

Examples of bioenergy contributing to rural development and land restoration in developing countries

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IEA Bioenergy e-workshop WS27, co-organised with GBEP and Biofuture Platform:
Bioenergy and Sustainable Development – Climate Change Mitigation and Opportunities for
Sustainability Co-Benefits

24 May 2022

GLOBAL BIOENERGY PARTNERSHIP

WORKING TOGETHER FOR SUSTAINABLE DEVELOPMENT

GBEP context

GBEP/FAO Project:

ENVIRONMENTAL

SOCIAL

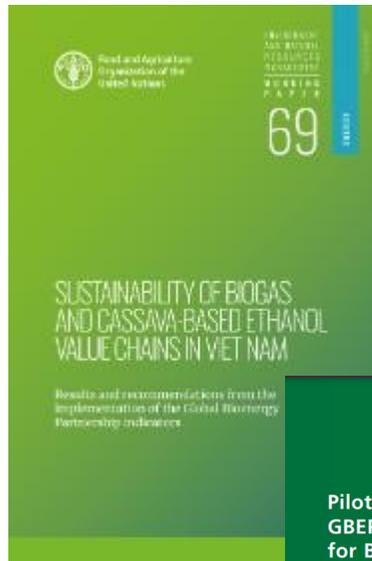
ECONOMIC

1. Lifecycle GHG emissions	9. Allocation and tenure of land for new bioenergy production	17. Productivity
2. Soil quality	10. Price and supply of a national food basket	18. Net energy balance
3. Harvest levels of wood resources	11. Change in income	19. Gross value added
4. Emissions of non-GHG air pollutants, including air toxics	12. Jobs in the bioenergy sector	20. Change in consumption of fossil fuels and traditional use of biomass
5. Water use and efficiency	13. Change in unpaid time spent by women and children collecting biomass	21. Training and re-qualification of the workforce
6. Water quality	14. Bioenergy used to expand access to modern energy services	22. Energy diversity
7. Biological diversity in the landscape	15. Change in mortality and burden of disease attributable to indoor smoke	23. Infrastructure and logistics for distribution of bioenergy
8. Land use and land-use change related to bioenergy feedstock production	16. Incidence of occupational injury, illness and fatalities	24. Capacity and flexibility of use of bioenergy



Examples of Positive Bioenergy and Water Relationships

GBEP
IEA Bioenergy
January 2016



Situation in developing countries

Problem analysis

- Traditional bioenergy > inefficient use of resources > land degradation > lack of basic energy services
- Fossil fuels > fundamentally unsustainable
- Problem of managing and disposing of wastes > further contamination of environment
- Impacts on all aspects of development

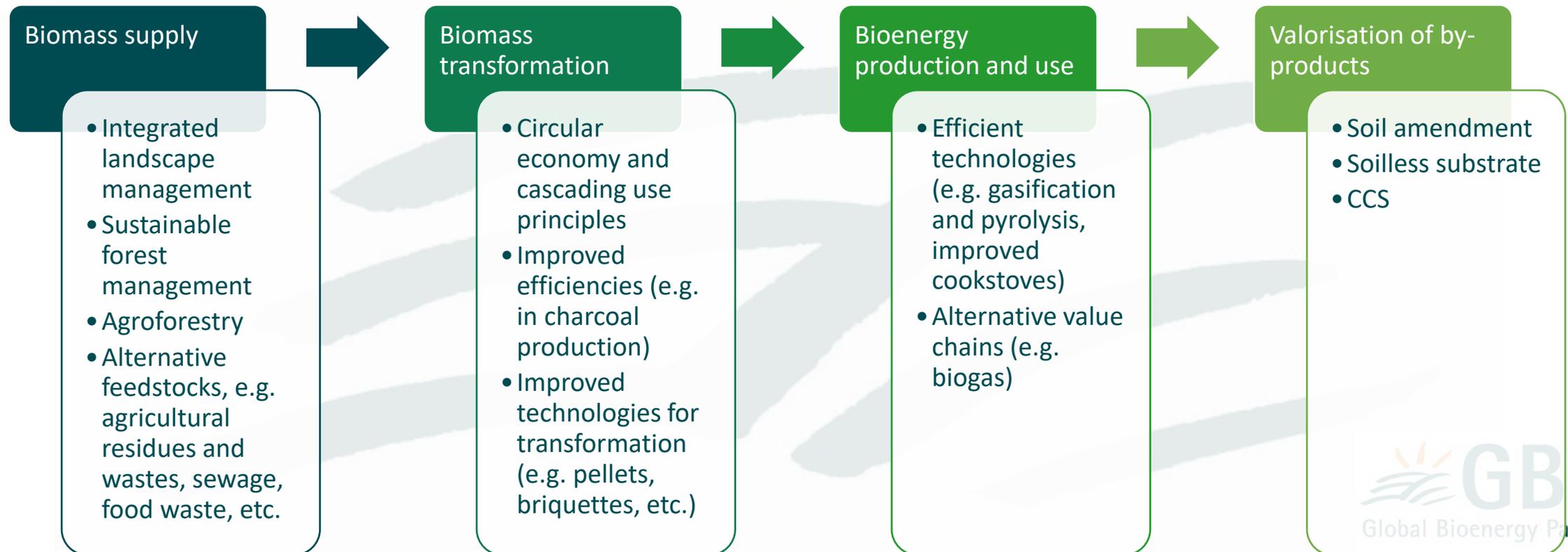
What do we need?

