

KERALA CALLING

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Can't Reach on Time?



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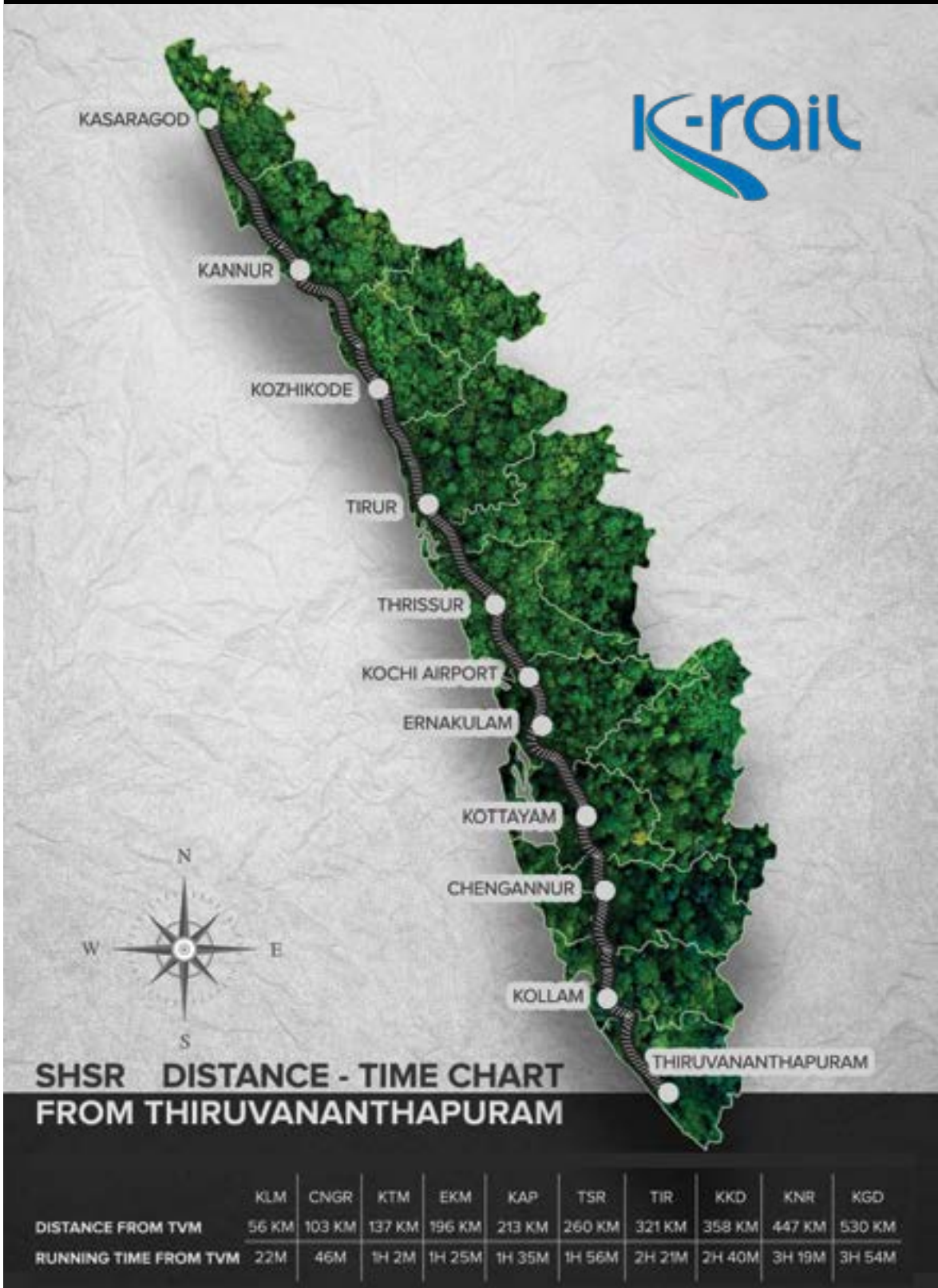
SILVERLINE



Traffic snarls, road accidents and air pollution from vehicles have long been a major concern for our people. This is a problem that's long overdue fixing. The one major solution to this issue which is local railway development is unfortunately very slow in our state. Currently, it takes more than 16 hours to travel from one end of the state to the other. It's high time this changed. The semi high-speed rail, SilverLine is the greatest possible solution to this issue. The travel from Thiruvananthapuram to Kasaragod can be achieved in just four hours with the execution of such a facilitating project. When it becomes a reality, our infrastructure will undoubtedly change for the better.



THIRUVANANTHAPURAM-KASARAGOD SEMI-HIGH SPEED RAIL PROJECT **SILVERLINE**





The SilverLine of development

This issue of Kerala Calling celebrates the prospect of the realization of the state government's ambitious project - K-Rail. There are two parts to it. One focuses on the possibilities and the other on the practicalities. One is based on the personal experiences of much-travelled personalities and their evaluation of the advantages that the project will bring to the state, and the other is a more grounded one, getting down to the brass tacks, and mentioning how the government will tackle the liabilities and sort out the disadvantages. Together they will, it is hoped, give a comprehensive picture of how the K-Rail will actually impact the lives of people in the state.

The article written and by the Chief of UN Office for Disaster Risk Reduction Muralee Thummarakudy itemizes the various advantages of the high speed and semi-high speed railway systems that operate in western Europe, Japan and the US -fast and safe movement of people and cargo, a great boost to the tourism sector, high connectivity among cities and so on - and mention how similar changes are long overdue in Kerala.

The article by Chief Minister Pinarayi Vijayan purports to allay widespread fears of people

regarding the rehabilitation of those who will be affected by land acquisition in connection with the implementation of the project, the compensation packages that have been factored in, the environmental issues that have been taken into consideration and so on. They seek as much to clear doubts as to counter false propaganda, and aim to get popular support for the dream project.

Another noteworthy article revolves around a problem that has been plaguing the entire world for nearly two years now - COVID-19 and its variants, especially OMICRON.

Dr P. S. Indu, Professor and Head, Community Medicine, Govt Medical College, Kollam, reiterates the use of masks, maintenance of social distance, and the need for well-ventilated spaces in order to keep the infection at bay, and ultimately overcome the pandemic.

Ironically, these two thrust areas - the SilverLine and OMICRON - have a point of convergence: the importance of time and the need for speed. Let us wish the SilverLine a speedy entry into Kerala and OMICRON/COVID a speedy exit!

S. Harikishore I.A.S.

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False propaganda will adversely affect development



Pinarayi Vijayan
Chief Minister

Why did this government opt for Semi-High Speed Railway instead of High Speed Railway?

Earlier, the UDF government had conceived a High Speed Railway, but its cost worked out to be around Rs. 280 crores for every kilometre. That was one of the major reasons why the present Government decided on a Semi-High Speed Railway that comes at a cost of Rs. 120 crores per kilometre. The ticket rate for the High Speed Railway had been pegged at Rs. 6 per kilometre in the High Speed Railway. But the corresponding rate for the Semi High-Speed Railway is only Rs. 2.75 per kilometre as per the fare rates of 2020.

Besides, Kerala has a high density of population. This requires a stop every 50 kilometres. Therefore the Semi-High Speed Railway looks like a more practical choice. This project envisages 11 stops. The short distance between the stops makes it difficult for High Speed trains to run at speeds of 300 or 500 kmph, except in very small stretches in our state. In essence, therefore, practically there will hardly be any difference between the two trains (High Speed and Semi-High Speed) in terms of speed. For instance, a High Speed train will take 62 minutes to cover the distance between Ernakulam and Thiruvananthapuram whereas a Semi-High Speed train will do it in 85 minutes. A mere difference of 23 minutes! That was another reason why the Government abandoned the High Speed project and opted for SilverLine.

Won't the expansion of the existing railway lines suffice?

With the completion of the doubling of the existing railway lines, the trains will be able to keep time. We may even be able to introduce a few new trains. But running them at faster speeds may not be possible. Laying parallel tracks may not reduce the time taken for travel either because of the many curves on the existing alignment and also the undulating nature of land. Straight paths and level ground are essential for attaining great speeds. That was why the government had to think of laying new tracks. However, wherever possible, the government will go ahead with laying parallel tracks.

What will be the cost of the project?

SilverLine, far cheaper than High Speed Rail and suited to Kerala's financial status, is a very practicable project. According to the DPR, the cost of SilverLine will come to Rs. 63,940.67 crores. The cost of land belonging to the Railways will come to Rs. 975 crores. Besides this, Rs. 2,150 crores constitute the Central share. The State's share is Rs. 3,225 crores. Rs. 4,252 crores will be sourced from public share partnerships. Assistance from international agencies will also be used to meet the costs.

Won't loans be inevitable?

Yes, indeed. The Government aims to source Rs. 33,700 crores from international funding agencies, and

has already approached ADB, JICA, AIIB and KfW, through the Union Finance Ministry, for low-interest loans, and submitted copies of the DPR. Discussions are on with institutions like HUDCO, KIIFB and Indian Railway Finance Corporation to raise a loan of Rs. 13,362 crores for the purpose of land acquisition. HUDCO has already sanctioned Rs. 3,000 crores for the first phase of land acquisition from Kochuveli to Chengannur.

Will the SilverLine project create environmental problems?

Globally, railway is considered to be the safest and most comfortable mode of transport that causes the least environmental pollution. That is the reason why railway projects do not require environmental impact assessment, as per the GIAA guidelines. Nevertheless, in sync with the Government's policy that developmental projects should always be undertaken after taking environmental impact into consideration, a study was done. Moreover, the railway line will avoid the Western Ghats and eco-sensitive zones altogether. The State Government has entrusted the National Centre for Sustainable Coastal Management, a Central Government institution, to present a detailed report on CRZ and mangrove forests, as well.

What about the anxiety that houses and buildings will get damaged?

It is being propagated that there will be large-scale damage to houses and buildings because of the SilverLine project. While it is true that approximately 9,314 buildings come in the way of the proposed alignment, steps are being taken to reduce that number further. Besides, technical expertise is being sought to relocate entire houses, keeping them intact. In order to reduce the area of land acquisition, the Cut and Cover construction style will be adopted.

While acquiring land, as per the rehabilitation laws, damages of up to four times the market price will be paid in rural areas, and up to two times the market price in urban areas. A total of Rs. 13,265 crores has been set apart for payment of damages, including land acquisition. Of this Rs. 1,730 crores will be for rehabilitation, and Rs. 4,460 crores for compensation of houses. Discussions have been initiated with financial institutions on this issue. HUDCO has already advanced Rs.3,000 crores for the first phase of land acquisition for the SilverLine from Kochuveli to Chengannur.

Hasn't opposition been launched even before the implementation of the project?

Government is always willing to listen to constructive criticism. However, no opposition for the mere sake of torpedoing developmental projects, will deter us from fulfilling our promises to the people. We need to stand united for the sake of the development of our State. If such development projects are sought to be derailed, it will affect our future generations. We cannot allow that to happen.

Rail of Honour

K-Rail– No need for Anxiety

SILVERLINE

Sustainable, quick and cost effective transportation systems are indispensable to any modern society. During our previous tenure itself, we had taken up several initiatives to ensure that. Kannur Airport, National Highway development, National Waterway, Kochi Metro development, Kochi Water Metro, Railway development, Coastal and Hill Highways, solar boats, EV manufacturing and so on were realised or taken up as part of it. K-RAIL's Semi High Speed Railway, ie SilverLine, is the next step in that scheme of things.



Pinarayi Vijayan
Chief Minister

Traffic snarls and road accidents on Kerala's roads are a matter of serious anxiety among the general public of the State. Environmental pollution caused by emissions of vehicles is also a grave concern. Currently, it takes about 16 hours to travel from one end of the State to another. This needs to change, and SilverLine, is the real solution. It will enable us to travel from Kasargod to Thiruvananthapuram in just 4 hours. Once this becomes a reality, it will provide a complete facelift to Kerala's basic infrastructure. This will in turn be a boon for all our sectors, including industry, IT, tourism, health, education and so on.

Joint Ventures by the State and Central Governments have been initiated to plan and execute railway projects to cater to the demands of each State. Such ventures are aimed at reducing instances of traffic block, road accidents and environmental pollution in each of them. It will also ensure speedy transport facilities. That is why such projects are being implemented in eight States, including Kerala. A sum of Rs. 100 crores was set apart to set up the JV in January 2017, with the Indian Railway owning 49 % shares and the State Government, 51 %. Thus, the Kerala Rail Development Corporation Limited (K-RAIL), was brought into being.

On 10.02.2020 the Government explained the details of the project to the MLAs through whose

constituencies the proposed railway line would pass. The SilverLine project was discussed in the Kerala Legislative Assembly on 21.01.2021 as well. LIDAR (Light Detection and Ranging), the most modern and sophisticated remote-sensing system available today, is being used in order to conduct a survey of the land required for the project. It is a technology that can collect information from the surface of the earth with amazing accuracy and remarkable speed.

The Government will follow all laws, rules and guidelines while acquiring land. When such a project is implemented, it will naturally put some people through difficulties. But the Government gives full assurance that they will be given all protection. Compensation will be given for both plots and buildings, as per the prevailing rates and in a time-bound manner. A clear-cut rehabilitation plan too is being put in place. Not a single individual in the state will be rendered homeless, in the name of this project. The Government is taking steps to address the anxieties and doubts that people may have, and give due consideration to the opinions of people's representatives. Let us not forget the fact that over the last 5 years we have had several examples of implementing projects after overcoming negative propaganda and anxieties that came up in the initial stages.

The Government will hold public hearings to correct

the misgivings regarding the project and find out solutions for the genuine problems that are shared. It will also take steps to get various social and cultural organizations to conduct seminars and meetings so as to address the concerns of the people. The attempt will be to conduct them before the land acquisition process begins. Therefore, at this point of time, we should desist from any kind of negative propaganda that will stoke unnecessary worries among our people.

The estimated cost of the K-RAIL project is Rs. 63,941 crores. Approximately 1,383 hectares of land will be required, including for rehabilitation, of which 1.198 hectares is privately owned. The project has been conceived in such a way that the least amount of damage is inflicted on places of worship, farm lands and groves. Though the SilverLine passes through 11 districts of the State, as the tracks will be laid largely on uninhabited lands, only 9,314 buildings, including houses, will be affected. The alignment for the project has been scientifically designed, giving utmost importance to its economic and social dimensions, and will impact only the less densely populated regions. For every hectare of land, a sum of approximately Rs. 9 crores has been budgeted for acquisition and compensation.

The Tirur-Kasaragod track will be constructed to run parallel to the existing railway line. This will considerably reduce the inconvenience of the people as well as the alleged impact on the environment. The Thiruvananthapuram-Tirur track will avoid paddy fields and watersheds as much as possible, and accommodate 115 kms of elevated rail over paddy fields and 88 kms of skyway. Besides, bridges and culverts will be constructed to protect water bodies and watersheds.

The Detailed Project Report was prepared by SYSTRA. An environment impact assessment is not essential for this project, as it is a rail line. Yet, it was undertaken by the Centre for Environment and Development. This is proof of the extreme precaution that the State Government is taking with regard to both the planning and implementation of this project.

