Market research of high priority investment sectors in Côte d'Ivoire

Agro processing & machinery report

May 2021

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Context: JICA's market study aims to accelerate Japanese companies' business in CI and improve the investment environment

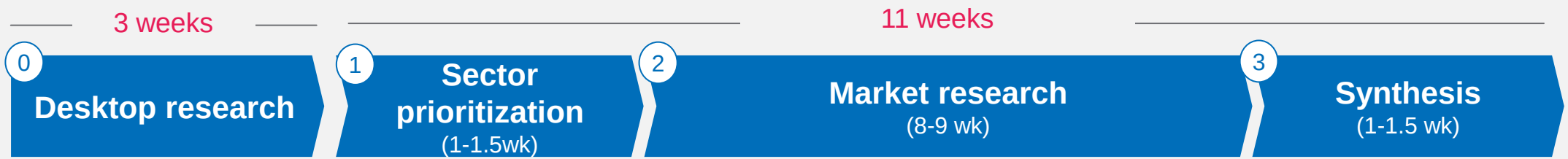
- The Africa-Japan Business Council was launched under the initiative of the 7th Tokyo International Conference on African Development (TICAD7) in August 2019 to improve the business environment in 7 African countries with the aim of increasing Japanese investment

- With this goal in mind, JICA has conducted a study to promote investment by Japanese companies in selected sectors in CI, and improve the overall investment environment

- As a result of high-level assessment, JICA has identified agro-machinery/processing and waste management as two high priority sectors and is conducting detailed market research with BCG that can be utilized by Japanese companies' business consideration in CI

- This report summarizes the output from the market research (including size/growth, competitive landscape, regulatory landscape, value chain analysis, etc.) which was done through extensive interviews with key market players & selected government agencies to identify investment opportunities for Japanese companies in the agro processing & machinery sector

Approach: 14-week effort on overview of investment landscape, market research on the 2 high priority sectors, and synthesis



- Data analysis on FDI market trend analysis and health check
- Analyze relevant policy and IPA analysis

- Validate JICA's suggestion on the priority sectors
- Propose 2 sectors for market research
- Build alignment with JICA/JETRO on the sector prioritization

- Conduct desktop market research (e.g. market reports, data analysis)
- Conduct interviews with key market players & selected government agencies (mostly virtual but could be done in-person when necessary)
- Conduct interviews with Japanese companies interested in the 2 sectors
- Develop initial outputs from market research and share them with Japanese stakeholders (JICA/JETRO/EOJ and selected Japanese companies) for their comments
- Finalize the market research outputs based on inputs from the Japanese stakeholders

- Develop recommendation for JICA/GoJ to further promote FDI in the 2 sectors
- Develop final report

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Côte d'Ivoire has a strong momentum and is rapidly becoming a leading player in the region

#2
in West Africa for ease of doing business[1]

Climbing from 170th place (2010) to 110th place (2020) worldwide

8%
GDP CAGR from 2011 to 2019[2]

Second fastest growing economy in Africa, and fastest in West Africa

#4
fastest growing infrastructure devt. Index in Africa[3]

Significant investments to improve infrastructure (especially transport)

0.8%
Inflation rate in 2019[4]

Stable CFA currency (fixed rate with the euro) keeps inflation rate low

#2
Highest FDI to GDP ratio in West Africa with $1.8B total[5]

Large volume of FDI mainly from France, with strong momentum from Morocco

120M
Population accessible through the Port of Abidjan[6]

Gateway to West Africa (including many landlocked countries) with the most modern port in the region

26%
of Ivorians belong to the middle-class[7]

Growing middle-class (beyond the capital city) driven by GDP growth

1. Doing business 2020, World Bank Group - #1 country in West Africa is Togo 2. World Bank data 3. Africa Infrastructure Development Index (AIDI) 2020 4. Côte d'Ivoire Economic Outlook, African Development Bank 5. fDi Markets; Press Search – represents greenfield investments 6. La Côte d'Ivoire en chiffres, CEPICI 7. Ecole Nationale de Statistiques et d'Economie Supérieure Appliquée

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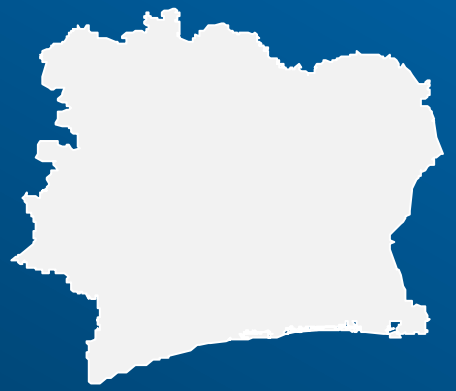


4 key points from Côte d'Ivoire's investment environment health check analysis

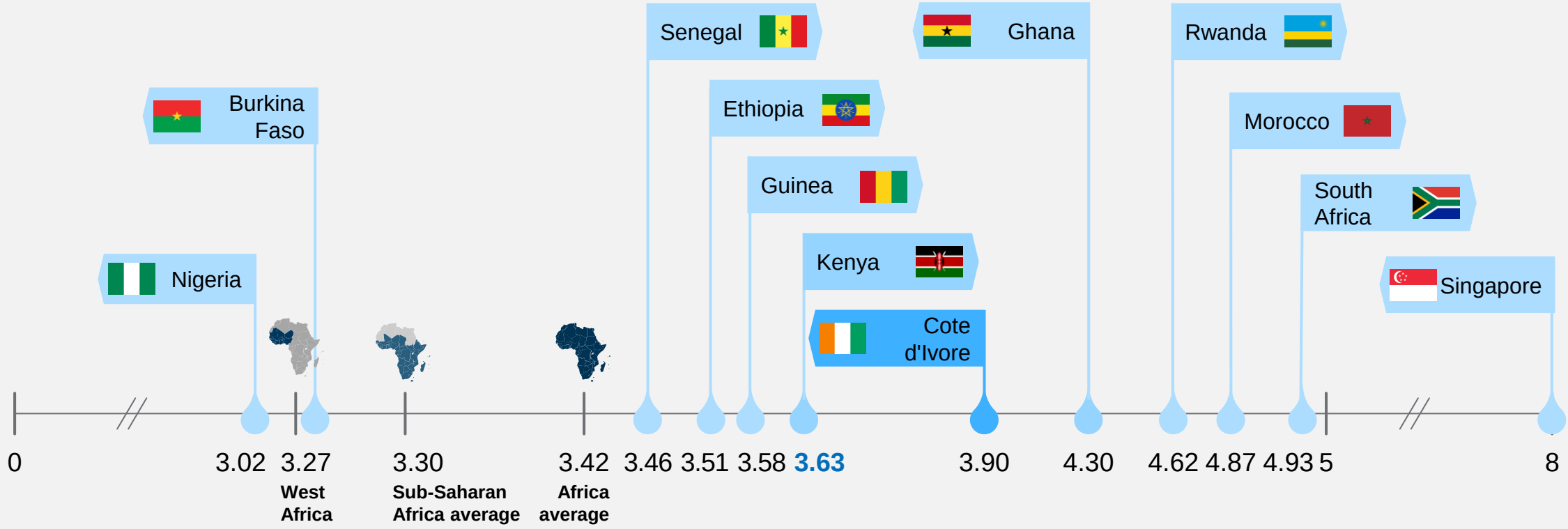
Côte d'Ivoire is performing relatively better than Kenya and Senegal but lagging behind regional front runner Ghana

They perform relatively well than peers **in market access and connectivity**

On the other hand, there are areas for improvement in **FDI incentives and talent and innovation**

Côte d'Ivoire is relatively better positioned to excel in **efficiency- seeking FDIs compared to market-seeking FDIs**

Investment environment health check vs. peers: Côte d'Ivoire performing well relative to African average but room to catch up with regional front runners

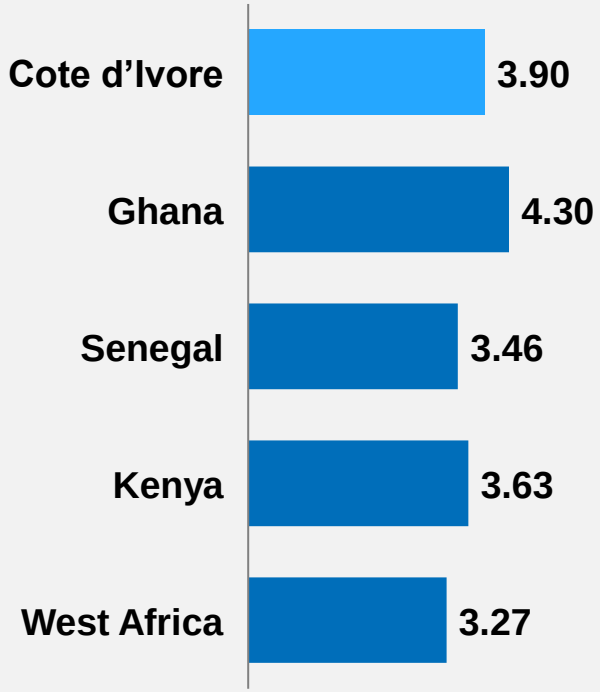


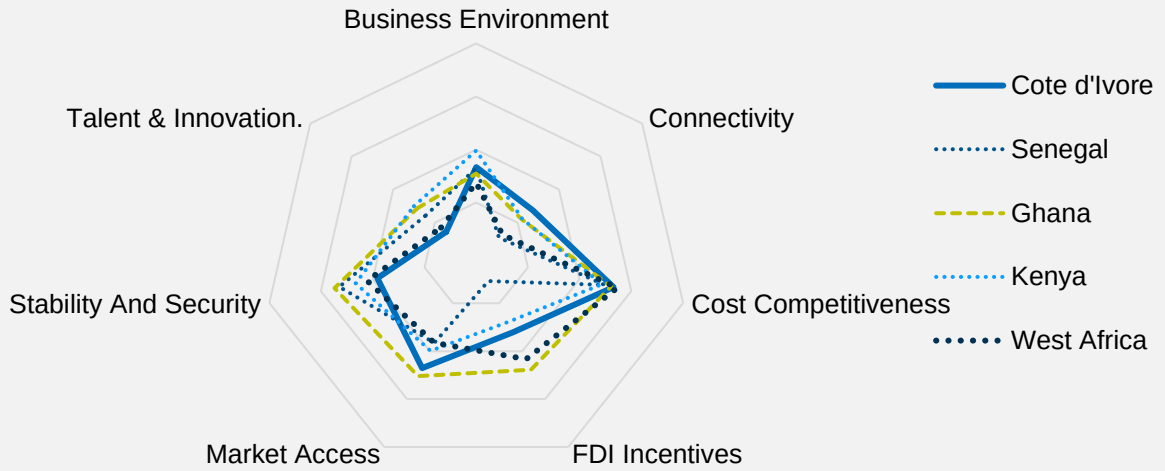
Scoring methodology explained on slide 15

Source: World Bank Data; Global Competitiveness Index; BCG Analysis

Overall result: Côte d'Ivoire is performing relatively well overall though lags behind Ghana mainly in FDI incentives, talent and innovation and political stability

BCG Health Check Score (out of 8)





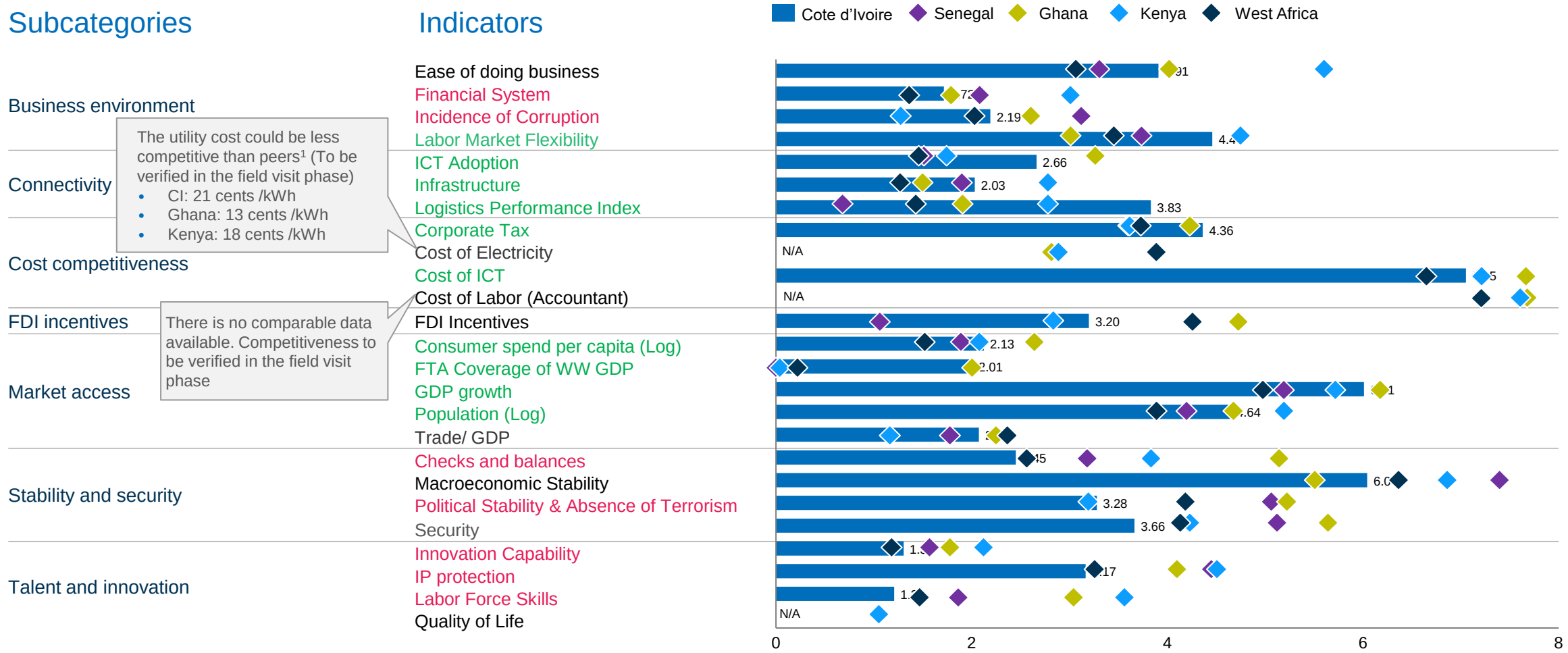
- **Good market access** due to relatively strong trade position in the region
- **Good connectivity** driven by competitive quality of infrastructure in energy and transport and strong Logistics Performance Index
- **High cost competitiveness** due to good transport infrastructure, low ICT cost and low corporate tax
- **Moderate conduciveness of business environment** driven by moderate ease of doing business rating and strong labor flexibility
- **Moderate political stability and security** due to weak checks and balances though they has been increased transparency and openness in governance
- **weak attractive FDI incentives** resulting from weaker regulatory measures
- **Lag in talent and innovation** driven by lower skilled labor force and low innovation capability

Note: FTA – Free Trade Agreement; WW – Worldwide
Source: Press search, BCG Analysis

Scoring methodology explained on page 15

Indicator breakdown: Côte d'Ivoire is behind Ghana and on a number of indicators but performs well in connectivity

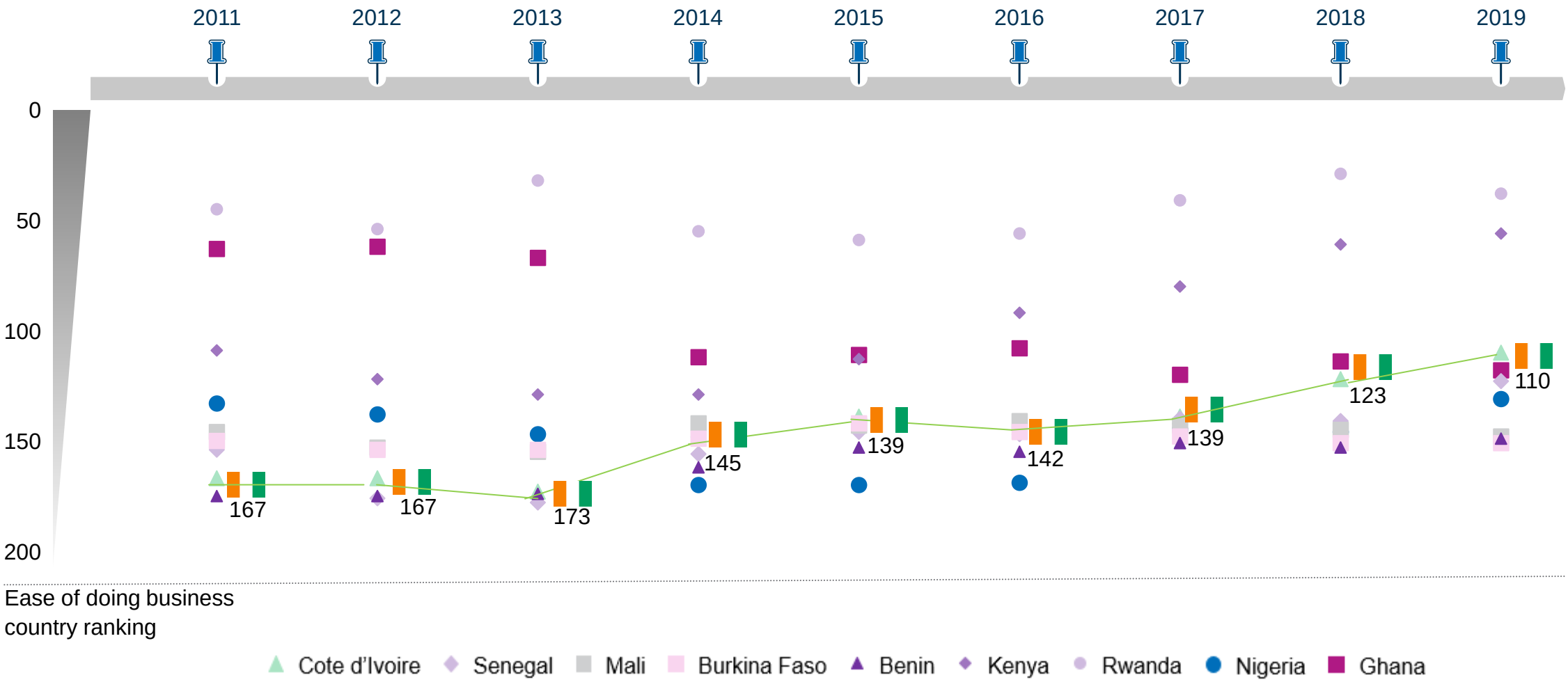
Green: Major strengths
Red: Major weakness



Note: FTA: Free Trade Agreement; WW: Worldwide; N/A: Sufficient data not available; Data for Quality of life unavailable for West African countries
1. The price of electricity for households and businesses as of September 2019 (Global Petrol Prices). Data for Senegal is not available
Source: Press search, Global Petrol Prices, BCG Analysis

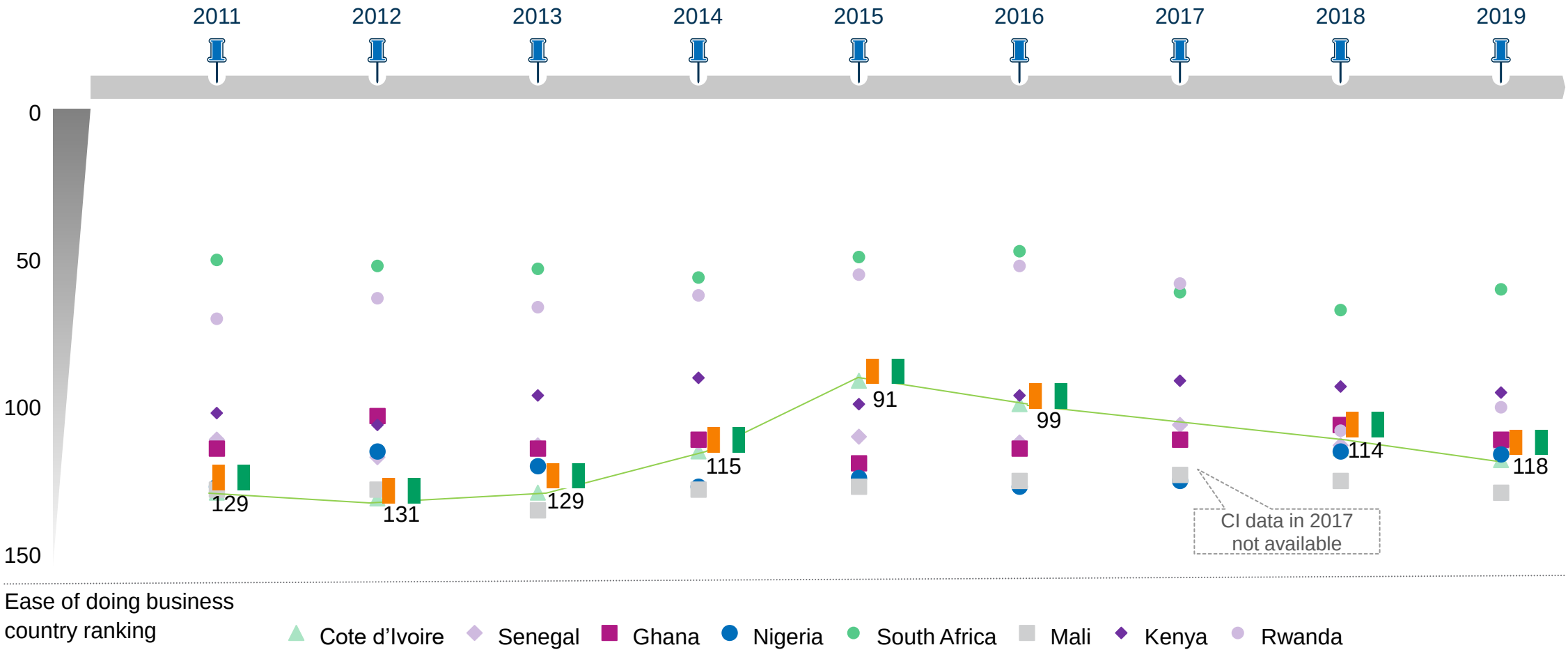
Scoring methodology explained on page 15

Ease of Doing Business ranking: Côte d'Ivoire is gradually improving over the past 5 years. Major improvements have made in starting a business and resolving insolvency indicators



Source: World Bank Ease of Doing Business Index; BCG Analysis

Global Competitive Index: Côte d'Ivoire has been gradually decreasing since 2015 due to comparatively poorer performance in education, institutions, infrastructure indicators etc.



Relative positioning and historical trend differs by index (e.g. East of Doing Business vs Global Competitive Index).
It is important to capture real situation on the ground (to be verified in the field visit phase).

Source: Global Competitive Index by World Economic Forum; BCG Analysis.

