CIDA registered chartered architect to enable the constructor/contractor to commence construction.

Eng. Gunathilleke expressed the Chamber's gratitude to Tokyo Cement Group for their sponsorship of Seminar under the very important theme "What Next..?" He also thanked all sponsors who had come to assist the Chamber in various ways.

3. National Physical Development Plan – 2050 and Construction Potential



Dr Jagath Munasinghe

M.Sc(B.E), M.Sc (TCP), Ph.D(NUS)

Chairman

Urban Development Authority &

Director General

National Physical Planning Department

Dr Jagath Munasinghe, Chairman, Urban Development Authority & Director General/National Physical Planning Department said he was very happy to talk about the National Physical Plan as nowadays there were many controversial remarks being made in political arena as regard to Millennium Challenge Corporation and land corridors etc. As his topic involves an overall picture of Sri Lanka, this was a good opportunity to clarify and elaborate on issues related to National Physical Planning not merely as the Chairman/Urban Development Authority but as Director General of Department of National Physical Planning. Dr Munasinghe expressed the view that not many countries had a National Physical Plan (NPP) but it was a good thing to have one as it would be National Framework responding to future needs of a country. The main task of a NPP is to provide guide lines to draft plans for the future in respect of infrastructure development and other development.

❖ History

Referring to the history, Dr. Munasinghe said prior to year 2000 in Sri Lanka, there were different institutions like Government Departments, Local Authorities, Private Sector Constructors/contractors, etc who were engaged in various construction activities at urban and rural levels in an haphazard manner without any physical plan at national level. The need arose to streamline these activities within a national level framework to facilitate development centred on human needs under an overall plan which would be loved and sustained by all. For this purpose, then government renamed the Town & Country Planning Department as National Physical Planning Department and initiated the task for formulating a NPP. Accordingly in the year 2007, a NPP was drafted for 10 years and in the year 2012 it has been further improved by amendments and additions.

❖ **Updated NPP**

The updated National Physical Plan – 2050 is an amalgam of both 2007 and 2012 plans with further improvements to cover a period upto year 2050, towards a ‘Smart nation’. This updated NPP was gazetted on 12 June 2019. Where do we want to be and what do we (Sri Lanka) need to achieve within next 10,20 & 30 years? Dr Munasinghe queried.

Sri Lanka is categorized as a middle income country where the per capita income is approximately 4000 USD. What we want to be is in a developed country with a per capita income of 12000 USD. To reach the developed country status in 15 years, Sri Lanka requires annual growth rate of 7.5% in the Gross Domestic Product (GDP).

❖ **Studies Undertaken**

Dr Munasinghe said the Department of Physical Planning had to conduct a series of studies as regard to population pattern, climatic changes, geographical factors, education attainment and unemployment, emerging urbanization, etc to ascertain facts before embarking on the project to draft the NPP. During such studies the following were taken into account to be addressed within the NPP:-

- More employment opportunities or income services need to be made available to citizens
- Quality of life should be improved
- Steady growth rate of minimum 6% in the national economy
- Pleasant, safe and peaceful living environment need to be ensured
- Need to increase the exports and Foreign Direct Investments (FDI)
- Balanced development (not equal development) throughout the country, no region to be left out
- Sustainable use of available resources
- Conservation of culture and heritage
- Exploration of new resources/opportunities

With a power point presentation, Dr. Munasinghe pointed out the areas where education attainment and increase in unemployment are high in the country during the period from year 2001 and 2012. The indication was that in the areas with higher education attained the unemployment too has increased. This reflects that unemployment we have is educated unemployment. So whatever government that sought to solve the unemployment should do so by providing educated youth, with opportunity to be exposed to IT, technology, construction industry and modern agriculture or whatever is new and not with conventional education.

❖ **Urbanization**

Dr Munasinghe referring to the urbanizing of Sri Lanka said that the data presented by the Department of Census and Statistics reflecting 18% of the population as urban in the year 2018 is not quite correct. According to the studies done by Department of Physical Planning around 45% of population could be categorized as urban. The reason being more and more people are living in between the categories of rural & urban. They who are considered as rural have quick access to urban amenities like pipe-borne water and other urban facilities which are being enjoyed by them. They also enjoy the urban life style. Explaining further, Dr Munasinghe stated irrespective of where they live either urban or rural area they are experiencing urban facilities, leading urban life style with urban aspirations and are employed in non-agricultural sectors.

At the same time we have to control the unplanned urban development in certain parts of the country. As such, need arises to regulate the urban development and to make it orderly. This pattern is expected to rapidly increase in the future. In 10 years more than 50% of the population will be urban. That will make an impact on the construction industry. Sri Lanka is heading to be an urban country in next 10 years. To control the urbanization the Department of Physical Planning formulated 04 polices to be implemented as included in the NPP.

- **Policy 01 – Conservation**

For sustainable development, it is important to conserve the environmentally sensitive land areas in the country like rain-forests, wildlife areas, etc to maintain the ecosystem. Further land areas prone to natural disasters like landslides, floods, cyclones need to be protected and kept away from construction along with areas liable to sea-level rise, high rainfall, draughts, etc.

- **Policy 02 – livability**

The second policy outlined by Dr Munasinghe referred to livability areas. These areas were identified as the most appropriate for human habitation in terms of climate, availability of resources for basic needs and essential services. The selection criteria for area under ‘Livability’ category is based on security from disasters, availability of water, main-road connections, close proximity to main urban centres, healthy temperature, reasonable rainfall, Dr Munasinghe revealed. In this context the availability of unutilized land for future development was also considered.

- **Policy 03 – Optimization**

To achieve a 6% growth rate during next 10 years to become a developed country, Foreign Direct Investments are extremely essential. In order to direct the investors to right locations in the right time the existing infrastructure and resources need to be identified and optimally utilized before going for new infrastructure projects. Dr Munasinghe elaborated that in the sense available infrastructure, water, proximity to highways and main roads, proximity to urban centres and less of undulating terrains are meant.

- **Policy 04 – Exploration**

Policy 04 concentrates on human resource locations where populations with various skills or higher education levels are located. By directing foreign investors to such locations with potential for development, it is expected to use such potential for diversified development. Apart from the said human resource locations there are natural resource locations such as eco/natural/ cultural and tourism, locations as well as fisheries and aquatic resources, mineral resources, etc located in different parts of the country facilitating diversified development. Exploration of untapped resources and enhancement of the use of such resources are important for future economic growth.

❖ **Economic Corridors**

Then Dr Munasinghe emphasized that based on the 04 policies namely conservation, livability, optimization and exploration the economic corridor proposal emerged. It has nothing to do with land issues being talked about in political arena in respect of MCC programme. The NPP was drafted by National Physical Planning Department with the participation of experts representing universities and related state and non-state organizations all coming together as a local team. There was no involvement whatsoever by Millennium Challenge Corporation or any foreign country or organization. According to the analysis and the population patterns etc in the next 10 years, more than 50% of the population is expected to be urban. To make the process sustainable, it has been planned to create 04 urban conurbations, 02 metro regions and 09 service center cities. The idea is to attract, and not relocate, people to such regions with economic activities, employment income sources etc.

As shown by our studies and the data the identified areas for economic corridors are the most favourable and best developable. By 2050 it is projected that 30 – 50% of the total population will be concentrated in these areas. The main economic corridor will be the East-West corridor from Trincomalee to Colombo. The expected population in this corridor is expected to be 1/3 of the total population.

The other Development Corridors proposed are the northern corridor from Jaffna to Killinochchi, the Eastern corridor from Chenkaladi to Ampara and the 3rd corridor from Galle to Tissamaharama. These three corridors are expected to hold 15-20% of the population. The two metro regions proposed are the Kandy and Anuradhapura. The 02 metro regions and main cities will serve as service centres with schools, hospitals, access roads etc to the 04 urban conurbations. The service providing main cities are Mannar, Mulativu, Vauniya, Polonnaruwa, Puttalam, Mahiyanganaya, Nuwara Eliya, Rathnapura and Wellawaya.

❖ **What is Happening Now in Urban Development**

Dr Munasinghe moving on to the question of what is happening now in urban development, said the Urban Development Authority (UDA) is receiving a large number of applications for various development activities including residential development. With the view to facilitate such development the UDA has programmed 30 Nos development plans for different areas in the last 03 years. When analyzing the pattern of applications being received it was revealed that most number of applications are coming from region leading from Colombo to Negombo. The next highest was from the belt from Colombo to Kurunegala, followed by Kurunegala to Anuradhapura and from Galle to Hambantota.

Dr Munasinghe by way of a power point slide displayed the following information analysis of development permit applications 2018-2019

Submission of Building Applications (Cluster percentages)

Colombo – Central	-	10.98%
Galle	-	8.10%
Dehiwala & Moratuwa	-	7.03%
Colombo – East	-	6.80%
Gampaha/Negombo	-	4.37%
Ambalangoda	-	4.89%
Kandy	-	4.33%
Homagama	-	4.06%
Anuradhapura West	-	3.77%
Kurunegala	-	3.02%
Colombo North	-	2.75%

Dr Munasinghe affirmed that for urban development in the country, the UDA has set the trend and to promote it, has launched a new approach deviating from conventional methodology. The reason being, for example, once an approval is granted, for a seven storied construction, later the developer may come and request for approval for an additional floor. To accommodate such requests a methodology based on the extent of development that particular area can hold needs to be evolved within set principles. Hence the new approach – Zone Factor.

❖ **Colombo City & Capital City Development Plan**

Floor area density based zoning is to introduce a proactive mechanism for the implementation of development plans and guidelines by providing more flexibility and more adoptability to the developers. This also is expected to induce scientific thinking into the development promoting regulatory process.

❖ **Zone Factor**

The quantum of development that a given area can hold depends on certain factors based on analysis of urban form, environmental/cultural sensibility of the area, infrastructure availability, and the carrying capacity.

Dr Munasinghe further elaborating on these factors said infrastructure availability includes access roads, water supply, surface drainage, sewerage disposal, etc. The carrying capacity denotes geographical conditions, geological profile, existing and desirous population density etc.

By taking into account the above factors the Zone Factor of a given area is determined. The process follows the consideration of floor area likely to be generated, floor area accommodative and floor area demanded by future residential +community populations. Accordingly a simple formula has been evolved to determine the Zone Factor as the ratio of the achievable floor area in a given Zone to the available developable lands in that Zone. In other words using a mathematical calculation to divide the total permissible floor area by available developable land area, the zone factor could be ascertained.

$$\text{Zone Factor} = \frac{\text{Total permissible Floor Area}}{\text{Available developable land area}}$$

❖ **“Fair Share” Concept**

The UDA has evolved the “Fair Share” concept to determine the total floor area achievable for each land owner. It depends on extent of land, the land area occupied by the road space and other common spaces, and the percentage to open space left unbuilt. The formula for computation of “Fair Share” is simplified as per following.

$$\frac{\text{LE = land extent}}{\text{IX plot size}} \\ \text{-----} \\ 10,000$$

By the method of Fair – Share the distribution of development among builders could be determined. The bigger the land extent, the more will be the Fair-Share.

❖ **Questions from the Audience**

Question 01- Is there a possibility to obtain the data base of studies conducted before drafting the NPP and the final report?

Answer - **By Dr. Jagath Munasinghe**
Yes. All are available in the UDA website and the Government Printers's Website. You can have access to them. You may also contact me by email. The website of Department of National Physical Planning is at the moment being under construction.

