

The main Challenges for Financing Sustainable Energy in Africa

Lessons from the past and new Opportunities for PPP, viewed from an European Point of view

Paul Frix

Senior Economist, Honorary General Director Belgian Cooperation, Counsellor CBI-ACP, Propadev Sprl.

2017, October 23-25, Palace of the Academics, Brussels, Belgium

International Conference organized by the “Royal Academy for Overseas Sciences” (RAOS) of Belgium on “Sustainable Energy for Africa”.

Structure of the Presentation

1. Context;
2. The False dilemma: decentralized approaches versus big projects and the emblematic case of Inga;
3. the financial needs, the development of PPP on a large scale: the blending and guarantee issues, main tools and the delicate concept and role of ODA
4. the current EU priorities and evolutions

1. General context

According the Davos Forum:

- The electricity landscape is a prime example of the Fourth Industrial Revolution as it undergoes a transformation, becoming more complex than ever before with rapidly **evolving technologies, declining costs, and shifting regulatory landscapes**.
- **Three trends in particular are converging to produce game-changing disruptions:**
 - **electrification,**
 - **decentralization**
 - **digitalization.** These trends are presently at the “grid edge” – smart and connected technologies at the end of the electric power grid. They encompass all of the major technologies – such as distributed storage, distributed generation, smart meters, smart appliances and electric vehicles – that are impacting the electricity system.

1.1. African Context

- At least 600 M people have no access to electricity mainly in SSA;
- Even for the ones connected: frequent blackouts and need of costly domestic generators,
- Public utilities in the sector face under capitalisation, poor management, inappropriate tariff collection, financial difficulties and insufficient maintenance.
- In the year 2000, 40% of the world population will be African
- Under the joint pressure of demography and urbanization the electricity needs will explode in the coming decades.
- Up to now Africa has only contributed marginally to the global warming of the planet but will figure among the region the most affected

Current context of Africa

- Fortunately the energy resources of the continent are extremely important and diverse combining renewable and traditional
- The potential of clean energy is huge:
 - 10 TW of solar;
 - 350 GW for Hydroelectricity;
 - 350 GW 110 GW of Geothermal;
 - + Wind and Ocean.
- **rapid and affordable technological progress in clean energy production and distribution, management and communication tools (ICT) , should logically allow Africa a leapfrog in its development process.**

2. False dilemma: decentralised approaches vs. big projects

2.1. Centralized grids, Power Pools & Regional Integration

- Centralized and decentralized approaches are complementary but require different types of financing process and actors;
- The development of centralized grid and their interconnection at national and regional levels through Power Pools has a critical role to play in the development of regional integration, industrialization, trade and market structuration;
- By contrast decentralized approaches through mini-grids, smart grids or off-grid solutions are by far less expensive and allow affordable energy access to population in rural and isolated regions. Today solar and wind are the most competitive solutions