Analysis approach: 5-step approach used to compute Health Check scores

Output used in the analysis

1 Consolidate information used as inputs

- Raw indicator scores for all countries retrieved from public sources
  - E.g., GDP growth information sourced from World Bank
- Indicator and sub-category weightings for each investor type developed through expert input[1] (range of 0 – 2, with increments of 0.5)

2 Convert raw indicator scores to scaled scores

- Set up scaled score range of between 0 (bad) and 8 (good)
- For each indicator, raw figures indicating worst performance given a score of 0, best performance given a score of 8
  - E.g., Ethiopia has highest average GDP growth rate post-2009 recession at 9.9%: given a score of 8; Yemen has lowest rate at -4.1%: given a score of 0

Scaled indicator scores for each country interpolated based on raw score range

3 Compute sub-category scores for each FDI type

- Multiply each scaled indicator score by respective indicator weighting and sum them up to obtain raw sub-indicator score
- Minimum and maximum sub-category scores identified: Max. score given sub-category score of 8; min. score given 0

Scaled sub-cat. scores interpolated based on raw sub-cat. score range

4 Compute country scores for each FDI type

- Multiply each scaled sub-category score by respective sub-category weighting and sum them up to obtain raw country score
- Minimum and maximum country scores identified: Max. score given country score of 8; min. score given 0

Scaled country scores interpolated based on raw country score range

5 Compute overall country and sub-category scores

- Compute overall country score as an average of country scores for each FDI type
- Compute overall sub-category scores as an average of sub-category scores for each FDI type

1. Several experts (BCG senior advisors and topic experts) consulted to develop consensus on appropriate indicator and sub-category weightings for each FDI type

Source: BCG Analysis

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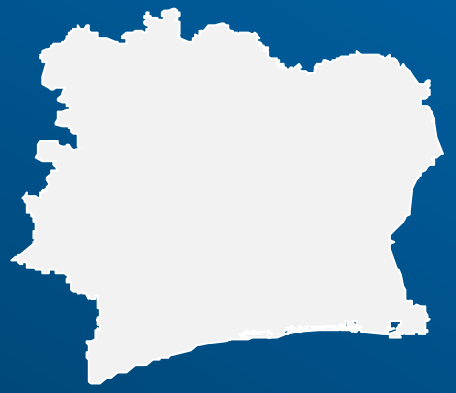


5 FDI trends in Côte d'Ivoire

Positive growth trajectory in FDI post-civil war era but still susceptible to **occasional headwinds**

Europe is Côte d'Ivoire's largest investor, driven by **France**

Investments from **Africa growing,** driven by **Morocco**

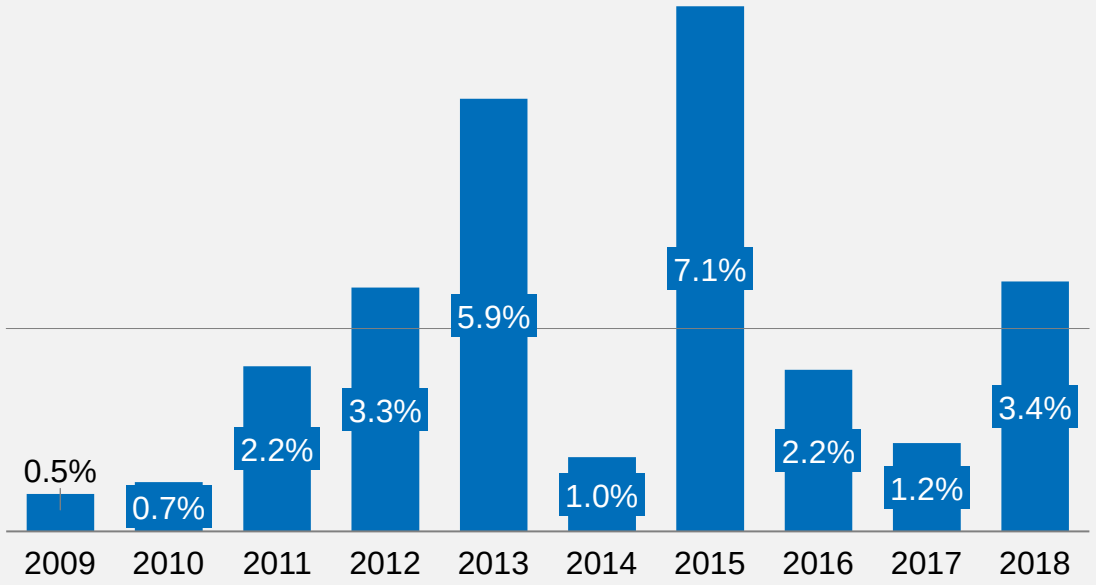
Real estate & transportation and warehousing key sectors driving FDI

Inconsistent Japanese FDI mainly focusing on **real estate**

Overview of FDI volume: Côte d'Ivoire has untapped potential to increase FDI in light of occasional strong performance in the last 10 yrs

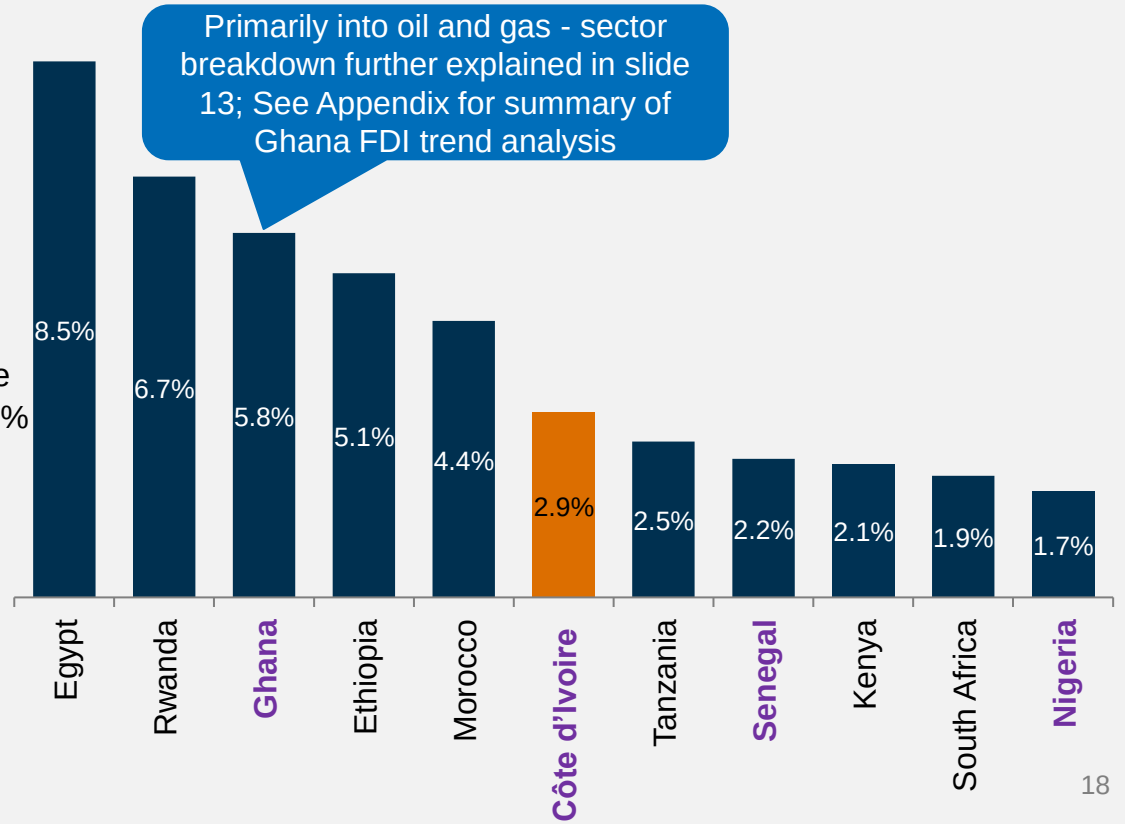
FDI as % of GDP historically generally below 4% with occasional spikes, modest recovery from '09 & '10 lows

FDI inflow as a percentage of GDP Côte d'Ivoire (%)



Côte d'Ivoire leading largest West African economies[1] in FDI attraction but lagging behind Ghana

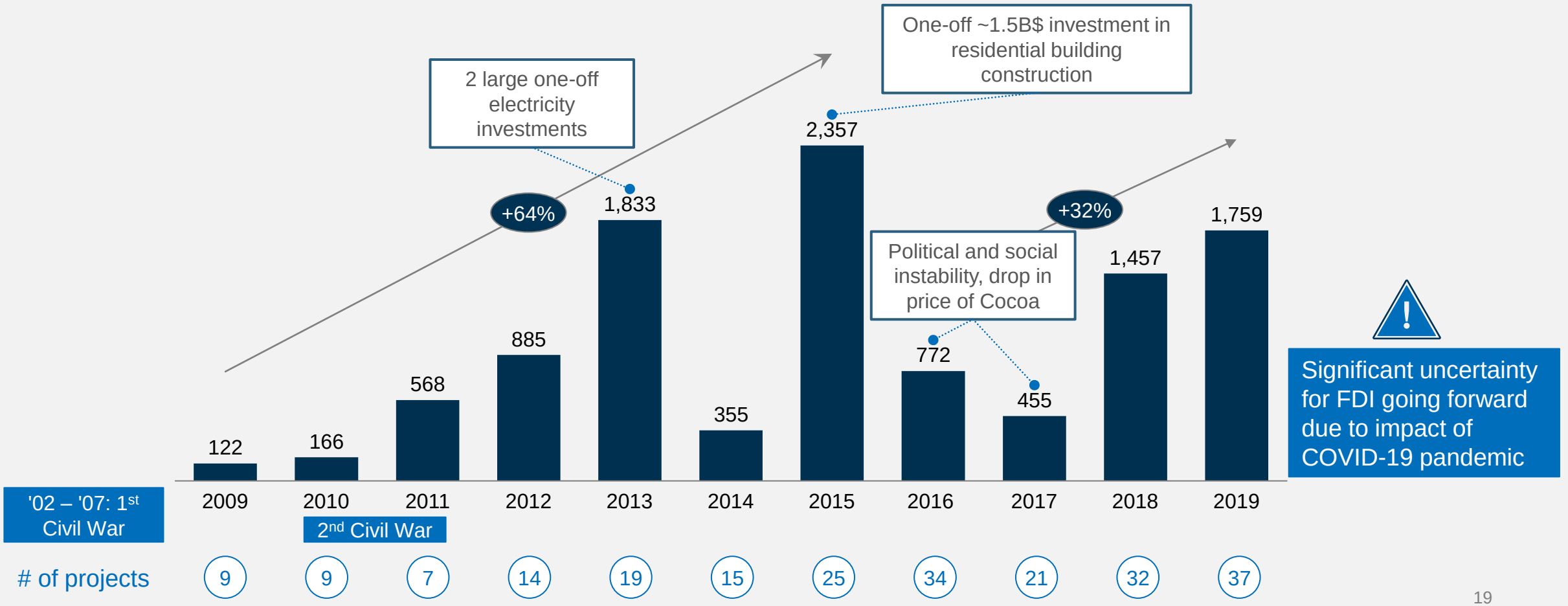
5-Yr Weighted average Greenfield FDI as a % of GDP (2014 – 2018)



Note: CI = Côte d'Ivoire
1. The 4 largest West African economies are Nigeria, Ghana, Côte d'Ivoire and Senegal
Source: fDi Markets; World Bank; BCG Analysis

Historic FDI trend: Greenfield FDI inflows to Côte d'Ivoire grew from early 2010s after civil wars with occasional spikes

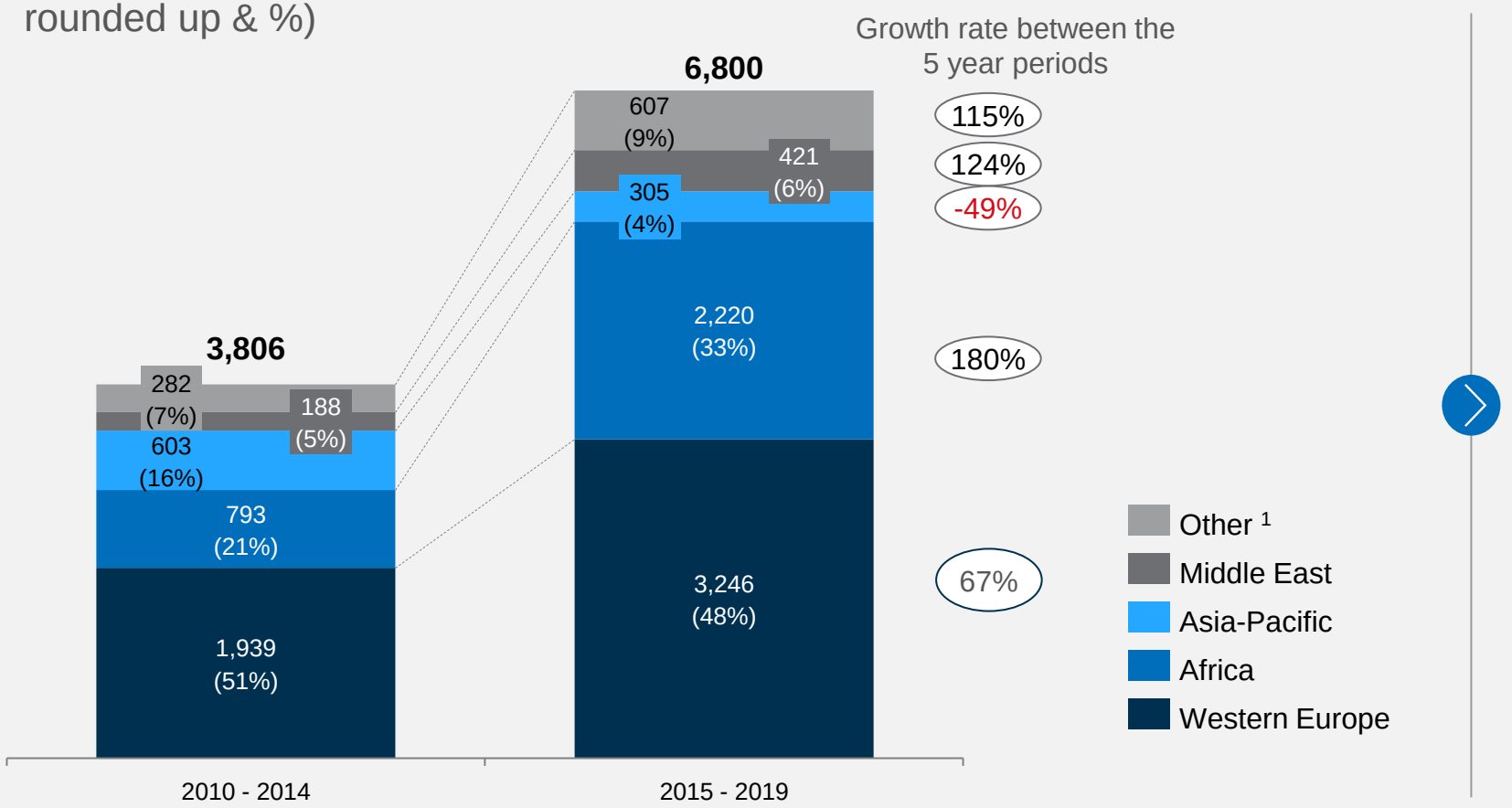
Total FDI inflow into Côte d'Ivoire ($M value rounded up)



Source: fDi Markets; Press Search; BCG Analysis

Origin of FDI by region: Europe has remained Côte d'Ivoire's largest investor, but momentum increasing from Africa

Total greenfield FDI inflows by source region ($M value rounded up & %)



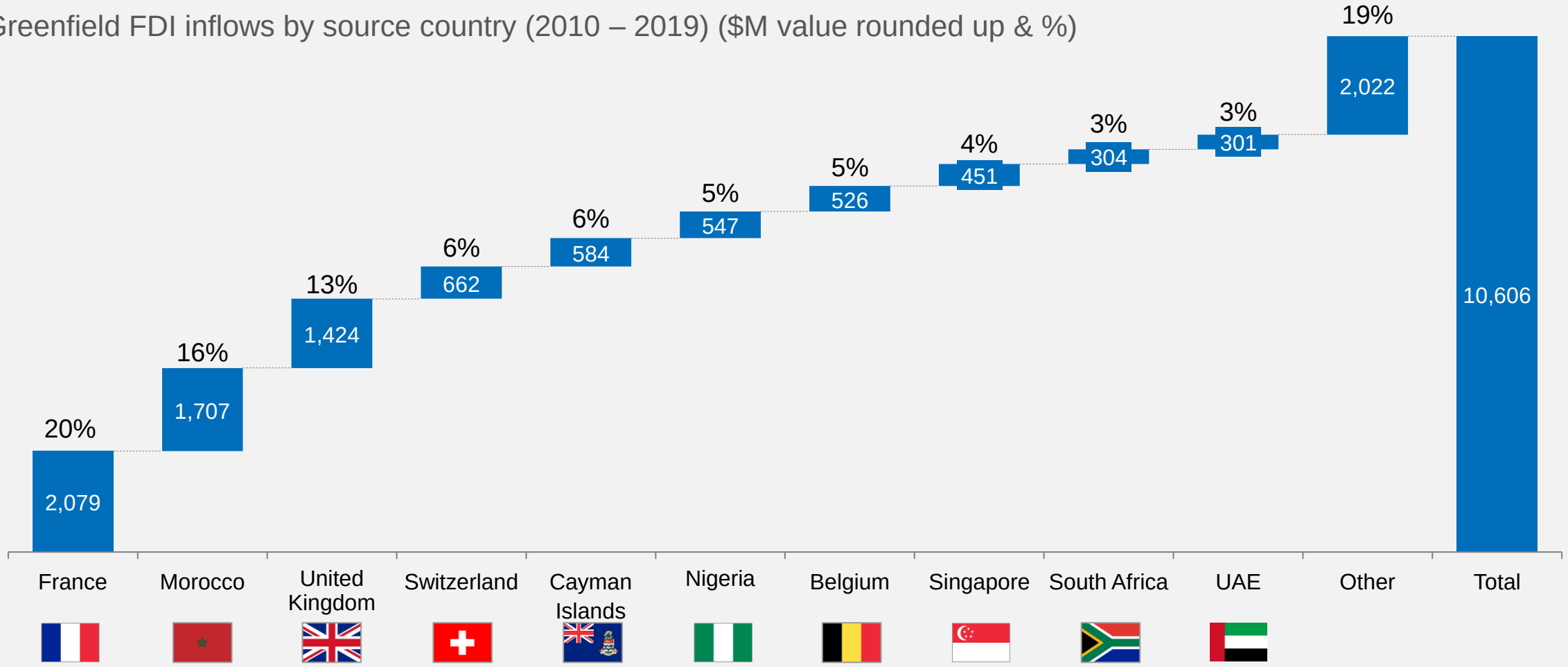
Investments from Europe are mainly driven by France

Investments from African countries mainly driven by Morocco with consistent YoY investments since 2013

1. North America, Latin America & Caribbean and Emerging Europe
Note: YoY – year-on-year
Source: fDi Markets; BCG Analysis

Origin of FDI by country (I / III): Top 10 investors account for ~81% of FDI inflow into Côte d'Ivoire over the last decade

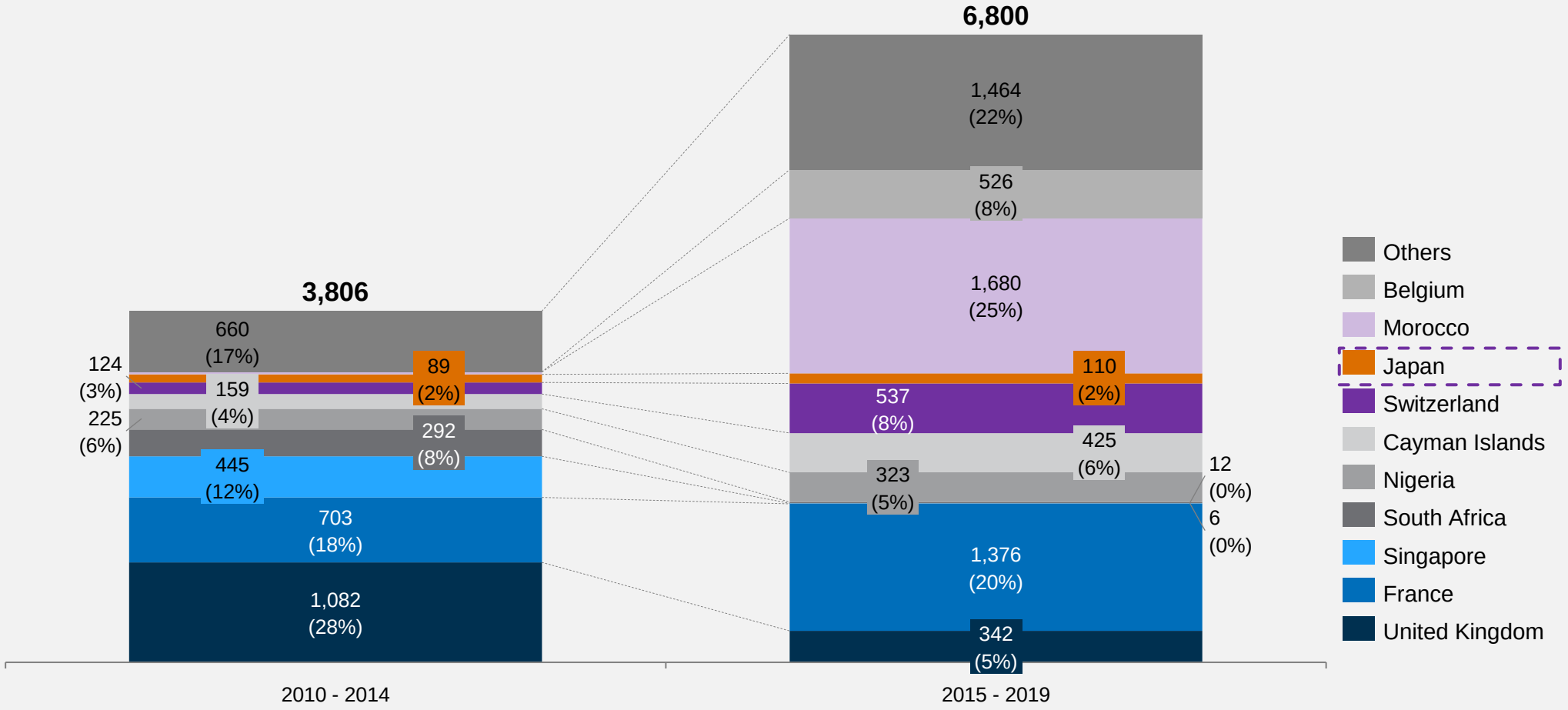
Greenfield FDI inflows by source country (2010 – 2019) ($M value rounded up & %)



Source: fDi Markets; Press Search; BCG Analysis

Origin of FDI by country (II / III): France & Morocco leading, taking over from UK & interest from others steadily increasing

