

**Ouagadougou, Burkina Faso**  
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**Conférence Internationale**  
**Enjeux et perspectives des biocarburants pour l'Afrique**

**Bioenergy:**  
**Contributing to development and poverty eradication?**

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ПРОГРАММА ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ ПО ОКРУЖАЮЩЕЙ СРЕДЕ

## mission statement:

Provide **leadership** and encourage **partnership** in caring for the environment by **inspiring, informing, and enabling** nations and peoples to **improve their quality of life** without compromising that of future generations

## priority areas:

- **environmental assessment, monitoring and reporting:** enable the international community to evaluate, predict and respond to existing and emerging needs
- **legal and institutional strengthening and environmental policy development:** from negotiation to implementation
- **integration of economic development and environmental protection:** encourage decision-makers in government and industry to develop and adopt environmentally sound policies, practices and technologies



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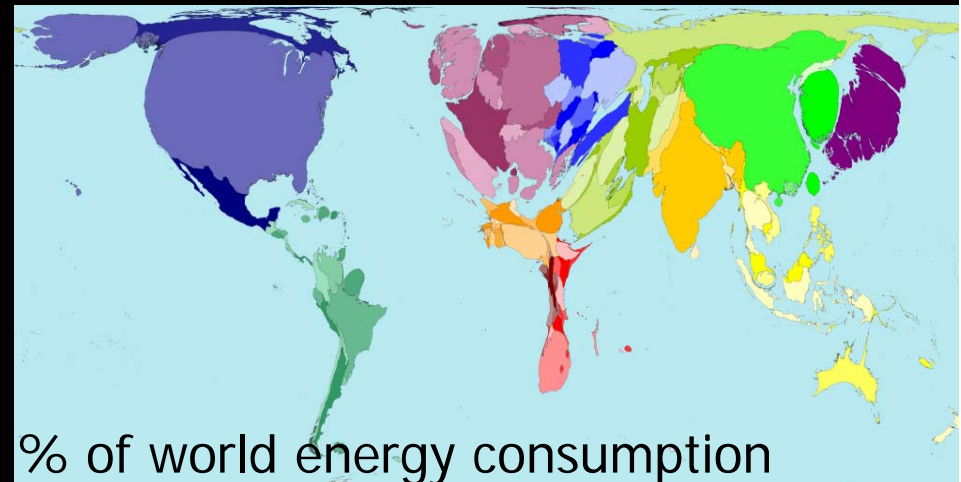
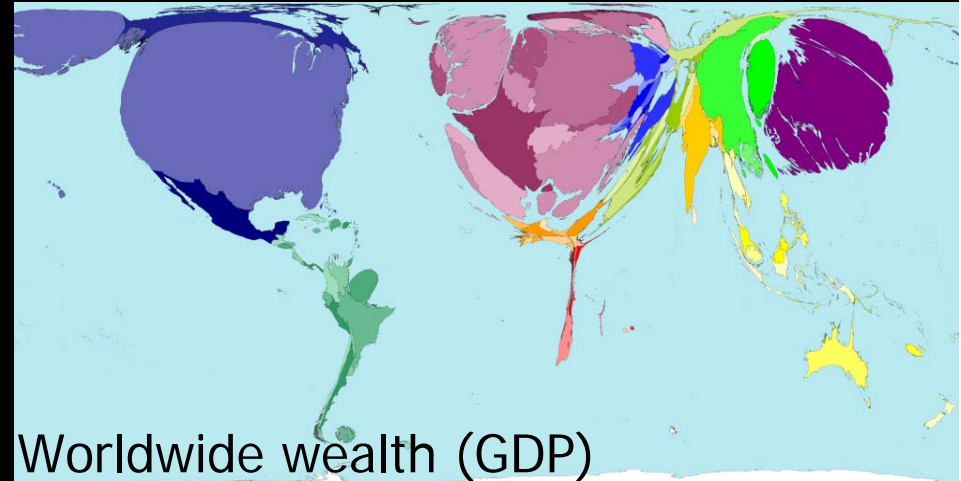
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# energy - enabler for social and economic development

