5

INDUSTRIAL DECARBONIZATION PILLARS FOR SRI LANKA

Each pillar provides action points to begin decarbonizing Sri Lanka's industries. While applicable to all sectors, certain actions, like reusing, recycling, and packaging optimization, are particularly suited for textiles and food industries. Meanwhile, carbon capture will greatly reduce emissions from cement production.

PILLAR 1

DEMAND MANAGEMENT AND MATERIAL EFFICIENCY

Optimize the use of materials in the production process by reducing waste

Embrace a circular economy to cut waste and emissions by reusing or recycling materials like plastic packaging, fabric wastage, or cement by products.

Shifting to biodegradable materials for hard-to-recycle components is also a sustainable option, reducing the overall carbon footprint.



PILLAR 2

ENERGY EFFICIENCY

Reduce energy consumption in industrial processes

Apply energy-saving technologies to enhance the efficiency of machines across Sri Lankan industries.

OPTIMIZE COMPONENTS and use high-efficiency motors with variable speed drives to improve electric motor systems, **responsible for**

70% of industry electricity.

BOOST THE ENERGY EFFICIENCY OF STEAM SYSTEMS, which account for approximately

60%

OF INDUSTRIAL FUELS, by improving insulation, installing advanced controls, and repurposing waste heat.

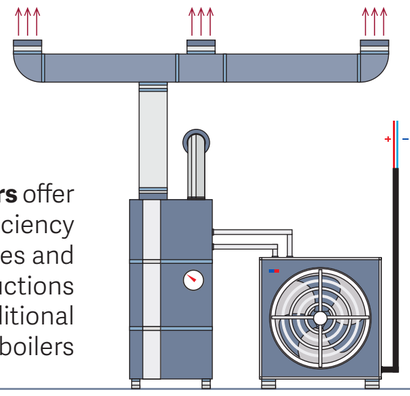


PILLAR 3

ELECTRIFICATION

Transition from fossil fuel-based energy sources to renewable electricity

Three key technological pathways paired with renewable electricity facilitate this shift: electric boilers, industrial heat pumps, and alternative processes with electrified heating



Electric boilers offer significant efficiency advantages and emission reductions compared to traditional steam boilers

Electrified heating enhances control, quality, and reduces emissions

Industrial heat pumps efficiently transfer heat from low-temperature sources to high-temperature sinks, offering a versatile solution for various industries

PILLAR 4

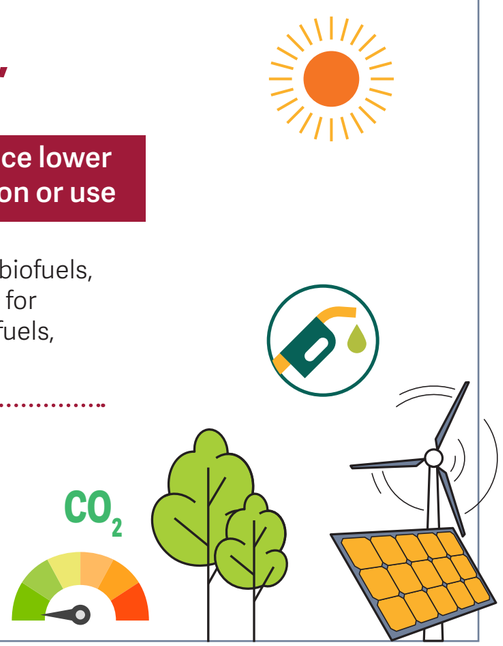
LOW-CARBON FUELS, FEEDSTOCKS, AND ENERGY SOURCES

Use energy sources and feedstocks that produce lower or zero carbon emissions during their production or use

Use renewable electricity sources like solar and wind, biofuels, and synthetic fuels. While some technologies are ready for deployment, others, like clean hydrogen and synthetic fuels, require further development

Reduce emissions and energy costs with biogas from organic waste or solar thermal systems.

Adopt low-energy fuels and materials for textiles, rubber, and cement production



PILLAR 5

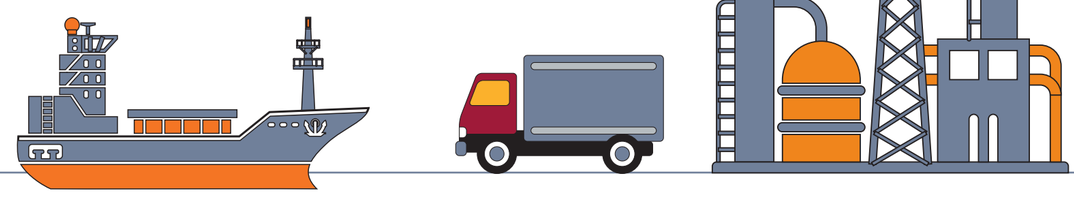
CARBON CAPTURE, UTILIZATION, AND STORAGE (CCUS)

Store CO_2 emissions from industrial processes

Captured CO_2 can be reused in concrete curing, aggregate production, or algae biomass cultivation

Implementing carbon capture, utilization, and storage depends on technology availability and local infrastructure support.

Crucial for Sri Lanka's cement industry, a top CO_2 emitter from KILN LIMESTONE CALCINATION.



Source: Hasanbeigi, A., Springer, C., Fernando, S., Dehod, N., Vidanagama, J., Rajaguru, M., & Mendis, R. (2024). Industrial Energy Efficiency and Decarbonization in Sri Lanka. United Nations Industrial Development Organization (UNIDO).

ACCELERATING INDUSTRIES' CLIMATE RESPONSE SRI LANKA

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