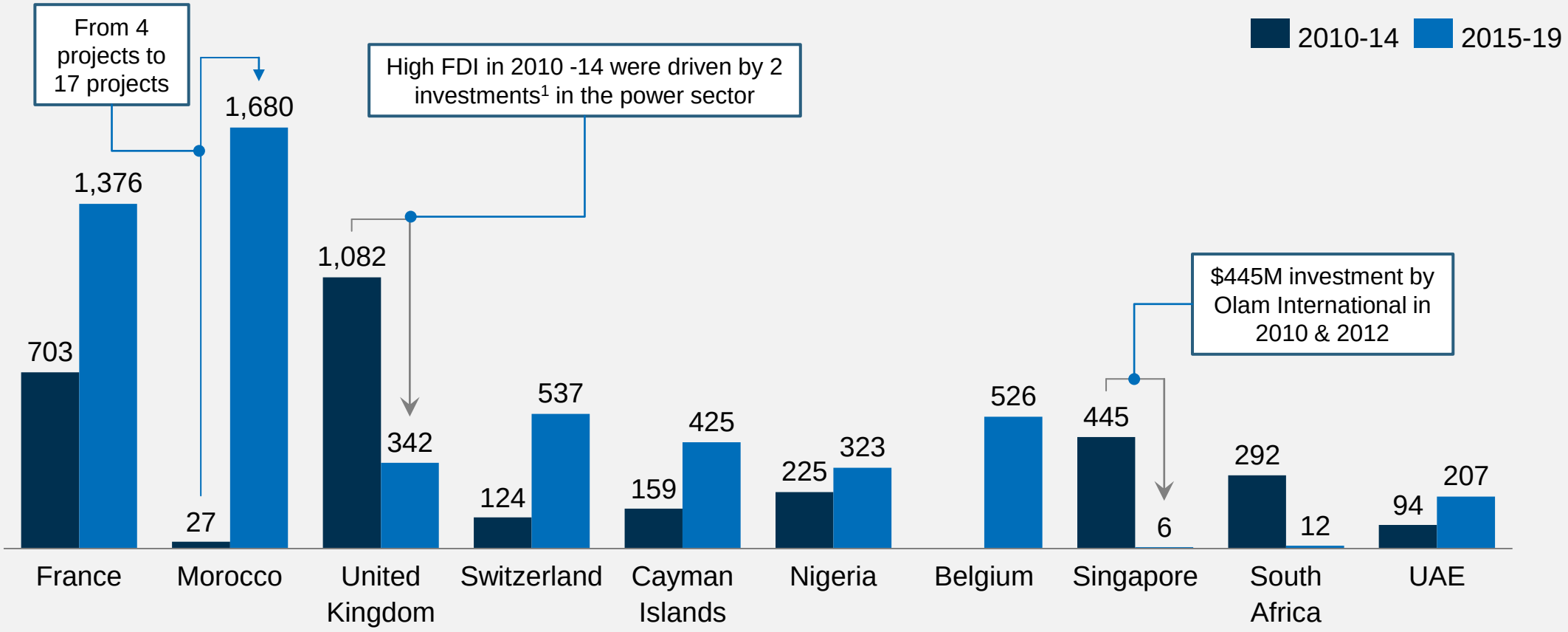
Cumulative greenfield FDI inflows by source country (2010 – 2019) ($M value rounded up)



Source: fDi Markets; BCG Analysis

Origin of FDI by country (III / III): Of the top 10 investors, Morocco is the largest grower in the last decade

Greenfield FDI inflows by source country (2010 – 2019) ($M value rounded up)



Source: fDi Markets; BCG Analysis

Deep dive on French investments: Strong focus on investment in transport & logistics in the 2nd half of the decade, taking advantage of developing sector

Top 5 French investments in Côte d'Ivoire (2015 – 2019)

	Project year	Investing company	Destination city	Sub-sector	Activity	Jobs created	Investment ($m)	Estimated?
1	2018	Bollore Transport & Logistics	Abidjan	Warehousing & storage	Logistics, Distribution & Transportation	823	493	Yes (jobs) / No (investment)
2	2019	BIOVEA Energie	Not specified	Biomass power	Electricity	62	223	Yes (jobs) / No (investment)
3	2018	Bollore Transport & Logistics	Abidjan	Warehousing & storage	Logistics, Distribution & Transportation	131	220	Yes
4	2017	Seafrigo	Abidjan	Freight/Distribution Services	Logistics, Distribution & Transportation	98	72	Yes
5	2017	Orange (France Telecom)	Abidjan	Wireless telecommunication carriers	Headquarters	194	50	Yes (jobs) / No (investment)

Source: fDi Markets; Press Search; BCG Analysis

Deep dive on Moroccan investments: Focus zeroing-in on residential real estate investment in Abidjan

Top 5 Moroccan investments in Côte d'Ivoire (2010 – 2019)

	Project year	Investing company	Destination city	Sub-sector	Activity	Jobs created	Investment ($m)	Estimated?
1	2015	Douja Promotion Groupe Addoha	Abidjan	Residential building construction	Construction	1,466	1,457	Yes
2	2016	Saada Côte d'Ivoire (B Group)	Abidjan	Residential building construction	Construction	712	12	Yes (jobs) / No (investment)
3	2016 (April)	Ciment d'Afrique (CIMAF)	San Pedro	Cement & concrete products	Manufacturing	120	60	Yes (jobs) / No (investment)
4	2018	Denia Snacks	Grand-Bassam	Food & Beverages - Grains & oilseed	Manufacturing	500	24	No
5	2016 (October)	Ciment d'Afrique (CIMAF)	Bouake	Cement & concrete products	Manufacturing	44	22	Yes (jobs) / No (investment)

Source: fDi Markets; Press Search; BCG Analysis

Deep dive on UK investments: Majority of investments focused on electricity generation especially in 1st half of the decade to increase electricity output

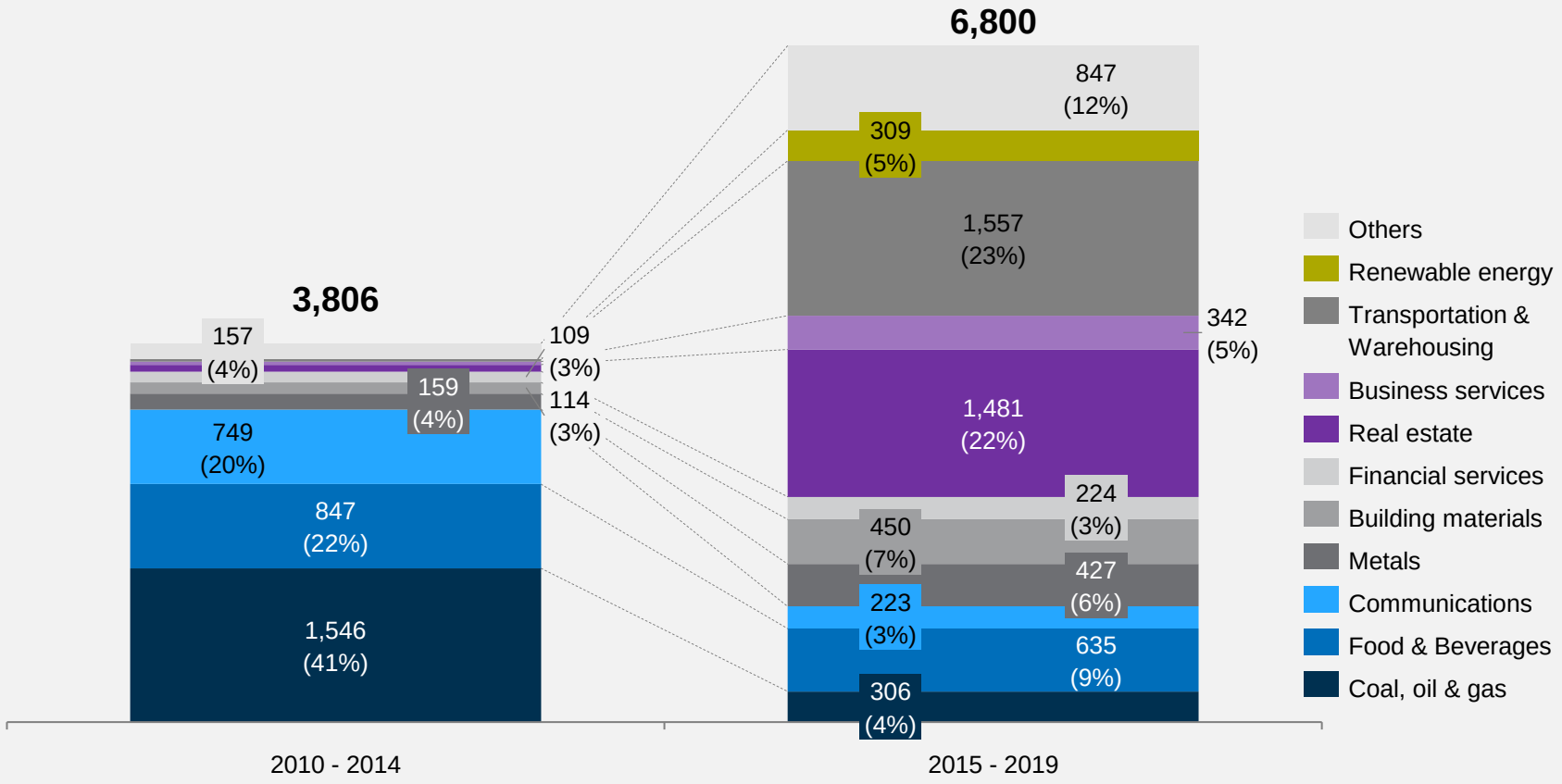
Top 5 UK investments in Côte d'Ivoire (2010 – 2019)

	Project year	Investing company	Destination city	Sub-sector	Activity	Jobs created	Investment ($m)	Estimated?
1	2013	Aggreko	Abidjan	Fossil fuel electric power	Electricity	119	653	Yes
2	2011	Azito Energie (Globeleq Generation)	Abidjan	Fossil fuel electric power	Electricity	116	428	Yes
3	2019	Azito Energie (Globeleq Generation)	Abidjan	Fossil fuel electric power	Electricity	116	293	Yes
4	2016	Unilever	Abidjan	Food seasoning & dressing	Manufacturing	58	10	Yes (jobs) / No (investment)
5	2015	PCCI Group	Not specified	Business support services	Customer Contact Centre	428	4	No

Source: fDi Markets; Press Search; BCG Analysis

Sector breakdown of FDI into CI: Significant FDI diversification occurring over time

Greenfield FDI inflows by sector ($M value rounded up)



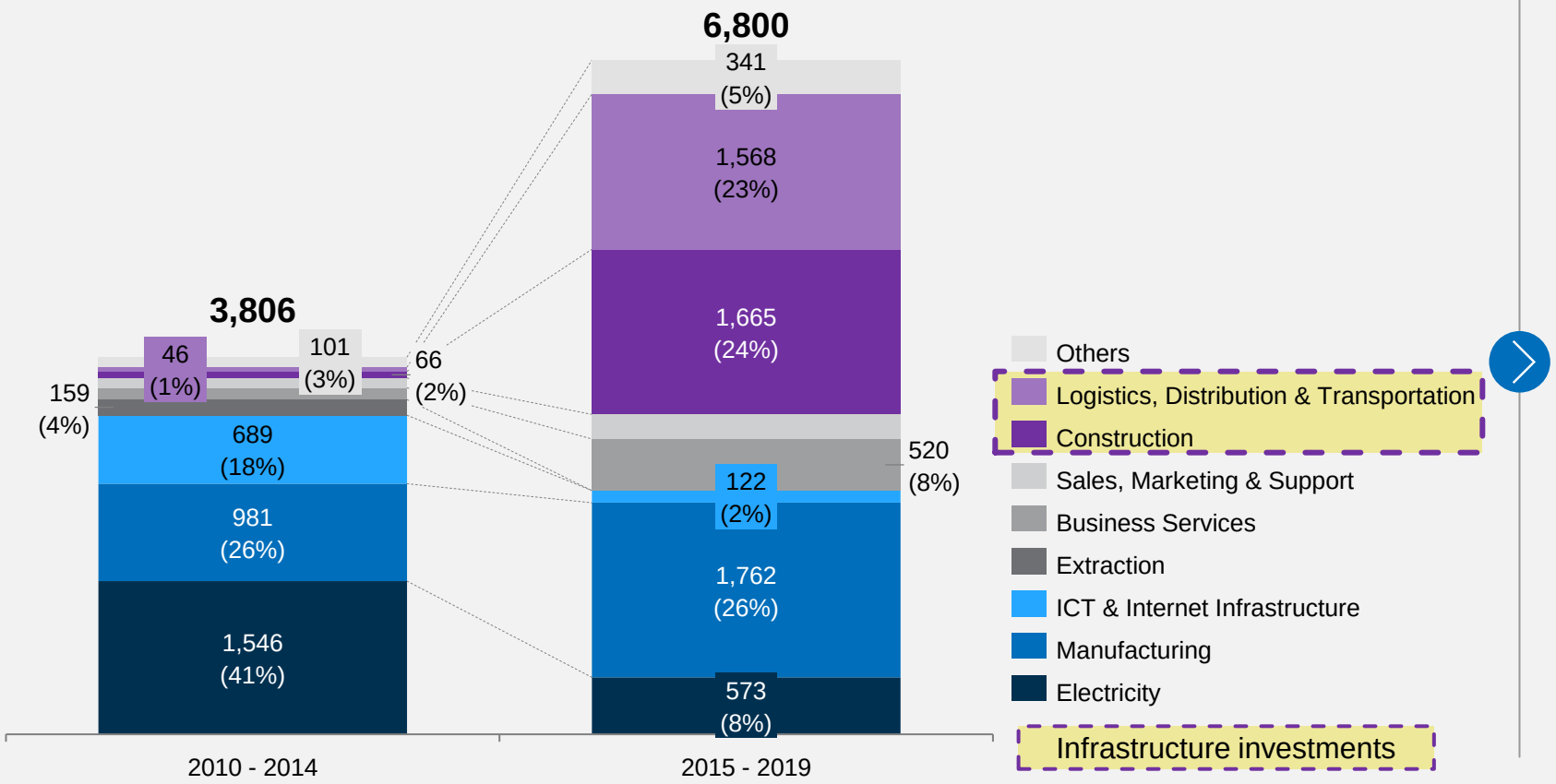
4 key sector trends:

- Significant growth in investment in **real estate** and **transportation & warehousing** in the 2nd half of the decade
- Strong investment in **coal, oil and gas** in 2011 and 2013 that has since reduced in consistency
- Consistent investment in **food and beverage** & **communication** sectors despite decline in share of FDI
- Potential growth in sectors such **renewable energy & business services** whose investment is picking up

Source: fDi Markets; BCG Analysis

Activity breakdown: Investments in infrastructure show strongest growth, share of FDI into manufacturing stagnant

Total Greenfield FDI inflows by activity ($M value rounded up)



FDI inflows increasingly directed towards infrastructure: Construction (~25x growth) & Logistics and Transportation (~34x growth)

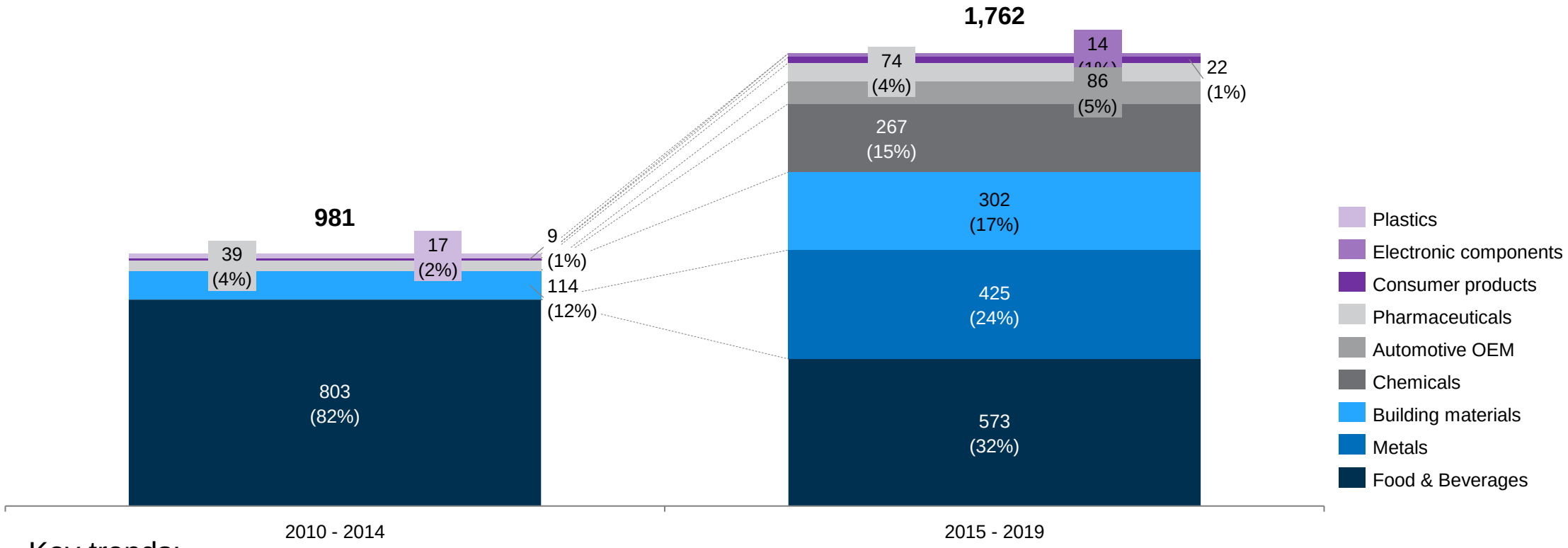
Despite stagnant share of total FDI, manufacturing FDI grew ~1.8x mainly due to growth in FDI towards metals, building materials and chemicals

Despite steep decline, investment in electricity moving towards renewables

Source: fDi Markets; BCG Analysis

Deep dive on manufacturing: Progressive diversification occurring with food & beverage production, metals and building materials leading the way

Investments in manufacturing in Côte d'Ivoire, $M value rounded up & % (2010 – 2019)



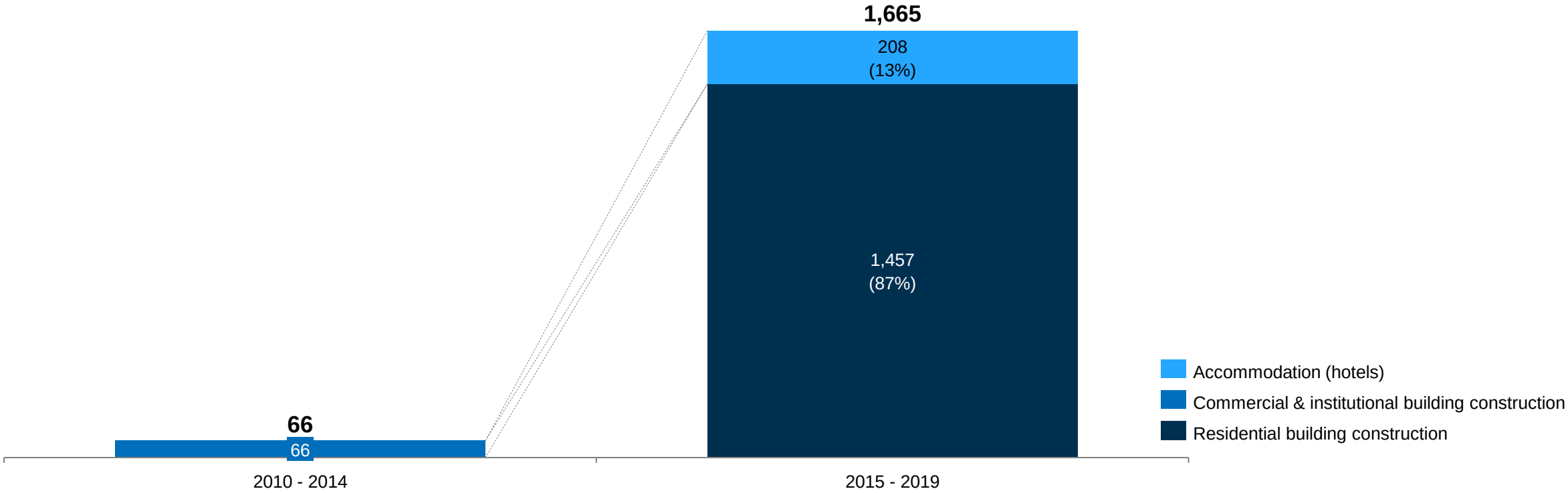
Key trends:

- **Food and beverage manufacturing** has been on the decline across multiple sub-sectors such as snack food (~77% decline, but # of smaller scale investments increased) and sugar & confectionary products (~13% decline)
- Significant growth noted in **building materials (cement)** and **pharmaceuticals manufacturing;** large one-off investments driving growth in **metals and chemicals**

Source: fDi Markets; BCG Analysis

Deep dive on construction: Significant growth in residential real estate arising from increasing urbanization

Investments in construction in Côte d'Ivoire, $M value rounded up (2010 – 2019)



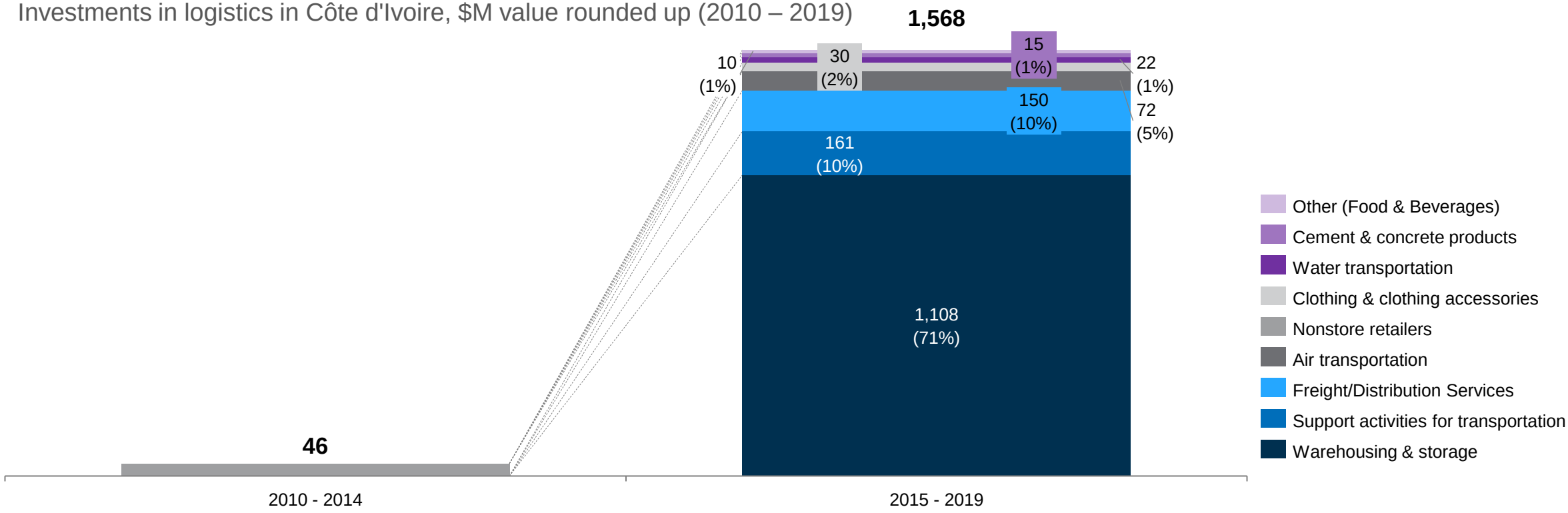
Key trends:

- **Significant investment in residential building construction** concentrated around the Abidjan area, potentially driven by increasing urbanization (from ~43% in 2000s to >50% in 2018) as pop. grows (2.6% in 2018); gov't committed to providing home financing

Source: fDi Markets; Oxford Business Group; World Bank; Press Search; BCG Analysis

Deep dive on logistics sector: Substantial diversification occurring with FDI being mainly channeled into warehousing & storage for exports

Investments in logistics in Côte d'Ivoire, $M value rounded up (2010 – 2019)



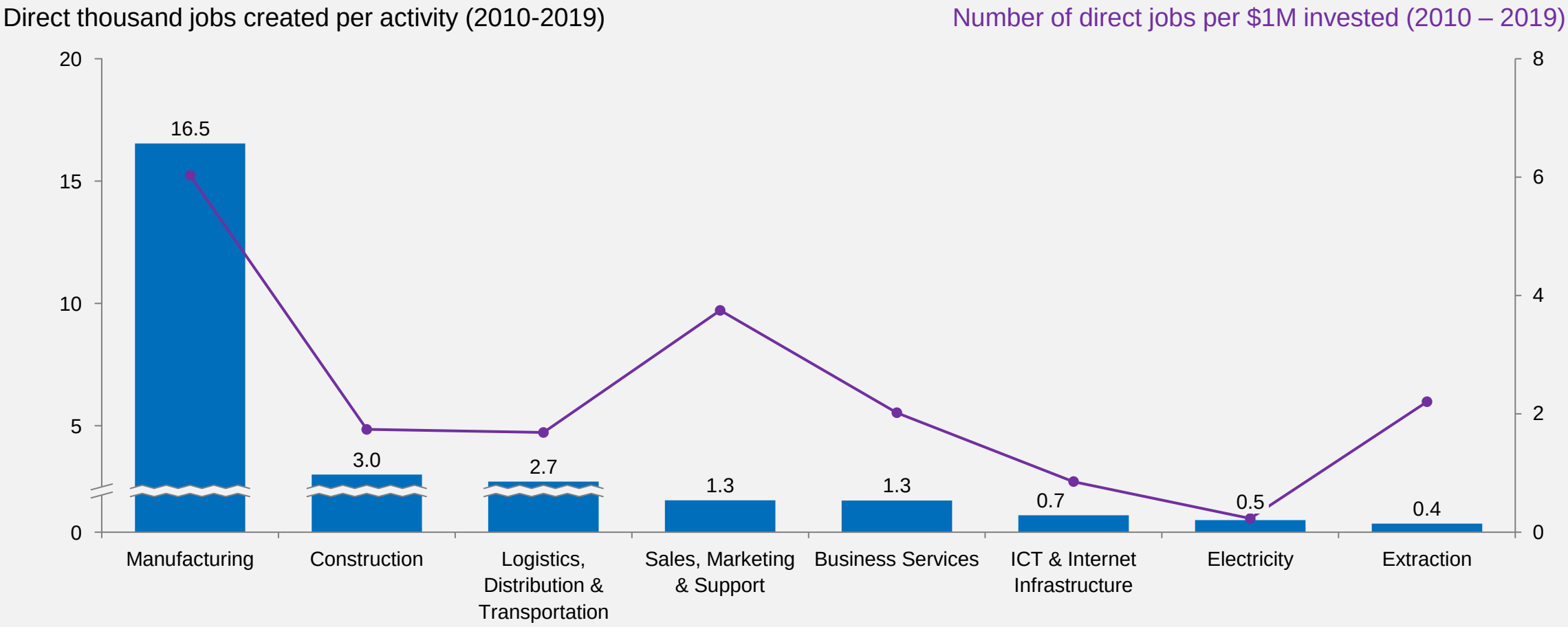
Key trends:

- **Considerable investment in warehousing & storage** being led by Bollore Transport & Logistics (France) – primarily in support of cocoa processing & export – & Sea Invest (Belgium)
- **Establishment of CI's 1st fixed based operator**[1] (Jetex) driving investment in support activities for transportation
- **Diversification of freight & distribution services** taking place to include air and sea freight, and set up of logistics parks

1. A fixed base operator is an organization granted the right by an airport to operate at the airport and provide aeronautical services

Source: fDi Markets; Oxford Business Group; World Bank; Press Search; BCG Analysis

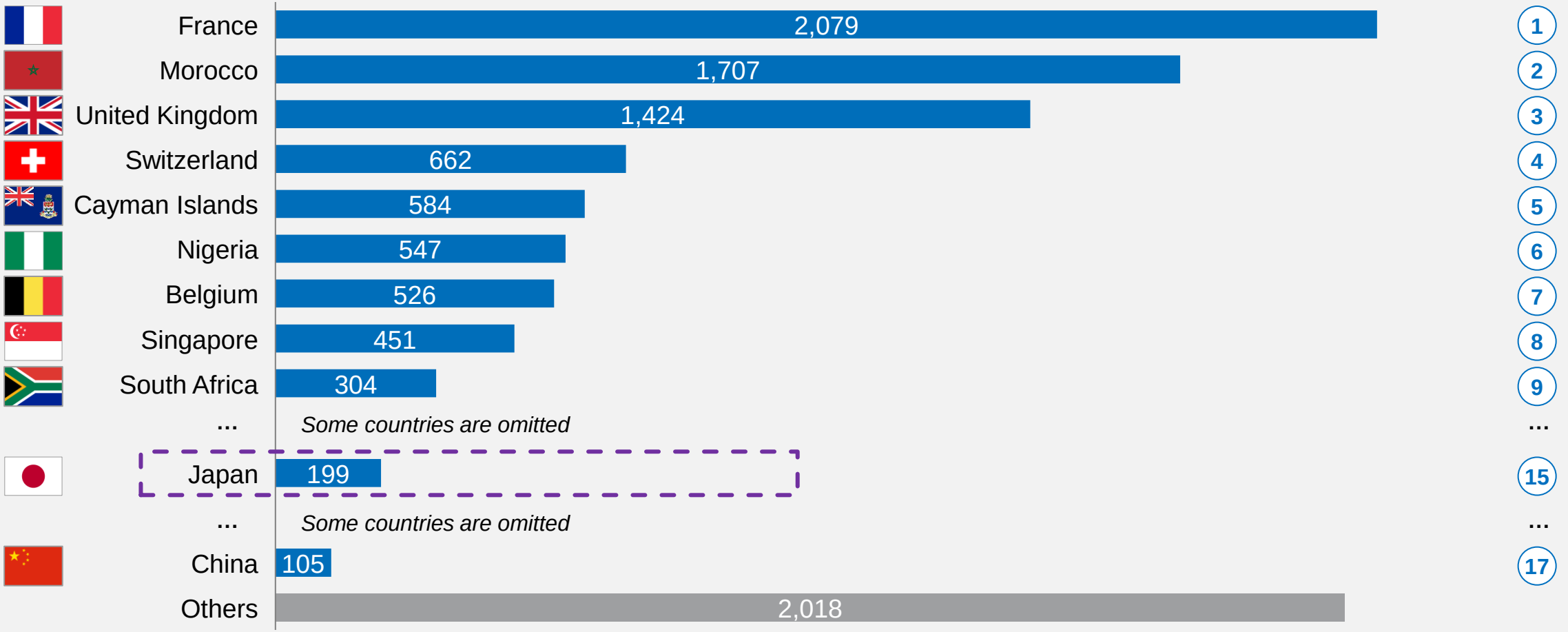
Job creation effect of FDI in Côte d'Ivoire: Manufacturing activities have created the most jobs



Note: Applies to greenfield investment only and related to only direct jobs created from investment, not including indirect jobs created
Source: fDi markets; BCG analysis

FDI to Côte d'Ivoire over past 10 yrs by country: Japan in 15th position for greenfield FDI

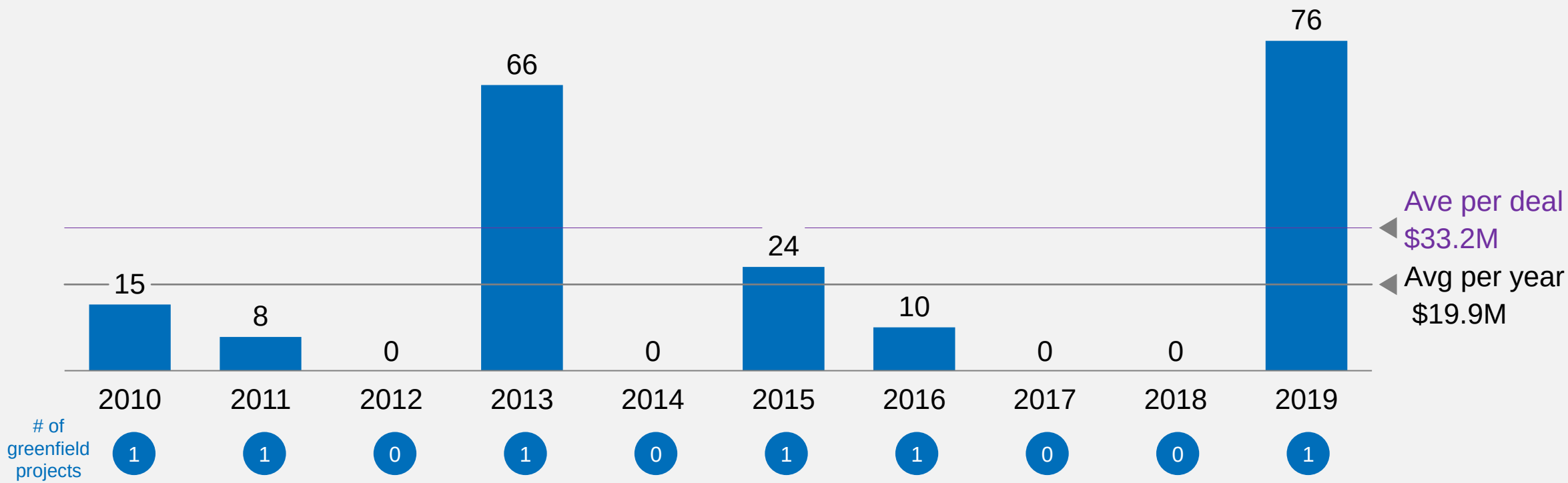
Total greenfield FDI into Côte d'Ivoire 2010 - 2019 ($M value rounded up)



Source: fDi Markets; BCG Analysis

Historic shift of Jpn FDI: Total of 6 announced and executed projects

Japanese greenfield FDI into Côte d'Ivoire (2010 – 2019) ($M value rounded up)



Source: fDi Markets; BCG Analysis

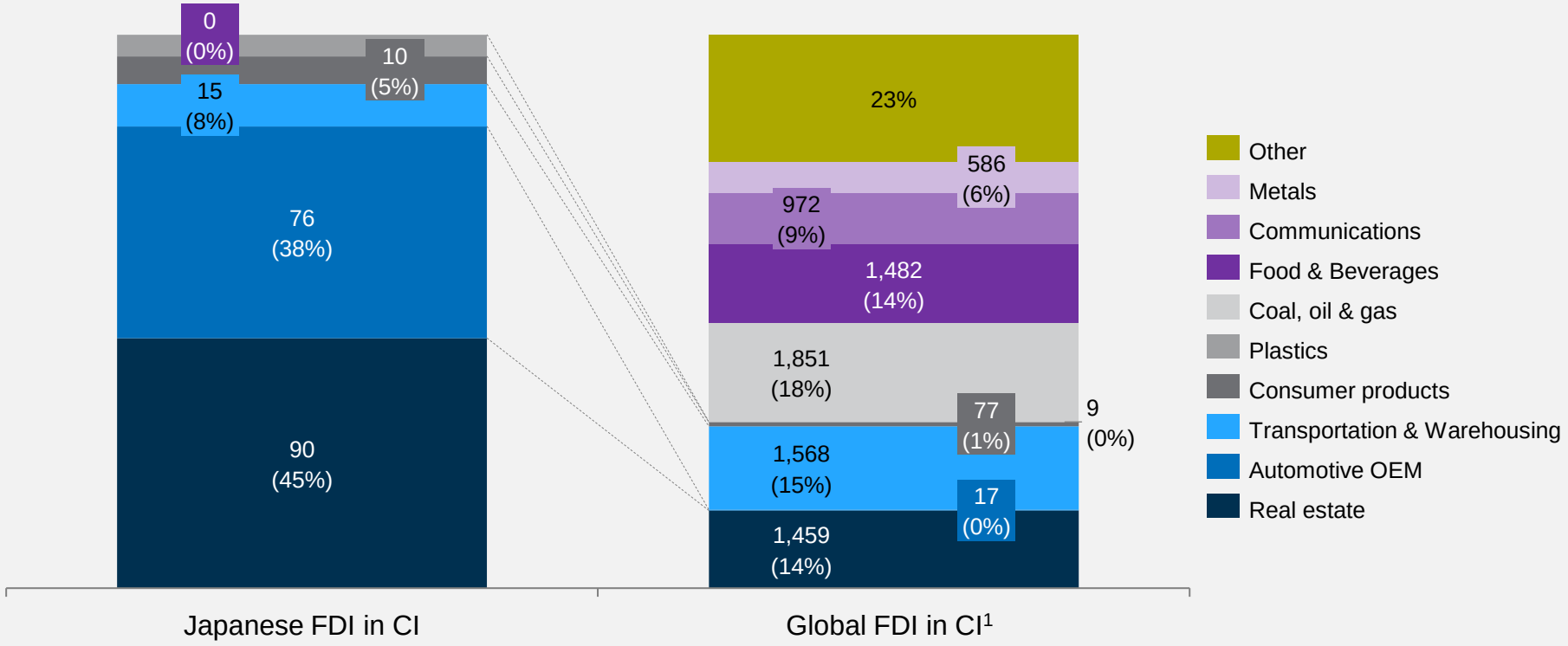
Regional breakdown of Jpn FDI: FDI concentrated in Abidjan & mainly in real estate and automotives

	Project year	Investing company	Destination city	Sub-sector	Activity	Jobs created	Investment ($m)	Estimated?
1	2019	Toyota Motor	Abidjan	Automobiles	Manufacturing	947	76	Yes
2	2013	CFAO Group (Toyota Motor)	Abidjan	Commercial & institutional building construction	Construction	388	66	Yes (jobs) / No (investment)
3	2015	Mitsui & Co	Abidjan	Commercial & institutional building construction	Sales, Marketing & Support	14	24	Yes
4	2010	Mitsui OSK Lines (MOL)	Abidjan	Water transportation	Sales, Marketing & Support	10	15	Yes
5	2016	CFAO Group (Toyota Motor)	Abidjan	Consumer products	Manufacturing	259	10	Yes
6	2011	Ajinomoto	Abidjan	Plastics packaging materials & un-laminated film & sheets	Manufacturing	34	8	No

Source: fDi Markets; Press search; BCG Analysis

Sector comparison: Jpn FDI vs. global FDI in Côte d'Ivoire
Japanese FDI focusing on real estate & automotives

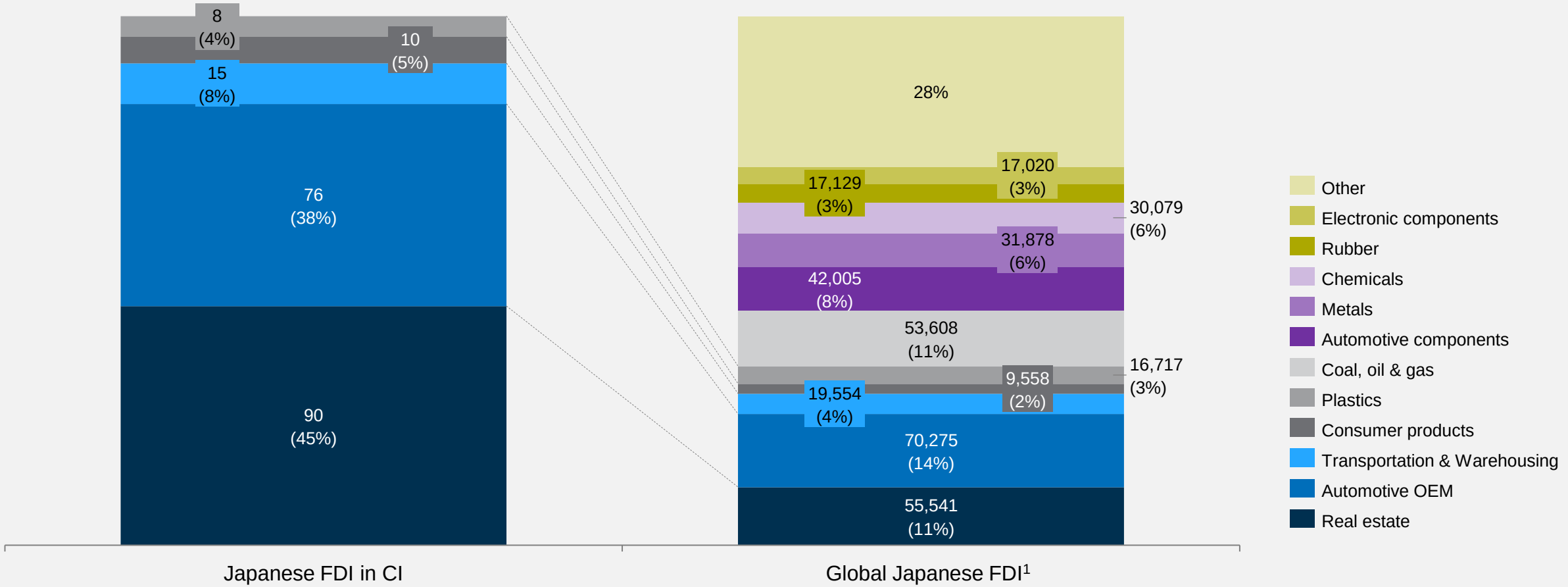
Japanese greenfield FDI in CI compared to Global greenfield FDI in CI, $M value rounded up (2010 – 2019)



1. Global figures exclude Japanese FDI
CI = Côte d'Ivoire; OEM = Original Equipment Manufacturing
Source: fDi Markets; BCG Analysis

Global FDI in CI is more diversified with significant investments in coal oil & gas, food & beverages, communications etc.

Sector comparison: Global FDI in CI vs. global Jpn FDI: Potential for Japanese FDI diversification leveraging existing strengths



1..Global figures exclude Japanese FDI into CI;
OEM = Original Equipment Manufacturing;
Source: fDi Markets; BCG Analysis

Major M&A by Jpn companies in CI: M&A not a prominent entry strategy, only 3 transactions recorded

	Direct M&A	Indirect M&A	
CI Target	Anadarko Petro-Block CI-103	SGI Africaine De Bourse SA	Olam Cocoa Processing Cote d Ivoire
	↑ Acquired 20%, deal value undisclosed	↑ Acquired 40%, deal value undisclosed	↑ Owns 100%
Acquiror	Mitsubishi Corp 	CFAO SA 	Olam International 
		↑ Owns 100%	↑ Acquired 20% for $1.1M
Acquiror parent	N/A	Toyota Tsusho Corp 	Mitsubishi Corp 
Transaction Year	2014	2019	2015

Source: Thomson One; Press Search; BCG Analysis

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Agriculture in Côte d'Ivoire: Executive Summary

Overview of the Agriculture Sector

Agriculture is a major economic sector in Côte d'Ivoire with high production volume across key crops

- Côte d'Ivoire is the world's largest producer of cocoa (accounting for 40% of total world production) and raw cashew nuts
- It is the largest exporter of rubber, palm oil, bananas, pineapples and copra in Africa, and the second producer of Robusta coffee on the continent
- The country is self-sufficient in most major local crops (maize, sorghum, millet, yam, cassava, plantain), rice remaining the exception

Given its size and momentum, the sector presents some opportunities for private investors

- Size and growth: Production grew by 50% between 2011 and 2017 (15.8M to 23.7M tons), 30 percentage points faster than in Sub-Saharan Africa
- Government: The government has unveiled an ambitious program to improve production and processing in which the private sector will play a key role
- Private sector: Several large international players including Japanese companies continue to invest in the sector (e.g., Barry Callebaut, Olam, Cargill and CEMOI have 80% of installed cocoa beans processing capacity)
- Access to markets: Thanks to its modern ports and established routes, Côte d'Ivoire offers access to a larger West African market

Despite its importance, the sector still faces some challenges

- Low land use: less than 60% of total agricultural land is cultivated
- Crop yields lag peers: 50-70% lower than global average across local and export crops
- Low local processing: less than 5% of export crops processed locally, which is up to ~50% potential loss in value realization
- High wastage: ~2x of global average (8.2% vs 4.5%), driven by inadequate storage infrastructure, poor post-harvest processes and farm ecosystem

Japanese companies' interest in the sector

Several Japanese companies are active in the sector and the benefits they could gain from this study depends on their activity

- We have classified the Japanese players in three groups based on involvement in the sector and potential opportunities highlighted in this study:
  - Rice farming and processing machinery: Opportunities to supply machinery to local dealers or processing players
  - Cocoa sourcing and processing companies: Consider cocoa processing to Côte d'Ivoire (based on cost implications)
  - Established agri-processing players: Potential to increase processing in cocoa and cashew if the economics are right

Japanese players consistently identified three key challenges

- Difficulties for local players to get financing: high interest rates from financial institutions (over 20%) prohibits purchases of agricultural machinery
- High processing costs: processing costs are higher in Côte d'Ivoire than other markets due to an accumulation of factors including higher logistics, management hires, security, machinery servicing/maintenance costs
- Need for improvement in government policies: duration of incentives, import control on rice, and governance of market competition can be improved

The Ivorian agriculture sector is attractive for investment because of its size and continuous growth supported by government's policy

Size & Growth

- Agriculture accounts for 23% of GDP and more than 65% of exports
- Agricultural production grew by 50% from 15.8M tons in 2011 to 23.7M tons in 2017, 30 percentage points faster than in Sub-Saharan Africa and 20 percentage points faster than in West Africa

Government Actions

- After a 3.7B$ investment (2012-2017), the government plans to further invest 7.9 B$ in the 2018-2025 period to improve the sector
- The plan has three objectives:
  - Increase value-added
  - Strengthen production
  - Support rural development

Source: Ministry of Agriculture, World Bank (2020),

Sector size and growth: Agriculture is a major economic sector in Côte d'Ivoire with high production volume across key crops

#1
producer of cocoa in the world

Largest producer of cocoa in the world, accounting for ~40% of the world's production

#1
global exporter of raw cashew nuts

Leading exporter of raw cashew nuts with a 38% market share in global export of RCN (2018)

#7
producer of natural rubber

7th largest producer of natural rubber with 760,000 tons (2018)

#1
Africa's largest exporter of key fruits

Africa's largest exporter of bananas with 400,000 tons and pineapples with 32,064 tons (2019)

