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Country:	Senegal
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Date	22 January 2015
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Title	Green technology deployment in industrial zones
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Contact information:

Please fill in the table below with the requested information. The request proponent is the organization that the request originates from, if different from the National Designated Entity (NDE).

	National Designated Entity	Request Proponent
Contact person:	Mr. Issakha Youm	Ibrahima DIOUF
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Geographical focus:

{Select below the most relevant geographical level for this request:}

- Community-based
- Sub-national
- National
- Multi-country

{If the request is related to the sub-national or multi-country level, please indicate here the areas concerned (provinces, states, countries, regions, etc.)}

Theme:

{Select below the most relevant theme(s) for this request:}

- Adaptation to climate change
- Mitigation to climate change
- Combination of adaptation and mitigation to climate change

Sectors:

{Please indicate here the main sectors related to the request. e.g. energy, industry, transport, waste, agriculture/fisheries, forestry, water, ecosystem/biodiversity, coastal zones, health, education, infrastructure/human settlement, tourism, businesses, early warning/disaster reduction, institutional design and mandates, cross-sectorial}

Industry – Energy - Waste

Problem statement (up to one page):

{Please describe here the difficulties and specific gaps of the country in relation to climate change, for which the country is seeking support from the CTCN. Please only provide information directly relevant to this request, and that justifies the need for CTCN technical assistance.}

Over the past decade, Senegal has become an important institutional and economic actor in West Africa. The Senegalese economy has very promising perspectives and the country is a key player in ECOWAS. The continuous strengthening of democratic institutions has made Senegal a role model for political stability.

Senegal is experiencing a spell of sustained economic growth. Yet, further socio-economic development is hampered by constraints to structural change due to relatively low productivity and a hefty (half of GDP) informal sector. Senegal is having difficulties making the most of the buoyant dynamic in the region and attracting investments. Challenges faced by and opportunities available to Senegal have been well documented, notably in the landmark document *PLAN SENEGAL EMERGENT*.

Senegal is one of the most industrialized countries in West Africa and has the fourth largest economy in the region (after Nigeria, Côte d'Ivoire, and Ghana), which is based on tourism, agro-industries, mining and fisheries and benefits from a strong presence of multinational companies concentrated in urban areas. Production is vulnerable to both internal (e.g. rainfall) and external (e.g. global prices fluctuations) shocks. The country notably faces challenges related to the availability of affordable energy, as well as natural resource management and environmental conservation.

Senegal benefits however of key assets such as political stability and relatively robust institutions. It is also endowed with natural resources, and geographically advantageously situated. A number of reforms (e.g. governance, energy, infrastructure, business environment, human resources, ITC) have been launched to improve competitiveness and productivity in an effort to face growing international competition.

Industry, contributing to 12% of GDP, is facing a number of challenges, notably availability and cost of energy, shortfall of qualified manpower, deficient access to affordable financing, lack of support to SME, and insufficient production diversity. The lack of competitiveness of goods and services is due, *inter alia*, to weak production capacity and access to market. Outdated equipment, technologies, and techniques, coupled with challenges in the supply of raw material, hinder socio-economic development through industrialization. Insufficient human capacity impedes the use of advanced technologies to boost competitiveness.

Four main sectors can be considered as high-potential value chains with strong comparative advantages regarding industrial capacity, value added and employment: agro-food, textile, minerals, and chemicals. Nonetheless, the Senegalese industrial base remains fragile, given the small size of production units and economic actors, high input costs, the underutilization of production capacity, and limited access to finance for local and national enterprises. In addition to these drawbacks,

industrial production suffers significantly from its strong concentration in the Dakar area, hampering the potential of provincial economic zones, as well as from lack of diversification and a system of product quality certification.

This notwithstanding, targeted actions undertaken recently have allowed to develop sparkling activities in particular economic zones and the development of high value-addition niches, including with considerable potential for export. Access to modern technologies requires additional attention and support. Technology innovation is key to strategic sectors that are potent in terms of wealth and employment generation.