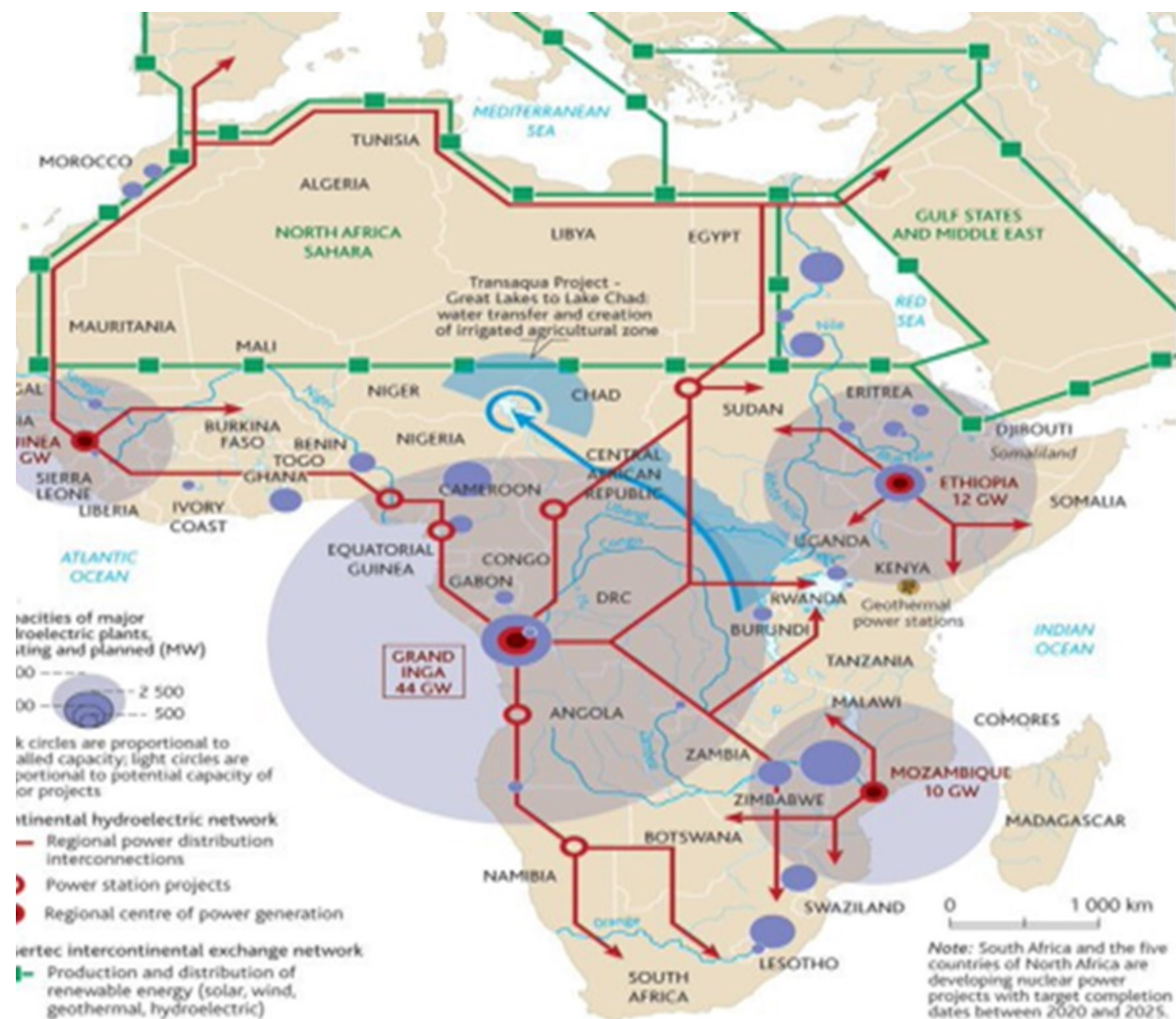
2.2 Today huge hydroelectric projects have bad réputation at the level of NGOS/ They are indeed

- :
- **very expensive ;**
- **complex;**
- **require long and careful preparation and implementation periods**
- **expose to corruption and bad governance;**
- **Their financing needs are important and often very risky**

Where are located the main resources?

The countries and spots in Africa possessing a important comparative advantage to develop this type of project and boost their industrialisation processes and regional integration are:

- **The DRC** with a global exploitable potential of 100 MG whose 44 % located on the sole Inga site;
- **Ethiopia** (12 GW);
- **Mozambique and Zambia** with 10 GW;
- **Guinea** (6 GW)



2.3 Regional energy integration and Power Pools

- **Regional energy integration is extremely important** to attract investments, for the security of energy supply and mix and **to reduce the cost of doing business** (economies of scale) and costs to consumers;
- **regional energy generation provides an optimal economic solution to generating and using energy**, because energy is produced where it is most economical and supported, and is provided where it is most highly needed;
- **power trade is an indicator of energy integration; power pools themselves are, with transport infrastructures and ITC, key drivers of regional integration;**
- there is **high political commitment to regional energy markets;**
- **regional energy integration through power pools is a prerequisite for sustainable development.**

t:

The existing Power Pools

- the EAPP (11 countries);
- the WAPP (14 countries);
- the SAPP (11 countries);
- the CAPP (10 countries);
- the COMELEC (5 Magrebian countries).

