



IBSA Cooperation for Renewable Energy: Geopolitical Dimensions of Biofuels and Green Hydrogen

Presentation by

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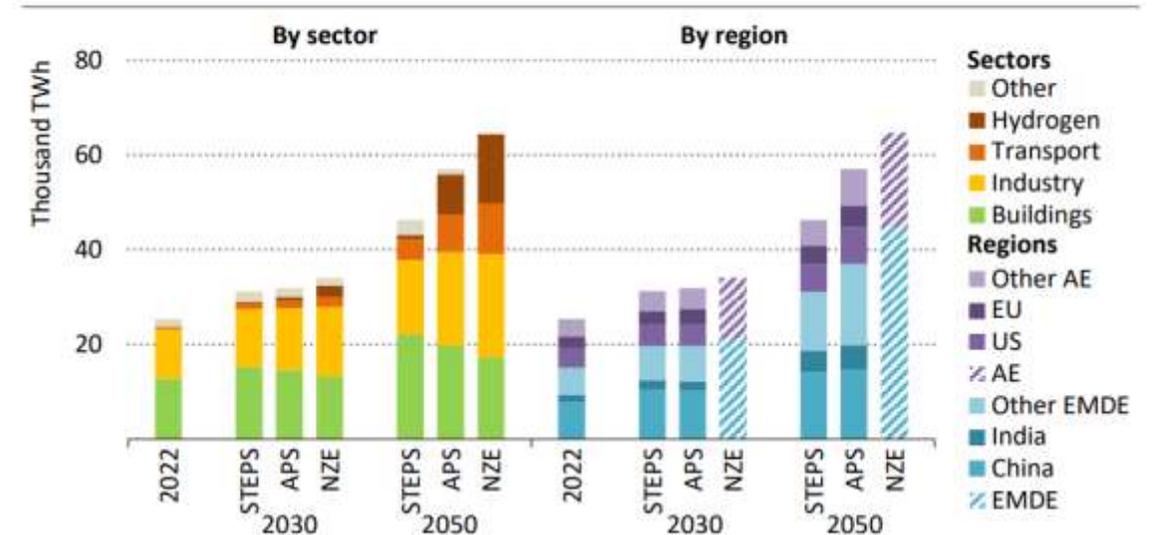
Research and Information System for Developing Countries (RIS),

New Delhi

Why IBSA matters in Renewable Energy Transition

- IEA projected that about 85% of the total increase in electricity demand will come from the emerging economies.
- Increasing energy demand with increasing industrialisation and population
- Common challenges- import dependence, climate change,
- Strategic Role- IBSA countries as leaders of Global South- in global political discourse over climate change and transition towards renewable energy

Figure 3.14 ▶ Electricity demand by sector and region, and by scenario



IEA. CC BY 4.0.

Emerging economies see robust electricity demand growth reflecting population growth and rising incomes; EVs and hydrogen production add to electricity demand growth

