IEA Bioenergy
Technology Collaboration Programme

Sustainable bioenergy:

A global contributor to achieve a 1.5 C world

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IRENA-ECS Workshop on policies for sustainable bioenergy
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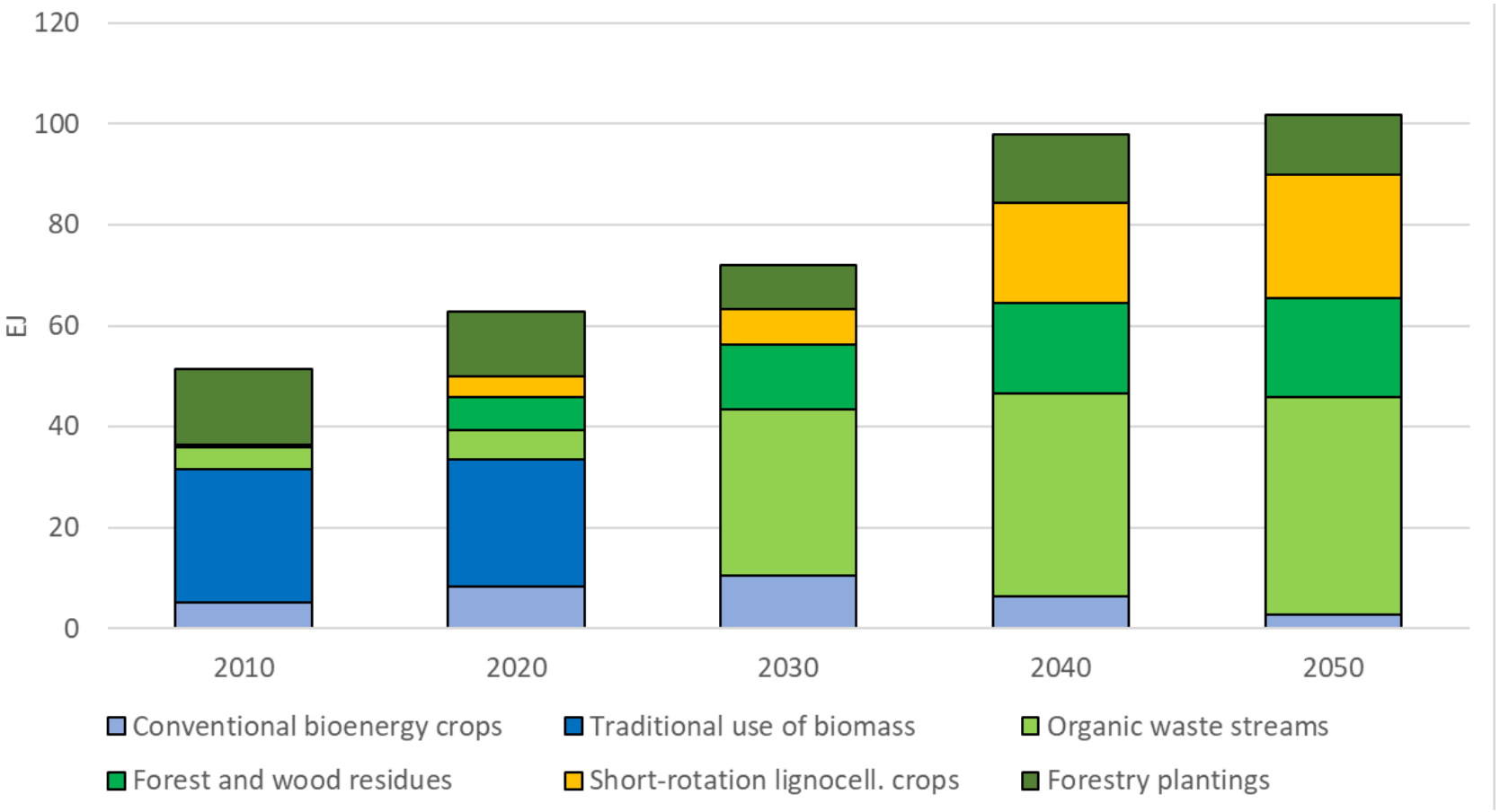
Bioenergy: IEA Net Zero By 2050 scenario



Source: https://www.iea.org/reports/net-zero-by-2050

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Bioenergy: IEA Net Zero By 2050 scenario

Limited to 100 EJ (*conservative*)

- 60 EJ from agri, forestry & industry residues & wastes
- 40 EJ cultivation for bioenergy
  - 1G bioenergy crops (food & feed) – strongly declining role
  - Increase in short-rotation lignocellulosic crops
  - Forestry plantings, e.g., forestry & agroforestry

140 Mha land use for bioenergy crops:
70 Mha marginal lands + 70 Mha croplands (~ *current land use for biofuels*)

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Bioenergy in 2050 scenarios

SCENARIO	BIOENERGY IN PRIMARY ENERGY (EJ)	BIOENERGY IN TOTAL PRIMARY ENERGY (%)	CO_2 REMOVED BY BECCS ($GtCO_2$/year)
IRENA 1.5°C Scenario	153	25	4.5
IPCC 1.5°C Special Report			
Median	154	26	5
Range	40-312	10-54	0-10[55]
IEA Net Zero Scenario	103	20	1.3

For 2050 “net zero emissions”, IRENA’s WETO assumes more biofuels and BECCS than IEA’s NZE – and about 50% more primary energy.

Source: IRENA (2022) World Energy Transitions Outlook 2022: 1.5°C Pathway. International Renewable Energy Agency. Abu Dhabi https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Mar/IRENA_World_Energy_Transitions_Outlook_2022.pdf

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Sustainable bioenergy: Key issues

- Bioenergy for “hard to abate” sectors, priority on biogenic residues & wastes (**cascading**)
- **No additional land:** restore land, agroforestry, inter-cropping, landscape management residues
- **Biorefineries** for food/feed/chemicals **and** bioenergy
- Rural & urban biomass supply for employment & income, **can improve** food security
- Strong **sustainability governance** needed

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Thanks for your attention!

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