Their level of integration are variable and certain countries are members of several Power Pools as the DRC (CAPP and

Main challenges for power pools

- According estimations the resources needed for grid integration would be at least **\$19 billion USD annually**.
- Investment in **improving regional energy trade would save an estimated \$5 Billion USD** annually in emergency generation costs, yielding a 22% [rate of return](#).
- **If the theoretical global and mutual advantages of grids integration are obvious, the strategic options concerning the volume and choice of investments, partners, localization of investment, transmission lines, tariff strategies, governance regulatory and business environment existing at regional levels are critical to determine who and where will be the main winners.**

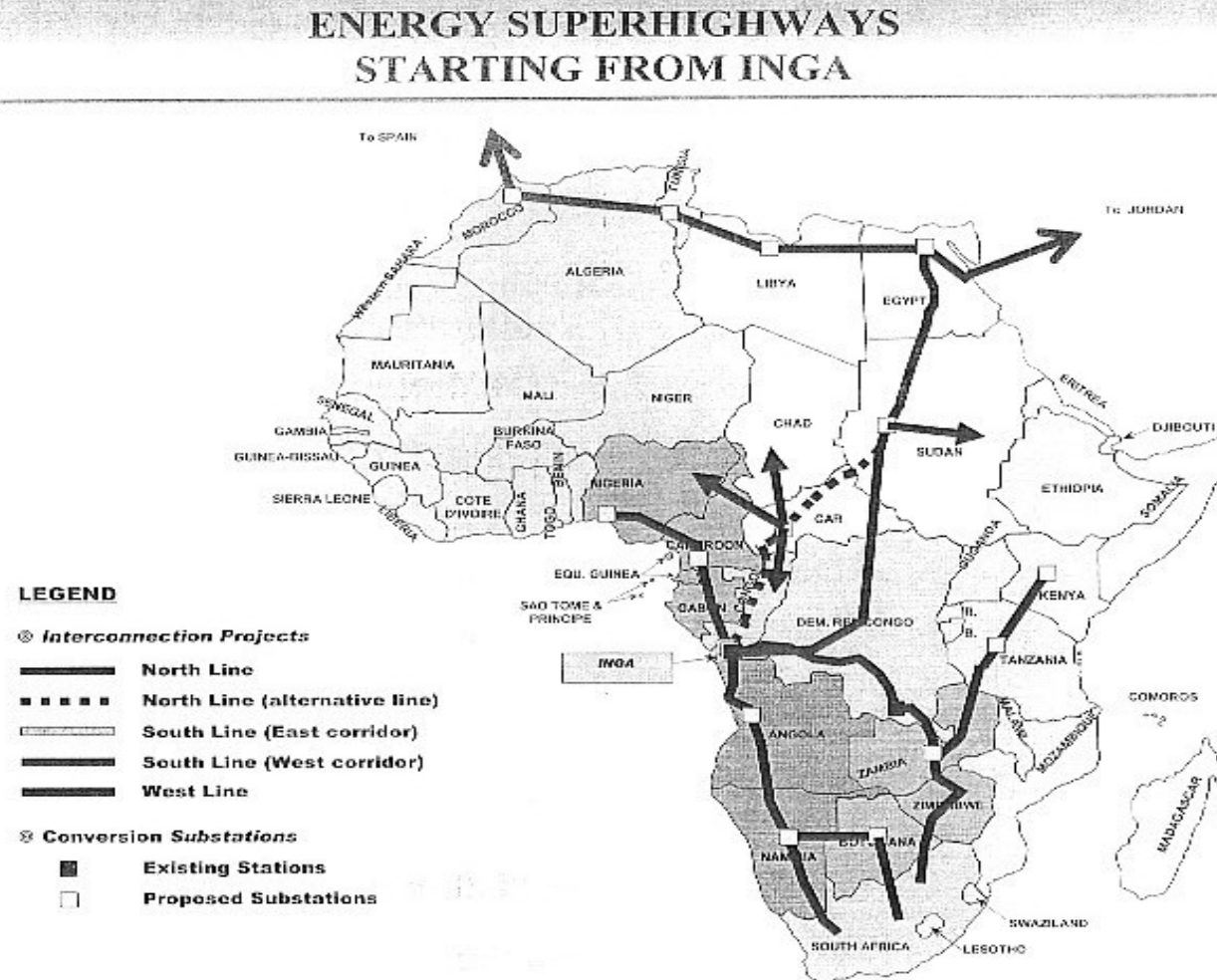
The emblematic INGA Project

The turbulent history of this project will be mainly treated in the Presentation of Francois Misser

Economist and NGOS point of views concerning this project are often contrasted

1. Generally NGOs consider this project as ruinous, a dangerous Utopia, detrimental for the environment and a potential White Elephant
2. By contrast a large number of experts and economists consider that :
 - The DRC dispose with Inga of one of the most important potential of clean and renewable energy in the world .
 - well conceived, implemented and properly managed, it will produce the cheapest electricity for industrial and general use in the world.
 - will be essential not only for the development and diversification of the DRC economy and the one of a significant part of the African continent. It is regarded by NEPAD and ADB as one, if not the greatest, integrative project in Africa
 - , the environmental damages produced by the development of Inga will be minimal limited displacement of population and very few environmental damage.
 - It will enable economic development less dependent on fossil fuels and reduce consumption of charcoal in large urban centers, such as Kinshasa, the project will slow further deforestation in Central Africa and have, in the end, a substantial positive ecological balance

Energy highways envisaged but is it the right approach?



Key Issues

- If Inga is a wonderful asset, it has in fact the disadvantage of being internationally coveted as well by equipment suppliers and contractors as by potential customers