There are people who allege that the SilverLine Project will completely destroy the financial backbone of the State, because of the borrowings required. What they ought to understand is that there is not a single Government in the world that has been able to improve infrastructural facilities without taking loans. Infrastructural development will not only invigorate financial growth but also increase income. This is a fact that is acknowledged by all. Surely there should not be any difference of opinion regarding the need for reducing travel time within the State to one-quarter of what it is at present, and nurturing all sectors including business, technology and tourism.

Project Cost and Implementation

A sum of Rs. 13,362.32 crores is required for acquisition of land for the Semi-High Speed Railway, of which Rs. 2,100 crores will be sourced from

KIIFB. The Central Government has already given the green signal to the State Government to go ahead with land acquisition. The Railway Board has also, in principle, given its approval for the project. In the letter dated 15 January 2021, the Union Finance Minister has recommended that steps be taken to proceed with land acquisition.

International funding agencies, including JICA (Japan International Cooperation Agency), have come forward offering financial assistance for the implementation of the project. Discussions with AIIB (Asian Infrastructure Investment Bank), KfW (German Development Bank) and ADB (Asian Development Bank) have been completed. The NITI Aayog, the Finance Ministry and the Railway Ministry have given their approval for seeking help from these sources.

Infrastructure development is key to industrial development. In this modern day and age, availability of quality electricity supply, modern transportation systems, and high speed internet connectivity are all essential to the setting up and growth of industries. During the previous Government itself we had initiated measures to ensure them.

Through the Kerala Infrastructure Investment Fund Board we have realised basic infrastructure development, which would've otherwise been possible only over the next half a century. While our goal was projects worth Rs. 50,000 crores over 5 years, we were able to initiate projects worth Rs. 62,500 crores during the previous tenure. During this Government, our goal is to take up projects worth Rs. 60,000 crores.

'Nava Keralam' cannot be realised without addressing our backwardness in basic infrastructure. Various projects are being implemented to address that. It is not just our present requirements that are being borne in mind while implementing them. What guides us are the requirements of our future. Modern transportation facilities are the hallmarks of any developed society. Ensuring such facilities in Kerala will make us comparable to developed nations in terms of basic infrastructure. It will give fresh impetus to our industrial development.

K-RAIL's SilverLine - Semi High Speed Railway - is one such project. Infrastructure that allows investors to reach any part of Kerala in just a few hours will improve our investment friendly atmosphere by leaps and bounds. Additional capital that is invested because of the availability of such modern facilities will invigorate Kerala's development in general. Resources generated subsequently can be made available to all, so that social justice can be ensured, which will form the bed rock of 'Nava Keralam'.

Through projects such as SilverLine, we can improve Kerala's production and ability to produce. This will help us in our endeavour to reorganise Kerala into a knowledge economy. The LDF Government is moving forward with a clear action plan to achieve that. In that journey, the limitations of our present should not become barriers in ensuring the success of our future generations. ■



V. Abdurahiman

*Minister for Railways, Sports,
Wakf and Haj Pilgrimage, Post and Telegraphs.*

SilverLine: A Novel Path Towards Development

SilverLine Rail Project has been planned to foresee the needs of the upcoming generation. The most important attraction of the project is that one will be able to reach Thiruvananthapuram from Kasargod in four hours.

Kerala proudly stands first in administrative excellence. The democratic government has made its mark in the development sector too. The government got another term due to its unique way of functioning, including people from various walks of life. The government machinery has been developing and implementing projects truly adhering to the faith showered by people.

Kerala Rail (K-Rail) Development Corporation, a joint initiative of Indian Railways and the Kerala State Government, will be implementing the Silver Line Project. The aim is not to divide Kerala into two but to join the two ends in the fastest way possible. When distances are covered faster, a lot of time can be saved. This in turn can help in the fruitful usage of human resources. Through the project, it is expected to save around 2,80,000 human hours per day which can be used for other fruitful work.

The State Government has been taking the necessary steps to complete the SilverLine project on time. The final nod from the Central Rail Board is anticipated. The State Government has assured the Centre that it will monitor the timely repayment of the loan amount. The project has been

the current path. 36 per cent of the path comprises curves. Speed regulation becomes necessary at level crosses, steep rises and descends, waterlogged regions etc. Hundreds of trains, maintaining various speeds, run through the rails of Kerala. When Passenger and Express trains are compared, there is not much variation regarding speed as they stop at almost all stations. This is why it is impossible to increase speed despite rail doubling.

Signalling Facility

Existing problems can indeed be solved to a great extent with modernisation. Kerala has Absolute Block Signalling System. Within a block, only a single train will run between two stations. In the Automatic Signalling Facility, more trains will be able to run within a single block. There will not be much progress in speed even if the existing facilities are improved.

Apprehensions that SilverLine Project may lead Kerala to a debt trap is pointless. Loans received from international financial institutions for low-interest rates (JICA-0.2 per cent, ADB and AIIB-1 to 1.5 per cent) will be utilised for the project.

The Financial Internal Rate of Return (FIRR) of the project is 8.49 per cent and the Economic Internal Rate of Return (EIRR) is 24.04 per cent. Projects that have EIRR above 14 per cent are considered exceptionally good ones. According to DPR, the loan and interest can be repaid from the project earnings. While supporting facilities improve, opportunities increase for investment which in turn help in economic growth. This further helps increase job opportunities.

The government is trying to complete Silver Line Project in a time-bound manner. All arrangements are being done to begin construction works as soon as the Central Railway Board gives a nod for the same. Now, preliminary works are progressing to take up land for the project. Studies and other arrangements are also being done. Steps to take up land will be initiated only after getting the final nod for the same. Only when other preliminary arrangements are done earlier, land can be taken up on time when approval will be received for the same.

Thiruvananthapuram-Chengannur Sub Urban Rail Project was suggested by the State Government. The project was conceived to run more trains by using the Automatic Signalling facility. But Railways did not approve this project that was planned to keep in mind passengers making use of the InterCity facility. Existing double lane paths were constructed for long service and goods trains. The Rail Ministry had given directions to construct two additional paths for InterCity service. Based on this, the State Government had conceived Silver Line Project, with two additional lanes, for travelling at a speed of 200 km per hour.

The LDF Government decided to bring in Semi High-Speed Railway Silver Line as it was found to be less expensive than the High-Speed Rail Project planned earlier. When the cost for constructing high-speed rail and the time that can be saved get compared, it has been found that Silver Line will be the most suitable project for Kerala.

All the doubts raised by Niti Aayog regarding the expenses for the project were cleared by giving a detailed response. Niti Aayog has also directed to go ahead to receive foreign loans.

SilverLine will pass through areas lesser inhabited by people. 15 to 25 km of land will be taken up for the project. On both sides, 5 metres of land come under a protected zone. For people to move across, underpasses or bridges will be constructed with a gap of 500 metres.

Silver Line Project has been envisaged keeping in mind the requirements of the upcoming generation who will be struggling for time. Those who think ahead in life will not be able to oppose the project based on vested interests. Silver Line will certainly be a milestone on the path of Kerala's overall development. ■

designed to implement the service profitably. In this way, the loan repayment will be possible from the earnings alone.

While development projects get implemented, it is natural that some people will have to be rehabilitated. It turns necessary for long-term proceedings. It is not right to state the same as an eviction. Nobody is being forced to vacate their homes but they are being rehabilitated. The government strongly believes in protecting the rights of all people, following the Centre's legislation, regarding taking up land and rehabilitating people.

Though the trains will be able to run timely, with the completion of rail doubling, it is difficult to increase speed. There will also be a rise in the number of trains. But it is impossible to reach the destination faster within a limited time. Between Thiruvananthapuram and Mangalapuram, only 19 km rail doubling is pending. There has not been much progress regarding speed in areas where the doubling has been already implemented.

There are around 626 curves on



Nothing to Hide; Everything is Transparent

▶ Kerala requires a semi high-speed railway

Kerala is stifling due to the increasing number of vehicles and traffic congestion. National Highways seem to be incapable of accommodating the increasing number of vehicles on road. Kerala also comes top while taking a list of accidents. Though it is one of the favourite tourist spots in India, traffic snarls frequently trouble tourists.

To travel via road or rail from Kasargod to Thiruvananthapuram, covering 560 km, it will take around 10 to 12 hours. With Silver

Line, one will be able to travel from Kasargod to Thiruvananthapuram in three hours and 54 minutes. According to the project estimate, it has been found that apart from saving travelling time, around 2,80,000 human working hours will be saved. This much time can be utilised for other creative work.

▶ Semi high-speed trains are the most suitable ones for Kerala

SilverLine passes through developed cities. It will have to stop in 10 district centres or business spots. The average distance between stations is 50 km. Trains will have to travel at least 20 to 25 km to gain

speed on the high-speed path offering 350 km speed. For stopping such a vehicle, the break will have to be applied at least 5 km before the destination. Therefore, the distance that will be covered in 350 km per hour speed will be lesser. In a major portion of the zone coming under the project, the high-speed project cannot be utilised. Though speed can be gained by stopping at alternate stations, it will not be useful for the passengers. For constructing a high-speed rail corridor offering 350 km per hour speed, the construction cost will be more than that required for a semi high-speed rail corridor.

A solution for traffic snarls for the next 50 years

According to studies, the National Highways will get further crowded with vehicles in the next five years. Then the State Government will have to construct more National Highways or alternate Express routes through green corridors every five or 10 years. With SilverLine, there will be a solution for traffic snarls for the next 50 years.

The Railways did not approve Suburban Rail Project

Thiruvananthapuram-Chengannur Sub Urban Rail Project was proposed by the State Government. The project was conceived with a plan to run more trains by including Automatic Signalling. But this project, planned for the benefit of Inter-City travellers, was not approved by the Railways. Existing two-line paths were constructed for long-distance trains and goods trains. The Railways directed the State Government to construct two additional paths for Inter-City travel. Accordingly, the government has come up with SilverLine Project, comprising two additional lines, offering a speed of 200 km per hour.

Existing lines cannot solve traffic snarl

Under Thiruvananthapuram-Mangalapuram Section, line doubling has been completed in a 615 km area out of the total 634 km. But there has not been a considerable increase in speed in these areas. Though the remaining will be completed, not much time can be saved or speed will be acquired. This happens due to the construction of similar turns and curves parallel to the existing path when the lines are doubled.

Straightening curves is not possible in Kerala

There are 626 curves between Thiruvananthapuram and Kasargod. There is a speed regulation ranging between 20 km per hour to 110 km per hour in such

The main aim of the SilverLine Project is to improve the traffic system in the State. Traffic on the road needs to be reduced and more people need to be made dependent on Railways. SilverLine has not been designed to increase the speed of long-route vehicles in Kerala. When this project gets realised, around 46, 206 people making use of the road is expected to shift to the SilverLine facility. In the first year, it is anticipated that around 12,872 vehicles will stop running on the road thus reducing road traffic considerably. Other than this, Rs 530 crores worth of petrol, diesel can be saved per year. SilverLine will also help to a great extent in reducing carbon pollution.

areas. If we have to make the path turn useful for running at a speed of more than 110 km per hour, all these curves will have to be straightened. In the 576 km path, 36 per cent comes under curves (626 curves). The line passes through a densely populated area. So, it is not practical to straighten the curves. This will affect more people and areas inhabited by the people. Also, several stations with curves will need to be abandoned. Due to the weak quality of the soil and old bridges, several restrictions are in force here. So, speed cannot be increased.

Kerala has been excluded from the existing rail development schemes

Railways do not have any existing scheme to increase the speed of trains coming under the Rail divisions of Kerala. Speed can be increased only by straightening curves and by strengthening bridges, rail corridors, the structure of the path etc. Rajadhani Express that runs at a speed of around 102 km per hour (Nizamuddin-Kota) in sectors other than Kerala, runs at a speed of 57 km per hour on the rails in Kerala. In the Delhi-Agra sector, Gathman Express conducts service at a speed of 160 km per hour on a single line. In Delhi-Mumbai, Delhi-Howrah sectors, there are schemes to increase the speed from 130 to 160 km per hour. Under the existing scheme, in the next stage, to increase the speed, the Golden Quadrilateral Line (the rail line connecting Delhi, Mumbai, Chennai, Howrah) is being considered. Kerala is not included in this.

Modernising the signalling facility cannot improve speed

Under Automatic Signalling facility, more number of trains can be run within a block. With the existing facilities, more number of trains could be run but speed cannot be increased. To increase speed, the structure of the path needs to be strengthened.

SilverLine has been designed following the guidelines of the Central Government's Make in India campaign and Atma Nirbhar Bharat.

Bridges need to be strengthened. Curves have to be straightened. An automatic/Electronic signalling system might help increase average speed to a certain extent. This will not help achieve a speed of 200 km per hour. Goods/ passenger trains, Mail/ Express trains and Super Fast are currently running at a speed of 35 to 100 km per hour. In such a facility, with mixed traffic, the average speed of the path will be determined by the train running at the slowest speed.

▶ Advanatage of Standard Gauge

The Indian Rail Network runs under Broad Gauge. Under the Indian Broad Gauge facility, there is no system to run trains at a speed of more than 160 km per hour. Indian Railway Standard Code (IRS) is the criteria followed by Broad Gauge System. To run trains at a speed of more than 160 km per hour, the Indian Broad Gauge system will have to frame new rules and standards. For this, more active work and time will be required. These are some of the reasons why India's new high speed, semi high-speed projects have been accepting a standard gauge system.

▶ Kerala will not be divided under this project

Under the 530 km-long Silver Line Project, 137 km-long path passes through pillars or tunnels. There will not be any obstacle on this path for people to move across. In other areas, for people to move across, over bridges or underpasses will be constructed after every 500-metre space. The existing roads will be used by constructing underpasses or over bridges. To prevent people and animals from entering the track, a protected zone will be formed according to the rules of the Indian Railway.

▶ A total green project

SilverLine Project is a fully environment-friendly Green Project. It causes very minute carbon pollution. By 2025, around 2,80,000 tonnes of carbon can be removed. This will be made possible when road travellers would begin preferring SilverLine. The path will not be passing through Protected Zones in the environment or wildlife zones. It will not obstruct the flow of rivers, streams etc. In paddy fields and wetlands, the path will pass through tunnels.

▶ State will not fall into a debt trap with SilverLine Project

The total expected expenditure of the SilverLine Project is Rs 63,941 crores. Out of Rs 63,941 crores, Rs 6,085 crores come under the tax share of Central-State Governments. Rs 975 crores is the share from the land of the Indian Railway. The remaining Rs 56,881 crores will be spent in five years. Firms like ADB, AIIB etc give loans that can be repaid in 20 years. Firms like JICA allow a loan repayment term of up to 40 years. The interest rate charged by these firms is also less. According to the DPR, the loan repayment of the project will be possible from the earnings alone.

▶ No debt trap

When other infrastructure facilities improve, more investments will occur, resulting in economic growth and the creation of more job opportunities. Such economic growth will help overcome any debt that has resulted while improving infrastructure facilities. The future generation will only benefit as earnings increase and high budget projects that help in development are implemented by taking loans. Nedumbassery airport, Kannur airport etc. are similar high budget projects that were implemented by taking loans.

