Investing in Bioenergy Perspectives on GEF and the Green Economy Initiative

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The Green Economy Initiative

- Assisting governments to reshape and refocus policies, investments and spending towards clean technologies, renewable energies, sustainable transportation, green buildings and sustainable agriculture and forests.

- Promoting decent job creation in green sectors

- Reducing carbon dependency and ecological scarcity, enhancing resource et material efficiency

Employment gains and economic multiplier effects of bioenergy investment

Employment in the renewable energy sector

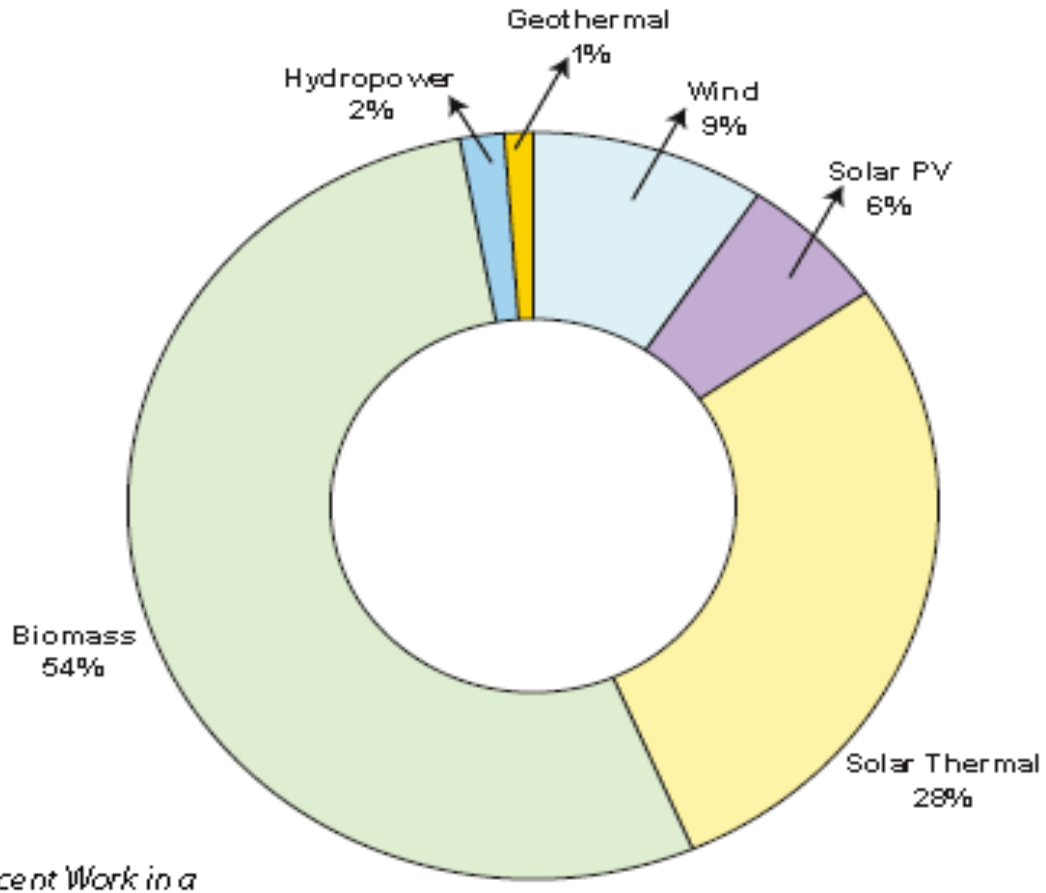
- More than 2.3 million people have been created in the renewable energy sector in recent years even though these provide only 2% of global primary energy.

- In comparison, total employment of the oil and gas, and oil refining industries in 1999 was just over 2 million jobs.

- Bioenergy has a particularly high potential to create employment and accounts for half the reported jobs (UNEP/ILO/IOE/ITUC, Green Jobs report 2008).