- choices were also made difficult, because of a lack of updated comparative studies on the advantages and disadvantages of the various possible development scenarios at continental and regional levels.
- If mainly oriented to give a decisive comparative advantage to Central Africa, Inga could become a key factor for the economic diversification and regional integration of this part of the Continent which lacks behinds despite its enormous potential.
- The impact Inga will have on the RDC and the rest of Africa will depend heavily on strategic options and tariff policies that will be performed at the local, sub-regional, continental and sectoral levels;
- If Inga is a wonderful asset, it has the disadvantage of being internationally coveted as well by equipment suppliers and contractors as by consumers

3. Financial Needs , PPS, and evolution of the ODA role

The resources to implement the 7TH SDG goals, the UN initiative SE4all and realise the commitments subscribed COP 21 in Paris are very important:

- According to a 2015 McKinsey report “**it would take US\$ 490bn to generate power and US\$345 bn for transmission and distribution to meet the needs of the SSA region in the next 15 years**”.
- **The AfDB estimates that it could cost \$ 60bn per year to achieve its target of providing universal electricity access by 2025**

3.1. Initiatives in support to sustainable Energy in Africa are numerous and on the increase

To be mentioned as examples

1. the African Union « Agenda 2063 » *The first ten year implementation plan of the African Union “Agenda 2063”, approved in 2015 in Addis Ababa, has e.g. as objectives:*

- to raise by at least 10% the share of renewable energy (wind, solar, hydro, bio and geothermal) in total energy production;
- to reduce by at least 20% proportion of fossil fuel in total energy production;
- to increase by at least 50% electricity generation and distribution
- 2. the Africa Power vision (APV) based on the PIDA Programme of Infrastructure Development in Africa° managed by the AfDB;
- the AREI (African Renewable Energy Initiative)
- “New Deal on Energy in Africa” (NDEA) recently launched by the AFDB.
- The Facility for Energy inclusion (FEI), rooted on the NDEA. FEI will focus on providing senior and mezzanine debt to off-grid, mini-grid and small scale Independent Power Producers (IPP), i.e. projects with total costs under USD 30 million. The Fund will provide hard and local currency financing

