CEWT Foundation Series
Defossilisation vs Decarbonisation: Rethinking the Energy Transition

Introduction

Climate change is a global problem, yet most current solutions remain local, fragmented, and incremental.

The dominant narrative today is “decarbonisation” — reducing emissions wherever possible.

While important, this approach often works within an existing fossil-based system.

A more fundamental question must be asked:

Are we reducing emissions… or are we removing the root cause?

This is where the concept of “defossilisation” becomes critical.

Decarbonisation vs Defossilisation

Decarbonisation focuses on lowering emissions:

- Improving efficiency

- Adding renewables to the grid

- Applying carbon capture or offsets

Defossilisation focuses on eliminating fossil inputs entirely:

- Replacing fossil fuels in power, heat, and industry
- Redesigning systems around renewable energy and closed loops
- Treating carbon as a recyclable carrier, not waste

In essence:

Decarbonisation manages the symptom.

Defossilisation addresses the cause.

Why Climate Requires a Global System Approach

Carbon dioxide does not respect borders. Once emitted, it mixes globally in the atmosphere.

This means:

- Local reductions do not equal global solutions
- Fragmented actions cannot fully solve a systemic problem

Today's approach often involves distributed improvements:

- Rooftop solar installations
- Wind farms in select regions
- Electrification of transport

However, heavy industry, fuels, and continuous processes still rely heavily on fossil inputs.

Limitations of the Current Renewable Strategy

Renewables have scaled rapidly, but their deployment is often:

- Distributed rather than systemic

- Intermittent rather than continuous
- Additive rather than transformative

As a result:

- Grids still rely on fossil backup
- Industrial processes remain fossil-based
- Energy systems remain structurally dependent on hydrocarbons

This creates a gap between ambition and reality.

Defossilisation as the Starting Point

Defossilisation reframes the challenge:

Can our energy and industrial systems operate without fossil inputs at all?

This requires:

- Continuous, firm renewable energy systems
- Integration of energy, fuels, and industrial processes
- Circular carbon systems where CO2 is reused rather than emitted

It is not just about adding clean energy.

It is about redesigning the system architecture.

The Strategic Shift

Current mindset:

- Reduce emissions where possible
- Offset what remains
- Improve efficiency

Defossilisation mindset:

- Eliminate fossil feedstocks
- Close carbon loops
- Build systems that are inherently low-emission

This is a shift from optimisation to transformation.

Why This Matters Now

We are entering a new phase of the energy transition:

- Carbon pricing mechanisms like CBAM are becoming global
- Energy demand is rising due to AI, electrification, and industry
- Fragmented solutions are reaching their limits

The next stage requires system-level thinking.

Conclusion

Renewable energy is essential, but its role must evolve.

The question is no longer:

How do we add renewables to the system?

The real question is:

How do we build a system that operates entirely without fossil inputs?

Defossilisation represents this next step.

It is not just a technical shift.

It is a structural transformation of how energy, industry, and carbon itself are managed.