



Ethiopia's Chemical and Allied Products Processing Industries



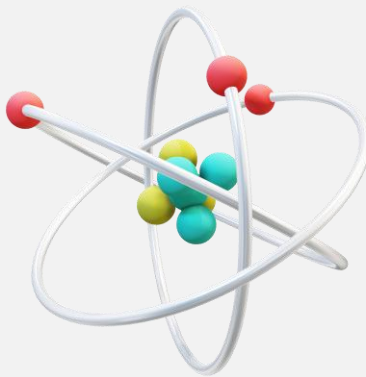
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President's Message

Dear Members of the Ethiopian Society of Chemical Engineers,



As we enter the month of July, this edition of our newsletter highlights a subject that lies at the heart of our profession; Ethiopia's Chemical Process Industries (CPI). This theme provides an opportunity to reflect on the journey of our nation's industrial sector, recognize its achievements, and consider the important role chemical engineers must play in shaping its future.

Chemical process industries – including manufacturing, agro-processing, pharmaceuticals, textiles, cement, energy and related sectors – form the backbone of any industrialized economy. In Ethiopia, these industries have evolved from small-scale, import-dependent operations to a growing, ambitious sector. Yet, despite the presence of abundant raw materials and a young, dynamic workforce, the sector remains underdeveloped relative to its potential. From the early state-owned enterprises of the 1960s to today's industrial parks, the journey of Ethiopia's CPI has been one of incremental progress punctuated by policy shifts and economic challenges. The recent investments in large-scale projects such as the Dangote fertilizer complex, the chemical value chain partnership with Tianjin Bohai, and the expansion of industrial parks signal a new era. However, translating these investments into lasting industrial capacity requires skilled professionals, clear policy frameworks, and sustained collaboration between government, industry, and academia.

As a Society, ESChE is committed to playing a central role in this transformation. We will continue to engage with policymakers, advocate for professional recognition, and provide a platform for knowledge exchange that strengthens the technical capacity of our members.

This month also marks the graduation season for many universities across Ethiopia, and I would like to extend my heartfelt congratulations to all our new chemical engineering graduates. Completing your studies is a significant achievement and the beginning of an exciting professional journey. As you step into the workplace, I encourage you to become ambassadors of our profession by applying your knowledge with integrity, embracing innovation, and contributing to the growth of Ethiopia's industries. Stay connected with ESChE and continue to engage with the professional community as you build your careers. To our continuing students, I wish you a restful and productive summer break. While taking time to recharge, I also encourage you to seek internships,

industrial attachments, volunteer opportunities, or research experiences that will strengthen your practical skills and better prepare you for your future careers. The experience gained outside the classroom is often just as valuable as the knowledge acquired within it.

I am also pleased to share that the ESChE Executive Committee is actively working to establish and strengthen sustainable student chapters across universities throughout Ethiopia. Our vision is to create vibrant campus communities where chemical engineering students can develop leadership skills, expand their professional networks, and actively engage in technical and societal initiatives. We look forward to sharing more updates on this important initiative as preparations continue for the upcoming academic year.

As we reflect on Ethiopia's industrial journey and look toward the future, let us remember that the success of our nation's chemical process industries depends on the collective efforts of all stakeholders. Whether you are a student, a recent graduate, an academic, or an experienced professional, each of us has an important role to play in advancing our profession and contributing to Ethiopia's industrial and economic development. Together, through collaboration, innovation, and dedication, we can help build a stronger chemical engineering community and a more prosperous future for our country.

Yours in service,

Tesfayesus Zinare (PhD)

President, Ethiopian Society of Chemical Engineers (ESChE)

Editor's Note: Strengthening Ethiopia's Industrial Self-Reliance

The July 2026 issue of ChE arrives as we continue our Silver Jubilee year, focusing on the theme **"Ethiopia's CPI" (Chemical Process Industries)**. This edition is dedicated to examining the current state of national industrialisation and the critical role chemical engineers play in its future.

Inside This Issue

In this edition, we provide a broad overview of Ethiopia's industrial evolution, transitioning from a heavy reliance on foreign-led Turnkey/EPC arrangements toward the development of local engineering solutions and domestic expertise. We touch upon the potential of **Modular Chemical Process Intensification (MCPI)** as a strategic tool to "leapfrog" traditional industrial pathways, illustrated by successful regional benchmarks like the modular chloralkali plant in Tanzania.