- underpins economic activity, enhances productivity, and provides access to markets for trading purposes (transport)
- enables fulfillment of the basic human needs of cooking, heating and cooling, lighting, in addition to education, health, and communication services
- ensuring energy access to all remains important in order to achieve the MDGs



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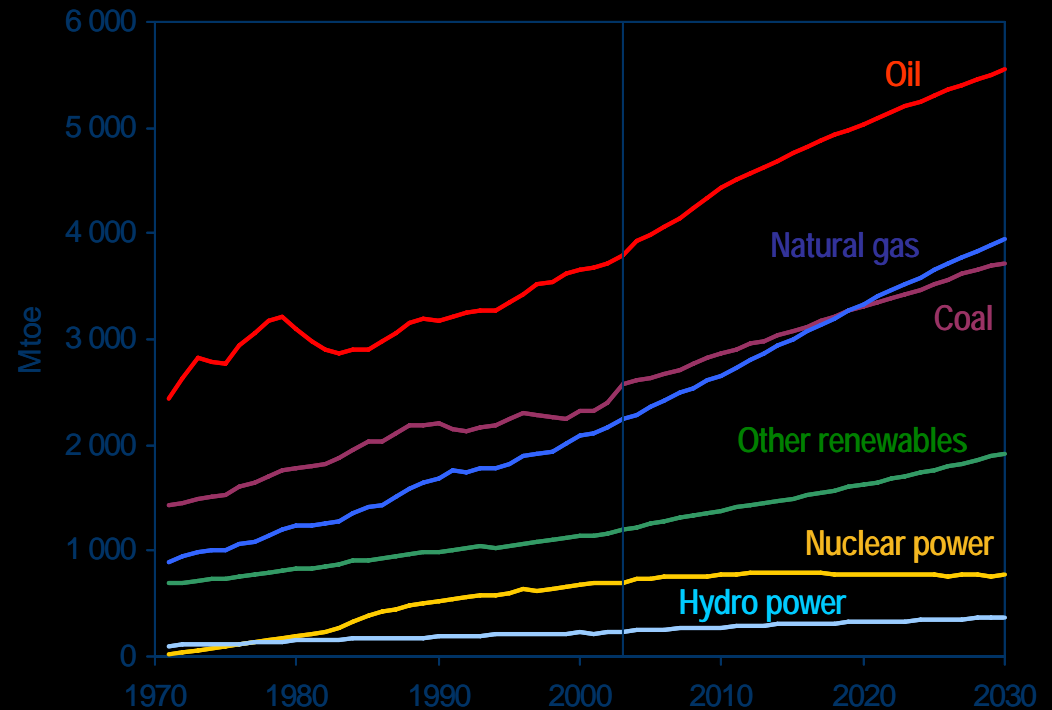
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# energy security

global energy demand is projected to grow by more than half by 2030, with oil, gas and coal together accounting for 83% of the growth in energy demand



Source: IEA



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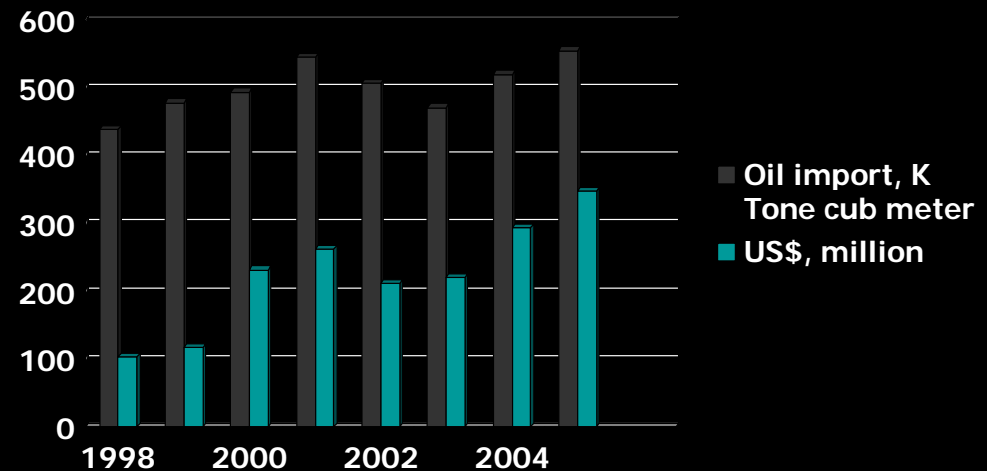
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# energy security

