

Consultancy Wing :

Background : KSEBL has the legacy of enormous technical expertise and experience in the execution of huge engineering projects through its strong contingent of engineers which can very well be called the best in the Industry. However, the captive use of these expertise has been on the ebb with the decline in the size and numbers of hydro-electric projects for various reasons. On the other hand, there has been a significant demand for agencies having technical expertise in offering consultancy services and implementation of infrastructure projects in the state. Hence previously, a separate wing named SPIN (Sports, Pre-Engineered Infrastructure Projects and New construction technology) was formed by KSEBL vide B.O(CMD)Noi.2556/2015(CE/Civil Design/Prefab) dated 12.10.2015, which took up the works predominantly of Sports Dept. for 35th National Games, Industries Department, etc. apart from own works of KSEBL using Pre-fab technology. On completion of National Games, these works declined in volume, especially since the pre-fab works were not found to be a better alternative for Section offices.

Paradigm Shift from SPIN to Consultancy Wing :

Vide B.O(DB)No.1578/2018(DGC/AEEIV/GNL/2014) dated 26.06.2018, SPIN was re-formulated as Consultancy Wing, KSEBL as part of scaling up and for the execution of major infrastructure Projects. The foraying into the design and consultancy for the development of Healthcare Infrastructure has definitely tested the waters regarding the capabilities of Consultancy Wing which has been catapulted into a higher orbit from the works which the erstwhile SPIN has been previously handling. Although it stemmed out of KSEBL's Social commitment as a major government owned utility, the centage charges offered are good enough in taking this forward. The major aspects involved in the transformation permitted by the Board of Directors are as follows:



1. The change in nomenclature of "Engineer" to "Consultant".
2. Outsourcing of professional services in domains where there is lack of expertise
3. Hand picking of professionals from the workforce of KSEBL



MAJOR PROJECTS CURRENTLY UNDERTAKEN :

I. DEVELOPMENT OF TALUK, SPECIALITY & DISTRICT LEVEL HOSPITALS :

As of now, Consultancy Wing KSEBL has evolved designs for 10 major Hospital Projects across the state. Full fledged construction of 4 of these projects are going on, while that of 4 others are slated to commence within a couple of months. All the aspects involved ie, planning, design, construction and commissioning of these projects are done by a dedicated team of Consultancy Wing, surpassing the challenges these 'brown field projects' coming up in existing hospitals pose. The scale of development is to the tune of an average of 100 crores per hospital with state of the art features matching international healthcare infrastructure standards.

The blend of learning and technical acumen of the engineers of Consultancy Wing has been put to use in developing the healthcare infrastructure through sustainable and eco-friendly construction. All the 4 projects which are about to commence will have Green Building star rating from GRIHA (Green Rating for Integrated Habitat Assessment). Being projects, which require multiple domain knowledge and expertise, the services of experienced consultants have also been utilized so as to evolve state of the art infrastructure at par with International Standards. Very frequent client visits and mutual discussions have also been made to assess the specific requirements from the authorities of the Health & Family Welfare Department, who are the end users along with KIIFB who is the funding agency.

DETAILS OF HOSPITAL PROJECTS UNDERTAKEN BY CONSULTANCY WING :	
A: ONGOING HOSPITAL PROJECTS: CONSTRUCTION IN FULL SWING	
<p>1. Taluk Hospital – Karunagappally</p> 	<p>Administrative Sanction: Rs. 90.00 Crore</p> <p>Financial Sanction from KIIFB: Rs.64.93 Crore</p> <p>Scope of work: Development of 1.Hospital Block – 2 Existing Storeys + 2 New Storeys (4433 sqm) 2.Ward Tower- G+8 Floors (10,905 sqm)</p>
<p>2. Taluk Hospital – Kottarakkara</p> 	<p>Administrative Sanction: Rs. 90.5 Crore</p> <p>Financial Sanction from KIIFB: Rs.67.7 Crore</p> <p>Scope of work: Development of 1.Admin Block - G+3F (1367 sqm) 2.Ward Tower -2B+G+8F(10,000 sqm) 3.Diagnostic Block- G+4F (4417 sqm)</p>