Question 02- Without green building concept we cannot achieve sustainable development. In our building agreements and documents no mention of green concept, green materials, etc?

Answer - **By Dr. Jagath Munasinghe**
From the new regulations to be enforced from January green certifications will be compulsory for building industry with floor area of 4000 sq.ft. and above. For other development including infrastructure development as per studies conducted we have included greener provisions to the best of our level. If you have further proposals for improvement you may contact us.

Question 03- When formulating National Physical Plan, was Sri Lanka influenced by foreign powers?

Answer - **By Dr. Jagath Munasinghe**
No. Sri Lanka is one of the few countries that have National Physical Plans. The other country that has NPP is Malaysia. We are very much inspired by Malaysia. India also has some plans at state levels. The our NPP is purely a Sri Lankan effort.

Proposed Population Distribution 2050

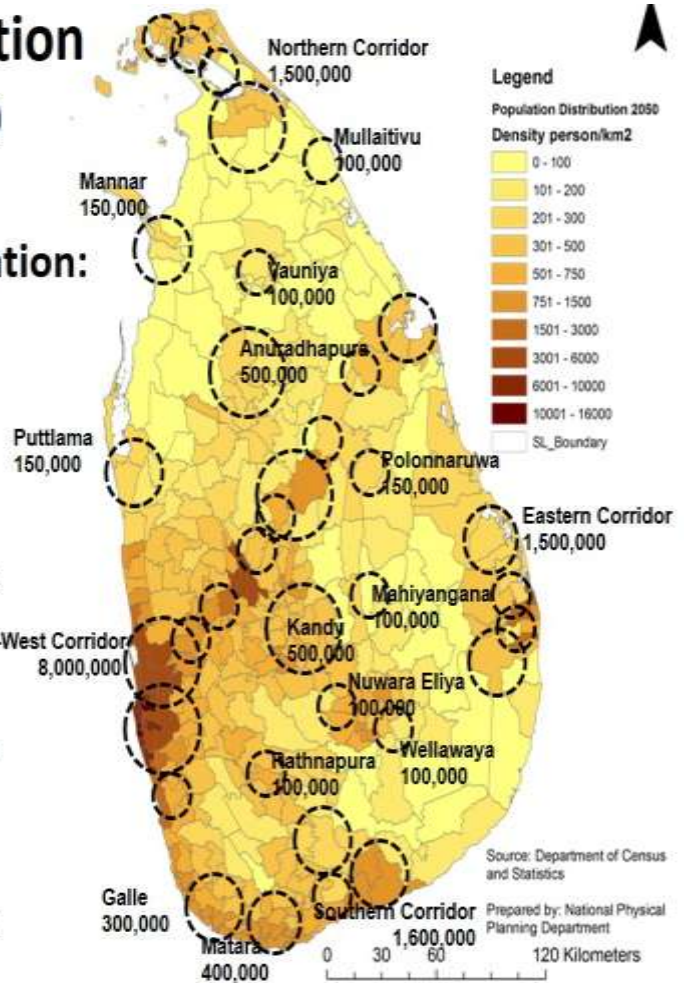
Projected Total Population:
2030 - 24,000,000
2050 - 25,000,000

Expected Pattern (2050):

Main Development Corridor:
33-35% of the Total Population
 20-25% increase (2012-2050)

Other Development Corridors:
15-20% of the Total Population
 10-12% Increase (2012-2050)

Other Urban Areas:
20-25% of the Total Population
 10-12% Increase (2012-50)



4. Colombo Suburban Railway Project



Jong Seok, Han

TL CSR, Sri Lanka
PM KL-Singapore HSR, Malaysia
PM Samsung Eng. UAE Algery
PM Tripoli – Slrt HSR. Libya
PM Kyungbu HSR, Korea

Consultant

Colombo Suburban Railway Project

Mr Jong Seok, Han commencing his presentation referred to the Colombo Suburban Railway Project as a Tri-Nation Cooperation involving organizations from India, Japan and Sri Lanka in implementation. This Project was initiated under the Ministry of Transport & Civil Aviation together with Sri Lanka Railways with a loan facility of the Asian Development Bank (ADB). The Project envisages the task of designing and developing rail transport service to an overall distance of 209 km spreading from Colombo to Suburban areas.

❖ **Main Line**

The modernization of main line covers 83 km from Maradana to Rambukkana. The development from Maradana to Ragama will be the addition of another new track to existing 03 tracks making it four-track stretch. The distance is 14 km. From Ragama to Veyangoda new track will be laid to making the rail road a 03 track stretch covering 22 km. From Veyangoda to Rambukkana, the existing 02 tracks will be rehabilitated.

❖ **Coastal Line**

The Project covers 43 km from Maradana to Kalutara-South. The Maradana – Fort stretch of 1.8 km will be developed to be of 04 tracks. From Fort to Panadura a new track will be added to make it 03 tracks. The distance is 26.27 km. From Panadura to Kalutara South the existing 02 tracks are to be rehabilitated.

❖ **Puttlam Line**

The stretch is 23 km. From Ragama to Seeduwa existing 02 tracks will be rehabilitated while seeduwa to Negombo will be made a 02 rail track by building an additional track to existing single line.

❖ **Kelani Valley Line (KV Line)**

The main interest of the government is focused on KV Line due to the urgency warranted to ease the traffic congestion emerging in the area. The Kelani Valley Line from Maradana to Avissawella is 60 km. From Maradana to Padukka existing 35 km track is to be developed to 02 tracks. The 25 km stretch from Padukka to Avissawella will undergo rehabilitation.

❖ **Objectives of the Project**

Mr Jong Seok Han elaborating on the Project objectives said as of now the commuters travelling from suburban areas to Colombo City had to spend around 2 – 3 hours for travelling to and fro. After implementing the project the travel time could be significantly reduced. The passengers could be assured of convenience, safety and punctuality in train operations. As at present due to commuter based train operations, it could be seen that more trains are entering Colombo in the morning and more trains are outbound in the evening. Due to diesel engines being used the operational and maintenance costs are high. However, with electrification of the operations, the maintenance costs will be lower to make it possible to run trains in daytime too. After electrification the expectation is to operate a train in every 30 minutes.

By providing an efficient rail transport system the traffic congestion in Colombo and suburbs will be eased. Mr Jong Seok said the Project plan would provide a transport solution to the population increase in the future in suburban areas. The designing for KV line is now completed and tenders will be opened in the year 2020 for construction. For main, coastal and Puttlam lines the designs are to be completed in 2020 and construction are expected to commence in the year 2021.

❖ **KV Line**

Mr Jong Seok outlined the following :-

- Out of 60 km stretch from Maradana to Awissawella, the stretch of 20.8 km from Maradana to Malapalla will be an elevated structure.
- Due to elevated structure the existing 56 Nos level crossings will be eliminated thus terminating traffic congestion.
- The section from Malapalla to Avissawella, 37.6 km is designed to be at-grade structure which means at a height of 01 m from ground level.
- The rail operation from Maradana to Angampititya will be electrified and the depot will be located at Angampititya.

❖ Stations

The total number of stations from Maradana upto Angampitiya stands at 25 Nos. of which 23 Nos have been re-designed while 02 Nos being existing ones. Out of the 25 Nos stations from Maradana to Angampitiya, 14 Nos will be elevated structures at following locations and considering the expected populations in these areas they have been graded into large, medium and small.

Large 03 Stations

Cotta Road, Nugegoda and Padukka

Medium 07 Stations

Baseline Raod, Narahenpita, Kirullapona, Navinna, Maharagama, Kottawa and Meegoda.

Small 04 Stations

Royal Golf Club, Pangiriwatte, Udahamulla, Dambahena

The number of at-grade (not elevated) stations will be 11 Nos as detailed below:-

Medium 01 Station

Homagama

Small 08 Stations

Pannipitiya, Homagama Hospital, Panagoda, Godagama, Watareka, Liyanwara, Arukwathpura, Angampitiya

Existing 02 Stations

Maradana, Makmbura

Travel Time

Mr Seok expressed the view that with the completion of electrification of KV the travel time would be 07 minutes from Maradana to Malapalla, 14 minutes from Malapolla to Padukka and 30 minutes from Padukka to Awissawella. The total travel time from Maradana to Awissawella would be 51 minutes significantly reducing the current time travel of 1.30 – 2.00 hours.

❖ Construction

Mr Jong drawing attention on constructions related to modernizing KV Line said, it would be in three packages. First package will be for infrastructure development from Maradana to Baseline Road station which consists 0.23 km whilst second package for infrastructure development for 23 km from Baseline station to Angampitiya. Third package envisages the systems development from Maradan to Angampitiya or all suburban railways as one package for electrification, signals, ICT, Telecom etc.



5. Light Rail Transit Development Project



Eng. Commander (Rtd) Chaminda Ariyadasa

Bsc(DS), C.Eng. MIE, MBA, MSc(MS), PG, Dip(CL&DR),PSC

Project Director

Light Rail Transit Project – JICA

Ministry of Megapolis and Western Development

The purpose of the Light Rail Transport Project is to provide the commuters in and around Colombo with a convenient and comfortable transport system. Eng. Ariyadasa informed the audience that LRT is an elevated Railway System with a length of 16km from Malabe to Colombo Fort.

He said that LRT was now in the last stages of detailed designing and preparing bidding documents. Around 122 professionals/experts are working in the project and the tender for the first package that is for rolling stock would be ready by the end of the year for awarding and bidding works for other documents would be hopefully finalized mid-2021.

Eng. Chaminda Ariyadasa making reference to himself stated that 23 years he was in the SL Navy as a Civil Engineer out of which 05 years served as a specialist attached to Colombo Metro Development Project from 2010 to 2015.

❖ **LRT Project**

It will be an elevated structure taking 95% of the track on the centre median of road. The physical construction will commence in 2021. Project would have one depot in front of the wetland before CINEC campus. The stations are to be located at Malabe, Talahena, Lumbini Temple, Koswattta, Battaramulla, Diyatha, HSBC, new RDA building, Rajagiriya, Cotta Road, Borella, National Hospital, St Josephs College, transit Station between Maradana and Fort Railway stations, and Fort Transport Centre. The feasibility study was completed by JICA in 2018. The Project is financed by JICA.

The depot will contain workshops for heavy, medium and light maintenance, administration building, control room, under floor lifting systems, and gantries etc. The control room and training center too would be located at the same premises.

In parallel to the completion of feasibility study in 2018 action had been taken for procurement of consultants.

Accordingly, loan agreement was signed in March 2019 with JICA and subsequently on 01 April 2019 the consultants were mobilized. It was a consortium consisting Japanese companies, Japanese Railway and a local company. By now 122 consultants from 12 countries are working in the Project.

❖ Packages

First package is for procurement of Rolling Stocks amounting to 100 cars. One train set will have 04 cars. The procurement is only from Japan as the project is funded by Japan. The second package is for construction of E&M track and third package for building the depot and related constructions. Fourth, fifth and sixth packages are meant for civil works along the track. Utility diversion like water, electricity, sewer lines, telecom are provided for under seventh package and the expenditure for such diversions has been allocated from project funds.

The first package will be tender-ready by the end of 2019



❖ **Station Structure**

The steering committee of the project has selected one out of three types designed. The acquisition of land is a costly affair because small land plots are not suitable for putting up escalators, stair cases, etc. Road widening is also required to accommodate access to stations. To keep the landscape beautiful the structures need to be designed in such way with greenery.

