

WELCOME

To



**Kerala State
Electricity Regulatory Commission**

ACKNOWLEDGEMENTS

- All of you were identified by the former Vice Chancellor of KTU
- Indicating his trust in your capabilities
- All of you deserve special appreciation

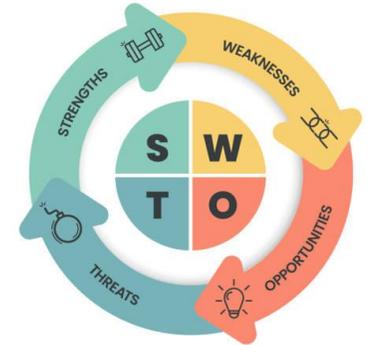
Please accept our **Congratulations.....**

ENGINEERING EDUCATION IN KERALA

– A Quick SWOT Analysis

STRENGTHS (S)

- **Wide Network of Colleges**
 - Large number of institutions
- **Public Institutions of high standards**
 - NIT Calicut, State Government Colleges, Autonomous colleges, etc
- **Growing Innovation Eco-system**
 - Platforms like KSUM, IEDC, TBI, etc



ENGINEERING EDUCATION IN KERALA

– A Quick SWOT Analysis



WEAKNESSES (W)

- Weak Industry–Institute Connect
- More emphasis on theory than practical work
- Unable to catalyse entrepreneurship in the core engineering sector
- Slow pace of curriculum modernisation

ENGINEERING EDUCATION IN KERALA

– A Quick SWOT Analysis

OPPORTUNITIES (O)



- Emerging technology sectors
- New concept of Private Industrial Estates (31 Nos already functional)
- Scheme for Campus Industries Park
- Technological support to all kinds of entrepreneurs
- Skill based learning and internship programs
- Under utilization of the entrepreneurial ecosystem

ENGINEERING EDUCATION IN KERALA

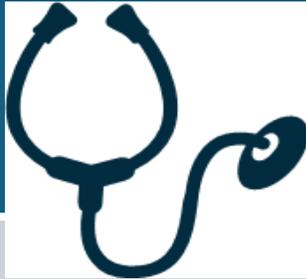
– A Quick SWOT Analysis

THREATS (T)

- Rapid technological obsolescence
- Declining interests in traditional branches
- Emergence of AI leads to job losses
- Falling opportunities in job market



A QUICK COMPARISON OF MEDICAL EDUCATION AND ENGINEERING EDUCATION (SLIDE 1 OF 2)

	MEDICAL 	ENGINEERING 
Orientation	Health and patient care	Problem solving through application of technology
Input process	Through entrance tests to check the aptitude	Through entrance tests to check the aptitude
Assessment process	Practical examinations and clinical cases.	More theory and less labs and project works.
Attracting needy clients	Automatic	Seldom attracts

A QUICK COMPARISON OF MEDICAL EDUCATION AND ENGINEERING EDUCATION (SLIDE 2 OF 2)

	MEDICAL 	ENGINEERING 
Training process	On-the job training mandatory in hospitals attached to the medical colleges	Limited to laboratories and project works only; Does not focus on real life situations
Regulation and industry linkage	Highly regulated; hospitals central to training.	Moderate regulation; lacks industry collaboration

Global Benchmarks in Engineering Education – A Snapshot

- Industry – Academia Collaboration
 - Mandatory Internship programs
 - Joint Research Centres between Industry and Institutions
 - Industry Funded Research programs evaluated by Industries

Example:
University of Waterloo, Canada

Global Benchmarks in Engineering Education – A Snapshot

- Strong Research and Innovation Ecosystem
 - Institutes act as hubs for
 - Patents
 - Technology transfer
 - Startups

Example:
MIT, USA

UROP (Undergraduate Research Opportunities Program)

Global Benchmarks in Engineering Education – A Snapshot

- Encouraging Entrepreneurship Culture
 - Students encouraged to build companies as part of academics.
 - Startup accelerators, incubators, and seed funding on campus.
 - Courses on entrepreneurship, IP management, product design, and market analysis.

Example:
MIT, USA / NUS, Singapore

Global Benchmarks in Engineering Education – A Snapshot

- Strong Student Support Systems
 - Programs for
 - Career services
 - Mentoring
 - Skill-development

Example: University of Cambridge, UK

Emerging Opportunities in the Energy Sector (Slide 1 of 4)

No	Opportunity area	Sub Area	Opportunities
1	Renewable Energy Technologies	Solar Energy	<ul style="list-style-type: none">• Building-integrated photo-voltaic• Agri-voltaic• Advances in floating solar (eg triangular shaped)• Higher efficiency cells
		Wind Energy	<ul style="list-style-type: none">• Small vertical turbine design• Off-shore and floating wind wills• Innovations in blade materials

Emerging Opportunities in the Energy Sector (Slide 2 of 4)

No	Opportunity area	Sub Area	Opportunities
2	Energy Storage	Battery technologies	<ul style="list-style-type: none">• Lithium-ion• Flow batteries• Solid state
		Business models around grid services	<ul style="list-style-type: none">• Virtual Power Plants (VPP)• Other Ancillary Services
3	Decentralised Energy	Microgrids	<ul style="list-style-type: none">• For remote, rural or islanded regions• Peer to peer (P2P) Energy Trading