<p>3. Taluk Hospital – Kundara</p> 	<p>Administrative Sanction: Rs. 76.13 Crore</p> <p>Financial Sanction from KIIFB: Rs.35.56 Crore</p> <p>Scope of work: Development of Hospital Block: B+G+6F (7078 sqm)</p>
<p>4. Speciality Hospital – Mattannur</p> 	<p>Administrative Sanction: Rs. 99.9 Crore</p> <p>Financial Sanction from KIIFB: Rs.71.5 Crore</p> <p>Scope of work: Development of Hospital Block – 2B+G+3F (17,925 sqm)</p>
<p>B: TENDERED PROJECTS: CONSTRUCTION TO COMMENCE SHORTLY (***With Star rating from GRIHA)</p>	
<p>5. District Hospital Kollam ***</p>	<p>Administrative Sanction: 183.00 Cr</p> <p>Financial Sanction from KIIFB: Rs. 104.489 Cr</p> <p>Revised FS Sanction from KIIFB: Rs. 143,84,72,701/-</p>



Scope of work: Development of
 1.Diagnostic Block - G+7,
 2.Ward Tower – G+10,
 3.Utility Block – G+2

6. Taluk Hospital – Mallappally ***



Administrative Sanction:
 Rs. 38.25 Cr

Financial Sanction from KIIFB:
 Rs. 34.54 Cr

Revised FS Sanction from KIIFB:
 Rs. 47,16,69,793/-

Scope of work:
 Development of Hospital Block - G+5F (6697 sqm),

7. Taluk Hospital Varkala ***




Administrative Sanction:
 Rs. 39.97 Cr

Financial Sanction from KIIFB:
 Rs. 33.255 Cr

Revised FS Sanction from KIIFB:
 Rs. 45,95,26,385/-

Scope of work: Development of
 1.Hospital Block- (GF+6+Terrace Floor) 6077 Sq.m

	2.Hospital Tower block and Renovation of Utility block
<p>8. Taluk Hospital Iritty***</p> 	<p>Administrative Sanction: Rs. 57.63 Cr</p> <p>Financial Sanction from KIIFB: Rs. 49.046 Cr</p> <p>Revised FS Sanction from KIIFB: Rs. 64,01,61,757 Cr</p> <p>Scope of work: Development of 1.Hospital Block- (BF+GF+5+Terrace Floor) 8737 Sqm. 2.Modification of the existing IP block and Casualty block.</p>
<p>C: Projects in Appraisal Stage:</p> <ol style="list-style-type: none"> 1. Development of Victoria Hospital, Kollam 2. Development of Taluk Level Hospital at Munnar 	<p>AS: Rs.108,97.51,735/- AS: Rs. 78,24,60,269/-</p>
<p>Typical State of the Art Facilities envisaged in the above Taluk, Specialty & District Level Hospitals generally are as follows - provided in each case as per norms :</p> <p>Full Fledged Out Patient Departments, Causality - Accident & Emergency, Triage, Trauma Care, Full fledged Laboratory, Operation Theatres, CSSD, MICU, SICU, PACU, Pre-operative ward, Recovery ward, Blood Bank, NICU, Gynecology and OBG wards, Post natal and Post operative wards, Nephrology, Pulmonology Training centre, Mammography, Palliative wards, ENT, Dental surgery and wards, Ortho wards, Paediatric ward, General Medicine ward, Pay wards, Ophthalmic ward, Geriatric ward and Psychiatry ward, , Medical Gas Piping System with Liquid Oxygen plant, PTS, Isolation ward, Burns ward, Labs, Quarters and Dormitories for resident staff, canteen, office, Medical records room, serology, clinical pathology, Bio chemistry, Dietician, triaging, resuscitation, dialysis, Radiology Dept., X-ray, Ultra-Sound scan, CT Scan, Cardiology, Geriatrics, Immunization, Snake bite, Chemo, radiotherapy, Haematology, Mortuary & Post Mortem, Membrane Bio-Reactor STP, ELV including Nurse Call Systems, Solar Panels & Heating Systems etc.</p>	

