



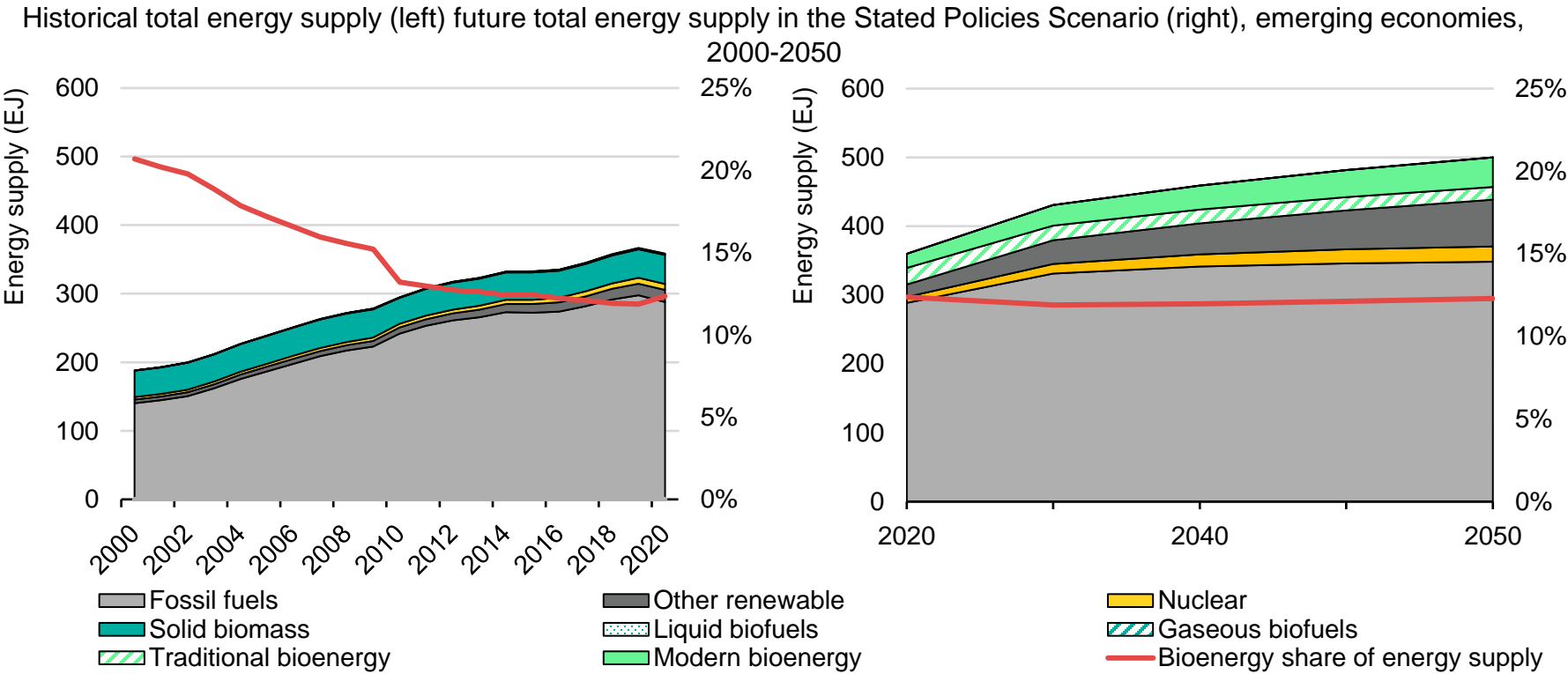
Bioenergy in emerging economy clean energy transitions

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- **Sustainable bioenergy is a pillar clean energy transitions in emerging and developing economies:** Bioenergy supplies more than 15% of energy by 2050 in the IEA's sustainable development scenario.
- **Traditional use of biomass declines to zero by 2030:** Traditional biomass use, solid biomass use with basic technologies, supplied 7% of energy in emerging economies in 2021.
- **Clean fuels demand triples to 2030:** Biogases and liquid biofuels expand to help decarbonize transportation, heating and power sectors.
- **Bioenergy supports energy access, especially for clean cooking:** In the IEA's Sustainable Africa Scenario bioenergy supplies 90% of clean cooking energy by 2030 in Sub-Saharan Africa.
- **Production and use of modern, sustainable bioenergy is not expanding in-line with the IEA's sustainable development scenario:** Modern, bioenergy production and use is 25% higher in the sustainable development scenario compared what existing policies are expected to achieve by 2030.