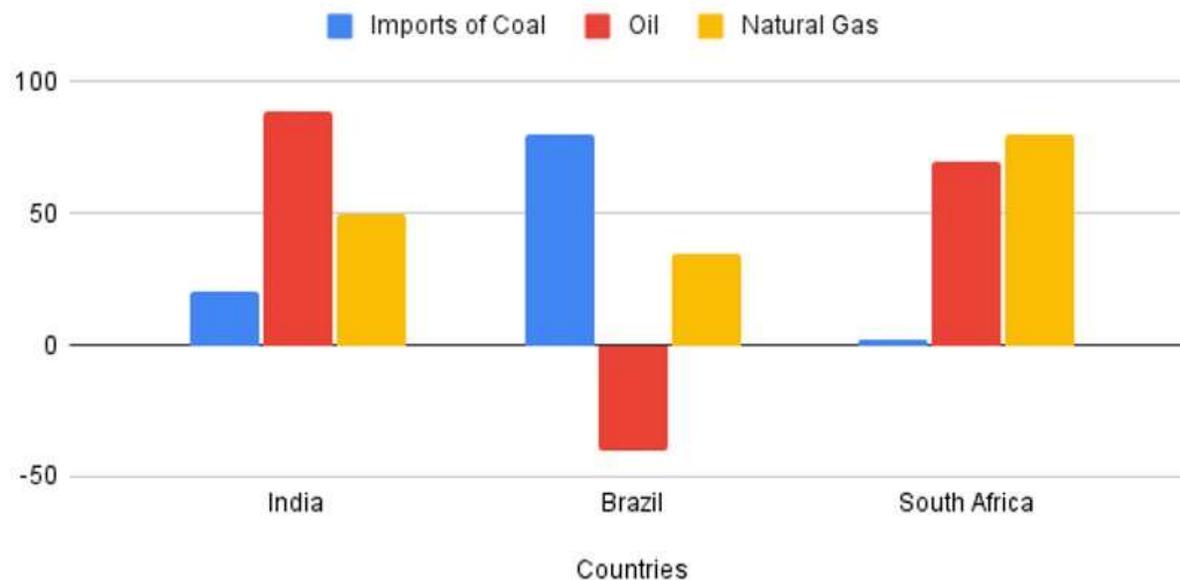
Note: EMDE = emerging market and developing economies; AE = advanced economies; US = United States; EU = European Union.