## devastating effect of oil prices

some countries spend 6x as much on fuel as on health; others spend 2x as much on fuels as on poverty reduction; and other's foreign exchange drain from higher oil prices is 5x the gain from recent debt relief

Impact of oil imports on the economy of Mali



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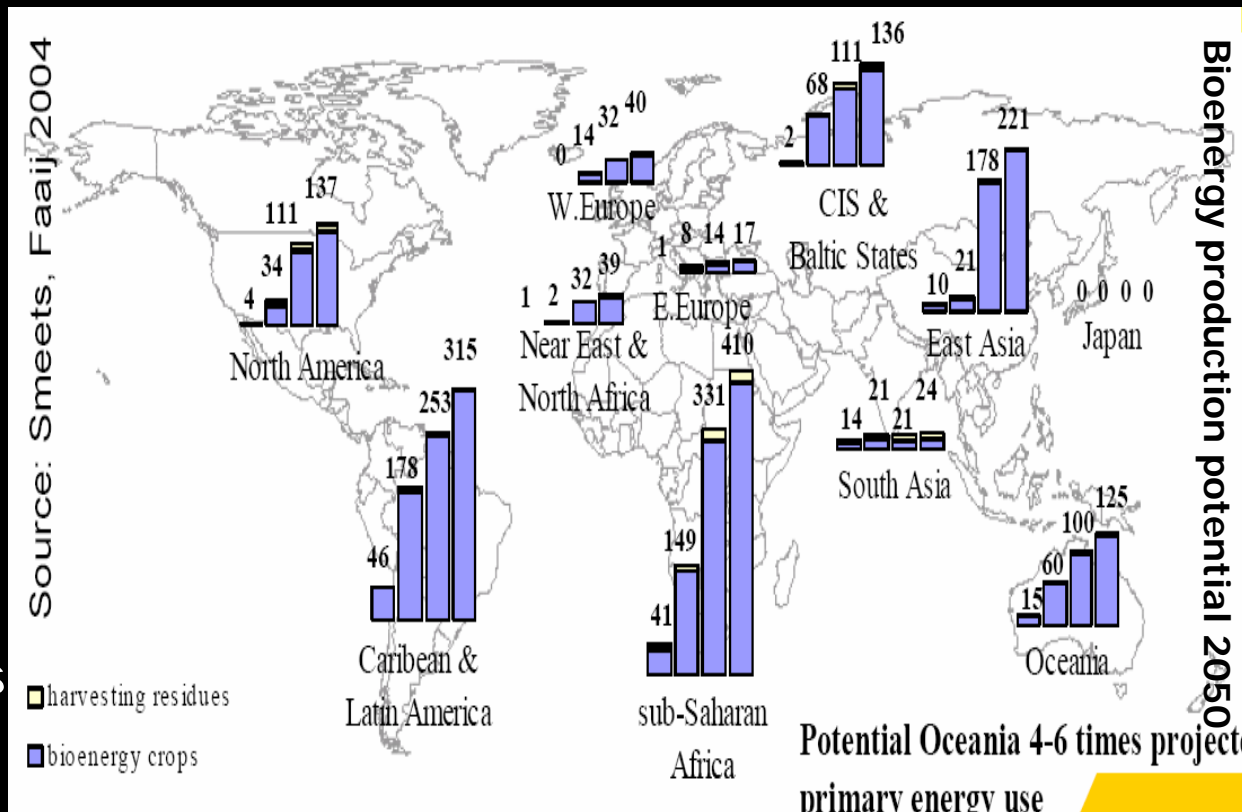
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# bioenergy can be part of the solution