▶ The project will have been completed in five years

SilverLine Project was first conceived in 2018. It is expected to be completed by 2025. Construction companies will be identified through Global tender. Project Management Companies with the international standard would monitor the construction activities. Work will continue for 24 hours in 365 days. SilverLine Project has been planned on a fast track basis and is expected to be completed in five years. If steps for the land acquisition get completed within two years, construction work can be completed in three years. Be it any project, the faster it gets completed, it will be more profitable.

▶ SilverLine Embankment does not cause flooding

An embankment is a raised soil platform used for constructing a railway line. All existing rail paths are installed on such soil platforms. In Kerala, till now, floods have not occurred anywhere due to such embankments. In some areas, waterlogging occurs even when there is no raised soil platform. In SilverLine, there would be culverts for water to flow out. SilverLine Project will not be a cause for floods.

Ticket Fare

As part of DPR, a detailed traffic study was held. In Kerala's south-north route, around 1,58,271 passengers travel more than around 150 kms. in cars and taxis every day. The survey found out that around 88,442 people travel the same distance by bus and around 91, 975 people in trains. It is expected that a majority of these people will shift to SilverLine. This is because time, fuel and money can be saved. For example, while it would cost more than Rs 10 per km to travel via car, it would cost only around Rs 2.75 per km (according to the current rate) while using SilverLine.

80,000 passengers per day

More than 80,000 passengers are expected to travel per day via SilverLine. Every day, there will be 37 services in one route. In a train with nine coaches, around 625 passengers can be accommodated. In a study conducted, it was found that the average distance travelled by passengers is 200 km. The total distance covered by SilverLine is 530 km. When the average distance to be travelled is considered as 200 km, if all seats get filled in all trips, the maximum number of passengers will be 1,74,825. The total number of passengers considered for a day would not be half the number of total seats. If it gets the calculated number of passengers per day, the revenue earned in the first year (according to the current ticket rate-Rs 2.75 per km) will be Rs 1,605 crores, according to a traffic survey.

Electric Vehicles for connectivity

In Thiruvananthapuram's Kochu Veli and Mukhathala in Kollam, the stations would be on the National Highway bypass. Kakkanad station will be in Kochi metro station itself. Other stations will be in the centre of the city. In Kozhikode, the Silver Line station will be in a tunnel under the existing railway station. The rest of the stations will come in city centres. There will be other transportation facilities to connect the passenger to the last destination he has to reach (Last mile connectivity). There will also be transportation facilities from railway stations and bus stations to SilverLine stations. These services will be arranged according to the time of SilverLine trains. It has been planned to include electric vehicles for the same. SilverLine stations will also have an arrangement for charging such electric vehicles.

There is no basis in conducting a comparison of Broad Gauge facilities in Russia and India. In Russia, the width of broad gauge paths is 1,520 mm. In India, this is 1,676 mm. This is why we have not run high-speed trains in India, this long, after gaining Independence.

Land acquisition steps have started

Now, preliminary steps such as a study to understand the social impact of the project are being held. This is being done before the land acquisition process. Railway Board had given in-principle nod for the project based on the Feasibility Report submitted to it in 2018. As per the memorandum of the Central Finance Ministry, those projects that have received in-principle nod can begin preliminary steps such as a land acquisition. According to Railway norms, those projects that get in-principle nod can begin pre-investment procedures. The Union Finance Minister has directed the State Government to begin steps to get the loan and to speed up the land acquisition process.

No harm to nature

Earlier, as part of preparing the DPR, a speedy study was held to analyse the impact of the project on Nature. The alignment has been decided on areas where the impact is least affected. In reality, Rail projects do not require environmental nod. This was clarified by the Central Government in the National Green Tribunal. Even then, a complete environmental impact study is being held. The study is being held to analyse how much Nature would be affected by the project, a measurement of the same, how this can be reduced and the steps for the same. The study is usually held to suggest steps for reducing the negative impact on Nature.

Only 10 m buffer zone.

Usually, for railway lines, a 30-metre buffer zone is arranged on either side, considering future development activities. In such areas, for activities like the construction of a building, one has to get approval from the Railways. The buffer zone for SilverLine will only be 10 m ■



V. Ajith Kumar
Managing Director, KRDCCL

SilverLine: Aiming Kerala's Overall Development

SilverLine has been designed to solve the shortcomings of train travel facilities in Kerala and to strengthen the State's public transport system.

Kerala Rail Development Corporation Limited (K-Rail) is a joint initiative of Railways and the Kerala Government. The aim is to speed up rail development in Kerala and to improve the basic facilities. A semi-high speed rail corridor from Kasargod to Thiruvananthapuram is one among the different projects of K-rail. SilverLine is a rail project that helps to reach Kerala's northern end from the southern end in four hours. SilverLine has been designed to solve the limitations of facilities during



train journeys and to strengthen the public transport system in the State.

SilverLine trains run at a speed of 200 km per hour. The corridor is being constructed on the Standard Gauge path. In most of the countries in the world, high-speed trains have been running in the Standard Gauge facility for several years. Standard Gauge facility is being used by understanding the limitations of the Broad Gauge path. In the broad gauge paths of India, trains will not run at a speed of more than 160 km per hour.

As the lanes are being doubled, the aim of high speed in a short time cannot be achieved. In the existing track system of Kerala, there are 626 curves. This means 36 per cent of the tracks are comprised of curves. Through lanes will be doubled, due to numerous level crosses, elevations/ depths, speed regulations due to waterlogging in areas where soil erosion occurs etc. the aim of high speed cannot be achieved. Even if signalling facilities are made better, a speed of 200 km per hour cannot be achieved. Super Fast, Mail/ Express, Passenger, Goods trains run at a speed of around 100 km per hour. In such a mixed traffic facility, the average speed of the path will be determined by the slowest train.

The total expenditure for the project has been calculated as Rs 63,940 crores. Out of this, Rs 33,700 crores will be through a foreign loan. It has been planned to take a loan from international financial institutions for a smaller interest rate (JICA-0.2 per cent, ADB and AIIB-1 to 1.5 per cent). The Financial Internal Rate of Return of the Project (FIRR) will be 8.49 per cent. The Economic Internal Rate of Return (EIRR) is 24.04 per cent. Those projects with an EIRR above 14 per cent are considered the best projects. The loans can be repaid from the earnings of SilverLine. The project can be completed in five years.

The planning for SilverLine Project began in 2018. It is expected to be completed by 2025. It is expected to complete the construction activities as five EPC packages. This division is based on a funding package.

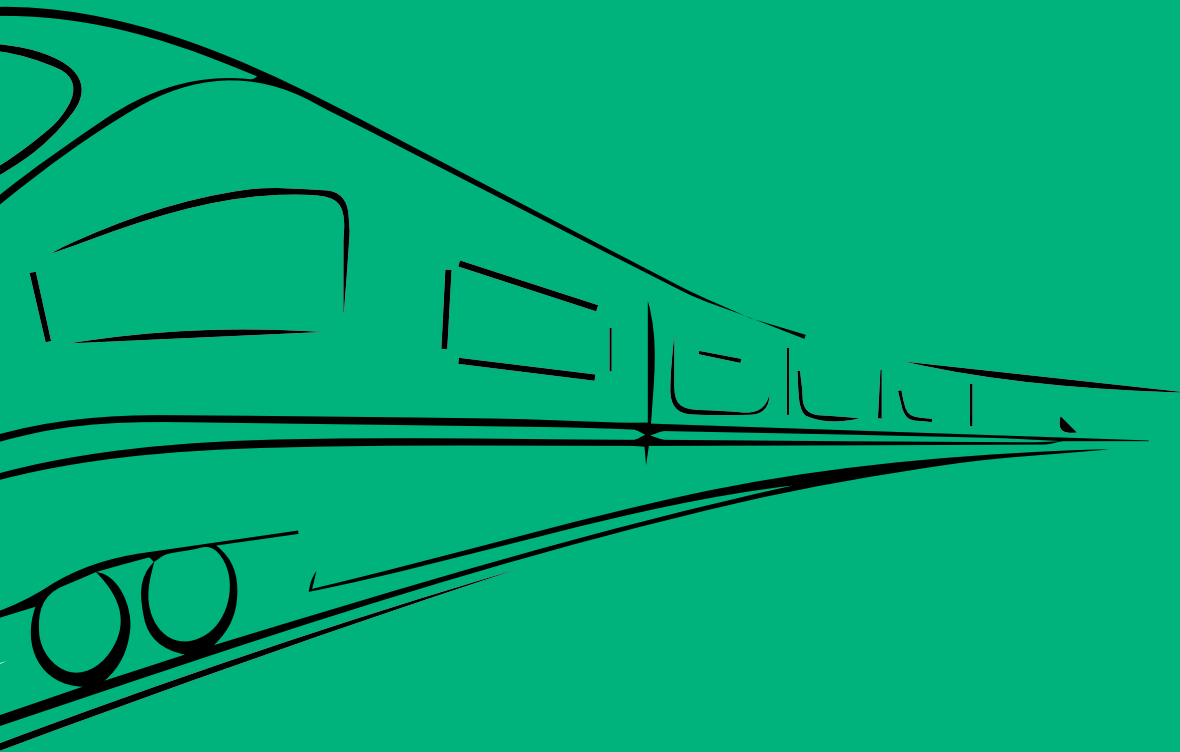
Construction companies will be identified through a global tender. Project Management Companies having international standards will monitor the construction activities. Construction work will progress in five packages at the same time. SilverLine Project has been planned on a fast track basis to complete in five years. Five years is sufficient time to complete the SilverLine project. The land acquisition programme will get completed in two years and construction work will be completed in three years. The cost of projects that will be completed in eight to 10 years will be very high. Any project that can be completed faster will be more profitable.

SilverLine has been fully designed as an environment-friendly project. The railway is an important transportation facility that does not cause much harm to Nature in terms of pollution. SilverLine will help reduce carbon expulsion to a great extent. Vehicles for transporting public on-road and goods vehicles will get reduced to a great extent, making way for SilverLine. In this way, it will be possible to eliminate around 2,80,000 tonnes of carbon from the atmosphere by 2025.

SilverLine Project will require land around 15 to 25 metres in width. This will be lesser than half the land required for constructing a six-lane National Highway. It will also require only half the quantity of rock, soil, sand etc when compared to that required for the construction of a National Highway. SilverLine would also be able to include more passengers than that on a six-lane National Highway. ■



A Plan Designed to Protect Nature



SilverLine is not passing through protected environment zones or wildlife areas. It will not affect the flow of rivers and streams. The height of the SilverLine path has been decided based on the data related to flood-level in the last 100 years. The height will be 1 metre more than the highest flood level recorded in the last 100 years. As the path passing through paddy fields move across bridges, it will not affect farmland. SilverLine project has been conceptualised by understanding Kerala's geography.

Apprehensions of whether the SilverLine embankment will lead to floods is baseless. An embankment is a raised soil structure on which a railway line is laid. Existing railway lines have also been laid on similar soil structures. Such embankment has not caused floods anywhere in Kerala. In some places, waterlogging will occur even if there is no raised soil platform. For this water to flow away, there would be natural channels. If these channels

are widened, without obstructing them, water would naturally get drained through them. In SilverLine, there would be culverts for such water to get drained away. Related studies are being held in the hydrographic survey. The project has been conceptualised by taking a record of floods, tidal waves and ebb that occurred in the last 100 years. SilverLine will not be a reason for causing floods. Apart from this, the project also has measures to prevent floods. ■



Detailed reply to all the queries raised by Niti Aayog.

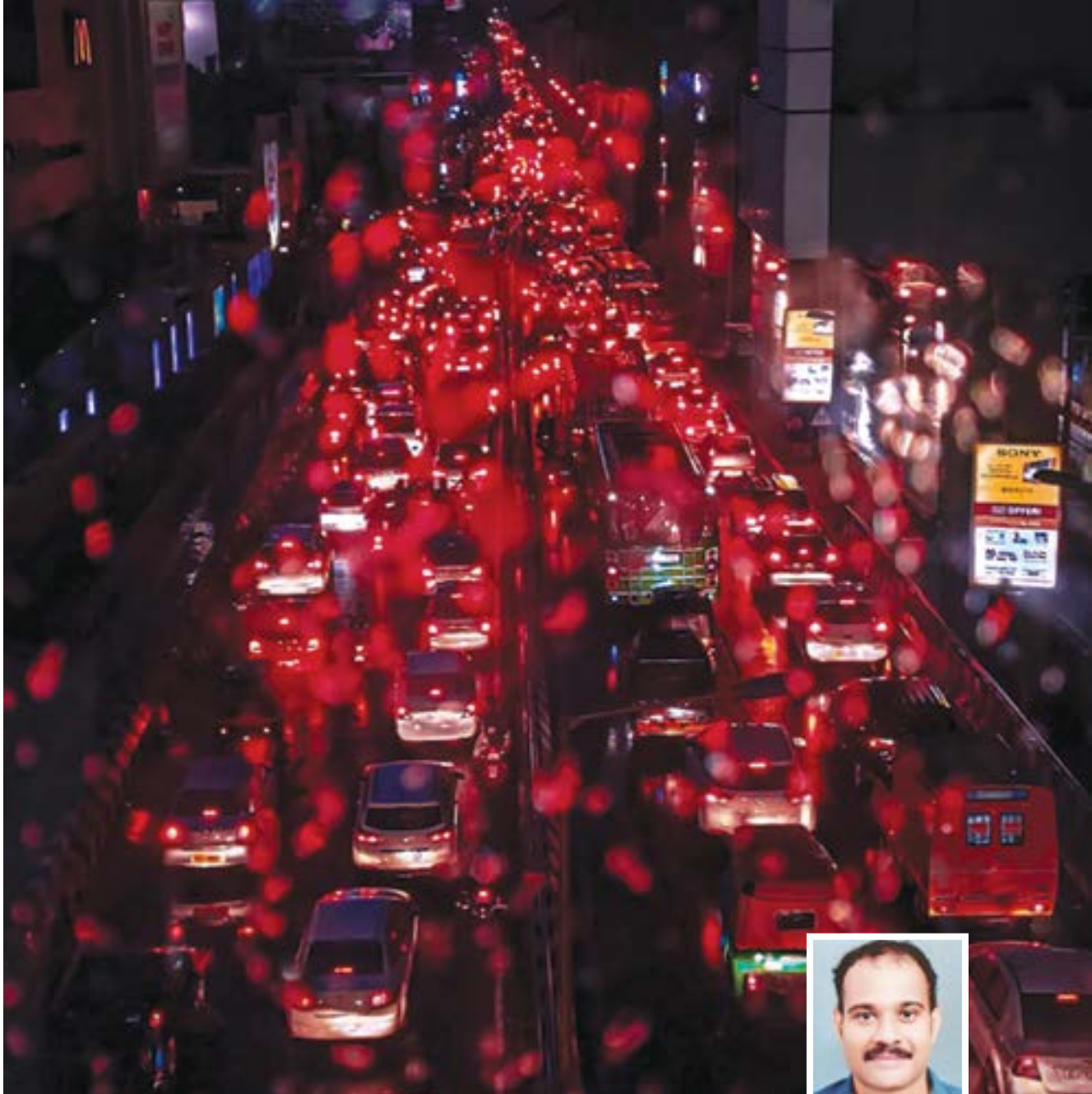
Niti Aayog had directed to begin steps for taking loans from financial firms for SilverLine Project after realising that the project can be completed with Rs 64,000 crores. Independent consulting agency 'Rights' had clarified that the estimate cited in the DPR is practical and logical.



