



# Exploring the role of carbon finance support instruments in Africa

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## Background

The Kyoto Protocol never prescribed how CDM projects must be distributed among host countries, though interest in regional distribution patterns have been high ever since. While the Kyoto mechanism prompted successful investments in most of the emerging economies across the world, some regions like Africa saw a dampener. Africa policy panel (in 2010) concluded the average external financing need (2010–2020 p.a.) for mitigation activities (including REDD+) to be approximately \$13–26 billion. While CDM helped in leveraging finance for emission reduction projects (by creating incentives), the investments in Africa for CDM project development was seen to be meagre.

*Table 1: Regional distribution of CDM projects registered and undergoing registration*

Regions	Countries without a DNA & zero projects	Countries with DNA & zero projects	Countries with 1–10 projects	Countries with 11–100 projects	Countries with >100 projects
Africa (33)	5	27	18	3	0
Asia and Pacific (13)	11	11	17	7	2
Europe and Central Asia	1	4	8	1	0
Latin America and Caribbean (1)	4	8	12	7	2
China and India	0	0	0	0	2

*Source: UNFCCC, Benefits of the Clean Development Mechanism Report 2012*

Regional distribution of CDM projects shows that 27 African countries with an existing DNA do not have registered projects till now while the countries which do, the number spans between 1 to 10 projects only. Geographical distribution of CDM exhibits large share of projects for countries such as South Africa, Kenya, Egypt, Morocco, Nigeria, and Uganda. Sector-wise distribution of CDM projects illustrates negligible share of projects in every CDM sector for the continent as a whole. Differences in level of CDM participation is even more pronounced when measured in terms of CERs by region.

*Table 2: Share of CERs from CDM projects by region*

Regions	Total	Small-scale projects	Large-scale projects	Non-Industrial gas projects	Projects under validation
Africa	3%	2%	3%	3%	5%
China	68%	41%	70%	67%	57%
India	7%	19%	6%	8%	12%
Rest of the World	22%	38%	21%	22%	26%

*Source: UNFCCC, Benefits of the Clean Development Mechanism Report 2012*

Africa accounts for only 3% of the total Certified Emission Reductions (CERs) and the share of non-Industrial gas projects also remains low for the continent. This denotes that the sectors which had potential for mitigation in Africa were also not exploited within the mechanism. Moreover 'CER generated as a share of national emissions' is also low for the continent which amounts to approximately 2% of national emissions, while it is at 5% and 6% of national emissions for India and China, respectively (UNFCCC 2012). Only 32 CDM projects from Africa (out of 148 registered CDM projects) have been issued CERs till now. A possibility

is that some of these projects are still idling at the development stage due to lack of money for project execution.

Though Africa contributed least to the global GHG emissions in the past, its potential in carbon markets relies both in its ability to produce a wide range of carbon mitigation projects as well as its possibilities for sustainable development. Since Africa is growing at above the global average – generating consumer demands – growth from underdevelopment and high renewable energy sources offer good potential for carbon mitigation and avoided emissions in Africa. The small percentage of CERs as a share of national emissions in Africa is worrisome and demands attention. This suggests that there are factors other than national emission reduction potential in Africa that discouraged CDM investments in the continent.

With provision of suitable market-based opportunities to reduce and/or avoid emissions conducive to African circumstances, the small share of investments in conventional energies in Africa could be seen as an opportunity to transform it into one of the cleanest energy generation continents of the world. For this, the barriers and opportunities need to be realized, to effectively utilize opportunities and enhance country readiness for future market mechanisms.

## **Barriers particularly impacting CDM in Africa**

### *Project cost recovery*

Attractiveness to investments in CDM projects particularly depend upon the nature of economy, type of finance availability, impact of carbon finance on project cost recovery, etc. Studies quote that Africa's potential primarily lie in projects with 'low carbon credit contribution to the total project cost recovery' (such as landfill gas, renewable energy sector, LULUCF, etc.), which dis-incentivize CDM investors from investing in African projects. However, the fact that the African share of projects even in the so called low attractive sectors is negligible as compared to China and India (as seen in Table 2) reflects that there are barriers other than the 'nature of project availability' in a country which drives the motivation of CDM investors.