Eng. Ariyadasa stressed the point that in all these packages, the Sri Lankan companies can join the project as joint ventures with Japanese contractors. However, there is a condition in loan agreement that products/supplies by local contractors to the value of 30% of the loan, need to be originated from Japan.

For stations via-duct structure is to be of standard form. In places like Darly road, where high-rise buildings are many, the portal type will be used.

❖ **Utility Diversion**

About half of utility diversions have been completed. The biggest issue encountered was at Rajagiriya where earlier it was planned to use the centre-median of the road for the elevated rail track, but now not possible due to the fly over. However, Mr Ariyadasa revealed that after his discussions with the occupants North of Fly over, they agreed to accept the compensation package and to leave the location.

The station planned for Robert Gunawardena Mawatha had to be moved to a location in front of RDA office eliminating the Palam-Tuna station. This relocation is due to the proposed highway to Pore. The new location will have connectivity to tri-forces Headquarters as well.

Moreover, at Ward Place, Colombo, there is a 400 mm sewer line at a depth of 6 ft thereby making it impossible to use centre-median for rail track and LRT taking action to shift the sewer line out of Project funds. At Borella there are under passes and the supermarket owned by Colombo Municipal Council.. The LRT has offered 03 options to CMC for a joint venture, or public private partnership to develop Borella super market and incorporate the station into the developed structure.

❖ **EIA**

Environment Impact Assessment Report has been agreed upon by the Governments of Sri Lanka and Japan and all related agencies subject to certain conditions. The whole project will be environment friendly and it is hoped to obtain silver level certification by the Green Building Council of Sri Lanka.

❖ **Financing**

Referring to financing of the Project Eng. Ariyadasa highlighted that JICA would be providing a loan at extremely generous concessionary terms. Accordingly, out of total project cost of USD 2.22 Bn, JICA's component as a loan would be USD 1.85 Bn whilst GOSL component stands at USD 370 Mn. The grace period agreed is 12 years and Re-payment period allowed is 40 years.

Eng. Ariyadasa further clarified that the interest rates applicable were not much of significance given the re-payment period being lengthy. The rate of 0.01% was agreed for consultancy services whereas 0.1% is imposed on civil works, machinery and procurement of equipment. The loan agreement was signed on 11 March 2019.

❖ **Rolling Stock**

The rolling stock will have a length of 18m, while the body width will range between 2.65 m and 2.85 m. The trains are expected to be configured into four-car formation and will carry a passenger load of 800 per train.

❖ **Operations and Maintenance**

Eng. Ariyadasa enlightened the audience on operations and maintenance of the LRT after commencing commercial operations. For this purpose a state owned company will be established. For the establishment of the said company and to regulate the related activities such as recruitment, skilled, semi-skilled and unskilled labour, manpower requirements, finances, commercial operations, etc, a parliamentary Act known as LRT Act is being drafted. This Act will provide the required legal status to the company.

❖ **Benefits**

Eng. Ariyadasa in his presentation indicated the following benefits to the public by LRT:-

- Reducing traffic congestion in the Colombo City
- Affordable and more convenient transport. One way fare will be around Rs. 100/- from one end to the other. For in between stations fares will be proportionately low.
- Travel time from Malabe to Colombo Fort will be reduced to 30 Minutes from current 45-90 minutes
- The operations are emission free thereby reducing carbon footprint of the country.

Eng. Chaminda Ariyadasa making his concluding remarks invited the audience to visit www.clr.lk for further information, when required.

➤ Connectivity

- **Route Length** – 16 km
- **Number of stations** – 16
- **Track** – Double track incl. Depot access line
- **Structure** – Elevated in all stations, 95% along center median
- **Number of Depots** – one with OCC and training center (Elevated)



6. Changes Expected in Colombo Skyline and Sustainable Construction



Prof. Ranjith Dissanayake

BSc Eng. (Hons), Meng., Phd, C. Eng. FIE(SL), MSSE(SL)

Vice President/CCISL

Faculty of Engineering, University of Peradeniya

Chairman/Green Building Council of Sri Lanka

Commencing his presentation Prof. Ranjith Dissanayake displayed few pictures taken recently in Colombo and some other major cities indicating how they look like today with high rise buildings and other developments.

With new development, like coming- up port city, the lotus tower and the other skyscrapers, the Colombo skyline is rapidly changing. By this development, we have got rid of environment, said the professor.

Why is it happening? We need cities that we love. Prof. Dissanayake elaborated in detail. Through built up-environment, we have lost the natural-environment. To protect the environment with continual constructions, it is important to transform, not to change, the construction industry into green development thereby creating green cities which citizens love.

❖ Construction Materials

The use of excessive water during construction is a loss in natural resources. For construction, raw materials need to be gathered and processed. This is harmful to the natural environment. For timber, trees have to be felled and woods are lost. Similarly by leveling the ground, way is paved for soil erosion by disturbing the ground.

Hence the need to transform to greener concepts of construction. Thus greener building practices will lead to greener cities where people will be happy to stay. The cities with happy people will lead to greener economy. To facilitate greener buildings in the cities is the basic concept of Green Building Council of Sri Lanka. Prof. Dissanayake pointed out that transformation of existing cities into Greener Cities would be possible, and essential.

Prof. Dissanayake quoted remarks made by Gustove Petro that “A developed country is not a place where the poor have cars. It ‘s where the rich use public transportation”.

Prof. Dissanayake explained how in the construction process transformation should take place from Linear Economy to Circular Economy. Describing difference between Linear and Circular, Prof. Dissanayake said that in Linear economy the materials are manufactured, and used and thereafter disposed. On the contrary, in Circular Economy materials are manufactured then used and returned to be re-cycled and reused. This is conducive for the protection of environment and cost effective. This is important not only for construction industry, but for overall economic activities too. Our economic model too is on the linear model which needs to be transformed.

❖ **Cities**

Prof. Dissanayake expressed the view that we should have to define a city. There are various ways one looked at cities. Family oriented cities, interacting cities, sporty and healthy cities are some of the definitions. However, there cannot be all these characteristics in one city. When one looks at Peradeniya, it is more like a garden city where one finds parks, walking paths etc. The Colombo city looks like a shopping or innovative city. Whatever the definitions, the city at the end should be a happy city for which the citizens have to care for nature. For the transformation to Green city a strong leadership and commitment is required. In this regard important thing is to protect the natural environment.

❖ **Action Plan for Transformation**

Prof. Dissanayake stated that Sri Lanka is a member of World Green Building Council and the Green Building Council of Sri Lanka has formulated an Action Plan to facilitate the transformation to Green cities. The Action Plan stresses the importance of leadership and commitment. Prof. Dissanayake also indicated that climate leadership, green building, green construction, zero waste, local food, are some of the aspects addressed by the Action Plan.



Green City Action Plan is based on 10 Goals and 03 Themes namely Zero Carbon, Zero Waste and Healthy ecosystems. To achieve Zero carbon, the requirements for climate leadership, Green transportation and green building method are significant. Healthy eco-systems like access to nature, clean water, local food and clean air are important to happy life style.

❖ **Green Building**

A Green building is designed to consume less natural resources. A typical building, shown through a picture, contained a green rooftop with plants, solar power, heat recovery ventilation, etc. It is environment friendly construction and social and economic activities too could be activated in the building. People are happily living there while engaging in social and economic activities.



❖ **Rating System**

There is special rating system formulated for Sri Lanka for Built Environment. This system is being implemented by Green Building Council of Sri Lanka to assess and certify how Green the buildings are. Accordingly, points are allocated to determine the greenability of the buildings. The building obtaining points in the range from 40-49 receive certifications. The category from 50-59 is considered as Silver, whilst the category from 60-69 are accepted as Gold. The recipients of points 70 or above are eligible for Platinum status. The awarding system is to encourage the builders to transform to green building concept for construction sustainability by protecting natural environment. As of now CECB building in Colombo has attained the Gold status.

❖ **New Rates**

The Green Building Council expects to introduce a new rating system at its annual Awards Ceremony on 15 December 2019 to induce builders to conform to greener guidelines.

Concluding the presentation Prof. Dissanayake stressed the importance of change of attitudes, service & technology and economy & Law as the prerequisites to activate transformation to green economy



07. National Policy on Construction, CID Act and Regulations



Eng. Col. Nissanka N. Wijeratne

M.Sc (Construction Management) Loughborough, UK

B.Sc Eng.(Sri Lanka) MICE, C.Eng

Secretary General/CEO

Chamber of Construction Industry Sri Lanka

Eng. Col. Nissanka N. Wijeratne commencing his presentation stated that he would first deal with the historical background to legal enactment on regulating Construction Industry. Thereon National Advisory Council on Construction and thereafter elaborate on National Policy on Construction.

❖ **Historical Background**

- Private sector participation in construction industry in Sri Lanka flourished only with the construction boom after 1977 that resulted with the open economy. Consequently, several private consultancy & contracting companies were established.
- However, by 1980 skills shortage was badly felt and as a result Construction Industry Training Project (CITP) was initiated with World Bank funds in 1981. This Project included training & structural Reforms.
- On a recommendation of Paskaralingam Committee Report, Institute of Construction Training & Development (ICTAD) was established in 1982 under State Industrial Corporation Act, No. 49 of 1957.
- The several measures taken by ICTAD were very useful for development of the local construction industry.
- The limited scope and lack of legal authority to ICTAD was badly felt as it was restricted to public tenders/ contracts. As the ICTAD was established under Industrial Corporation Act, it had no legal authority to enforce laws in construction industry. The Act used for incorporation was meant for industrial activities of manufacture and sale.

- Realizing this shortcoming, then Minister Indika Gunawardana appointed a committee in 1996 to draft a new Act. However, no draft could be finalized due to disagreements among various stakeholders.
- In 2008, a new initiative was made to finalize the draft.
- Consequently, Construction Industry Development Bill was tabled in Parliament by then Minister on 08th December 2009. This could not be passed due to dissolution of Parliament.
- After election, the new Minister decided to revisit the total Bill. Finally Construction Industry Development Act, No. 33 of 2014 was passed in Parliament on 16th Oct 2014.
- The 2014 Act has nearly 85% of provisions from 2009 draft Bill, as well as few new useful provisions. However, some very important sections were deleted. One was the section on security of payments to consultants and contractors and the other was the Section on issuance of building permits within 90 days. These two important provisions, which were in the earlier Act were deleted.

❖ **Construction Industry Development Act**

- The CID Act has envisaged a management structure resting on 3 main pillars.
- Firstly the National Advisory Council on Construction (NACC) This is the overarching policy making body (Section 4)
- Secondly, Construction Industry Development Authority (CIDA) (Section 8). This is the implementing and regulating arm.
- Then finally Construction Industry Development Fund (CIDF) (Section 19) which is supposed to be the funds provider for NACC and CIDA to implement various proposals. The development fund is an independent body which should be managed by NACC. Unfortunately this is not in place yet.

❖ **National Advisory Council**

- NACC comprises 22 members including representatives from;
 - Ministries – Construction, Urban Development, Highways, Water Supply & Drainage, Irrigation, Housing, Vocational & Technical Training

- Chairman of CIDA
- Institutions – IESL, SLIA, IQSL, ITPSL, ACESL, IIESL, NCASL, CCISL
- 4 nominees of Minister from industry professionals.