Past and ongoing efforts (up to half a page):

{Please describe here past and on-going processes, projects and initiatives implemented in the country to tackle the difficulties and gaps explained above. Explain why CTCN technical assistance is needed to complement these efforts, and how the assistance can link or build on this previous work.}

In the framework of the *Plan Sénégal Emergent*, a number of key avenues are pursued. Those receive the highest political backing. They include flagship projects aiming at developing integrated industrial hubs. Industrial agglomerations can foster rapid economic development as well as transfer and adaptation of technology, knowledge and skills, and as such represents engines of industrialization. When matched with higher standards of environment and social responsibility, application of resource efficient production and reuse of waste energy and waste materials, such hubs can deliver shared prosperity whilst safeguarding the environment and climate.

The development of the industrial park in Diamniadio, run jointly by the Government and the private sector for the period 2014-2017, represents a substantial flagship industrial project. The main aim is to establish a one-stop service centre to provide maintenance, logistic, security, and equipment services. The building of a power plant will ensure the required energy supply. A 10,000 cubic meter reservoir will provide water, and a drainage canal and wastewater treatment plant will manage water effluent. Infrastructure and construction are financed by the Taiwanese Cooperation, and 91.5 hectares will be made available to foreign and domestic investors.

Six local companies have already started operations in iron manufacturing, industrial gas, household products, and the production of natural mineral water. Sixty-eight other companies have reserved space at Diamniadio and there are still other 300 requests in this respect. The park will be expanded, will acquire additional modern utilities, and will be linked to enterprises located in Hann Bay around transport networks facing storage issues, as well as to urban poles, companies registered at SODIDA, and informal enterprises.

Diamniadio will provide strong trade and tax incentives to attract investors and will integrate ten industrial units of 30 hectares, with specialized labour-intensive poles in textile, agro-food, household products, electronics, services, and aeronautics. The park is expected to generate 8,000 jobs; moreover, twice as many jobs will be created by indirect employment.

Other industrial projects worth mentioning are: the development of an industrial park dedicated to the relocation of Senegalese companies; the reorganization and expansion of the regional industrial poles at Kaolack, Ziguinchor and St Louis; the creation of new departmental industrial zones between 2017 and 2020 at Fatick, Kaffrine, Matam, and Kédougou; the creation of sub-contracting zones, in close proximity to manufacturing enterprises, in Kédougou (mining), Darou, etc.

Noteworthy in this context is that the World Bank will shortly (early 2015) initiate studies on the investment climate in Senegal and industrial zones.

In terms of technology upgrading, Senegal has carried out an exhaustive assessment of the key needs.

The technologies listed as priorities in the Technology Needs Assessment (TNA) include notably:

- **Direct biomass combustion:** either as sole fuel or co-fired, from non-edible (waste stream or bi-product)
- **Cogeneration:** as efficient way of responding to the demand of electricity and thermal energy.
- Energy efficiency, in particular **power factor improvement:** reduction of generation and transmission costs through management of reactive power.
- **Thermal solar energy,** notably for industrial applications: hot water production for industrial processes, as well as cooling.
- **Photovoltaic:** to displace or complement grid electricity.

The work stemming from the TNA provides guidance on technology priorities.

Senegal, realizing the potential of competitiveness to leverage socio-economic development, set up the so-called *Fond de Mise à Niveau* to facilitate investments in technological upgrading. It is a fund to support policies, strategies, and programmes for enterprises and institutions supporting those.

