

Linkages between Sustainable Bioenergy and SDGs

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IEA Bioenergy eWorkshop- Session 2: Sustainability co-benefits of bioenergy beyond climate

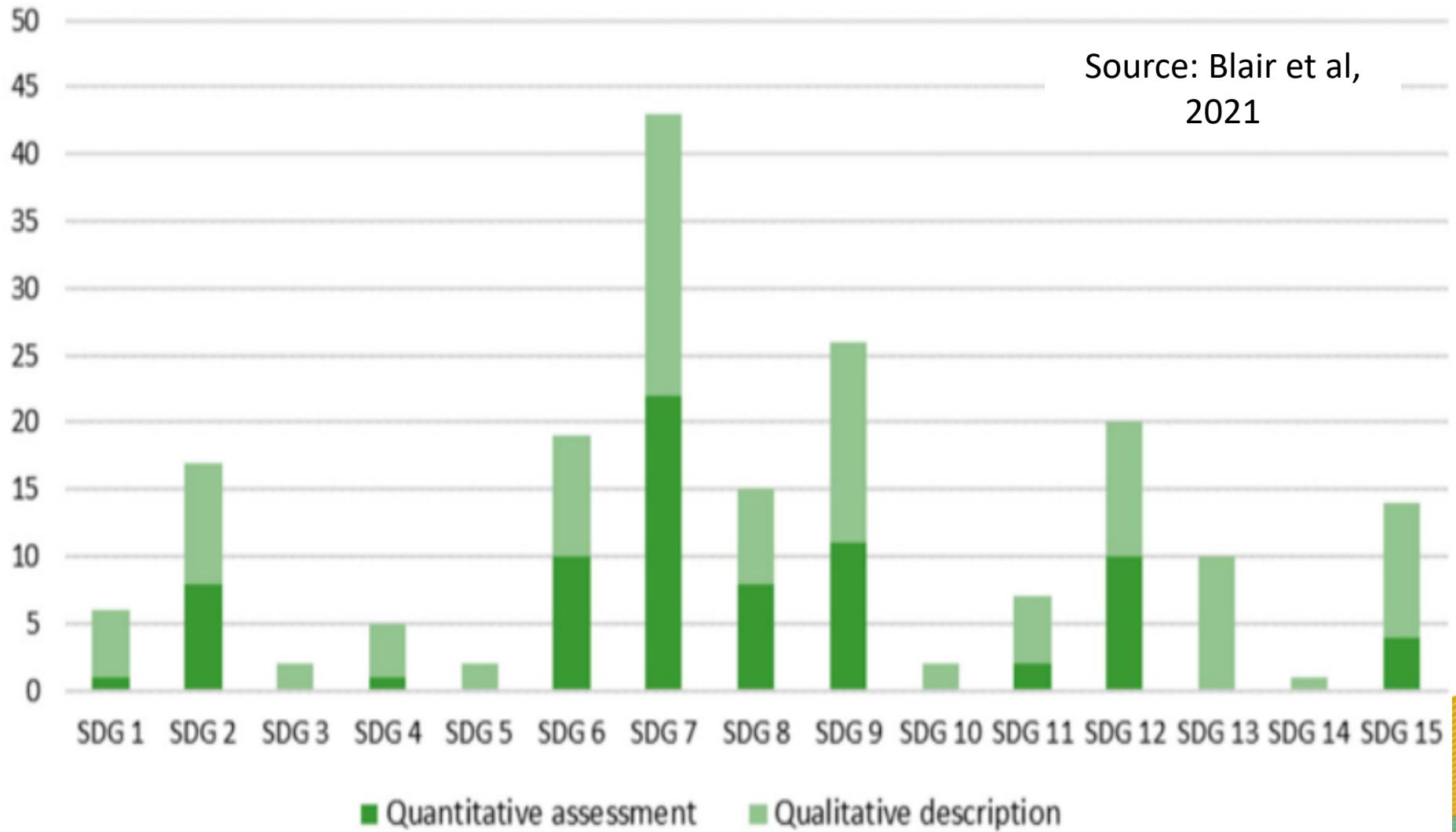
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Bioenergy mainly linked to Food, Water, Jobs, Efficient Use of Resources, Climate and Land