Global estimated employment in the renewable energy sector, selected countries and world, 2006

Employment in modern biomass in 2006: 1,174,000 (50%)



Source: Green Jobs - Towards Decent Work in a Sustainable, Low-Carbon World, UNEP/ILO/IOE/ITUC, September 2008

Global estimated employment in the renewable energy sector, selected countries and world, 2006

Employment in modern biomass in 2006: 1,174,000 (50%)	Country	Number of jobs
	Brazil	500,000
	United States	312,200
	China	266,000
	Germany	95,400
	Spain	10,349

Source: Green jobs report, September 2009

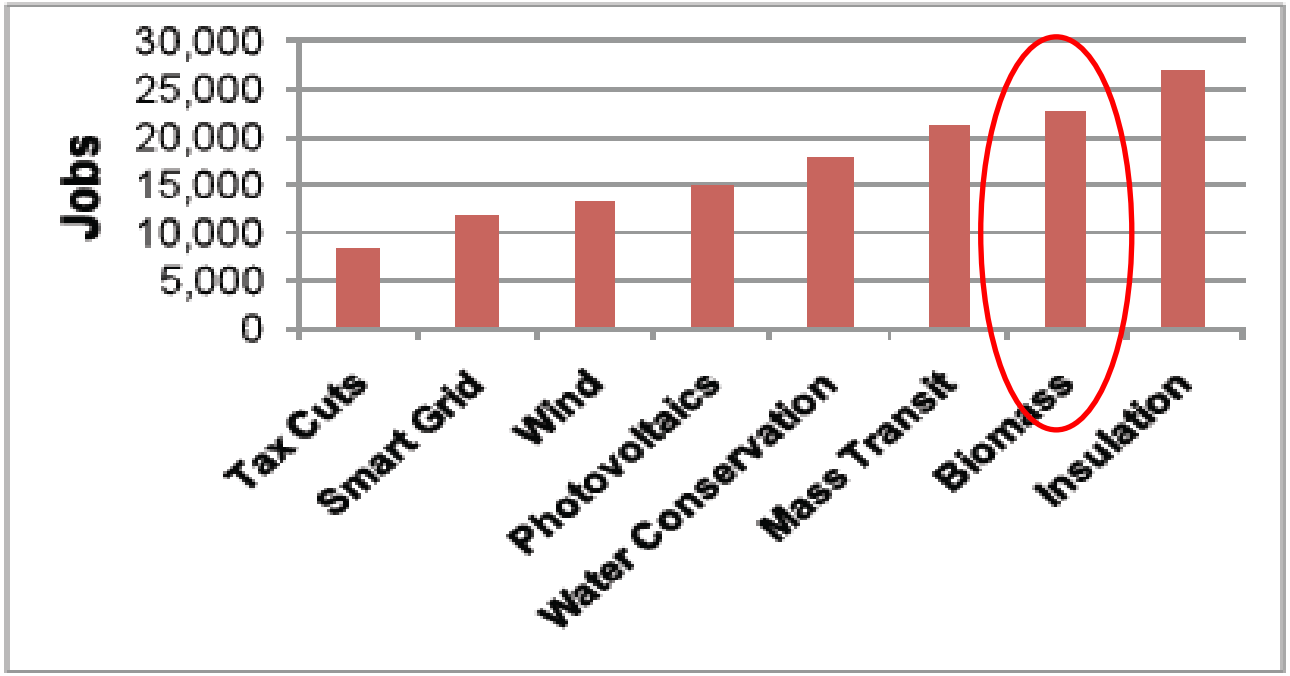
Massive government spending in fiscal stimulus

Country	Stimulus $bn	% of GDP/GNI	Green Stimulus $bn	% of green stimulus	Green stimulus as % of GDP
Australia	26.7	2.49	2.5	9%	0.2
China	586.1	13.88	221.3	38%	5.2
Japan	485.9	10.03	12.4	3%	0.3
Korea, Rep	38.1	4.44	30.7	81%	3.6
France	33.7	1.12	7.1	21%	0.2
Germany	104.8	2.74	13.8	13%	0.4
UK	30.4	1.09	2.1	7%	0.1
US ARRA	787	5.27	94.1	12%	0.6
US EESA	185	1.29	18.2	10%	0.1
Canada	31.8	2.03	2.6	8%	0.2

source: HSCB 2009, UNEP

Clean energy investment in stimulus spending has significant multiplier effect

Jobs per billion dollars of spending on tax cuts and selected green programs (billion constant 2008 US$)

