

FUTURE LEADERS' NEWS



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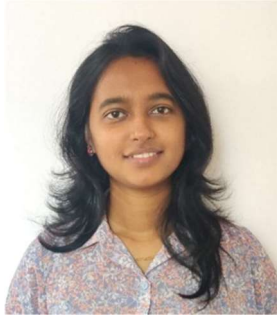
INTERNATIONAL FEDERATION OF CONSULTING ENGINEERS – ASIA PACIFIC



FIDIC
Future
Leaders

Inside Stories:

- **Member story**
- **One of the roles of consultants for the achievement of SDGs**
- **Environmental, financial & Reliability aspects of utilizing multi-circuit transmission towers- Sri Lanka**



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FROM THE EDITOR

Year 2020 started with a total surprise to the whole world. Mankind has been preparing for greater natural disasters like tsunamis, earthquakes, etc., and have been tightening up the military powers to face threats from their own kind. But a teeny tiny virus turned the globe upside down.

Today due to Covid-19 viral pandemic the order of life on earth has changed. Economies collapsed. Millions of people have lost their jobs while some have lost their lives. The word "positive" does not sound good anymore.

On the other hand this is an eye-opener to all of us. As humans we think we are the sole owner of the earth and it is under our control. This lingering pandemic reminds me of a quote from the legendary speech of chief Seattle. "Man does not weave the web of life. He is merely a strand in it."

I believe this is an opportunity for all of us to rework the perspective we have on life, to realize the impermanence of lives, value of contentment, what matters the most, and so on. Good situations do not last forever. So do the bad situations. Let us grow in wisdom amidst this rainy day...!

Stay safe... Stay healthy...!

CHAIRMAN'S MESSAGE



Dr. Zhou Sheng
China

This year is an extraordinary year for the world. When confronted by the sudden onslaught of COVID-19 this year, FIDIC ASPAC Future Leader Forum and young professionals have helped each other and took on the challenge in solidarity. We have reached important consensus in many respects, including sharing experience on COVID-19 response, continuing monthly meeting, calling for papers, and editing this newsletter. I wish to extend, on behalf of the ASPAC Future Leader Forum and also in my own name, the sincere appreciation to all the young professionals.

Our world is undergoing momentous changes unseen in a century. It is moving towards greater multi-polarity, economic globalization, and cultural diversity, and is becoming increasingly information-oriented. Never before have the destinies of people in different countries been so closely connected. At the same time, however, the world is faced with growing uncertainties and instability. The world economy is sluggish; unilateralism and protectionism are on the rise; cyber security issues, major infectious diseases, climate change, and many other non-traditional security threats continue to spread; and the international order and global governance system are being challenged.

As the future leaders, young professionals need to enhance innovation in science and technology and deepen cooperation on the new digital consulting industry and strengthen cooperation against COVID-19 and enhance capacity building in public health. ASPAC Future Leader Forum is the platform to work and share together. More young professionals are welcome to join us.

At last, I also want to wish all the people healthy in the world!

Dr. Zhou Sheng has been an honorable chair from 2019 to 2020

MEMBER STORY

**JITENDRA****KUMAR****SINGH**

Jitendra, the Vice Chair of FIDIC -Asia Pacific (ASPAC) Future Leaders' Committee is a Civil Engineer by profession. He has done his Masters in Environmental Engineering & Management from Indian Institute of Technology, Kanpur, India.

His Engineering consultancy experience over 18 years comprises of working on various water supply and sewerage projects in India funded by International funding agencies viz. World Bank (WB), Asian Development Bank (ADB) and Japan International Cooperation Agency (JICA). His areas of expertise are related to Water Engineering, which ranges from potable water source, treatment, transmission, storage, and distribution to consumers as well as wastewater collection, treatment, and safe disposal.

Though based in Delhi, Jitendra has spent quite a good time in the towns he had worked for. This has not only helped him understanding the real problems pertaining to a city's water supply and sewerage system and doing his design activities more effectively, but he also enjoyed meeting new people and cultures.

He has been associated with Tata Consulting Engineers, India for first 16 years of his career. Since November 2018, he is working as Staff Consultant with Asian Development Bank.