3.2 How to promote new PPPs

- The IRENA report published in 2016 and named "Unlocking Renewable Energy Investment: the role of risk mitigation and structured finance" give a broad view not only of the renewable energy opportunities but also of the risks involved and the kind of enabling environment, instruments and policies needed to promote and facilitate access to capital and mitigate financial risks.
- As well, centralized than decentralized approaches in the field of renewable energy needs to be supported by PPPs through guaranty scheme and blending mechanisms
- If coherent institutional, legal and regulatory reforms are generally needed locally or regionally to accelerate the process, it is at the level of medium sized and large project that the situation and challenges are the most complex.

3.4 Main risks involved:

:

- **political and regulatory risk;**
- **counterparty risk,**
- **grid and transmission link risk;**
- **currency, liquidity;**
- **refinancing risk;**
- **resource risk**

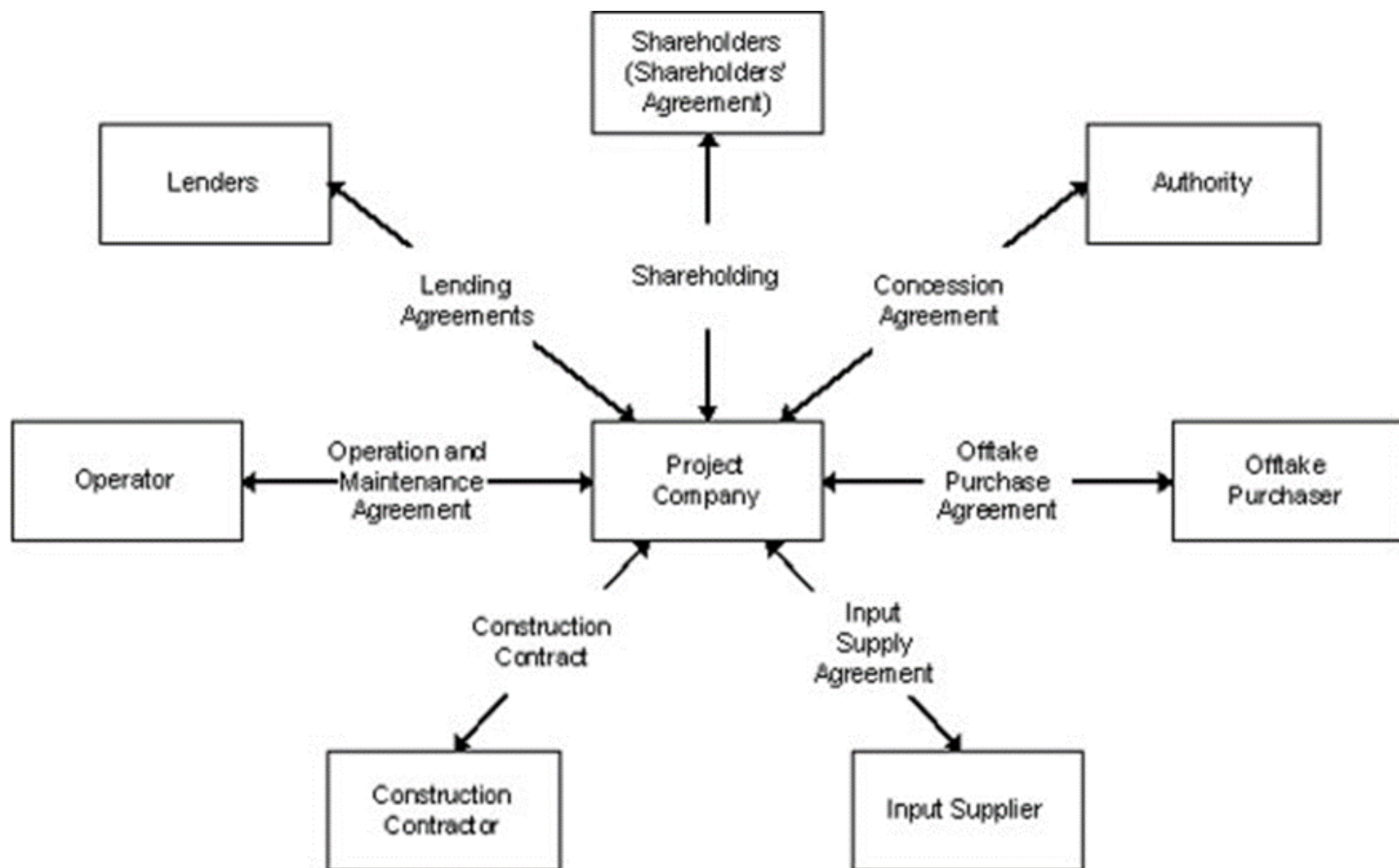
3.5 Diminishing risks factors

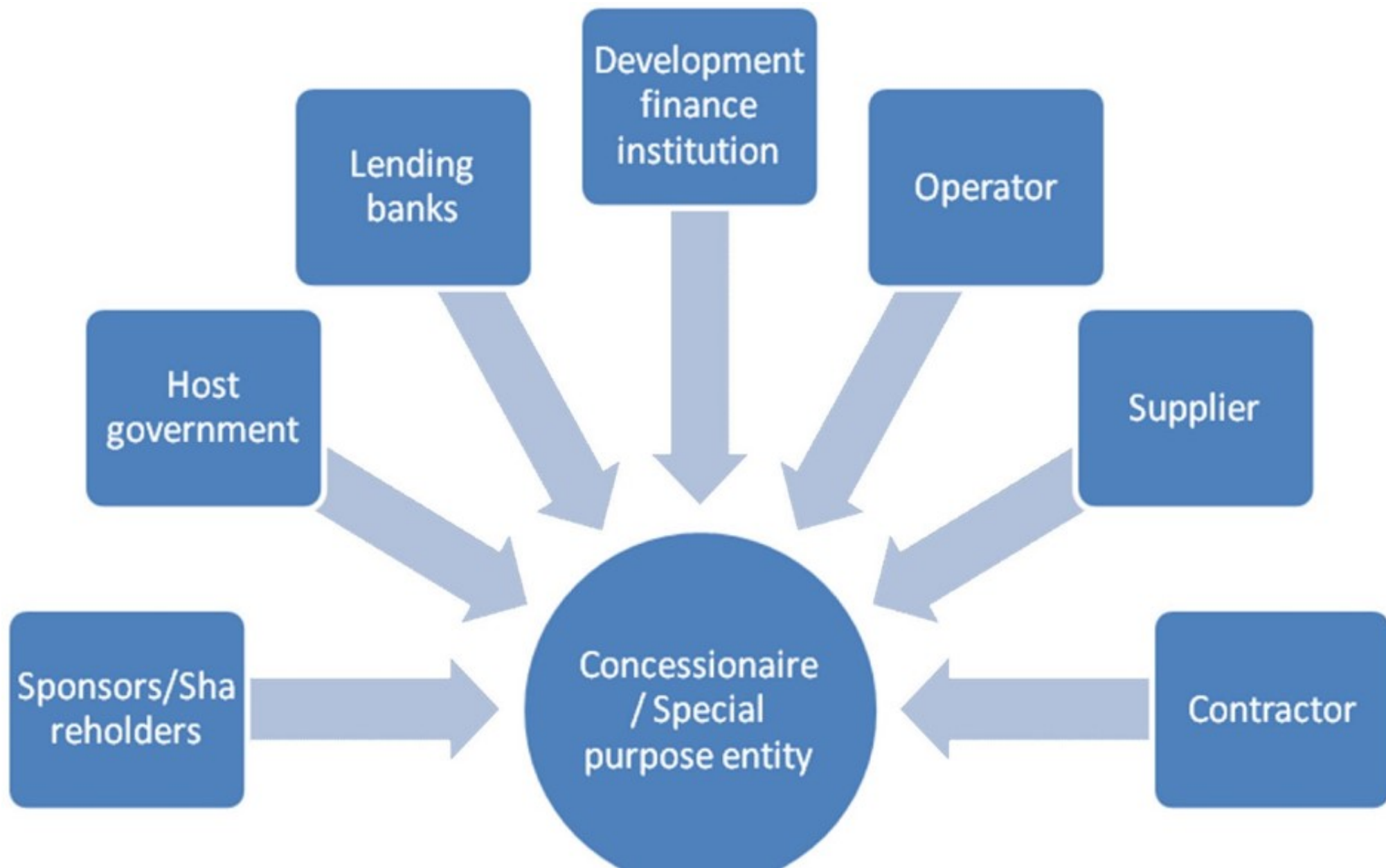
To be used in combination:

- **Enabling policies** to create stable and predictable investment environments,
and help overcome barriers and ensure predictable project revenue streams.
- **Technical assistance and grant funding** can be critical early on in the project lifecycle when preparing the ground for investment.
- **Debt-based instruments**, such as on-lending and co-lending structures, can help local finance institutions overcome key barriers, especially limited access to capital and low experience in lending to renewable energy projects.

3.6. Contractual structures

- **The more common PPP approaches for the realization of big projects** led by the public authorities in developing countries are **Concessions, BOT and DBO**.
- **Precise definition and detailed information on those approaches are given on the site 'PPPIRC'** (Public Private Partnership in Infrastructure Resources Center) of the World Bank
- the two following slides give an indication of the complexity of the configuration required to implement and finance this type of arrangement





3. 7 The Use of guarantees and andother blending schemes to mitigate risks and mobilize financing

The main mechanisms used to reduce and share risks are:

- Government guarantee;
- Political risk insurance ;
- Partial risk guarantee ;
- Export credit guarantee;
- Various currency and liquidity risk mitigation instruments;
- Collaterals.

Financial structure limiting the risk involved by investors and financiers

Three classes of financing and risk associated:

- **Class C:** first lost share;
- **Class B:** Mezzanines loans or shares that ranks senior to the C Share portion (Class B) They are generally contributed by DFIs;
- **Class A** share that ranks senior to the other two share classes.
- The financial structure of such projects can also be presented this way:

The financial structure of such projects can also be presented this way:

Senior debt (the least risky level)
Subordinated Debt;
Hybrid instruments,
Preferred Equity
Common Equity (the riskier level)

Quid about ussing real assets as colateral?

- The local and international financial sector may also ask to promoters or to local government to **provide various type of collateral as guarantees to their loans. For fifteen years, China has massively used this type of guarantee at a state to state level to develop infrastructures in Africa and facilitate its access and investments in mines, energy, agro, and agro forestry and industry, deep-sea ports and ESZ (Economic Special Zones).**

ODA concept and role to be revisited

- **Today nearly everybody recognize the need to adapt the ODA concept to the need to better involve the private sector, local and foreign, in the process of a sustainable and inclusive development.**
- **ODA may play, trough appropriate modalities of blending and technical assistance, a catalytic role in the orientation of local and regional development and in the mobilization of resources at local and international levels**

3.8 European approaches

- up to now, the support has been channeled mainly in the framework of the Yaounde, Lome and Cotonou convention through namely the” **Energy Facility**” financed by the European Development Fund and managed by DG Dev, and the “**Investment**” and “**Infrastructure**” facilities located at the EIB.
- Among the tools and channels getting already the support of the EU to be mentioned: the “**EU- Africa Energy Partnership**”, the UN “Energy4all” Program, the IRENA and AREI.
- Launched in 2015, **the AREI’s is an African initiative**. Its objective is to install 10 GW of renewable energy power plants on the continent by 2020 and 300 GW by 2030. The AREI has already obtained the support of several investors, which promised to provide 10 billion USD by 2020 to reach that objective.

