DESERTEC-Africa
www.desertec-africa.org

Unveiling Clean Energy Infrastructure project
Electrification of entire Africa

- oUnveiling Renewable energy Infrastructure for Electrifcation of entire Africa
- oPolicy reforms Private-sector-driven Electrifcation of entire Africa
- ✓**Donor-Aid: the cancer that has devasted Africa‘s initiative, resourcefullness and local industries**

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President / CEO, Applied Science Solutions Group (Nasset Enegy, Naaset Petroleum)

Does Africa really lack investment capital for infrastructure development ?

- We do not believe that Africa lacks the investment capital for infrastructural development, like donor agencies and lending institutions would like Africa to believe!
- Misplaced priority rather than lack of fund is the reason for the current crisis in Africa's infrastructure development and maintenance!
- DÉSERTEC-Africa has strong reservations against current form of aid to Africa due to its negative impact on Africa's initiative, resourcefulness and local industries.
- Now, is there any explanation for Africa's continued overly reliance on mere meager Aid-money for infrastructure development, when it can mobilized larger fund locally in Africa?
- Will Africa's infrastructure development and maintenance suffer if Aid-money dries up?
- In order to answer these questions, we would first ascertain the amount of money Africa requires for infrastructural development. 2009 World Bank's report of study on Africa's infrastructure funding conducted in 24 African countries estimates that:

2009 World Bank's report of study on Africa's infrastructure spending conducted in 24 African countries estimates that:

Ainfrastructure spending:

- $45 billion (current total annual Infrastr. spending)

Should spend annually:

- $93 billion (right level of infrastr. spending) (15% GDP)
- half of $ 93 billion ca. $46 billion on power (7.5 % GDP)
- Comparable to China's infrastructure investment over the last decade.

Calculation I:
$93 billion (15% of GDP) (right level)
-$45 billion (current spendind level on power)
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➢US$ 47 billion (ca. 7.5 % GDP)
(This is funding gap for power)

How to close funding gap of $47 billion (ca. 7.5 % GDP) needed annually for electricity infrastructure development:

The report shows

- $17 billion annual funding efficiency gap for all Infrastructure

  (= power $8.5 billion)

Calculation I:
$93 billion (15% of GDP) (right level)
-$45 billion (current level power)

➢$ 47 billion (power) (ca. 7.5 % GDP)
(This is funding gap I)

✓Calculation II:
$ 47 billion (funding gap power)
-$8.5 billion (efficiency savings)

$ 39.5 billion (rest funding gap power II).

Closing the efficiency gap (How to avoid waste due to inefficiency)

The UN recommends:

- improving management of utilities,
- ensuring adequate maintenance,
- promoting regional integration,
- recovering costs while recasting subsidies to enable broader access,
- and improving allocation and spending of public resources,

DESERTEC-Africa believes:

- Most of UN recommendations are best implement by the private sector
- Electricity market based on legislated policy framework would usher in private-sector-lead electricity infrastructure development in Africa with improved efficiency, as a result, has just a single recommendation / requirement for countries wishing to be part our electricity project
- put in place policy framework with focus on renewable energy
- However, the study also found that even if major efficiencies are gained, there is still a funding gap of ca. $39 billion every year much of it for power and water infrastructure in fragile states.

Closing the rest funding gap of ca. $39 billion needed annually for electricity infrastructure development: the ***rest funding gap***

- could be closed using both budgetary, financial and other instruments as follows:
- **a) Budget instrument: - adjustments to public budget** to allocate more fund, as percentage of GDP, to electricity infrastructure development.
  b) Financial instrument: Local capital markets: The example of the telecommunication and Banking sector's success in raising capital from ordinary citizen on the capital market is proof there is money from ordinary citizens to tap into in Africa for the funding of infrastructure development funding.
- c) **The Private sector:** Desertec-Africa prefers private-sector based approach to electricity infrastructure development and we believe if policy framework is in place, they (private investors) will come. However, since "private investor" is not always "private investor", we have refrained from using the expression "private investor", instead have consistently used "private project

Private-sector-driven Electrification of entire Africa

PRIVAT SECTOR CLEAN ELECTRICITY INFRASTRUCTURE PROJECT

- Utility Scale
- Rural Electrification
- How energy is made available to consumers
- Energy Efficiency
- Funding (allocation of % GDP)
- African RE market is huge
- Workforce Training/ Job creation