Source- World Energy Outlook, 2023

Energy Dependency- IBSA Countries

Imports of Coal , Oil and Natural Gas

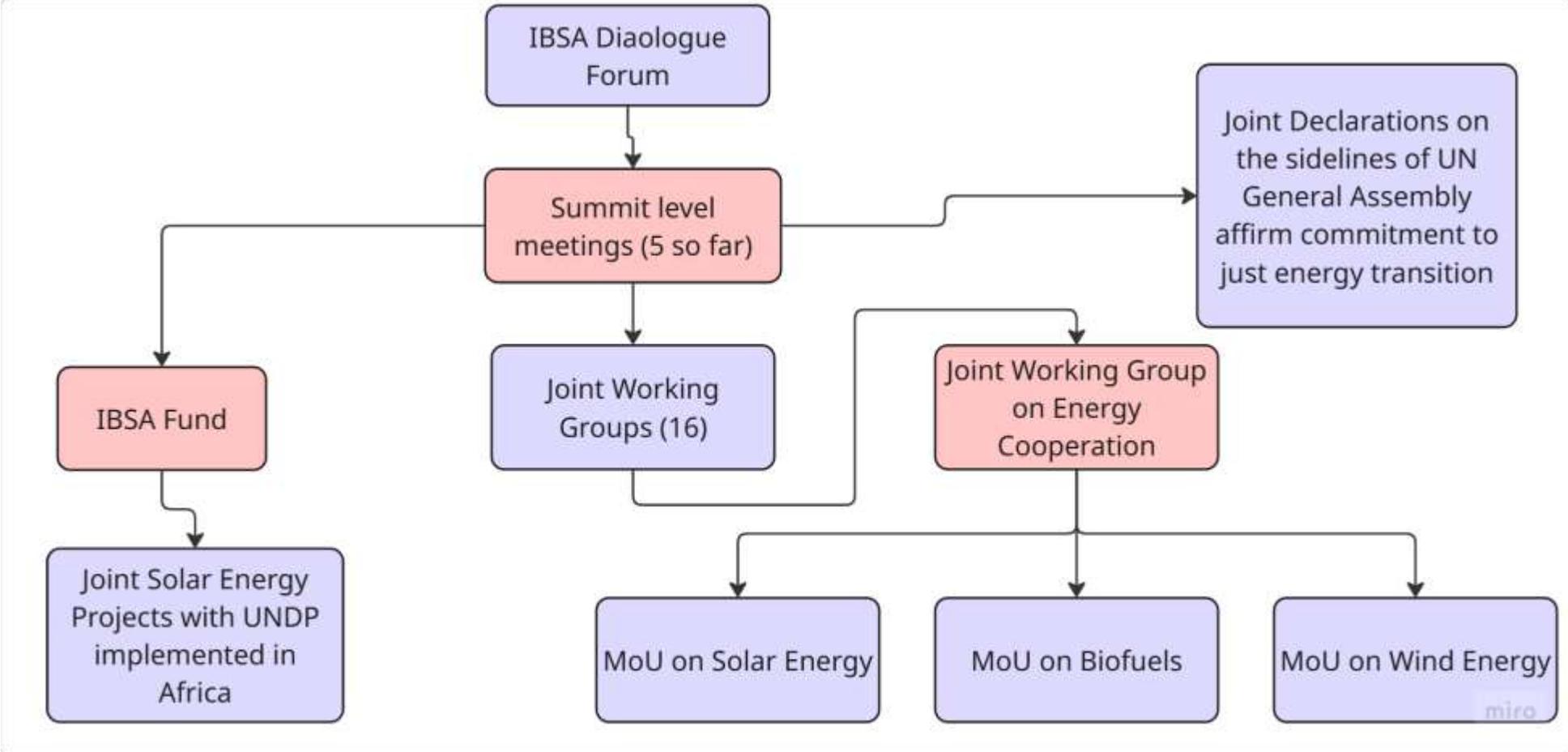
2023-24



Source- International Energy Agency

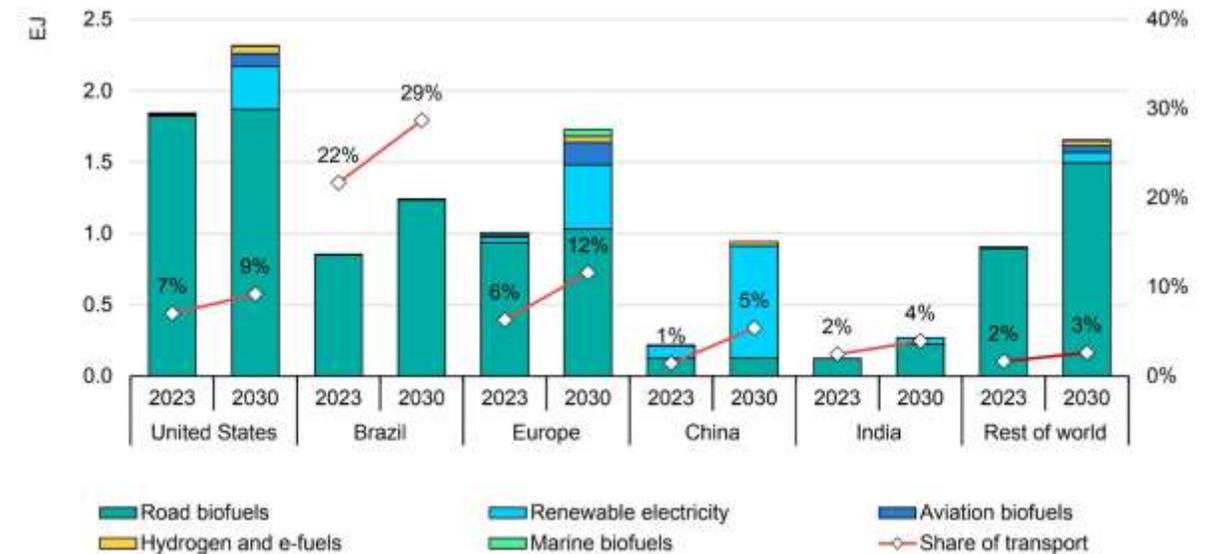
- **India:** Largest coal producer, but rising demand - imports of coal, oil & gas.
- **Brazil:** 80% coal and 35–40% gas supplies imported.
- **South Africa:** almost fully dependent on oil & gas imports.