The assignment of Consultancy Work for Development of Health Care Infrastructure with KIIFB funding has been as challenging as it has been gratifying and definitely contributed to the goodwill of KSEBL. Such challenging tasks while being essential fodder for the growth of technical organisations - have also served as being the integral part of the social cause in the creation of world class HealthCare Infrastructure for the common man. It has definitely paved the way to work hand in hand with this noble initiative of Government of Kerala,

aimed at transforming the Health care systems to International standards, which is bringing out the much awaited paradigm shift in the way the public healthcare infrastructure of the State is looked upon.

It is also worth mentioning that the professional work which Consultancy team has delivered in this regard has won accolades from Government of Kerala with regard to the design and planning of health care systems within tight timelines. The above recognitions have bestowed the Consultancy Wing with the energy to surge ahead further.

D. Recently Completed Projects:

1. PHC Building in Tribal Area, Achenkovil in Kollam District (G+2)

AS amount : 3,33,00,000/-
TS amount : 3,10,00,000/-
Plinth Area : 7300 Sq.Ft.
Structure : RCC Framed
Date of Completion: 20.08.2021





2. Multipurpose Indoor Stadium at Pathanapuram, Kollam

AS amount : 1,46,00,000/-
TS amount : 1,46,00,000/-
Plinth Area : 7000 Sq.Ft..
Structure : RCC Columns with Steel Roofing
Date of Completion: 28.08.2020



3. Construction of Shelter Home in Piravom Municipality (G+2)

AS amount : 3,00,00,000/-
TS amount : 3,00,00,000/-

Structure : RCC Framed
Date of Completion: 12.07.2021



4. Industrial Park - Poovanthuruthu : Training Centre(G+2)

AS amount : 81,02,500/-
TS amount : 71,00,000/-
Structure : RCC Framed
Date of Completion: 30.04.2022



5. Infrastructure Upgradation at Industrial Development Area at Edayar- Development of Roads

Completed length- 3.7 Kilo Metres
Actual Expenditure – 4,87,66,000/-

6. Infrastructure Upgradation Works IDP- Poovanthuruthu- Development of Roads

Completed length- 1.8 Km
Actual Expenditure – 273,64,000/-

II. MODERNISATION OF SECTION OFFICES :

Many of the Section Offices of KSEBL are functioning without proper facilities including modern work spaces, insufficient facilities especially toilet facilities etc. Further, standardisation of the facilities are also to be made along with introduction of Green building Protocol in all KSEBL buildings. This task for bringing out standardisation has been entrusted to the Consultancy Wing for ensuring quality of built infrastructure and to ensure uniformity.

Elaborate appraisal of the present condition & requirements have been made for all the 776 Section offices and interventions are planned on prioritising the grossly needed ones. To evolve a typical design, the Section office building for Mattancherry and Fort Kochin has been taken up as a pilot project. It involves a combined design to accommodate both the section offices in the land owned by KSEBL housing the old structure of Mattancherry section office. The glimpses of the state of the art Section office building planned & designed based on green building concepts are as follows:

SECTION OFFICE - CONCEPTUAL DESIGN



View 01



View 02

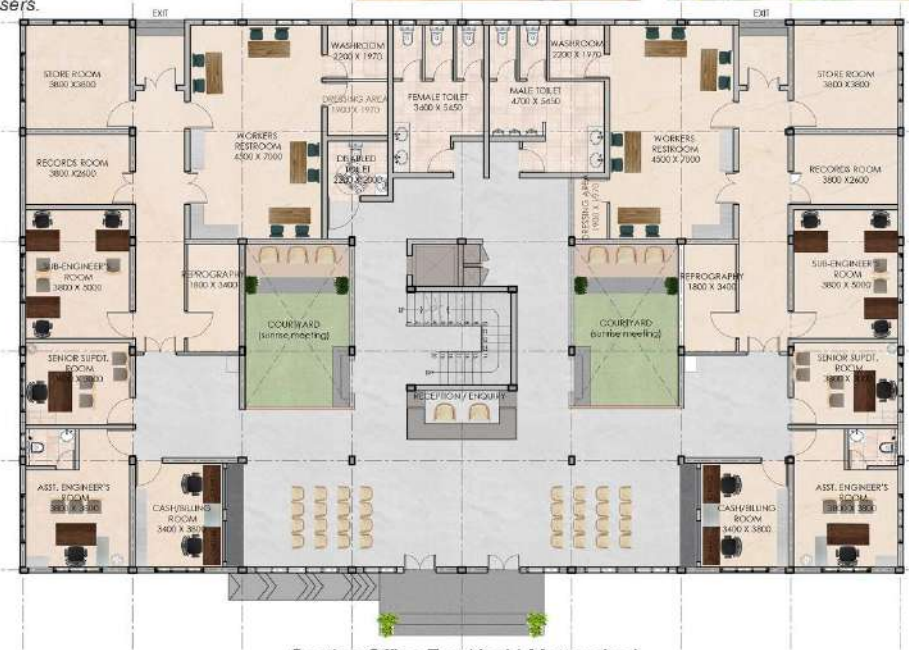
Components of green building design:



01. Toxic Reduction
02. Waste Reduction
03. Water Efficiency
04. Indoor Air Quality
05. Smart Growth and Sustainable Development
06. Energy Efficiency and Renewable Energy
07. Environmentally Preferable Building Materials and Materials and specifications.



Efficient building strategies and biophilia are integral parts of green concept in buildings. The same when implied into design and interiors create a better functioning space for all users.



Section Office Fort Kochi-Mattancheri
GROUND FLOOR PLAN

III. MODERNISATION OF VYDYUTHI BHAVANAM, PATTOM:

On reviewing the recent works of Modernisation for the Vydyuthi Bhavanam building , it has been found that it is necessary to revamp the whole design concept to arrive at a