### *Cleaner grids*

With a comparatively small share of investments in conventional energy systems in comparison to economies such as China and India, the grids in some African economies are cleaner. Further, with lower grid emission factors, the returns to CDM credits are also

lower which discourages investments, as in the case of Ethiopia. Hence, a large share of CDM projects in Africa are still idling at development stage, with developers lacking money to implement projects effectively.

### *Transaction costs*

'Higher transaction costs' is an important determinant that drives investors away. The dispersed nature of projects and relatively sparse DOE presence in the continent runs CDM projects in Africa into higher transaction costs of project execution. This in turn reduces the financial viability of the projects thereby increasing investment risks, which demotivate investors from investing.

### *National CDM capacity*

A necessary but not a sufficient determinant of CDM uptake in a country is its national CDM capacity. Some of the African countries do not have a DNA till now. Moreover, lack of awareness of the CDM in the financial sector and lack of local CDM consulting capacity is also expected to act as a barrier for CDM uptake in Africa. While successful CDM projects build awareness and private sector capacity to take up more such activities, lack of experience with CDM in Africa makes it difficult for the countries to cope with CDM system complexities and modalities.

### *Suppressed demand*

In 2011, only 34.57% of the population in Sub-Saharan Africa had access to electricity. Moreover, the energy consumption per capita in Africa is also low. This in turn leads to the problem of suppressed demands wherein the actual demand for energy is not equal to the desired demand for energy in a country. Since CDM in its methodology takes the baseline from the current level of energy use in a country (which is very low for Africa on account of underdevelopment) and do not take into account the future projections of energy consumptions (which is likely to increase with economic expansion), the feasibility/profitability of CDM projects in Africa diminishes.

## **Investment climate in Africa: A barrier?**

It is well understood that opportunities in carbon markets would be limited if the basic framework for investment and markets are weak within a country. This is because market-based mechanisms presuppose that markets in a country are well developed and the private sector is well mobilized within the system to undertake project developments.

- ❖ Studies reveal that the investment climate in the host country is a crucial determinant of CDM activity (Michaelowa and Buen, 2012)
- ❖ The funds available for domestic investments, such as from domestic financial institutions and private sectors' internal funds, also affects CDM activities in a country (Michaelowa and Buen, 2012).
- ❖ The extent of 'market maturities' for private sector activities is also expected to be crucial.

Table 3 summarizes Africa's development progress between 2005 and 2012 in comparison to China and India and derives results from the same.

**Table 3: Africa's development progress between 2005 and 2012 in comparison to China and India**

Indicator	All African Countries		China	India
	Baseline 2005	Current 2012	Current 2012	Current 2012
<b>Investment climate and domestic financial sector</b>				
GDP per capita	833	953	3348.01	1106.797
Access to electricity (% population)	–	34.57*^	99.7c	75c
Global competitiveness index	3.4	3.6	4.83	4.32
Cost of business start-up (% GNI per capita)	217	64.5	2.1	49.8
Business extent of disclosure index	4.6*	4.9*	10	7
Time required for business start-up (Days)	58	33	33	27
FDI (% GDP)	3.27*	3.3*	3.03	1.7^
Domestic credit to private sector(% GDP)	63.79*	61.36*	131.60	51.49
Strength of legal rights index (0=weak, 10=strong)	4.4	5.8	6.0	8.0
% share of global trade	2.5	3.1	10.4	2
Intra-African Trade (billion USD)	47.4	108.4	–	–
<b>Governance and transparency</b>				
Country Policy and Institutional Assessment (CPIA) Financial sector rating (1=low, 6=high)	2.9	3.0	–	3.5
CPIA, fiscal policy rating (1=low, 6=high)	3.3	2.9	–	3.5
Number of fragile countries in Africa	20	19	–	–
Note: *= Data available for Sub-Saharan Africa, ^ = 2011 data, C= 2010 data				

**Source:** Author's own compilation based on African Development Bank, World Bank Group, International Energy Agency, CDM Pipeline database, Organization for Economic Co-operation and Development