❖ **National Advisory Council on Construction**

- The NACC is responsible to formulate a National Policy on Construction [Sec 2] and its implementation mechanism [Sec 6(a)]. In addition NACC is required to advise the Minister and make recommendations on regulations to be made under the Act, any new legislative proposals, policies and any measures to develop the construction industry.
- A serious shortcoming in NACC is the non – inclusion of representatives from Ministries of Finance, Power, Provincial Councils and Policy Planning. These 4 ministries are very important in policy making.
- The Chairman of the NACC is the Secretary to Ministry of Construction [Section 5 (a) (1)]. But in the 2009 Act, Minister was the Chairman and in his absence Secretary was to chair. This was done as NACC was to be the main policy making body for the construction industry.
- As per Sec 7, NACC shall meet at least once in 3 months.

❖ **National Policy**

- National Policy on Construction was formulated by the NACC under Sec 2 of the Act and approved by the Cabinet of Ministers.
- This Policy will apply to the construction industry in general, both public and private sectors.
- Usually on any national issue, the national policy should be formulated first and then enabling legislation to follow. However when the National Policy on Construction was formulated, action needed to be taken to ensure that it did not conflict with already enacted legislation.
- This Policy has 18 main elements with implementation mechanism defined as detailed below:-

- **NPC 1-** Provide strategic leadership to the stakeholders of the construction industry to stimulate sustainable growth, reforms and improvement of the construction sector.

Under the implementation mechanism registration & monitoring system of all stakeholders, uniform application of standard bidding documents & guidelines on all construction projects of public & private sectors and measures for expeditions resolution of construction related disputes such as by adjudication are included.

- **NPC 2-** Regulate and monitor the activities of all stakeholders of the construction industry as may be prescribed from time to time
- **NPC 3** - Promote sustainable economical growth of the construction industry with special attention to the design and development of disaster resilient, energy efficient and environmentally sustainable buildings, structures and construction practices.

Under the implementation mechanism CIDA should encourage research & development in building construction technology.

- **NPC 4** - Promote innovation, research, dissemination and publication of research work on matters relating to the construction industry and its development. So it is the responsibility of CIDA to encourage research and development in construction industry.
- **NPC 5** - Establish national standards and specifications for the construction Industry. CIDA is empowered to formulate national standards and specifications.
- **NPC 6** - Establish codes of conduct, practices, procedures, processes and documentations to promote good practices relating to construction industry. The CIDA in consultation with all stakeholders need to formulate acceptable codes of conduct.

Under the implementation mechanism CIDA has to develop appropriate codes of conduct & acceptable practices and also enforce these.

- **NPC 7** - Enhance human capital, professionalism, efficiency and productivity of the human resource of the construction industry. Accordingly, CIDA has to facilitate training.
- **NPC 8** - Enhance occupational safety and health standards and practices in the Construction Industry.

- **NPC 9** – Enhance the use of Information Technology to improve efficiency and productivity of the construction industry processes. This deals with the use of IT in designing, planning, administration, documentation etc. However for this arrangement the training to the staff is important.

Under the implementation mechanism CIDA has to promote in association with relevant agencies, the use of IT based systems in planning, designing, estimating, documentation and project management. This is an ideal fit for promoting use of BIM.

- **NPC 10** – Promote access to overseas markets for Construction Companies and personnel.
- **NPC 11** - Create an enabling environment for local and foreign investments in the construction Industry.

Under the implementation mechanism CIDA has to establish reforms that will lead to improvement & acceleration in the approval process for construction projects. However, an amendment proposed to CID Act to ensure approval for building planning applications within maximum 90 days was not agreed by the Chief Legal Draftsman.

- **NPC 12** – Establish a monitoring and evaluation procedure to ensure compliance of industry practices including disaster resilient construction standards & practices, with the National Construction Policy.
- **NPC 13** – Promote domestic participation in foreign funded construction projects implemented by foreign contractors and consultants. In this regard, NACC is working on enabling legislation that foreign contractors’ majority foreign funded projects, should form joint ventures with local contractors allocating subcontracts to the value of 40% and making the locally funded projects open only to locals.

Under the implementation mechanism when foreign consultants and contractors are required to execute foreign funded projects they should form joint ventures with local companies. Subsequently NACC decided to have a minimum share of 40% of the work involved to local companies. Also, an amendment is to be introduced to reserve locally funded projects to local consultants & contractors.

- **NPC 14** – Encourage private sector participation in policy development

- **NPC 15** – Encourage effective management of construction projects by the industry
- **NPC 16** – Establish codes of conduct among partners of the industry. A committee has been appointed to draft the codes and conduct for entire construction industry.
- **NPC 17** – Encourage Human Resource Development in the Construction Industry
- **NPC 18** – Establish appropriate procurement practices in the Construction Industry. In fact the procurements are guided by the National Procurement Committee and CIDA is working with the National Procurement Committee to persue action in this regard.

Eng. Wijeratne concluding his presentation invited Archt. H K Balachandra, Director General/Construction Industry Development Authority, to elaborate on Construction Industry Development Act and Regulations.

08. National Policy on Construction Construction Industry Development Act and Regulations



Archt. H K Balachandra

B.Sc, M.Sc.(Arch), Chartered Architect

Director General

The Construction Industry Development
Authority (CIDA)

Archt. H K Balachandra, Director General/ Construction Industry Development Authority (CIDA) made his presentation on CID Act, Regulations and Rules published and planned to be published and amendments proposed to CID Act.

❖ **Present status of Construction Industry**

While focusing attention on the present status of the Construction Industry he said Sri Lanka's Gross Domestic Product (GDP) at current market prices stood at USD 89 Bn in the year 2018 and contribution by construction industry amounted to USD 6.23 Bn. This was the highest ever recorded by construction industry at current market prices. However percentage share of GDP was 7.1% in 2016, 7.2% in 2017 and 7.0% in 2018. More than 7% of the total workforce in Sri Lanka is engaged in construction industry.

As construction industry has become a driver of the economic growth, it needs to be properly developed with a long term vision ensuring its sustainable growth. In order to achieve the sustainable development three frameworks have been established. Under policy framework, a National Policy on Construction has been established with the approval of the Cabinet of Ministers. As per legal framework the Construction Industry Development Act No.33 of 2014 was enacted and made a law. In keeping with Institutional framework, the Construction Industry Development Authority was established.

Construction Industry Development Act No. 33 of 2014

❖ **The Major objectives of the Act**

- To regulate, formulate and standardize the activities of the Construction Industry
- To provide for the establishment of the National Advisory Council

- The establishment of the Construction Industry Development Authority (CIDA)
- The establishment of the Construction Industry Development Fund and fund of the Construction Industry Development Authority. The fund is meant for building capacity and research and development of the construction industry.
- To provide measures for the improvement and well-being of the industry related professionals, manufacturers, Suppliers, and Craftsmen
- The settlement of disputes related to the Construction Industry activities
- To ensure the safety in the Construction Industry of Sri Lanka and matters connected there with or incidental thereto.

Arch. Balachandra said 12 Nos rules and regulations have been gazetted and being operated by now under the Construction Industry Act No. 33 of 2014 and 07 Nos are to be forwarded to Government Printer whilst 05 Nos regulations are with Legal Draftsman's Department. It is hoped that all 12 regulations that are with Government Printer and Legal Draftsman would be finalized and in operation before the end of 2019. Arch. Balachandra displayed the list of 24 regulations in a slide which is reproduced below:-

SRL No.	Section	Rules & Regulations	Whether a Rules or a Regulations	Gazette No.	Gazette Date
1	26 & 30	Registration of Qualified Persons and Standards to be adhered by Qualified Persons	Regulation	2057/5	05.02.2018
2	32	Disciplinary Actions against Qualified Persons	Regulation	About to send to Govt. Printers	
3	33	Registration of Foreign Consultants	Regulation	With Legal Draftsman	
4	34	Maintaining the Register of Contractors	Rule	2065/41	05.04.2018
5	35	Registration of Contractors and renewal of registration	Regulation	2057/5	05.02.2018
6	36	Disciplinary Actions against Contractors	Regulation	About to send to Govt. Printers	
7	38	Standards and procedure to be adopted by registered Contractors in identified construction works	Regulation	2085/20	23.08.2019

8	39	Registration of Foreign Contractors	Regulation	2085/19	23.08.2019
9	40	Monitoring of Contractors	Rule	About to send to Govt. Printers	
10	42	Registration of Property Developers and renewal of registration	Regulation	About to send to Govt. Printers	
11	43	Maintaining the Directory of Importers, Manufactures, and Suppliers of Construction Materials and Components	Rule	With Legal Draftsman	
12	44	Maintaining the Directory of Heavy Construction Machinery and Equipment	Rule	2116/49	28.03.2019
13	45(2)	Technical Auditing Procedure and Fees for Technical Auditing	Regulation	2057/5	05.02.2018
14	45(4)	Registration Procedure and required qualifications for Quality Management Auditors	Rule	2065/41	05.04.2018
15	48(1)(2)(9)	Issue of Craft Identity Cards and manner of maintaining the Register of Craft Identity Card Holders	Regulation	With Legal Draftsman	
16	48(6)	Code of Conduct for such Craft Identity Card holders	Rule	About to send to Govt. Printers	
17	49(1)	Maintaining a Register of skilled Construction Workers, Construction Site Supervisors, Middle Level Technical Officers and other Professionals in the construction industry	Regulation	About to send to Govt. Printers	
18	49(2)	Registration of skilled Construction Workers, Construction Site Supervisors, Middle Level Technical Officers and other Professionals in the construction industry	Rule	With Legal Draftsman	
19	51(2)	The procedure for adjudication of any dispute	Regulation	With Line Ministry	
20	52(1)	The form and manner of maintaining a Register of Adjudicators	Rule	2114/1	11.03.2019
21	52(2)	Registration of Adjudicators	Regulation	2113/63	08.03.2019
22	53 & 54	Form and manner of submitting an appeal to the Appeals Board	Regulation	2116/47	28.03.2019
23	55(2)	The functions, procedures and performance standards required of the Information Secretariat	Regulation	2116/48	28.03.2019
24	55(3) (i)	Requesting of information relating to any details of construction work	Rule	About to send to Govt. Printers	

Archt. Balachandra explained the regulations one by one and emphasized on regulations having major impact on construction industry.

❖ **Registration of Qualified Persons**

The purpose of this regulation was to ensure that only the persons with required professional qualifications are carrying out, designing, preparation of documents and supervision of identified construction works. The identified construction work meant any project over the value of Rs.10Mn for public use. The construction exclusively for private use has been excluded. All Engineers, Architects and Quantity Surveyors are required to register with CIDA.

Local Authorities shall approve the Designs and Plans for construction work prepared only by Qualified Persons registered with CIDA.

The regulations were published under Section 26 and 30 of CID Act, in Gazette No. 2057/5 dated 02-02-2018.

❖ **Registration of Construction Contractors**

The Rules are for maintaining a Register of construction contractors registered with CIDA, in the prescribed form and manner. They will be registered under different grades depending on the value of contract, nature of contract, technology and financial capacity. Already CIDA had a list of 4000 contractors. The CIDA registration is mandated for undertaking of any identified construction works.

These Rules have been published in the Gazette No. 2065/41 dated 05-04-2018 under Section 34 of CID Act. The benefit of regulation is to ensure that only the contractors fulfilling the required criteria are carrying out identified construction work and to ensure the construction of buildings of required standards and quality.

❖ **Technical Auditing**

CIDA shall provide Technical Auditing Services on the request made by the owners of the construction projects or any Government Organization. The following facts shall be considered in Technical Auditing :

- Execution of the construction works in accordance with the relevant standards.
- Execution of construction works in conformity with the relevant provisions of the contracts.
- Compliance by the parties referred to in the contract, with their respective obligations under the contract.

