



## Cement Pollution

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 [drishtias.com/printpdf/cement-pollution](https://www.drishtias.com/printpdf/cement-pollution)

The production of **cement is a cause of 7 % of global carbon dioxide emissions**, more than what comes from all the trucks in the world.

- Cement's contribution to emissions is especially immense **because of the chemical process required to make it.**
- **A ton of cement yields at least half a ton of CO<sub>2</sub>.**
  - Kilns are heated to more than 1,400 degrees Celsius, about four times hotter than a home oven set to the self-clean cycle.
  - Inside the kiln, carbon trapped in the limestone combines with oxygen and is released as CO<sub>2</sub>, the most abundant greenhouse gas.
- **Alternatives to cement:** Many cement makers are working to cut the amount of clinker (a key raw ingredient) in their cement, while some others are looking at substitutes including **fly-ash**, which comes from the chimneys of plants that burn coal, or **slag** from steel-making blast furnaces.
- The **high cost of the greener forms of cement** makes it difficult for consumers to use it as an alternative such as geopolymer cement.
- It can further make it difficult for policymakers to take greenhouse gases out of buildings, roads and bridges.

## Geopolymer Cement

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- Geopolymer cement is **made from aluminium and silicon.**
- The sources of aluminium in nature are not present as carbonates and therefore, when made active for use as cement, do not release vast quantities of CO<sub>2</sub>.
- **The most readily available raw materials containing aluminium and silicon are fly ash and slag.**

- Brazil, for instance, is making rapid progress in the adoption of greener alternatives to traditional cement, as it has the availability of raw materials such as **pozzolan, a type of siliceous and aluminous material** that results in a product with the same technical properties as the traditional cement. Also, it has one of the lowest clinker contents in the world for its cement, below 70 % in the year 2014.