## – if planned and managed well

- today, all forms of biomass together provide **14% of the world primary energy supplies**, in developing countries the share is 35%, in some African countries even 90%

- **2.5 billion people** rely on traditional fuels as their primary source of energy



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## (economic) access to energy

- 1,6 billion people lack access to modern sources of energy
- low income levels prevent poor societies from purchasing modern energy services and make them rely on non-commercial fuels acquired from open-access sources
- **local availability and reliability of supply** can make biofuels (feedstock cost sometimes represents 75-90 % of the fuel cost) an interesting option
- in remote rural areas, where fossil fuel prices are usually high due to transport cost, **bioenergy can prove to be the most economical option**



⇒ local production for local use/ensure share of created value added



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# revalorising the agricultural sector

- + Increased income
- + Job creation (farming, transportation and processing)
- + Improved agricultural productivity and profitability (including crop drying)
- Land tenure
- Type of labour (science, engineering and business, technical staff, low skill and unskilled labour) /working conditions (wages, hours)



⇒ Materialisation of benefits depends on the crop (labour intensive), the business model (scale, level of mechanisation, share in creation of added value) and safeguards (indigenous people's rights, customary land rights and labour standards)



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# Powering other industries, businesses, and infrastructure;

example: ICT

## Telephone service

- income generation for rural inhabitants through small village phone business
- telephone services for remote agro-processing sites to attract and keep investors, businesses and employees
- reduced need for walking/transport – money and time can be used productively

## E-commerce, training, Internet

- multipurpose business platforms supporting business development by supplying basic renewable electric power, wireless communication and micro-finance
- Enabling e-governance and support to agriculture (by providing commodity prices and e-ordering facilities for seed/fertilizer, whether prediction reports)

## Telemedicine/tele-health

- Video consultations, rural telemedicine services based on low-cost videophones (tele-radiology, pre-natal screening, tele-ophtalmology)

## Distance education/tele-education

- Tele-learning centers (tele-lectures, tele-tutorials)



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## Health / Gender / Child mortality

- + reduce **indoor air pollution** (severe health problems mainly for women and children)
- + reduce **time, effort and injury** associated with traditional fuel gathering and cooking (time for educational and economic opportunities)
- + minimize **public health risks from use in transport fuels** (pollutant emissions, lead)
- + **improved health services** (sterilization, medicine refrigeration)
- **hazards related to biofuel production** (harvesting methods, machinery, conversion processes, storage)



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# Food security (availability, access, stability, utilization)

- + **well-designed systems** can increase local food production (intercropping, crop rotation, improvement of land, reclaiming waste lands, water mmt)
- + new techniques introduced thanks to bioenergy development can help modernise farming practises and increase food production
- + **rising incomes** of poor farmers
- + **accessing markets** (transport)