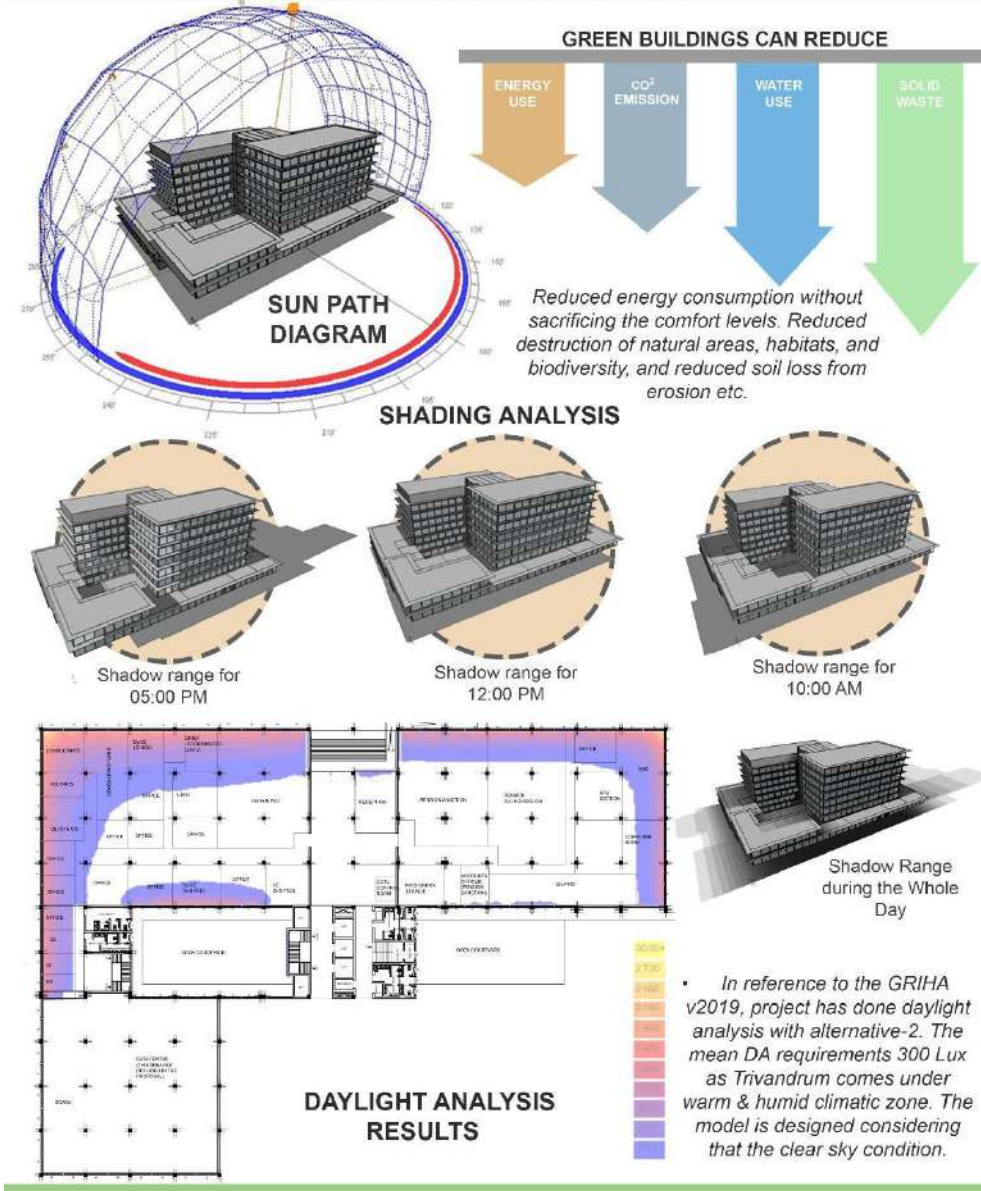
cost effective methodology for renovation. As a matter of principle, Air-Conditioners should be provided for head of offices and in other places where they are currently allotted. False ceiling shall also be avoided, as done in state of the art modern offices in it sectors etc.

It was decided to revise the total plan for modernisation so as to avoid unnecessary re-location of current offices and facilities. Strict adherence to Green Building concepts and avoiding congestion through effective use of space are to be ensured. Ways for design improvisation to arrive at an energy efficient building, with the help of consultants having exposure to Green Building certification have also been explored. Hence it was decided to make use of the expertise and systems in place in Consultancy Wing in this regard.

On detailed evaluation and reconnaissance of the existing building & its services, it has been found that not only mere upgradation of the office spaces which is required but there are many services which are also to be upgraded in the building which is more than 50 years old. The Electrical systems are causing frequent dripping due to deterioration , Fire Systems are to be reworked as per rules, Library has to be made digital and accessible to all the employees of KSEBL, Structural repairs are to be made for the Building, Parking facilities are to be enhanced etc.

Further, it has to be ensured that all the above modernisation & renovation works are to be made as per Green Building protocol. For this the modelling of the Vydyuthi Bhavanam Building and its simulation has been done in the GRIHA Platform and the following are the glimpses of the work being done :


 India's own green building rating system.
SIMULATION STUDIES TO OBTAIN GREEN CERTIFICATION
VYDYUTHI BHAVANAM



IV. Foraying into the Green Technology regime – Guidelines for Green Building Protocol in KSEBL :

At a time when the focus is on green building technology, the top management of KSEBL is contemplating to bring out Guidelines to ensure strict adherence to the Green Building Protocol :

When it comes to implementation of Green Building Concepts in KSEBL, even though the importance of green buildings has been fairly well understood, the comprehensive Green

Building Protocol is conspicuous by its absence. This quite often than not, ends up in buildings and retrofits which doesn't stand any merit due to the mere absence of an implementable Green Building Protocol. Most of the time, the initial costs outweigh the recurring running & maintenance costs in the decision makers mind owing to lack of clear cut protocols, without which there could be adverse objections from an auditing point of view as well.

