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Better-iS

Strategies to use Biofuel Value Chain Potential in Sub-Saharan Africa to respond to Global Change - Enhancing low-productivity Farming in Tanzania and linking to SMEs

- Stefan Sieber and Götz Uckert

on behalf of the Better-iS consortium -

Leibniz Centre for Agricultural Landscape Research e.V.

Leibniz Universität Hannover – Environmental Economics and World Trade

The International Food Policy Research Institute

World Agroforestry Centre

Association for Strengthening Agricultural Research in Africa

Sokoine University of Agriculture (SUA)

Wuppertal Institute for Climate, Environment and Energy

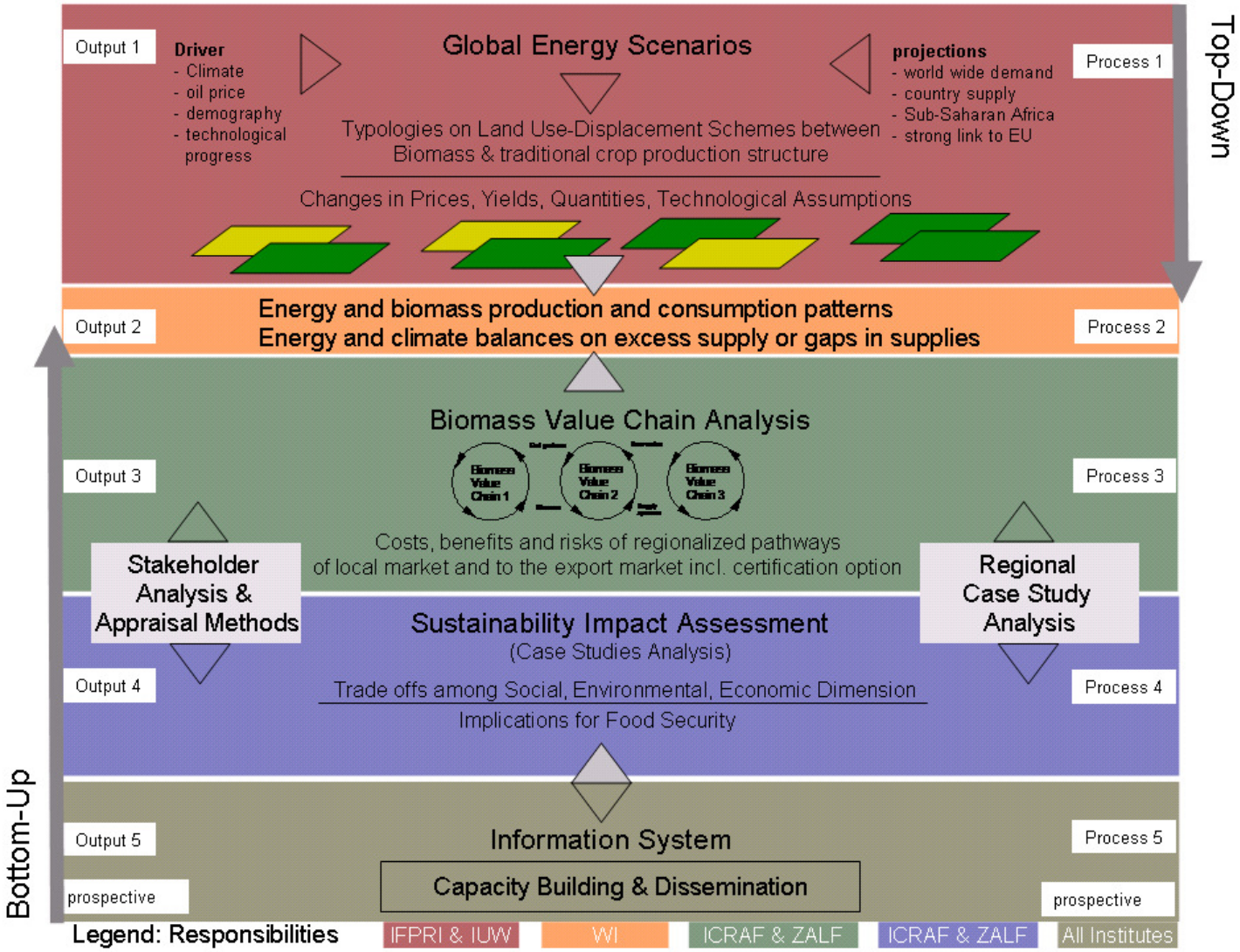
Müncheberg, 20. August 2010

gtz – Im Auftrag des Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung

Outline

1. Overview Better-iS
2. Milestones per Output
3. Overview Timing
4. Outcome beyond Outputs
5. Overview budget

Overview Better-iS



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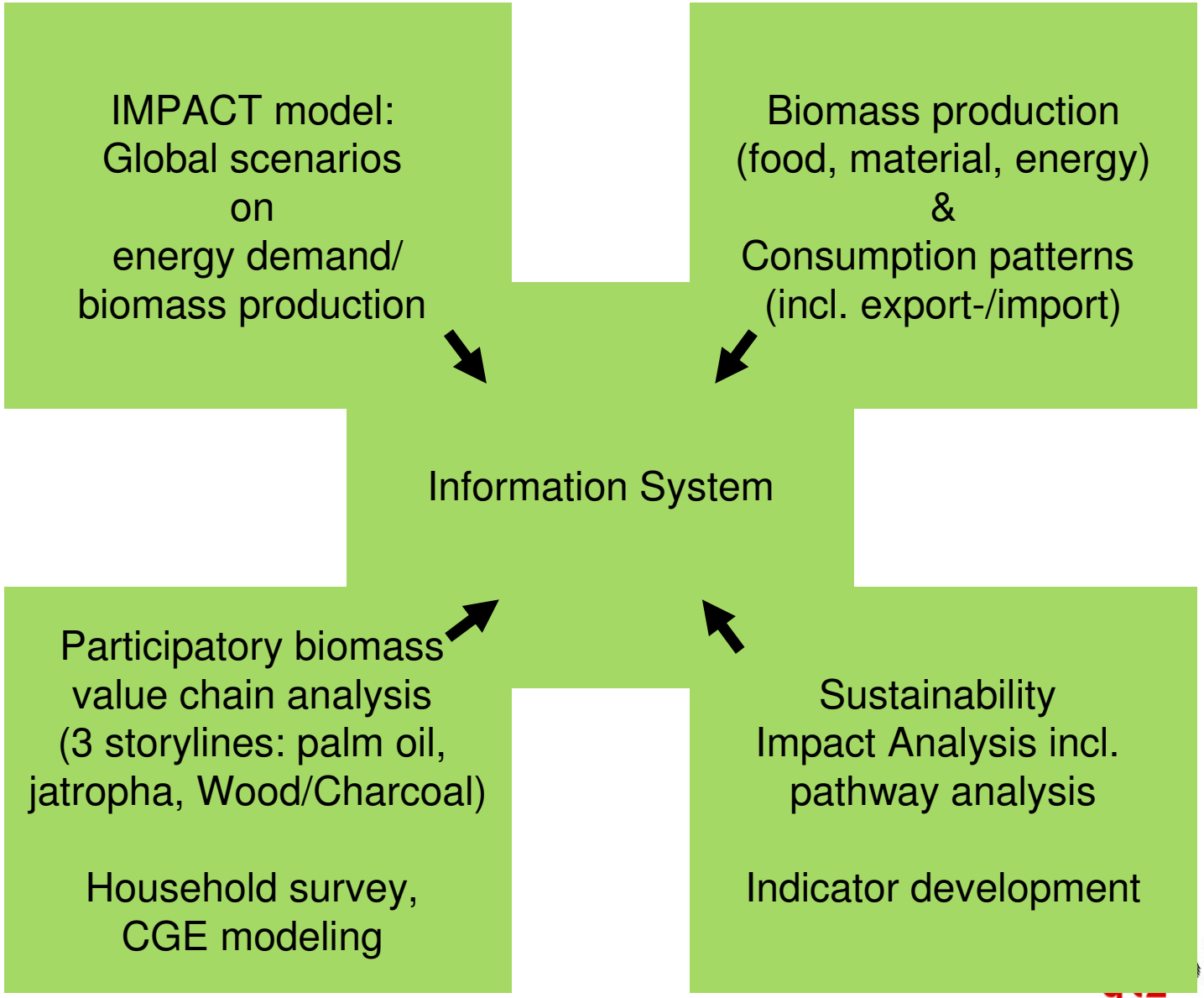
Overview Better-iS