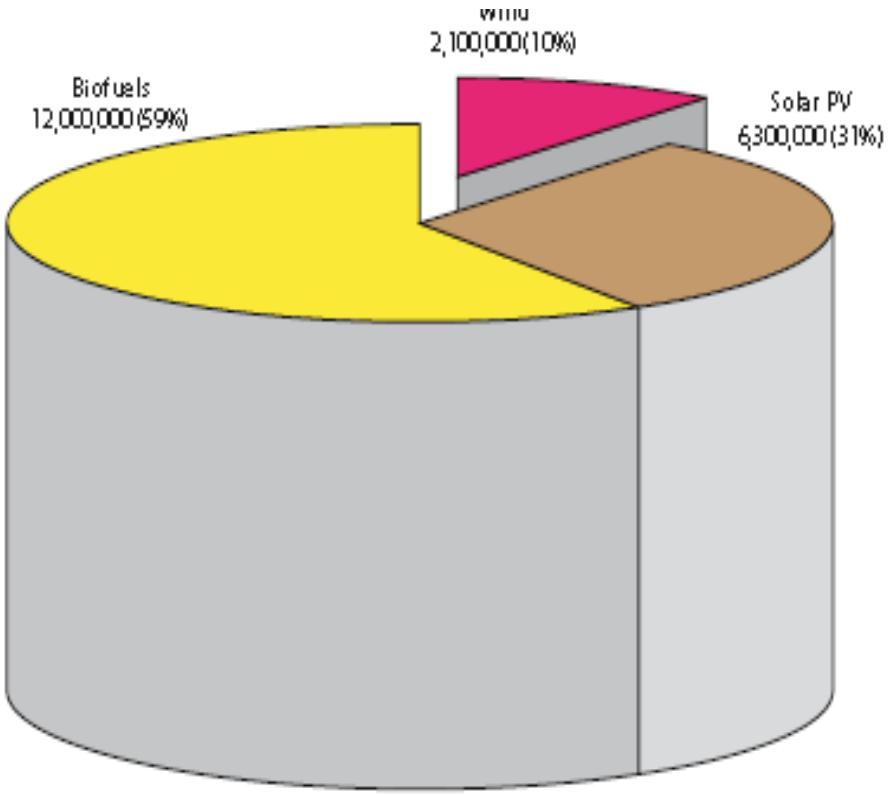


Source: Management Information Services, Inc., 2009.

SEF Alliance, Why clean energy public investment makes economic sense - The evidence base, September 2009

Jobs in the renewable energy sector: Future potential

- Globally, investing US$630 bn in the renewable energy sector by 2030 would create 20 million additional jobs:
  - 2.1 million in wind energy
  - 6.3 million in solar PV
  - 12 million in bioenergy



