IINAS
International Institute for Sustainability Analysis and Strategy

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INSTITUT FÜR ENERGIE- UND UMWELTFORSCHUNG HEIDELBERG

Linkages between the Sustainable Development Goals (SDGs) and the GBEP Sustainability Indicators for Bioenergy (GSIs)

Technical Paper for the GBEP Task Force on Sustainability

- DRAFT OUTLINE -

prepared for

GBEP
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prepared by

Uwe R. Fritsche, Scientific Director, IINAS

Ulrike Eppler, Research Fellow, IINAS

Horst Fehrenbach, IFEU

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Background

The GBEP Task Force on Sustainability (TFS) was reopened in May 2015 with a new scope of work agreed by the GBEP Partners, with the focus to enhance the practicality of the GBEP Sustainability Indicators for Bioenergy (GSI) by producing an implementation guide to complement the "Global Bioenergy Partnership Sustainability Indicators for Bioenergy" report.

As agreed at the 13th Meeting of the TFS, it is important to understand the GSIs in the context of the **Sustainable Development Goals** (SDGs). As a contribution to this, a Technical Paper will be prepared to highlight the linkages between the SDGs and the GSIs and to determine how they may be mutually reinforcing.

Purpose of this Draft Outline and Next Steps

This **outline** gives an overview of issues to be addressed in the paper, and introduces first thoughts on the content.

The Technical Paper will be further developed on the basis of the discussions to be held during the 2016 GBEP Rome meetings, with the aim to have a draft version in Spring 2017, which will be discussed during a workshop (tentatively scheduled for early July 2017 in Bonn, Germany)[1].

After that, a final version will be prepared for approval during the 2017 GBEP meetings in Rome.

Acknowledgements

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Any error, misconception or omission remains the responsibility of the authors.

[1] The paper will be further developed by Germany - after the GBEP discussions in Rome no further GBEP engagement or commitment is proposed until the preparation of the draft version, but the authors would appreciate comments or other inputs by GBEP partners and observers anythime.

1 Biomass and the SDGs

The 17 SDGs[2] represent a **normative framework** which could be used to "define" sustainable development in general – and their 169 targets give quantitative steps towards achieving the goals. Each country will have to "translate" the SDGs into its own development agenda – and to report to the UN on respective achievements.

There is a multitude of **indicators** for the SDGs, i.e. quantitative or qualitative expressions to "measure" the achievement of the goals and targets which are to be used at national scale.

The SDGs are meant to give orientation for the future global development. However, the SDGs disregard the relevance of biomass for the global food, feed, fibre and energy systems (see Figure 1 in Annex) **by not making any reference** to biomass, bioenergy, or biofuels – or more "modern" concepts such as biorefineries.

Yet bioenergy - as part of the overall use of biomass (i.e. the "bioeconomy") is expected to **increase globally** (see Figure 2 in Annex). This increase will likely be driven by several SDGs, but could also be subject to sustainability safeguards from other SDGs, as indicated in Table 1.

[2] The SDGs are part of the Resolution adopted by the UN General Assembly on 25 September 2015 "Transforming our world: the 2030 Agenda for Sustainable Development" (UN GA 2015)

Table 1 Role of the SDGs for biomass supply and use

SDG	Key wording	Driver	Safeguard
	End poverty in all its forms everywhere	(✓)	(✓)
	**End hunger, achieve food security and improved nutrition and promote sustainable agriculture**	✓	✓
	Ensure healthy lives and promote well-being for all at all ages		(✓)
	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all		
	Achieve gender equality and empower all women and girls		
	Ensure availability and sustainable management of water and sanitation for all	(✓)	(✓)
	**Ensure access to affordable, reliable, sustainable and modern energy for all**	✓	(✓)
	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	(✓)	(✓)
	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	(✓)	
	Reduce inequality within and among countries		
	Make cities and human settlements inclusive, safe, resilient and sustainable	(✓)	(✓)
	**Ensure sustainable consumption and production patterns**	✓	(✓)
	**Take urgent action to combat climate change and its impacts**	✓	✓
	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	(✓)	(✓)
	**Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**	(✓)	✓
	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels		
	Strengthen the means of implementation and revitalize the global partnership for sustainable development	(✓)	(✓)

Source: own elaboration based on SDKP (2015). ***Bold text:*** *SDG related to biomass;* (✓) *= partially relevant*

Table 1 can be explained as follows:

- SDG 1 is a partial driver (e.g. through increased investments in bioenergy to foster rural employment and respective income), but also a partial safeguard (e.g. regarding land grabbing).
- SDG 2 will increase biomass for food & feed, but can also act as a safeguard due to promoting **sustainable** agriculture.
- SDG 3 may be a safeguard against respiratory diseases due to reducing health impacts from "traditional" biomass use.
- SDG 6 is a partial driver due to improved waste water treatment which implies increased supply of biogas.
- SDG 7 and particularly Target 7.2 "*By 2030, increase substantially the share of renewable energy in the global energy mix*" is the key driver for increasing demand for bioenergy, but as this SDG explicitly calls for **sustainable** energy, it could also be a safeguard.
- SDG 11 can be a partial driver (impling sustainable housing using biomaterials for construction), and also a potential safeguard if cities and settlements require **sustainable** provision of biomass, e.g. through procurement rules.
- SDG 12 will be a driver though increased use of biomaterials, and potentially safeguarding biomass sourcing.
- SDG 13 is a driver, as biomass is (under certain conditions) a low-GHG option for energy and materials, and also a safeguard in avoiding high-carbon options (e.g. biomass from conversion of grasslands or deforestation).
- SDG 14 may be both a partial driver, and a partial safeguard if aquatic biomass is developed for biomaterials, and bioenergy supply[3].
- SDG 15 can be a partial driver (restoring degraded land through biomass cultivation), and a safeguard (protecting biodiversity, no land degradation).
- SDG 17 may imply both increased biomass use, and sustainability safeguards for biomass if, for example, the GBEP GSIs receive more attention.

To determine the implication of the SDGs for biomass, **all** these drivers and potential safeguards need to be reflected in an **integrated way[4]**.

[3] Up to 2030, the role of **additional** aquatic biomass supply (macro- and micro-algae) for non-food uses will not be prominent due to the early stage of technological development for these purposes.

[4] This integration will be reflected to the extent possible in Section 3 of this paper. The analysis in Section 2 is "linear" (i.e. made sequentially), but considers both potential synergies as well as potential negative tradeoffs (conflicts).

2 The GBEP Sustainability Indicators for Bioenergy and the SDGs

This section will discuss the GSIs with regard to their (inter)linkages to the SDGs and their indicators.

Table 2 The GBEP Sustainability Indicators for Bioenergy

Environmental pillar	Social pillar	Economic pillar
1. Life-cycle 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

Source: GBEP (2011)

The GSIs are accompanied by so-called methodology sheets for each indicator which provide descriptions of underlying concepts, potential data sources and examples for applicable methodologies (GBEP 2011).

In the following subsections, the linkages between the SDGs (and their targets and indicators) and each of the three GSI pillars is discussed. Where meaningful, interlinkages to other SDGs (potential synergies and/or conflicts) are indicated.

2.1 Environmental Pillar

- to be compiled -

Table 3 SDGs and the GBEP Sustainability Indicators for Bioenergy: Environmental Pillar

		GSI Indicator	Potential linkage to SDG	
			synergy	conflict
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
etc.				

Source: IINAS compilation

2.2 Social Pillar

- to be compiled -

Table 4 SDGs and the GBEP Sustainability Indicators for Bioenergy: Social Pillar

		GSI Indicator	Potential linkage to SDG	
			synergy	conflict
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
etc.				

Source: IINAS compilation

2.3 Economic Pillar

- to be compiled -

Table 5 SDGs and the GBEP Sustainability Indicators for Bioenergy: Economic Pillar

		GSI Indicator	Potential linkage to SDG	
			synergy	conflict
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
SDG				
- Target(s)				
o Indicator(s)				
etc.				

Source: IINAS compilation

3 Perspectives for Applying the GSI in the Process of National Implemention of the SDGs

This section will discuss how the national implementation of the SDGs **could benefit** from the GSIs - and *vice versa*.