Existing Mechanisms- IBSA Countries Cooperation for Renewable Energy



Biofuels in Global Context

- 80 percent of the global production of biofuels is concentrated in the United States, Brazil, Europe, India, and Indonesia.
- 30 percent demand to be increased in by 2030
- Socio-economic role in IBSA Countries: rural jobs, waste management, energy equity and justice



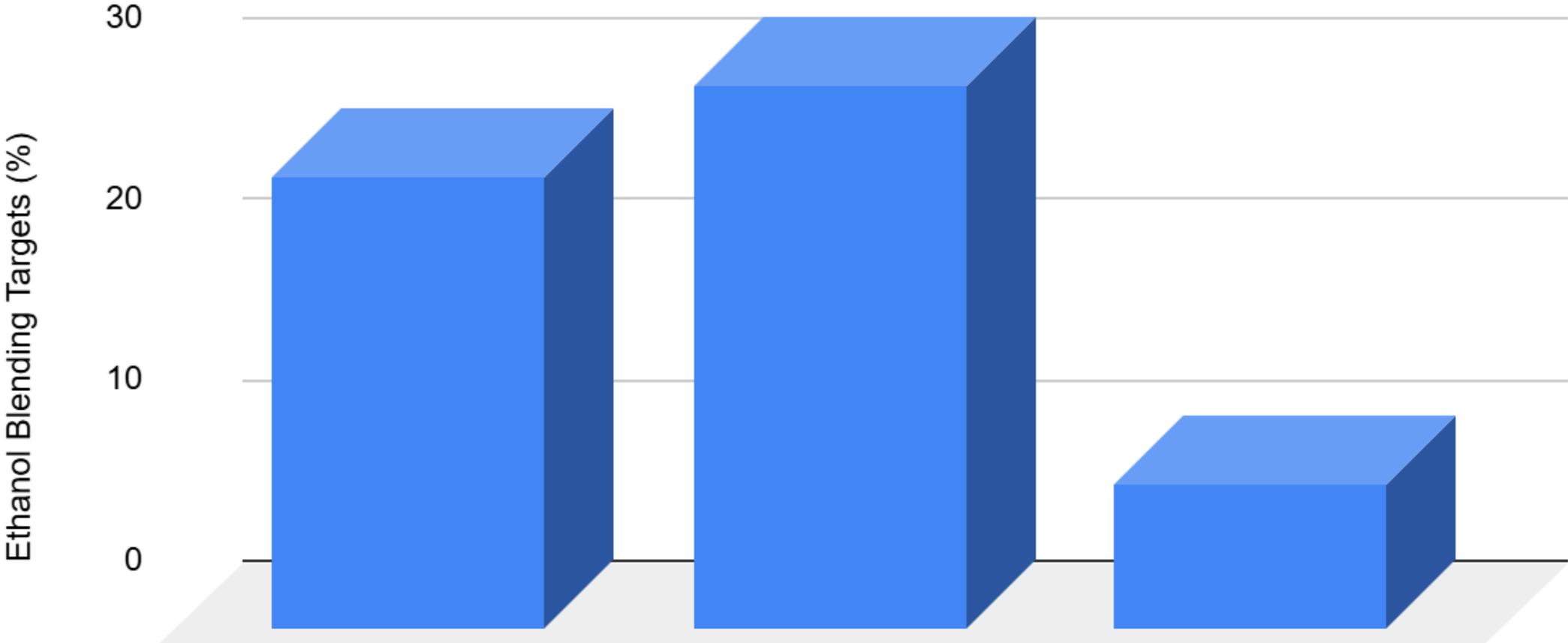
Source- World Energy Outlook, 2023

IBSA and Biofuels

Dimension	India	Brazil	South Africa
Status	Large emerging biofuel market; E20 rollout	Global biofuel powerhouse; flex-fuel norm	Under-commercialised but high SAF potential
Core Policies	National Biofuel Policy (2018), E20 roadmap, SATAT	RenovaBio, ProAlcool, CBIO credits	Biofuels Strategy (2007), Just Energy Transition
Ethanol	E20 blending by 2025; 20% by 2030	E27 (moving to E30); world's most efficient cane	E2–E10; limited blending infra
Biodiesel	B10 - B20 roadmap; agri-waste focus	B12–B15 range; strong soy base	Low capacity; reliance on synthetic diesel legacy
SAF (Aviation Biofuel)	1% SAF blending from 2027; IOC SAF project	HEFA, ATJ leadership; aviation export capacity	3.2–4.5 bn L SAF potential; Fischer–Tropsch advantage
Biogas / Biomethane	SATAT targets 15 MMT; compressed biogas rollout	Cane waste + circular fuel loops	Landfill + off-gas potential, slow scale
Feedstocks	Cane, grains, waste, UCO, bamboo	Cane, bagasse, soy, UCO	Cane, bagasse, Solaris, off-gases
Geopolitical Role	Lead voice of Global South, supply diversification	Biofuel diplomacy via exports	SAF export hub for Africa + Atlantic route
Challenges	Food–fuel tension, financing, logistics	Land-use emissions risk, monoculture	Weak policy incentives, grid coal-dependency

Ethanol Blending Targets- IBSA Countries

2025



Common Challenges for Biofuel Production in IBSA Countries

- **Food vs Fuel debate-** Agricultural expansion for biofuel crops can create shortages for food; leading to conflict between food and energy security
- **Fuel Efficiency-** Ethanol blending in earlier versions of automobiles- reduction of fuel efficiency.