Our sector highlights provide snapshots of progress across key areas:

- ✚ **Textiles:** Improving efficiency and wastewater management in industrial hubs.
- ✚ **Sugar & Agro-Processing:** Maximising resources through integrated ethanol and electricity production.
- ✚ **Specialty Chemicals:** Identifying opportunities for import substitution and local innovation.

- ✚ **Beverages:** Modernisation efforts and quality assurance by local manufacturers like Sorene Liquors and VIV Beverages.

A Call for Professional Contributions

While the Society is energised by our recent digital growth on platforms like **Telegram (@ESChElink)** and our rebranded website, the continued success of this publication depends entirely on you.

We are now issuing an urgent Call for Technical Contributions for our upcoming issues:

- **September Theme: "ChE's Viewpoint"** – Focusing on chemical engineering education, professional certification, and remuneration standards.
- **November Theme: "Career Shelf"** – This issue will be dedicated to career growth, featuring tips on job searching, effective presentations, and professional development.

To maintain the quality and consistency of ChE, we must insist on greater member participation. Relying on a limited circle of contributors has become a significant challenge for the editorial team. More importantly, it prevents our community from accessing the diverse, high-value insights that only you—our knowledgeable practitioners and academics—can provide.

Your voice is vital to ensuring this newsletter remains a credible platform for professional advocacy and knowledge exchange. Please submit your articles, reflections, or technical reviews to cheditor@eschenew.com.

Together, let us ensure the next quarter-century is defined by our collective expertise.



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Ethiopia's Chemical Process Industry: Building the Foundation for Sustainable Industrial Transformation

The Chemical Process Industry (CPI) is a key driver of industrialization, transforming raw materials into products that support economic growth, create employment, and improve livelihoods. In Ethiopia, sectors such as food and beverage processing, sugar, textiles, cement, pharmaceuticals, and specialty chemicals contribute significantly to value addition and national development. While the country has made encouraging progress over the past decades, challenges remain in technology transfer, innovation, and industrial competitiveness. This article explores the historical evolution of Ethiopia's CPI, highlights key industrial sectors, and examines how emerging technologies such as Modular Chemical Process Intensification (MCPI) could support the country's future industrial transformation.

The Evolution of Chemical Engineering and Industrial Development in Ethiopia

The development of Ethiopia's CPI is closely linked to the growth of chemical engineering education and the country's industrialization efforts.

One of the significant milestones in Ethiopia's industrial and engineering development was the formal establishment of the College of Engineering in 1955, which became part of Haile Selassie I University in 1961 (now Addis Ababa University). This was followed by the establishment of the Chemical Engineering Department in 1986[1], which has played an important role in developing engineering expertise and advancing industrial processing technologies in the country.

Over the past several decades, Ethiopia has invested in expanding its manufacturing

sector through the establishment of industrial parks, public enterprises, and private manufacturing companies. Industries such as sugar, cement, textiles, food and beverage processing, pharmaceuticals, and

Leather manufacturing have played an important role in creating employment, adding value to local resources, and supporting national economic development. Chemical engineers have been central to these industries by optimizing production processes, improving resource efficiency, ensuring product quality, and promoting safe and sustainable operations.

Despite these achievements, much of the country's industrial growth has relied on imported technologies and external expertise. While this approach has accelerated industrial expansion, it has also highlighted the need to strengthen local engineering

capacity, research, innovation, and technology development. Building on this foundation will be essential for advancing Ethiopia's CPI toward greater competitiveness, resilience, and long-term sustainability [2].

Sector Highlights: Driving Ethiopia's Chemical Process Industry

Ethiopia's CPI encompasses a diverse range of manufacturing sectors that transform locally available raw materials into products that support economic growth, create employment, and improve the quality of life. While these industries vary in scale and technology, they share a common objective: adding value to Ethiopia's abundant natural resources through chemical and process engineering.

Textile Industry

The textile and garment sector has become one of Ethiopia's priority manufacturing industries, supported by industrial parks and the country's abundant cotton production. Chemical engineers contribute to textile manufacturing through fiber processing, dyeing, finishing, wastewater treatment, and quality control. Although the sector has attracted significant investment, improving process efficiency, adopting cleaner production technologies, and increasing local value addition remain essential for enhancing global competitiveness.