POLICY FRAMEWORK WITH FOCUS ON RENEWABLE-ENERGIES

LEGAL FRAMEWORK

LAWS ARE MADE BY PARLIAMENTS

1. Legislated Feed-in tariff
2. Long period power purchase guarantee for Renewable Energies only!
3. % GDP allocated to RE Infrastr. development
4. Scientific energy conversion chain should be employed
5. Gov. Rural electrif. projects to use panel that are made in Africa to ensure job creation.
6. Trained Workforce

Law makers (Legislators)

REGULATORY FRAMEWORK

Regulatory / Licensing Authority (RA/LA)

RA/LA

RA/LA

RA/LA

Banks / Financial Institutions

Government appointed officials

Establishment of African / W. African Renewable Energy (RE) Infrastructure MARKET

SELLERS	BUYERS
•Project developers •Equipment suppliers •Financiers	•Independent Power Holding Company (PHC) •Local PHC •Homes, •Hotel, Bank •The Public •Companies / •Organizations
•CSP, Wind, Geothermal, •Ocean current, Biogas	
PV, Micro, Hydro-Power, biomass	
•Off grid, micro grid •HVDCgrid •Virtual grid	
Solarthermal panel for (hot water preparation/ Cooling), Greenbildung	•Market instrument = share •Budget instrument = % GDP made availabe AS GRANTS; LOANS; TAX EXEMPTIONS
Investment capital Local sources first!	

Turning huge market into huge Job opportunities for locals (policy driven)

Market participants

Private-sector-driven Electrification of entire Africa

Establishment of African / W. African Renewable Energy (RE) Infrastructure MARKET

PRIVAT SECTOR CLEAN ELECTRICITY INFRASTRUCTURE PROJECT

POLICY FRAMEWORK WITH FOCUS ON RENEWABLE-ENERGIES

	LEGAL FRAMEWORK	REGULATORY FRAMEWORK	SELLERS	BUYERS
			•Project developers •Equipment suppliers •Financiers	•The Public •Companies / •Organizations •W. Africa RE-Communities •Households •National Power Holding Company (PHC) •Local PHC •Homes, •Hotel, Bank •share •Budget instrument = % GDP made availabe AS GRANTS; LOANS; TAX EXEMPTIONS
Utility Scale	**LAWS ARE MADE BY PARLIAMENTS**	Regulatory / Licensing Authority (RA/LA)	•CSP, Wind, Geothermal, •Ocean current, Biogas	
Rural Electrification	1. Legislated Feed-in tariff	RA/LA	PV, Micro, Hydro-Power, biomass	
How energy is made available to consumers	2. Long period power purchase guarantee for <u>Renewable Energies only!</u>	RA/LA	•Off grid, micro grid •HVDCgrid •Virtual grid	
Energy Efficiency	3. % GDP allocated to RE Infrastr. development	RA/LA	Solarthermal panel for (hot water preparation/ Cooling), Greenbildung	
Funding (allocation of % GDP)	4. Scientific energy conversion chain should be employed	RA/LA	Investment capital Local & foreign	
African RE market is huge	5. Gov. Rural electrif. projects to use panel that are made in Africa to ensure job creation.	RA/LA	Turning huge market into huge Job opportunities for locals (policy driven)	
Workforce Training/ Job creation	6. Trained Workforce	RA/LA	Who can be trained?	

Law makers (Legislators)

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Private-sector-driven Electrification of entire Africa

Establishment of African / W. African Renewable Energy (RE) Infrastructure MARKET

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- Utility Scale
- Rural Electrification
- How energy is made available to consumers
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REGULATORY FRAMEWORK

	SELLERS	BUYERS
Regulatory / Licensing Authority (RA/LA)	•Project developers •Equipment suppliers •Financiers	•Independent Power Holding Company (PHC) •Local PHC •Homes, •Hotel, Bank •The Public •Companies / •Organizations
RA/LA	•CSP, Wind, Geothermal, •Ocean current, Biogas	
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Banks / Financial Institutions	Solarthermal panel for (hot water preparation/ Cooling), Greenbildung	•Market instrument = share •Budget instrument = % GDP made availabe AS GRANTS; LOANS; TAX EXEMPTIONS
	Investment capital Local sources first!	