Emerging Opportunities in the Energy Sector (Slide 3 of 4)

No	Opportunity area	Sub Area	Opportunities
4	Energy Justice & Access	Clean Energy	<ul style="list-style-type: none">• Research / entrepreneurial space – ensuring equitable access to clean energy / addressing energy poverty
		Community based energy enterprise (energy start-ups)	<ul style="list-style-type: none">• Local co-operatives• Rural energy firms• Community micro-grids

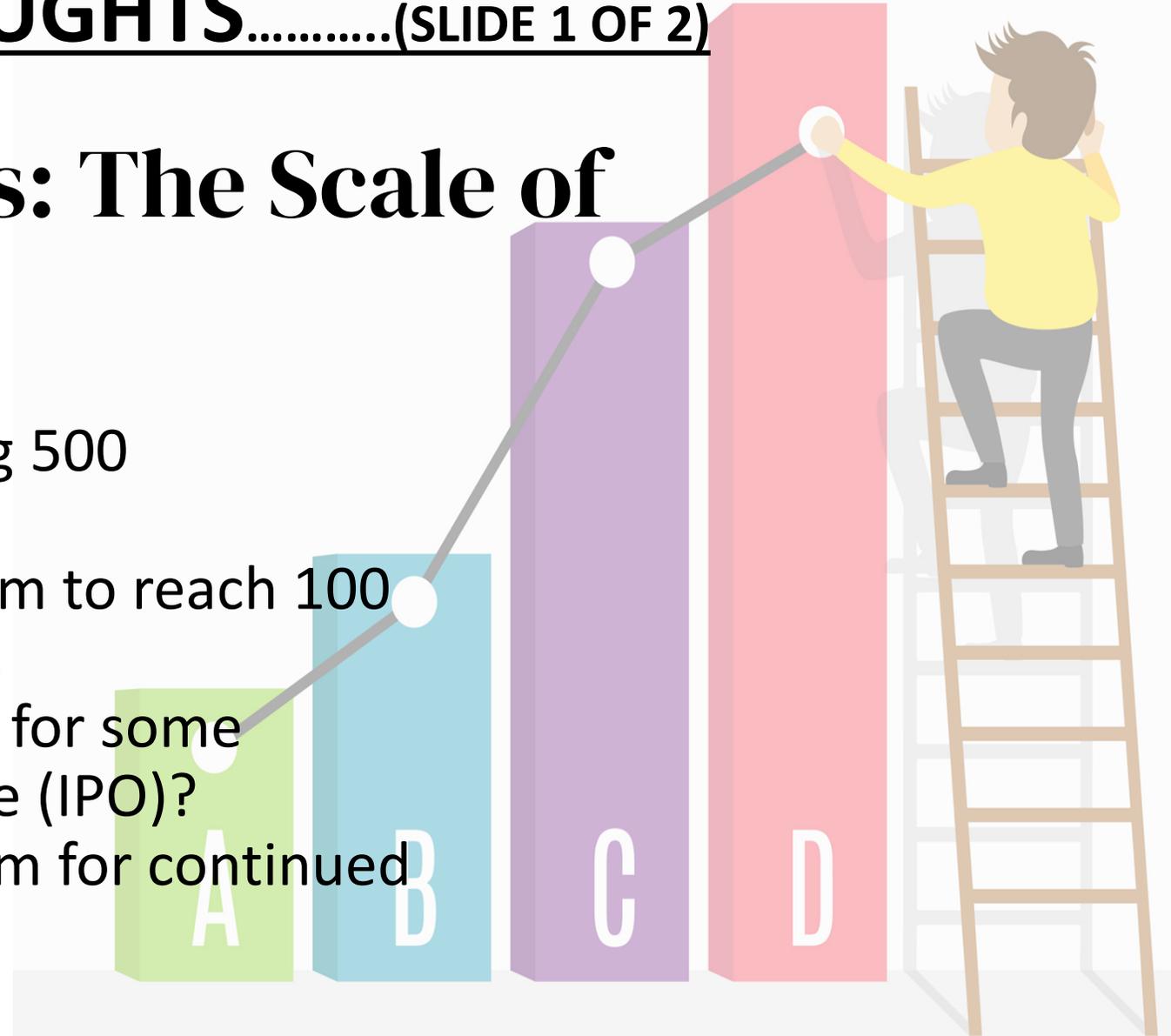
Emerging Opportunities in the Energy Sector (Slide 4 of 4)

No	Opportunity area	Sub Area	Opportunities
5	Innovative Business Models	Energy as a Service (EaaS)	<ul style="list-style-type: none">• Customers pay for energy services
6	Smart Grids & AI	Smart Grids	<ul style="list-style-type: none">• Smart-grid optimisation using AI/ML• Demand forecasting• Predictive maintenance

SHARING SOME THOUGHTS.....(SLIDE 1 OF 2)

Setting Bold Targets: The Scale of Our Ambition

- Can we set a target of nurturing 500 entrepreneurs?
- Support framework to help them to reach 100 Cr annual turnover in five years
- By year seven, can we facilitate for some startups to launch a public issue (IPO)?
- How can we create a mechanism for continued support?