- Compliance with the basic public health, occupational health and environmental standards and technical standards which include efficient resource and energy utilization standards.

The regulations are meant for the carrying out the process of Technical Auditing for construction projects, as per the prescribed procedure and rates for levying of fees for the same. These Regulations have been published under Section 45 (2) of CIDA Act in the Gazette No.2057/5 dated 05-02-2018.

❖ **Quality Management Auditors**

Rules for registration of Quality Management Auditors are meant for the purpose of carrying out Technical Auditing as per the prescribed procedure and qualifications, and maintaining a Register of such Quality Management Auditors.

By these regulations, General Public are able to obtain a technical report as to whether a building has been constructed according to required construction standards. Further by this procedure, building owners would be able to ensure that construction of their buildings are according to required standards and specifications.

These regulations were published under Section 45(4) of CID Act in Gazette No. 2065/41 dated 05-04-2018

❖ **The standards and procedures to be adhered to, by the construction contractors registered with CIDA**

All contractors should adhere to the standards and specifications set by CIDA. For any deviations the prior approval of CIDA must be obtained. Any request for technical audit by CIDA should be submitted in specified format of CIDA. The foreign contractors can use their own formats in keeping with bidding documents. These regulations were issued under Section 38 of CIDA Act and were published in Gazette No. 2085/20 dated 23-08-2019.

The CIDA is legally mandated to monitor that all the contractors adhere to set standards and specifications.

The benefits expected by these regulations are as per following:-

- Public property and lives of people are protected by carrying out identified construction work, that is work over the value of 10 million which is meant for public, according to required standards.

- Adverse environmental impacts are minimized by carrying out construction work according to required standards and procedure; thereby enabling to reach the Sustainable Development Goals.
- Ensuring the construction of buildings which are resilient to natural disasters & unfavourable weather conditions; thereby lives and property of general public are protected and the sustenance of such buildings are ensured.

❖ **Registration of Foreign Contractors**

In the legal context, CIDA has to monitor all constructions including by foreign contractors. All foreign contractors are required to get registered with CIDA before awarding of projects. The engaging in construction without registration in CIDA is punishable by law with a fine not less than Rs. 100,000/- or 02 years in prison or both. The client is supposed not to award contracts to foreign contractors before registration is completed. If client is to award contracts he is liable for violation of law.

The temporary registration of foreign contractors who intend to engage in identified work in Sri Lanka, will be for the specific period of the project as per the prescribed procedure subject to registration fees and renewal of such registration. The CIDA will monitor foreign contractors' construction, labour and equipment adherence of standard of their construction. These Regulations are published in Gazette No.2085/19 dated 23-08-2019 under Section 39 of CID Act.

- ❖ The expected benefits of registration of foreign contractors are as per following:-
 - Being able to maintain a National Data Base of the foreign contractors fulfilling required financial and technical criteria; who are engaged in identified construction work.
 - Ensuring that only foreign contractors who fulfill required criteria who have registered with CIDA are carrying out identified construction work.
- ❖ **Archt. Balachandra, referring to regulations proposed or being under submission to Legal Draftsman elaborated the followings:-**
 - **Establishment of the Appeals Board**
There need to be formal procedure for an Appeal to be made by any person who is aggrieved by a decision of CIDA.

○ **Advantages of having a proper procedure and form for the Appeals Board**

- Opportunity needs to be given for any person aggrieved by a decision made by the Construction Industry Development Authority under the Construction Industry Development Act to appeal against such decision. This will help to minimize disputes in the construction sector.
- As the proposed regulations have prescribed the appeals procedure (the manner in which the appeal is made and the form), the appeals procedure will be formal and uniform.
- As a result of the appeals procedure being formal and efficient the stakeholders of the construction industry will be able to secure just solutions to their problems

❖ **Disciplinary action against the Qualified Persons**

Any complaint against the Qualified Persons relating to :

- a) any professional negligence, lack of competency or violation of ethical and social standards
- b) moral turpitude, malpractice, fraud or dishonesty
- c) breach of any terms and conditions where his registration has been granted subject to any terms and conditions

When complaint is received against the Qualified Person, it will be first referred to the respective professional body for investigation and to effect the necessary disciplinary action. If no action has been taken by the respective professional body, the CIDA will investigate in to the matters and take necessary action.

❖ **Disciplinary Action Against the Contractors**

When a complaint is received against a registered contractor such complaints will be referred to the disciplinary committee to investigate and make recommendations to the CIDA. Upon the receipt of such recommendation, CIDA will take action following the recommendation of the disciplinary committee such as suspension or cancel of certificate of registration

❖ **Establishment of the National Database**

A separate Secretariat is necessary to update and maintain the National Data Base in the construction industry. The Construction Industry Development Authority, intends to maintain an Information Secretariat for collecting information pertaining to the construction industry as per the required

functions, procedures and performance standards. Then Authority will be able to collect, process and distribute formal and credible information to stakeholders from a single location. This will enable the access to information with ease through electronic and information technology systems.

❖ **Registration of Adjudicators**

CIDA will register the adjudicators and maintain a register of adjudicators. The expected advantages are as per following:-

1. Ability to resolve the disputes amongst partners of a construction contract outside the legal framework expeditiously and at a low cost through adjudication.
2. To have disputes relating to construction contracts resolved with ease and obtain a ruling without having to suspend the construction activities.
3. To select a suitable adjudicator (from the pool) for the resolution of disputes.
4. The qualifications and competency of adjudicators registered with the Authority can be certified and a uniformity in the methods adopted can be ensured.
5. Through the facilitation of the resolution of construction disputes, projects can be completed within the stipulated timeframe and the approved estimate.

❖ **Directory of specified Heavy Construction Machinery**

➤ **Benefits of maintaining a Directory of heavy construction machinery and equipment;**

- To obtain details of heavy construction machinery and equipment required for such construction projects, easily by maintaining a National Data Base of such details.
- To collect and disseminate standardized and guaranteed information relating to heavy construction machinery and equipment.
- To obtain guaranteed information relating to quality, and standards of heavy construction machinery and equipment to be used in construction projects.

- Easy access to be provided to information such as make & model, specialty, country of origin, country of manufacture, place of availability etc. of this machinery.

❖ **Registration of Foreign Consultants**

Every foreign consultant prior to be engaged in the identified construction works should be registered with the authority. They will be given registration only for a certain period for a specific project. With the given registration, the foreign consultants cannot bid another project.

❖ **Property Developers Registration**

Legal Provision is already there to register Property Developers for the benefit of the industry as per Clause No 41 & 42 of CID Act 33 of 2014. However currently there is no formal registration and the need arises to streamline the property development industry to ensure the end user satisfaction, reduce disputes, improve confidence and build up the image of the industry. As such it is hoped to issue regulations.

❖ **Directory of Importers, Manufacturers, and Suppliers of Construction Materials and Components**

➤ **Documents Prepared (Materials & Component Suppliers)**

A complete set of documents which is required for commencing Material Suppliers registration has been compiled, as per Act part VI,(43). Programme for Registration of Construction Material and Suppliers will commence soon ensuring the quality of materials in the market as the market is flooded with low quality materials. Initially, registration will be done for identified set of materials.

❖ **Registration of Construction Craftsmen**

To ensure a quality and certified work force to increase productivity and quality of work up to the highest standards, CIDA will soon commence registering of all the construction craftsmen practising in the construction industry giving them a identity card indicating their level of skills and providing them with long term insurance and retirement benefits.

All the construction craftsmen who do not possess a valid certificate will be encouraged to obtain a National Vocational Qualifications (NVQ) under the system of recognition of prior learning (RPL) before being registered as a qualified construction craftsman.

No person other than a craft identity card holder shall be engaged independently in any identified construction work unless under the supervision of a craft identity card holder on the relevant craft.

Vocational Training leading to the awarding of National Vocational Qualifications (NVQ) should be carried out by the institutions accredited by the Tertiary and Vocational Education Commission so that quality and standard of the training can be assured.

❖ **Amendments Proposed to CID Act No.33 of 2014**

- Having discussed at meetings of National Advisory Council on Construction, a set of amendments were proposed to the CIDA Act, in response to current needs of the construction industry.
- The approval of Cabinet of Ministers too was obtained for these amendments. Presently amendment bill is being drafted by Legal Draftsman.
- Thereafter draft Construction Industry Development (Amendment) Bill shall be presented in Parliament for enactment of Construction Industry Development (Amendment) Act.

The Proposed amendments are indicated below:-

❖ **Construction Industry Development Levy**

Section 19 - Including provisions relating to CID Fund and CID Levy relating to collecting authority, collection mechanism, and the fact that such levy shall be channeled to the Consolidated Fund.

- Providing for the well-being of the small scale contractors and self-employed registered craftsmen.
- Encouraging research relating to Construction Industry and utilizing the results of such research for the development of the Industry.
- Rewarding and encouraging the innovation and invention, application and propagation of environmentally friendly and cost efficient construction technologies.
- Arranging a long term insurance with pension benefits for the craftsmen registered with CIDA.

❖ **Payment of fees to Qualified Persons**

Section 28A - Including provisions in ensuring payments for services provided by Qualified Persons as agreed by the two parties.

A provision is introduced to ensure payment of fees due to Qualified Persons making the same a statutory (legal) obligation.

❖ **Duties of Qualified Persons**

Section 30 - The Standards to be followed by Qualified Persons when engaging in Identified Construction Work and preparing documents relating to them have been included.

This Amendment stipulates the standards to be used by Qualified Persons in many situations, as the standards specified by CIDA in consultation with SLSI and where there are no such standards, the international standards acceptable to CIDA to be used.

❖ **Engagement of Foreign Consultant Making JV mandatory**

Section 33 - A Foreign Consultant when engaging in any Identified Construction Work, as a Qualified Person, shall enter in to a joint venture with a local partner.

Joint Venture between local and foreign consultants is introduced as an amendment. The Joint Venture between foreign and local consultants shall bring home, the internationally accepted best practices in construction industry. This amendment will ensure the capacity building of the local consultants.

Section 33 - Another amendment is brought to this section, to delete the provision exempting foreign consultants directly negotiating with GOSL, from registration with CIDA.

This will enable CIDA to register and regulate all the foreign consultants practicing in Sri Lanka, minimizing malpractices and ensuring safety and health in the construction industry.

❖ **Payment of Fees to the Registered Contractors**

- Payment delay to the contractors has been a major issue in the Construction Industry.
- Cabinet paper submitted to enact Guarantee of Payment Security Act to ensure the payment within the agreed period

❖ **Payment of Fees**

- Section 38A - Provisions have been included to ensure payments to Registered Contractors within a specified period as agreed upon by the parties.
- This amendment is brought in giving a legal effect to the payment of fees to the registered contractors.

- ❖ **Amendments to Make JV Mandatory for Foreign Contractors**
Section 39 - Joint Venture between foreign and local contractors is introduced as an amendment. This amendment shall ensure capacity building of local contractors through technology and knowledge transfer.

Removing of exemption of registration of foreign contractors entering into agreement with government.

Section 39 - Another amendment is brought to this section, to delete the provision exempting foreign contractors directly negotiating with GOSL, from registration with CIDA



09. Tokyo Cement Group



Mr Janaka Perera

MBA, B.Sc. Eng. (Hons.)