Jitendra was awarded Young Engineers Award for Leadership in year 2016 by Consulting Engineers Association of India (CEAI).

Currently he chairs the Young Professionals' Forum of CAEI.



Naoki Takanashi
*Kaihatsu Management
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Japan*

ONE OF THE ROLES OF CONSULTANTS FOR THE ACHIEVEMENT OF SDGS

Towards Sustainable Development

[Overview]

“Sustainable development goals” (SDGs) is a trendy term in Japan. Many private companies have started to pay attention to how to integrate SDGs into their corporate strategies. Nowadays, not only big companies but also small and medium-sized enterprises (SMEs) are interested in SDGs.

SMEs in Japan have a unique technology that contributes to the achievement of SDGs in developing countries. SMEs want to expand their business and to disseminate their technologies as a solution for SDGs. However, they have been struggling with how to connect their unique technologies or business activities with SDGs. The role of consultants is to create a story about how their technology contributes to achieving SDGs and to lead SMEs to be in line with the story.

For more than five years, I have advised SMEs in Japan on how to connect their technologies/business with SDGs in developing countries. I would like to introduce one of the feasibility surveys (F/S) of which Japanese companies tried to contribute to achieving SDGs in a developing country.

The name of the F/S is “Feasibility Survey for Establishing a Circulatory Society through Reduction and Recycling of Waste by means of Carbonization Plant in Papua New Guinea,” which is conducted by Goyu-Eco-Works Ltd. (GEW) from 2018 to 2019.

Due to the population flowing into the cities, the amount of solid waste generation has significantly increased in Port Moresby (POM), the capital of Papua New Guinea (PNG). Commercial and industrial waste comprise the most significant proportion of solid waste, and of those wastes, 79% is organic, including coconuts shells, husks, and others.



“Eco-Tan-Kun,” the proposed technology in F/S, is a carbonization plant that can reduce waste and carbonize all varieties of organic materials without odor. Thus, the introduction of Eco-Tan-Kun in PNG might contribute to achieving the SDGs below:

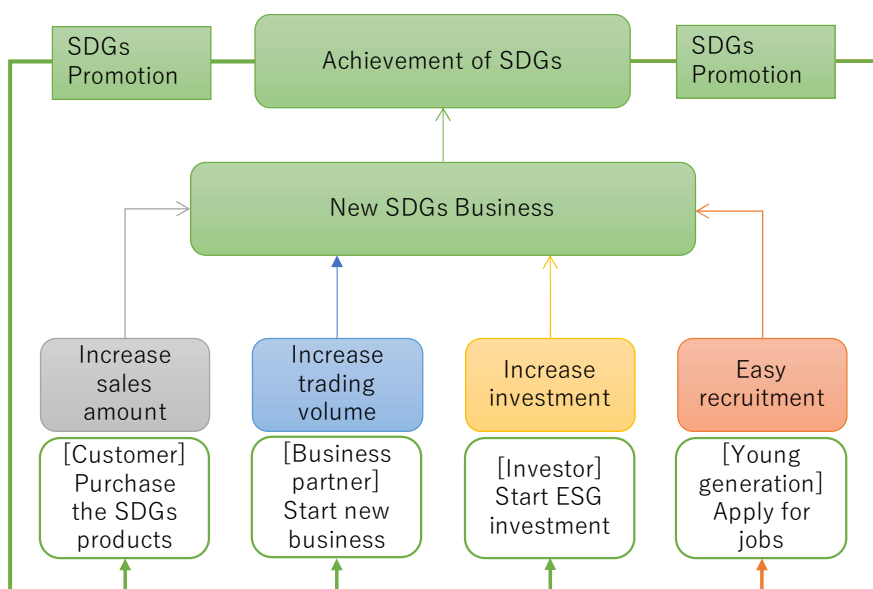
- ✧ SDG 11 Target: 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
- ✧ SDG 12 Target: 12.5 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

It can produce not only waste charcoal but also waste vinegar from organic waste. The charcoal and vinegar produced by Eco-Tan-Kun may have an impact on agriculture development, water purification, and other issues related to SDGs.