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und Entwicklung

Overview Better-iS

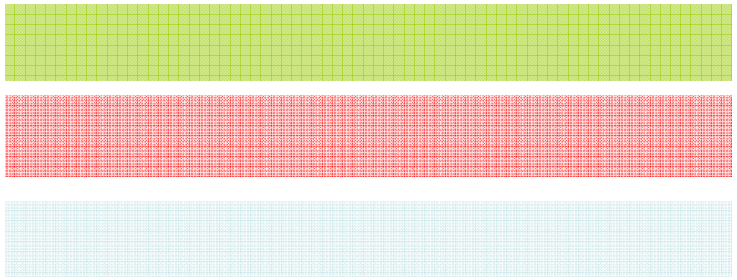
Unique features

- Broad stakeholder involvement ↑
- Strong capacity building ↑
- Generic GP in value chains ↑
- Strong network (e.g. GTZ Prokon) ↑
- High Integration task for Information System ↑

Overview Better-iS

Milestones per Output

Estimation on Milestones per Output:



In time

Delay: To be refined and / or in progress

Still time

Milestones per Output

Alternative global scenarios (Impact model)

O.1 *[IFPRI] Set of **alternative global scenarios** with implicit climate change projections focusing on energy demand, resulting changes of crop prices, land use, biomass feedstock usage and traditional food production for biomass production*

Key milestones and indicators for these activities are:

1. Four Storylines on energy scenarios; model adjustments for scenario design on global energy demand with specific attention to outcomes of sub-Saharan Africa. Discussion of reliability, plausibility and forecast accuracy of results. [8 months]

2. Downscaled global energy assumptions for sub-Saharan Africa as package for input into output 2. [1 year]

3. Documentation of scenario outcomes and paper in peer-reviewed journal. [year 2-3]

Biomass (food, material, energy) production and consumption patterns

O.2 *[WI] E **Biomass (food, material, energy) production and consumption patterns** (incl. export-/import-structures) in sub-Saharan Africa with detailed focus on Tanzania* (using outcome of output 1 and output 3)

Key milestones and indicators for these activities are:

1. Summary report on biomass consumption patterns in sub-Saharan Africa at different scales (national, regional), taking into account competing uses of biomass. [year 1]

2. Summary report on implications of the future scenario outcomes at case-study level including country's implications for energy production (biomass) as well as expected changes on demand (cascading systems). [years 1,5]

3. Processing information for module-structured Information System and dissemination of results [year 2,5]

Milestones per Output

Participatory biomass value chain analysis

O.3 *[ICRAF, ZALF, IUW]* ***Participatory biomass value chain analysis*** *for small-scale farmers in Tanzania subjected to pathways related to production and socio-economic conditions (e.g., employment, land tenure, human capacities); with special regard to comparing local market and export market with certification option to ensure sustainable use of natural resources.*

Key milestones and indicators for these activities are:

1. *Stakeholder Analysis for the considered Tanzanian case study region [year 1]*
2. *Participatory workshop in case-study region defining biomass value chains [year 2]*
3. *Summary report of major findings according to the tasks of 3.1 to 3.6 [year 2,5]*
4. *Processing information for module-structured Information System and dissemination of results from analysis. [year 2,5]*

Sustainability Impact Analysis

O.4 *[ZALF, ICRAF, WI]* ***Sustainability Impact Analysis*** *in case study region under developed alternative global energy scenarios with focus on implications for livelihoods, environmental safety, regional economy) including a synthesized framework on costs, benefits and risks of regionalized typologies (pathways) of biomass value chains and implications for food security.*