Turning huge market into huge Job opportunities for locals (policy driven)

Law makers (Legislators)

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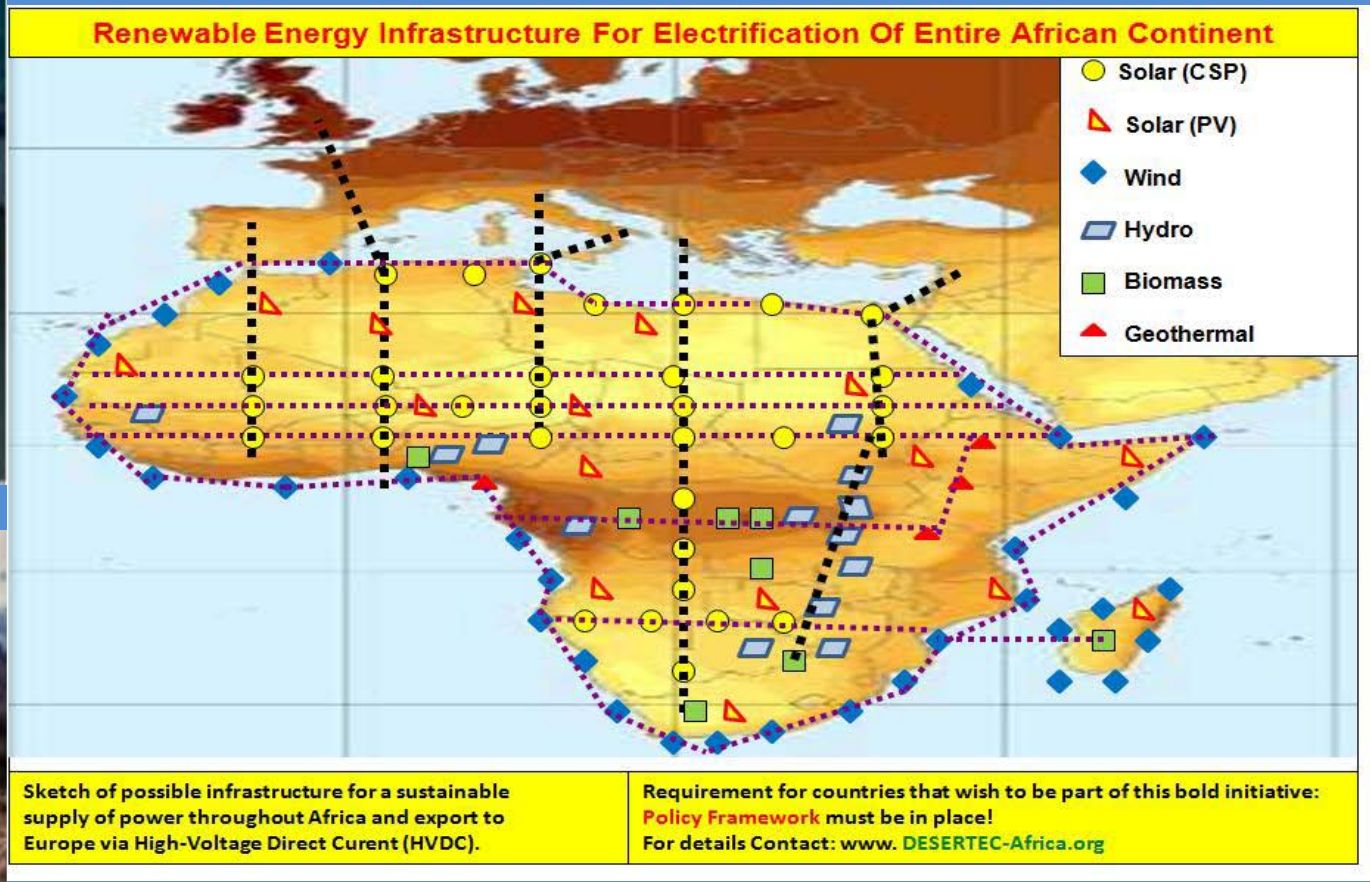
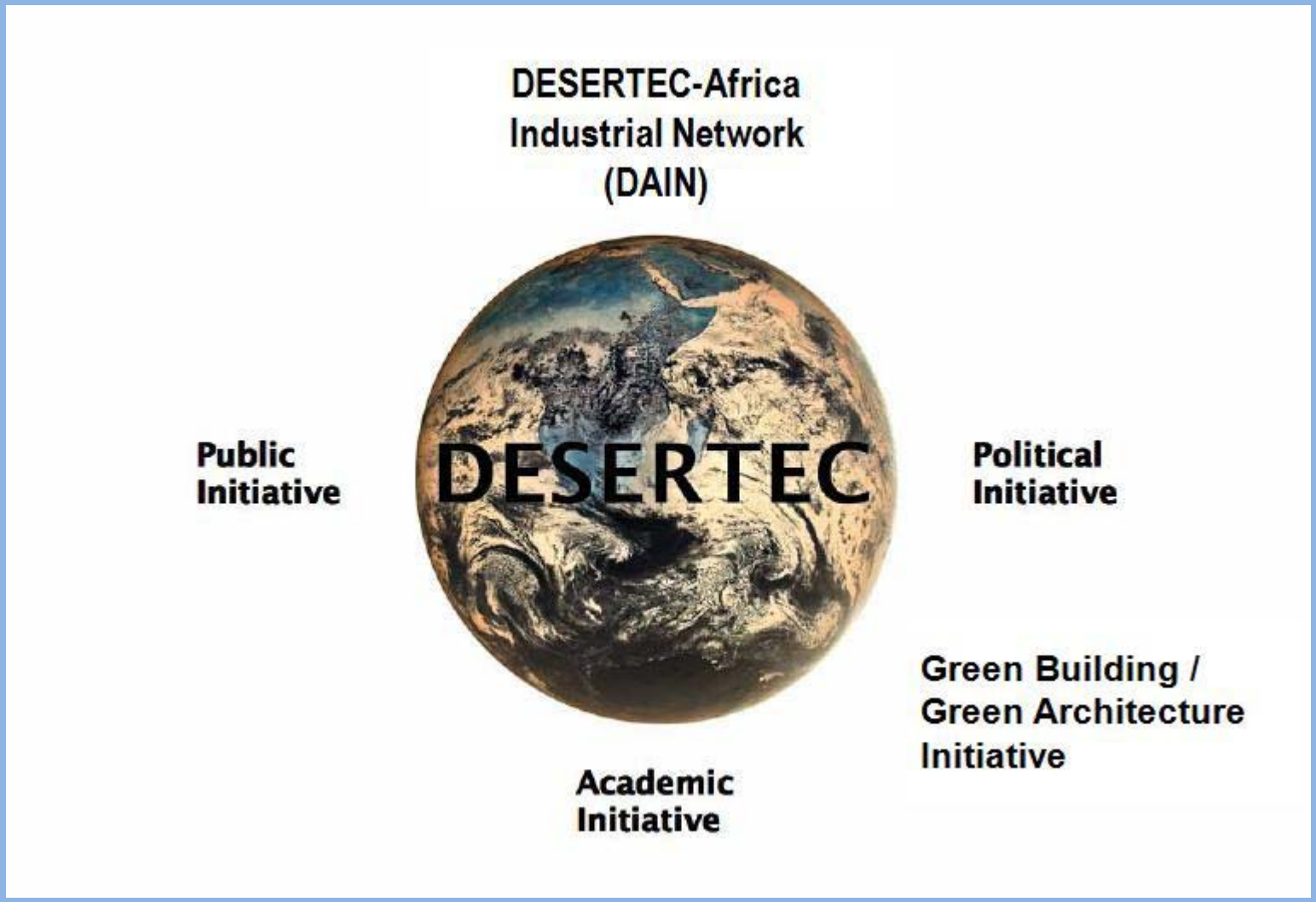
Bold Plan for Electrification of entire Africa unveiled