The significant effects of charcoal and vinegar are listed below;

	Agriculture	Livestock	Water	Environmental improvement	Health
Charcoal	Soil improvement	Growth promotion	Water purification	Air refresher dehumidification	—
Vinegar	Grass killer Bug repellent	Growth promotion Disinfectant	—	Air refresher	Mosquito repellent
SDGs	SDGs 1, 13	SDGs 1	SDGs 6	NA	SDGs 3

SDGs are not only for developing countries but also for companies that seek to be sustainable. GEW wanted to sell Eco-Tan-Kun and the produced charcoal and vinegar in PNG; it might be a business chance for GEW. Generally speaking, in Japan, the positive impacts on the company (e.g., GEW) that the activities of SDGs bring are the following:



GEW has not yet started its business in PNG, even after the feasibility survey, so the outcomes are not yet clear. Hopefully, GEW will launch its business in PNG and will contribute to achieving SDGs through its technology/business.

It is significantly difficult to achieve all SDGs by 2030 given the present circumstances. As indicated above, many companies cannot connect their technology/business and SDGs; however, if consultants create SDGs stories and connect the companies' technology/business and SDGs, many companies will have a chance to contribute to achieving SDGs through the expansion of their technology/business. Therefore, the role of a consultant as an SDGs story-maker is vital for the achievement of SDGs.



Environmental, Financial And Reliability Aspects of Utilizing Multi circuit transmission towers – Sri Lanka



Kosala Vidanapathirana
Ceylon Electricity Board
Sri Lanka

INTRODUCTION

Proposed Kotmale - New Polpitiya, (Sri Lanka) 220kV transmission line provides an alternative path to flow Mahaweli Hydro Power to the load centre in Colombo (Sri Lanka) via New Polpitiya and Padukka Grid Substations reducing the dependency on Kotmale - Biyagama 220kV line to transmit the Mahaweli Power. Therefore, this transmission line improves the reliability of the transmission of power generated at, both Mahaweli and Laxapana Complexes to Colombo. The new line will be constructed using Low Loss ACSR (Zebra equivalent diameter) conductor as twin, double circuit transmission line.

The existing 132kV transmission line from Polpitiya power station via Kiribathkumbura, Ukuwela to Habarana Grid Substation is strung with Lynx conductors with maximum design temperature of 54°C. According to the present transmission network configuration, this transmission line transmits bulk power generated at Laxapana hydro power complex, Ukuwela and Bowatenna Hydro Power Stations to Northern, North Central and Eastern Provinces of the country. This line is more than 40 years old and present condition of the line is poor and thereby causing poor reliability. Under this project, a new line will be constructed using Low Loss ACSR (Zebra equivalent diameter) conductor as double circuit transmission line from Polpitiya to New Habarana replacing the old existing line in order to improve the reliability as well as enhancing the capacity of supply to above provinces. This project will connect Nawalapitiya GSS, Moragolla hydro power station, Kiribathkumbura GSS, Ukuwela GSS and Naula GSS to the proposed Polpitiya - New Habarana 132kV transmission line.

Initially proposed double circuit route for Kotmale New Polpitiya 220kV transmission line was 22.3km long, and traversed along home gardens, paddy fields, tea, rubber plantations, shrubs & forests. Initial route proposal displayed on 1:50,000 survey map is presented as Fig. 1(a).