- Need an immediate but gradual shift away from traditional bioenergy and fossil fuels towards modern, sustainable bioenergy as part of a circular economy approach
- Provision of modern bioenergy has many co-benefits...



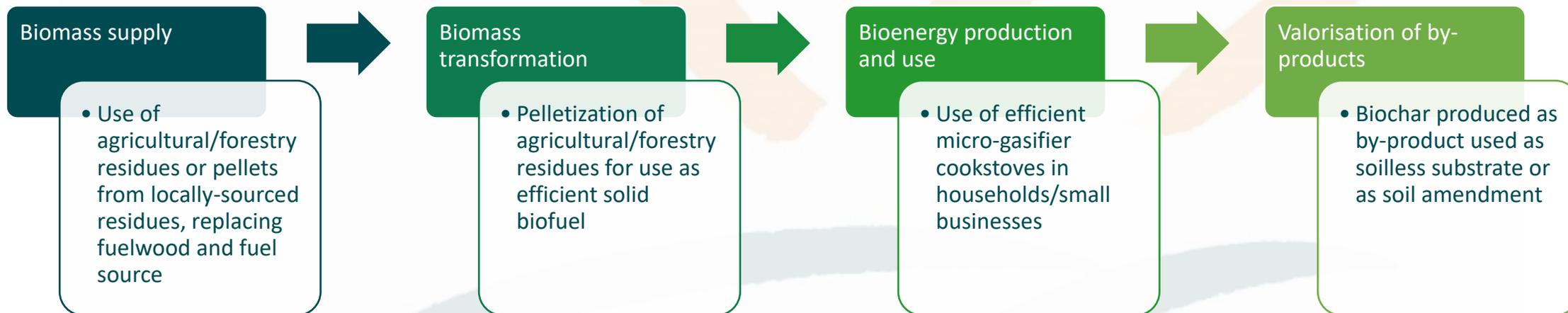
How can bioenergy contribute to rural development and land restoration?

- Improvements across value chain from biomass supply, pre-treatment/transformation, bioenergy production and use, and the valorisation of by-products



Deployment of micro-gasifier cookstoves for cooking and biochar in Ghana

CAPACITY BUILDING ON THE GLOBAL BIOENERGY PARTNERSHIP (GBEP) SUSTAINABILITY INDICATORS FOR BIOENERGY IN THE ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS) COUNTRIES
A project funded by GIZ on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ) of Germany
Grant Agreement Number: 81227987
Final report
March 2019