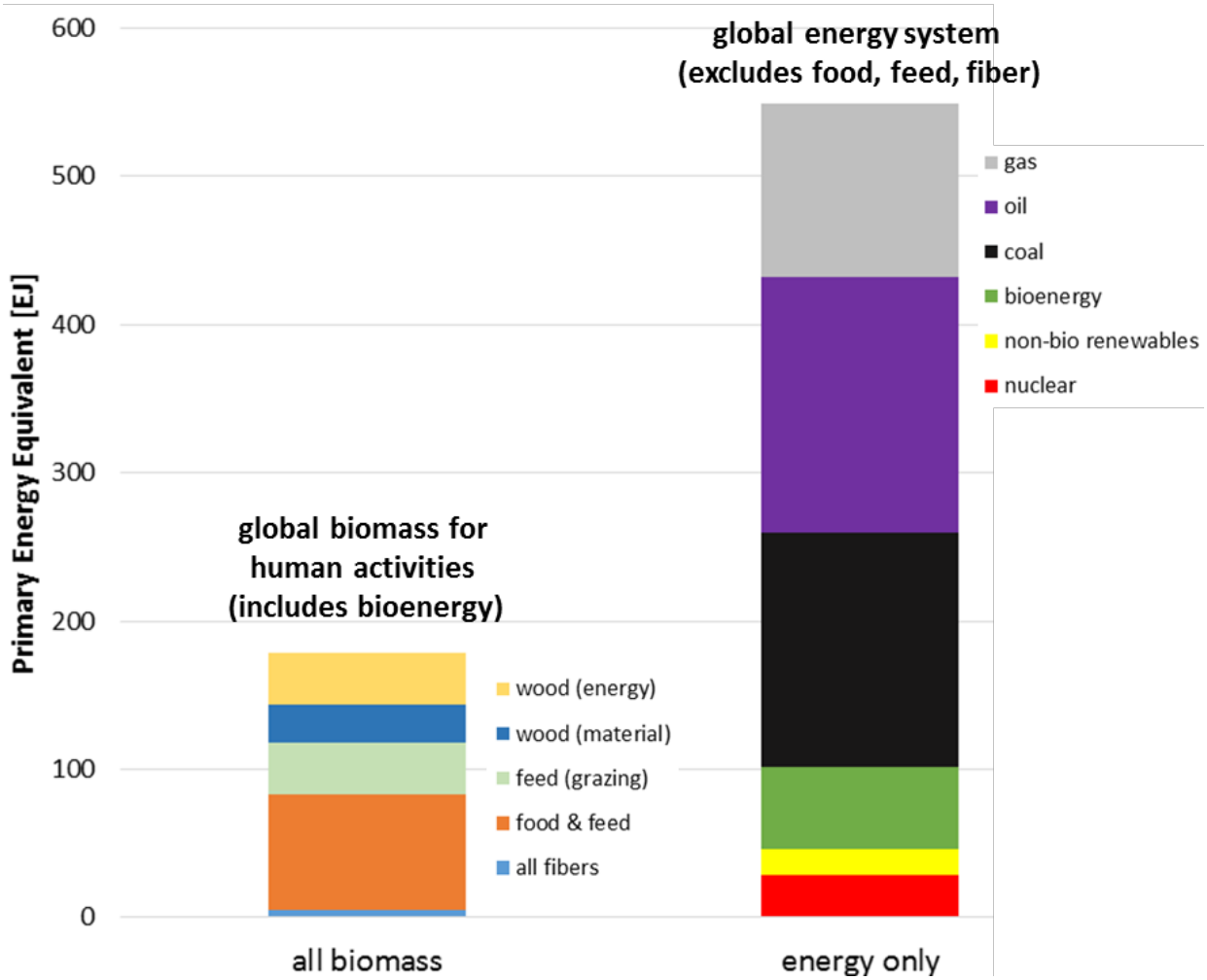
Furthermore, opportunities and challenges for integration of several SDGs (and their indicators) will be reflected.

References

- will be given in the draft paper -

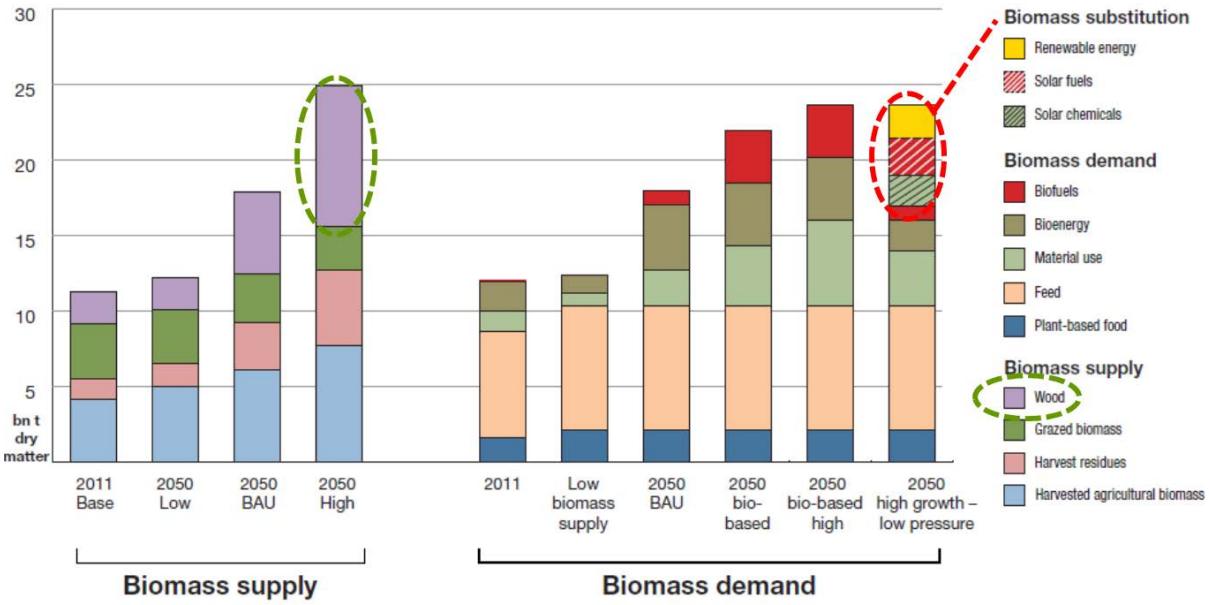
Annex: Data on global biomass and global (bio)energy

Figure 1 Biomass and the global energy system



Source: IINAS calculation for 2010 based on IEA and nova-institute data

Figure 2 Bioceconomic scenarios for global biomass supply and use up to 2050



Source: Nova (2015): Global bioeconomy in the conflict between biomass supply and demand. nova paper #7. Hürth www.bio-based.eu/nova-papers