- **Ecological Issues-** cultivation of sugarcane has led to water scarcity in India and Brazil, also indirect land use emissions through fertilisers etc
- **Land Rights, food inflation etc-** Relatively small sugarcane production in South Africa- tied up with political sensitivities

Geopolitics of Biofuels and IBSA Countries

USA- Brazil Relations and biofuels

- 2000s: US backed Brazilian sugarcane ethanol to reduce dependency on Venezuela (OPEC, oil-based economy)
- Post-shale boom (mid-2010s): US became oil-secure: restricted Brazilian ethanol imports
- Brazil imposed higher tariffs on US corn ethanol
- US corn lobby demanded reciprocal tariffs
- Ethanol as key variable shaping regional power politics in Latin America and its relations with the USA

U.S. targets Brazil's aviation biofuel program amid ethanol tensions

Ethanol remains an obsession for Trump and a political priority for Republicans

By Assis Moreira

09/20/2023 06:44 PM - Updated 3 months ago



Source- [Valor International](#)

Ethanol a Key Issue in US-Brazil Trade Talks

November 5, 2025 · 3 min read · Ethanol



 Frank Zaworski · [Read bio](#) →



Source- [Frank Zaworski](#)

Biofuels and Global South

- Brazil's Ethanol Diplomacy- (2003–2010) under Lula:
- 29 visits to Africa, biofuel cooperation featured
- Agreements signed with 14 African states

EU's Green Protectionism and Biofuels trade-

- Green protectionism- Limits on food-based fuels in EU and Indirect Land Use Emissions (ILUC)
- Sustainability standards used to restrict Brazilian imports since 2008
- 2022–23 reversal: Russia–Ukraine war led to fuel instability
- Cheaper Brazilian ethanol- record Brazilian ethanol imports into EU

Global Biofuel Alliance

- Launched during India's G20 Presidency in 2023
- Currently 32 members- All IBSA Countries are members of GBA
- Significance- a international organisation exclusively dealing with biofuels created with leadership from Global South (India and Brazil) and collaboration with Global North (USA)
- Can serve as a knowledge sharing platform for cost effective, sustainable and inclusive biofuels
- Can act as a collaborative forum for IBSA countries to cooperate