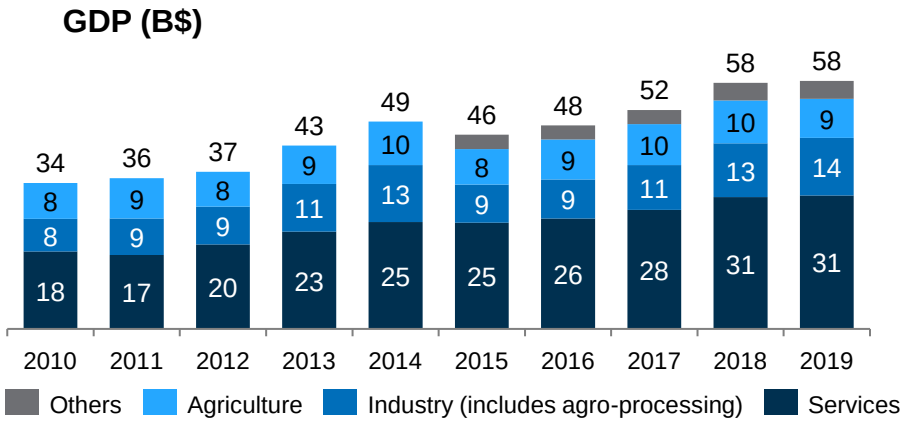
#2
exporter of Robusta coffee in Africa

#2 exporter of Robusta coffee in Africa with 1.1M tons exported in 2019

Source: World Bank (2020)

Sector size and growth: Growth across key crops and organization of the sector

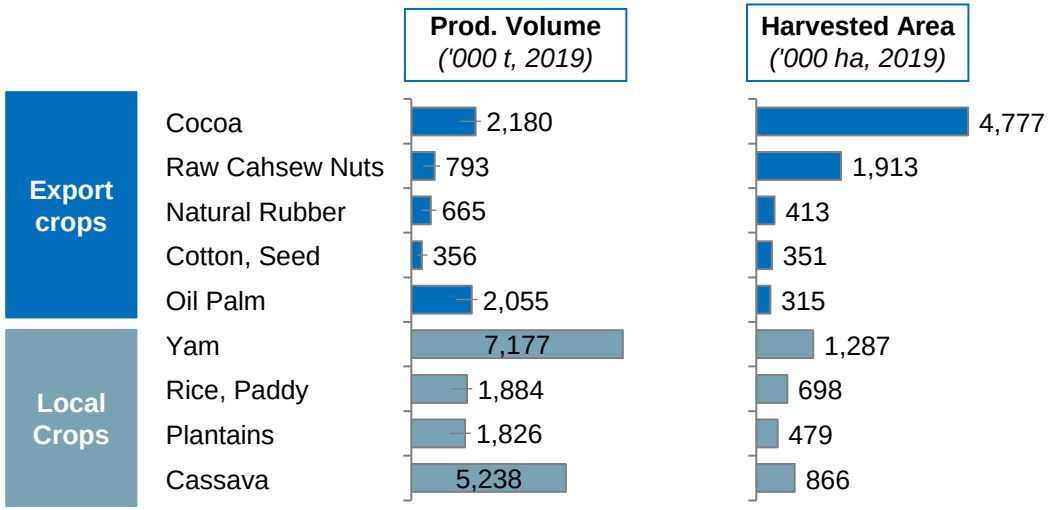
GDP: Agriculture vs Other sectors



In 2019:

- Agriculture represented ~16% of GDP
- Agribusiness represented 7% of GDP and 50% of manufacturing

Key Crops



Policies

The National Agricultural Investment Program (PNIA) is the reference document for all development policies and strategies in the agricultural sector

- 6 Development Programs
- ~7.9 B$ of investment

Key Players

Le Conseil du Café-Cacao
SIFCA
OLAM
Cargill
CNRA
ANADER
FIRCA
SUCRIVOIRE
wilmar
COMPAGNIE FRUITIERE
Mondelēz International
SOMDIAA
Nestlé
BARRY CALLEBAUT

Source: World Bank, FAO, EIU, Press Search

Government actions:
The Government has unveiled an ambitious development plan to develop the sector

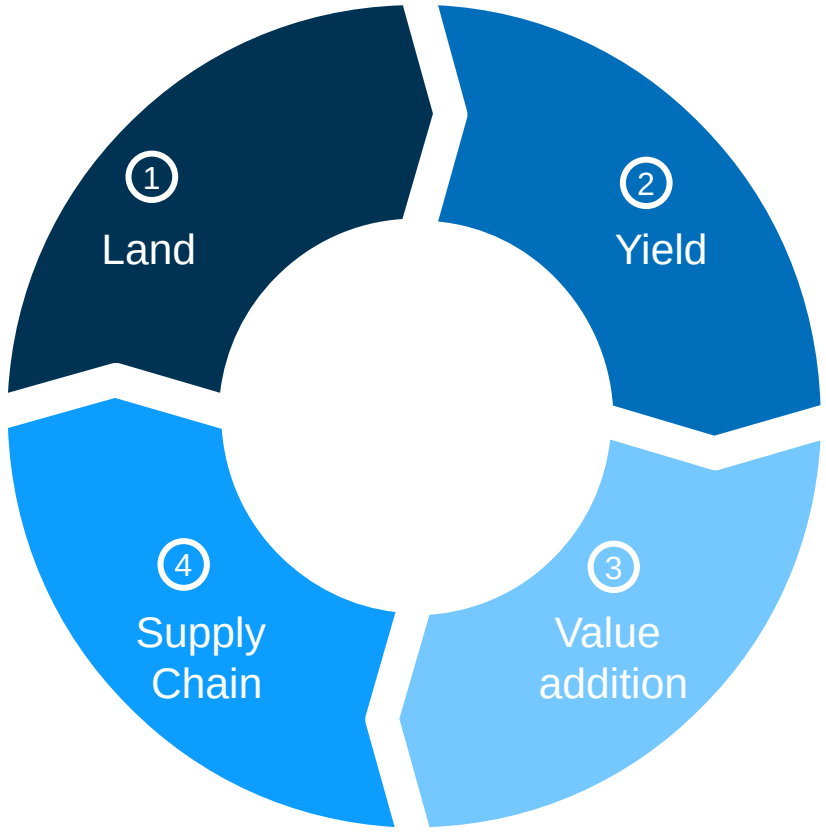
PNIA
National Agricultural Development Program
Development Policies and strategies in the agricultural sector (2017-2020)

~7.9 B$ to invest in 6 programs:

1. Productivity and sustainable development
2. Improvement of value-added and of agriculture market performance
3. Sustainable management of environmental and climate resilience
4. Improvement of the livelihood of players in the value chain
5. Increase access to finance and private investment channels
6. Strengthening the institutional framework, governance and business environment

Source: Ministry of Agriculture (November 2017)

Despite its importance, the sector faces several challenges across local and export crops



1 Low land use:
- <60% of total agricultural land is cultivated

Small size of land holdings
- Avg. size 1-1.5 Ha vs 5.5 Ha (global average)

2 Crop yields lag peers
- 50-70% lower than global average across food and cash crops
- Driven by small farm size, insufficient input use, inferior crop varieties, low mechanization, poor farm management

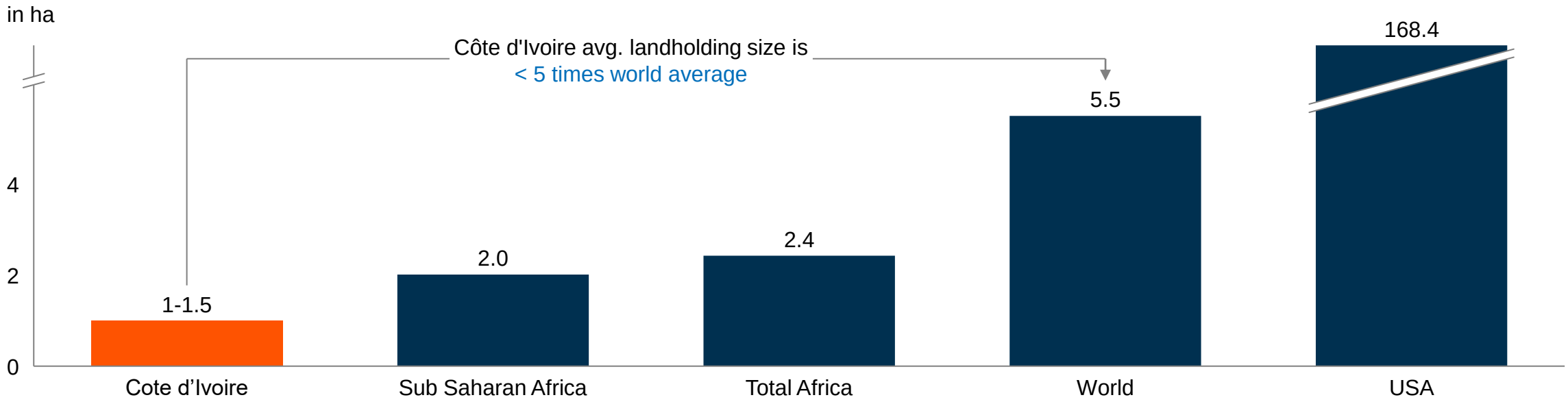
3 Low local processing
- <5% cash crop processed locally – up to ~50% potential loss in value realization
- Driven by high processing costs, lack of infrastructure and weak local demand for processed products

4 High wastage
- ~2x of global average (10% vs 4.5%)
- Driven by inadequate storage infrastructure, inadequate development of farm eco-system & poor post-harvest processes

Source: FAOSTAT, FAO reports, OECD, Press search

Small size of landholdings: Average size of landholdings is half of Sub-Saharan Africa nations and <5 times world average

Average land holding size

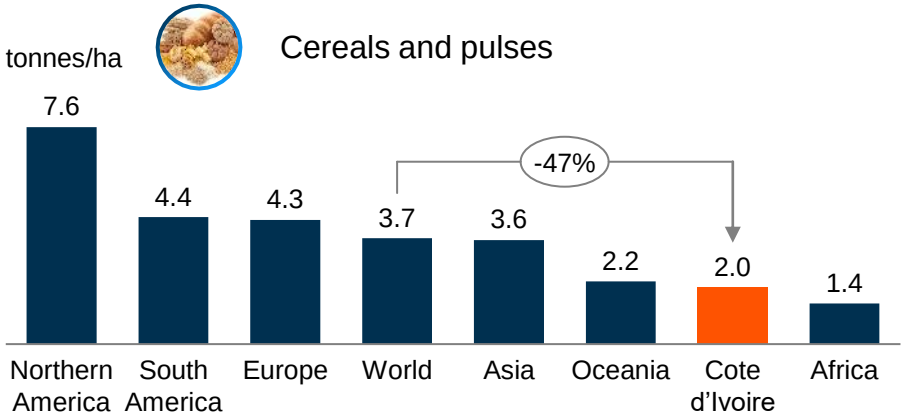


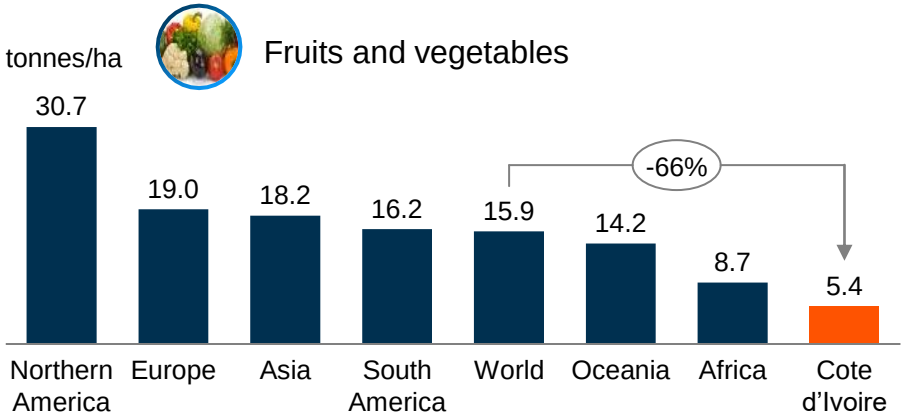
Fragmented small landholdings leading to challenges in mechanization, irrigation, infrastructure etc.

Source: Secondary research, FAO Stats

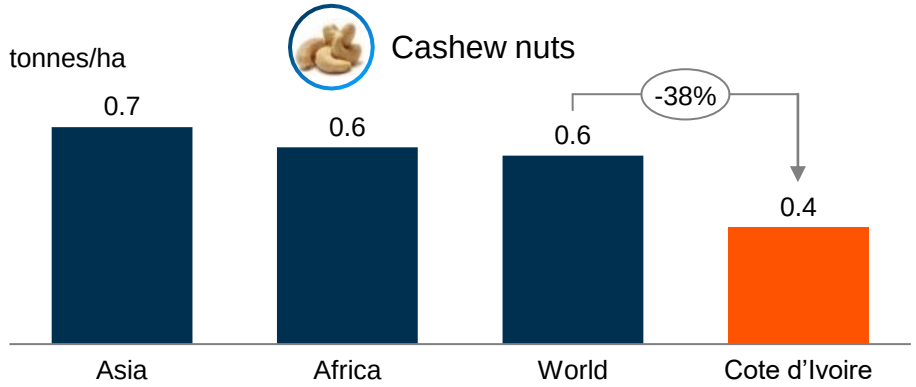
Low Yield: 50-70% lower yield observed across food and cash crops as compared to world average

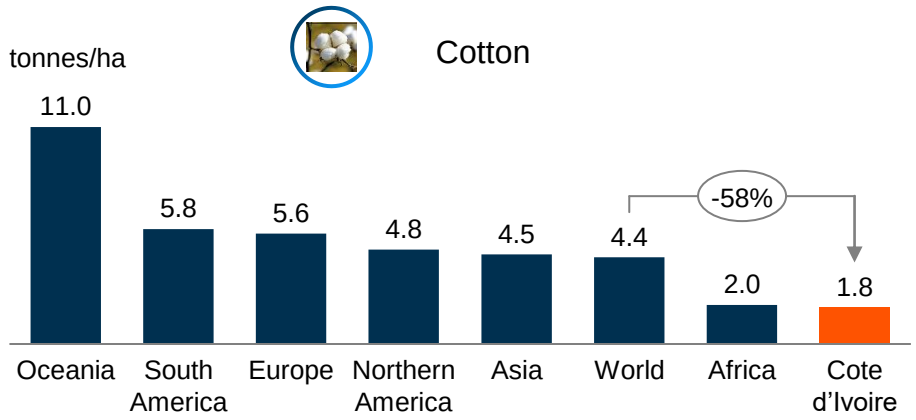
Food Crops





Cash Crops

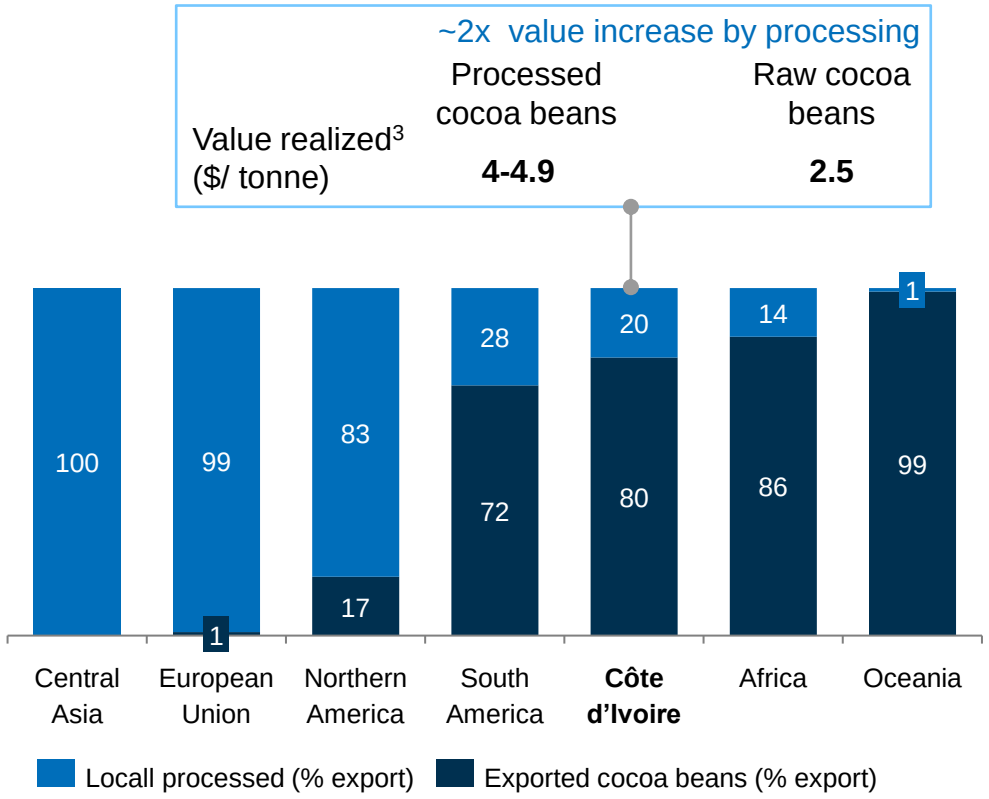




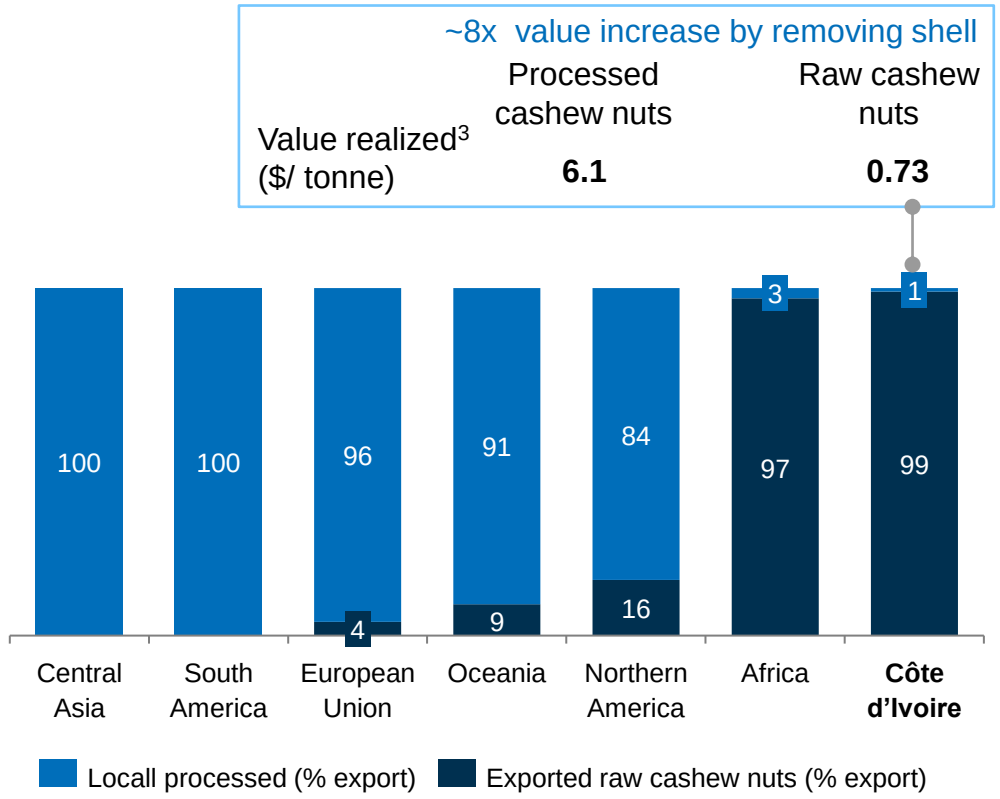
Source: FAO, 2014 yield data

Low local value addition: Lack of local transformation ecosystem resulting in majority export of raw products

Cocoa: Developed regions exporting processed cocoa, realizing ~2x higher value for exports



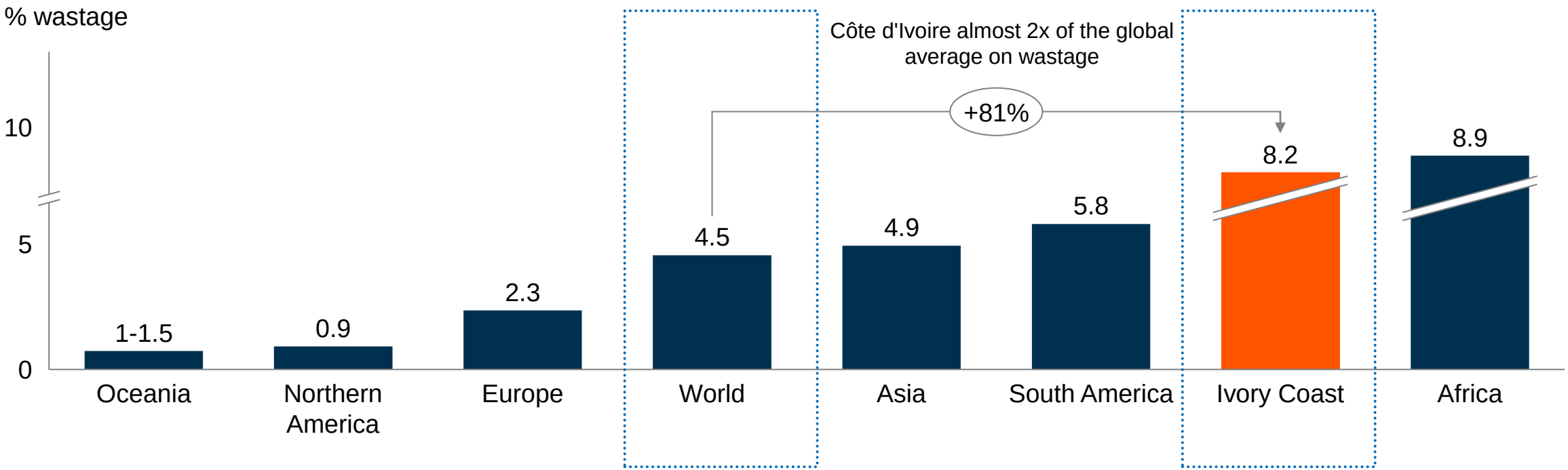
Cashew Nuts: Unlike Côte d'Ivoire; all other regions mainly export processed (without shell) cashew nuts



1. Processed cocoa includes cocoa cutter, cocoa paste, cocoa powder and cake; 2. Processed cashew includes cashew nuts without shells while shelled are raw nuts; 3. Value realized calculated as (exports value/ exports tonnage) for 2013 for Côte d'Ivoire
Source: FAO

High Supply Chain Wastage: Wastage in Côte d'Ivoire almost 2x global average

Wastage as a % of production quantity (aggregate across all crops)



Source: FAO. 2013 data

Several Japanese companies are active in the agro-processing/machinery sector with varying levels of interest and involvement

Higher interest in rice farming and processing machinery

- Several Japanese companies are interested in the rice farming and machinery sub-sectors, having already realized some recent sales
- Those companies perceive Côte d'Ivoire as a high priority market within the region given its high rice harvesting area
- Current players focus on leveraging existing GoJ projects and are mostly focused on post-harvest phase with the supply of rice tillers, combines or rice milling machines