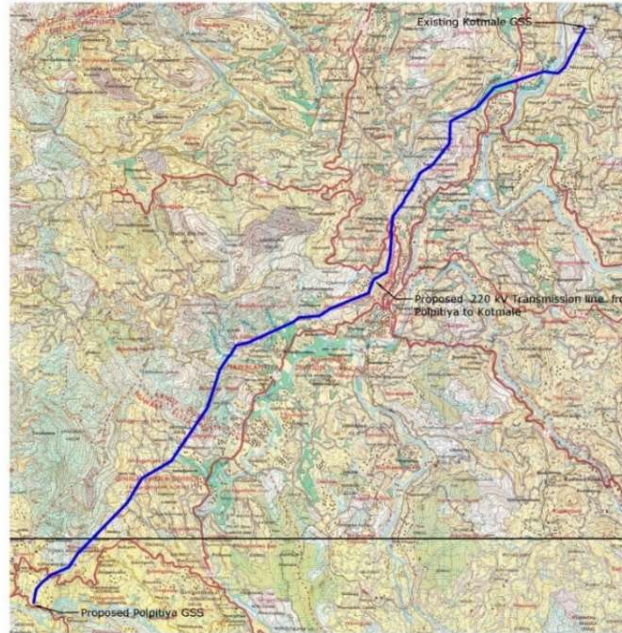


Fig. 1(a). Proposed New Polpitiya – Kotmale 220kV transmission Line

Polpitiya – Kotmale section of proposed double circuit Polpitiya – New Habarana 132kV Tr. Line was 19km and traversed along similarly utilised lands as of 220kV line. Initial 132kV route proposal displayed on 1:50,000 survey map is presented as Fig. 1(b).