Bioenergy's share of energy supply remains constant to 2050

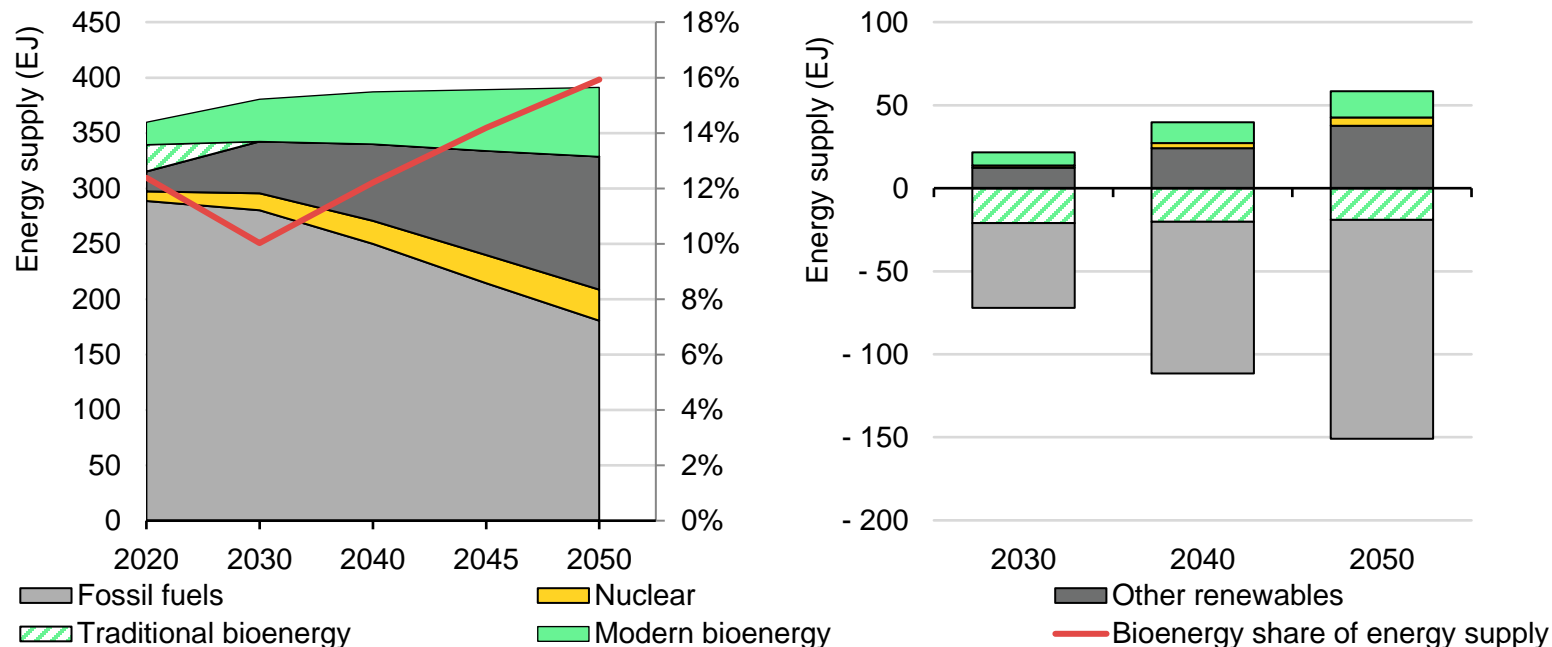


Historical energy supply: IEA global energy balances, stated policy scenario from IEA (2021) World Energy Outlook

Under existing policies bioenergy would continue to provide 12% of total energy supplies, primarily in the form the solid biomass. However, total bioenergy supply increases by 40% by 2050 from 2020 levels.