Green Jobs in Renewable energy, 2030

Jobs in the renewable energy sector: Future potential

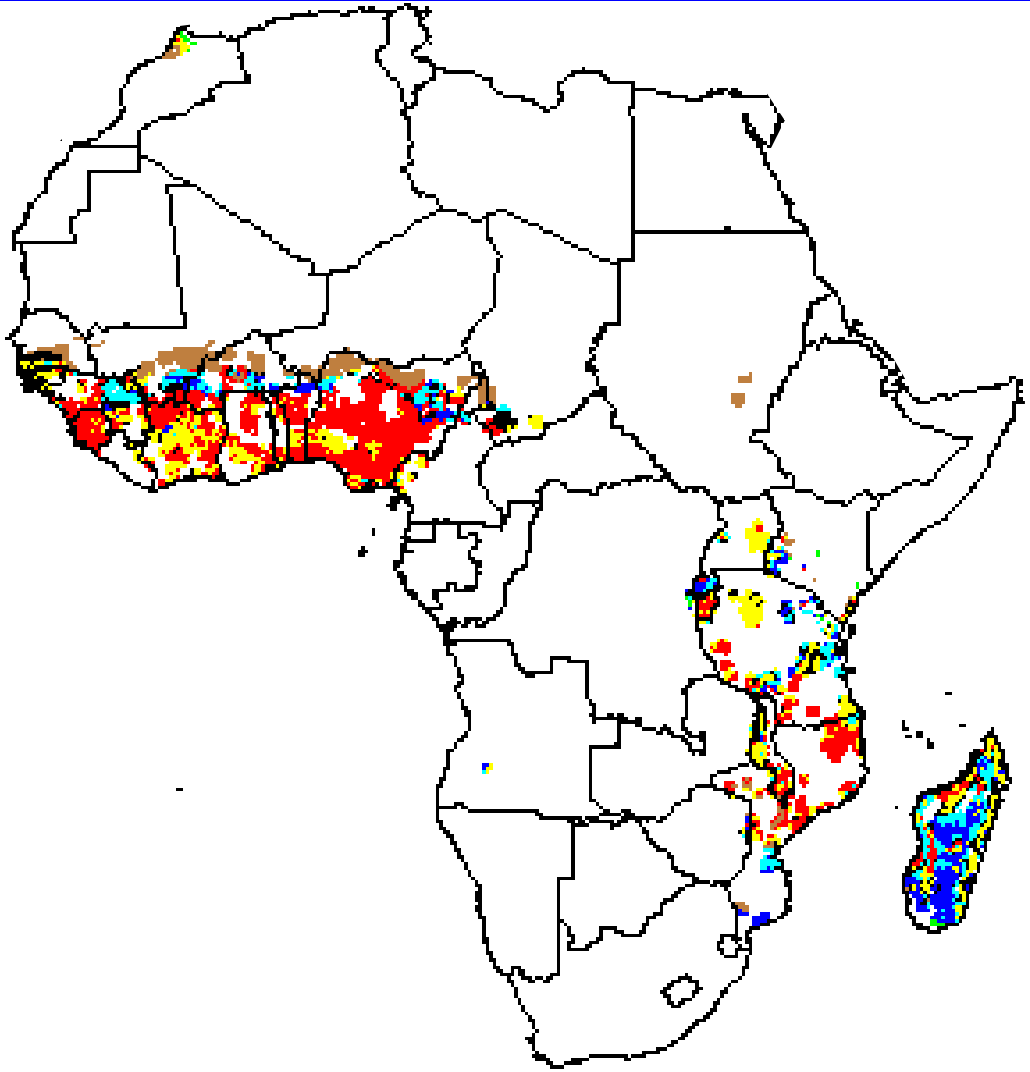
- In Nigeria, a biofuels industry based on cassava and sugar cane crops could provide jobs for 200,000 people.

- India could generate 900,000 jobs by 2025 in biomass gasification.

- The 2008 EU Renewable Energy Directive, which set the goal of reaching a 20% share of renewable energy in total consumption by 2020, is projected to create 2.8 million jobs in Europe alone.

Beyond jobs:
Other economic spillover effects

Irrigated rice yields decline 20% worldwide by 2050



Preliminary results

- 2000 old area lost
- loss > 25% of baseline
- loss 5–25%
- change within 5%
- gain 5–25%
- gain > 25%
- 2050 new area gained

Source: Gerald Nelson, IFPRI, Presentation at ICTSD/IPC Dialogue on “Climate Change, Agriculture and Trade” 5 April 2009