Lower interest in processing and machinery for other crops

- Processing of cocoa, cashew, rubber and cotton have not attracted the interest of new Japanese players
  - Existing processing and trading players are interested in cost benchmarks for processing crops in Côte d'Ivoire, with a particular focus on Cocoa
- Farm size and farming technique for cocoa, cashew, rubber and cotton are not suitable for machinery

Implications for the market study

1. 1st priority: rice farming and rice processing for deep-dive
2. 2nd priority: 1st level processing of cocoa in Côte d'Ivoire
3. Deprioritize cashew, rubber and cotton and only provide overview of the sector

1. GOJ – Government of Japan

Japanese companies in agro-processing/machinery sector identified a few consistent challenges and opportunities to improve the business environment

Japanese companies identified three major challenges in Côte d'Ivoire…

Difficulties for local players to get financing

- High interest rate by financial institutions (e.g. over 20%) prohibits their customers (contractors) to purchase farming/processing machinery

High cost of processing when compared to other markets

- Processing costs are higher in Côte d'Ivoire due to higher logistics, management, security, machinery and maintenance costs

Need for improvement in Government policies

- Incentives provided by the government to promote processing are short in nature (3-5 years), which limits long-term planning/investment
- Need for the government to promote local rice farming and processing
- Existence of unfair competition due to some treatment favoring certain players

… and highlighted some actions that can be taken to improve the environment

Expectation for JICA's support

- Advocate to CI government to remove Pre-export Verification of Conformity for agriculture machinery and its spare parts (to avoid extra time and cost for export from Japan to CI)
- Further advocate importance to effectively promote local rice production
- Provide funding beyond feasibility study/piloting phase

Request for this market research

- Market data on rice farming in Côte d'Ivoire: information on contractors; level of mechanization by region; transport infrastructure; upcoming investments
- Cost benchmarks on processing Cocoa

Opportunities & challenges for machinery & processing: We identified stronger interest from Japanese companies in the rice sector and cocoa processing

	Rice	Cocoa	Cashew	Rubber	Cotton
					
Opportunities for the private sector	~2.8Mt in demand for white rice and government's will to increase insufficient local production presents opportunities for: • Supply of farming machinery • Supply for processing machinery	#1 global producer of cocoa beans and government's target of increasing local processing capacity by 2025 creates opportunity for Investment in cocoa beans processing for established players in the cocoa value chain	#1 exporter of raw cashew nuts in the world with potential to grow processing as only ~10% of the production (760k tons) is done locally bringing opportunities for Investment in primary and secondary processing of cashew nuts	~100M$ of rubber goods imported per year bringing a small opportunity to manufacture non-tire rubber products like mattresses, conveyor belts, gloves, condoms and shoes	#3 producer of cotton (high quality) in Sub-Saharan Africa, offering an opportunity to invest in fabric manufacturing with potential additional benefits if byproducts (cottonseed oil and linters) are commercialized
Challenges	• Slow progress in domestic production increase • Difficult access to finance for local processors/contractors	• High processing costs • Temporary nature of government incentives	• High processing costs of raw cashew nuts compared to India and Vietnam • Low use of by-products	• High processing costs • Difficult access to key inputs (chemicals) to make rubber goods • Difficult access to qualified labour	• High processing costs • Low use of by products
Interest by Jpn firms	Higher interest	Medium interest	Lower interest	Lower interest	Lower interest

22 interviews conducted with Japanese companies & relevant government agencies

	Company / Government agency	Contact name	Contact info / e-mail address
	[Confidential] 7 Japanese companies in Agro-machinery processing sector		
	[Confidential] 5 Japanese companies in Waste Management sector		
Ministère de l'Agriculture et du Développement Rural	Conseil du Café-Cacao	*Coulibaly Wathami*	Contact info available upon request
	Conseil du Coton et de l'Anacarde	*Gue Simplice*	
	Conseil Hévéa-Palmier à Huile	*Sabah Mohamed*	
	Chambre d'Agriculture de la Côte d'Ivoire	*Bella Kouassi Lago*	
Ministère du Commerce et de l'Industrie	Chambre de Commerce et d'Industrie de Côte d'Ivoire	*Kouakou Casimir*	
	Société Ivoirienne de Technologie Tropicale	*Dosso Lancine*	
MINEDD[1]	Centre Ivoirien Anti-pollution	*Kouadio Kouassi Gilbert*	
	Direction de l'économie circulaire	*Serge Kouadio*	
MINASS[2]	Agence nationale de gestion des déchets (ANAGED)	*Konan Eddie*	
Other	CEPICI (Centre de Promotion des Investissements en Côte d'Ivoire)	*Franck Quenum*	

1. MINEDD: Ministère de l'Environnement et du Développement Durable 2. MINASS: Ministère de l'Assainissement et de la Salubrité

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Rice:
Assessment of the Agro-processing / machinery sector

Côte d'Ivoire ranks #6 in Africa in terms of rice harvesting surface

It produced about 1,1M tons of white rice in 2018.

Côte d'Ivoire imported 53% of total rice demand in 2018

Rice

Cocoa

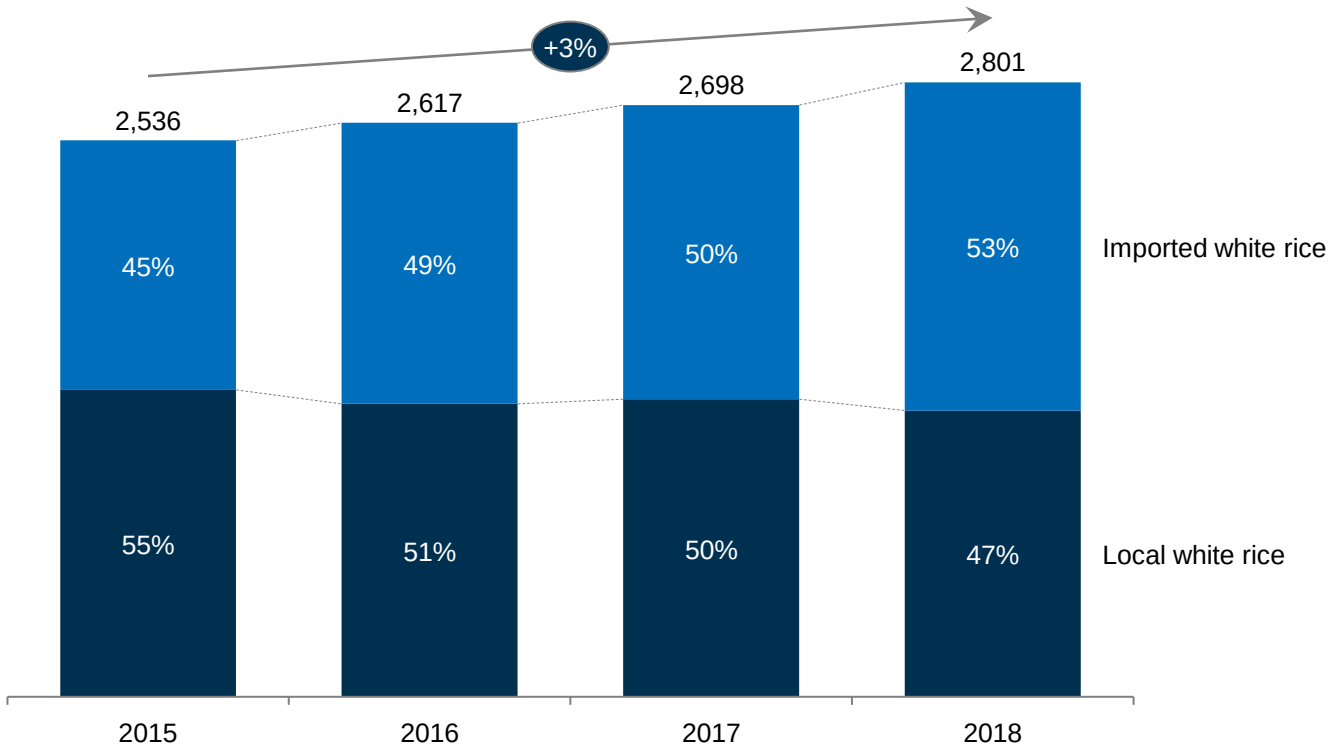
Cashew

Rubber

Cotton

Rice production & import: Despite the growing demand for rice, local production and processing remain low, making CI more dependent on import

Total available rice in CI – Local production and imports (1000s tons)



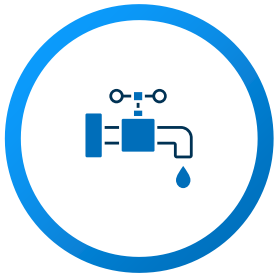
- Lagging local production and increasing demand has led the country to rely heavily on imports
- Stagnating productions is driven in part by low level of mechanization in rice production
- Government launched a new strategy to improve self-sufficiency, following several attempts with limited success

1. SNDR – National Rice Development Strategy
Source: Expert Interview; Interview National Chamber of Agriculture; IFC (2015); SNDR 2020-2030 Plan; WFP (2018); BCG Analysis

Low level of mechanization: Three factors hinder mechanization in the sector and contribute to the stagnating rice production

Difficulties in accessing finances

Players along the value chain (farmers, processors, machinery service providers) have challenges securing loans to finance their projects



Lack of infrastructure

The absence of infrastructure around farming areas (e.g., irrigation, road) prevents development of large-scale production and processing projects

Unsecure land ownership

Farmland is highly fragmented (majority between 0.5-1.0 ha) with unclear process for acquisition / ownership making it difficult for large commercial farms to rise

Implication for machinery suppliers

All

Difficulties in accessing finance hinder sales of high-priced machinery and spare parts

Farming machinery

- Insecurities around land ownership prevent development of commercial farming, thus limiting demand of farming machinery
- Lack of road infrastructure around farming areas can limit access to larger machines, further lowering mechanization

Processing machinery

- Prevalence of small-scale production creates challenges securing sufficient raw materials to ensure full utilization of processing units

The government and Development Partners are pushing to boost mechanization and local processing

New Rice strategy for Côte d'Ivoire 2020-2030[1]

The strategy aims to reach self-sufficiency by 2025 and turn Côte d'Ivoire into a rice exporter in Africa by 2030. 5 measures were defined to reach this goal:

- Repair existing dams and 55,000 ha of rice parcels belonging to the state
- Design and implementation of integrated rice projects (irrigation, seed production, mechanization, support to farmers with intrants etc.)
- Ensure the functioning of rice poles and state-owned processing units (to be passed on to the private sector)
- Production of high-quality seeds in partnership with CNRA[2] and AfricaRice
- Boost mechanization of rice farms via installation of mechanization centers in all production regions, in partnership with Small and Medium Enterprise

CARD Partners

Measure addressing mechanization and processing

All other measures

1. The National Rice strategy is developed with the support of the Coalition for African Rice Development (CARD)

Source: ADERIZ (2020), JICA internal document (2021); Rice for Africa (2021)

Impact of JICA's PRORIL project

Impact of PRORIL phase I (2014-2020)

- 50% increase in production and sales among subject farmers from before PRORIL launch
- Increased participation by financial institutions in rice farming
- Strengthened cooperation among parties involved in the value chain

Expected impact of PRORIL phase II (2021-2025)

- System to ensure sustainable and high-quality agricultural machinery services established
- Post-harvest processing technologies, reduction of post-harvest losses, and improvement of the quality of final products
- Development of financial products for different actors of rice value chain

2 . CNRA – National Agricultural Research Center

Rice farming machinery in Côte d'Ivoire

Rice farming machinery in Côte d'Ivoire: Executive Summary

Overview of the rice farming sector

Large rice harvesting surface and low yield presents a strong upside potential to increase production through mechanization

- Côte d'Ivoire ranks #6 in Africa in rice harvesting surface with 698k ha
- The productivity in yield is low: 50% lower than global average across local crops including rice

Value chain and key players

Given the small farm sizes, the government designed a "contractor" model to centralize machinery activity. Contractors (called PMEAs) provide farming machinery services to farmers or cooperatives. OEMs use local dealers or distributors to sell equipment to the PMEAs

- Large international OEMs: Mainly provide tractors (used for various crops), and rice farming machinery
  - Tractors: 8 major players active in the market, collectively selling ~300 tractors/year. They include Kubota, John Deere, Massey Fergusson, New Holland, Mahindra and TAFE
  - Rice farming machinery: Most demanded machines are power tillers and combine harvesters. Japanese players active in the segment compete mostly with Chinese brands (e.g., Chalion) and Indian brands (e.g., Shakti). Experts estimates Japanese to have a longer lifespan than Chinese machinery (10 years vs 1-2 years) but costs twice as much
- Dealers / distributors: Mix of local companies (e.g., Lassire Industrie, CI Motors) or subsidiaries of international dealers (US - Kanu Equipment, French - Bouchard CI). Dealers often have partnership with regional mechanics and contractors/PMEA
- Contractors/PMEA: 13 government certified PMEAs (small and medium contractors) provide farming machinery services to rice farmers

Challenges in the sector

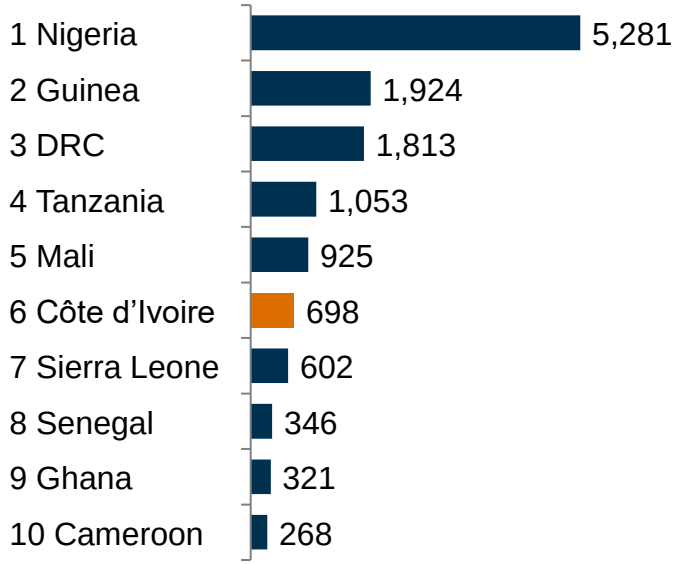
In order to expand the rice farming machinery business, it is critical to address challenges faced by PMEAs, with the support of OEMs, the government and/or development partners

- Access to finance: Contractors/PMEA have difficulties in accessing loan as financial institutions charge high interests (e.g., over 20%). This makes it difficult for them to purchase high-priced machinery
- Maintenance: Challenges in accessing spare parts (especially compared to Chinese brands) and lack of skilled mechanics
- Labour: Untrained operators reduce the life span of equipment (e.g., tractor lasts 10-15 years in Europe vs. 2-3 years in Côte d'Ivoire)
- Infrastructure: The last mile transport infrastructure around rice farming areas needs to be improved

High rice harvesting surface and low yield presents an opportunity for mechanization

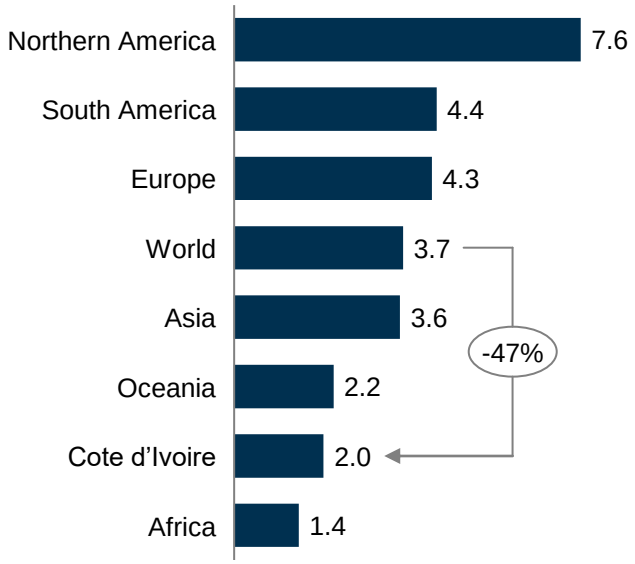
6 in rice harvesting surface in Sub-Saharan Africa

Harvesting surface in 000s ha[1]



50% lower yield observed across food crops (including rice) as compared to world average

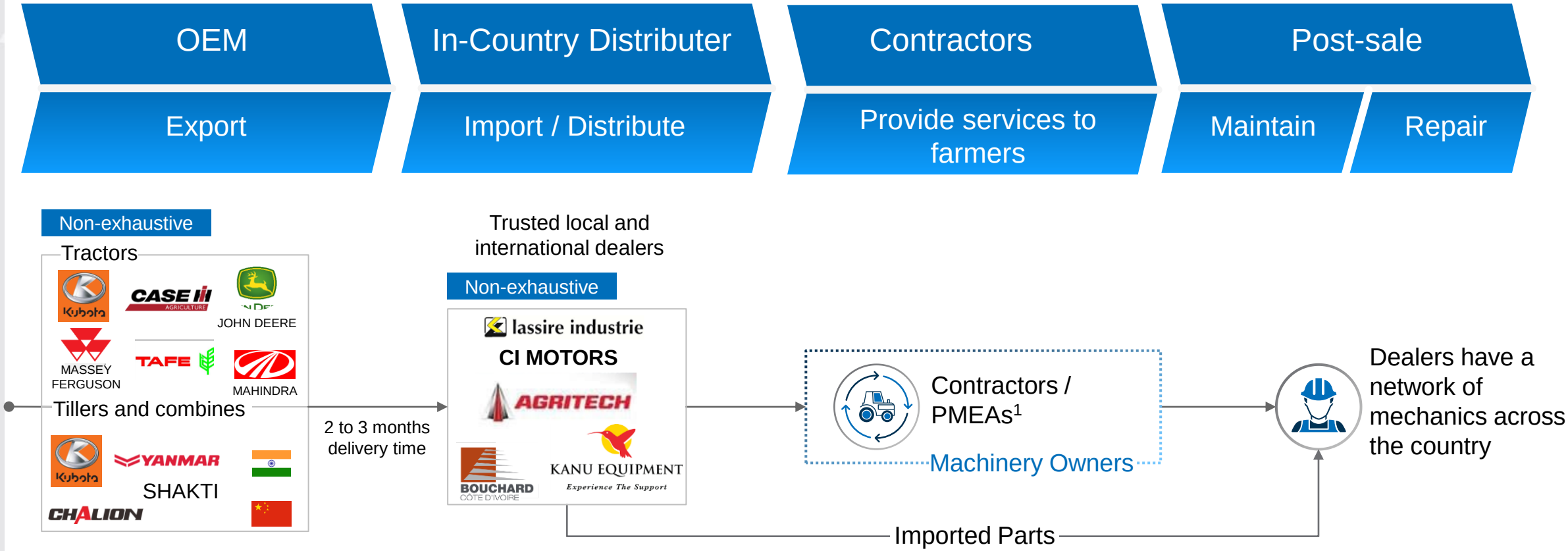
Yield (tons/ha)[2]



Strong upside potential for significantly increasing production through machinery and mechanization

1. FAO 2019 harvesting data 2. FAO aggregated 2014 yield data

Value chain & key players for agro machinery in CI: International players are active in the market, leveraging in-country distributers for contractor sales



1. PMEA – Small and Medium Agricultural Enterprise
Source: Desktop Research; BCG Analysis; Interview with experts

OEMs (incl. Japanese players) active in Côte d'Ivoire partner with distributors

Non-exhaustive

N°	DEALER NAME	COMPANY OVERVIEW & OEMs	EQUIPMENT	DELIVERY TIME[1]	MECHANIZATION SERVICES
1	ATC COMAFRIQUE	• Cars and machines dealer supplying OEM tractors • HQ in Abidjan, 3 franchises: Tropi-Auto (Yamoussoukro), Midas (San Pedro) and SOCOMCI (Korhogo)	☆ Tractors (40hp, 75hp) • Tools: disc plow, sprayer, rotary cutter, cereal seeder • Combine harvester, tracked trailer and mower (on order)	10 weeks	• Does not provide mechanization services but collaborates with PMEA CAP BERE
2	BOUCHARD CI	• Subsidiary of French Group Bouchard • Installed in CI since 2015 • HQ in Abidjan, no regional branches but delivers service within 72 hours	☆ Tractors (35 to 75 hp) • Tools: Disc plow, double axle trailer, sprayer, grader blade ☆ Modular tillers • Combine harvester	8 Weeks	• Does not provide mechanization services
3	CI MOTORS	• Ivorian machinery dealer supplying multiple OEM brands • HQ in Abidjan, collaborates with regional mechanics	☆ Tractors (40-75hp) • Tools: disc plow, rotary tillers ☆ Tillers from China and India ☆ Mowers, threshers, combine harvester • Milling machines, drying and seed treatment system	7 weeks	• Operates as a PMEA servicing rice and oil palm farmers in Yamoussoukro, Dabou, Eloka, Sikensi, Anguedou • Plans to establish a training center
4	GIA AGRITEC	• Ivorian machinery dealer created in 2003 supplying an OEM brand • HQ in Abidjan, partners with regional mechanics	• Tractors (40-75hp) with tools ☆ Tillers	8 weeks (tillers) 12 weeks (tractors)	• Provides mechanization service in Western CI • Plans to expand to the center in collaboration with **JICA**
5	KANU EQUIPMENT	• US based dealer selling an OEM brand tractors and other agriculture machines (in partnership with ALVAN BLANCH) • HQ in Abidjan since 2017, technicians in other regions	• OEM tractors (35-60hp) and tools ☆ OEM tractor (75hp) • Combine harvester • Thresher • Rice milling machines	12 weeks	• Partners with GRACE CI, FERME BIO, CAP BERE, AGRO KROBIS
6	LASSIRE INDUSTRIE	• Ivorian dealer supplying various OEM brands • HQ in Abidjan, branch in Korhogo • Partners with CFMAG for training	☆ OEM tractors (38 to 90hp) with tools • **T**illers • Combine harvester	8 weeks	• Partners with ELOLA PMEA

1. Delivery time – defined as time from order to delivery

Source: JICA PRORIL II Report

☆ Most demanded equipment

PMEAs are critical to the government's mechanization strategy…

PMEAs are service providers who deploy their machinery on farmers' field and help increase productivity. They can also to ensure proper use of machinery

Non-exhaustive

N°	PMEA NAME	LOCATION
1	GRACE AGRICOLE CI	Yamoussoukro, M'Bahiakro
2	CAP BERE	District de savanes, Tonpki, Région du Béré
3	CI MOTORS CORPORATION	District de Yamoussoukro, région du Gbèkè
4	MECA PREST INTER	Région Agneby Tiassa
5	SYLLA PRESTATIONS	Région du Goh
6	AGRONEGOCES	Région du Hambol, région du Gbèkè
7	GARAGE IVOIRE AGRI (GIA)	Région du haut Sassandra, Cavally
8	AGRO KROBIS	Moronou,béré, Goh
9	FERM BIO	District du belier
10	SIMAPRES	GBEKE, IFFOU, HAMBOL, LA ME, INDENIE DUABLIN,
11	SAMI	District des Savanes
12	GBEKE PREST AGRI	GBEKE, HAMBOL, BERE
13	PAYSAN AUTONOME	District de Yamoussoukro