It is against this backdrop that adherence to the principles of Environmental Social & Governance (ESG) in a cost effective manner in KSEBL gains importance. At the same time elaborate procedures and certifications are not only time consuming but will have their own cost overruns also - with diminishing marginal returns. Hence it is felt that the introduction of a Comprehensive Green Building Protocol in KSEBL to ensure that the low hanging fruits are reaped- which will not delay the construction while ensuring optimum budgets – is the need of the hour. The above protocol will have to cater to the new buildings as well as enabling retrofitment to the existing ones, to elicit tangible results.

Some of the representative aspects which will be covered while framing the Green Protocol for KSEBL are as follows:

Lighting

- Using appropriate LED tube/ bulb according to the room size.
- Using automatic lighting controllers like occupancy sensors, Proximity Infrared Sensors and day light controllers etc.
- Usage of Day lighting which involves controlled admission of natural light, direct sunlight, and diffused-skylight into a building to reduce the need for electric lighting and to save energy. By providing a direct link to the dynamic and perpetually evolving patterns of outdoor illumination, day lighting helps create a visually stimulating and productive environment for building occupants, while reducing as much as one-third of total building energy costs.
- Usage of Light Shelves which is a passive architectural element that serves the dual purpose of providing shade and reflecting light. The main component of the light shelf is a horizontal element that is positioned either on the exterior or interior side of window façade, or both.
- Selection of the power rating of lamp based on the room size and illumination requirements.
- Lamps with Luminous efficacy which is the total luminous flux emitted by the light source divided by the lamp wattage; expressed in lumens per watt (lm/W).
- The lighting power density of the offices shall be limit to 13W/sqm.
- Astronomical Timer or sensor based control for exterior lighting.

Ventilation

- Usage of BLDC fans.
- Remote type regulators may be used.
- Utilize maximum natural ventilations while designing the rooms.

Air conditioned Rooms

- Conditioning of the room with minimum air leakages.
- Using proper curtain/ blinds to prevent heat loss.
- Applying low solar heat gain coefficient and high visual light transmittance type film on glass.
- Utilizing the high energy efficiency ratio air conditioners.

Plumbing

- Throttle the valve of wash basin to reduce water flow.
- Using sensors on wash basin/ Urinals.
- Using twin flushes.
- Recycle the water for gardening.

Building constructions

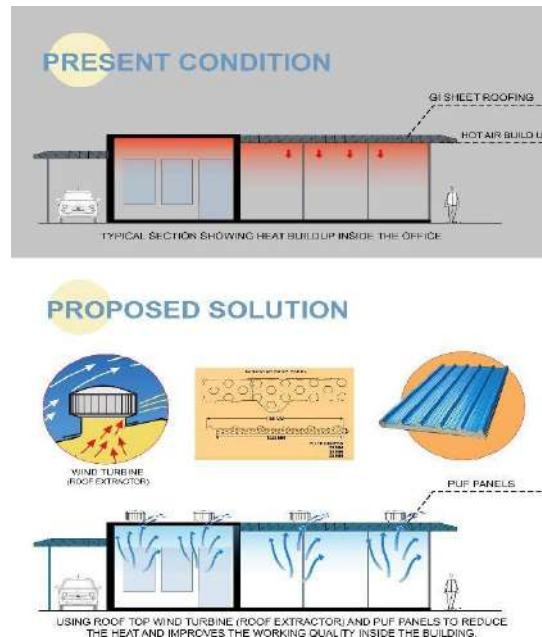
- Use of Proper Colour Schemes
- Apply light colour paints on interior of walls.
- Better Fenestration with High wall window ratio.
- Adoption of Passive Design Principles . “Passive design” is an approach to building design that uses the building architecture to minimize energy consumption and improve thermal comfort. The building form and thermal performance of building elements (including architectural, structural, envelope and passive mechanical) are carefully considered and optimized for interaction with the local microclimate. The ultimate vision of passive design is to fully eliminate requirements for active mechanical systems (and associated fossil fuel-based energy consumption) and to maintain occupant comfort.