Figure 1: Hawassa industrial park (HIP)

Sugar Industry

Ethiopia's sugar industry represents one of the country's largest agro-industrial sectors. Beyond sugar production, modern sugar factories integrate multiple chemical processes to produce ethanol, electricity through bagasse cogeneration, and other valuable by-products. These integrated processes demonstrate how chemical engineering can maximize resource utilization while minimizing waste, contributing to both economic development and environmental sustainability.



Figure 2: Tana Beles sugar factory

Food and Beverage Industry

The food and beverage industry continues to expand as consumer demand grows and investment increases. Companies such as Sorene Liquors and VIV Beverages illustrate the sector's ongoing modernization through improved production technologies, quality assurance systems, and process optimization. Chemical engineers play important roles in fermentation, distillation, product formulation, packaging, quality management, and food safety, ensuring products consistently meet national and international standards.

Such investments demonstrate how modern process engineering and quality assurance contribute to the competitiveness of Ethiopia's beverage industry.

Specialty Chemical Industry

The specialty chemical sector, represented by companies such as Bekas Chemicals, supplies products that support agriculture, manufacturing, construction, and public health. Although this sector remains relatively small compared with other manufacturing industries, it offers significant opportunities for innovation, import substitution, and technology development [2]. Expanding local production of specialty chemicals can strengthen industrial self-reliance while creating opportunities for

research, entrepreneurship, and high-value manufacturing.

Together, these sectors demonstrate both the progress achieved and the opportunities that lie ahead. Strengthening technological capability, investing in research and development, and encouraging collaboration among universities, industries, and professional societies, and across engineering, science, and other relevant disciplines will enable Ethiopia's CPI to become more innovative, competitive, and sustainable, as emerging technologies increasingly require cross-disciplinary knowledge and expertise.

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Modular Leapfrogging: Accelerating Ethiopia's Chemical Process Industry through MCPI

In recent years, Ethiopia has made progress in establishing processing facilities across sectors such as agro-processing, cement, food and beverage, and chemicals. However, many of these facilities have been developed through Turnkey/EPC, Engineering, Procurement, and Construction (EPC) arrangements, in which foreign contractors undertake the design, equipment selection, installation, and commissioning of the plants. While this approach enables relatively rapid industrial expansion, it has often resulted in limited technology transfer, weak accumulation of domestic engineering knowledge and insufficient development of local design, manufacturing, and innovation capabilities.

Consequently, plant maintenance, process modifications, equipment upgrade, and future expansion continue to rely heavily on external expertise, constraining Ethiopia's long-term industrial self-reliance and technological competitiveness. Addressing these challenges requires industrial strategies that extend beyond expanding production capacity to strengthening the country's technological capability and engineering ecosystem.

In this context, Modular Chemical Process Intensification (MCPI) offers a promising pathway not only to deploy more flexible and

efficient processing technologies but also to strengthen local engineering participation, technology adaptation, and innovation when implemented alongside deliberate knowledge transfer and capacity-building strategies. Unlike traditional plants that require significant capital investment and lengthy construction, modular systems can be manufactured in standardized units, transported to the site, and expanded as production demand increases [3].

A notable African example is the modular chlor-alkali plant supplied by ThyssenKrupp in Tanzania. The project, recognized as the first modular chlor-alkali plant in Sub-Saharan Africa, demonstrates how modular technology can significantly reduce construction time, simplify installation, improve energy efficiency, and lower investment costs while maintaining high operational performance [4]. The plant's skid-mounted design also allows equipment to be transported in standard shipping containers, making it particularly suitable for developing countries seeking flexible and cost-effective industrial solutions.

For Ethiopia, such an approach presents an opportunity to "leapfrog" conventional industrial pathways by adopting modular and process-intensified technologies. However, this does not imply skipping the fundamental industrial capabilities required for sustainable industrialization.

Foundational sectors, including metallurgy, machine manufacturing, fabrications, and technical capacity development, remain indispensable for supporting the successful deployment and long-term operation of advanced chemical processing technologies.