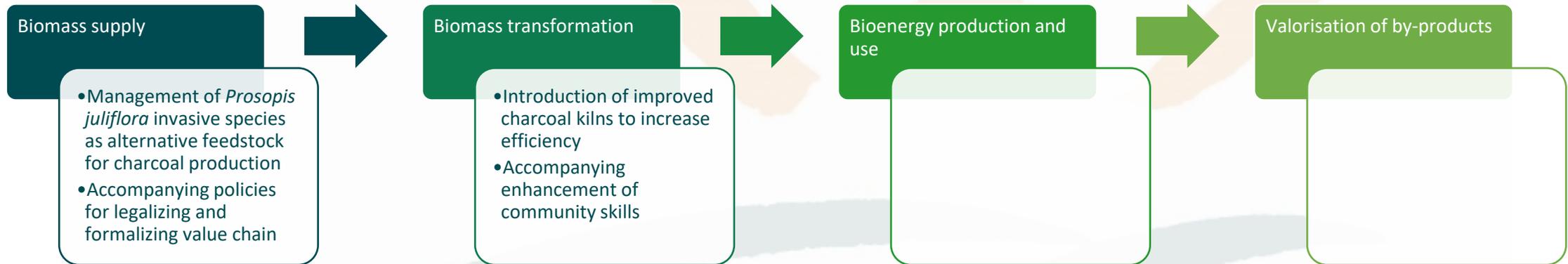
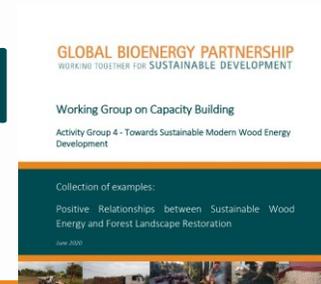
Co-benefits:

- Increased energy access – lower cost fuel
- Health benefits – clean cooking
- Reduce pressures on local forest resources
- Community waste management
- Climate-smart agricultural practices – biofertilizer
- Climate change mitigation – CCS
- Direct and indirect job creation from value chain

Lessons learnt:

- Access to investors/investment is key
- Should be combined with training to local farmers in making biofertilizer and engagement in process to address agricultural market bottlenecks

Examples of rural development and land restoration in Kenya – invasive species



Co-benefits:

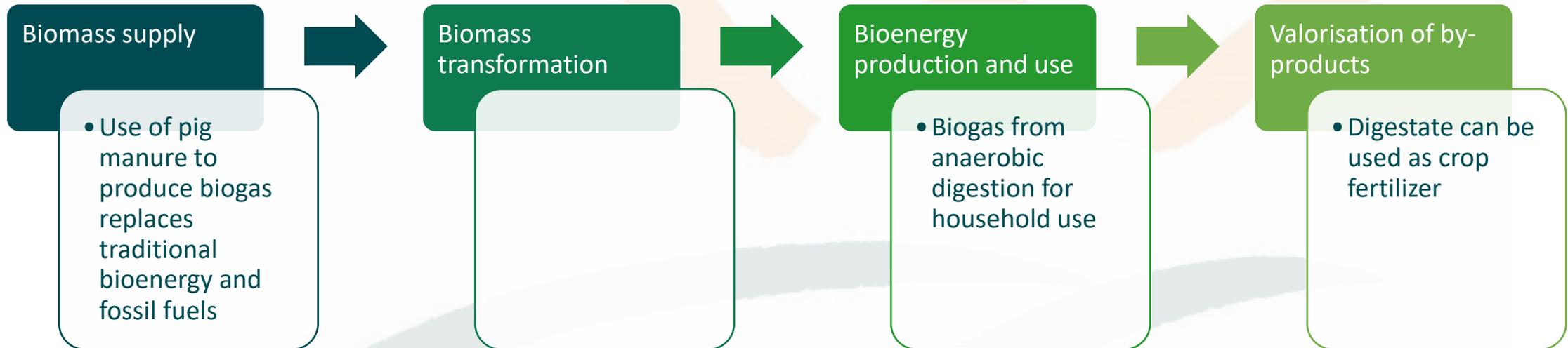
- Reduced pressure on indigenous woodlands
- Production of sustainable charcoal to meet growing demand
- Opening of invaded areas for multiple land uses
- Increased standing biomass
- Enhanced species diversity
- More resilient livelihood systems

Lessons learnt:

- Require appropriate enabling environment



Valorisation of livestock wastes – biogas from pig manure in Viet Nam



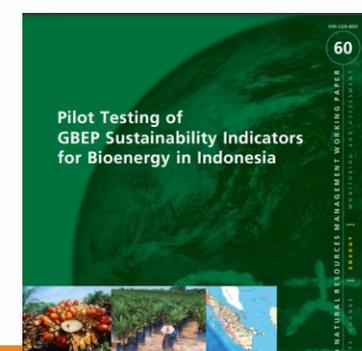
Co-benefits:

- Reduced household expenditures on energy (ind. 11)
- Increased access to modern energy services (ind. 14)
- Reduced time spent collecting fuelwood (ind. 13)
- Reduced exposure to indoor air pollution and to the related health risks (ind. 15)
- Demand for skilled jobs (ind. 12)

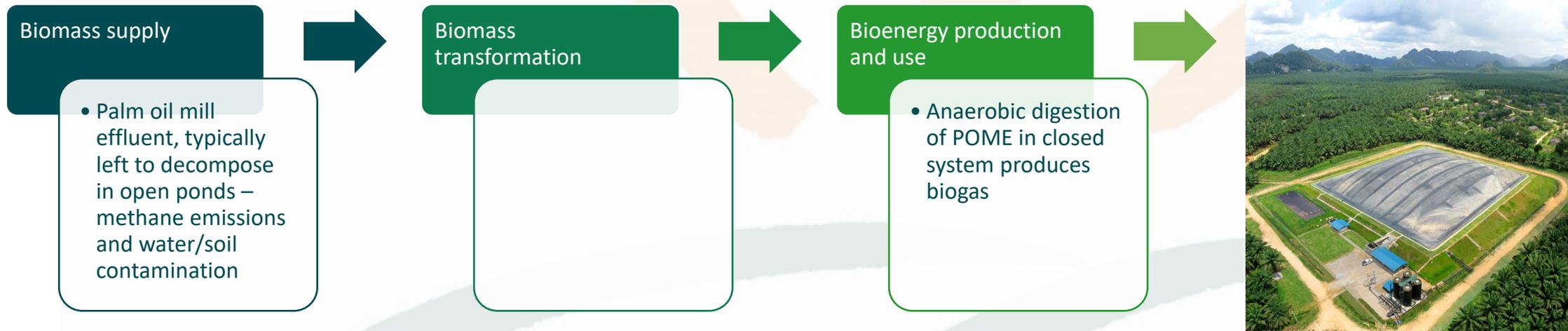
Lessons learnt:

- Poor management of ADs must be improved to ensure benefits and reduce risks (digestate discharge, methane leaks and poor efficiency)
- Need awareness raising on use of biogas and by-product
- International coordination is key

Improving value chains through circular economy approach – POME in Indonesia



CASE STUDIES



Co-benefits:

- Reduce GHG lifecycle emissions through reduced CH₄ emissions and reduced dependence on fossil fuels for industrial activities
- Reduce soil contamination
- Improve water quality
- Enhance access to modern energy services

Lessons learnt:

- POME anaerobic digestion must be incentivised through both waste regulation and biogas/biomethane incentivisation policies

There are many different solutions to similar problems but some overarching factors that can lead to success:

- Understanding of system dynamics to enhance positive synergies
- Short value chains embedded in local stakeholder priorities
 - Focusing on solving existing problems, as identified by stakeholders
 - Valorisation of residues and wastes
 - Stakeholder ownership
- Accompanied by appropriate capacity building
- Enabling environment and supporting policies are always necessary (requiring awareness among policy makers at various levels)

GBEP lessons learnt and future perspectives

GBEP brings together stakeholders to facilitate information exchange and raise awareness among policy makers across sectors and levels about the opportunities and pitfalls of modern bioenergy

The *GBEP Sustainability Indicators* provide the scientific basis for sound policy development that supports sustainability bioenergy value chains

The *Rapid Implementation Framework* of the GBEP Sustainability Indicators has been developed to facilitate a rapid assessment of national bioenergy value chains for raising awareness among stakeholders of critical sustainability issues



Thank you