### General investment climate

The general investment climate of the host country is considered to be an important determinant for CDM activities. Indicators such as cost of business start-up, Global Competitiveness Index, FDI, and others have been taken to analyse the investment climate in Africa. Data reveals that since 2005 (the beginning of CDM), some considerable efforts have been made in Africa for promoting more business friendly environment. The cost of business start-ups has fallen from 217 to 64.5 (%GNI per capita) and the time required for business start-up has almost halved. These buoyant prospects are increasingly attracting the Foreign Direct Investments (FDI) into the continent. Since 2000s, FDI across the continent has increased to five-fold leading to its growth and economic expansion (AfDB, 2012). However, progress could be expected to be slower than potential on account of the slow improvement in the Global Competitiveness Index and asymmetric trade benefits due to lack of regional integration among neighbouring countries in Africa. It is a well-known fact that as Africa integrates its economies and invests in better infrastructure, it can achieve economies of scale in production, leading to better management of shared resources and effective utilization of its capacity for joint action on regional public goods. Its markets can expand attracting larger private sector participation, increasing competitiveness, and attracting faster investments. The intra-African trade currently stands at only 108.4 billion USD in 2012 which has increased marginally from 47.4 billion USD in 2005.

Despite improvements in the general investment climate in Africa since 2005, its 'Global Competitiveness Index' has not improved substantially and its 'business extent of disclosure index' also features way below that of China and India. Hence, in high capital investment ventures (riskier projects) like that of CDM, attracting investors would require a strong policy push within the system concurrent to the improvements in general investment climate in Africa.

### Domestic financial Sector

The availability of funds from the domestic financial sector for leveraging finance also impacts CDM uptake in a region. In Africa, the bank assets to GDP ratio for all countries are way below that of South Africa which stands at 106% of total banking assets as a percentage of GDP. Though the asset value of banks has increased rapidly over the years, the market development is building up from an extremely low level. Moreover, despite several reforms in the national financial

institutions in Africa, the financial sector remained relatively small and fragmented. The minimum capital requirement by banks in African states is generally below \$10 million (Price Waterhouse Coopers, 2008). For example, Nigeria consolidated from more than 80 to 25 banks in 2007, by way of raising the minimum capital requirement to \$200 million. This is one reason that in most economies in Africa, sometimes capital is not available for all kind of investments including investments in CDM activities. In coming years, other countries are likely to follow suit in order to streamline and better capitalize their domestic financial sector. The availability of domestic capital is considered significant because it is observed that the countries where the domestic credit to private sector (% GDP) is higher, the number of CDM projects is also higher. Some countries showing this trend are South Africa, Kenya, and Egypt. This is also essential because credit lending by domestic banks signal confidence in the markets to the foreign investors as well. These findings are consistent with other studies which show that a weak financial sector and/or limited supply of finance for domestic investments limits CDM uptake in many African Countries and LDCs (Castro and Michaelowa 2011; Byigero et al. 2010; Schmidt-Traub 2011; Burian et al. 2011).

#### *Private sector mobilization*

In Africa, SMEs make up the bulk of private sector economy and hence are extremely averse to risks and vulnerable to incremental costs.

In the upper middle income countries in Africa where markets are sufficiently developed and banking system is reliable, capital is not always available for all kinds of investments including CDM. In such situations these countries (such as India, China, and South Africa) are better able to finance projects with their domestic budgets combined with international flows and private equity. While on the other hand, countries in low-income categories have small market capitalization of private sector, insufficient domestic budgets, and unreliable banking systems which makes investments in CDM kind activities extremely difficult. Thus, private sector players do not have the capacity to rely on its own funds unless supported and mobilized by public vehicles.

#### *Institutional capacity*

Institutional frailty, fear of regulatory changes, lack of coordination mechanisms across various levels of government, governance, and conflicts also puts

constraints on the overall attractiveness to investments – 19 out of 54 countries in Africa (33 LDCs) feature as 'fragile' in the global rankings by the African Development Bank (AfDB) (2012). The Country Policy and Institutional Assessment (CPIA) rating of the African fiscal policy is lower that of other emerging economies under study. Also, the 'strength of legal rights Index' though have increased significantly from 4.4 in 2005 to 5.8 in 2012 for all African countries, most of the countries still stands at lower index levels.

### **Relevance of carbon funds and facilities for African carbon market growth**

Though mitigation potential existed in Africa, CDM as a leveraging instrument did not work in the continent on account of several barriers. While some of the CDM specific barriers in Africa have been addressed with constant efforts to modify the methodologies and modalities such that they are conducive to the African circumstances like 'adoption of PoAs', 'methodology for interstate electricity connection developed by AfDB' etc.; the issue of leveraging investments for CDM activities remained a challenge for the continent.