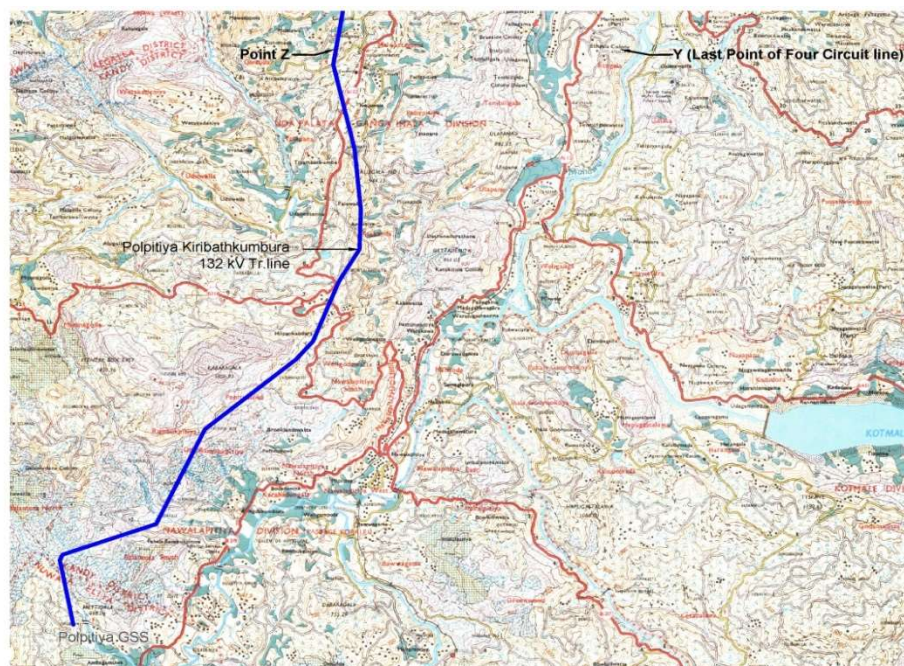


Fig 1(b). Proposed 132kV Tr. Line

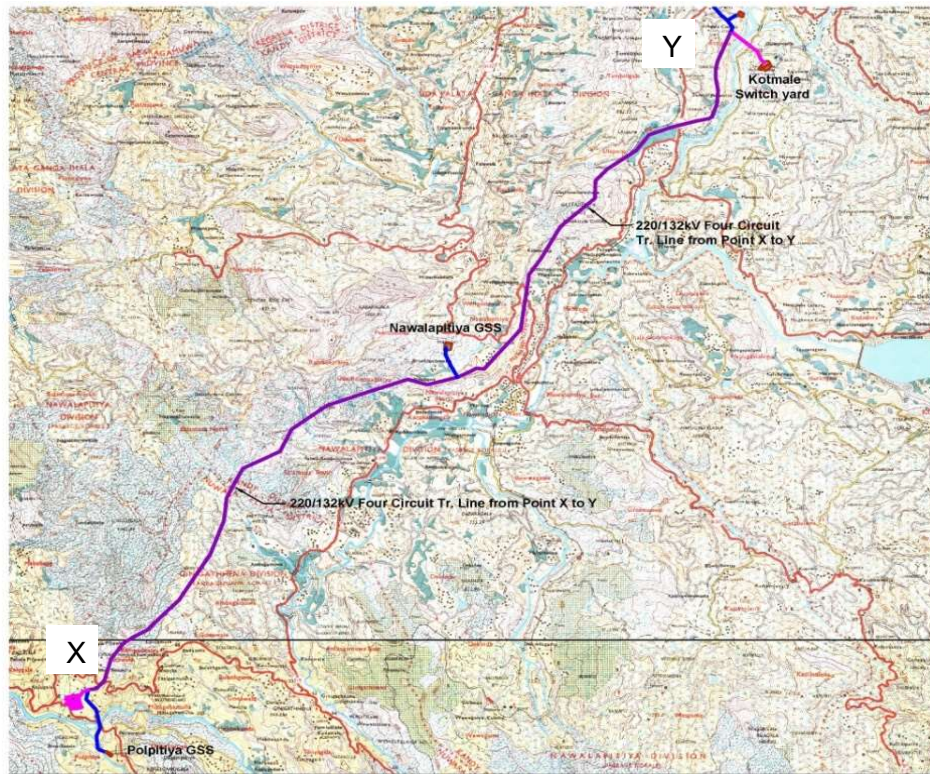


Fig. I(c). Proposed Multi Circuit Transmission line.

As depicted in above maps it is evident that the proposed line routes share a common corridor for 35% of the line route in between the points marked as X and Y on fig. I(c)

Therefore, a multi circuit solution is proposed to be constructed as follows.

New Polpitiya – X → 220kV Double circuit

Polpitiya – X → 132kV Double circuit

X – Y → 132kV/220kV Four circuit

Y- Kotmale → 220kV Double Circuit

Y – Kiribathkumbura & Moragolla → 132kV Double Circuit

This article summarises the evaluation on selection of multi circuit transmission line over double circuit transmission lines for the above case.

COST EVALUATION

Cost comparison of the multi circuit solution vs double circuit solution has been carried out considering the costs of following components.

- i. Costs on constructions of lines
 - a). Towers – Steel, Erection and Foundation
 - b). Conductors & Accessories – Cost of conductors & accessories, Stringing
 - c). Other Costs – Clearing, Survey
- ii. Compensation for Way leave Clearance.
- iii. Compensation for lands and vegetation.

Designing of transmission lines were carried out for the options of 132kV Double circuit, 220kV Double circuit and 132/220kV four circuit transmission line using PLS CADD & PLS TOWER.

The comparison of costs of four circuit and double circuit solutions calculated considering the costs incurred for each of above component results a total saving of 15.7% when compared with the project cost for constructing the two transmission lines on separate routes as double circuit transmission lines.

ENVIRONMENTAL IMPACT

The reduction of environmental impact is a distinct advantage of multi circuit transmission lines, the land usage for right of way has been reduced by 157.8%.

The distribution of land usage is as follows.

Land Usage	Multi CCT Line		220kV Line		132kV Line	
	Amount	Percentages (%)	Amount	Percentages (%)	Amount	Percentages (%)
Rubber	3.59	2.8	3.57	2.7	6.35	3.2
Shrub	43.09	33.6	46.70	35.3	29.55	14.9
Forest	20.39	15.9	12.04	9.1	37.49	18.9
Tea	22.30	28.6	33.34	25.2	95.61	48.2
Home Garden	17.31	13.5	21.56	16.3	29.55	14.9
Paddy	7.18	5.6	10.85	8.2	0.00	0
Other Plantations	0.00	0	4.23	3.2	0.00	0
Total	128.25	100	132.28	100	198.35	100

Table – Summary of land usage

RELIABILITY

Major concern on construction of multi circuit transmission line is reduced reliability.

The forefront causes for the reduced reliability are,

i). Maintenance work

The jobs carried out as planned interruption or repair work of breakdowns of one voltage may disturb the other voltage, especially in the event of a maintenance work of the conductors/insulators of the two circuits at the top of the tower.

This fact has been considered in deciding the voltage to be placed on the top of the structure. Since 220kV network is more critical than 132kV network, circuits of 220kV line are placed above 132kV line.