SHARING SOME THOUGHTS.....(SLIDE 2 OF 2)

Introducing Institutional Social Responsibility (ISR)

- **The ethical obligation and proactive commitment of an educational institution to contribute to the well-being of the local community, society, and the environment.**
- **Can the faculty spare a portion of their time for society?**

Annual days: 365 days

Proposed time contribution: 3% of a year

Equivalent Hours: \approx 260 hours per year

Weekly Commitment: \approx 5 hours per week

Field Lab & Business Development Project (BDP)

Vision: *To establish a unique "Field Lab" through a dedicated "Business Development Project (BDP)" as part of the 4-year UG Program*

Methodology (Win-Win-Win Model)

Student Engagement: Groups of 3-4 students, guided by a faculty member, will spend 2 days a fortnight with identified enterprises.

In-Campus Interaction: Key persons from participating business units will be invited to STC Palai for in-campus interactions on another 2 days in the next fortnight (utilizing 4 Saturdays a month without compromising class hours).

Goal: Improve all-round performance of enterprises: increase turnover, profit, profitability, diversification of products/services, scaling up.

Measurable Outcomes: Fix clear, measurable outcomes over a four-year period for each participating enterprise.

Field Lab & Business Development Project (BDP)

Target Entrepreneur Categories:

- *Start-up Enterprises:* Handholding and guiding new ventures.
- *New Entrepreneurs (Non-Start-ups):* Support for establishing new businesses.
- *"Young Retired Entrepreneurs":* Guidance for retired employees/teachers (less than 65 years) wanting to start ventures.
- Existing entrepreneurs **who want to grow.**
- *"Not-for-Profit" Organizations:* Support if demand exists.

Inspiration & Precedent:

- Model successfully utilized for B Com students in collaboration with Kudumbashree, leading to a win-win-win situation for students, institute, and the community. Model originated from SB College Changanacherry.
- Inspired by IIM Kozhikode, which has made such projects a part of its curriculum with student performance evaluation.

Field Lab & Business Development Project (BDP)

Scalability & Impact:

With students in groups of 3-4, STC can support 10 to 15 Business Units within its circle of influence.

Initially voluntary, aiming to integrate into the curriculum from this year.

*Serious work over 2-3 batches can generate significant **future consultancy opportunities.***

Entrepreneur Identification:

*Potential entrepreneurs can be identified through Management Associations like **TRAMA** and **District Industries Centre, Kottayam** (with support from GM, DIC, KTM).*

Fostering the Next Generation of Innovators

Mentorship as a Core Service

- Bridging the gap between theory and practice.
- Leveraging our professional networks and experience.

Types of Mentorship

- **Tech Mentorship:** Guiding students on the technical and practical skills needed to thrive in the modern tech landscape.
- **Entrepreneurial Mentorship:** Providing support on business strategy, funding, and scaling new ventures.

This can become a key offering of our consultancy hub.

Fostering the Next Generation of Innovators

Long-Term Vision & Mentorship:

- Leverage "Manage mentors" and "Techno mentors" from within STC campus to help, guide, facilitate, and handhold enterprises for the first 5 years.
- Ambitious Goal: Educated entrepreneurs achieving an annual turnover of Rs 100 Crore per annum after 5 years is **challenging but achievable.**
- Empowering Professionals: **Teacher Consultants** possess the capability to undertake difficult jobs and make them successful.
- Call to Action: **"Nothing will move forward, if we do not start."**
- Keys to Success: Setting an **ambitious Goal**, developing a **Shared**

Leveraging the opportunities.....

CHALLENGES

- Faculty pre-occupied with routine responsibilities.
- Hardly find time to pursue these matters
- Attaches low priority to allied activities.

SOLUTIONS

- A dedicated Centre Management Unit (CMU) with the required skill sets.
- CMU should function on a Full Time basis.
- Faculty can review and guide the activities of the CMU.

Way forward.....



Centre for Energy Studies (CES)

- Foster Research in thematic area
- Conduct cutting edge R&D
- Promote interdisciplinary research



Way forward.....



Centre for Techno-preneurship Management (CTM)

- Team of Engineers and Managers
- Combine Research plus Entrepreneurship
- Develop business models.
- Prepare project reports
- Set up and manage Business Incubation Centres / Start-ups



Way forward.....



Centre for Industry Institute Linkages (CIIL)

- Bridging the industry academia gap
- Provide students and faculty with the real-life issues.
- Marketing activities – Patents, Technology Transfer, etc.
- Liaison with the industries around the institute.
- Provide technical solutions to industry problems.
- Joint Research Facilities.



Way forward.....

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Centre for Career Counselling and Mentoring (CCCM)

- Guiding students explore career options
- Enhancing technical aptitude
- Promoting entrepreneurial journey
- Arranging internship and project works
- Extend mentoring service on a regular basis



Discussions.....