IBSA Fund and Renewable Energy

- Projects done in Solar power sector- could be also expanded to biofuels projects
- IBSA Fund supports South- South cooperation on energy access
- 5.3% allocation to renewable projects across Africa, Asia, Latin America, MENA (Grobbelaar, 2014)
- Example: Solar electrification in 20 Guinea-Bissau villages
 - \$596,305 budget; 20,000 beneficiaries
 - Solar in schools enabled women's literacy & community energy skills



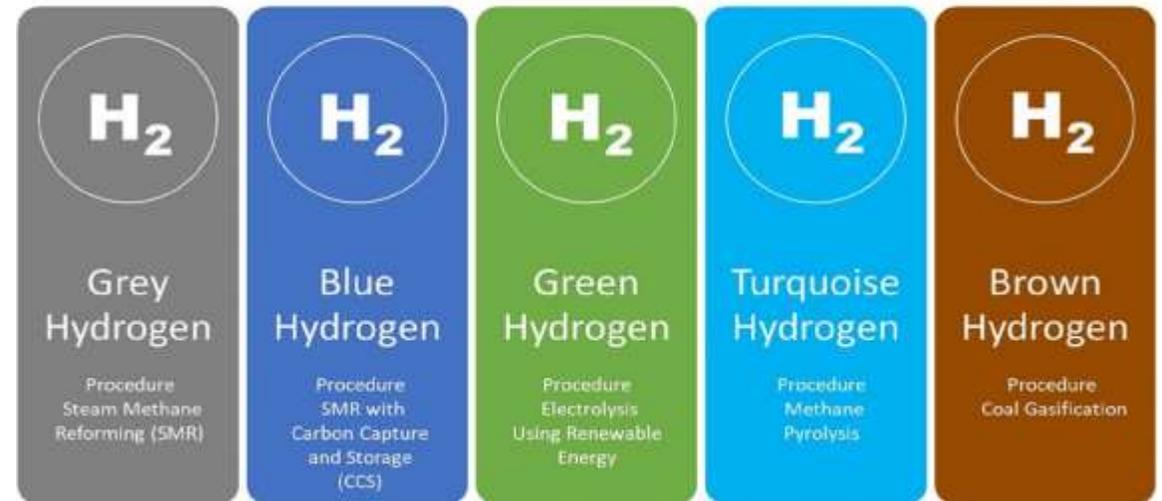
Hydrogen & Green Hydrogen: Global Outlook

- Most abundant element on Earth.
- Green Hydrogen: produced via electrolysis using renewable energy.
- Byproduct: only water + oxygen, making it the cleanest fuel.

Current Status

- Still nascent: only 7% of announced projects completed (high cost, investment risk).
- China: largest hydrogen producer globally.
- Truly green hydrogen = only ~1% of global hydrogen production.

TYPES OF HYDROGEN



IBSA and Green Hydrogen

India

- National Green Hydrogen Mission (2021): target 5 MMT by 2030 (potential 10 MMT).
- Expected 50 MMT CO₂ reduction annually.
- Nodal Agency: Ministry of New & Renewable Energy.
- Support concentrated: 7 states have 92% potential.

Brazil

- Policy continuity across Rousseff, Bolsonaro, Lula.
- Latin America: 5% global demand, Brazil = 10% of it.
- Strength: abundant hydropower & renewables.
- National Hydrogen Programme (2022), Hydrogen Act (2024).

South
Africa

- Strength: Fischer–Tropsch expertise + PGMs + renewables.
- Potential: solve blackouts & rural energy access inequality.
- Policy: HySA Strategy-2007 (Hydrogen & Fuel Cell R&D).

Common Challenges for Green Hydrogen

High Costs- The Green hydrogen costs are \$5-\$8 per kg, while the costs of grey hydrogen derived from fossil fuels are five times less

Nascent technologies- challenging to integrate grids, and export-pressure and temperature required for hydrogen

eg- shipping it in liquid forms requires cryogenic temperatures below -253 C

Ecological challenges- electrolysis would require water. All IBSA countries face water shortage or water pollution.