To Reduce Carbon Foot Print

- Encouraging Locally available materials
- Raw materials which use by-products like fly ash in Cement/ bricks etc.
- Use of Solar Energy for power & heating
- Fine finished smooth walls –reduce the surface area and the heat load.
- Using Cool roof - A cool roof is designed to reflect more sunlight and absorb less heat than a standard roof. A high solar reflectance-albedo is the most important characteristic of a cool roof.
- Under deck insulation
- Encouraging use of Stairs to avoid use of lifts

In this context, it is worthwhile to discuss the difficulties faced in various office buildings including Section Offices, where sheet roofing is provided for the yard, totally engulfing the area.

A typical case was observed in the Parippally Section Office. Needless to say that GI sheet roofing will be too hot while usage of Aluminium sheets / sand witch panels roofing with the effective use of Heat Extracting Wind Turbine Exhausts will help lessen the under deck heat build up as seen in this illustration :



Consultancy Wing is in the process of evolving the practical guidelines for green building Protocols in all the existing and to be constructed buildings of KSEBL

Future Road Map for the Consultancy Wing :

Based on the performance of the Consultancy Wing, the top management of KSEBL off late deliberated on its way ahead and the future road map has been examined by the Director Board of KSEBL in the adjourned 72nd meeting held on 27.07.2023, the main excerpts of which are as follows :

Consultancy Wing is presently implementing various public projects including 10 Hospital projects funded by KIIFB, with a total outlay of Rs.880 Crores. At present, the Consultancy Wing is having an organizational structure attached directly to Director (Gen-Civil) with a Head-Consultancy Wing, a Chief Technical Officer, 3 Principal Consultants, 5 Senior Consultants (Civil), 1 Senior Consultant (Ele.), 10 Consultants from the newly recruited PSC batch of Asst. Engineers (Civil), 1 Consultant (Ele.), 16 Consultancy Asst. (Civil) and 1 Consultancy Asst.(Ele.). Apart from these permanent staff, services of 15 Engineers are also outsourced from the Centre for Management Development (CMD), Govt. of Kerala, predominantly to cater to specialist jobs in MEP and for conforming to various additional KIIFB procedures wherein domain experience is not available with the KSEBL.

Although KSEBL had granted in principle permission for the formulation of a Subsidiary company for Consultancy vide B.O(DB)No.1578/2018(DGC/AEEIV/GNL/2014) dated 26.06.2018, the Memorandum of Association (MoA) of the KSEBL does not allow formulation of subsidiary companies for any other purpose other than its main objectives. Hence the Board of Directors of KSEBL, in their 50th Meeting held on 07.11.2019 had taken a decision to amend the MoA of KSEBL in order to proceed with the formulation of various

subsidiaries, it has been contemplating. This has been taken up vide Letter No.CS/Amendment of Articles/2019 dated 31.12.2019 of CMD,KSEBL with Govt. of Kerala for sanction. Further, reply to clarifications sought by Government has been furnished vide Letter No.CS.18/KSEBL-Amendment in AoA/2014 dated 08.03.2023 and the decision of the Government is awaited. Only on amending the MoA of KSEBL and filing the revised MoA with the Registrar of Companies (RoC), any concrete steps for the formulation of the subsidiary company for Consultancy, could be taken forward.

In the above backdrop, vide Note No. CW/GNL/2023 dated 06.07.23 of the Chairman & Managing Director, the following aspects were brought to the notice of the Board of Directors:

1. A stand alone subsidiary company has to have an assured revenue stream, good enough to take care of the overhead charges which a separate company may additionally require. Even though Consultancy Wing, KSEBL is currently entrusted with projects worth Rs.880 crores, the centage being obtained currently is not good enough to justify the formulation of a Subsidiary company on account of this alone.
2. As far as Consultancy Work in general is concerned, a huge quantum of work with high value projects is required for making the company profitable. The availability of sufficient engineers in the Civil Wing after the ongoing major retirements every year will also have to be taken into account while finalizing the composition of the Subsidiary company on Consultancy and while proceeding further.
3. Further, the infrastructure development of properties and assets owned by KSEBL is also required for making Consultancy activities more viable. Hence we may further explore the possibility of making Consultancy Wing a viable entity by tapping the potential of Infrastructure development of properties and assets owned by KSEBL also.

