



NETSSAF Final Conference in Ougadugu

Alternative use of wastewater for biomass production

26th SEPTEMBER 2008

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Situation in West Africa



- Lack of energy sources (power)
- Available amount of untreated wastewater
- Extreme poverty of suburban and rural population and lack of income sources
- High health risks (polluted surface waters, contaminated ground water)
- Deforestation (firewood) and resulting floods and losses of fertile soils

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Targeted Needs



- Low-cost and efficient wastewater treatment systems with additional positive aspects like producing biomass (fuel wood)
- Clean and affordable drinking water
- New sources of income and jobs e.g. as energy farmer (especially in rural areas)
- Production of local renewable energy sources
- Substitution of chemical fertilizers with organic matters
- Clear legislation and standards for a environmental protection (health risks)

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SHORT-ROTATION-PLANTATIONS



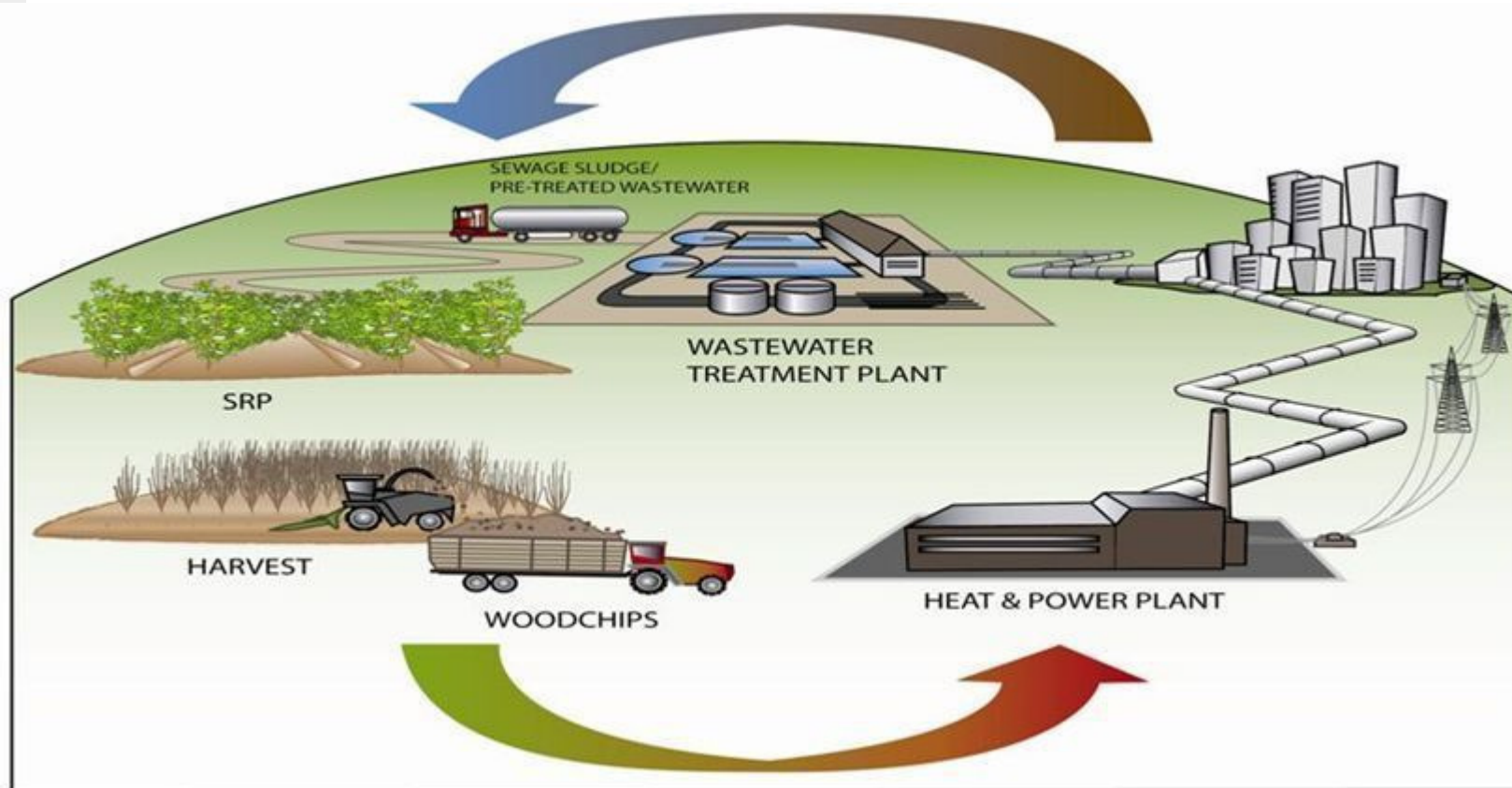
From Waste to Energy



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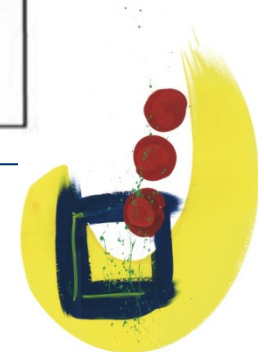