Merits of SilverLine Project

- A journey within 4 hours from the southern end to the northern end of Kerala.
- Safe and easy journey.
- Thiruvananthapuram –Kochi - 1.25 hours.
- Kozhikode-Kochi-75 minutes.
- Human hours saved per day -2,80,000 hours.
- Rate- Rs 2.75 per km.
- Thiruvananthapuram-Kochi-Rs 540
- Thiruvananthapuram-Kasargod -Rs 1,460
- With the realisation of the project, 46,206 people travelling via road per day would shift to SilverLine.
- With around 12, 872 vehicles being withdrawn from the road in the first year, traffic snarl in the State would be considerably reduced.
- Petrol, diesel and fuel worth Rs 530 crores can be saved in a year.
- Complete Green Project.
- Through the project, around 2,80,000 tonnes of carbon can be removed from the atmosphere by 2025.
- Along with a reduction of traffic on road, around 500 Goods vehicles will be able to reach the destination by Ro-Ro facility in SilverLine.
- It can accommodate passengers equivalent to that which can be included on a six-lane National Highway.
- 11 stations connecting all cities through which the SilverLine pass.
- A high-speed journey will increase the number of people visiting tourist spots.
- Around 50,000 people will get jobs in the construction stage and around 11,000 people will get jobs in the functional stage of the project.
- A leap towards the overall development of Kerala.

The State Government and K-Rail had submitted the Feasibility Report to the Railway Board on December 10, 2019. Based on this, the Railway Board had given in-principle nod for the project. The specialities of the project were discussed and it was included in the minutes of the Railway Board meet. According to the memorandum of the Central Rail Ministry, on August 5, 2016, if a project gets in-principle approval, preliminary steps, including land acquisition can be begun. Based on this, preliminary steps for land acquisition was begun. ■



^ Scene from Vytilla, Ernakulam at 8 p.m ^ Photo: Bithin Raj



Vivek VS
Interaction Design Enthusiast

Stop Defeating Ourselves on the Streets

“Eda Tholvii, Make it fast man” The ‘cargo pants’ urged, biting his nail.

Staring at his eyes for a moment, the boy, turned to his computer. Standing by his side is another youth sporting ‘funky shorts’. He’s quick to respond: “Kalippu Aakkalle. He didn’t take his eyes off the

monitor even for a second last night. Anytime he may explode.”

“I think it’s just two more slides”

“Leave it, we gotta go now. Don’t pull the rug out from under my feet with those two slides”

“It’s a chance in months” the ‘cargo pants’,

the marketer among the team, finally put an end to the work.

While saving the project, the 'funky pants' haphazardly searched for a flash drive in his drawer,

The presentation was arranged on short notice, the start-up firm was as excited as well as anxious. All hopped into the car.

Waking up from its sound sleep, the car suddenly screamed in full throttle like it has had a nightmare.

Without wasting much time, they hit the road. The hotel, where the programme has been planned, is located in the city next to theirs.

Can you sense where the story is getting at?

Imagine they are a bunch of 'dream-ups' incubated in Trivandrum and want to make a pitch at Kollam. Can they make it up to that hotel on time?

Anything can happen on our roads. There could be a plot twist anytime.

There could be happy endings too. The young entrepreneurial spirit, risking their lives overcomes the obstacles. Do you think they have to? Or one among the thousand vehicles scuffed with another and the rage between the two took over all other's priorities on the road. Then it would be a moral story. Our venture heroes go back to their little world learning the traffic department lesson "start early reach safely".

Roads are our daily dose of adrenaline and adventure.

Journeys like this always make people doubt the choices we have made while putting in our transportation infrastructure.

"Bro, why do we have so many people on our roads?"

I think the better question they should be asking in situations like this is why do we have so many cars on our road?

In a state where every one in two has a vehicle 'super roads' can't be the only solution. We don't have

a transportation problem. We have a mobility problem. We suffocate ourselves at peak loading times of the day.

How do we take down the excess from our streets?

Cars, the dirtiest polluters, are expensive to buy and maintain. They kill 13 lakh people each year. Another interesting fact is that during the COVID-19 lockdown, the cars killed fewer people on the roads. The lockdown has saved more than 20,000 people in India alone. Between April and June 2020, vehicles claimed 20,732 lives compared to 41,032 lives during 2019.

Moreover, road rage incidents are too common these days. People are getting chased and brutally attacked on the streets for the simplest mistakes they make behind the wheels. There are more unreported cases than the reported ones. It would be rare if you ever got behind the wheels and never felt rage.

Behavioral researchers of Automobile Associations around the world reveal that about 80% of drivers report aggressive behaviors such as tailgating, yelling, or honking to show annoyance. Most of the time, it doesn't climax into a physical clash but social media has enough visuals



▲ Road Accidents in Kerala from 2016 to 2021. Deaths due to road Accidents in Kerala considerably dropped during the lockdown period.

Data Source: <https://keralapolice.gov.in/crime/road-accidents>.

Data Visualization: Vivek VS


of brutal encounters between people behind the wheels fighting like cats and dogs.

Rush on roads is robbing us of life and our hope for tomorrow. Quality of life and enthusiasm in families, workspaces, and society as a whole is being shriveled by this mobility problem.

Car dependence is the evil of the century.

Without cars, we are better. Now we've evidence to prove it. Our never-ending 'rat race' was interrupted by the pandemic, only for a short period though. The emission level had gone down. Surprisingly, all over the world, the ecosystem has shown signs of healing. Delhiites breathed fresh air in decades and the Punjabis had an awesome view of the Himalayas from their balconies. People around the world spotted rare animals and birds they thought were extinct until they shot them with their camera phones. They shared the animosity of the long-suppressed animals welcoming the change.



^  Snowcapped Himalayas saw from Saharanpur, Uttar Pradesh in May 2020 was virally welcomed by Twitterati. It was clicked by Dushyanth Kumar, an amateur photographer.

We need to choose another path rather than advancing on these dangerous roads of car-dependency. Our cities are giving away a lot of real estate to this individualistic obsession. Purchasing a car may be affordable to many but parking them is not. The parked cars chock our roads and occupy the space meant for public life.

There is no other product that human beings are more obsessed with than cars. Western individualism has an unseen influence on our social decisions. We find our social satisfaction through the products we consume. Our crush for cars is a classic case of Thorstein Veblen's leisure class. The automobile industry has been successful in reinforcing the idea that "cars make men". To fit the macho benchmark set in their mind some demand expensive cars as dowry. What if they don't get it? The consequences become news. Our society is transforming from car-dependency to car-addiction. People think it might make up for their insecurities. But it doesn't. It adds more miseries to their already stressed out and exhausted lives.

Car boom started as a by-product of the American oil boom. The USA had fabulous high-speed rail services back then. They combined speed, luxury and convenience. Models such as California Surferliner and Legendary Hiawatha- a model named after the pre-colonial Native American leader were epitomised luxury on rails.

So, where do the trains in the USA disappear?

The common misconception is that the airlines and automobiles naturally took over the trains as the population increased. But that can't be true. Trains were cheaper, convenient and comfortable.

In the April 1959 issue of "Trains" magazine of USA published a report titled 'Who shot the passenger trains?', revealing a larger conspiracy by the oil companies, automobile manufacturers, and the federal government that backstabbed the railways by imposing heavy taxation on rail companies and restricting their innovation.

In this Car vs Train story, the former became victors. It gifted the Americans soul-destroying traffic, and they successfully exported it to all over the world through automobile mass production.

Even by laying down billions of dollars worth of mortar and bitumen each year, escape from congestion is nowhere to be seen. America is now solving this puzzle much expensively. Now they are spending a trillion dollars on mass transport infrastructures such as underground tunnels and hyperloop.

On the other hand, After World War II, Japanese leaders chose to be different in their infrastructure for transportation. It reflected the

domestic realities of an economy that imports all its oil.

They built rails that are connected with a network of subways and moved ahead with high-speed trains. The contrast in both approaches is deeply rooted in the nature of human societies. Most Asian societies have a strong collective culture in comparison to many western societies that are highly individualistic.

Rather, it's a clash between 'me' vs 'we', the bipoles of human mindset or individualism vs collectivism, or the realm of self vs shared prosperity.

'We' is the belongingness to groups, maximising individual benefits through shared prosperity. Keralites transform even the simplest moments of joy into crowded celebrations. We love sharing food. Welcoming more people make us happier. Our festivals are celebrations that bind millions of people together where we merge ourselves in merrily.

Let's cultivate this collectivism of our's on rails. Let's move even more quickly and safely together to the next level of individual productivity and shared prosperity.

Every funky short, pencil fit, and cargo pants could seamlessly chase their dreams, a little more hassle-free manner, if they go in a high-speed train. ■



Dr. K. Balan
Geotechnical Engineering Consultant
(Kerala Rail Development Corporation Limited)

SilverLine will not cause flood

Here is the answer to tarnish the proposed SilverLine that it will cause floods

The attempts to tarnish SilverLine, the semi high-speed railway scheme of Kerala Rail Development Corporation Limited, are very strong. One of the allegations against the proposed project, extending from Thiruvananthapuram to Kasargod at 530km, is that it will lead to flooding in Kerala as more than half the distance of SilverLine is constructed on mud platforms. The propaganda

being used mentions water stagnation along either side of the embankments or mud platforms that are built during the construction of roads and railway lines which may cause floods.

But mud platforms are constructed by taking ground level into consideration. Sometimes it becomes necessary to increase the height horizontally when constructing roads and railway lines. Mud platforms are built to aid the comfortable movement of vehicles along slopes. The sides of these mud platforms are protected using concrete retaining walls or reinforced earth retaining systems. It is only natural to doubt if it will lead to water stagnation on either side of these mud platforms. Water may collect in some places even without the presence of mud platforms. Nature provides the canals for allowing this water to flow. We only need to make those channels wider. One of the main reasons for the floods that occur in Kerala is the interruption of these natural canals.

The possibility of floods was also considered during the hydrographic survey conducted for the SilverLine project. The survey will also check if the rivers along the planned alignment have been joint with the dams if at all the dams are opened, the time taken for the water to flow etc.

Do mud platforms cause flooding?

The common notion is that a mud platform is built to obstruct a water source. But unlike a bund, an embankment does not have water contained on one side and nothing on the other side. The water will flow on its own without affecting the embankment. Water always flows from a higher to lower altitude so there will be culverts for the

water to flow in SilverLine as well. For the same reason, SilverLine will never be the cause of any flood in Kerala.

The pieces of advice of experts abroad, who were faced with similar challenges, are also being taken apart from those of experienced engineers in the Indian Railway sector. Discussions are on among experts in related fields to resolve all the issues to do with alignment. Spreading propaganda about mud platforms causing floods happens because there is a lack of understanding about civil engineering.

Soil piping and SilverLine

The term soil piping is a recent addition of terminology to the Malayali's vocabulary. It is important to take the layout of the land and soil structure into consideration before a project is implemented. The possibilities of soil piping can be anticipated from the beginning then. Civil engineering has developed to that extent. These are the basic principles of civil engineering and not just a recent introduction. Every student who pursues civil engineering will learn this in the fourth or fifth semester. While studying hydraulics related to water and geotechnical engineering which deals with soil, a student comes across the possibilities of piping and its engineering equations. This is a basic concept. They are aware of the techniques to prevent piping. Piping are of two types. If the water level is raised on one side and lowered on the opposite side, water will flow under the embankment. Channels will be constructed in this scenario to hasten the flow.

Counter measures against soil piping

Soil piping refers to the sudden flow of water from the higher regions to the lower regions. The best way to prevent soil piping is to enhance the distance of the water discharge. The difference between the height for the water to flow from and to which it has to fall is the flowing velocity. There are numerous ways to determine this distance in engineering, namely a cut-off wall or a grout curtain. Such methods are used for dams. The water has to travel a long distance to reach its destination in the lower regions rather than flowing directly from where it is contained. This removes the possibility of soil piping at any point. If the allegations of those who disagree are to be considered, there would never be embankments anywhere in the world.

Places like Japan have had high-speed railway networks for many years. Despite the fact that the country is situated in an earthquake-prone zone, their railway line embankment has a height of 14 metres. The actual speed of the SilverLine is 200km. The height of the embankment is much lower than that of Japan. In places where more height is required, pillars are installed for the SilverLine. The retaining wall is built at a height of 14 metres in Japan whereas, for the SilverLine, the maximum height of the retaining wall will be 8 metres.

The basic infrastructure such as roads, bridges, railway lines, etc. is planned in foreign countries with the help of modern technology. We can also do the same as there are expert engineers in India, especially in Kerala. We also have highly experienced engineers who have overseen the construction of railway lines.

Bridges above flood water level

When hydrographic surveys are conducted, floods and rainwater levels from 100 years back are collected from the meteorological department for research. Designing is only the next step. Bridges will be constructed approximately 5m above the maximum flood water level in places

with waterways. Inland water transport enriches tourism possibilities too. This possibility can be utilised by small canals along the rivers on the SilverLine route.

The approach roads and their sidewalls have been built after considering the flood water level of the past 100 years. Unexpected rainfall due to cloud bursts has also been taken into consideration.

Less Land Availability for Embankments

In the earlier time, while constructing road embankments and approach roads of bridges, the deck slabs of bridges were arranged on the mud platforms. The land area of 30m width was needed to construct a 10m wide embankment with a ratio of 1:1 slant. But constructing

an embankment by utilizing this much land in a small state like Kerala is not possible. Reinforced earth retaining wall is a technology to reduce the usage of land in this fashion. It is used in newly-constructed roads and bridges. This type of construction requires a very small area of land.

To quote a simple example: When children build sand dunes on the beach the slopes will be in their natural incline. Keep a piece of paper in it and make another sand dune, then the slope will be more reinforced. The paper holds the sand in place. When a weight is placed on that dune, it is deformed. Paper prevents this deformation. Synthetic materials such as polyester and polypropylene will be used in place of paper in SilverLine's embankments. Net-like structures, made of these

materials, are deposited on the soil. This is known as geo-grid. This geo-grid is connected to the concrete blocks along the sides of the embankments in equal intervals. This is used for highways but is rare in railways. This is used for 14m long embankments in Japan.

All aspects are considered when a civil project is undertaken. This is known as holistic planning. It considers the environment and the damages caused, known as ecological impact studies. The K-Rail project will be implemented after completing all these studies.

(The author is a senior resource person of the geotechnical engineering department of KIIFB and retired professor, Civil Engineering Department, College of Engineering, Thiruvananthapuram.)