The projects currently undertaken by Consultancy Wing are basic infrastructure works involving planning & execution of Projects, which predominantly utilize our expertise in Civil Engineering. Further, on overall analysis of the pattern of Projects which can be taken forward, it is seen that not only Civil Engineering based projects, but those requiring expertise of the Electrical Wing of KSEBL can also be pursued. The main aspects which can be leveraged are those centered around the core competency of the majority of the work force in KSEBL and some of the representative fields identified in this regard are the following:

1. Energy Auditing & Energy Optimisation Solutions of both Governmental & Private buildings/Industrial units/ Hospitals etc.
2. Total Solutions in the Renewable Energy Sector, venturing into installation of Solar Plants by making use of land parcels available with governmental entities to start with and solar related consultancy works.

3. Energy efficient & Carbon neutral Building solutions, based on ECBC (Energy Conservation Building Code)
4. Establishing Data Centres for offering Cloud space on lease to Governmental entities like NIC, CDAC etc.
5. Planning and Development of Commercial / Office spaces in land owned by Government.
6. Establishing EV Charging stations/Facilities.

Elaborate studies are required before finalizing and deciding on the resources which can be earmarked for these non-tariff revenue streams, especially with regard to the profitability and to arrive at the ratio of employee costing involved, those from KSEBL & the outsourced manpower, in order to ensure feasibility. Further, the domains in which the Consultancy services could be offered should also be investigated in detail.

It was also suggested that as of now, consultancy works can be offered within the ambit of KSEBL itself, on the activities related to Power sector & infrastructure. And this can be taken forward by the Consultancy Wing under a brand name rather than undergoing the hassles of formulation of a subsidiary company with its related overhead charges. It was suggested to brand it suitably, like “InfraKerala” with a tag line “ Powered by KSEBL” in order to give it an identity while retaining it as a Wing of KSEBL itself. This will have its inherent advantage of utilizing the vast manpower as and when required, which are locally available from the work force of KSEBL available throughout the expanse of the state, depending upon the location of the project to be implemented. For this, hand picking of engineers with expertise and capability to perform the tasks as an additional work may also be thought of, along with an incentive scheme for the extra work to the concerned, as done in Govt. Engineering colleges for the extra Projects attended to, so that the workforce will stay motivated to perform efficiently.

The Board of Directors in the adjourned 72nd meeting held on 27.07.2023 considered the proposal in detail and resolved to:

1. Grant in-principle approval for expanding the scope and mandate of the Consultancy Wing, as a separate Wing of the KSEBL itself, under the brand name “InfraKerala”, along with the tag line “Powered by KSEBL”, by utilizing the core competencies of the workforce in KSEBL and for infrastructure development in the State.
2. Entrust the Director (Generation-Civil) to take up with the Full Time Directors, KSEBL, to get approval of various aspects involved like the major domains in which the Consultancy services could be offered, the ratio of employee costing involved between those from KSEBL & those through outsourced manpower in order to ensure feasibility, hand picking of employees for offering regular work and as additional work, additional training to be imparted to employees, incentive schemes, approval of logo etc. and to report to Board of Directors, the actions taken in this regard.

So to put it in a nutshell, Consultancy Wing, has been a successful endeavour by KSEBL to test the grounds for its technical competency in the state of the art infrastructure

development and differential capabilities by foraying into untapped technical domains, while contributing effectively to Government of Kerala's flagship projects envisaged for the social well being of its people which is posed to be scaled up under the novel brand "InfraKerala".