There was a concern that placing the higher voltage on top, which requires longer cross arms will increase the cost on steel, due to the requirement of strengthening the lower legs, body and cage to support the lengthier cross arms. Therefore the towers were designed with PLS TOWER for both the cases in order to evaluate the requirement of steel of each case.

Suspension towers with no body extensions were designed to evaluate the difference. Two designs are shown below as fig. 4(a), 132kV circuits placed above the 220kV circuits and fig. 4(b), 220kV circuits placed above 132kV circuits.

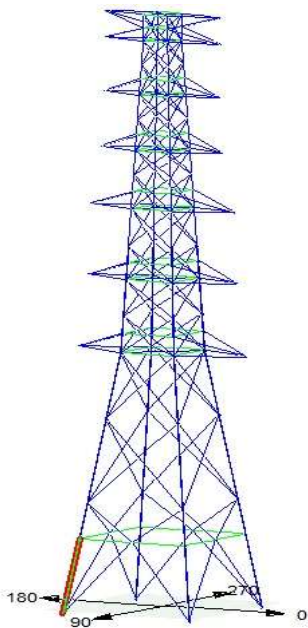


Fig: 132kV Circuits Placed above 220kV circuits

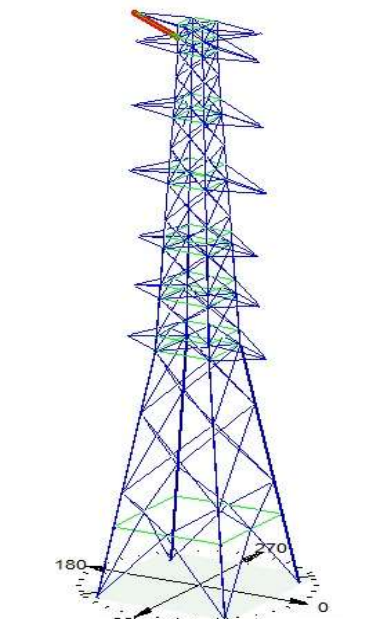


Fig. 4(b). 220kV Circuits Placed above 132kV circuits

Summary of the comparison is tabulated below, table 4.1

S.No	Parameter	132kV Top	220kV Top
1	Steel mass	14 Ton	15 Ton
2	Height	49.375m	48.475m
3	Base width	10.32m	10.32m

Table – Summary of comparison of steel requirement

ii). Falling of objects

In an event of falling of objects to the line, there is an excess of risk of causing outages in both the lines. Since both of these lines are very critical to the system stability an intensive attention has to be given to ensure the availability of these lines. Therefore to mitigate the reduced reliability caused by using multi circuit transmission line, it is essential to maintain the best industry practices in maintaining the way leave clearances.

iii). Falling of conductors of higher circuits on to the lower circuit.

When 220kV conductors are placed on top of 132kV conductors, if a 220kV conductor falls on a 132kV conductor, if over/under voltage, neutral voltage displacement, over current, loss of phase schemes take long to operate (not being operated before 220kV conductor hits 132kV conductor and the fallen 220kV conductor hits only one 132kV conductor), there is a risk of appearing 220kV voltage on the 132kV line at the two ends of it, causing 220kV to appear across the equipment rated for 145kV insulation level.

Even though this risk prevails considering the low probability of occurrence the impact on reduced reliability by this event is not considered.

SUMMARY & CONCLUSION

The basic objective of this study was to evaluate the impact of utilization of multi circuit transmission towers on cost, environmental and reliability aspects.

It can be concluded that there is a significant advantage in cost and environmental aspects at the expense of reduction of reliability. Considering the availability of migratory measures and low probability of occurrence in cons utility shall consider the option of multi circuit transmission line.

QUOTES OF WISDOM FROM COVID-19 PANDEMIC

YOU CAN'T CHANGE THE
OCEAN OR THE WEATHER,
NO MATTER HOW HARD YOU TRY,
SO IT'S BEST TO LEARN HOW
TO SAIL IN ALL CONDITIONS.



HEALTHYPLACE.COM

In the rush to get back to
normal, use this time to
decide which parts of
normal are worth rushing
back to.

DAVE HOLLIS

Hello Lovely Studio



KidsHelpPhone.ca

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