Source: Interviews, PRORIL II, World Bank

…But they face several challenges

Challenges faced by PMEAs

1. **Access to finance:** PMEAs must pay higher interest rates (over 20%). This leads to purchase of cheap machinery and to frequent breakdowns as they often cannot afford to purchase spare parts in a regular basis

2. **Access to spare parts:** PMEAs find it difficult to access spare parts of Japanese machines as compared to Chinese spare parts

3. **Shortage of skills at 3 levels:** shortage of skills affects three levels
   - **Management** – skills to run day to day management activities and deliver high quality service
   - **Operation** – skills to properly operate the machinery
   - **Maintenance** – skills to run regular maintenances on the equipment

Key Findings from focus group discussion with PMEAs[1]

Objectives	• Collect feedback on PMEAs' experience with current machinery • Understand their decision-making process
Duration	3 hours
Participants	6 PMEAs/contractors • 3 to 20 years of experience • Dealers of farming and processing machinery (including one who also provides service to farmers) • Located in the North and West of Côte d'Ivoire
Brands of sold equipment	5 dealers sell Chinese brands 1 dealer sells multiple brands including one Japanese
Farming Equipment	Tractors, threshers, tillers and respective spare parts
Processing Equipment	Sheller and miller

While Japanese brands are perceived as durable, the lack of a broad and reliable spare parts supply network and higher purchasing price compared to Chinese machines create a challenge

1. PMEAs/contractors using Japanese machines perceive it as high quality, but find it difficult to acquire spare parts in time and perceive Japanese machines as more expensive
   - Most signaled the need to often go to Abidjan to acquire spare parts

2. PMEAs indicated no explicit lower quality perception for Chinese machinery
   - PMEAs highlighted the ease of finding spare parts for Chinese machinery, and the lower initial cost of Chinese machines (relative to Japanese machines)

3. All highlighted challenges in educating farmers for appropriate usage and maintenance
   - Frequent breakdown occur due to inappropriate basic maintenance (e.g., wrong quantity of oil, maintenance at infrequent intervals)

Imperative for farming machinery suppliers to:

- Build an effective spare parts supply network
- Partner with training facilities and/or local technology companies (e.g., I2T – Ivoirian Institute of Tropical Technology) to provide timely maintenance service

1. PMEA – Small and Medium Agricultural Enterprise

Case study: Large international tractor manufacturer strategy in Nigeria

Non-exhaustive

Player and Context

- In 2018, an international tractor manufacturer has signed a MoU with the Nigerian Government to supply 10,000 tractors to rural farmers across Nigeria
- The agreement was enabled by Agricultural Mechanisation and Equipment Leasing Company (NAMEL) and the Federal Ministry of Agriculture and Rural Development (FMARD)

Key successes factor

- Strong government collaboration/support
  - MoU to supply 10,000 tractors
  - This initiative is being subsidized by the government through reduced interest rates loans to private tractors lessors
- The Company partnered with TATA for the distribution of its tractors: TATA often sells tractors to private sector hiring services who enjoy government support to purchase tractors. Hiring services then lease these tractors to farmers to support specific work
- Partnered with Alluvial, a Nigerian company that uses an innovative service delivery model (SDM) to support smallholder farmers by providing training, technology, land preparation, irrigation, input supplies, and market access
- Partnered with Hello Tractors, who use a tractor monitoring device to tell when maintenance is required and acts like an "Uber" for tractor owners/farmers

Learnings for Côte d'Ivoire including Japanese companies

- Strong government collaboration/support
  - Japanese companies need to seek opportunities to partner with the Government to unlock the market
- Enabling downstream value chain activities and after-sale support
  - Japanese companies need to have a clear after-sales strategy before entering Côte d'Ivoire. Partnering with a player who offers an innovative after-sales is an option (e.g., Hello Tractors in the case of Nigeria)
- Strong local partnerships
  - Identifying local champions and working with them can be beneficial in the long-term (e.g., Alluvial in the case of Nigeria)

Source: All Africa, 2018; Africa Scanning; Hello Tractor; Reuters, 2018; Yahoo Finance, 2019; Financial Times, 2018; BCG Analysis

Rice processing in Côte d'Ivoire

Rice processing machinery in Côte d'Ivoire: Executive Summary

Overview of rice processing sector and key players

- Processing is dominated by mini-processors (less than 2 tons per hour units). Industrial processing is at ~2%, presenting a strong upside potential
  - Industrial processors typically operate at ~30% capacity due to limited production of raw materials and cyclical nature of production
- Processing machinery market is highly fragmented with several small Chinese and Indian brands active
  - International players including Satake, Bühler, Avlan Blanch and Riela all offer end-to-end crop processing machinery including rice milling

Government actions and potential opportunity for Japanese players

- CI government and machinery players both stand to benefit from an increase in industrial processing capacity
  - Government: High prevalence of mini-processors creates an obstacle to the ambitious targets for production growth
  - Machinery players: Increase in industrial processing would create additional opportunities for machine providers
- As part of its effort to promote industrial processing, the government secured thirty (30) industrial units, funded by EXIM Bank of India
  - 15 units have been installed (of which 5 are in operation), but local expert state that funding issues are preventing the installation of remaining units
  - Few processors have purchased units from the government under this scheme: SOCOMCI, GAN-LOGIS, and Oriane Industries are confirmed buyers
- *To be confirmed:* According to local expert, Sania (subsidiary of agribusiness leader SIFCA) is preparing to invest in industrial rice processing plant

Challenges in the market and potential support by Development Partners including JICA

Pole leader model could be key to develop industrial processing

- Pole Leaders are responsible for increasing rice production and ensure processing, as well as building mechanization centers (working with PMEAs)
- They can be a key player in the decision-making process for machinery purchase

Despite its potential, the implementation of the Pole leader model has not delivered the expected results

- Failure to deliver results driven by lack of financing model, lack of criteria for the selection of Pole Leaders, absence of performance metrics and of a clear distribution of roles between the government and pole leaders
- The model is currently under review by the government to determine how to structure it moving forward

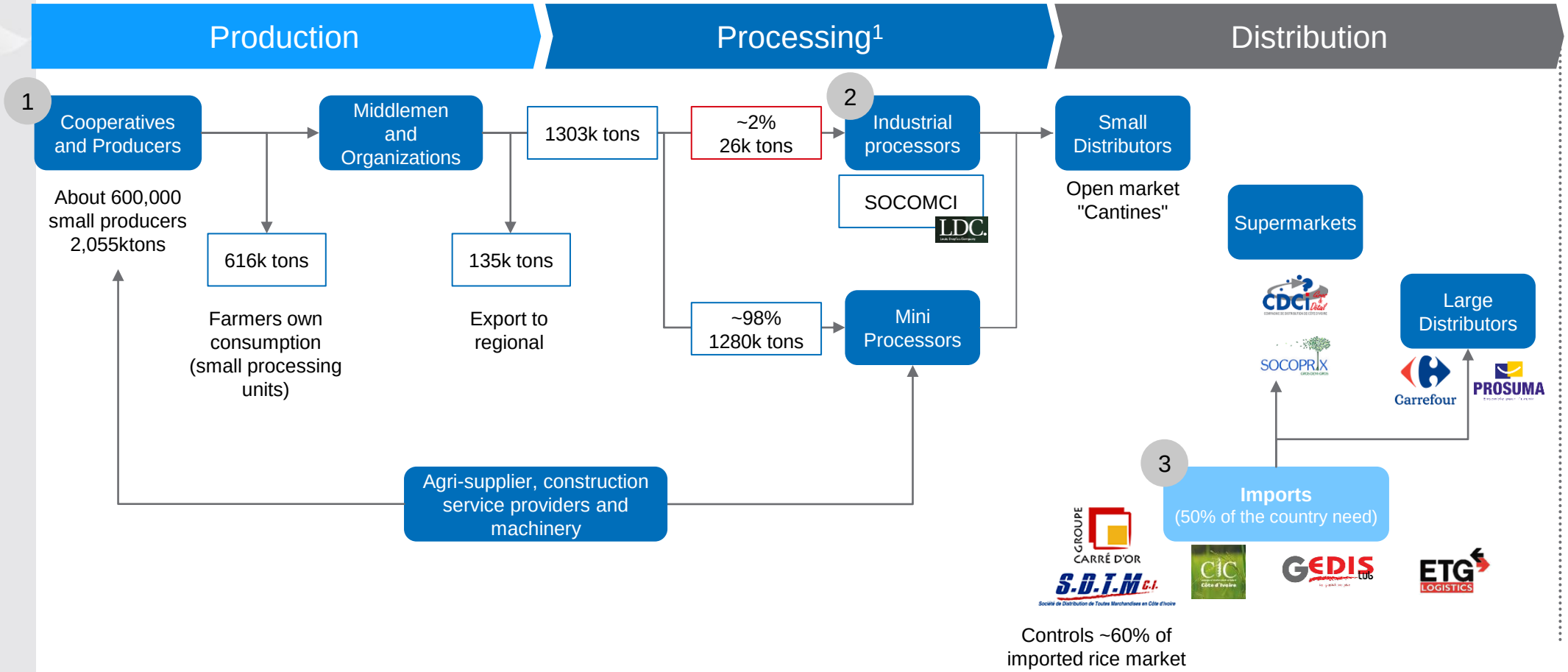
Development partners like JICA can support in a few areas

- Help clarify and pressure-test the role of different stakeholders involved in the financing and execution of the model
- Capacity building for ADERIZ, the government implementation agency

Rice processing value chain in CI: Currently industrial processing is marginal (only ~2%) presenting strong upside potential

Rice ecosystem in Côte d'Ivoire (using 2016 data)

Non-exhaustive



1. Production is dominated by small producers with small land size (ranging from 0.5h to 3ha)
2. Opportunity to grow industrial processing capacity
3. Rice imports play significant role in meeting demand

1. 2nd level processing not included – hydrocarbons, energy, beer and flour 2. Industrial processors – more than 2 tons per hour 3. Mini processors – less than 2 tons per hour
Source: WFP (2018); JICA Internal report

A few large processing machinery suppliers are active in the market, while there is a strong presence of Chinese, Indian and local players for small machinery

Large international end-to-end solution providers[1]: Typically supply larger processors

Non-exhaustive

Company	Origin	Main offering for rice processing
Satake Europe	Japan	End-to-end solution includes packaging but excludes drying
Bühler	Germany	End-to end solution including drying
Alvan Blanch	UK	End-to-end solution excluding drying
Riela	Germany	Offers end-to-end solution and specializes in drying

Small machinery providers: Typically supply mini-processors

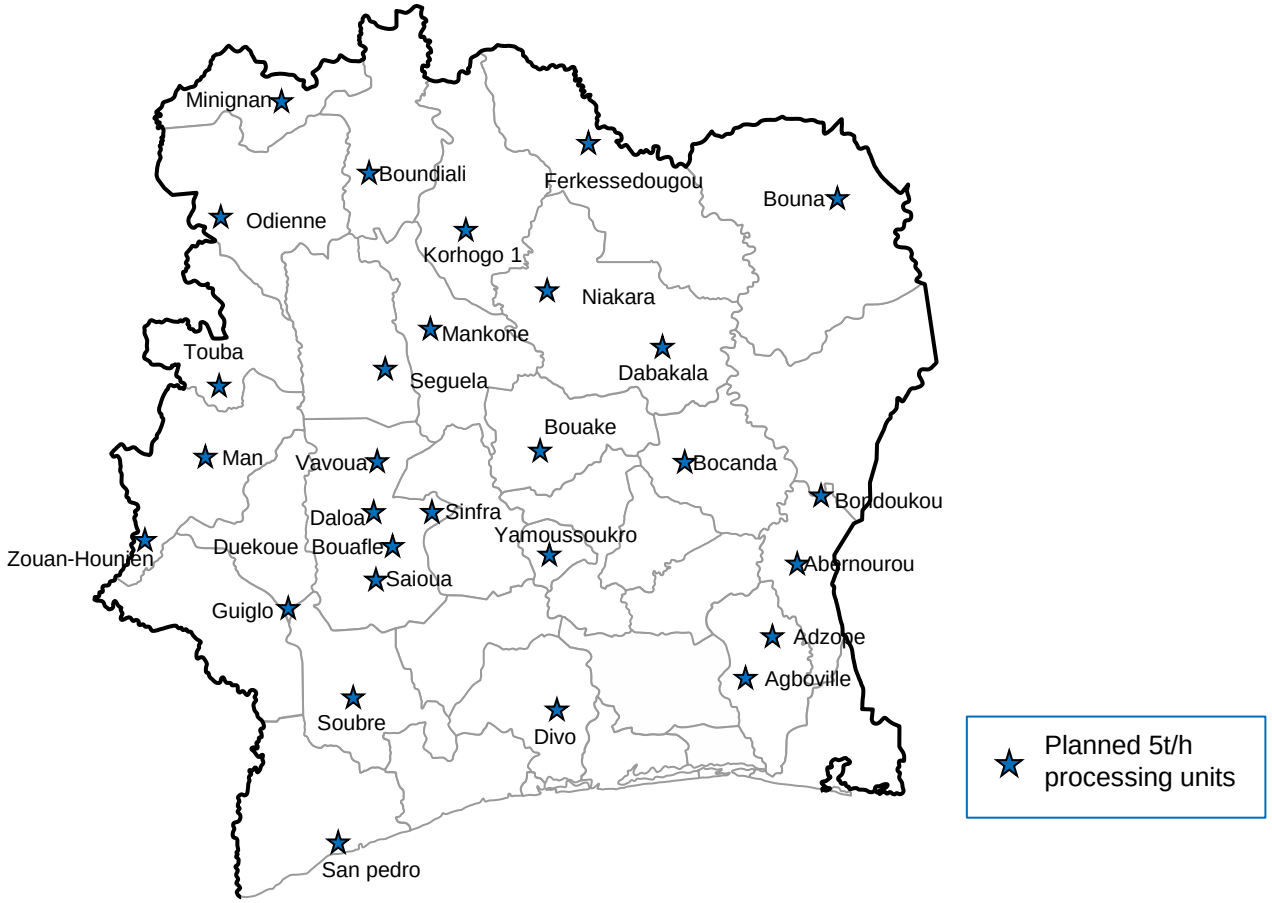
- This segment is dominated by Chinese and Indian brands followed by Turkish players who have recently entered the market.
- There is also a limited number of local players providing rice milling machines

1. Many large international players provide multiple crop processing solutions; we have not identified the full scope of their activities in Côte d'Ivoire

Source: JICA internal report; Interviews

The government is taking steps to promote industrial processing and secured investments for 30 5t/h units

Location of the 30 processing units financed by EXIM Bank of India[1]



- As part of its effort to promote industrial processing, the government secured thirty (30) industrial units, funded by EXIM Bank of India
- 15 units were installed, 5 of which are in operation although not at full capacity
- Funding issues are preventing the installation of the remaining units, according to local expert
- Few processors have purchased units from the Government under this scheme: SOCOMCI, GAN LOGIS, and Oriane Industries are confirmed buyers

1. EXIM – Export-Import Bank of India
Source: Expert Interviews; Interview National Chamber of Agriculture; IFC (2015); SNDR 2020-2030 Plan; USDA (2020); BCG Analysis

CI government and machinery players both stand to benefit from an increase in industrial processing capacity

CI Government

- High prevalence of mini-processors creates an obstacle to the ambitious targets for production growth
- More centralized production model enables faster growth and greater control over the product quality
- Central 'Pole leader' is designed to play a critical role in the industrialization of the sector

Processing machinery providers

- Machinery providers currently working with distributors who navigate complex network of small individual processors
- Increase in industrial processing would create additional opportunities for machine providers
- Central 'Pole leader' model has potential to simplify go-to-market model with single decision maker for machinery purchase

Pole leader model could be key to develop industrial processing, but has not yet delivered results – Support from Development Partners can help improve the model

Pole leaders could be key decision makers in machinery purchase

- Pole leaders are responsible for purchasing all the paddy rice in their zone and ensuring that the rice is processed
- They can own their own processing units and are therefore potential buyers of machinery (e.g., SOCOMCI, a pole leader, acquired 4 processing units from the government)
- Alternatively, they can attract investors to build processing units within their pole

Implementation of the Pole leader model has not delivered the expected results

- Designed in 2012, the pole leader model has had limited success so far
- The strategy is lacking a detailed implementation roadmap that includes:
  - Financing model to support the activity of pole leaders
  - Criteria for the selection of pole leaders
  - Performance metrics
  - A clear distribution of roles between the government and pole leaders
- As of today, the model is under review by the government to determine how to structure it moving forward

Support from Development partners can help improve the model by:

- Helping to clarify the role of different stakeholders involved in the funding and execution of the model
- Supporting capacity building of Rice Development Agency (ADERIZ) to ensure successful implementation of the model

Source: ADERIZ (2020); BCG Analysis

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Cocoa: Assessment of the Agro-processing / machinery sector

Côte d'Ivoire is the largest producer of cocoa beans and cocoa liquor in the world

2.2M tons of cocoa beans were produced in 2019

Rice

Cocoa

Cashew

Rubber

Cotton

Cocoa processing in Côte d'Ivoire: Executive Summary

Overview of cocoa processing sector and key players

Côte d'Ivoire is the largest producer and exporter of cocoa beans globally, with most of the production being processed abroad

- 25% of cocoa production goes through first-level processing locally. The remainder is exported, with the key destination being The Netherlands (18%), the USA (9%), Belgium (8%) and Malaysia (7%)
- Cocoa processing in Côte d'Ivoire is dominated by a small number of global players including Barry Callebaut, Olam, Cargill and CEMOI which account for ~80% of current installed capacity
- Short to medium-term investment opportunities are in the first level processing given that there is limited opportunity in chocolate manufacturing as only 4% of the global consumption is in Africa

Challenges in the market and actions taken by the Government

Low local processing in Côte d'Ivoire is caused by high Investment and operational costs when compared to Europe and the US

- High costs is driven by the accumulation of high costs of labor, utilities, logistics, security, transportation, port logistics and taxes

To offset these high processing costs, the government has provided a series of benefits to companies processing cocoa locally

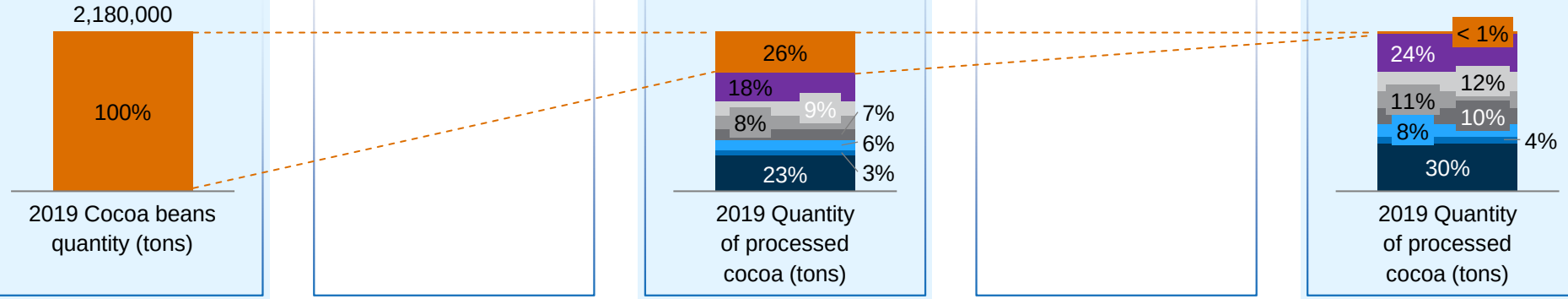
- The main incentive is the differentiated export tax (DUS) with lower tax rates for processed products (14.6% for cocoa beans vs 6.0% for cocoa liquor)
  - Already established companies (including Japanese companies) stand to benefit the most from this initiative
  - Some large processors like Barry Callebaut and Cargill have committed to increasing their processing capacities

However, many investors are still reluctant due to short duration (3-5 years) of incentives

- Expansion of the incentive period could provide reassurance to investors, and help the government achieve its target

Cocoa value chain: While Côte d'Ivoire is an important producer of cocoa beans, only ~1/4 of production is processed locally

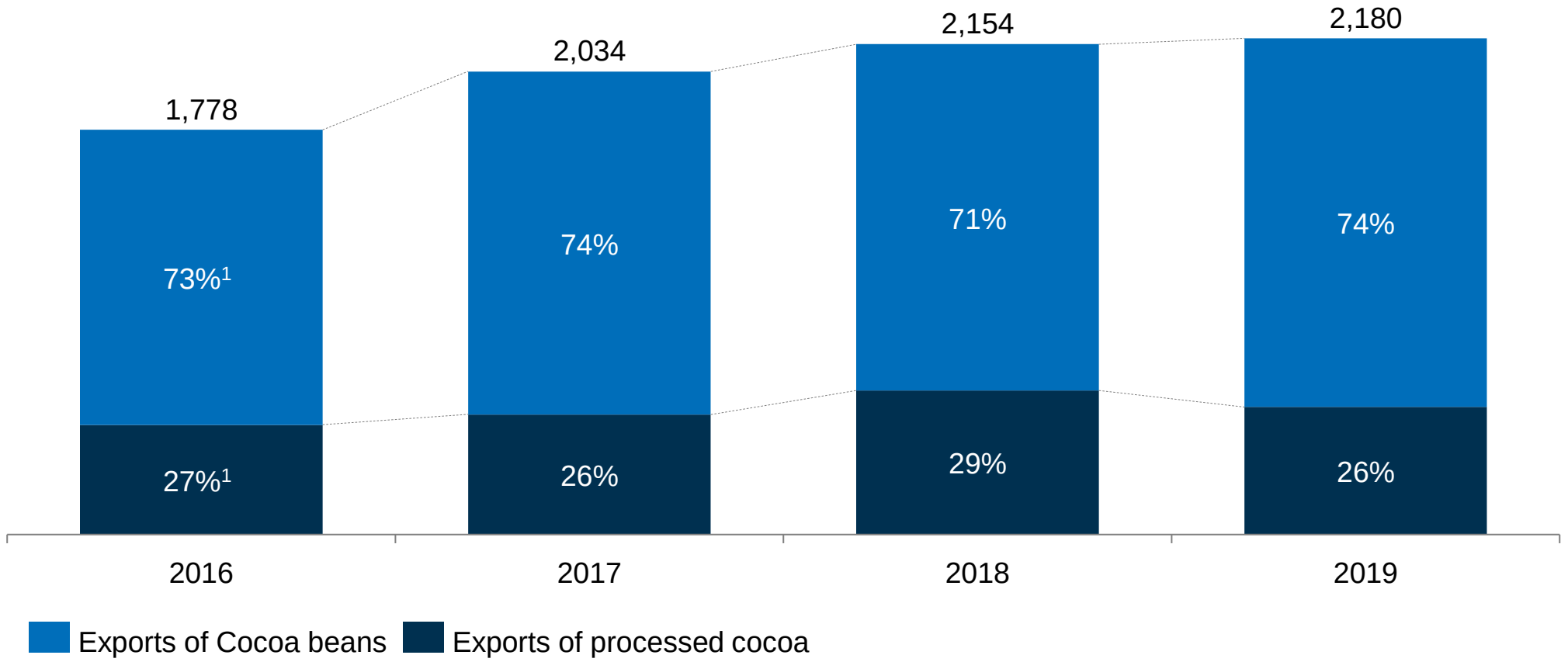
Production and pre-processing		1st level processing		2nd level processing	
					