General Manager (Marketing)

Tokyo Cement Group

Mr Janaka Perera, General Manager (Marketing) of Tokyo Cement Group, also the sponsor of the Seminar, recalled that Tokyo Cement Company was founded in the year 1982 by its visionary leader and renowned industrialist late Deshamanya A.Y.S Gnanam and his visionary business leadership is at present being continued under the able guidance of present Chairman Mr S R Gnanam.

Mr Perera also revealed that Tokyo Cement is the only Sri Lankan cement company in the country. It enjoys majority ownership of the company with 90% of the share equity while the balance 10% is owned by the UBE industries of Japan, which is the second largest cement company in Japan. The vision of founder Chairman was “making innovative construction materials solution available at affordable prices”.

Mr Perera stressed that Tokyo Cement Company has become the leader in cement, mortar products and ready mix concrete renowned for quality, strength and durability.

Then he proceeded to explain the products manufactured and offered to construction industry and builders throughout the country by Tokyo Cement, under different names and qualities for specific structures.

➤ **Cement**

‘Nippon Cement’ and ‘Tokyo Super’ are ordinary Portland cement with SLS – 107 certifications. The ‘Nippon cement’ is the premium brand of Ordinary Portland Cement (OPC) and is suitable for structural and pre-cast concrete requiring high, compressive and strength. ‘Tokyo Supper’ OPC is general purpose cement which can be used in the production of all types of concrete used in structural and non-structural applications. ‘Tokyo Super’ Blended Hydraulic Cement (BHC) is of SLS – 1247 – 2015 certification. Blended FLY-ASH content in Tokyo Super makes it the greenest cement in the market with the lowest carbon footprint. It can be used for mass scale concreting. Nippon Cement – BHC is the premium brand of blended Hydraulic Cement which conforms to SLS 1247-2015 certification. It is ideal for mega construction and mass concreting.

➤ **Cement Based Mortar Products**

As Mr Perera explained there are 03 types under brand supercast Plaster Master Category for mortar works

- Plaster Master (regular) is easy to spread resulting in a high strength plaster with no hairline cracks.
- Plaster Master (weather shield) is specially formulated for external applications. Water proofing capability of this product prevents dampness of external walls resulting from wind driven rain.
- Plaster Master (white) which is new plastering formula requires only one coat of application contributing to significant cost savings.

➤ **Tokyo-Super Seal/Superset**

- Tokyo Super seal water proofer is a cement based material suitable for interior or exterior surfaces where water proofing is required. Typical uses are in water sealing bathrooms, overhead slabs, walls, joints, etc.
- Tokyo Superset Block Brand is the most suitable masonry mortar for laying AAC, CLC and cement/sand blocks.
- Tokyo Superset screed mortar is a mix of cement with filler and fiber. It can be used for interior and horizontal concrete slabs, balconies, side walls, parking decks and ramps.

➤ **Adhesive Products**

- Tokyo Superbond Tile Adhesive (standard set) can be used for fixing tiles on walls and floors.
- Tokyo Superbond Tile Adhesive (High Performance) is suitable for fixing tiles on an existing tiled or cemented floor without breaking.
- Tokyo Superbond tile Adhesive (Premium) is meant to lay large format tiles.

➤ **Power Generating (Biomass)**

Tokyo Cement operates 02 Biomass power plants with the total capacity of 18 Mw. in Trincomalee and Mahiyangana. The administrative building in Trincomalle known as the green building is fully powered by Biomass.

**Trincomalee Cement Plant Complex and the Value Added Products Factory
with 02 Bio Mass Power Plants**



➤ **Ready Mixed Concrete**

In order to cater to the demand of clients, Tokyo Cement is operating 12 Nos Ready Mixed Concrete Batching Plants at various premises. (Peliagaoda-02 Nos, Meetotamulla, Ratmalana, Anuradhapura, Jaffna, Negombo, Kandy, Matale, Mahiyangana, Weligama, Trincomalee)

➤ **Tokyo Super Sand**

Tokyo Cement has established an Aggregate Manufacturing Plant in Dompe to turn out M-sand which is an alternative to river sand. As sand mining in rivers has caused an environmental issue, this product is a good solution to sand-needs of constructions.

➤ **Fly-Ash Classification**

Tokyo cement, in the year 2018, initiated Sri Lanka's only Fly-Ash and UPC blending process to produce Superior Blended Hydraulic Cement (BHC). In this process Fly-Ash is subjected to inter grinding. Tokyo Cement obtains Fly-Ash from Norochcholai Power Plant.

➤ **Standards**

- All cement plants are upto ISO-9001 certification thereby complying with accepted and set standards.

- Main laboratories at Trincomalee and Colombo are of ISO-17025 certification.

➤ **Competitive Strategies**

The Tokyo Super-Mix competitive Strategy is in the continual process based on superior quality, strength and durability by adhering to following:

- Good quality of cement aggregate raw materials and admixture.
- Performance by qualified Quality Controllers.
- Enhancing capacity through deployment of truck mixers and pump cars.
- Continual upgrading of technology. In this aspect, automatic plant control systems, data logging and report generation are noteworthy. The logistics for efficient control of vehicle- usage with vehicle tracking system and central control and resource-sharing also have shown good results.

➤ **Infrastructure-Investment**

- Tokyo cement, in the year 2018, completed its own private jetty in Trincomalee Port for their cement plant.
- Tokyo Cement Group uses its own ships for transportation network now there are 04 ships.

➤ **Corporate Social Responsibility (CSR)**

- Tokyo cement operates mangrove reforestation project in collaboration with SL-Navy.
- Engaged in a project for replenishing and conservation of corals in Mannar, Trincomalee and Pasikudah.
- As a measure of minimizing carbon emissions technical building in Trincomalee have been constructed as a green building.

Mr Janaka Perera concluding his presentation displayed visuals of major construction projects where Tokyo Cement products were used. They included Altair project Colombo, Trillium Residencies, outer circular Highway – section 02, Southern Highway – section 02, Emperor Towers, Havelock city project, Court complex – Negombo, New Ministry of Labour Building, Shangri-La Hotel & apartments, Orion city project among others.

Major Projects Completed

Prima Silo Project


Southern Highway – Section 2
 First Cast-In-situ Type Bridge in Sri Lanka - 210m long
 Concrete (C30 – 83 N/mm² in 3 days)


Trillium Residences Tower - 3


Out Circular Highway – Section 2


Emperor Tower




Major Projects Completed (Continued ..)

Epilepsy Hospital - Colombo


Greater Kandy Water Supply Project


Colombo Water Supply System Upgrading


Court Complex Negombo


Serendib Flour mills – Colombo Port




Transportation Network of Ships Owned by Tokyo Cement Group

Tabernacle Prince


Tabernacle Star II


Grace


Mohar




Tokyo Cement Group Private Jetty – Trincomalee 2018

Clinker Unloading from Ships / Transferring to Silos







10. New Trends in Construction



Jinwoo Kim

PE, PhD Candidate

Team Leader

Building & Housing Solution Team

Hyundai Engineering & Construction,

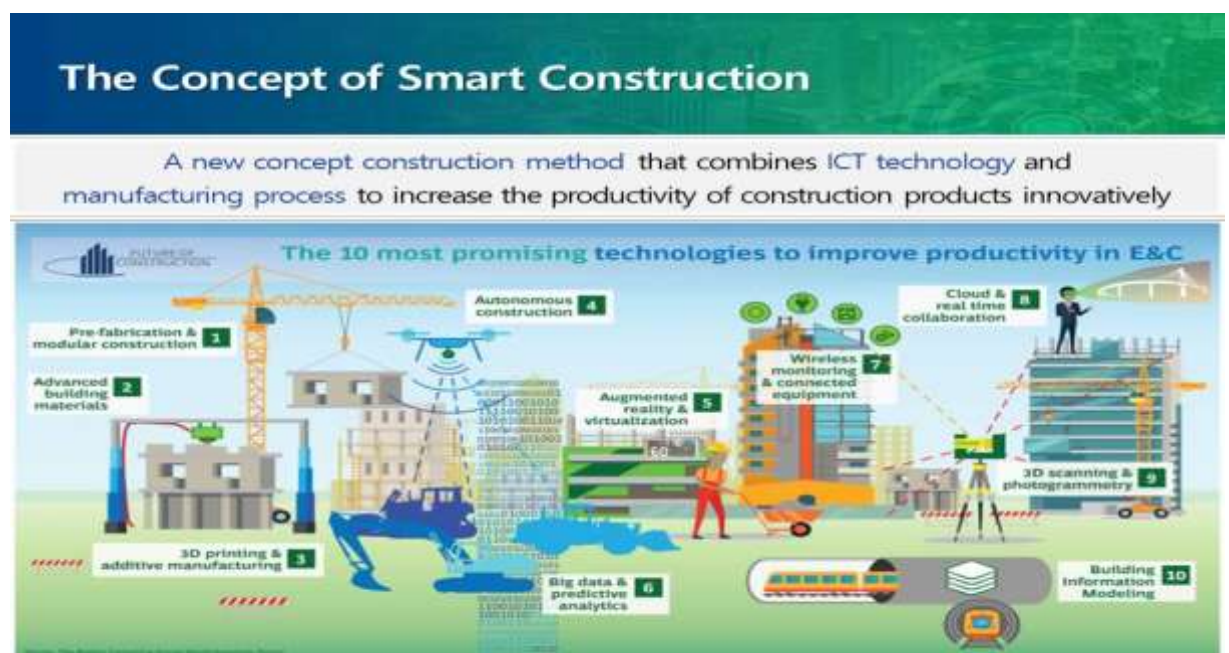
Seoul, Korea

Mr Jinwoo Kim thanked the Chamber of Constructin Industry Sri lanka, the organizer of the Seminar for inviting him to speak on the subject of ‘New Trends in Construction’

Next making reference to Mckinsey Report – 2017, he said that the industrial revolution had changed our lives. The new technologies that sprang up in the post industrial era has brought many changes and developments to almost all industries except constructin industry. The constctuon industry too needs to change to maintain its competitiveness and to reduce construction costs ‘So what is the solution?’ he quired and answered ‘It is the Smart Construction’.

➤ **Smart Construction**

Smart construction is a new concept of construction method that combines ICT technology and manufacturing process to increase the productivity of construction products innovatively. Describing the key structure of Smart Construction, Mr Kim detailed 04 factors as BIM –based virtual construction, Prefab construction, robotics & automation and smart field management.



➤ **BIM-based Virtual Construction**

BIM (Building Information Modelling) based virtual construction is a tool which could be utilized to draw many benefits to construction industry. One benefit is that it serves as a tool in pre-construction stage to detect risks, joint errors and interference between various alignments. The BIM could be used as a means of collaboration force too as it creates a platform for clients, contractors and stakeholders to voice their views and concerns. So BIM would be useful to make rational decisions not only in construction projects but also in infrastructure projects.

Through BIM –based simulation system, construction site planning could be effected by eliminating probable risks in pre-construction stage by planning earthworks, location analysis, constructability analysis, lifting simulations and so on.

➤ **VR and AR**

The VR (Virtual Reality) and AR (Augmented Reality) can improve constructability and enhance decision making, thereby leading to improved customer satisfaction. Since year 1947, for last 73 years Hyundai Company has accumulated data and experience, but it is not as good as wanted to be because it had to rely on traditional knowledge and historical data. By now the company has changed. Through BIM the company has a database. It is useful at constructability reviews with all subcontractors and coordinating with multiple trades.