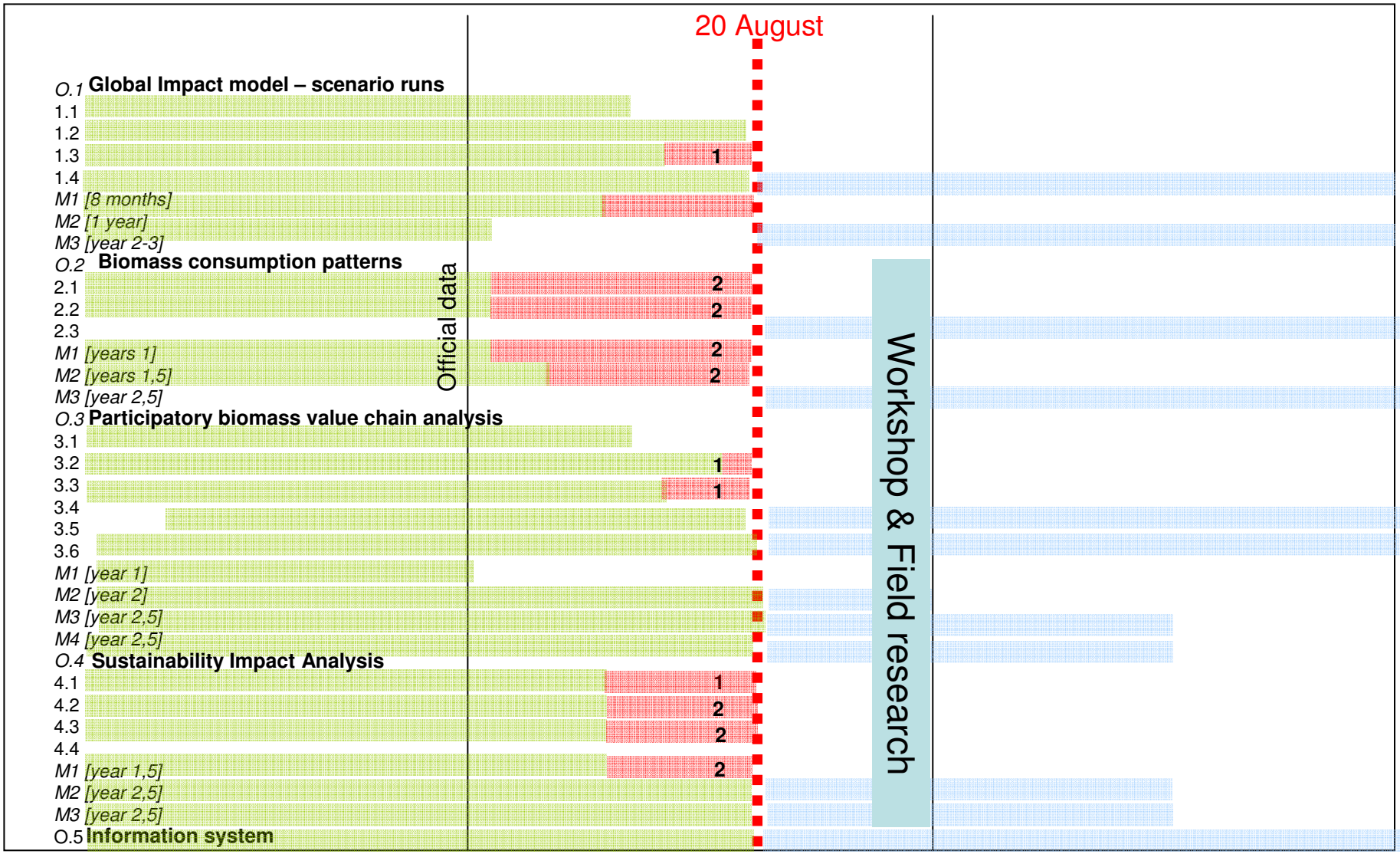
Key milestones and indicators for these activities are:

1. *Second workshop: final overview on key indicators and available data [year 1,5]*
2. *Summary report on sensitivity and trade-offs of observed impacts in case study region – current state and future perspective [year 2,5]*
3. *Processing information for module-structured Information System. [year 2,5]*

Information System

O.5 [All] Information System for Decision Support in module-structure and theoretical concepts for Capacity Building incl. training measures at farm schools, local authorities to benefit small-scale farmers and / avoid negative effects.