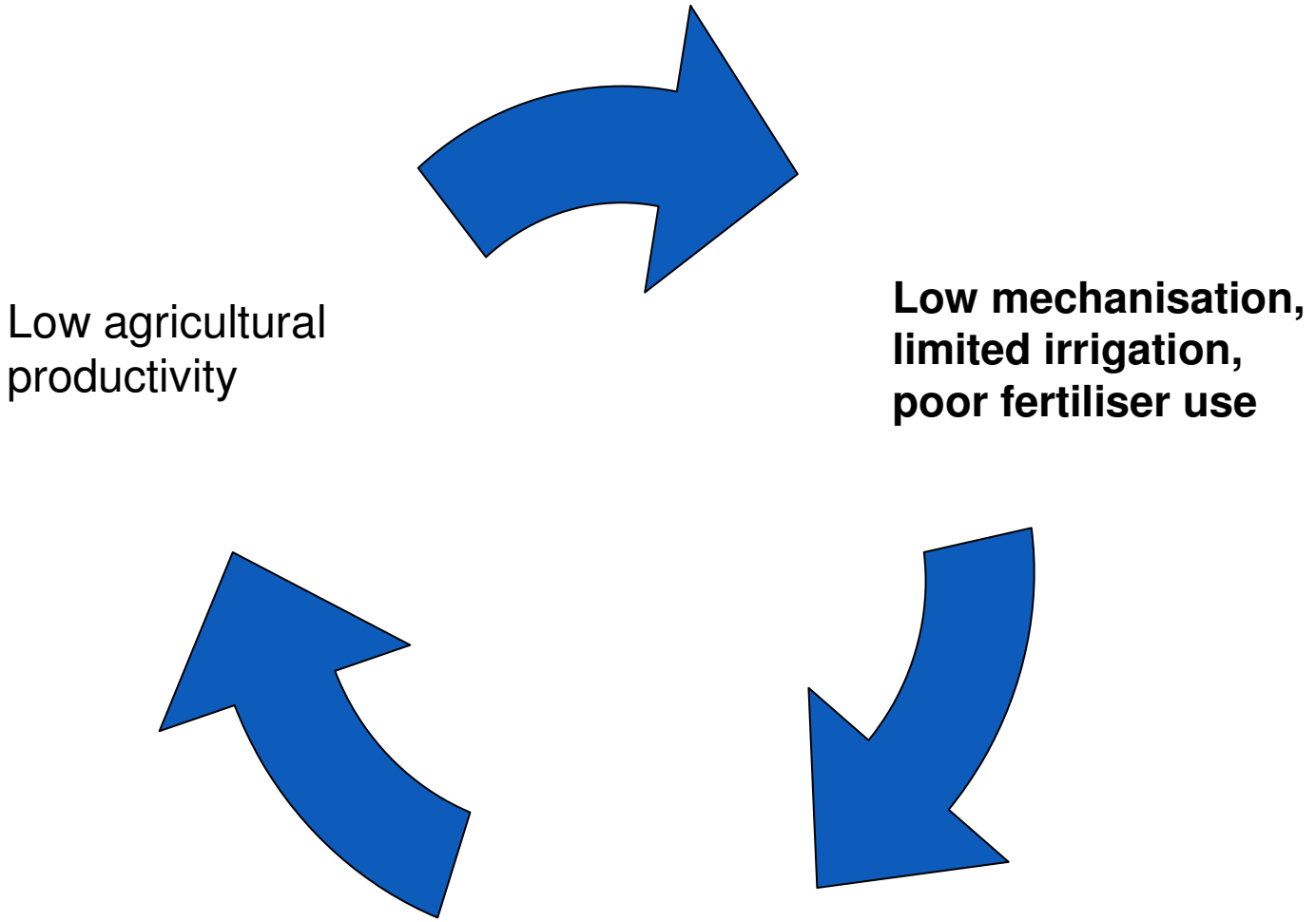
Possible impacts on rural livelihood and food security

Number of undernourished, incorporating climate change effects (in millions)

	1990	2020	2050	2080	2080/1990 Ratio
Developing countries	885	772	579	554	0.6
Asia, Developing	659	390	123	73	0.1
Sub-Saharan Developing	138	273	359	410	3.0
Latin Amercia	54	53	40	23	0.4
Middle East & North Africa	33	55	56	48	1.5

Source, Joachim von Braun, IFPRI. Impact of Climate Change on Food Security in Times of High Energy Prices