Geopolitics of Green Hydrogen and IBSA Countries

- Green Hydrogen as “New Oil?”
- Projected as future energy backbone; potential shift from fossil-fuel chokepoints to distributed hydrogen trade.
- Debate: will GH2 create stable multipolar energy or new dependencies? (Van de Graaf et al., 2020)
- Energy Security Shift
- Fossil fuels = few producers, many dependent consumers risk via Malacca, Bab-al-Mandeb, Hormuz.
- GH2 enables long-term storage & shipping, potentially reducing chokepoint vulnerability (*still nascent stage*).

CHEMICALS, ENERGY TRANSITION, RENEWABLES, HYDROGEN

November 13, 2024

Germany's SEFE partners Brazil's Eletrobras on green hydrogen supply



By James Burgess

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India and Germany forge green hydrogen ties

AUTHORITIES & GOVERNMENT

October 28, 2024, by Aida Čučuk

To promote the market ramp-up of green hydrogen and enhance cooperation in climate action and sustainable development, India and Germany have launched the "Indo-German Green Hydrogen Roadmap."

The countries released the roadmap during the seventh round of India-Germany Inter-Governmental Consultations (7th IGC) on October 25, 2024, in New Delhi.



Green Hydrogen and Regional Geopolitics around IBSA Countries

- **IBSA Regional Reactions**
 - **Colombia vs Brazil:** GH2 leveraged to counter Brazil's biofuel dominance; yet pursuing **Ecopetrol–Petrobras** partnership.
 - **Southern Africa:** South Africa + Namibia planning **shared ports, pipelines, grid corridors** (SAPP) to export GH2 & ease SA's energy deficits.
 - GH2 cooperation is not only tech transfer but regional power positioning & clean-energy leadership within the Global South.
-

Global North and Green Hydrogen Diplomacy

- H2Diplo Initiative: German foreign-energy tool to secure GH2 imports; reduce gas dependency in steel & chemicals.
- Berlin has signed GH2 MoUs with all IBSA countries.
- India- EU partnership on Green Hydrogen
- emerging North–South GH2 corridor.
- Challenges- Export of GH2 might externalise water stress, land pressure, soil contamination to producing states.
- “Green hydrogen sustainability” standards accepted in EU, but local consent & social safeguards remain weak in IBSA.

India: EIB backs green hydrogen deployment and joins India Hydrogen Alliance

8 FEBRUARY 2023

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- EIB and India Hydrogen Alliance bring industry, investor and government agencies to support green hydrogen hubs
- Indicative funding of €1.5 billion for large-scale projects in India
- EIB working with the Indian government on a credit facility to support the development of green hydrogen

Source- [EIB](#)

Recommendations

Biofuels-

- Knowledge sharing and technology transfer through Annual Biofuels Dialogue inviting different stakeholders including end users.
- Effectively placing IBSA in Global Biofuel Alliance
- Jointly partnering with ICAO for CORSIA to boost production of Sustainable Aviation Fuel
- Biofuels projects through IBSA Fund like solar energy projects in Guinea Bissau

Green Hydrogen

- New MoU for Green Hydrogen- Technological Knowledge sharing
- Common committee to study feasibility of ports for hydrogen supply
- Can utilise partners and leaders from Global North for triangular cooperation- eg- Germany already collaborating with all IBSA countries for Green hydrogen production



Conclusion

- **Norm-Setting Role:** IBSA can shape global standards in biofuels & green hydrogen while recognising existing leadership gaps in global energy governance.
- **Balanced Partnerships:** Deepen South–South collaboration and selectively engage Global North (e.g., Germany/EU) for technology & finance without enabling new dependencies. **Eg- IBSA+ Indonesia Forum**
- **Institutional Leverage:** Utilising and strengthening platforms like GBA, ISA, and IBSA Fund to support sustainable production, trade corridors, and resilient supply chains.
- **Just & Inclusive Transition:** Pursue energy security and decarbonisation aligned with domestic capacity, environmental safeguards, and social inclusion.