Over the recent years, the proliferation of instruments such as carbon funds and facilities are seen likely to increase the appetite to leverage finances and support for CDM and future market-based activities in the continent. A wide range of instruments have been established by the Multilateral Bank, Regional Development Banks, and Bilateral Financial Institutions to catalyse growth of carbon markets in Africa. They not only address some of the existing market barriers (like high perceived risks, high transaction costs etc.), but also help in leveraging private finances (domestic/ international) for the underlying carbon market investments.

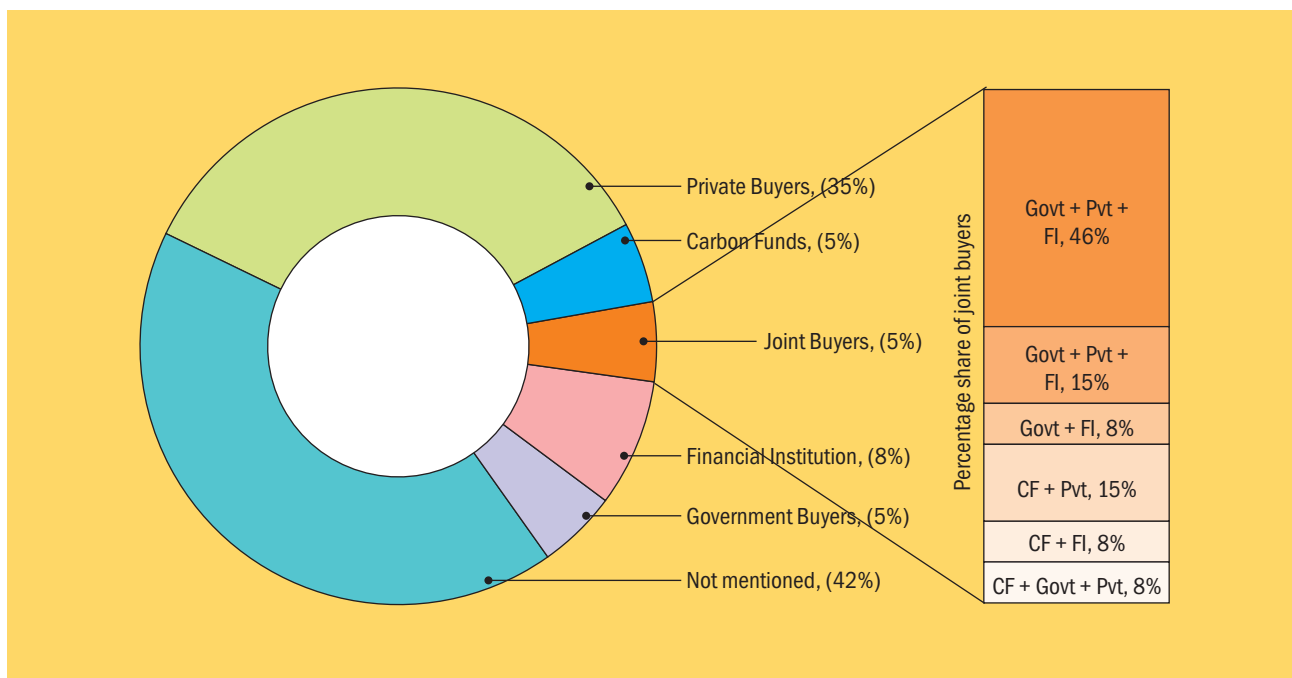
#### *Carbon funds as credit purchasers*

Carbon funds are investment vehicles which raise public/private capital to invest directly in projects to reduce GHGs and/or purchase carbon credits using a standardized purchase agreement (ERPA). They have been playing a crucial role in mitigating risks from CDM markets such as risk of delivery, portfolio diversification, risk from volatile credit prices, etc., and their significance is well observed in their exponential growth trend from a single fund (Prototype carbon fund) in 1999 to 96 funds in 2009 (CDC Climat Research, 2010). In the span of these years, the carbon funds have also diversified their activities from pure carbon credit buying to other support activities. However, the role of carbon

funds as credit purchasers in Africa is very meagre. Data reveals that a major share of credits buying in Africa is by private sector buyers (35%) followed by financial Institutions (8%), government buyers (5%), carbon funds (5%), and combination buyers (5%). Out of the credits bought jointly, 31% of projects feature carbon funds as one of the joint buyers. Results from CDC Climate Research (2010) also

the markets. These public institutions help fill the gap for the asymmetry of information among the different stakeholder groups in project development, thereby build trust in private enterprises and lead to more maturity in the market with their participation.