Overview timing



1: Refinement for final report needed

2: in progress, not finished

Outcome beyond Outputs

1. Conferences (Vienna, Tropentag, PhD-conference)
2. Publication Initiative (Special Issue)
3. SUA is important partner
4. Seven Master Theses
5. Village Survey
6. CGE Village Modelling

Outcome 7 Master Theses

1 Topic: Impact of Jatropha on water supply

Title: To assess the possible influence of selected *jatropha carcus* cultivation on water supply in bagamoyo distric.
Name of the student: Ntabaye, Prisca Patrick
Start/End: December 2009 to September 2011
Expected data delivery: January 2011 – Dissertation and publication
Responsible Institution/Co-Institutioin: Sokoine University of agriculture (SUA)
Supervisors: Prof. P.T.K. MUNISHI (Department of Forest Biology), Dr. L.LUSAMBO (Department of Forest Economics)

2 Topic: Biofuel investments and development

Title: Potentials, challenges and opportunities for biofuel development in Tanzania: a case study of Kisarawe district in Tananzania.
Name of the student: KISANGI THADEUS B.
Start/End: December 2009 to September 2011
Expected data delivery: Dissertation and publication
Responsible Institution/Co-Institutioin: Sokoine University of agriculture (SUA)
Supervisors: Prof. E. Luoga and Dr. Kashaigili J. (Department of Forest Mensuration)

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Outcome 7 Master Theses

3 Title: Short rotation coppices agroforestry: potentials for bioenergy and livelihoods improvement in Rungwe district Tanzania

Name of the student: KARWANI GEORGE
Start/End: December 2009 to September 2011
Expected data delivery: Dissertation and publication
Responsible Institution/Co-Institutioin: Sokoine University of agriculture (SUA)
Supervisors: Prof. LULANDALA L.L.L
Project: Better-iS
Topic: Marketing

4 Title: Marketing efficiency analysis of the existing jatropha chain in northern value Tanzania; case study of Monduli and Arumeru districts

Name of student: MAHOO, PENDO-EDNA
Start/End: February 2010 to September 2011
Expected data delivery: Dissertation and publication
Responsible Institution/Co-Institution: Sokoine University of agriculture (SUA)
Name of supervisor: DR. KHALMADIN MUTABAZI (Department of Agricultural Economics)

Outcome Decision support tool

Cross-project development with tool developed by funding of

- BMVEL
- GTZ Sustainet
- GTZ Sektorvorhabens „Nachhaltige Ressourcennutzung in der Landwirtschaft“
- BETTER-iS
- REACCT

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Biofuel Evaluation for Technological Tanzanian Efficiency using Renewables – integrated Strategies

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About Better-iS

Better-iS aims at identifying the potential for linking low-productivity farming to small and medium enterprises (SME) to enhance livelihoods through biofuel value chains. Local biomass production and processing targeted to small-scale farmers in Tanzania (Morogoro) through linkages to SMEs is expected to be improved. Within the scope of increased

Biofuel Evaluation for Technological Tanzanian Efficiency using Renewables – integrated Strategies

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Research

Overview

Most significant global drivers that affect low-productivity farming in sub-Saharan Africa are Climate Change (Gbetibouo et al. 2006) and global energy demand (Von Braun 2007). Simulations on long- and medium-term global energy demands have high forecast uncertainty but will likely disproportionately affect sub-Saharan regions. Biofuels have the potential to provide communities in sub-Saharan Africa