Modern bioenergy supply triples in the SDS

Total energy supply (left) total energy supply growth in the SDS relative to existing policies (right), emerging economies, 2020-50

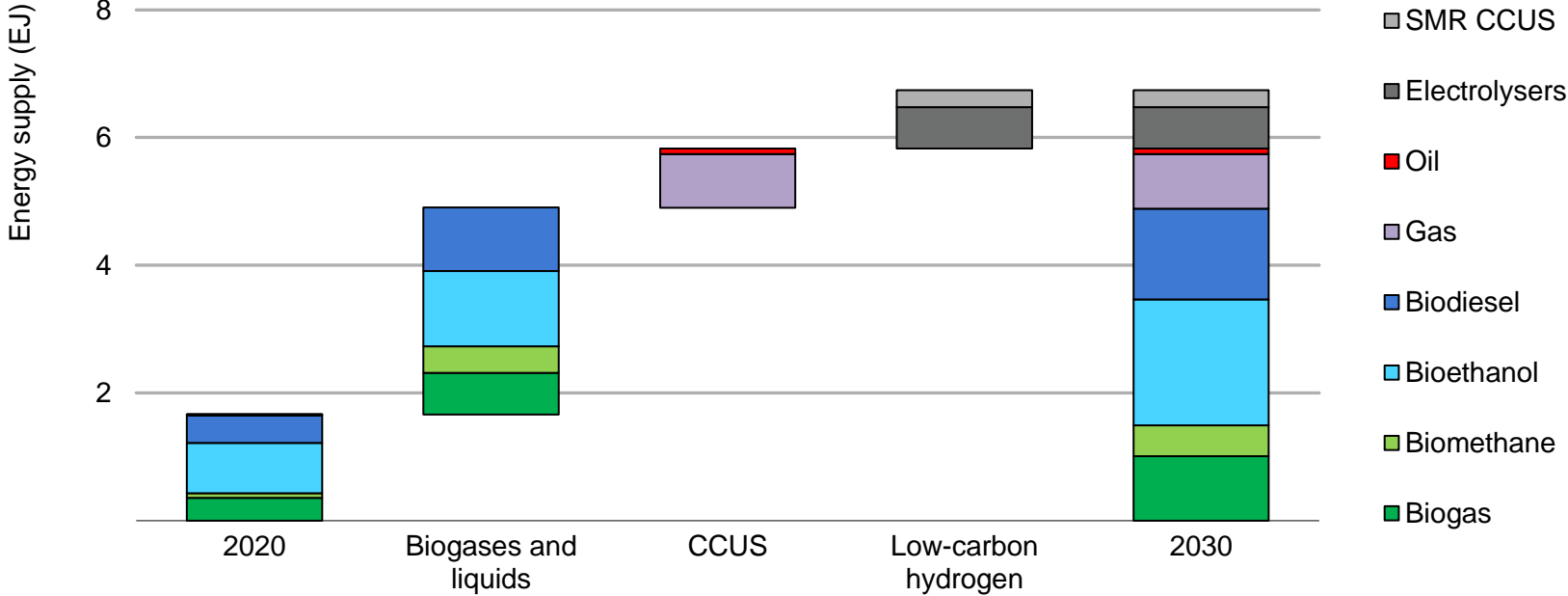


IEA (2021) World Energy Outlook

By 2050 modern bioenergy supplies 16% of energy in the IEA's sustainable development scenario, helping provide liquid, gaseous and solid fuels compatible with existing infrastructure.