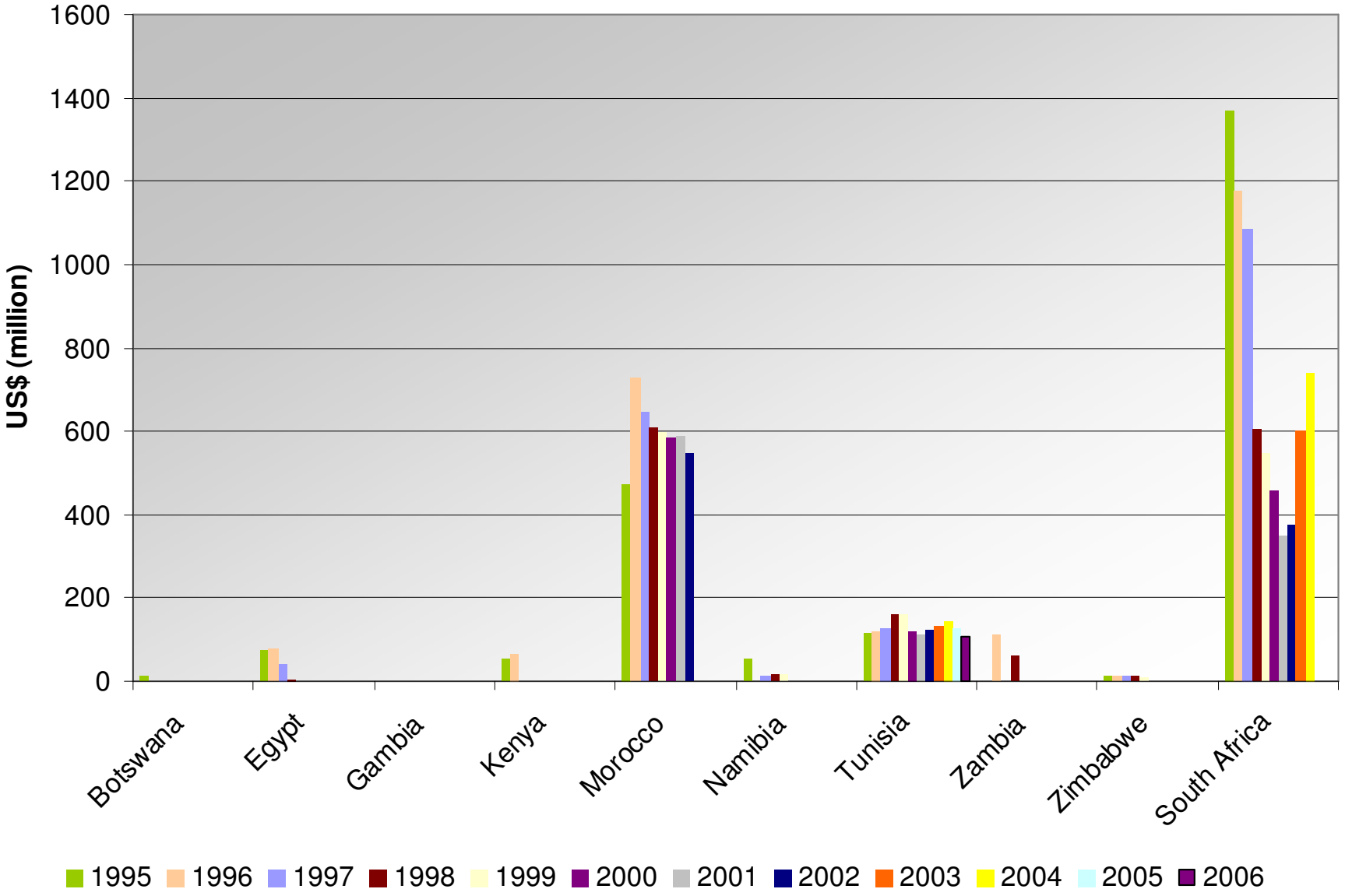
Breaking the vicious cycle of import dependence, energy poverty, low productivity and food insecurity