Moreover, in order to increase the competitiveness of local and national industrial companies, the Government of Senegal, with assistance from its development partners, adopted a support policy to raise capacity levels in companies through various projects and programmes such as:

- “Programme de Mise à niveau des Entreprises”, initiated in 2004 with financial assistance from the French Development Agency (AFD), while UNIDO technical assistance led to the creation in 2007 of the “Bureau de Mise à Niveau” (BMN); Since 2010, BMN supports companies in the private sector to a cleaner production approach, depollution and energy management.
- The Support Program for the Competitiveness and Growth of SMEs and the Performance of the Micro-Finance Sector (PACC-PME/PMF), carried out within the framework of the Senegalese-German cooperation;
- The Platform for Support to the Private Sector and to the Valorization of the Senegalese Diaspora in Italy (PLASEPRI). This program aims in particular at creating and strengthening local SMEs, especially investment projects of Senegalese nationals residing in Italy.

Assistance requested (*up to one page*):

{Please describe here the scope and nature of the technical assistance requested from the CTCN and how this could help address the problem stated above and add value vis-à-vis the past and on-going efforts. Please note that the CTCN facilitates technical assistance and is not a project financing mechanism.}

The CTCN is requested to provide state-of-the-art technical assistance to unfold the potential in terms of green technologies in selected industrial agglomerations (either brown- or greenfield). The expert advice should allow to identify and implement opportunities related to improving resource productivity (i.e. doing more with less) and reducing pollution intensity (i.e. the environmental footprint).

The CTCN should assist in making resource recovery common practice. Materials, water and energy that are regarded as unproductive by one company can be turned into a business opportunity by another operating nearby (industrial symbiosis). There are numerous successful implementations of such concept and useful lessons can be drawn.

Detailed strategies and implementation measures are thus expected to deploy climate technologies, including those identified in the TNA, to boost industrial competitiveness. Options would include process upgrading and better management, resource substitution (incl. renewable energy) and recycling, with the aspirational objective of closing material, energy and/or water cycles within clusters of co-located users. Further measures pertain to shared logistics, collective energy

generation system and/or waste and effluent treatment.

The assistance from the CTCN ought to include technical advice, as well as support to leverage finance to implement the measures prioritized.

This assistance, in line with the *Plan d'Actions Prioritaires*, would focus on Agro-poles (fruits and vegetables, livestock, aquaculture and fisheries) and industrial parks.

Expected benefits (*up to half a page*):

{Please outline here the medium and long-term impacts that will result from the CTCN technical assistance, including how the assistance will contribute to mitigate and/or adapt to climate change.}

Removal of barriers to the deployment of climate technologies deemed priority.

Significant savings for enterprises by improving resource productivity and waste valorization through the targeted implementation of climate technologies and measures.

In turn, increased competitiveness of industries and job creation.

By capitalizing on the studies and first experiences, it will be possible to develop a real industrial ecology approach for the design and the implementation of new industrial parks across the country.

Post-technical assistance plans (*up to half a page*):

{Please describe here how the results of the CTCN technical assistance will be concretely used by the applicant and national stakeholders, to pursue their efforts of resolving the problems stated above after the completion of the CTCN intervention (list specific follow-up actions that will be undertaken).}

The outputs of the CTCN intervention will serve in demonstrating the technical and financial viability of such measures and thus spur replication. The national stakeholders are committed to further promote the deployment of the technologies stemming from a collaborative thorough assessment (i.e. TNA).

Key stakeholders:

{Please list in the table below the main stakeholders who will be involved in the implementation of the requested CTCN technical assistance, and what their role will be in supporting the assistance (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.). Please indicate what organization(s) will be the main/lead counterpart(s) of CTCN experts at national level, in addition to the NDE.}

<u>Stakeholder</u>	<u>Role to support the implementation of the assistance</u>
National Designated Entity (NDE)	Oversight; strategic guidance; M&E
Bureau Opérationnel de Suivi (BOS)	Leader of flagship project on Integrated industrial hubs
Bureau de Mise à Niveau des Entreprises du Sénégal	Proponent ; Manager of Upgrading program and fund