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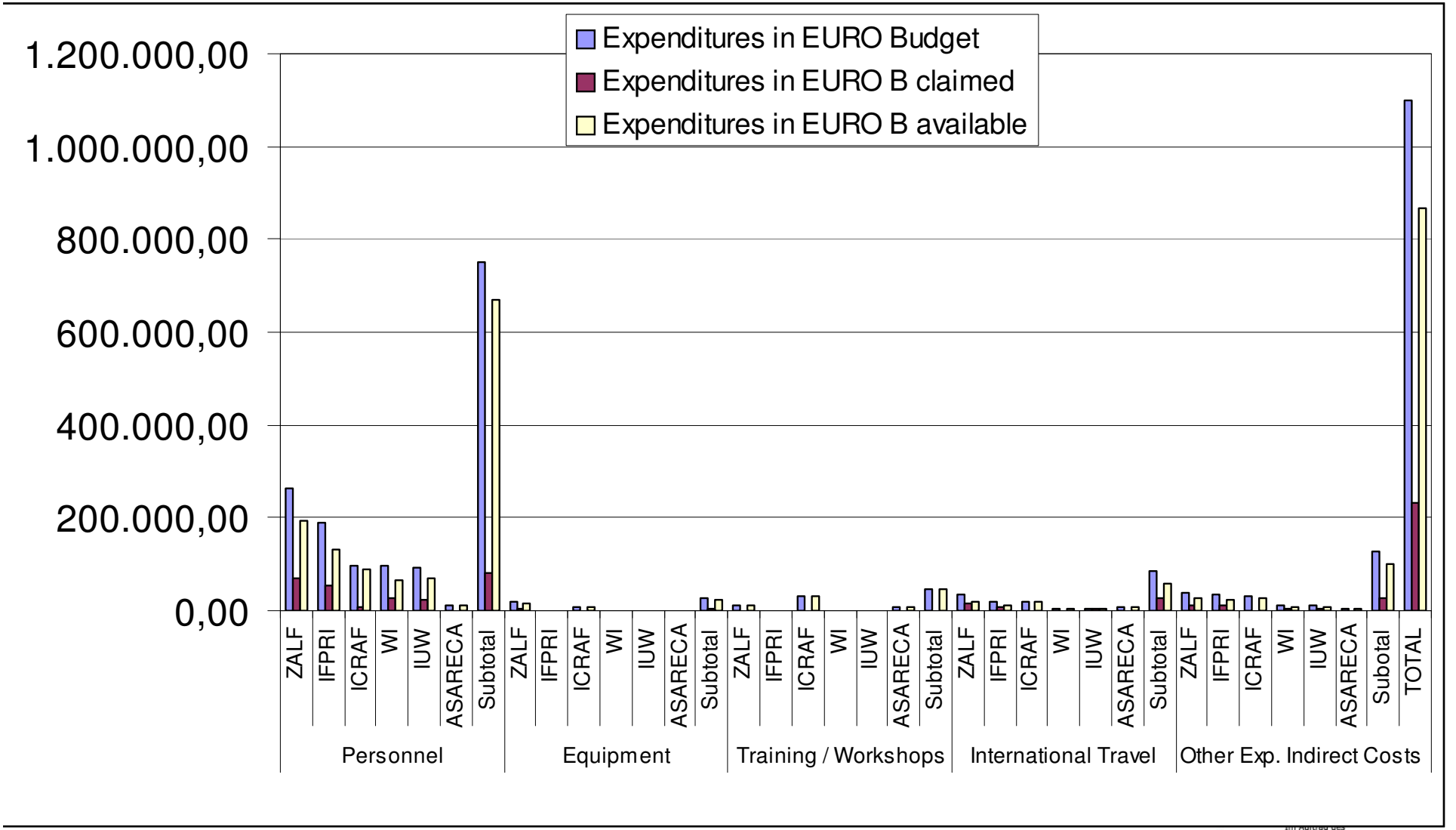
Overview budget



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Thank for your attention!

Leibniz Centre for Agricultural Landscape Research e.V.

