CSIR-CRRI wins CII 4R Award for steel-slag road and ECOFIX

Topics: Science & Technology · UPSC Prelims · TNPSC · SSC · Current Affairs



News

CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi, has received the CII 4R Award 2026 of the Confederation of Indian Industry for its Steel Slag Road Technology and its steel-slag-based instant pothole-repair mix 'ECOFIX' (4R – Reduce, Reuse, Recycle, Repair). The award was in the category 'Excellence in Innovative Solutions for Sustainable Waste Management by Research Labs/Academic Institutions'; CRRI was also named among the top 30 waste-to-worth leaders. It was reported that Prof. Anil Gupta, founder of the Honey Bee Network, presented the award on 26 November 2026 at the 11th International Conference on Waste-to-Worth Technologies in New Delhi. CRRI Director Dr Ch. Ravi Sekhar and scientist Satish Pandey, who developed both technologies, received it. In January 2026 the Technology Development Board (TDB) signed an agreement with Ramuka Global Eco Work Pvt Ltd, a Visakhapatnam firm, to support commercial production of ECOFIX.

Key facts for the exam

Point	Details
Award	CII 4R Award 2026 (Reduce, Reuse, Recycle, Repair)
Winner	CSIR-CRRI, New Delhi
Technologies	Steel Slag Road; ECOFIX pothole mix
Developer	Satish Pandey, scientist (CRRI)

Point	Details
Date, place	26 November 2026, New Delhi
ECOFIX mix	Processed steel slag + polymeric binder
Feature	No heating; works in waterlogged potholes
Commercial production	Ramuka Global Eco Work, Visakhapatnam – TDB agreement (Jan 2026)

Background

- In a blast furnace, iron ore, coke and limestone are charged in layers from the top. Limestone acts as a flux and reacts with impurities in the ore to form slag, which floats on the molten iron and is drawn off. Steelmaking slag piles up as a large waste stream.
- India, the world's second-largest steel producer, generates large quantities of steel slag every year. Processing this slag into road aggregate cuts quarrying and supports the circular economy.
- India's first processed steel-slag road was built in the Hazira industrial area of Surat, Gujarat, jointly by CSIR-CRRI, the Union Ministry of Steel, NITI Aayog and ArcelorMittal Nippon Steel (AM/NS), and opened in June 2022. About one lakh tonnes of slag went into the roughly 1 km six-lane road.
- ECOFIX is a cold mix: it is laid straight into a pothole without heating aggregates or bitumen and without a tack coat, even in waterlogged potholes without dewatering. In a demonstration on Delhi's Secretariat Road the patch took traffic within 20 minutes; it cuts greenhouse emissions by up to 30% versus hot mix. Road bitumen is a residue of crude-oil distillation.
- The Council of Scientific and Industrial Research, set up in 1942, is an autonomous society with the Prime Minister as its President; it has 37 institutes, including CRRI.

Tamil Nadu link: Direct Tamil Nadu link: in January 2026 CSIR-CRRI and JSW Steel began a sponsored research project to process slag from JSW's Salem Works into road material and build a demonstration steel-slag road near Salem. No use of ECOFIX in Tamil Nadu has been reported. Also, CSIR's Structural Engineering Research Centre (SERC) is in Chennai and its Central Electrochemical Research Institute (CECRI) is at Karaikudi.

Frequently asked questions

What is this news about?

CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi, has received the CII 4R Award 2026 of the Confederation of Indian Industry for its Steel Slag Road Technology and its steel-slag-based instant pothole-repair mix 'ECOFIX' (4R – Reduce, Reuse, Recycle, Repair).

What are the key facts to remember for the exam?

Award: CII 4R Award 2026 (Reduce, Reuse, Recycle, Repair); Winner: CSIR-CRRI, New Delhi; Technologies: Steel Slag Road; ECOFIX pothole mix; Developer: Satish Pandey, scientist (CRRI).

What is the background to this news?

In a blast furnace, iron ore, coke and limestone are charged in layers from the top. Limestone acts as a flux and reacts with impurities in the ore to form slag, which floats on the molten iron and is drawn off. Steelmaking slag piles up as a large waste stream.

Practice questions (with answers)

1. In a blast furnace, which substance is added as a flux to remove the ore's impurities as slag?

A) Limestone

B) Coke

C) Bauxite

D) Cryolite

Answer: A – Explanation: Limestone. Coke is the fuel and reducing agent; bauxite is aluminium ore; cryolite is the solvent in aluminium extraction.

2. India's first processed steel-slag road, built jointly by the Steel Ministry, NITI Aayog and CRRI, is in which city?

A) Jamshedpur

B) Bhilai

C) Surat

D) Rourkela

Answer: C – Explanation: Surat, Gujarat – Hazira industrial area (AM/NS plant); about 1 lakh tonnes of slag in a roughly 1 km six-lane road.

3. Who is the President of the Council of Scientific and Industrial Research, which runs labs such as CRRI?

A) President of India

B) Science Minister

C) Prime Minister

D) Vice-President

Answer: C – Explanation: The Prime Minister. CSIR, founded in 1942, is an autonomous society with 37 institutes.

4. What is India's rank among the world's steel-producing countries?

A) First

B) Second

C) Third

D) Fourth

Answer: B – Explanation: Second (China is first). CRRI's Steel Slag Road technology turns the large amounts of slag from steel plants into road material.

5. Bitumen, used to bind aggregates in road surfacing, is generally obtained from?

A) Coal carbonisation

B) Wood distillation

C) Natural gas

D) Crude oil residue

Answer: D – Explanation: It is the residue of the fractional distillation of crude oil. Cold mixes such as ECOFIX need no heating of the binder.