Bioenergy provides the majority of new, clean fuel supply

Clean fuel supply growth, emerging economies, SDS, 2020-30

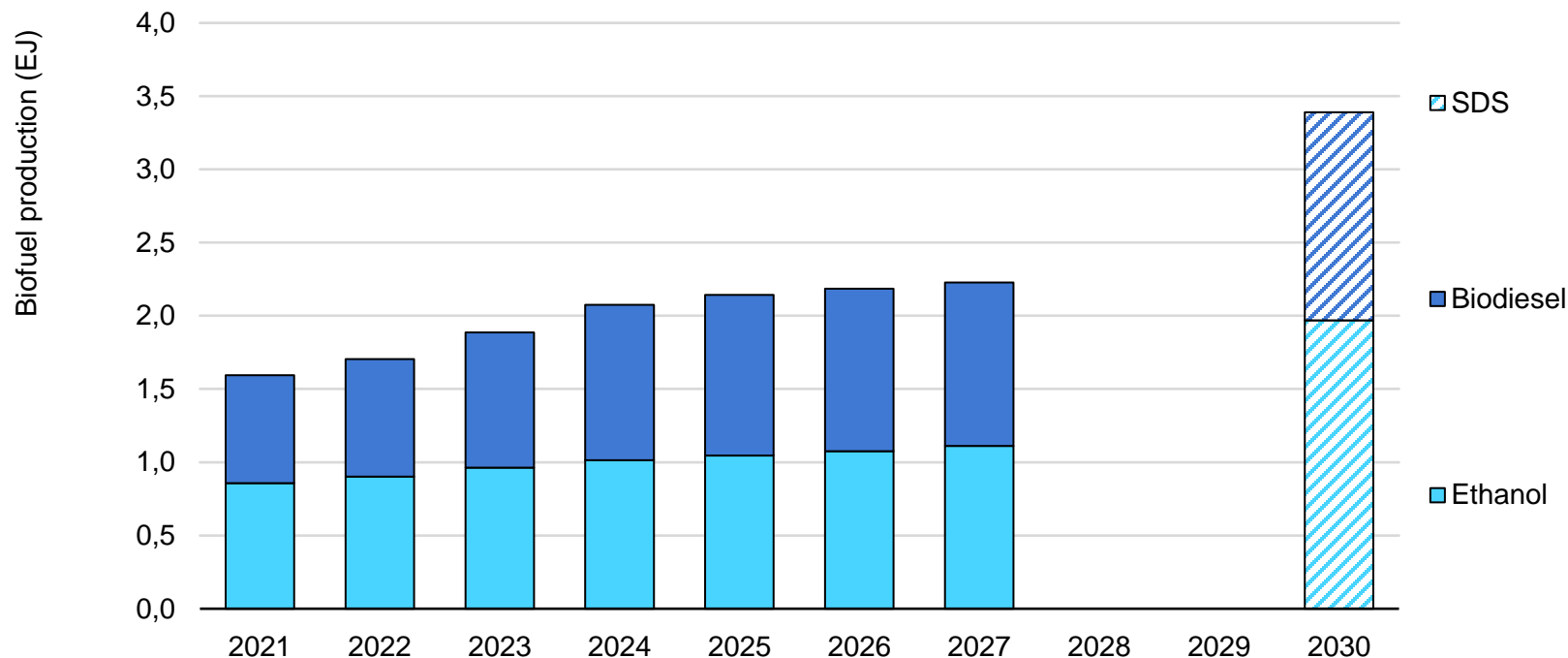


IEA (2021) Financing Clean Energy Transitions in Emerging and Developing Economies

Ethanol and biodiesel help decarbonize transportation while biogases help decarbonize transportation, industry and buildings.