By analysing the accumulated Big data based on past cases, historical data etc, it was possible to proceed with data-driven decision making. By Artificial Intelligence (AI) it was possible to automate repetitive tasks and improve efficiency of existing works.

➤ **Pre-Fab**

Pre-fab construction means modular components are to be factory-made and assembling of same on site. The conventional method was to construct the building and then to bring and store the amenity components like pipe lines, electricity lines, etc and to instal one by one. In prefab project all such components are manufactured in certain factories and to be delivered to the project just in time.

For such installations, Hyundai Company used to engage Chain Block System. By the use of this system, it was observed that it needed more labour input and needed chain block anchoring too. However to overcome this problem, a customized machine as shown in Power Point presentation was devised. It could be operated with least labour, saving costs and lifting time.

➤ **Robotics & Automation**

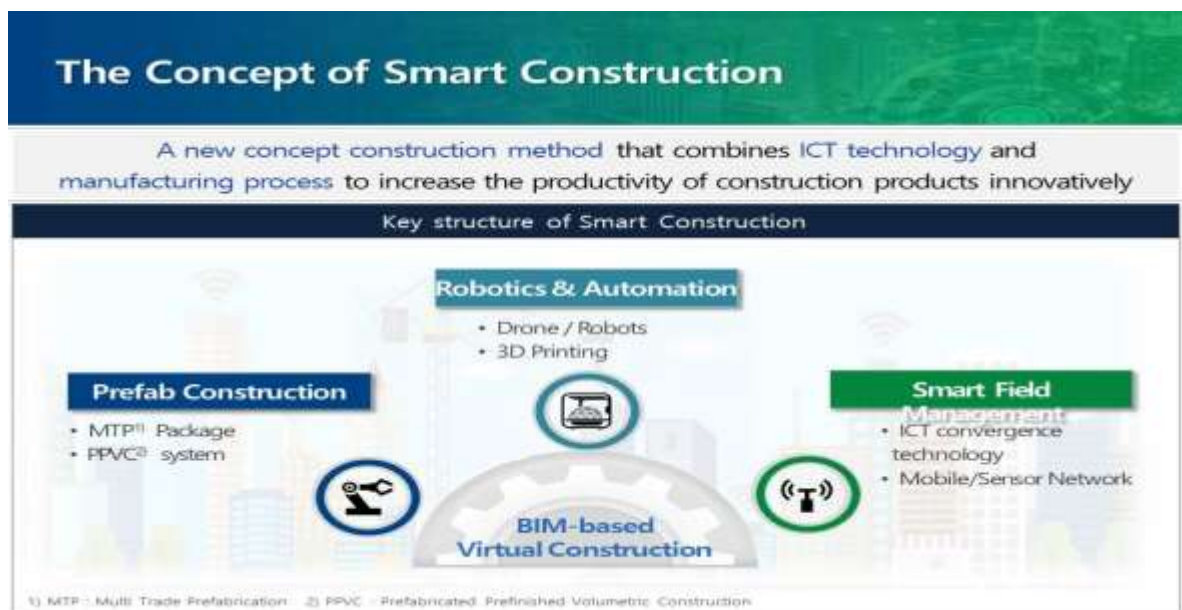
Robotics and Automation can reduce manpower and improve efficiency by automated equipment. The equipment is like a navigated car. As such, for example by utilizing machine control and automation, an earthwork equipment could be operated without a driver by pilot application of the automation robotics. The automation robotics also could be utilized for plastering, paintings, building blocks etc.

➤ **3D Printing**

3D printing is a revolution in the construction industry. It reduces costs and improve production efficiency. Hyundai company having used 3D printing in production of freeform panels has developed the 3D printing technology for freeform landscape structures and applications.

➤ **Smart Field Management**

Drone laser scan – The drones are useful in acquiring image data over a wide area and to shorten surveying time. Laser scan can be used for surveying accuracy and excavations. By analyzing and comparing droner data and laser scan data, accurate data could be evolved for decision making.



➤ **Field Safety Management**

Hyundai company has developed the IOT Field Safety Management system. IOT means connectivity. Through this system the Safety Manager is connected to an integrated control system (screen) by an IOT platform i.e. wi-fi LTL -BLE etc. This system will facilitate the Safety Manager for worker location, Gas concentration detection, equipment stenosis prevention, wind speed detection, tower crane collision prevention, prevention of collapsing of soil, web-camera monitoring while sitting on a chair. The system could be made accessible to a module App too.

11. BIM Applications – Designing, Construction & Procurement



Dr Chamila Dilhan Ramanayaka

PhD in Engineering, Bsc. (Hons) in Civil Engineering

BIM Educator & Developer

Lecturer, Curtin University

Australia

Dr Chamila D Ramanayaka commencing his presentation said it was a great honour to attend the Seminar and thanked the Chamber of Construction Industry Sri Lanka for the invitation. Dr Ramanayaka posed the following three questions to the audience:-

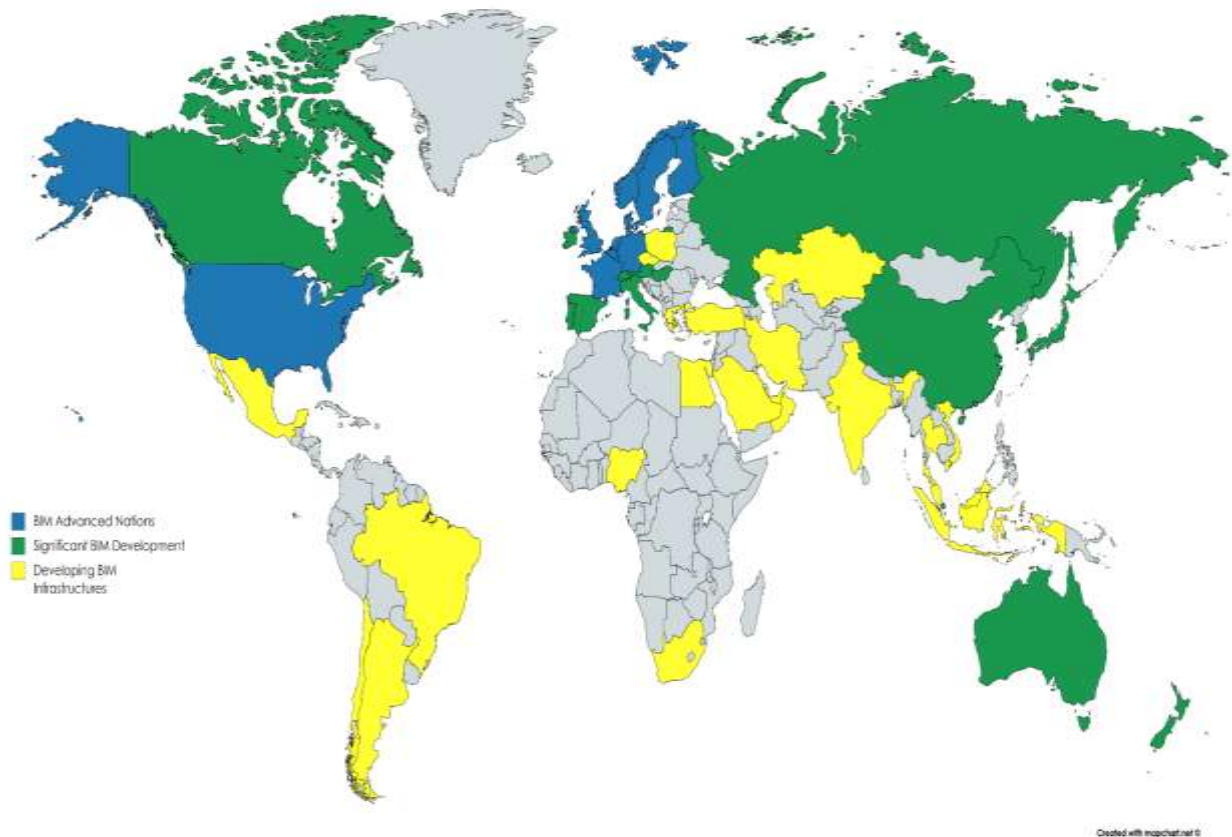
1. How many of you think that working in construction industry is rewarding?
2. How many of you think that we must do better for development of our nation?
3. How many of you think that we can do better, if we work collaboratively?

Next Dr Ramanayaka pointed out that the most important in order to do better, is collaboration. The word collaboration had been in use for decades. But the problem was that there was no platform to practice collaboration effectively.

Then Dr Ramanayaka speaking of himself said he has been working at Curtin University and living in the beautiful city of Perth, Australia and felt a bit selfish for being overseas while had been a product of free-education in Sri Lanka. However he expressed the view that he felt better for being an invitee to the Seminar to share knowledge and experience gained overseas with the Construction Industry Leaders in Sri Lanka.

Displaying a world-map where advanced countries were marked in blue, significantly developed countries in yellow and developing countries in green, Dr Ramanayaka stated that the countries who two decades ago said that they could not ever move on to advanced category were now moving towards that direction.

Use of BIM



If we are not moving ahead the question arises as to the viability of that option of not moving ahead.

❖ **Collaboration**

The reason is if we are not collaborating with the rest of the world we are not moving forward. The countries like Sri Lanka had to rely on foreign investments and employment to run the economy. As such there needs to be effective communication platform and the requirement for the construction industry to connect with policy makers and professionals.

❖ **BIM**

This collaborative platform is the Building Information Modeling (BIM) process. Consequently the construction industry, in addition to the product development efforts must move towards BIM to be efficient and competitive in the world. The people who outperform others are known as ‘outliers’ and they owe their success to good collaboration or use of BIM, as revealed by studies, Dr Ramanayaka pointed out. He also quoted the saying by Shawn Achor that ‘If we study the average, we will merely remain average.’

As revealed by studies by various universities, by now more and more countries are moving towards BIM. In the year 2014 only 49% of the population of New Zealand believed that the BIM is realistic. However by now the percentage for BIM has risen to 100%.

In this context, the necessity arises to increase the awareness on BIM not only in Sri Lanka, but also all over the World. In this respect action taken by Chamber of Construction Industry Sri Lanka to hold Seminars, Workshops, etc. of this nature is commendable, he added.

Referring to BIM concept, Dr Ramanayaka stated that there are three connotations meant by BIM. One is Building Information Model (BIM). The second is Building Information Modeling (BIM) and the third is Building Information Management (BIM). Elaborating on Building information Model Dr Ramanayaka said it referred to the BIM (Technology). It is meant to information model such as hardware, software, etc. The technology may be impressive, but not effective as people do not understand the utilization of the technology. If more money is to be spent on the model, the more benefits need to be accrued.

That is why we should move on to Building Information Modeling. That is to ensure that contents of the model are processed to the standards to gain a useful outcome. This could be summarized as Building Information Modeling (Technology plus Process).

Above that is hierarchy known as Building Information Management. For this purpose we need to add people factor too making it Building Information Management (Technology, Process plus People). Building the Information model for the construction industry could be made easy by building up a library where relevant objects are to be placed. When making a construction drawing (example: window, door. etc.) it could be easy to visit the library and take up the necessary objects and to put the right object in the correct place. The software could be developed for object oriented modeling. Similar parametric modeling where the uses are explained could be created. Intelligent Object too could be created for interacting between objects.