Digital garden in the Kerala assembly premises: First of its kind in country

Digital garden, to know about the flora in the premises of the Kerala assembly has introduced. The garden which includes various trees, plants and creepers have been documented and each has been assigned a QR code. With the introduction of the Digital garden, visitors can access information about each tree by scanning the QR code. This has turned to be the first of its kind in the country to have a digital garden in the legislative assembly premise. The speaker M B Rajesh inaugurated the digital garden recently. The concept and creation of the garden were by Akhilesh S V Nair, a research scholar from the Department of Botany, and Dr A Gangaprasad, professor and director of Centre for Biodiversity Conservation, both at the University of Kerala. The assembly campus has



more than 300 species of trees and plants. Individual URLs were designed to create QR codes for various species. The visitors can access the complete data of each plant species freely by logging onto - digitalgarden.niyamasabha.org. Adenanthera pavonina L (Manchadi), Alpinia calcarata Rosc (snap ginger), Aquilaria malaccensis

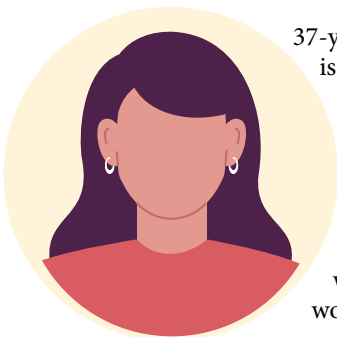
Lam (agarwood tree), Bombax ceibaL (Malabar silk cotton tree) and Ensete superbum (Roxb) Cheesman (a wild plantain) are some of the major plants and trees in the digital garden. Any person interested in plants can assess the website freely by logging onto - digitalgarden.niyamasabha.org.



Rejith Balakrishnan
Freelance Journalist

“We need Silverline”

Many youngsters, especially working women, and entrepreneurs, in Thiruvananthapuram and the adjacent districts, feels that SilverLine will play a key role in empowering their lives



37-year-old **Aiswarya Shyam** is an IT professional working at a prominent IT firm at Technopark. She believes that the SilverLine project would play a major role in empowering the lives of women, especially working women. As strange as it may sound, she has her own reasoning for holding such

expectations.

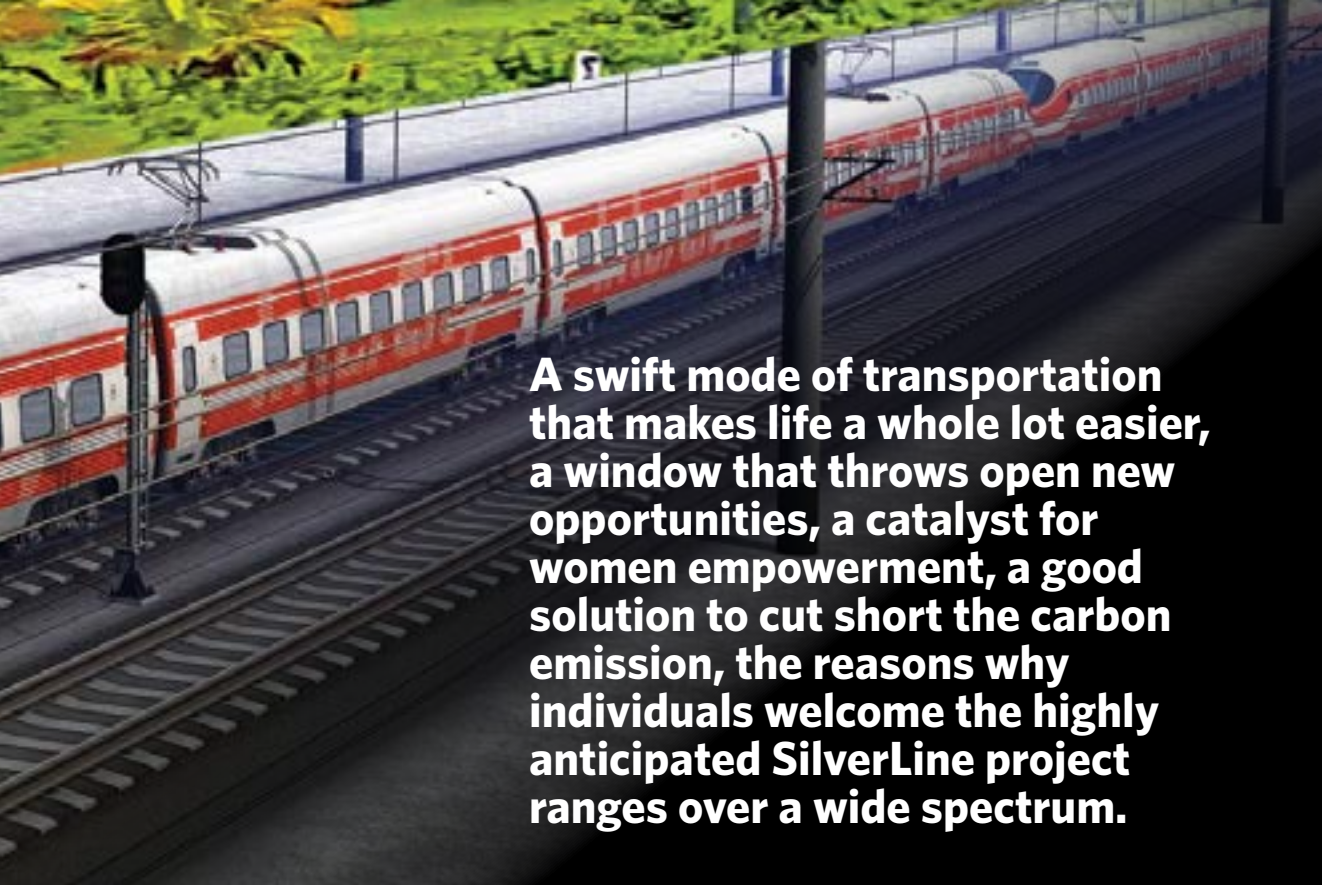
“Many people are unaware that the number of women in the IT sector who quit their job after marriage or after the birth of her child is very high. Often, it’s the women coming from distant places

that are forced to quit this way. It happens mostly when the husband and wife have their jobs in different districts and it’s the women who end up making the sacrifice for the family. This is where a project like SilverLine can make a difference. With the travel time getting shortened, at least those living in nearby districts can turn up for work without sacrificing family time”, she says.



Magi Vasundharan, another IT professional working at an MNC in Technopark seconds this opinion.

“I am someone who has gone through that phase for a brief period following the birth of my child. The



A swift mode of transportation that makes life a whole lot easier, a window that throws open new opportunities, a catalyst for women empowerment, a good solution to cut short the carbon emission, the reasons why individuals welcome the highly anticipated SilverLine project ranges over a wide spectrum.

reason I could resume my career after almost two years is that I live not far away from my workplace and I don't have to depend too much on my relatives to look after my child" Magi, who lives at Kallara located in the outskirts of the state capital says.

A swift mode of transportation that makes life a whole lot easier, a window that throws open new opportunities, a catalyst for women empowerment, a good solution to cut short the carbon emission, the reasons why individuals welcome the highly anticipated SilverLine project ranges over a wide spectrum.

For **Sruthi S Pankaj**, a marketing professional, whose work involves extensive travel across the northern districts, the obvious prospects of being able to cover more distance in such a short time is what excites him most.

One of the major arguments put forward by those who oppose the project is that the existing infrastructure has to be developed rather than setting up a new rail system.

"The argument may sound logical, but, the truth is that it is an impossible task. The vehicle density of Kerala is over 400, which is almost at par with developed nations like the United States of America. The number of vehicles on our roads keeps

increasing at an exponential rate. With the rate at which the vehicle population is increasing in the state, the task of developing the roads proportionate to the rising vehicle density would remain a never-ending task", Pankaj says. The reason why people preferred driving their own vehicles rather than public transport is because of the fact the current public transport modes do not save time. Once the SilverLine project comes in place, this attitude might change, he adds.

Sreekanth PK, who hails from Kannur and works as the Operations Manager of an Interior Designing Firm in Kozhikode feels that a high speed/semi high-speed rail system will have a positive impact on the tourism sector, especially in the Malabar region.

"Railway is the preferred mode of overseas travellers who are looking to explore other countries. The foreigners who visit Kerala often restrict their itinerary to a handful of destinations, including Kochi, Munnar, Alappuzha and Thiruvananthapuram. A major reason for this is that exploring more destinations means more travel, which in turn needs more time. There are numerous destinations in the Malabar region, whose tourism potential are yet to be tapped. A project

'I remember that three decades ago, the elders in my family too had had many doubts when the government approached them seeking land for the Technopark project. My family was one among many who had contributed their lands for the project. I am yet to look into the pros and cons of this project in detail, but, one thing I can promise from my personal experience is that such development projects elevate the living standards of people
-Veena V. Manoj

like SilverLine offers an opportunity for these tourist destinations to go mainstream", says Sreekanth.



Rahul Mohanlal, 34, a Thiruvananthapuram based businessman whose retail laundry business is into its seventh year, believes that projects like SilverLine project would enable the growth of small-scale businesses.

"I have been planning to expand my business to other major cities in the state, especially Kochi and Kozhikode for some time. But the hassles of long travels and time loss associated with it have been holding me back. With a high-speed transport system in place, I could even visit all my branches in just one day if needed and supervise the works personally. This is what makes me root for the project. I am sure there are many small-scale entrepreneurs like me in other cities too with the same thoughts", Mohanlal says.



Haritha Thampi, who hails from Guruvayoor, works for a Thiruvananthapuram based NGO and is married to someone in Kasargod, is all in for the SilverLine project. She believes that the project

would be an answer to the rising carbon emission contributed by the vehicles on our roads.

"The project could help remove a large chunk of vehicles from our roads, which may turn out good for the environment. Also, less crowded roads mean less road rage and less sound pollution and this, in turn, translates to better mental health and better productivity at work and at home", Haritha Thampi.



Veena V. Manoj, a resident of Kazhakoottam and a teacher at Loyola School, believes that there is no need to blindly object to development projects.

"I remember that three decades ago, the elders in my family too had had many doubts

when the government approached them seeking land for the Technopark project. My family was one among many who had contributed their lands for the project. I am yet to look into the pros and cons of this project in detail, but, one thing I can promise from my personal experience is that such development projects elevate the living standards of people. Earlier, securing a job abroad was the best shot for the middle class and lower middle class to elevate the living standards. After Technopark came into existence, we all saw the change in this scenario. It threw open new possibilities for the local population. It gave birth to an IT corridor here, with new development projects being launched one after the other. Every development project comes with such possibilities and hence I believe that such aspects must be thoroughly probed before raising objections", Veena says. ■

[As of March 31, 2020, the number of motor vehicles with valid registrations in Kerala is 1.41 crore. In 2019-20, the number of newly registered vehicles is 8,49,200. The last two decades have witnessed a compounded annual growth rate of above 10 per cent. The number of vehicles per 1000 populations for Kerala as of March 2019 is 425. According to world development indicators (2015), this number is almost at par with developed countries. The corresponding figure for the United States of America is 507] Source: Economic Review 2020.

Renowned Malayali rocket scientist S.Somanath appointed ISRO chairman



△ Dr. S. Somanath, 10th Chairman, Indian Space Research Organisation

The appointment of senior rocket scientist S.Somanath as the Chairman of the Indian Space Research Organisation (ISRO) and the Space Secretary is indeed a proud moment for the Malayalis across the world. S. Somanath is currently serving as the Director of Vikram Sarabhai Space Center.

Dr.Somanath, who hails from Aroor in the Alappuzha district will be the 10th chairman of the premier space organization. According to him, the most important responsibility would be to create a space enterprise in India where all the stakeholders, including DoS, ISRO, IN-SPACe, industry and start-ups are all part of the efforts to expand the space programme

on a bigger scale. He has experience as director of Liquid Propulsion Systems Centre (LPSC) for more than two years.

Somanath completed his B.Tech in Mechanical Engineering from the TKM College of Engineering, Kollam, and a Masters in Aerospace Engineering from the Indian Institute of Science, Bangalore with a specialization in Structures, Dynamics, and Control. Later in 1985, he joined the VSSC in the Polar Satellite Launch Vehicle (PSLV) project. Dr. Somanath had an eminent role in the development of the PSLV and the Geosynchronous Satellite Launch Vehicle Mk-III. He had contributed to the development of the indigenous cryogenic stages for the GSLV also.



Bimal Shivaji
Senior Journalist

Thus speak Central Kerala

For the people of Central Kerala, especially those residing in Ernakulam, Kottayam, Thrissur etc, the SilverLine will ease their daily burden to a great extent. And to those, who are coming to Ernakulam will be a matter of less than one and half hours!

“Kerala is a very densely populated state with a well-educated youth whose aspirations are sky-high in this connected world. Everyone would like to own a vehicle and the vehicle population has increased exponentially. This has led to a situation where there are more vehicles than road capacity. Consequently, there is an increase in road accidents leading to disabilities and deaths. A high-speed railways line would shorten the time taken to travel across the state and reduce the burden on the crowded roads thus bringing down fatality rates,” according to a transport expert.

Another important factor to be noted is the time spent on driving between cities. For a 200-km drive, it takes anywhere between four-and-a-half to six hours depending on the time of the day. A high-speed railway corridor is the only answer, according to a

transport expert.

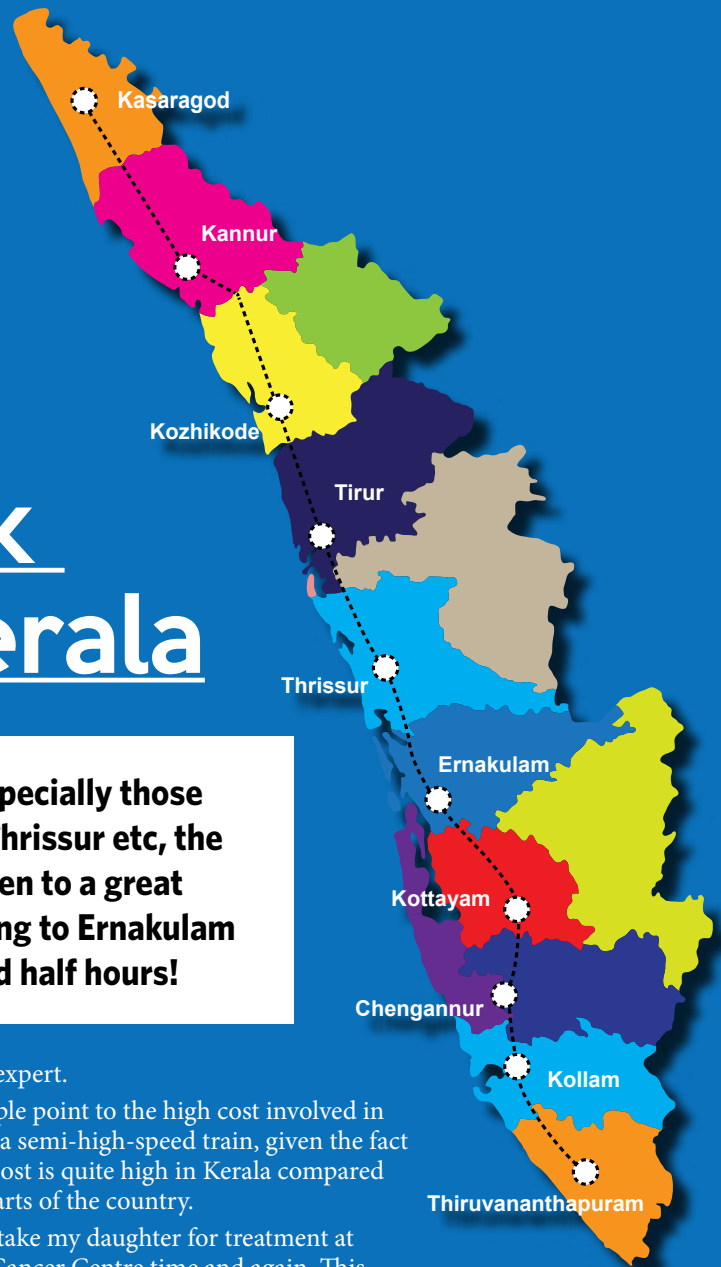
Many people point to the high cost involved in setting up a semi-high-speed train, given the fact that land cost is quite high in Kerala compared to other parts of the country.