Liquid biofuel production is not on track with the SDS scenario

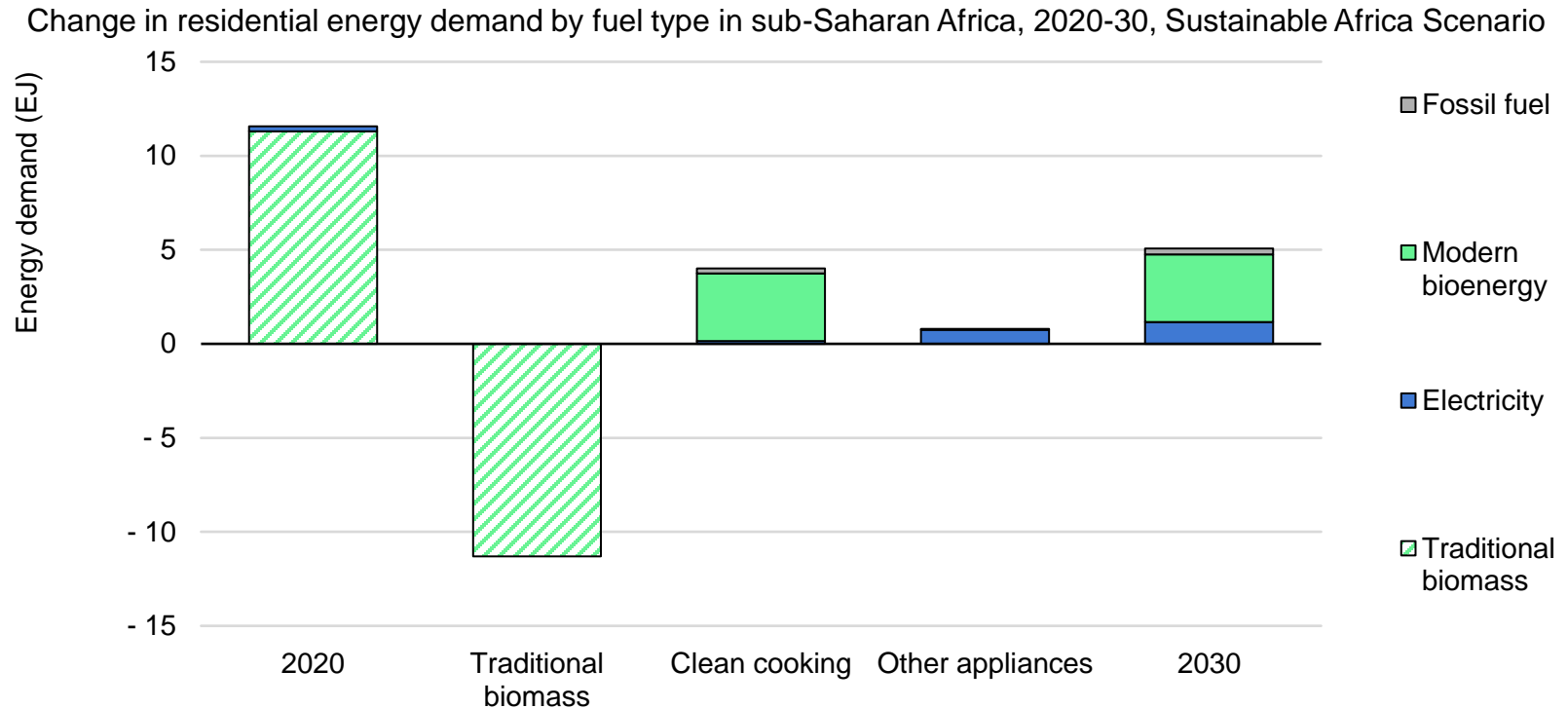
Forecast liquid biofuel production in emerging economies vs. SDS, 2021-30



IEA (2022) Renewables 2022 and IEA (2021) Financing Clean Energy Transitions in Emerging and Developing Economies

Annual growth rates would need to double from historical rates to align with the IEA's Sustainable Development Scenario in emerging economies.