CTCN	<i>Provision of cutting-edge technical assistance</i>
<i>Enterprises</i>	<i>Ultimate beneficiaries</i>
<i>Financial institutions</i>	<i>Financing</i>
<i>AEME (Energy efficiency Agency)</i>	<i>Validate the consistency with sectorial energy and environment policies</i>
<i>DEEC (direction of the environment and classified establishments)</i>	
<i>ANER (Renewable Energies Agency)</i>	
<i>ONAS (National Agency of sanitation</i>	

Alignment with national priorities (up to half a page):

{Please demonstrate here that the technical assistance requested is consistent with documented national priorities (examples of relevant national priorities include: national development plans, poverty reduction plans, technology needs assessments (TNAs), LEDS, NAMAs, TAPs, NAPs, sectorial strategies and plans, etc.). For each document mentioned, please indicate where the priorities specifically relevant to this request can be found (chapter, page number, etc.).}

A number of elements are worth mentioning in this context, including:

- *Plan Senegal Emergent (PSE):* PSE provides the framework in terms of national development strategy. It focuses on structural economic transformation, poverty alleviation and social inequality, and socio-economic development. It is designed for involvement of development partners and the private sector.
- *Integrated Industrial Platforms:* the PSE comprises a flagship project on integrated industrial platforms. It is foreseen that 2 or 3 of those platforms will emerge. Those will receive support in terms of infrastructures and incentives.
- *Diamniadio:* It is a special economic zone acting as multi-functional platform for revenue-generating activities such as industry, handicraft, textile, etc.
- *Pariindustrielintégré:* this effort has the objective to form a hub and attract high value-adding industrial activities. Manufacturing and assembly industries (e.g. electronics, fishing boats, aeronautic, steel) are targeted sectors.

The TNA (see section above) identified a number of technologies which would serve as key enabler to those efforts.

Development of the request (up to half a page):

{Please explain here how the request was developed at the national level and the process used by the NDE to approve the request before submitting it (who initiated the process, who were the stakeholders involved and what were their roles, and describe any consultations or other meetings that took place to develop and select this request, etc.).}

Early ideas regarding the request stemmed from informal discussions between the NDE, the Senegalese Member of the CTCN Advisory Board, ENDA, and the Climate Technology Manager of the CTCN. The request has been developed to support national priorities and strategies, notably the *Plan Senegal Emergent* and the Technology Needs Assessment. Those included thorough stakeholders' consultations. It also contributes to the Programme de Partenariat Pays Senegal with UNIDO recently

developed.

Expected timeframe:
{Please propose here a duration period for the assistance requested.}
2015 - 2017

Background documents:
{Please list here relevant documents that will help the CTCN understand the context of the request and national priorities. For each document, provide weblinks if available, to attach to the submission form while submitting the request. Please note that all documents listed/provided should be mentioned in this request in the relevant question(s), and that their linkages with the request should be clearly indicated.}

PLAN SENEGAL EMERGENT;
https://www.wko.at/Content/Service/aussenwirtschaft/sn/Plan_S_n_gal_Emergent_VP.PDF
PLAN SENEGAL EMERGENT - Plan d'ActionsPrioritaires 2014-2018;
http://www.gouv.sn/IMG/pdf/PAP_2014-2018_du_PSE_version_definitive_commentaires_et_ANNEXES.pdf
Technology Needs Assessment – Senegal; <http://tech-action.org>
UNIDO Programme de Partenariat Pays Senegal

Monitoring and impact of the assistance:
{Read carefully and tick the boxes below.}

By signing this request, I affirm that processes are in place in the country to monitor and evaluate the assistance provided by the CTCN. I understand that these processes will be explicitly identified in the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor the implementation of the CTCN assistance.

I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:
NDE name: **Pr. Issakha YOUM**
Date: **09 FEB 2015**
Signature: 



THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG
Need help? The CTCN team is available to answer questions and guide you through the process of

submitting a request. The CTCN team welcomes suggestions to improve this form.

>>> Contact the CTCN team at ctcn@unep.org