⇒ **Winners and losers; need for balancing measures**



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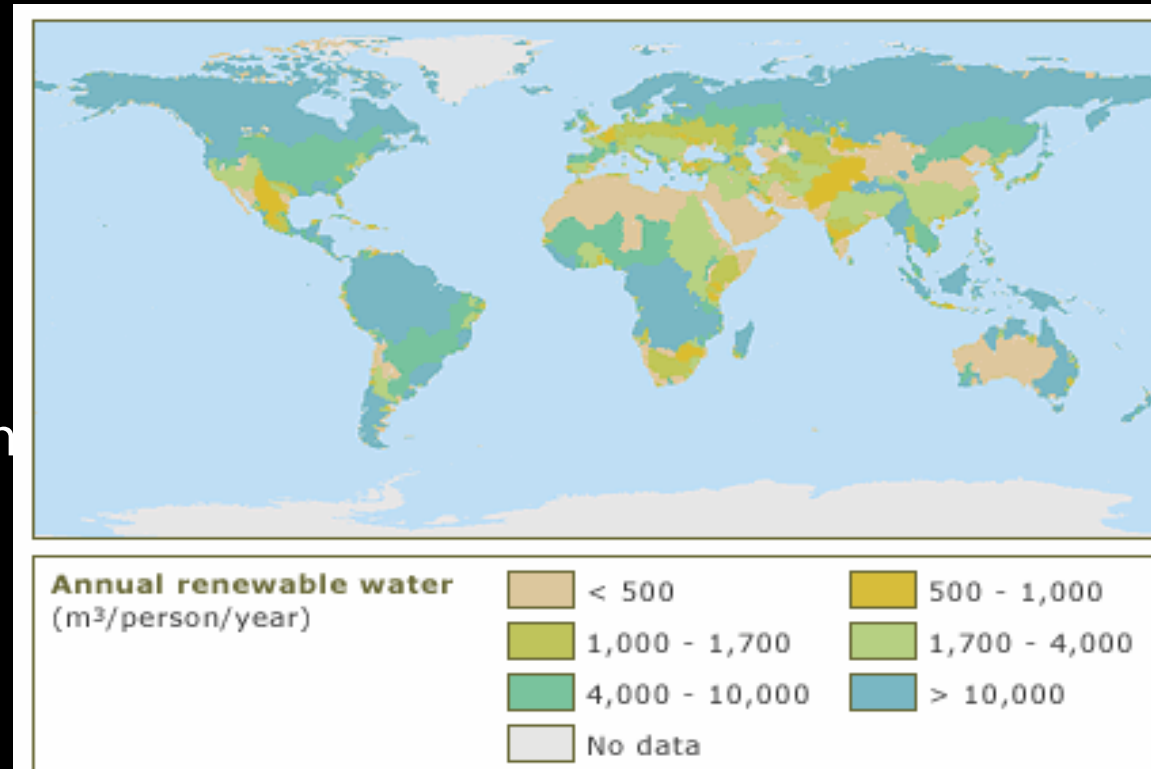
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# Water

- **competition for water** (food production, drinking)

agriculture currently uses 70% of the world's (85% of the developing world's) fresh water, and climate change impacts will create further pressure in areas that are already suffering from droughts

41% of the world's population or 2.3 billion people, live in river basins under 'water stress,' meaning that per capita water supply is  $>1,700 \text{ m}^3/\text{year}$



- **water contamination**  
(feedstock production and conversion)

Source: WRI, 2006



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# Water

- + **access to clean water** (purification and pumping)
- + better penetration of rainwater

⇒ **crop choices**,

⇒ **best agricultural practices** (rainfed systems/rainwater harvesting/drip irrigation, prevent eutrophication),

⇒ **cleaner production** methods in conversion plants



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# Climate change GHG balance

## + GHG reduction potential

varies from crop to crop and with agricultural practices, conversion processes and end-use practices; LCA necessary

- **land use changes** from forest cover or peat land to bioenergy crops let the project start with a negative balance



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# Impacts of climate change on agriculture - Africa

By 2020, 75 million to 250 million people are projected to be exposed to increased water stress due to climate change.

Agricultural production, including access to food, in many African countries and regions is projected to be severely compromised by climate variability and change. The areas suitable for agriculture, the length of growing seasons and yield potential, particularly along the margins of semi-arid and arid areas, will decrease.

⇒ Adaptation measures: crop choices



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## Trade offs

### Choices are specific to country context and priorities

#### Crop choices

- Suitability of climate conditions: soil type, rainfall and temperature
- Oil yield per hectare
- Limited dependency on external input (fertilizers, pesticide, and labour)
- Price of raw material (seeds)
- No competition in harvest season with existing crops
- Crop should already grow in the region

#### Conversion technologies

#### Business models

#### Production for local use / export

#### IRR / development benefits

Drivers (energy security, food security, development/access to energy, climate change, air pollution)



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# Tools to ensure social and environmental benefits materialize

- appropriate policies, institutional and legal frameworks (incl. bioenergy planning involving different ministries)
- enforcement of environmental laws and regulations
- institutional capacity building
- near-term research involving developing countries, where large production potentials exist
- knowledge and technology transfer
- an internationally agreed system (standard, certification or other assurance) to ensure sustainability of biomass intended for biofuels production, developed based on existing schemes and in a multi-stakeholder process



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