Modern bioenergy is critical to clean cooking access in Africa

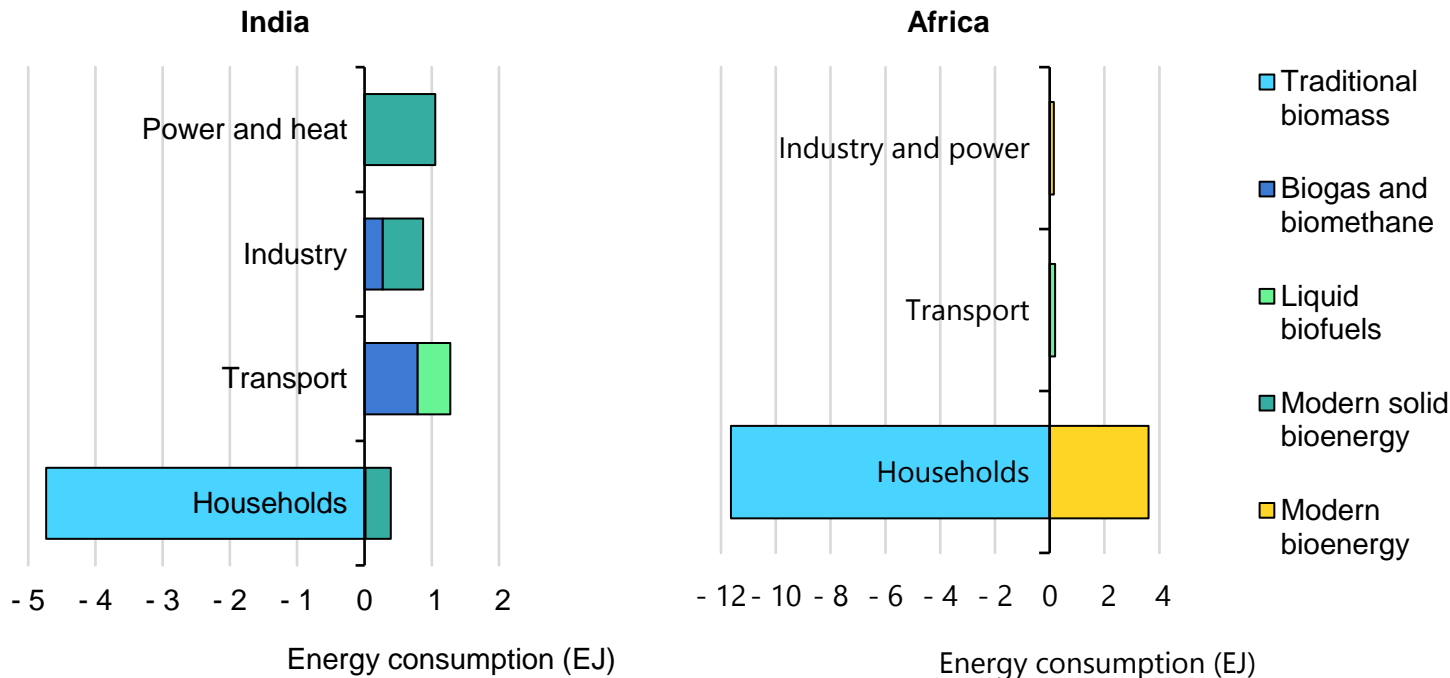


IEA (2022) Africa Energy Outlook 2022

Replacing traditional use of biomass with more efficient and clean cooking solutions more than offsets rising energy services demand to 2030.

Modern bioenergy supports the energy transition across sectors

Change in bioenergy demand in India 2020-40 (left) and Africa 2020-30 (right)



IEA (2022) Africa Energy Outlook 2022 and IEA (2021) India Energy Outlook

Declines in traditional biomass use more than offset modern bioenergy growth in other sectors in India and Africa in support of clean energy transitions.

- **Political priority:** Successful bioenergy deployment necessitates cross government coordination which requires strong political support.
- **Develop a long-term strategy:** Governments must consider feedstock supply, investment costs, economic impacts, infrastructure compability, technical standards, trade policy when developing biofuels policy. A long-term strategy helps identify challenges and opportunities.
- **Provide the right investment signals:** Clear government policies are essential to ensuring markets access and encouraging investment.
- **Ensure supplies are secure and affordable:** Biofuels must support energy security objectives while being affordable to governments and citizens.
- **Include sustainability governance:** Ensure biofuels provide significant GHG savings and support sustainable development goals.

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