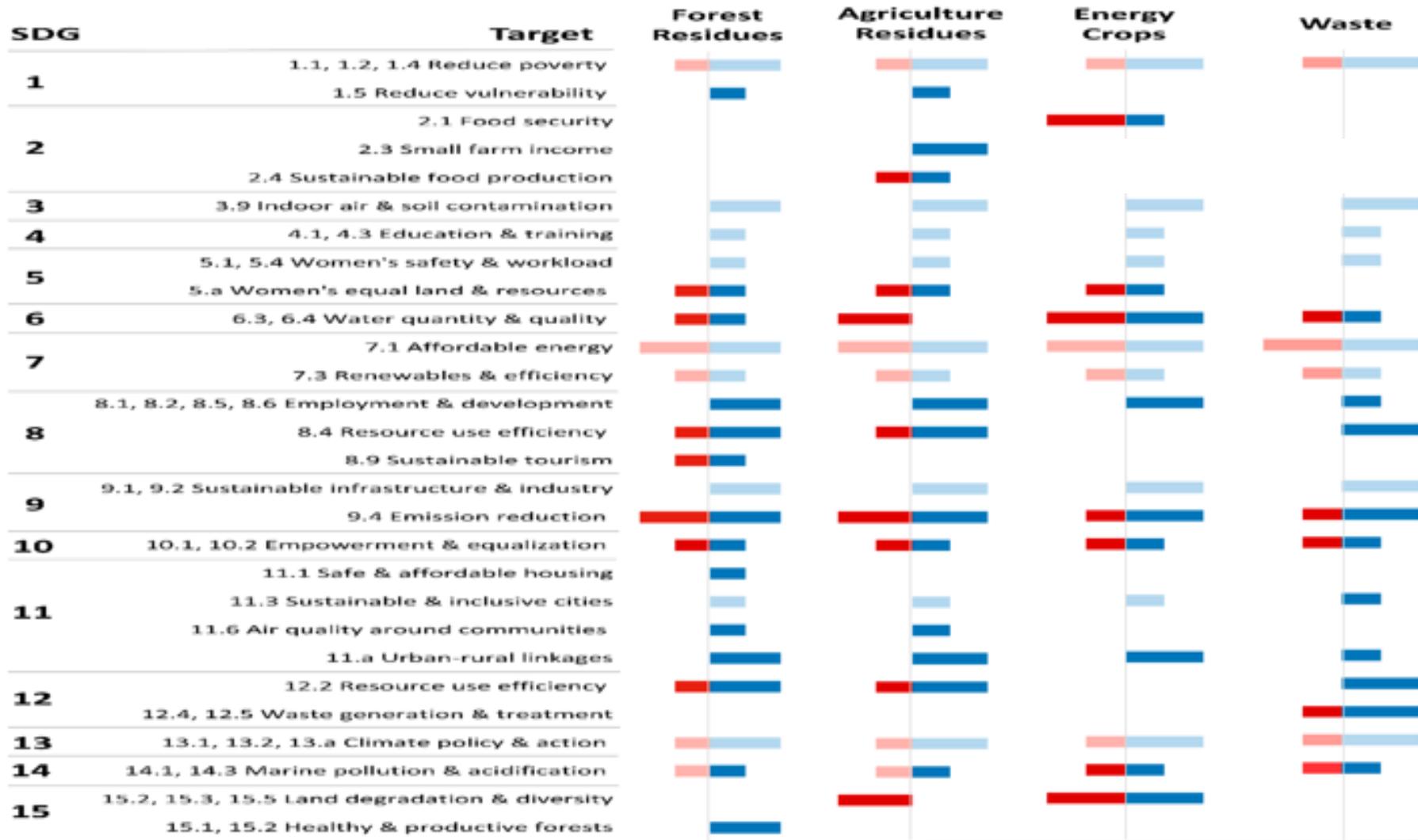


Many Context-Specific Trade-offs and Synergies

Results of scoring exercise

- Potential for positive interaction with target - biomass supply
- Potential for positive interaction with target - bioenergy generation
- Potential for negative interaction with target - biomass supply
- Potential for negative interaction with target - bioenergy generation

Source: Blair et al, 2021



Trade offs/Synergies: Food Security

- Possible competition for land used for food and bioenergy -
1G /Advanced
 - + By-products used as animal feed – 1G
 - + More income for farmers who produce feedstock -
1G/Advanced
 - + More energy self-sufficiency for food chain actors -
1G/Advanced
- ~ Food prices: bad for food consumers/good for farmers - 1G



Trade-offs and Synergies: Land

- Agricultural residues used for bioenergy can compete with their use for soil management and animal feed – Advanced
 - Conversion of high-carbon and/or high biodiversity land for bioenergy production
 - 1G/Advanced
 - Monocropping of energy crops can reduce biodiversity – Advanced
- + Bioenergy only type of RE that can achieve land rehabilitation: through use of biochar/biogas slurry, mixed energy/food crops (agroforestry), phyto-remediation and use of invasive species as feedstock - 1G/Advanced
- + Bioenergy can contribute to soil carbon sequestration through the use of biochar/biogas slurry and mixed cropping systems – 1G/Advanced

Multipurpose use of land (bioenergy + crops or other types of RE) can help reduce the land foot print of bioenergy and other REs

And , by the way, there can be good land use changes!



