

sustainable sanitation alliance

terms of reference

working group on sustainable sanitation,
renewable energies and climate change
draft version

1. Introduction

Security of energy supply, satisfaction of basic energy needs and facing the climate change are major challenges facing both developed and developing economies since prolonged disruptions would cause major economic upheaval. Security risks include the incapacity of an electricity infrastructure system to meet growing load demand; the threat of an attack on centralised power production structures, transmission and distribution grids or gas pipelines; or global oil supply restrictions resulting from political actions. Extreme volatility in oil and gas markets can present a security risk. Overall, the picture is complex: In many circumstances diversifying supply, increasing domestic supply capacity using local energy sources to meet future energy demand growth, and demand reduction can all make positive contributions to energy security.

More than a quarter of the world's population (2.4 billion in 2006) has no access to electricity and rely on wood, charcoal or other biomass materials. Renewable energy can contribute to the security of supply of all these energy forms and in addition reduce greenhouse gas (GHG) emissions when displacing fossil fuels. This makes it all the more important to pursue policies for research, development and deployment (RD&D) that can progressively reduce the costs of renewables so that, with appropriate credit for carbon saving, they can be established as technologies of choice.

The IEA's World Energy Outlook 2006 concludes that rising oil demand, if left unchecked, would accentuate the consuming countries' vulnerability to a severe supply disruption and resulting price shock. Biofuels for transport represent a key source of diversification from petroleum. Biofuels from grain and beet in temperate regions have a part to play, but they are relatively expensive and their benefits, in terms of energy efficiency and CO₂ savings, are variable. Biofuels from sugar cane and other highly productive tropical crops are 6 substantially more competitive and beneficial. But all first generation biofuels ultimately compete with food production for land, water, and other resources. Greater efforts are required to develop and deploy second generation biofuel technologies, such as biorefineries and ligno-cellulosics, enabling the flexible production of biofuels and other products from non-edible plant materials.

Based on these facts, it is clear that the demand for bio energy is increasing around the world. Important factors in this demand structure are the security of fuel supply, the diversification of domestic energy supply and the access to energy in rural areas. Additional factors are the increasing prices for fossil fuels and the widely accepted need for reducing greenhouse gas emissions.

There is a considerable overlapping between regional energy scarcity and lack of sanitation. Coupled with the ongoing population growth in these regions and its additional water and food demand, a new approach that recognises human excreta and wastewater as an important energy and nutrient resource is imperatively necessary. In this context, integrated sustainable sanitation systems could be the basis for reuse of nutrients in productive systems which will provide renewable energy sources to cover the basic energy needs.

2. Background

Motivated by the UN decision to declare 2008 as the International Year of Sanitation (IYS 2008), a core group of organisations active in the field of sustainable sanitation took the initiative to form a task force to support the IYS 2008. In January 2007, a first meeting resulted in a large number of commitments by the participants from various organisations, and in drawing up a first draft of a

“joint road map for the promotion of sustainable sanitation within the IYS 2008”. During a second meeting that took place mid of April, the goal and the objectives of this global competence network were clarified and the joint road map was reviewed. In order to have a unified label for the planned activities, and to be able to align with other potential initiatives, the group formed the “Sustainable Sanitation Alliance (SuSanA)” and had planned - among other activities - to establish a variety of thematic working groups to elaborate publications on different sustainable sanitation issues and to link them with adjacent areas and other MDG’s. One of the aimed working groups will be the “working group on sustainable sanitation, renewable energies and climate” which are lead and organised by the Technology Transfer Centre Bremerhaven (TTZ Bremerhaven).

3. Goals and objectives

The overall goal of the SuSanA is to contribute to the achievement of the MDGs by promoting sanitation systems that are taking into consideration all aspects of sustainability, with regards to health, environmental resources, economic viability, social acceptance as well as technical and institutional appropriateness. The MDGs and the International Year of Sanitation 2008 are highly appreciated by the SuSanA as they help push sanitation high up on the political agenda. The main focus of the work of the SuSanA will be to promote the implementation of sustainable sanitation systems in large scale water and sanitation programmes, in line with the strategies proposed e.g. by WHO, UNCTAD, UNDP-PEP, UNSGAB, and UNESCO and to highlight how important sustainable sanitation systems are as a precondition to achieve a whole series of MDG’s (e.g. to reduce child mortality, to ensure food and energy security and environmental sustainability).

Objectives of the working group on sustainable sanitation, renewable energies and climate:

- To support the implementation of the UN resolutions relating to energy , environment and development especially the MD goals
- To name, present and link existing and feasible reuse forms of human residues for the production of renewable energies to satisfy basic energy needs in order to improve living conditions
- Bring together all relevant organisations with global competence in reuse concepts related to renewable energy technologies, integrated wastewater treatment options, sustainable sanitation and neighbouring disciplines (e.g. biogas production technologies, agriculture production for non-food purposes, etc.), which are not yet fully involved in the sanitation discussions, to stimulate the work and help to convey the sustainable sanitation approach to new groups.
- To raise general awareness for the reuse-oriented sustainable sanitation approach, its prospective contribution to reduce dependence on imported energy sources and to promote it on a large scale.
- Preparation of publications (fact sheet, comprehensive major publication) ideally flanked by a collection of case studies and a practical guidance on how to implement reuse-oriented sanitation solutions for energy production (guidelines for households and farmers).

4. Deliverables

It is important to mention that every potential outcome and the deliverables of the group are highly dependent on the input and availability of resources of all participants. Manner and extent of the publications has to be adapted to it.

