Report Launch: GeoAI for Brick Kilns in Bihar: Learnings and Recommendations

In a remarkable event organised by the by Development Alternatives (DA) with the United Nations Development Programme (UNDP), Bihar State Pollution Control Board (BSPCB) and the University of Nottingham, a report titled " GeoAI for Brick Kilns in Bihar: Learnings and Recommendations", was released.

While the world is working towards accelerating progress towards achieving the Sustainable Development Goals (SDG). One of the leading problems acting as a hurdle is air pollution. As per the World Bank, air pollution cost the global economy over $8.1 trillion in 2019, equivalent to 6.1 percent of global GDP in human welfare losses, with developing countries bear most of this economic burden.

One of India's most populated regions - The Indo-Gangetic Plains, has been a victim of pollution caused by the Brick Kilns. The Dense and Increasing population across India sees the demand of jobs, infrastructure and resources rise day by day. And hence Brick Kilns are SDGs objects to Intersectionality, where extreme poverty meets environmental degradation.

As the Second largest user of Coal, the Brick Kilns present in the Indo Gangetic Plains contribute 8% to 14% air pollution across the region.

The invention of the Geospatial Artificial Intelligence, often known as GeoAI, which is an emerging scientific discipline that combines the innovations in Spatial Science (Geography), AI Methods such as Machine Learning (ML), and Deep Learning (DL), data mining and High-Performance Computing Sources.

Dr. Arun Kumar, President Emeritus, Mentor-in-Chief of Development Alternatives explained how the policies suggested in the report were aligned with the growth trends of the economy, he said, "we

have been working in the brick sector for 30 years, while the cement and steel sector is nationally recognised as hard to abate, this (Brick Sector) is really hard to abate. And recognising the challenges, the GeoAI App and tool gives us firsthand information and it will allow us to have data driven measures and decisions in terms of limiting brick kilns".

GeoAI can be used for diverse applications involving pattern detection in spatial imagery such as Segmentation, Object Detection, Feature Extraction, Image Classification, change detection and many more analyses that can be applied to inform a wide range of sustainable development challenges.

Through this latest technology, locations of more than 47,000 brick kilns along the Indo-Gangetic plains are detected with 96% accuracy. GeoAI leveraged digital volunteering and citizen science to generate training data sets for machine learning algorithms. These Value-added insights add a degree of compliance to environmental regulations such as distance criteria, technology classification which are also generated with GeoAI technology.

GeoAI platform brings coordinated action from diverse stakeholders – regulators, government agencies, civil society, and volunteer groups to tackle the complexity around brick kilns. A user-friendly mobile and web application supports government agencies in Bihar to conduct field inspection and regulate brick kilns.

Ground Inspection data feeds back into GeoAI algorithms to improve accuracy and generate value added insights.

The GeoAI helps the regulators to find out the distance of each brick kiln, thereby giving indications of kilns which are not complying with the government regulations, reducing air pollution and ensuring that India takes strides in achieving its goals towards sustainability.