Very Clear Messages on Bioenergy Links to Food and Land

- 1G biofuels not to be discarded on the basis that they are always bad for food security
- Discarding 1G biofuels misses a significant potential to increase sustainable biofuel production, and, according to IPCC and IEA, we badly need this increase
- Advanced biofuels can also (indirectly) hamper food security and sustainable land use (through competing use of land and residues)
- What Matters is that Bioenergy is/Biofuels are Produced in a Sustainable Way
- And, collectively, we know how to do It
- Managers of major Bioenergy/Bioeconomy programs who discard 1G biofuels - Please take Note !



Trade-offs and synergies: Water

- Possible competition between water needed for bioenergy (including biogas) and water needed for agriculture, livestock and people
- + Waste water treatment can produce biogas and biofertiliser, and the resulting water can be used for irrigation

A Water-Energy-Food Nexus approach helps to address these trade-offs and harness synergies



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Trade-offs and synergies: Climate Change

- Unsustainable woodfuel collection for domestic purposes can increase deforestation and forest degradation
- Use of woodfuel from unsustainably managed forests can increase GHG emissions
- + Substitution of fossil fuel with sustainable bioenergy reduces GHG emissions
- + Plantations of energy crops can increase carbon sequestration



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Final Considerations & Recommendations

- Bioenergy is here to stay and should stay because we need it to achieve several SDGs, in particular the Paris Agreement
- Don't over-simplify assessments because bioenergy is inherently complex and multi-faceted and its sustainability is therefore context-specific
- Instead embrace the complexity of bioenergy because there are ways to address its trade offs and there are often good and often overlooked co-benefits of sustainable bioenergy
- Don't rush in developing policies and regulations (e.g. mandates) without a robust and contextualised (not only global models please!) assessment of the situation and potential



Final Considerations & Recommendations

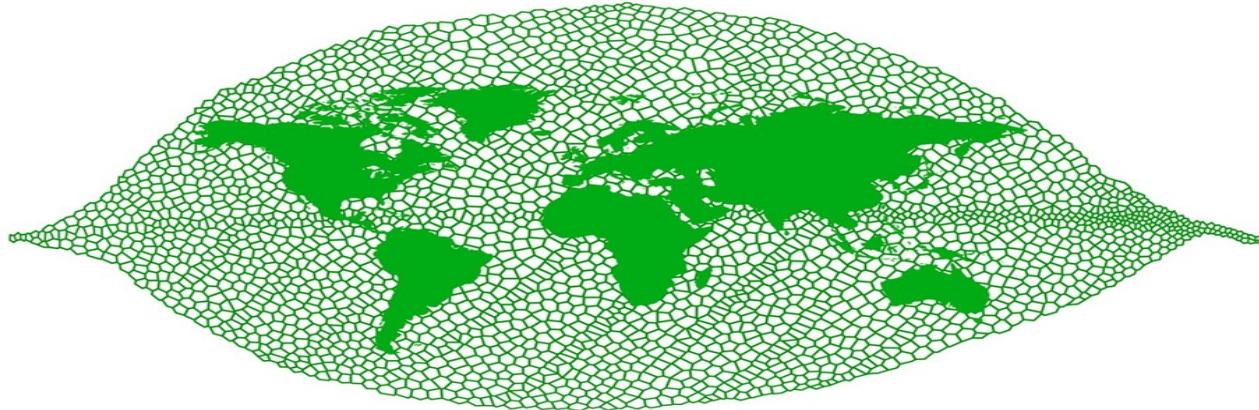
- Use and improve existing tools (e.g., GBEP indicators, FAO-BEFS approach) to assist in the quantitative reporting, and evaluation, of bioenergy systems to better inform investors and policy makers and help them go beyond their sectoral silos
- Implement proven agreed good practices such as Integrated Food Energy Systems and co-locating bioenergy with other types of renewable energy to reduce the land footprint of RE
- Develop bioenergy through cross-sectoral working groups
- Use a water-energy-food-climate nexus approach in developing sustainable bioenergy



Thank you for your attention

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