- The minimal expected outcome of the group is a **factsheet** with basic information regarding renewable energy production and local energy security and its relationship with the productive and reuse-oriented aspects of sustainable sanitation.
- Beyond that a more comprehensive **major brochure**, with detailed information about the various aspects of the topic (e.g. competition between food and non-food production,

competition of different land-use forms, available reuse technologies, content and properties of the resource flows) is to be produced. Target, admeasurement and exact outline of the publication shall be defined by the group.

- A **collection of case studies** that covers the different perspectives regarding the reuse of wastewater for biogas and biomass production (energetic use). Members of the Sustainable Sanitation Alliance as well as other partners should be invited to contribute to this collection. The examples may be included into the publication for a more vivid illustration of different aspects or could be seen as a stand-alone collection or annex to the publication respectively.
- **Practical guide for farmers** (reuse of wastewater and sludge for biomass production) will be produced (summer 2008)
- Additionally a **practical guide for users (e.g. biogas for households)** may be considered.

5. Work plan, time frame and milestones

Month	Next steps/ milestones	Comments
February- July 2007	• Literature review	• commented literature list and information compilation (done by TTZ)
	• Presentation of the current status and objectives of the working group at the 2 nd SuSanA meeting in Duebendorf	• Done by TTZ
June/ July 2007	• Draft terms of reference	• Done by TTZ
	• Contacting of additional partners	• Done by TTZ
	• Establishment of communication within the group by end of may	
	• Initiation of a collection of case studies	• Collection shall be done by all partners during the whole process
August 2007	• Reinitiating the working group at the steering group meeting (August 11th-12th 2007)	<ul style="list-style-type: none"> • Identifying potential new partners for the working group • Clarification on target groups • Draft outline of the factsheet and major publication • Break down the workload for the major publication on the basis of the draft outline • Roles and responsibilities of the participants • Discussing further synergies with other working groups (energy, technologies)
August 2007	• Working group meetings on the first day (August 11th 2007) of the meeting	• Internal discussion on first results and final decision on topics (draft factsheet and outline for major publication) and further proceedings
	• Joint SuSanA meeting on the second day (August 12 th 2007)	• Brief presentation of first results by TTZ
September 2007	• Continuing the work on factsheet and major publication	
October 2007	• Finalisation of the factsheet	<ul style="list-style-type: none"> • Inclusion of comments on the draft factsheet • Layout proposal (joint layout for all factsheets? In collaboration with other working groups?)
November 2007	• 1-day working group meeting directly before or after the SuSanA conference in New Delhi	• Internal discussion on the status of collection of case studies, the preliminary results of the major publication and further proceeding
	• SuSanA conference in New Delhi (November 3 rd and 4 th 2007)	• Presentation of the final factsheet and work progress on the major publication
December 2007	• Circulation of the first draft of the major publication	• Commenting on the draft by the whole group
January/	• Finishing the major publication	• Including the comments and resending it to

February 2008		the group for approval
	• 4 th SuSanA steering group meeting	• Presentation of final results

6. Draft outline of topics to tackle within the aimed publications

1. Goals and motivation (**all working groups**)
 - Integration into a bigger context
 - Millennium Development Goals
 - Johannesburg Plan of Implementation
 - International Year of Sanitation
2. Energy needs and developments versus climate change
 - General facts and forecasts
 - Current worldwide situation and developments
 - Attempts to increase energy security
 - Role of renewable energies
 - Limited global resource base/ climate change
3. Energy needs versus food demand (**food & energy group**)
 - General facts and market developments
 - Land use forms and renewable energy
4. Agricultural aspects
 - Current situation and common practices of wastewater reuse
 - Energy plants and biomass production schemes
 - Energy plant growth requirements and essential plant nutrients
 - Water and fertiliser demand in biomass production
 - Energy from waste (biogas production)
5. Health aspects and guidelines for safe reuse ((**all working groups**))
 - Health risks
 - Positive health aspects
 - Guidelines (WHO, FAO, etc.)
6. Collection, treatment and application (**all working groups**)
 - Collection
 - Treatment options
 - Reuse and application in agriculture
7. Content and properties of the sanitation resource flows (**food & energy group**)
 - Composition of sanitary resources regarding nutrients, pathogens and contaminants
 - Resource value (fertilising properties, soil conditioning properties, energetic aspects)
8. Advantages and benefits of reuse in agriculture (**food & energy group**)
 - Agricultural benefits as motivation for reuse-oriented sanitation
 - Effective use of resources
 - Improvement of soil structure and fertilising effects
 - Economic benefits

7. Participants (in chronological order)

Current partners:

gtz	German Development Cooperation Agency (Germany)
TTZ	Technology Transfer Centre Bremerhaven (Germany)
SLU	Swedish University of Agricultural Sciences (Sweden)

Enquired:

AEBIOM	European Biomass Association (EU)
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Lead of the group: TTZ

Literature:

FAO (1997): Guidelines for the integration of sustainable agriculture and rural development into agricultural policies. Food and Agriculture Organisation of the UN, Rome, ISBN 92-5-104104-0,
<http://www.fao.org/docrep/W7541E/w7541e00.HTM>

IFA (2004): World Agriculture and Fertilizer Demand, Global Fertilizer Supply and Trade 2004 – 2005 International Fertilizer Industry Association 30th IFA Enlarged Council Meeting Santiago, Chile – 1-3 December 2004,
http://www.fertilizer.org/ifa/publicat/PDF/2004_council_santiago_ifa_summary.pdf

WHO (2006): Guidelines for the safe use of wastewater, excreta and greywater. Geneva, Switzerland, World Health Organization. ISBN 9241546832

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