



General Studies-2

Inner Line permit:

Why in News?

As Assam gets ready to publish the final draft of the National Register of Citizens by June 30, neighbouring Arunachal Pradesh is tightening its borders.

What happened?

Last month, contractors in East Siang district of Arunachal Pradesh said 90 infrastructure projects were on hold because 2,000 labourers had left to ensure that their names figured in the NRC. More than a fortnight later, the police in Longding district caught 87 labourers without the Inner Line Permit (ILP) and pushed them back to where they came from — Assam.

Similar drives against “ILP violators” saw more than 350 people being thrown out from other districts of the State over the next few days.

Where is ILP applicable?

A British-era system, the ILP is a travel document Indian citizens need to possess to enter the frontier States of north-eastern India: Arunachal Pradesh, Mizoram and Nagaland.

It is issued under the Bengal Eastern Frontier Regulation, 1873, to regulate the movement of people who do not belong to these States.

The ILP is valid for a week, but can be extended. People who frequent these States for work can opt for a special ILP renewable annually.

Since the ILP is mandatory for Indians and the Protected Area Permit for foreigners, the fact that the labourers ejected from Arunachal Pradesh did not possess the permit put their nationality under a cloud.

Where does NRC fit in?

Two days after the first draft of the NRC was published on December 31, 2017, Assam Chief Minister Sarbananda Sonowal said those who were identified as



foreigners after failing to make it to the list would be barred from all constitutional rights.

Political commentators have said the NRC may leave 5 lakh-10 lakh people, mostly those with the 'Bangladeshi' tag, stateless.

Assam's neighbours fear some of those declared non-citizens may relocate to their territories to cash in on the demand for cheap labour.

Where will they go?

The sister States often blame Assam for their problems with "illegal migrants" who are ironically indispensable as skilled and unskilled workers.

Nagaland even has a term for them — IBI, which expands to Illegal Bangladeshi Immigrant.

Organisations such as the Naga Students' Federation conduct a 'census' to keep a record on the number of non-Nagas as well as IBIs.

In 2008, several Bengali-speaking Muslims were driven out of Nagaland's Mokokchung town, and this triggered vigilantism against "demography-changing" migrants.

International Relations

Colombia to join NATO

Colombia will next week formally become the NATO's first Latin American global partner.

Mr. Santos, who won the 2016 Nobel Peace Prize for his efforts to end a half-century of armed conflict with the former rebel movement FARC, said the move would improve Colombia's image on the world stage.

In addition to Colombia, the NATO lists Afghanistan, Australia, Iraq, Japan, the Republic of Korea, Mongolia, New Zealand and Pakistan as "partners across the globe".



According to NATO's website, areas of cooperation include cyber security, maritime security, terrorism and its links to organised crime, as well as building the capacities and capabilities of the Colombian armed forces.

About NATO:

The **North Atlantic Treaty Organization** (also called the **North Atlantic Alliance**, is an intergovernmental military alliance between 29 North American and European countries based on the North Atlantic Treaty that was signed on 4 April 1949.

NATO constitutes a system of collective defence whereby its independent member states agree to mutual defence in response to an attack by any external party.

NATO Headquarters are located in Haren, Brussels, Belgium, while the headquarters of Allied Command Operations is near Mons, Belgium.

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New nanozyme created at IISc:

Nanomaterials that can behave like human enzymes have now been successfully synthesized by a team of researchers from Indian Institute of Science (IISc), Bengaluru.

About Nanoenzyme:

They produced the new nanozyme — nanomaterial with enzyme-like activity — by using vanadium pentoxide nanocrystals of just 150-200 nm size.

The nanozyme was able to act like the natural antioxidant enzyme glutathione peroxidase in our body and help maintain the hydrogen peroxide levels within the threshold.

They synthesised the nanozyme with four different morphologies — nanowires, nanosheets, nanoflowers and nanospheres.

The nanozyme uses the same pathway as the natural enzyme but without generating any free radicals.



Aim of study:

The study was primarily aimed at understanding the effect of different crystal facets of nanozymes on their enzyme mimetic activity.

The team plans to carry out studies on mice models to understand more about the four nanozyme forms and their potential as therapeutic agents.

Nanozymes with tunable catalytic properties are emerging as the next generation of artificial enzymes that find applications in neuroprotection, cardioprotection and cancer therapy.

The robust, flexible electrodes recorded 98% water-splitting efficiency

Using paper coated with nickel nanoparticles and model catalysts as electrodes, researchers at Indian Institute of Science Education and Research (IISER) Kolkata have been able to split water and generate oxygen and hydrogen gas with very low overpotentials (voltage applied over and above the theoretical voltage to split water).

The flexible electrodes recorded 98% water-splitting efficiency and maintained robustness and durability even after more than 10 continuous days of operation.

Porous surface

The porous nature of the paper and abundance of functional groups on cellulose microfibrils help in strongly binding different metal ions and finally nickel nanoparticles in a three-step immersion process.

Coating the paper with nickel makes it electrically conductive. The nickel-coated paper is then coated with two different catalysts (nickel-iron oxyhydroxide and nickel-molybdenum alloy) to serve as an anode and a cathode.



Splitting water to generate oxygen and hydrogen gas requires cost-effective and stable catalysts that have high activity — generate higher current at lower applied voltage.

The more current produced the more will be amount of water split and hydrogen gas produced.

The team achieved “excellent” water splitting ability when nickel-paper electrodes coated with catalysts were used in electrolysis cells.

Developments in Space

Signs of early Life on Mars:

Iron-rich rocks — which formed in lake beds — are the best place to seek fossil evidence of life on Mars from billions of years ago, researchers say.

It is believed that Mars supported primitive life forms around four billion years ago and the new study could aid the search for traces of tiny creatures — known as microbes — on the Red Planet.

The study, published in the *Journal of Geophysical Research*, said that sedimentary rocks made of compacted mud or clay are the most likely to contain fossils.

These rocks are rich in iron and a mineral called silica, which helps preserve fossils.

Abundance of water

They formed during the Noachian and Hesperian Periods of Martian history between three and four billion years ago.

At that time, the planet’s surface was abundant in water, which could have supported life.

The rocks are much better preserved than those of the same age on Earth, the researchers said.



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This is because Mars is not subject to plate tectonics —the movement of huge rocky slabs that form the crust of some planets —which over time can destroy rocks and fossils inside them.