“I have to take my daughter for treatment at Regional Cancer Centre time and again. This means that I spend a whole day in train one way affecting the income from my business. If the SilverLine project becomes a reality, it would be a blessing as I can save two days’ travel,” said Abdul Khader hailing from Thalasseri in Kannur district.

For businessmen in Kottayam, Ernakulam, Thrissur or even Thiruvananthapuram, a fast train would mean cutting costs in this time of tough competition. “Instead of driving from one end of the state to another, incurring a huge amount as fuel expense, it would be beneficial to travel by a fast train. Moreover, I can still conduct my business talking to prospective clients or to my partners while travelling,” said Thomas Xavier from Kottayam, who often travels to the northern districts of the state for developing his business.

According to Mathew Thomas, a student of engineering, hailing from Kozhikode and studying at the College of Engineering Trivandrum, “I would definitely support a fast train as that would save time for people travelling from one end of the state to the other. Road travel has become terrible in the crowded highways, a result of the increase in privately owned cars after the COVID-19 pandemic.”

“Also, in tune with the changing times, we need to have means of



reaching places in no time than spending a major part of the day in travelling," he said.

"Top bureaucrats of all departments of the State Government are stationed in the State capital and we often have to travel to meet them at their convenience. This entails travelling a day earlier from Ernakulam or any other northern district of the State. This means incurring the extra expenditure. The SilverLine would surely help in reaching Thiruvananthapuram early in the day as it would mean only a few hours of travel," said George Moonjely from Mala.

Residents along the alignment of the railway corridor also expect an unexpected windfall as the price of land will rise, he said, expecting compensation that would be more than the present value of the land in the area.

The high court will be at an arm's length!

For litigants from other parts of the State travelling to the High Court of Kerala in Ernakulam, a semi-high-speed train would save them time and money. More often than not, many bureaucrats from the Capital city, have to attend court hearings in Ernakulam as part of their duty. At present, they have to either reach Ernakulam a day earlier or leave from home at unearthly hours to attend the court. This also means an additional expenditure for the state, according to V. Leela, a

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former registrar who was with the Department of Industries in the capital.

The chairman of a power loom project located near Neyyattinkara, in the southern part of the state, recalls many journeys early in the morning to attend hearings at the High Court. "We often had to start at 4.30 am from Thiruvananthapuram to reach Ernakulam by 9.30 am- 10 am as the office of the advocate opens. This had affected my health as we returned only late in the evening after starting from Ernakulam at 4 pm. Spending long hours travelling through the dilapidated highways was horrible during those days," he recalled.

A train journey from Ernakulam Thiruvananthapuram can take up to six hours. If the Silverline becomes a reality, that distance can be covered in an hour and a half. It would only take three hours and 53 minutes to

reach Thiruvananthapuram from Kasaragod, according to authorities of K-Rail.

Any government should think of meeting the future travel needs of the people. As we focus on smarter cities, the travel needs of the people should also be the long-term goal of the state, according to an official at the National Transportation Planning and Research Centre (NATPAC), an institution under Kerala State Council for Science, Technology and Environment (KSCSTE), a premier R & D institution in the country which works on a multi-modal system of transportation covering road, rail, water, air "The SilverLine project will be a major breakthrough in the development of infrastructure for the people of Kerala and future generations who are facing travel difficulties due to the drawbacks of the existing transport," said a serving bureaucrat who didn't want to reveal his identity.

Denying that the SilverLine project would affect the environment negatively, another official that K-rail pointed out rail projects are the most energy-efficient and least polluting transportation models in the world. The land required for constructing this rail project is half of that of the national highway and can carry three times the national highway traffic, that too without any pollution, according to K-Rail officials. ■

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Dr. V. Abdul Latif

Assistant Professor,
Sanskrit University, Koyilandy Centre

Unforgettable rail journeys...

High-speed rail journeys through Western Europe and Russia gave everlasting memories in my life

Some years ago, while on a trip to Bhutan, I missed a connection train to Hasimara after getting caught up in a traffic jam in Kolkata.

We had a plan to visit friend Shemi's house in Netaji Nagar, a few kilometres away from Shalimar station in Kolkata. We expected to reach Shalimar by 1.30 p.m. in a train from Kerala and thought of having food at Shemi's place. We had to reach Sealdah station to board a pre-booked train to reach Hasimara via New Jalpaiguri. If we consider all this in a Kerala context, it is a hassle-free plan. But our taxi couldn't move an inch from Shalimar station due to traffic snarls. We realised that it will be difficult to visit Shemi, have food at her place, and then return to the

station on time for KanchanKanya Express. We then thought of skipping the visit to her house and moving to Sealdah station. But one among us Ajith M.S. was firm that we should visit Shemi even if we miss the train.

After getting caught up in traffic for a long, we reached Shemi's home and had her special Kolkata Biryani. As expected, we missed KanchanKanya Express by the time we reached Sealdah station. Amidst this, both sides of our taxi rubbed against other vehicles as our driver tried to rush us to the station.

After Kolkata, a similar choking traffic system was witnessed in Dubai. Though the roads are wide enough, with multi-track one-ways and high-end signal systems, and cars have all modern facilities,

the peak-hour rush in the major Emirates of UAE is suffocating. Opting bypass route in each path, we will reach the destination only after several hours. Kolkata is struggling due to its age-old style while a modern city like Dubai gives an equal struggling experience due to over-dependence on cars and private transport. If everyone owns a car and uses it often, it will result in such a pathetic state.

Germany's Frankfurt city and Holland's Amsterdam astonished us with their excellent transport system. An extensive public transport system is a speciality of western European countries. Private vehicles have to be parked at least 50 km away from the city. Trams, Metro and Electric



Kolkata is struggling due to its age-old style while a modern city like Dubai gives an equal struggling experience due to over-dependence on cars and private transport. If everyone owns a car and uses it often, it will result in such a pathetic state.

buses will take us fast to any corner in the city. In several cities, water transport facilities are also available.

In several cities, public transport can be availed by using a single ticket. Swiping cards for the same can be bought from shops or transport vehicles and used according to need. These cards can be used in buses, trams and boats. In Paris and Rome, we were astonished to see underground Metros with several floors. Rail services run by several companies, high-speed rails and the cleanliness, facilities inside the coaches can be emulated. In several countries, two-floor coaches can be seen.

Moscow Metro and High-Speed Rails in Europe

Underground Metro services of Moscow and St. Petersburg really astonished us. Moscow Metro that connects the city centre and nearby places like a cobweb are really amazing. This Metro deals with lakhs of services per day. The station remains crowded full time as vehicles arrive each minute. The Metro line that has a depth of around 74 feet passes underneath rivers and canals. The Metro that became functional in 1935 is

known as People's Palace. Each station is attractive as the names denote. With unique architecture, paintings and lighting, stations here have turned into palaces. The Metro coaches in Russia reflect its history and culture through various pictures and rich descriptions.

St Petersburg has numerous waterways for ships. As more motor vehicles came up, several iron bridges were introduced that can be lifted to either side. At night, in certain intervals, these bridges will be opened for the movement of Ships. Those who have no idea about when the roads would be closed, for the movement of Ships, would get caught up in the city. I had a similar experience.

I had to reach Moscow by high-speed train in the early morning. As there were similar bridges near the apartment we stayed in and the railway station, we thought of moving via Metro by 12 a.m. When we reached the Metro station, the last vehicle had already left. As the road was about to be closed, taxis were unwilling to take us to the station. We somehow managed to reach the station but one of us had forgotten to take his suitcase. As it had several important documents, including a Passport, we had to go around a bridge that opened lately and retrieve the suitcase.

Venice, which is divided by Ship routes, has a different style of functioning. It does not have the wider bridges seen in St Petersburg. In its place, there are arch-shaped bridges where we can climb steps. It resembles our Alappuzha. If we have to walk a mile here, we will have to cover around four or five similar bridges. Those who have huge luggage to carry will face a tough time. They have small three-wheeled trolleys, a specialty of Venice, that can be used on these stairs. The trolleys resemble a Kangaroo as the wheels are placed in front to be used on the steps.

I will end this note after citing one more experience. The high-speed rail journeys in Western Europe and Russia are unforgettable ones in my life. I had experienced the ease offered by high-speed bullet trains in Frankfurt-Amsterdam, Amsterdam-Paris and St Petersburg-Moscow routes. While considering check-in, check-out time, the distance to be covered to reach the airport and time constraints, bullet trains seem to be more useful for the passengers.

Normal Express trains in Moscow-St Petersburg run throughout the night to cover a distance equivalent to that covered by high-speed trains in less than five hours. The facilities and cleanliness inside such vehicles are extraordinary. Coach assistants will bring tea, water, snacks and reading material for travellers. For those travelling longer routes, such considerations are not an extravaganza.

Clean washrooms give a mental satisfaction indeed. The people in Kerala spread across the south to north, also deserve such considerations. It is also our duty in this modern era to provide clean, protected, time-saving travel facilities to the tourists who reach Kerala, one of the most important tourist destinations in the world. As a traveller, I am eagerly awaiting with excitement for the Thiruvananthapuram-Kasargod semi high-Speed Rail Project SilverLine to be implemented by Kerala State Government. ■



Muralee Thummarakudy

Chief, United Nations Office For
Disaster Risk Reduction

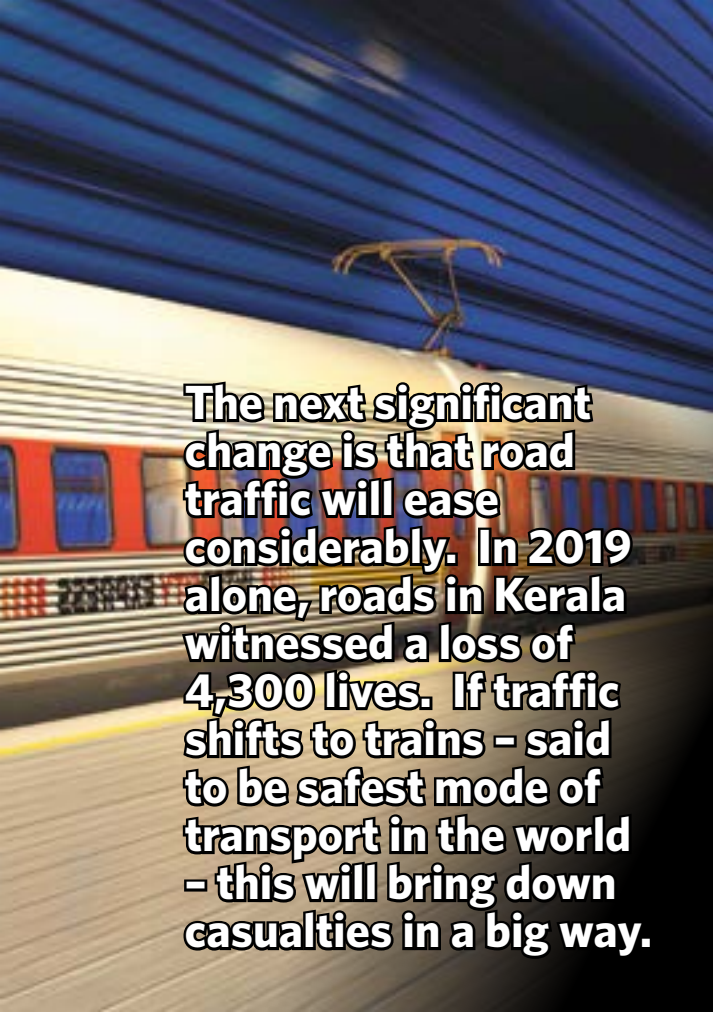
Silverline –An absolute necessity

Hi-Speed Railway is perhaps a subject that Keralites are not very familiar with. The railways became operational in the state several decades back but the average speed of the trains here continues to be 40 or 50 kmph. It takes 10 to 12 hours to travel from Thiruvananthapuram to Kasaragod.

Osaka and Tokyo are two cities in Japan that are 500 km apart. But it takes less than three hours to travel from one city to the other. In other words, the average speed of the train is 160 kmph, although it can reach a speed of 250 kmph. If a train that can run at 200 kmph is introduced in Kerala, it will take less than four hours to travel from Thiruvananthapuram to Kasaragod. The changes this will bring about will be nothing less than dramatic, and they will be perceptible at several levels.

Let us look at the financial picture first. Today, if someone from Ernakulam were to come to Thiruvananthapuram to transact any business, it will take at least two days to conclude because an overnight stay is inevitable. However, if it is possible to cover the distance in one-and-a-half to two hours, that will undoubtedly expedite our economic activities.

Most of the time we may wonder whether we really need such a superfast train. During peak hours, there is a high-speed or bullet train (called Shinkansen in Japan) running between Osaka and Tokyo every three minutes. Kerala is fast growing into an economic power. The state GDP is rising every year. Therefore, infrastructural development is not to be planned for the Kerala that we see today but for the Kerala of 2030 or 2040



The next significant change is that road traffic will ease considerably. In 2019 alone, roads in Kerala witnessed a loss of 4,300 lives. If traffic shifts to trains - said to be safest mode of transport in the world - this will bring down casualties in a big way.

or 2050. Should we still spend 10 to 12 hours on travel then, as we do today?

The next significant change is that road traffic will ease considerably. In 2019 alone, roads in Kerala witnessed a loss of 4,300 lives. If traffic shifts to trains – said to be safest mode of transport in the world – this will bring down casualties in a big way. There is even a provision for vehicles on the road to move from one place to another through the Roll-On-and-Roll-Off rail system that is in operation in several places in Europe. I have seen even trucks taking such trains! If such an arrangement is in place, it will not only ease road traffic but also reduce emission of greenhouse gases. This will make the carbon footprint really light. People will enjoy greater security, carbon efficiency will go up, cargo movement will become speedier, and easily perishable goods like fruits and vegetables will reach people and markets without much time delay. These are the many benefits of hi-speed trains.

Frankly speaking, I believe we don't even have to conduct debates about whether we should support the idea of hi-speed railway or not. The railway network is far denser in most other parts of the world than in our land. Considering our population, when we take stock of our railway line trains and passengers, we appear to be woefully backward. Train travel has not become part of our everyday life. We continue to depend on road travel. Shinkansen made its appearance in Japan in 1964.

So, in 2021, we do not need to debate whether or not we need a train that runs at half that speed. There are trains in Spain that run at 500 kmph. I stay in Geneva, and there are trains that run from there to Paris in less than three hours. They are TGV trains. When I have visitors in Geneva, they take a train at 6 in the morning to go to Paris, see all the main tourist spots there, and return to my house by 7 in the evening. And this happens every year. Can we even imagine such a thing happening in Kerala today? Starting from Thiruvananthapuram in the morning, going to Kozhikode, visiting all the important tourist sites there and returning to Thiruvananthapuram the same evening is simply inconceivable! When a system that was made functional in many parts of the world in the last century comes to Kerala today, it is already too late. That is the reason why I feel the very question as to whether we should have hi-speed rail is totally irrelevant.