Leibniz Universität Hannover
Environmental Economics and World Trade

IFPRI
The International Food Policy Research Institute

World Agroforestry Centre

ASARECA
Transforming Agriculture for Improved Livelihoods
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- *O.1 [IFPRI] Set of alternative global scenarios with implicit climate change projections focusing on energy demand, resulting changes of crop prices, land use, biomass feedstock usage and traditional food production for biomass production; special focus on typologies on displacement production schemes as competitive trade-offs between agricultural food and biofuel systems.*
- 1.1 [IFPRI] Evaluate the current state-of-the art of IFPRI models with regard to global scenarios related to food and energy (biomass) production. A feasibility study is needed to adjust specific models for sub-Saharan Africa. Improving IFPRI models in terms of capability to reproduce observed vegetation and cropping patterns in sub-Saharan Africa (in dryland regions in particular), using (sub)national data, vegetation maps and other geographical information and analysis tools.
- 1.2 [IFPRI] Downscale GCM outputs of temperature, radiation and rainfall to compute, with LPJmL, spatially disaggregated impacts on natural vegetation growth and distribution, crop growth/crop production, runoff generation, evapotranspiration (i.e. productive and unproductive "green" water consumption) and soil moisture (with special focus on climate extremes ("shocks"), primarily extended dry spells); covered by previous BMZ-call, but to be transferred to different sub-Saharan Africa countries.
- 1.3 [IFPRI] Combine data on energy, policy, and socio-economic assumptions to develop a set of most likely storylines, which will be translated into model scenarios for global change; given special attention to case-study regions in sub-Saharan Africa.
- 1.4 [IFPRI] Scenario simulations (4 runs under alternative policy assumptions) focusing on energy demand, resulting changes of crops prices, land use, biomass feedstock and traditional agricultural systems for biomass production; with subsequent result analysis and test on reliability, plausibility and forecast accuracy.
- Key milestones and indicators for these activities are:
- *Four Storylines on energy scenarios; model adjustments for scenario design on global energy demand with specific attention to outcomes of sub-Saharan Africa. Discussion of reliability, plausibility and forecast accuracy of results. [8 months]*
- *Downscaled global energy assumptions for sub-Saharan Africa as package for input into output 2. [1 year]*
- *Documentation of scenario outcomes and paper in peer-reviewed journal. [year 2-3]*
- *O.2 [WI] E Biomass (food, material, energy) production and consumption patterns (incl. export-/import-structures) in sub-Saharan Africa with detailed focus on Tanzania* (using outcome of output 1 and output 3)
- 2.1 [WI] Evaluate the biomass consumption patterns (competing biomass uses for food, material, energy and options for cascading systems) in sub-Saharan countries focusing on the Tanzanian Case based on primary statistics, and if not available, surveying available secondary data sources (using inputs from task 3).
- 2.2 [WI] Regionalize evaluated consumption patterns for example in terms of high-energy use and low-energy use regions; with special regional emphasis on biomass consumption patterns in case-study regions.
- 2.3 [WI] Analyze implications of global / national scenario outcomes for domestic biomass energy and material production on (1) production incentives, (2) potentialities of case-study regions for participation in global energy and material markets including (3) estimations on most vulnerable country conditions and / or expected benefits and (4) gross indication for climate balances (CO_2).
- Key milestones and indicators for these activities are:
- *Summary report on biomass consumption patterns in sub-Saharan Africa at different scales (national, regional), taking into account competing uses of biomass. [year 1]*
- *Summary report on implications of the future scenario outcomes at case-study level including country's implications for energy production (biomass) as well as expected changes on demand (cascading systems). [years 1,5]*
- *Processing information for module-structured Information System and dissemination of results [year 2,5]*
- *O.3 [ICRAF, ZALF, IUW] Participatory biomass value chain analysis for small-scale farmers in Tanzania subjected to pathways related to production and socio-economic conditions (e.g., employment, land tenure, human capacities); with special regard to comparing local market and export market with certification option to ensure sustainable use of natural resources.*
- 3.1 [ICRAF] Setting up adequate stakeholder groups per case study region that reflect a balanced mix of individuals or institutions, who participate in biomass value chains.
- 3.2 [ICRAF] Participative identification of pathways of biomass value chains involving all respective chain entities from small-scale farmers to organizations over potentially participating industrial entities / associations.
- 3.3 [ICRAF, ZALF] Identifying relevant factors of biomass value chains influencing and limiting the decision to use potentialities of value chains the subject of acceptance (perceptions of the stakeholder), and the surrounding context of case study.
- 3.4 [ICRAF, ZALF] Linking identified pathways to alternative energy scenarios and assessing developments of future perspective.
- 3.5 [IUW] Identifying and assessing two different typical value chains which are related to the local market and to the export market and determining the characteristics which are essential for their success and sustainability. A village model will be applied in this context to mimic different farming systems and interactions between stakeholders. Involvement in the development of the survey will be given.
- 3.6 [IUW] Assess the role of certification in ensuring the sustainable biomass production in sub-Saharan Africa, identify shortcomings and strengths of current certification programs and develop concepts of how to certify best in sub-Saharan case-study regions.
- Key milestones and indicators for these activities are:
- *Stakeholder Analysis for the considered Tanzanian case study region [year 1]*
- *Participatory workshop in case-study region defining biomass value chains [year 2]*