The 5th Africa summit

- **Over the past decennia, EU and Africa have developed a stronger and more political partnership in the Joint EU-Africa strategy (JEAS).** The objective is to raise the relationship with Africa to a higher strategical level. In this framework, a special energy partnership between the two continents has been developed that aims to develop visions and options of common interest.
- **The 5th Africa EU summit** due to take place in November 2017 provides a critical opportunity to **develop the Africa-EU- Partnership particularly in the strategic fields of investment promotion in clean Energy, and energy efficiency.**

The new blending facility “Electrifi”

- managed by FMO, Electrifi encourage the adoption of decentralized and renewable energy solutions.
- It will supply either development finance, debt, quasi equity, equity and guarantee
- Electrifi **will provide a 50% of the equity portion** of the project, which should be approximatively 30 % of total project size
- providing grant and seed capital for the structuring of feasible and bankable projects. Grant will be converted to subordinated debt when reaching projects miles stones;
- is funded by the European Commission and “Power Africa” with an initial amount of EUR 115 M. whose 75M by the EU.

3.6.3 EIP for Africa

- **built according the model of the Juncker plan at Europa level.**
- should progressively be able to :
- **leverage EUR 44 billion of investments** The investment vehicle will be based on a 1,5bd € budget from the EU and 1,85 bd from the European Development Fund. It will be supported by a structured dialogue with European and African private sector under a “Sustainable Business for Africa (SB4A) platform;
- **tackle the root cause of migration trough the promotion of sustainable project providing jogs for young generations;**
- **support Africa's digital agenda;**

EIP structure

Three pillars having to work together or in synergy:

1. **EFSD (European Fund for Sustainable Development)** offering a full range of new mechanisms: guarantees, blending facilities and other form of risk mitigation mechanism; **The EFSD guarantee will be mainly managed through thematic and geographic Investment Windows; Renewable energy will certainly be one of the thematic approaches.**
 2. **T.A.** for the preparation and launching of projects.
 3. **Investment Climate** for political and policy dialogue for economic reforms helping local and regional authorities to design coherent strategies , institutional and regulatory reforms.
- **A digital one-stop-shop/ web portal** will give a single and simple entry point for partners investors and private sector.

Functionning

- **A digital one-stop-shop/ web portal** will give a single and simple entry point for partners investors and private sector.
- **The process will be supervised by:**
- **a strategic Board** giving the general orientations and composed of the EU Commission- EU member states and observers;
- **an Operational Board** with the participation of the EU-EDFIs.
- **a Secretariat,** managed by the EU Commission

4. Main Conclusions

1. **The needs for investments in the clean energy sector in Africa are enormous** and request **peace and stability, coherent policies, favorable business environment, and involvement of the private sector**, namely through appropriate PPPs capable of mitigating risks and able to mobilize domestic, regional and international resources.
2. **international and local initiatives are currently burgeoning** but their real degree of complementarity, convergence, additionality and impact is sometimes difficult to assess including at the EU level.
3. **the EU**, in parallel with the EU-ACP framework has developed specific political and economic partnership with Africa (JEAS), namely in the field of energy with the **“Africa-EU Energy Partnership”**.
4. **Confronted with the migration problems and the competition with China** concerning Africa development, **Europe intends to develop new PPPs** to encourage private investment in Africa **namely trough the EIP for Africa**.
5. an **efficient permanent mechanism of dialogue with the private sector at European and African levels** has still to be properly fixed.

Main conclusions (end)

- 7. In its own interest and if it wishes to really remain one of the important partners of “Emerging Africa” the EU, with its member states, have to rapidly develop long term visions and coherent, dynamic, proactive approaches in the fields of PPPs.**
- 8. Risk lowering for private investment and the partial redefinition of the public aid concept and role at the level of the OECD/DAC will be key factors to allow the EU to contribute efficiently to the rapid emergence of a post carbon economy in Africa.**