Our economic status will not be like this always. The best talents of our land go elsewhere and work in different places – Bengaluru, Mumbai, San Francisco, Singapore and so on. During these COVID times,

Today, if someone from Ernakulam were to come to Thiruvananthapuram to transact any business, it will take at least two days to conclude because an overnight stay is inevitable. However, if it is possible to cover the distance in one-and-a-half to two hours, that will undoubtedly expedite our economic activities.

many have returned to Kerala too. They are people who, having seen these railway systems and even enjoyed their benefits, wish to see them here. Those who live in the state are also desirous of this facility. Therefore, if such a system is made available in Kerala, it may be possible to bring back our talented brains from overseas, and even attract foreigners to work here. If that happens, we will be able to compete with economic powerhouses like Dubai, Singapore, Hong Kong and others. At the very least, Kerala will be able to compete with Mumbai, Chennai and Hyderabad. Therefore, Hi-speed railway is an absolute necessity as far as Kerala is concerned. ■



N. Bhadrn Nair

Executive Editor, Indian Science Journal

Kerala's technology-driven innovative plans to broad base equitable health delivery

Recently, Chief Minister Pinarayi Vijayan added 50 more state-run hospitals in the state to the Digital Health Mission. It seeks to create an electronic health record of every citizen, accessible through a unique identity number at any government hospital, telemedicine and online appointment booking.

NitiAyog carried out a study to assess the prevailing status of emergency and trauma care at government and private hospitals in a bid to improve the existing gaps and provide a framework for improvement and the needed policy directions.

The study revealed medical emergencies including road traffic injuries are one of the leading causes of deaths in the country – 1.5 lakhs annually. The study assessed, emergency and injury cases annually accounted for 16 per cent of all patients brought to a health facility and 19-36 per cent of admissions in district hospitals. It pointed out more than 50 per cent of deaths and 40 per cent of the total burden of disease could be averted with pre-hospital and emergency care.

Kerala has the best health indicators in the country, with the lowest infant mortality rate at seven per 1,000 live births and a life expectancy of 75 years. The State has been steadily increasing expenditure on public health to improve infrastructure in

government hospitals since the Aardram Mission was introduced in 2016.

During the global pandemic, Kerala received accolades from the World Health Organisation for its “prompt response.” “The State used innovative approaches and its experience in disaster management planning came in handy to quickly deploy resources and put up a timely and comprehensive response in collaboration with key stakeholders. Active surveillance, setting up of district control rooms for monitoring, capacity-building of frontline health workers, risk communication and strong community engagement, and addressing the psychosocial needs of the vulnerable population are some of the key strategic interventions implemented by the State government that kept the disease in control,” said the world body in July 2020.

Much before the outbreak of COVID-19, the Kerala government had launched a Blockchain-enabled vaccine coverage analysis system. The programme identifies management for vaccines starting from manufacturer to beneficiary. The State government has set up a Blockchain academy in 2017 with many collaborators, including Kerala Development and Innovation Strategic Council, Biotechnology Industry Research Assistance Council (BIRAC) promoted by the Central Department of Biotechnology and Bill and Milinda Gates Foundation.

ImmunoChain seeks to conceptualise and demonstrate innovations in data systems for immunisation to aid in real-time visibility of the correlation between consumption and coverage of immunisations. It is the simplest and the most effective approach to protect humans from many serious diseases. Successful immunisation programmes are essential for the economy too, as they can save a large number

Much before the outbreak of COVID-19, the Kerala government had launched a Blockchain-enabled vaccine coverage analysis system. The programme identifies management for vaccines starting from manufacturer to beneficiary.

of public funds spent on controlling many disease outbreaks and healthcare activities.

India’s immunisation is the largest in the world, with annual cohorts of around 26.7 million infants and 30 million pregnant women. But the major challenge for the government has been monitoring and measuring the effectiveness of such interventions with relevant data. The blockchain-enabled framework improves traceability and coverage analysis of vaccine supply-chain reducing the anomalies in the existing system.

Another technology-driven healthcare intervention of the Kerala government is Blood Bag Traceability to ensure an efficient, safe supply of blood from donors in the Blood Collection Centres to recipients in Blood Storage Centres. It is part of the eHealth programme of the Central Government and State Health Department designed to provide people with a convenient centralised healthcare system.

The State hopes, these tools would provide valuable insights to help government navigate and effectively respond to any outbreak of diseases. A strong ground-level healthcare network in Kerala has effectively intervened during the outbreak of COVID-19 to mitigate its severity unlike in many other States in India.

These policy initiatives are being undertaken, anticipating future healthcare needs. As the State’s population ages rapidly, the policy is already being generated to combat this emerging issue. Senior care facilities are already being constructed across the State, existing facilities are being made more equipped for geriatric care, and the Pain and Palliative Care Policy of 2008 have increased the amount of home-based care at the local level. Likewise, to combat the re-emergence of infectious diseases like diarrhoea, typhoid, and Dengue fever, Kerala has invested in information-gathering at the household level in order to observe the spread of such illnesses.

The new policies seek to reshape the State’s health services to better account for an ageing population, re-emerging infectious diseases and non-communicable lifestyle diseases like diabetes and cardiovascular disease, and to expand mental healthcare. It will increase public spending on healthcare more than eightfold to further lower the cost of public health services as well as provide treatment guidelines to ensure a more even quality of treatment across the State. This comes at Kerala’s innovative health policy is a critical component of its low and steadily decreasing poverty rate. However, underprivileged individuals—including the poor, those in rural areas, women, and the elderly—continue to receive lower-quality care and less of it. According to the first multi-dimensional poverty report by NitiAyog, Kerala has registered the lowest poverty level in the country and is at the bottom of the index with 0.71 per cent. against a national average of 25.01 per cent (headcount ratio). ■



Joby Baby
Nurse, Kuwait

Kerala: Baby-friendly state in India

Kerala's achievement of consistently maintaining a single-digit infant mortality rate (IMR) and bringing it down from 7 in 2018 to 6 (as per the latest Sample Registration System bulletin for 2019) is a result of the State's single-minded initiatives and investment in the area of neonatal care.

Among bigger states, Kerala is the lone one with a single-digit IMR (per 1,000 live births), far ahead of other States — the closest being Delhi with an IMR of 11 — and against the national average of 30. It is commendable that the State

has managed to close the gap between the IMR in rural (9) and urban areas (5) in 2018 to 7 and 5 in 2019. It was in 2018 that the State first achieved the distinction of the single-digit IMR of 7. About 4.7-5 lakh births take place in the State annually. The State began by strengthening infant death reporting and auditing; drawing up clinical guidelines and quality standards for improving antenatal, intrapartum and neonatal interventions; investing heavily in improving newborn care nurseries, ICUs and delivery points; and training obstetricians, nurses and newborn nursery care personnel.

Human Milk Bank in Kerala

Breast milk banks are playing a significant role in this context. Breast milk is important for immunity and the milk bank could help save the lives of many children. No powdered milk formula can match with nutritional value and immunity offered by human breast milk. Presently, there are two human milk banks in Kerala. One is at Government General Hospital in Ernakulam, while the other is at Jubilee Mission Hospital in Thrissur. The State's first human milk bank was started at the Ernakulam General Hospital on 5th February 2021.

The facility will ensure breast milk for newborns who cannot be breastfed by their own mothers, who might be deceased, unwell or unable to produce sufficient milk. The milk, which will be collected from lactating mothers at the hospital, can be stored for up to six months at the bank. Initially, the milk will be provided to newborns admitted at the neonatal intensive care unit of the hospital. The milk bank, called 'Nectar of Life'. It consists of a pasteurisation unit, deep freezers, refrigerators, breast

pumps, equipment for sterilisation and computers. Trained nurses will operate the milk bank. They have highly advanced facilities and babies in intensive care units are specially catered.

"Niravu"

To ensure sufficient nutrition for malnourished lactating mothers in the state, the Government of Kerala has launched a pilot project of distributing lactation cookies rich in nutrients that help enhance breast milk production. Made with ingredients that are rich in nutrition and help in enhancing the production of breastmilk, the cookies are called 'Niravu' which means 'fulfilment'. Women, especially those in rural areas or belonging to the poor economic background are unable to have an adequate amount of nutrition per day. The take-home ration that is provided to women through Anganwadis under ICDS (Integrated Child Development Services) is mostly shared by the whole family and not exclusively by the pregnant/lactating mother. Lactation cookies as a form of supplementary nutrition for these women.

Breastfeeding and COVID-19 infections:-

In cases where a new mother is confirmed/suspected to have COVID-19, she should continue to breastfeed her child, as it is safe. To date, there have been no cases where the active COVID-19 virus has been detected in the breast milk of mothers who have tested positive. While there have been a few cases of newborns testing positive, the infants may have been exposed to the virus from other sources, and most of them only experience mild or asymptomatic illness. Mothers can also continue to provide the infant skin-to-skin contact, including kangaroo mother care, as it improves thermoregulation of the newborn, helps in early initiation of breastfeeding, reduces neonatal mortality and provides several other physiological benefits.

Campaign to change public attitude:-

The state women and child department (WCD) is running a campaign on breastfeeding. Because of the pandemic, it will be held online this time. Our theme this year is 'Protect Breastfeeding, Share Responsibility' with a special focus on 'Men speak about breastfeeding'. There is a notion that breastfeeding is solely the responsibility of the mother, but the spouse/partner has equal responsibility. Other members of the family should make sure that the mother is at peace and support her. People should make the workplace and public space woman- and child-friendly for lactating mothers.

Kerala Model

Kerala's success was in identifying the issues correctly and effectively implementing focussed interventions to improve . The interventions were aimed at ensuring the survival of premature babies, even those with a very low birth weight of 1,000-1,100 gm. Tribal mothers were given special attention. The State also launched a comprehensive newborn screening programme. All newborns undergo screening for visible birth defects, congenital anomalies, hearing and vision screening and metabolic disorders.

This was followed by the launch of Hridayam in 2017, a mega public-private initiative wherein infants with critical congenital heart anomalies were identified early and treated without delay. The project has saved the lives of hundreds of neonates and infants. Kerala's consistent and concerted efforts over the years for improving infant survival and ensuring the quality of life beyond survival has been phenomenal. ■



Dr. P. S. Indu

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OMICRON - Let's be prepared and let's do it all

It was in December 2020 that countries started approving and distributing the newly developed COVID vaccines.

The speed of development and completion of the mandatory clinical trials to prove safety and efficacy of COVID vaccines was unprecedented and historic and will be acclaimed as the intervention which has the potential to save millions of lives if distributed globally with equity and justice. Almost a year later, on 26th November the

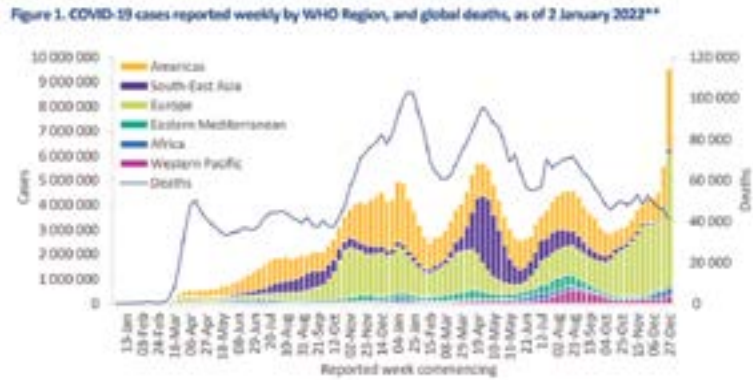
World Health Organisation declared OMICRON as the fifth variant of concern. Since then OMICRON variant which has tremendous growth advantage spreads very fast. This week, **we witness the largest ever peak globally, since the beginning of the pandemic (Fig1)**. During the last one week the rate of increase in covid cases is maximum in the African region (figure2), where the immunisation coverage is very low. European region and the American region have the largest number of cases. Among countries, USA has the highest number of weekly cases; followed by UK, France, Spain and Italy(150% weekly increase)

Why new variants of concern: the social perspective

Being an RNA virus, the SARS-CoV-2 constantly undergoes changes and is bound to evolve over time. Most of these changes do not have any public health impact. But some of these changes do have the potential to change the course of the pandemic through influencing



Figure 1



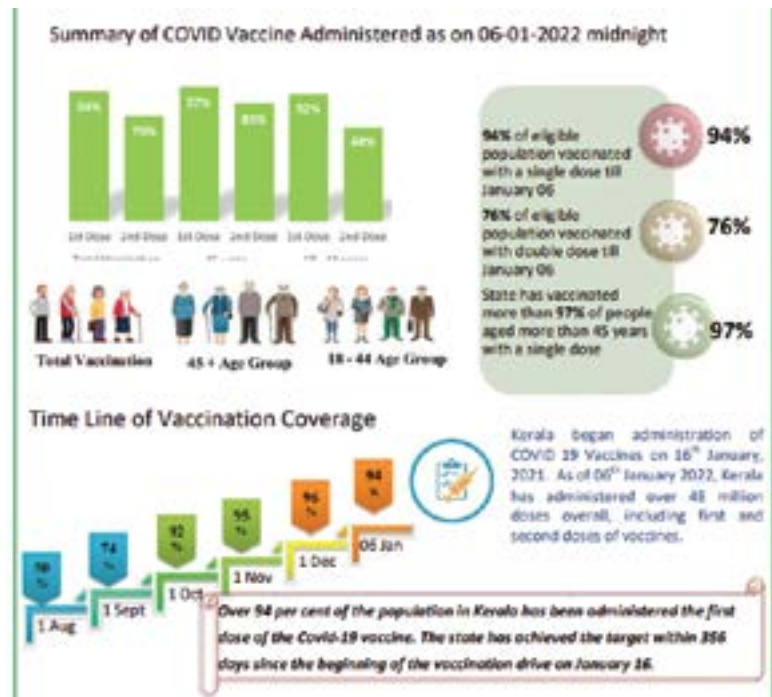
Source- COVID-19 Weekly Epidemiological Update 73, WHO , 6th Jan 2022

OMICRON

Situation in Kerala

Majority of OMICRON cases in Kerala are among those who returned from low risk countries and their local contacts. **R value of omicron increases in a short time. Many people becoming positive simultaneously will be difficult situation in all sectors. Kerala has high population density, high proportion of the elderly and high prevalence of diabetes, obesity, chronic kidney disease and heart diseases.** We need to be extremely vigilant and focus on PREVENTION ON A WARFOOTING to avoid the huge surge of cases which can overwhelm our health systems in a very short span of time and can be catastrophic if we do not slow down the transmission. Let's be prepared. Let's also focus on prevention

Figure 2



Source- Daily bulletin of DHS Kerala

the transmissibility, severity, diagnostics and impact of public health and social measures. They are the variants of concern. The delta variant created havoc in every part of the world. Kerala also had one the most difficult times when the delta struck us in May-June 2021. As long as the virus get the opportunity to circulate, newer variants may evolve. That is why the entire world has to join hands to implement all public health and social measures including vaccination to get out of this pandemic. As long as the virus circulates in countries with low immunisation coverage, threat continues. Achieving equity in vaccination and provision of health care is the biggest public health task in control of the pandemic.