Sketch of possible infrastructure for a sustainable supply of power throughout Africa and export to Europe via High-Voltage Direct Curent (HVDC).

Requirement for countries that wish to be part of this bold initiative: Policy Framework must be in place!
For details Contact: www. DESERTEC-Africa.org

DESERTEC-Africa Industrial Network



Conclusion:

Tackling the challenge of insufficient or lack of RE-policy framework

- African countries must demonstrate seriousness to improve their electricity infrastructure by putting comprehensive RE-policy framework in place.
- Establish electricity-infrastructure-market *(initial political support)* based on this policy-framework,
- and may have to make the first purchase (initial financial support in form of setting aside the right percentage of their GDP for electricity infrastructure development, made available to private project developers in the form
  - long-term power purchasing guarantees for Renewable energies (not for fossil energy).
  - Electricity tariff, effective feed-in tariffs, investment tax credit, production tax credits (and if need be equity ownership by public organizations, Desertec-Africa do not encourage this though), instead of direct government involvement in project contract awards and execution). These financial instruments from government would encourage sellers such as private project executioners and equipment suppliers (private sector) to *see the market as well established* and participate in it.

Conclusion:

Tackling the challenge of insufficient or lack of RE-policy framework

- As soon as policy frame work is in place government should restrict itself to licensing and regulation.
- A policy insufficient, obsolet or even works against RE development:
  - When the role of government is expanded to include award of contract for power projects
  - When power purchase guarantee is extended to power generated from fossil fuel.
  - When there is fossil fuel subsidy, when electricity subsidy is not a support scheme for RE development (rural electrification, levelized price, user tariff versus feed tariff).

Thank you

DESERTEC-Africa's Time Plan for Electrification of entire Africa