However problems arise when using the Information Models. An architect may draw a plan using his collected objects in the model library. All these models created by him/her are the intellectual property of him/her. The possibility is there that someone may enter into the software and extract others' models for his drawings. Although this is not a bad thing there should be the legal protection for the owners of such property. Therefore a formal contractual agreement should be in place to share models on legal basis for betterment of the construction industry. Hence the need for Building

Information Management. Sharing models is important and beneficial to all stakeholders and they are enabled to share what is already invented and practiced instead of beginning from zero level.

To regulate such information sharing and benefits sharing certain mechanisms are already in place in USA, UK, Hong-Kong and Scandinavian countries. They have formulated laws and guidelines to streamline the process of information sharing. The countries like Sri Lanka can obtain such guidelines and adopt them to the needs of construction industry in Sri Lanka without beginning from scratch.

❖ **Summary**

Summarizing the presentation Dr Ramanayaka stressed the importance of making awareness on BIM, the development of software jointly by architects/ structural engineers and comprehensive training for the staff as major issues that need to be addressed.

As for training on software applications it is essential to develop the software suited for Sri Lankan construction industry. Foreign software developers cannot do that for Sri Lankans as using foreign made software is not practical. Those softwares have been developed for different objectives or different obligations. The most effective way to develop software for BIM is for Architects and Structural Engineers in Sri Lanka to join together and invent. In Sri Lanka there are many educated young graduates who can be trained in the effective use of developed software. A common language and a code system also should be evolved for installing the software.

To be successful in the journey towards BIM without failure apart from awareness, training and software, the designers, architect planners and operational teams should have positive psychology. Because it reflects how people change their attitudes, reactions and positive thinking, emphasized Dr Ramanayaka concluding his presentation.

12. Panel Discussion – Q & A

Panelists

Eng. Col. Nissanka N. Wijeratne	Secretary General/CEO Chamber of Construction Industry Sri Lanka
Eng. Major Ranjith Gunathilleke	President Chamber of Construction Industry Sri Lanka
Eng. Chaminda Ariyadasa	Project Director/LRT Project
Prof. Ranjith Dissanayake	Faculty of Engineering, University of Peradeniya
Arch. H K Balachandra	Director General Construction Industry Development Authority
Mr Jinwoo Kim	Team Leader/R&D Centre, Hyundai Engineering & Construction Co Ltd, Korea
Dr Chamila D Ramanayake	Curtin University of Australia
Mr Janaka Perera	General Manager (Marketing) Tokyo Cement Group
Arch. Jayantha Perera	Precedent Elect as Moderator CCI Sri Lanka

Architect Jayantha Perera, having thanked the distinguished sponsor – Tokyo Cement and presenters for their contribution to the seminar directed few questions to the panelists.

Question No. 01- To Eng. Chaminda Ariyadasa

It is known that utility services to buildings under LRT project will have to be linked to main Service lines and there are delays in locating the foundations. The detailed designing process of LRT is in progress? How is it to cope with the situation?

- Answer** - **By Eng. Chaminda Ariyadasa**
At the inception a Committee was appointed representing 06 Engineers from CEB, Engineers from Water Board and representatives from other service provider agencies like LECO, Dialog, etc. Some of these engineers are still working in the Project on secondment basis. The CEB has guaranteed the power supply. For water LRT had got the plans available and engaged the Water Board requesting them to finalize the accuracy of locations. At Ward Place there is a 400 mm sewer line which will be relocated elsewhere . It was proposed to have a localized and isolated sewer treatment plant at station location which will later be connected to common sewer line. Power and water supply will be connected to mainlines.
- Question** - There are many buildings and condominiums being built. But the developers are unable to get connection to utility services as authorities are unable to comply with such applications as the authorities are not aware where the foundations for LRT project are to be located. There may be the possibility to shift the existing supply lines elsewhere?
- Answer** - **By Eng. Chaminda Ariyadasa**
That depends on finalizing the clear locations which is also linked to traffic diversion plans. First starting and terminating points need to be identified and then packaging such locations. This process is completed to around 85%.
- Question No. 03** - How is the involvement of the Government of Sri Lanka for its investments in the LRT project, to be managed after completion and during O & M stage?
- Answer** - **By Eng. Chaminda Ariyadasa**
The Japan International Cooperation Agency (JICA) has provided a loan of USD 1.85 Bn and the GOSL is to infuse Capital amounting USD 370 Mn. Due to GOSL stake in the equity, a fully GOSL owned company will be established for operations and maintenance of the LRT system. It will be a legalized entity with the empowerment to be granted by a Parliamentary Act known as Light Rail Transit Act which is as of now in the Legal Draftsman's Department. The company will be managed by a Board of Directors headed by a Chairman.

As per the administration and recruitments, the company will have the autonomy to run its business. The manpower requirements will be around 800 including operators, mechanics, maintenance staff, etc. We have studied several models in other countries like India, Singapore and Malaysia and selected the India daily-metro as a model. Indian company has agreed to train Sri Lankan staff.

The Article of association of the Company will contain provisions to the effect that in the event of making profits the company will retain profits for future investments and in the event of incurring losses, the amount of loss will be reimbursed by the Treasury.

Question No 04 - To Prof. Ranjith Dissanayake

Are there models in Universities to explain the Greener City Concept? Is there a universal platform to compare and define a Greener City?

Answer - By Prof. Ranjith Dissanayake

Universities are a platform to innovatively promote the concept of Greener City. What is proposed is to go for micro-level models in smaller areas in public and private sector institutions as typical models for Sri Lanka and sustain them for greener environment even in urban neighbourhoods for an healthy and environment friendly life.

Question No. 05 - To Eng. Col. Nissanka Wijeratne

Is there a link between national Physical Plan and National Policy on construction and UDA?

Answer - By Eng. Col. Nissanka Wijeratne

National Physical Plan is to guide on the future direction of development activities. National Policy on Construction is on how the construction industry should be structured. On planning buildings the constructors/developers should work with the relevant authorities in other agencies in respect to their requirements on construction and follow their regulations.

Question No.06 - To Archt. H K Balachandra

It was said in the presentation that a drop in Construction Industry was indicative from 2009 to 2019. Has it been confirmed by a survey?

Answer - By Archt. H K Balachandra

According to data gathered by CIDA and considering the Construction Industry's contribution to GDP in the past years a drop has been shown in the construction industry. But by now more and more approvals are being granted and it could be seen that more construction activities are due to commence in the coming years.

Question No. 07 - To Archt. H K Balachandra

Compared to India and Bangladesh cost of buildings materials in Sri Lanka is very high. What action to control the situation?

Answer - By Archt. H K Balachandra

In Sri Lanka the cost of building materials are high because in Sri Lanka material cost and labour costs are high. There is a shortage of skilled labour too. Our construction industry is labour intensive. As such it is important to train more craftsmen and to make the manufacturing of building materials to be based on automation in the future. As labour costs are concerned there is big labour force. As such we should take a holistic approach. Eng. Col. Nissanka Wijeratne intervened to say that cost of imported building materials are high also due to high taxes, sometimes totaling 107%. We still import over 50% of building materials. But all stake holders need to overcome this issue as a team.

Question No.08 - To Mr Jinwoo Kim

The question is about automotive construction. Will there be constraints in the aspects of design and innovative thinking?

Answer - By Mr Jinwoo Kim

There are no constraints as of now due to the reason what is needed is to enhance the labour productivity in the construction sector. Besides the labour shortage there is also the low labour productivity. As such a new concept that combines ICT technology and manufacturing process is the solution available. It reduces manpower and improve efficiency. Hyundai Engineering practices the concept of smart construction.

Question No. 02 - To Dr. Chamila D Ramanayake

How do you propose to have BIM applications in construction industry in Sri Lanka?

Answer - By Dr. Chamila D Ramanayake

First we must have a road-map to initiate the journey and to gain maximum benefits to construction industry in Sri Lanka. Next proper training on how to use BIM applications is required. The applications should commence from project level and go upto national level. There should be a national leadership to the process. It is important to establish an independent body to regulate and monitor the process, securing Sri Lanka identity and requirements in BIM applications to specific requirements of construction industry in Sri Lanka. Foreign software developers cannot do that for Sri Lanka. The software created in other countries have been designed to cater to their specific obligations and objectives. So they may not be compatible with Sri Lankan construction industry. For example, the doors or columns referred to in their BIM application codes may not conform to Sri Lankan information standards. Therefore best thing to do is to build-up our own software in Sri Lankan context by a joint effort of Sri Lankan Engineers, Architects, computer experts, etc. with Sri Lankan identity.

Questions by the Audience

Question 01 - The local contractors have suffered loss of jobs due to competitive foreign contractors being allowed in to Sri Lanka's construction industry. Is there a remedial action?

Answer - By Archt. H K Balachandra

The CIDA is making arrangements to register all foreign contractors before awarding them tenders. The reason is their low quotations which are around 30% lower than local contractors. The foreign contractors may have the capability for low bidding due to low interest rates in their countries. When registering them the financial and technical capabilities will be assessed.

At the same time action is being taken to amend the CIDA Act to make it mandatory for foreign contractors to enter into Joint Ventures with local contractors.

Eng. Col. Nissanka Wijeratne

It has been proposed to limit all projects which are locally funded only to local consultants and contractors. Only for majority foreign funded projects foreign consultants and foreign contractors can come either in public or private sector. For such projects too they should come as joint ventures of which at least 40% should be given to local counterparts. However this does not apply to donor funded projects. If the foreign contractors do not adhere to this requirements the local contractors can complain to CIDA.

Archt. H K Balachandra

The CIDA is in favour of giving preference to local contractors.

Other views by Panelists

However that preference cannot be indicated in the bidding documents. Considering the facts that local contractors having to hire new machineries at high cost foreign companies have the capacity to bring in used machinery at low costs. In that sense if the bidding is restricted to local contractors the bidding price too will be high. We should have a policy decision on the matter and merely registering foreign contractors will not resolve the issue.

Eng. Col. Nissanka Wijeratne

This policy was declared in last Budget Speech.

Question 03

- For the LRT project the loan repayment period is 40 years. By 40 years-time will there be the Railway – car model available in Japan for refurbishment or replacement?

Answer

- **By Eng. Chaminda Ariyadasa**

Yes, Sri Lanka was concerned about that, and that was the reason why model was shifted from monorail to light train. There are 03 competitive bidders from Japan. Even after 20 years the same model will be available in Japan for refurbishment or reconditioning. The period of running for a Rail-car before overhauling is 08 years. LRT will be purchasing spare parts couple of years ahead.

Question 04 - The procedure for forming a joint venture for local construction projects?

Answer - **By Eng. Col. Nissanka Wijeratne and Arch. H K Balachandra**

An amendment will be brought to CIDA Act. Thereafter Regulations under it for Joint Ventures will be published indicating the process of forming Joint Ventures. The details will be in the Regulations.

13. Presentation of Mementos

Archt. Jayantha Perera, President Elect of CCI Sri Lanka expressing appreciation and gratitude for their thought provoking contributions to make the Seminar a success, called upon the speakers to accept the mementos offered by the Chamber.

The Mementos were received by:-

- Eng. Chaminda Ariyadasa Project Director/LRT Project
- Prof. Ranjith Dissanayake Faculty of Engineering, University of Peradeniya
- Arch. H Balachandra Director General
Construction Industry Development Authority
- Mr Jinwoo Kim Team Leader/R&D Centre,
Hyundai Engineering & Construction Co Ltd, Korea
- Dr Chamila D Ramanayake Curtin University of Australia
- Arch. Jayantha Perera Precedent Elect
CCI Sri Lanka