When implemented within a broader national strategy for industrial development, MCPI can support the establishment of decentralized and flexible production facilities for specialty chemicals, water treatment chemicals, fertilizers, pharmaceuticals, and agro-processing, particularly in regions where industrial infrastructure is still emerging. More importantly, the adoption of modular technologies should actively engage Ethiopian engineers, researchers, manufacturers, and industries throughout the design, installation, operation, optimization, and future expansion of processing facilities. Such participation is essential not only for effective technology transfer but also for the accumulation of indigenous engineering knowledge, the growth of domestic manufacturing capability, and the development of a self-reliant Chemical Process Industry.

Realizing these opportunities will require supportive industrial policies, sustained investment in research and development, strengthened collaboration among universities, research institutions, industries, and professionals across multiple engineering and scientific disciplines, as well

as continuous capacity building for chemical engineers and related professionals. By combining innovative technologies such as MCPI with deliberate investments in domestic engineering capability, knowledge generation, and industrial collaboration, Ethiopia can build a more resilient, competitive, and sustainable CPI capable of driving long-term economic transformation.

Reference

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Society News

Seminar with Fenote Tekie– A Success Despite Exam Season

On Friday June 19, 2026 ESChE hosted a thought-provoking seminar led by Mr. Fenote Tekie on the topic of “From research innovation to industrial transformation”. The session attracted a dedicated group of participants, though attendance was limited due to the timing, coinciding with the university examination period. We extend our sincere appreciation to Mr. Fenote for his insightful presentation and to all members who made the effort to attend. We look forward to hosting similar events at times more conducive to broader student participation in the future.

ISID Grants 2025/26 – A Milestone for Research

We are delighted to announce that the Innovation for Sustainable Industrial Development (ISID) grants for 2025/26 have been

awarded. The selection process has identified four master's students and one PhD student as recipients of this prestigious grant. We are proud to note that two of the grant winners are female and three are male – a reflection of the growing diversity and talent within our profession.

We extend our heartfelt gratitude to **Professor Desta Mebratu** for his continued leadership and commitment to the ISID initiative, which plays a vital role in fostering research and innovation among the next generation of Ethiopian chemical engineers.

An induction session will be organized shortly to welcome the grant recipients, introduce them to the ISID framework, and provide guidance on their research projects. We encourage all members to join us in congratulating these emerging researchers and supporting their work.

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Chapters' Corner

★ Student Chapters – Preparing for the New Academic Year

As the current academic year concludes, we celebrate the achievements of our student chapters across the country. This month, we extend our congratulations to the graduating class of chemical engineering from all Ethiopian universities. Your dedication and hard work have brought you to this milestone, and we are proud to welcome you as professional members of ESChE.

To our continuing students, we wish you a restful and productive summer break. We encourage you to use this time to gain practical experience through internships or industrial attachments – an invaluable step in your professional journey.

Looking ahead, the Executive Committee is actively working on developing sustainable and active student chapters in every university offering chemical engineering. Our goal is to ensure that, in the new academic year, every student has a vibrant

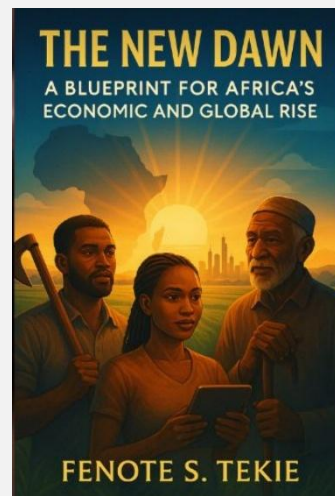
ESChE chapter on campus – a space for learning, networking, and leadership.

Upcoming Chapter Activities

- ✓ **Induction Session for ISID Grant Winners:** Details will be shared soon. All student chapter leaders are encouraged to attend and learn about the research being supported.
- ✓ **Student Chapter Development:** A framework for revitalizing and strengthening student chapters is being finalized and will be circulated to universities before the start of the new academic year.

If your student chapter has any updates, achievements, or plans, please share them with the Communications Committee at info@eschenew.com – we would love to feature your story in the next edition.

This issue highlights *The New Dawn: From Vision to Action* (2nd Edition) by engineer Fenote Selam Tekie. Aligning with our "Ethiopia's CPI" theme, this strategic guide advocates for national industrialization through local value addition and STEM-led manufacturing. Mr. Tekie provides actionable pathways for transforming raw materials into competitive domestic products. The book is available now on Amazon.



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