Since a few years, many institutions such as World Bank, UNFCCC, AfDB, UNDP, EIB, and some private sector companies are playing significant role in leveraging



**Figure 1: Credit buyers' portfolio in Africa**

**Source:** Authors' own calculations based on CDM pipeline database (as on September 2013).

**Notes:** Govt: Government Buyers; FI: Financial Institutions; Pvt: Private Buyers; CF: Carbon Funds

resonates our findings. Study highlights that major credits from CDM are bought by carbon funds in China and India and to a lesser extent in Africa. Even then, the funds have bought credits in only Egypt (5), Kenya (2), Morocco (3), Nigeria (1), South Africa (1), Tunisia (1), and Uganda (4), which are primarily located in the northern and eastern geographies of Africa. Though carbon funds are the primary buyers of credits from PoAs as well in most of the emerging economies such as China, Bangladesh, Thailand, and Vietnam, not a single CDM credit has been purchased by them in Africa.

#### *Carbon funds as CDM consultants*

While role of carbon funds as credit buyers is not seen to play a significant role in Africa, it is observed that most of the CDM and PoA projects were developed and assisted by the funds and their parent institutions as PDD consultants.

#### *Funds/facilities leveraging finance*

Most of the multilateral/bilateral/regional institutions have set up funds and facilities that help leverage capital for investments in CDM activities by project developers. These are in the form of upfront/seed financing, provision of debt loans, provision of project equities, concessional loans, and even grants [refer Annex I].

#### *Funds/facilities building institutional capacities*

One of most promising feature of the facilities is the fact that they are designed with an approach for long-term sustainability such that it aims at creating the 'readiness/preparedness' in countries for availing benefits from the emerging market instruments. In this regard, while some facilities aim at building the capacity for the government organizations, others focus more on building capacity for the domestic financial system, thereby building reliability and confidence in

finance for Carbon mitigation activities and capacity building in country stakeholders. Some institutions have prime focus on specific countries and some also earmark their sectors of implementation. For Instance, while KfW carbon fund has its key focus in sectors of renewable energy and afforestation, African Biofuels and Renewable Energy Company (ABREC) focuses mainly on biofuels and landfills. Moreover, some of the facilities developed by the AfDB, offer support and capacity to projects featuring in the banks' pipeline. In addition to the readiness building activities of the funds and financial institutions, they are increasingly beginning to look at the risk mitigation from African markets for leveraging private sector participation and also provide assistance with respect to new market mechanisms post-2012, and NAMAs.

## Recommendations and a way forward

Despite surge of support instruments in Africa to leverage finances and upscale CDM activities in the continent, a strong policy push is needed in the continent to catalyse the private sector activities in carbon markets. Some recommendations in this direction are:

- ❖ One of the priorities for Africa to increase its access to international funds would be to manage its shared resources and to expand its domestic markets via regional integration in order to attain global competitiveness.
- ❖ The banking sector in Africa can play an important role in assessing the soundness of project proposals. This is because foreign lenders/ international investors find it easy and acceptable to lend to entities which are appraised by local FIs/banks/ local agencies. For Instance, in India, IREDA and few other banks have set appraisal procedure for the CDM projects in renewable energy sector.
- ❖ In order to facilitate the CDM projects expeditiously in Africa, the financial intermediaries, such as energy service companies, mutual funds, etc., which are involved conventionally in project financing, can orient resources and approval mechanism towards CDM project as well, in their sector of operations. For example, the appraisal mechanism is already in place in India as an arrangement between World Bank PCF and IDFC (India). After a due diligence of IDFC's appraisal mechanism, PCF decided to fast track the project PINs proposed through it.
- ❖ The guarantees such as the Partial Risk Guarantees (PRGs), Multilateral Investment Guarantee (MIGA), and Export Credit Guarantees (ECG) are important in mitigating country risks in Africa.
- ❖ Institutions such as International Finance Corporation (IFC) have introduced some value-added financial products to help mitigate risks in emerging markets, carbon delivery guarantee products, and provision for upfront finances/ loans to carbon projects with a prerequisite of having a mature market in place. The role of public institutions and other support instruments is therefore crucial in mobilizing funds for private sector activities for market maturity and newer market developments necessary for exploiting these opportunities.
- ❖ There is need for creating role models and for replicating innovative financial schemes such as the revolving fund scheme by the World Bank, Micro-finance lending by ACAD, venture capital funding practiced in India, etc.
- ❖ Need for host country DOEs or similar institutional arrangements for future carbon market instruments.
- ❖ Need for push to create new methodologies to address the issue of suppressed demand in the continent.