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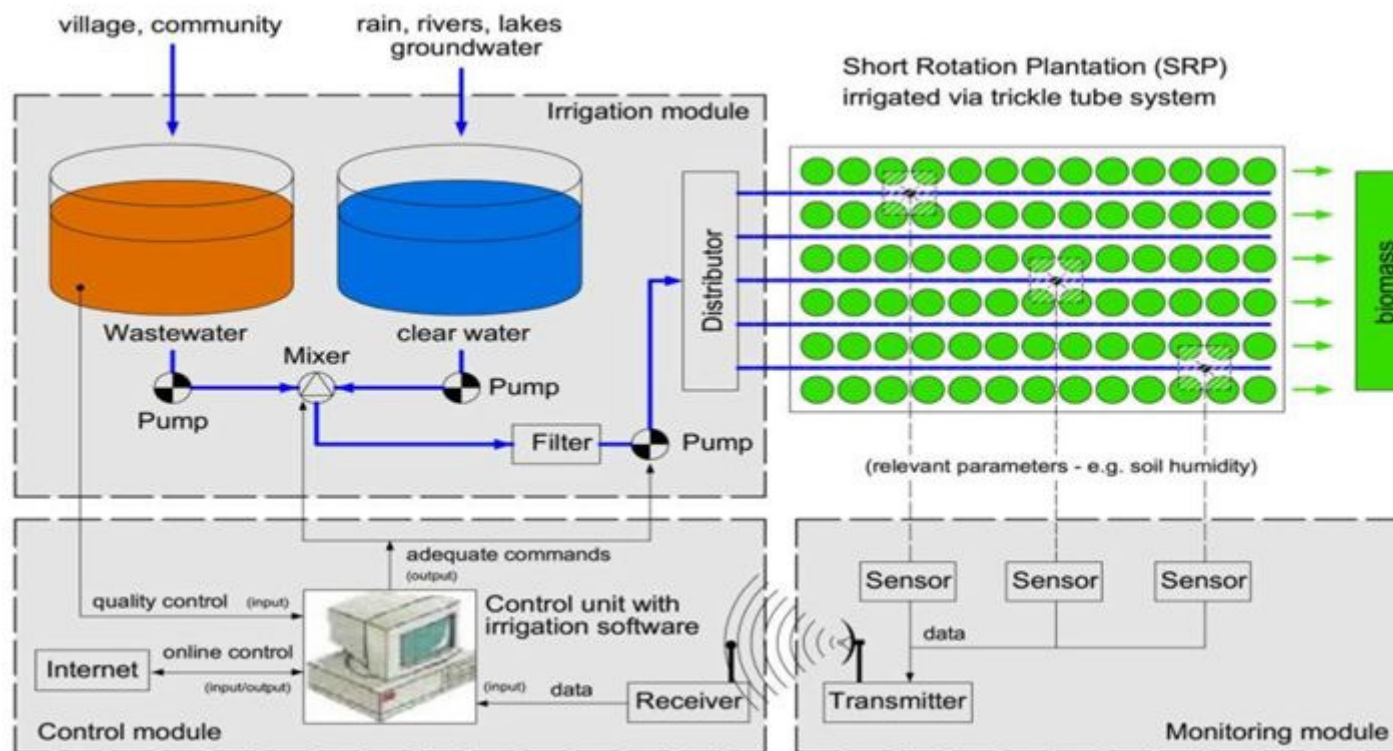
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SHORT-ROTATION-PLANTATIONS



WACOSYS: Monitoring Control System for Wastewater irrigated Energy Plantations



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Applications



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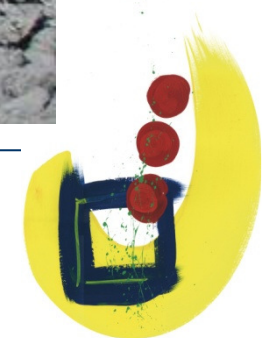


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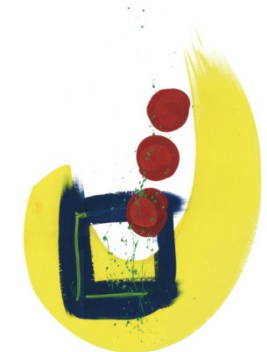


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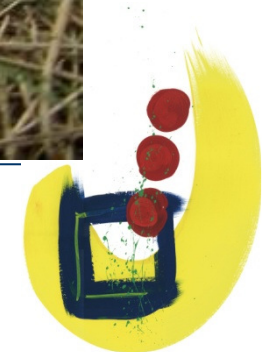


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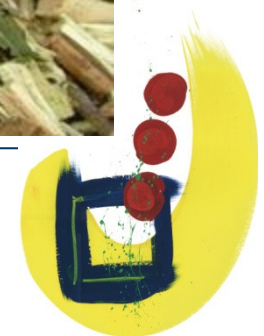


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Main principles



1. Use of fast growing and local available tree species (e.g. willows & poplars) with high potential
2. High density of plants and harvesting cycle of 2-3 years (up to 7 rotation cycles)
3. Reusing wastewater and sewage sludge for irrigation and fertilisation of trees
4. Treatment of wastewater in the root zone and direct reuse of nutrients by the plants (biofilter)
5. Enables an efficiency increase in Short-Rotation-Plantation (SRP) biomass production up to 3 times
6. Production of CO₂-neutral wooden biomass in SRPs as a renewable raw material for different technical purposes (fire wood, paper industry)

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Benefits for farmers



1. New source of income from energy crops
2. New source of income from wastewater/sludge recycling
3. Alternative fertilization and irrigation method at low cost
4. Increased income from improved biomass yields due to irrigation and fertilization
5. Increase in soil organic matter content and soil fertility

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Benefits for local communities & society



1. Opportunities to reduce costs for conventional wastewater treatment (investment, operation, disposal)
2. Opportunities to produce renewable biomass for local heat and power generation
3. Supporting local economy by establishing local biomass supply chains
4. Recycling of local water and nutrient sources
5. Supporting sustainable rural development by reducing dependency upon fossil fuels

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Example: INAWAB

Supported by the European Commission (ASIA PRO ECO Program)
ASI/B7-301/2598/ 17-2004/79070



Integrated Approach for sustainable water management in Bangladesh



Goal: Performance of a feasibility study for wastewater treatment in SPRs for water recovery and firewood production in Bangladesh

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End

**Thank you for
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