African countries have policy space to subsidise inputs in agriculture

- Spending in agriculture declined from 7.4% in 1980 to 6.7 % of GDP in 2002 - whereas total public sector spending grew in many African countries
- Overall, Africa has enough policy space to address supply side constraints through WTO compatible subsidies
- Non trade distorting measures form a substantial proportion of total domestic support (100% in Kenya, Zimbabwe, Zambia and South Africa since 2001)

Total Amount of Domestic Support Reported to the WTO by African Countries



Source: Dhar, B *Use of "Green Box" Measures by Developing Countries: An Assessment, ICTSD, 2007*

Key messages

- Investment in clean energy makes good economic sense from a macro-economic perspective – beyond individual investment returns.
- Public policies and government spending need to recognize and reflect these broader policy gains.

More Information

UNEP Green Economy Website

http://www.unep.org/greeneconomy/

UNEP

GEF 5 & Bioenergy

www.gef.org

Global Environmental Facility

GEF Provides grants to various types of projects

- **Full-Scale Projects - Over $1 million**

- **Medium-Scale Projects - Up to US $1 million**

Programmatic Approach (PA)

  - a partnership between country/ies, the GEF and other interested stakeholders
  - contains several projects that are linked through common objective/s of the program

Co-financing

Sources:

- Agency's own cofinancing;
- Government cofinance (counterpart commitments)
- Contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector, and beneficiaries.

Types

- Grants
- Loans, concessional or market-rate
- Credits
- Equity investments
- Committed in-kind support

Co-financing

Type and Size of Project	Minimum Cofinancing Ratio non-GEF resources: GEF
Enabling Activities, PDF-As	No minimum
PDF-Bs, PDF-Cs, MSPs, and Full-Size projects under $5million in GEF allocation	Reasonable levels of cofinancing reflecting the expected participation in project activities or the sharing of project benefits
Full-Size Projects where the GEF allocation (or the GEF allocation for any given country participating in a regional or global project) exceeds **$5 million**	In the country or countries concerned: 1:1 Biodiversity 3:1 Other focal areas and multifocal
Phased or follow-up projects, programmatic approaches, and partnerships where the overall GEF allocation (or the overall GEF allocation for any given country participating in a regional or global project) would exceed **$10 million**	In the country or countries concerned: 6:1