### Annex I: Financing and support instruments available for African Carbon markets

Programme	Year	Target Sectors	Target Countries	Financial Support				Poor country focused	Capacity-Building Activities			Technical assistance	Support PoAs/ NMMs/ Post 2012 focus
				Seed Finance	Debt Finance	Private Equity	Grants		DNA	Financial Institutions	Private Sector		
World Bank Carbon Finance Unit	2002-2011	OPEN	Most African Countries	✓			✓	✓			✓	✓	✓
Elltrix Carbon Credit Program	2012	Solar technologies	South Africa, Namibia, Mozambique, Swaziland, and Lesotho								✓	✓	

KfW Carbon Fund	2005	RE, Afforest	-	✓									✓
African Biofuels and Renewable Energy Co. (ABREC)	2008	RE, Biofuels, landfill	Emphasis placed on the ECOWAS countries	✓		✓		✓			✓		✓
UNDP MDG Carbon Facility	2007	Open	Open				✓	✓			✓	✓	✓
Africa Carbon Facility	2011	-	Address projects coming from AfDBs lending pipeline	✓	✓						✓	✓	✓
UNFCCC Schemes	2010 2012 2013	Open	Most African Countries			✓			✓		✓	✓	
African Carbon Support Program by AfDB	2010	Open	Ethiopia, Nigeria, Lagos, Burkina Faso				✓		✓		✓	✓	
Africa Carbon Ssset Development Facility (ACAD)	2009	Open	Burkina Faso, Kenya, Mozambique, Mali, Mauritius, Nigeria, Rwanda, South Africa, Uganda	✓	✓		✓	✓		✓	✓	✓	✓
Africa Carbon Credit Exchanges	-	Open	-	✓	✓	✓			✓	✓	✓	✓	✓
Africa Carbon Exchange	2011	Open	-								✓	✓	✓
Carbon Fund for Africa	2012	RE, methanization, EE	Sub-Saharan Africa		✓	✓							✓
EIB Post 2012 Carbon Credit Fund	2008	Wind, waste management, EE	-										✓
EIB Carbon Fund in Morocco	2008	RE, EE, waste management, A&R Morocco	-			✓	✓					✓	✓
Carbon finance for Agriculture, Silviculture, Conservation, and Action against Deforestation (CASCADe)	2007	LULUCF, bioenergy activities	Sub-Saharan Africa	✓									
NEFCO Carbon Finance and Funds	2008	RE, EE, Fuel switching	Africa	✓			✓					✓	✓

Notes: \*\*RE - Renewable Energy, EE - Energy Efficiency

Source: Authors' own compilation from various sources World Bank Carbon Finance Unit <<https://wbcarbonfinance.org/>>, Africa carbon Asset Development Facility <<http://www.acadfacility.org/>>, Elltrix Carbon credit program <[http://www.elltrix.co.za/Property\\_Developer.php](http://www.elltrix.co.za/Property_Developer.php)>, UNFCCC Loan scheme <<http://www.cdmlloanscheme.org>>, UNDP's MDP Carbon Facility <<http://www.mdgcarbonfacility.org/>>, KfW Carbon Fund <<http://www.kfw.de/carbonfund>>, Africa carbon Facility <<http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/>>, Africa carbon Credit Exchange <<http://www.africacce.com/>>, ABREF <[http://www.faber-abref.org/index\\_english.php](http://www.faber-abref.org/index_english.php)>, European Investment bank <<http://www.eib.org/projects/documents/eib-and-carbon-finance-faq.htm>>

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