TABLE 5. Age-Appropriate Group (2-15 Years) Coverage as on 06/01/2022 midnight

Age appropriate group (2-15 years) Coverage as on 07/01/2022, 12 AM					
District	Target	1 st dose coverage	Percentage	2nd dose	Percentage Fully Vaccinated
Alappuzha	960001	863750	90%	785673	82%
Ernakulam	1483234	1453664	98%	1273176	86%
Idukki	431545	440011	102%	379062	88%
Kannur	965897	956079	99%	857299	89%
Kasaragod	435487	431917	99%	374176	86%
Kollam	1038755	1053833	101%	915716	88%
Kottayam	896478	879758	98%	725908	81%
Kozhikode	1185845	1177693	99%	1019773	85%
Malappuram	1210900	1206629	99%	986336	81%
Palakkad	1051934	980727	93%	850423	81%
Pachananthitta	575669	591982	103%	521150	91%
Thiruvananthapuram	1366301	1307942	96%	1143089	84%
Thrissur	1271199	1246345	98%	1134295	89%
Wayanad	295546	304759	103%	274070	92%
Grand Total	13178875	12837999	97%	11231496	85%

Among those who took 1st Dose

TABLE 6. Age-Appropriate Group (18-44 Years) Coverage as on 06/01/2022 midnight

18-44 years Coverage as on 07/01/2022 at 12 AM					
District	Target	First Dose		2nd Dose Coverage	Percentage fully vaccinated
		1st Dose Coverage	Percentage		
Alappuzha	744178	629159	84%	553461	74%
Ernakulam	1470864	1449951	99%	1086500	72%
Idukki	437537	465703	93%	290440	66%
Kannur	947964	924088	98%	718047	76%
Kasaragod	456876	477664	104%	357422	64%
Kollam	1054752	893981	85%	681584	65%
Kottayam	665544	623335	94%	487628	73%
Kozhikode	1313678	1160446	88%	804340	61%
Malappuram	1777378	1717541	97%	1105206	62%
Palakkad	1088327	1033061	95%	747447	69%
Pachananthitta	460819	427151	93%	317509	69%
Thiruvananthapuram	1399090	1198980	86%	934297	71%
Thrissur	1274465	1055267	83%	890091	70%
Wayanad	361152	342815	95%	272712	76%
Grand Total	13462633	12350044	92%	9218339	68%

Among those who have taken first dose

Source- Daily bulletin of DHS Kerala

Lets take ALL the measures - VACCINE, MASK, VENTILATION

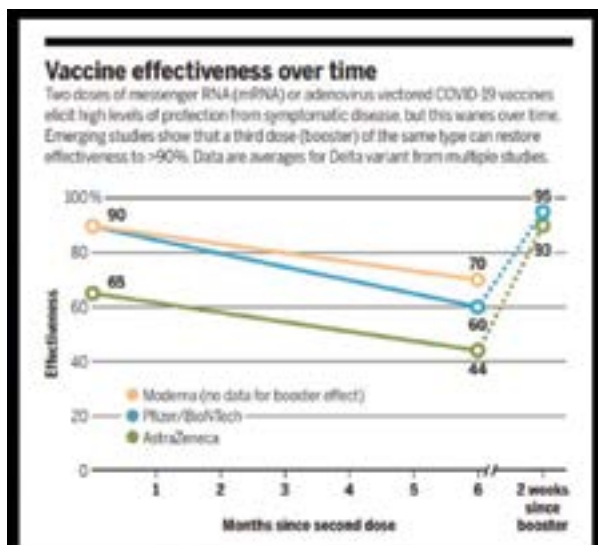
1. **VACCINATION:** Vaccination saves lives. Risk of breakthrough infections and re-infections is higher in omicron variant, but risk of hospitalisation and mortality is less among the vaccinated. Kerala's immunisation coverage is 94% and 76% for first and second doses respectively, in the eligible population. The two dose coverage in the 18-44 year age group is 68%. This is being completed on a campaign mode in all districts. Vaccination for 15-18 year old has started and is going well. Third dose vaccine for health care workers and the elderly will enhance the protection against symptomatic disease to 93% (figure3)

2. **MASKS, MASKS, MASKS-** We must wear masks, especially N 95 mask in all closed spaces and public spaces. Wearing good quality N95 masks is very important to prevent an OMICRON wave, since the transmissibility of the variant is very high and even the vaccinated can get the infection.

- 3. **VENTILATION** – Ventilation is a very important determinant in omicron transmission. Hence , all public activities may be carried out in open spaces or well ventilated spaces.
- 4. **Other public health and social measures** such as avoiding crowds and maintaining social distancing are also important
- 5. **Surveillance including genomic surveillance**
- 6. **Strengthening treatment facilities, care pathways, education and training on home care**

Let's take all the preventive measures together. Vaccines, masks, ventilation, social distancing and avoidance of crowds are all important to prevent a surge. Health system overwhelming can be very difficult for us, even when the proportion of severe cases is less. This is because the omicron spreads in lightning fast speed and large number of admissions in a brief period of time will pressurize the health system and this may result in higher mortality. Hence we must prevent the huge surge of cases by taking all preventive measures.

Figure 3



Source- Ravindra K. Gupta and Eric J. Topol, COVID-19 vaccine breakthrough infections, Science, 2021



The rage on roads

Road rage is another major cause of accidents on Kerala roads. “There are many youngsters who are new drivers and seek thrill in driving rashly. They are most likely to cause minor skirmishes leading to arguments on the roads and that can lead to fisticuffs,” said a traffic police officer.

Road rage is the act of using your car as a weapon to retaliate against other drivers by tailgating dangerously close or actually nudging the bumper of another vehicle.

“This is bound to increase in the near future as brash youth take to driving. You can avoid this by not reacting to insults, gestures, or other rude behaviour. It is better to back off and give the aggressive driver room to leave the scene. It is better to stay away from drivers who are speeding or exhibiting another form of anxiety,” says a psychologist. ■



△ KC Lekha



△ TP Ouseph



△ P Radhakrishnan Nair

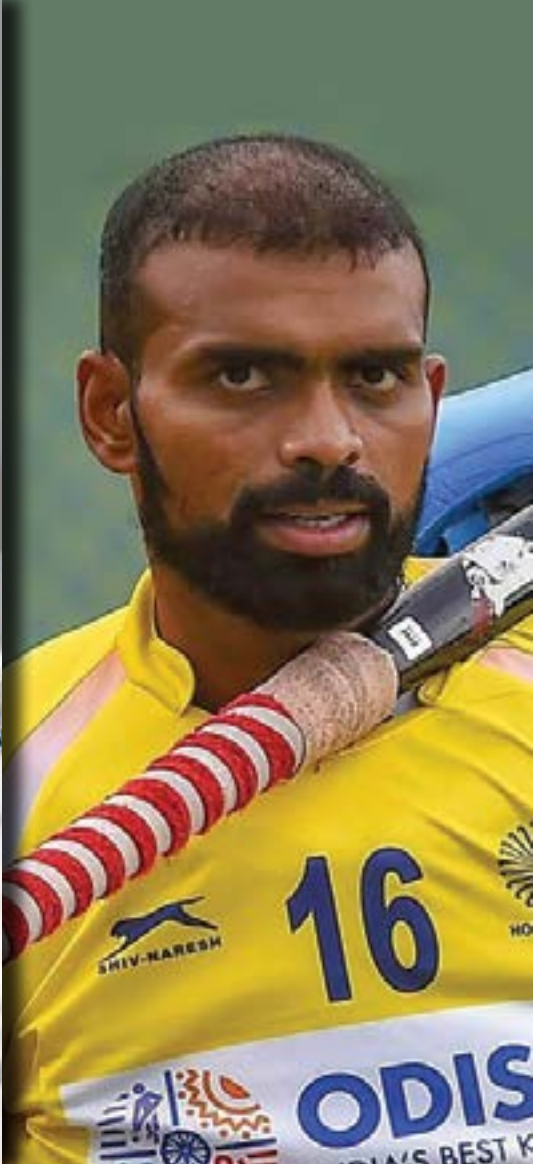
Kerala Shines with Four National Sports Awards



Sanil P Thomas
Sports Journalist

Kerala has been and will be a shining star in sports both in national and international scenario

Why dream at all when realisation lies beyond the boundaries of the possible? Both KC Lekha and TP Ouseph might have faced this question many a time over a decade. But their sheer courage and perseverance to fight it out ended in a blaze of glory. Lekha, the lone individual World Champion from Kerala (Four Keralites, T Kumar,



△ P R Sreejesh

P Siva Kumar, S Gopakumar and P Praveen Kumar were in the Indian cycle polo team who won World Championships) won the Dhyan Chand award and Ouseph bagged Dronacharya award for lifetime achievements.

With them, Tokyo Olympic hockey bronze medallist P R Sreejesh won Major Dhyan Chand Khel Ratna and the Indian athletic team's chief coach P. Radhakrishnan Nair won Dronacharya (in regular category). For Sreejesh, who did a splendid exhibition of skill as goalkeeper in the Indian hockey team's podium finish in the Tokyo Olympics, the recognition was a foregone conclusion. Radhakrishnan Nair who missed it last year in the final count got

it at the right time when India had its best-ever performance in Olympic track and field. Like Prof Sunny Thomas in shooting earlier, Radhakrishnan too got recognition for his overall contribution.

After KM Beenamol and Anju Bobby George, Sreejesh is the third Keralite to have won Khel Ratna. Hats off to you Sreejesh. For sure, it will instil confidence in aspiring sportspersons. Sreejesh has already become a role model for the youth.

For TP Ouseph this was the moment he did all his work for. The jump coach who works so hard and aims so high even in his mid-seventies, the prestigious award eluded him for years and him it's better late than never.

Ouseph might be the only athletic coach whose trainees held the national record in three events at a time. Bobby Aloysius in the high jump and Lekha Thomas and Anju Bobby George both in the long jump and triple jump were national record holders and did represent India.

Since Robert Bobby won the Dronacharya award by training Anju to win the World Athletics medal, Ouseph's hope was restricted from the other two. Once Bobby won Dhyan Chand his chances were rekindled and finally it materialised.

Radhakrishnan Nair was nine times shot put champion with Services whereas Ouseph was Airforce long jump champion from 1964 to 1970. Both were Kerala Sports Council coaches. Radhakrishnan Nair was the deputy chief coach of the Indian athletics team from 2013 and took over as chief coach when Olympian Bahadur Singh retired this year.

KC Lekha had a rocking time in the boxing ring winning even World title. But the Kannur star forgot to go for any award at that time as her goal was more

and more laurels for the country. Lekha won Asian Championships silver in 2003 and 2008 and gold in 2005 and went on to win gold in the fourth World Women Boxing Championships held in New Delhi in 2006. She was fourth in Turkey Worlds earlier. Altogether she took part in three World Championships.

It was only in 2001 that women took up boxing seriously and Lekha had been in the ring from that time to 2014. Six-time national champion, Lekha won National Games gold as well and was adjudged the best boxer in India in Jamshedpur nationals, 2005. A superstar in the middle wt (72 - 75 kg) category.

She joined SAI Kollam as a 9th std student. Coach D. Chandralal groomed her into a national champion in no time. Rest is history. Since 2010 she has been applying for Arjuna and eight times the World Champion's merits didn't get noticed. And, finally, the Dhyan Chand lifetime achievement award was conferred in her fourth attempt. Peeved, rather disheartened at being ignored for Arjuna, Lekha got due recognition finally. The marathon is over. She is relieved now. The sportsmanship and confidence are back when she talks now.

"Most deserving and long waited for the award for KC Lekha. She was deserving of the ARJUNA award but could not make it Better late than never. She has won medals in all major championships and no boxer in India has played with her full time before retirement. Lekha was a hard hitter". Her coach, Dronacharya award winner, D Chandralal said.

Works with the finance department in the State Secretariat she is set to give back something for the game which brought her fame. A diploma holder in coaching she aims high. Her experience, expertise and commitment should be tapped in. ■

Tomato van: market intervention programme launched by the government

The state agriculture department has launched Thakkali Vandi (tomato vehicle) to overcome the hike in the price of vegetables. With the launch of thakkali vandi the people will get tomatoes and other vegetables at a reasonable price on their doorsteps. The government has launched 28 running thakkali vandi under HortiCorp to keep the prices down. Here the tomatoes will be sold at Rs 50 per kilo. The vehicle will travel from 7.30 am to 7.30 pm. The government is planning to open more outlets and mobile shops in the areas where there is a minimum number of HortiCorp outlets. At present, HortiCorp has



procured 40 tonnes of vegetables from other states and these are being sold in retail. Another 170 tonnes of vegetables are procured through VFPC to meet the demand. The tomato vans are part of the market intervention launched by the department to curb the price rise that has hit the vegetable markets in Kerala. The agriculture department would launch a new campaign 'njanum krishiyilekku' from January next year to create awareness on farming and to attract people towards farming.

Refurbished Kerala paper products limited begins operation



The government of Kerala is scripting history in the cooperative sector by giving new life to the Kerala paper products limited. The KPPL was re-established as the government took over the

defunct Hindustan Newsprint Limited (HNL), which had shut down its production plant about two years ago because of some financial concern. The State government took over the company after the Union government had initiated plans to privatize the unit. The Hindustan newsprint limited has resumed its operations in Vellore.

The government is planning to solve all the technical and mechanical defects in the first phase. Hundreds of people have participated in the initial day activities. An


amount of 34.30 rupees has been earmarked for the first phase renovation. By finishing the second phase, it is estimated that the Hindustan Newsprint can produce paper using its pulp. An amount of 44.94 crore rupees is earmarked for the second phase. It is reckoned that by completing the third and fourth phases, KPPL would flourish into a successful establishment by employing more than 3,000 people.

Gender is a Myth Neutrality is a Reality



The G.G.H.S School at Balussery in Kozhikkode made a Giant Leap in Gender equality by introducing the same uniform for its students, across genders. Thus, it became the first government higher secondary school in Kerala to introduce gender-neutral uniforms.





NEW GUIDELINES FOR HOME ISOLATED COVID PATIENTS

When should I seek medical assistance?

▶ **DO SELF OBSERVATION
SEEK MEDICAL ASSISTANCE AT ONCE
IN CASE YOU HAVE THE FOLLOWING SYMPTOMS**

- IF THE FEVER WITH A TEMPERATURE ABOVE 100 DEGREES HAS NOT SUBSIDED EVEN AFTER 3 DAYS.
- DIFFICULTY IN BREATHING
- A FALL IN OXYGEN SATURATION
(IF THE SpO2 FALLS BELOW 93% IN 3 CONSECUTIVE READINGS DONE IN AN HOUR OR IF THE RESPIRATORY RATE FALLS BELOW 24 PER MINUTE)
- PROLONGED PAIN / PRESSURE IN CHEST
- A SENSE OF CONFUSION, DIFFICULTY IN GETTING UP
- EXTREME TIREDNESS, MUSCLE PAIN



Information & Public Relations Department
Government of Kerala