GEF 5 Replenishment

<u>Coverage</u> – July 1, 2010 to June 2014

No specific strategy for bioenergy, but …

<u>GEF 5 Focal Areas & Strategies Relevant to Bioenergy</u>

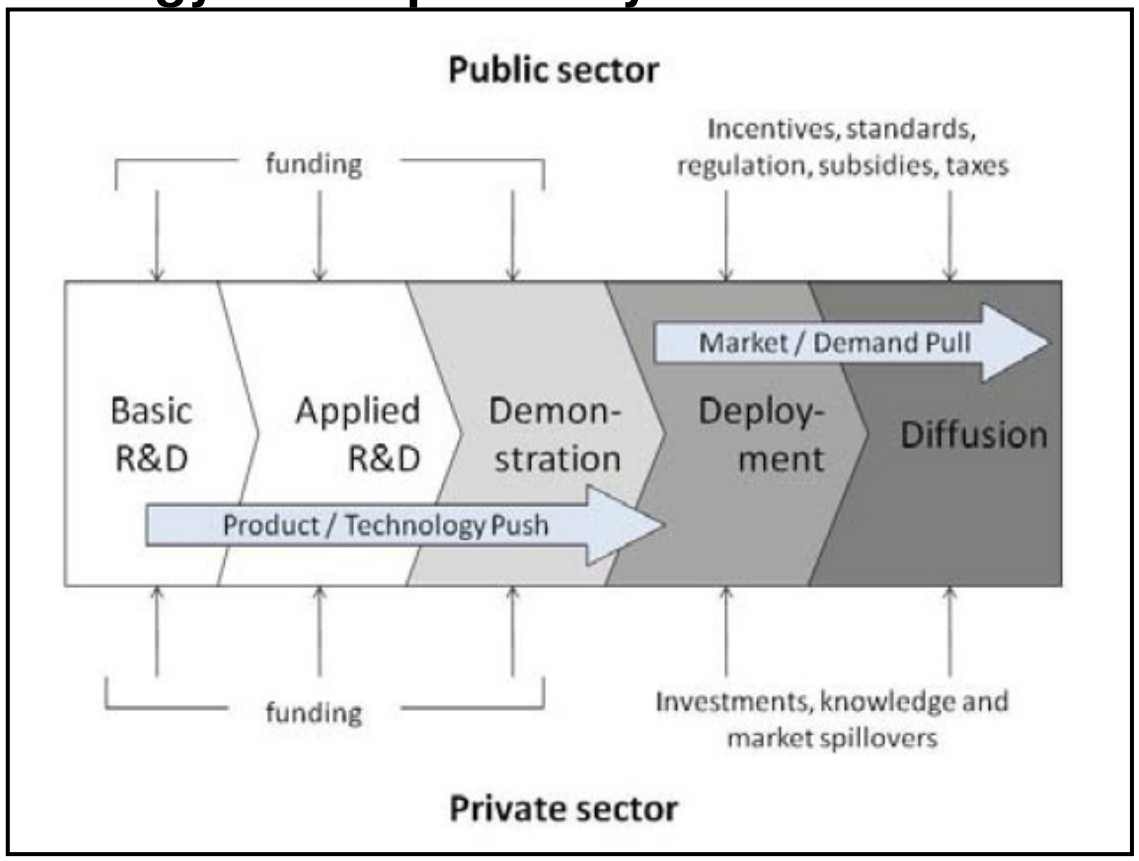
- **<u>Climate Change Mitigation</u>**
  - Promote a broad portfolio of environmentally sound, climate friendly technologies to achieve large GHG reductions in GEF recipient countries in accordance to their national circumstances

- **<u>Land Degradation</u>**
  - Support efforts to remove key barriers to the sustainable management of crop and livestock systems, as well as forests

Climate Change Mitigation

- focus on market demonstration, deployment, and diffusion
- a combination of technology push & market pull interventions.

Technology Development Cycle and Innovation Chain



Climate Change Mitigation

- A national planning process to identify priority areas for GEF support
- In relatively small and low-income countries, focus on investment as well as technical and institutional capacity building in promoting energy access through renewable sources of energy.
- Technology transfer will be promoted:
  - large countries and emerging economies - market demonstration and commercialization of new, emerging technologies
  - in small, low-income countries - deployment and diffusion of commercially available technologies
- No specific objective for bioenergy, but in promoting biomass applications, sustainability criteria

Climate Change Mitigation

Relevant CC Strategy Objectives	Replenishment Scenario
•Objective 3: Promote investment in renewable energy technologies	$ 400 to 800 million
•Objective 4: Promote energy efficient, low-carbon transport and urban systems	$ 350 to 700 million
•Objective 5: Conserve and enhance carbon stocks through sustainable management of land use, land-use change, and forestry	$ 200 to 300 million (plus $89 to 250 million under *Sustainable Forest Management* Objective)

Land Degradation

Goal - contribute to arresting and reversing current global trends in land degradation, specifically desertification and deforestation

Land Degradation

Strategic Objectives	Replenishment Scenario
Objective 1. Maintain or improve flow of agro-ecosystem services to sustaining the livelihoods of local communities	**$250 - 350 million**
Objective 2. Generate sustainable flows of forest ecosystem services in arid, semi-arid and sub-humid zones, including sustaining livelihoods of forest dependant people	**$25 – 75 million**

GEF Previous Support on Bioenergy Technologies

Biomass co-generation	Hungary, Malaysia, Thailand
Biomass boilers (heat production)	Belarus, China, Egypt, India, Kenya, Latvia, Poland, Slovak Republic, Slovenia, Sri Lanka
Biomass gasification for electricity	Chile, India, Uruguay