Production and pre-processing	Cocoa bean Export	Production of semi-finished goods	Cocoa powder, butter or liquor export	Manufacturing	Retail
Plant growing Cocoa pod harvesting Bean fermenting Drying	Bagging Trading/Export	Roasting, grinding Production of cocoa products (liquor, powder, butter) *Optional: solidifying*	Storage Loading Transport Shipping	*Optional: Melting* Production of industrial chocolate Dairy, confectionary and bakery products	Transport Unpack Display Promotion Sales



Source: FAO (2020); IFC (2015); Interview with Coffee Cocoa Board

Share of cocoa production processed locally has remained steady since 2016

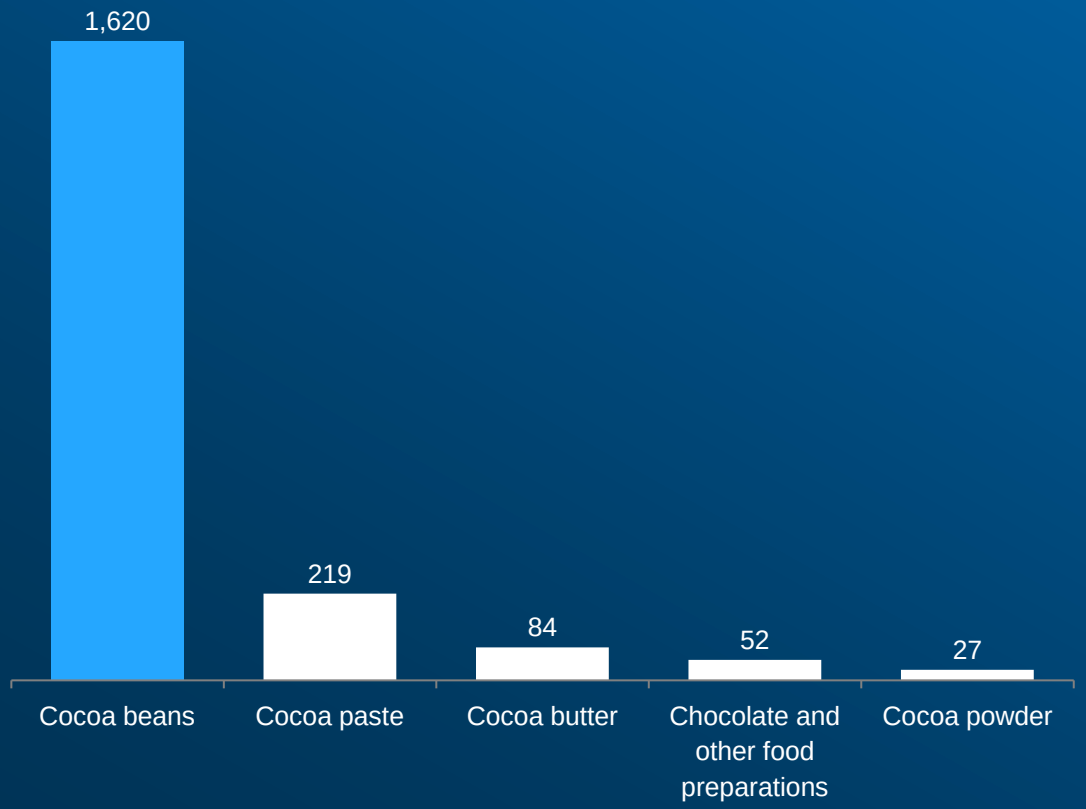
Exports of cocoa products (1000s tons)



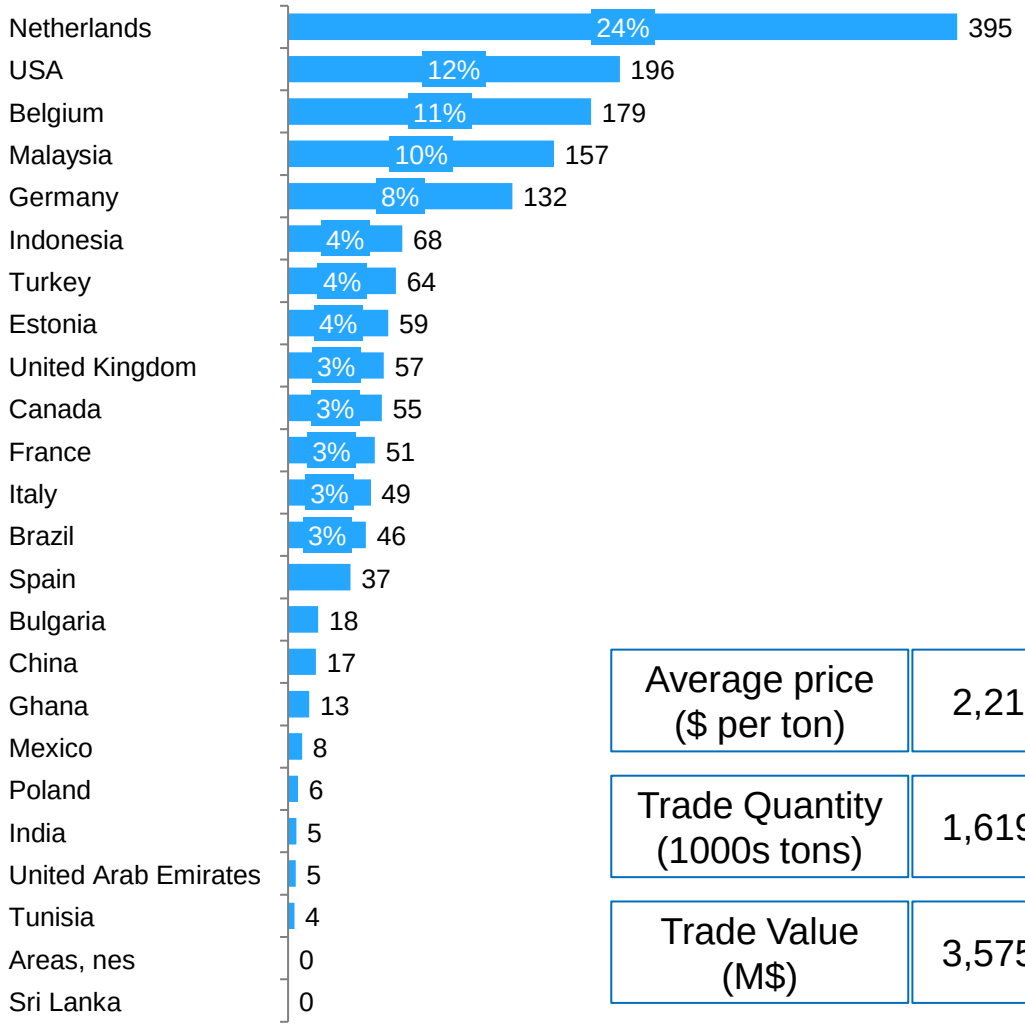
1. Estimates
Source: Un Comtrade, FAO

24% of the Ivorian Cocoa beans have been exported to The Netherlands; the USA (12%), Belgium (11%), Malaysia (10%) and Germany (8%) follow

Exported quantities (1000s tons)



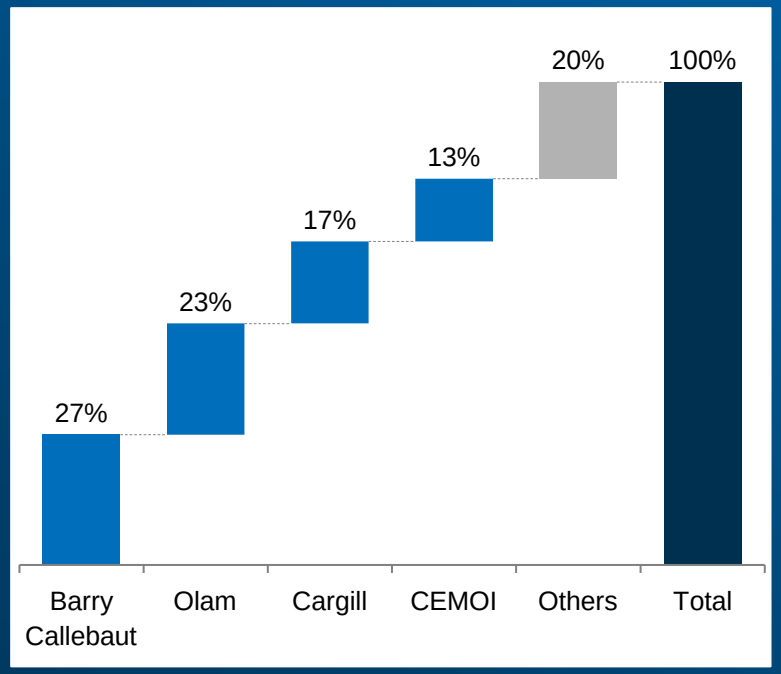
Exported cocoa beans quantities (1000s tons)



Average price ($ per ton)	2,21
Trade Quantity (1000s tons)	1,619
Trade Value (M$)	3,575

Source: UN Comtrade (2019)

Cocoa processing dominated by small number of global players



The increase of cocoa 1st level processing capacity will be highly influenced by the global leaders installed in Côte d'Ivoire

Source: IFC (2015); Cocoa Barometer 2020

Cocoa Production in Côte d'Ivoire	1st level processing of Ivoirian Cocoa	2nd level processing (Chocolate manufacturing)	Chocolate distribution

900,000 smallholder farmers

A few companies

Processors
Barry Callebaut, Olam, Cargill, etc.

Processing abroad

Transport

1.60M tons (73%)

Export

Netherlands, Belgium, USA, Germany, etc.

Processing

Farming

~2.20M tons

Local processing

Transport

0.60M tons (27%)

Processing

Export

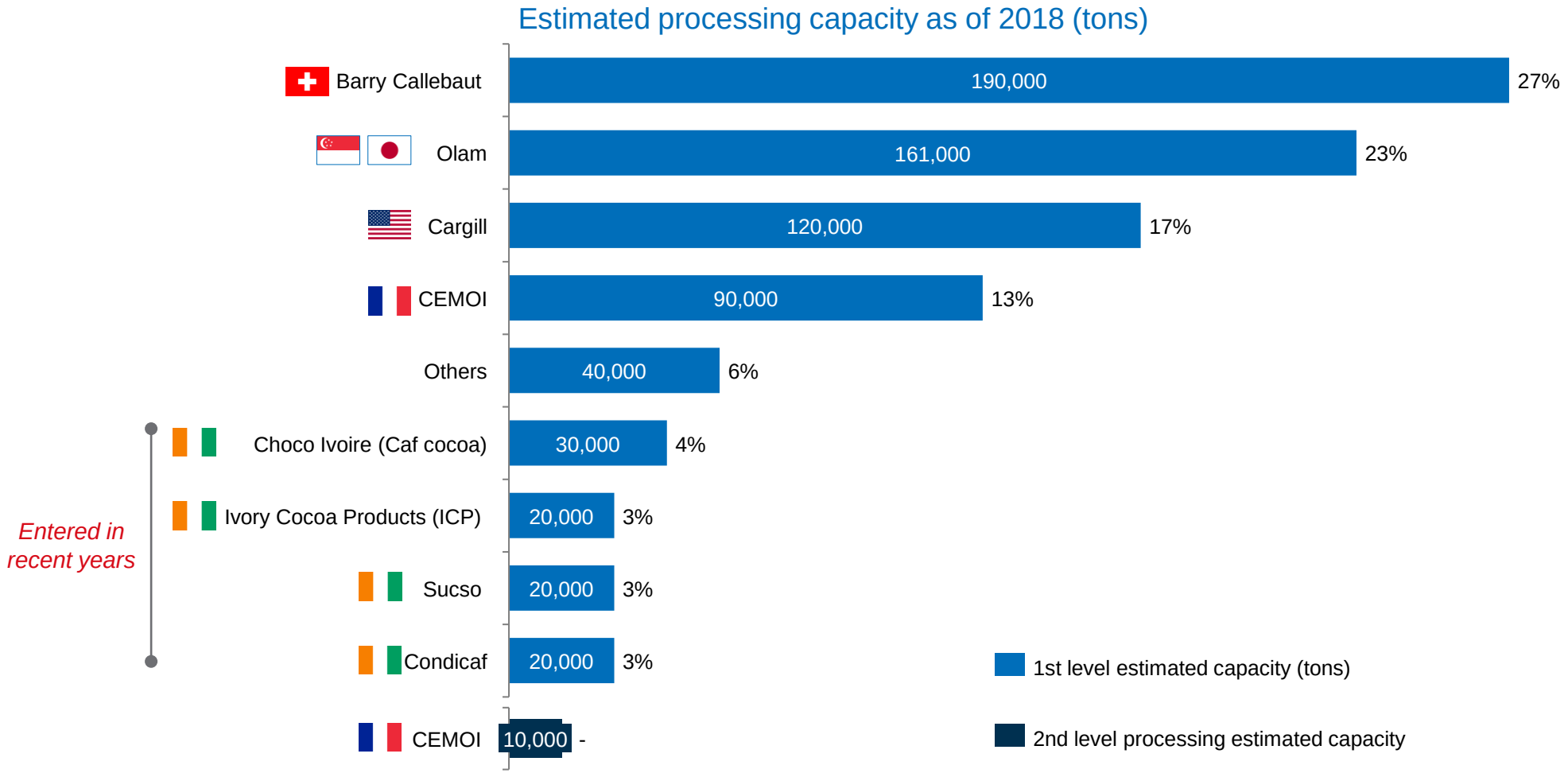
Netherlands, UK, France, Germany, etc

Traders
Cemoi, ETG – Cargill, Barry Callebaut, Olam etc.

Manufacturing
Mondelez, Mars, Nestle, Hershey, Ferrero, Lindt & Sprungli, etc

Retailers
Aldi, LidI, Ahold, Marks & Spencer, Tesco, Carrefour, Walmart, etc.

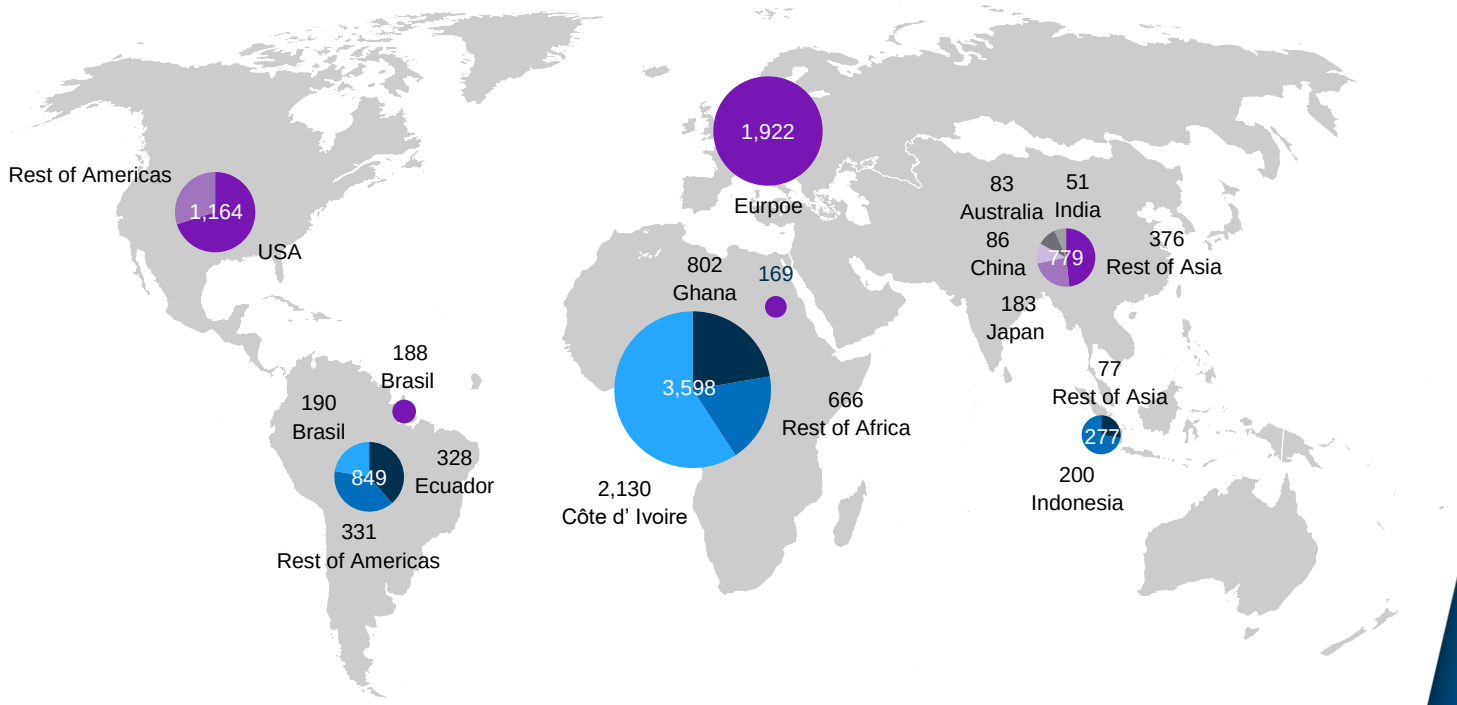
Processing in Côte d'Ivoire is dominated by four large global players who own 80% of the ~690,000 tons of 1st level processing



Source: IFC (2015); Press Search (2019)

Limited opportunity in 2nd level processing as only 4% of chocolate consumptions worldwide comes from Africa

Cocoa production in 1,000 tonnes 2019/20 (forecast)
Domestic consumption of cocoa in 1,000 tonnes 2018/19



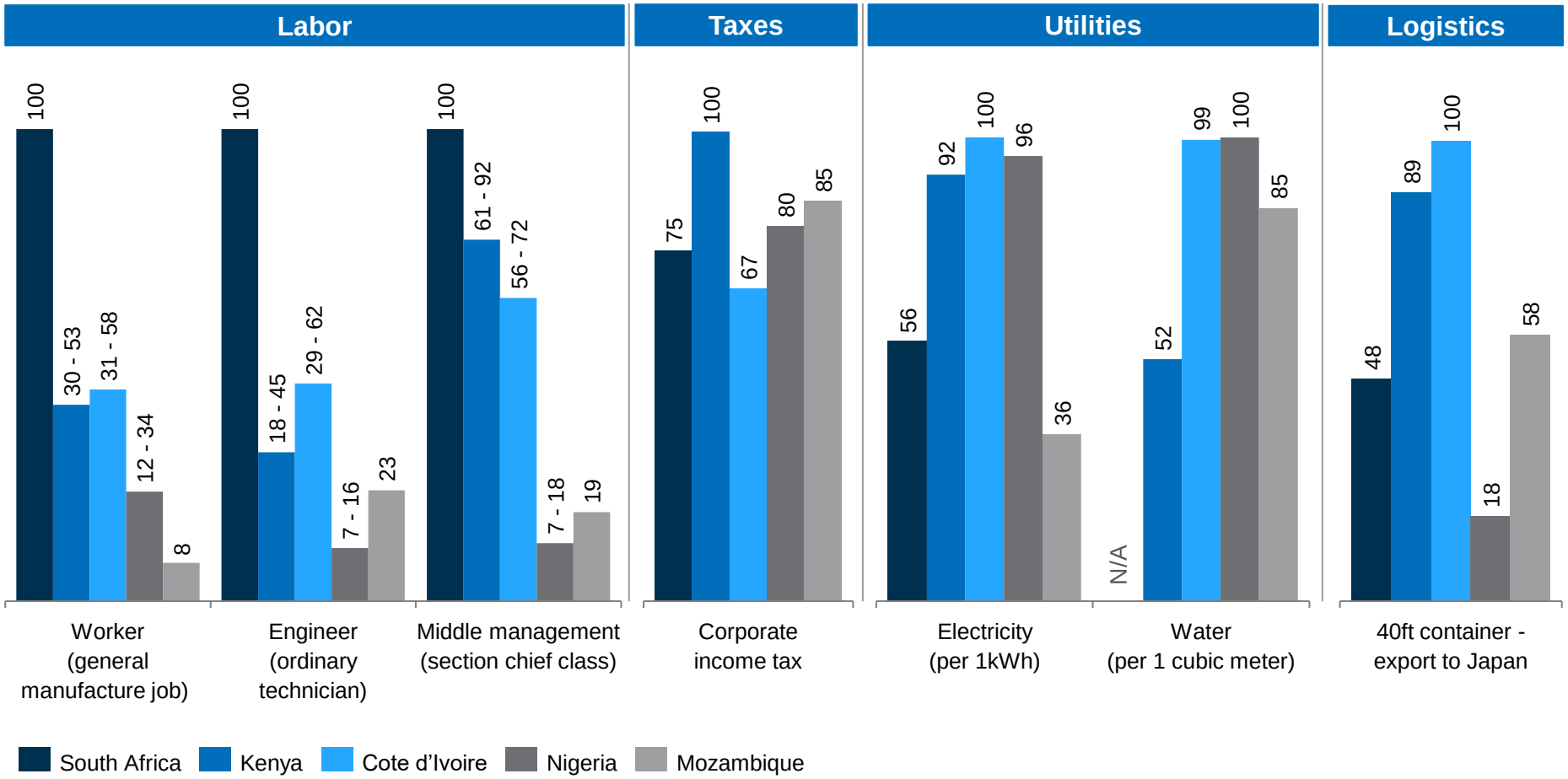
- Low demand for chocolate products in Africa, making large scale manufacturing unattractive
- Short to medium-term investment opportunities are in the first level processing

Source: ICCO (2020); Cocoa Barometer 2020; BCG Analysis

Low level of local 1st level processing driven by high operating costs, stemming from an accumulation of factors

Cost benchmark: Cost index relative to highest cost country *(highest cost country is 100)*

Non-exhaustive



Source: JETRO Cost benchmark (2020); Expert interview; BCG analysis

Additional factors causing high cost of processing:

- Cost of security
- Transportation costs (driven by road infrastructure)
- Port logistics costs

While incentives provided by the government are helping to increase processing of cocoa, the temporary nature is perceived as risky by many investors

Incentives aim to increase 1st level processing from 26% to 50% by 2025

- Reintroduction of a differentiated export tax (DUS) with favorable rates for processed products (applicable for companies which commit to increasing their capacity by at least 7.5% within 5 years)
  - Cocoa beans: 14.6%
  - Cocoa butter: 11.0%
  - Cocoa liquor: 6.0%
  - Chocolate: 0.0%
- Establishment of a specific window for export rights exclusively targeted at processors
- Customs exemption on imported machinery for new investors

Some large processors have already committed to increasing their capacities

Government measures have had some success as some established processors committed to invest in processing capacity increase

Examples

- Barry Callebaut, the largest cocoa beans processors in the country, projects to increase the capacity of its plant by 40%, from ~190,000 tons to ~270,000 tons in 2022[1]
- Cargill, the third largest cocoa beans processor, plans to invest $100M to increase its processing capacity by 50%, from ~120,000 tons to ~180,000 tons

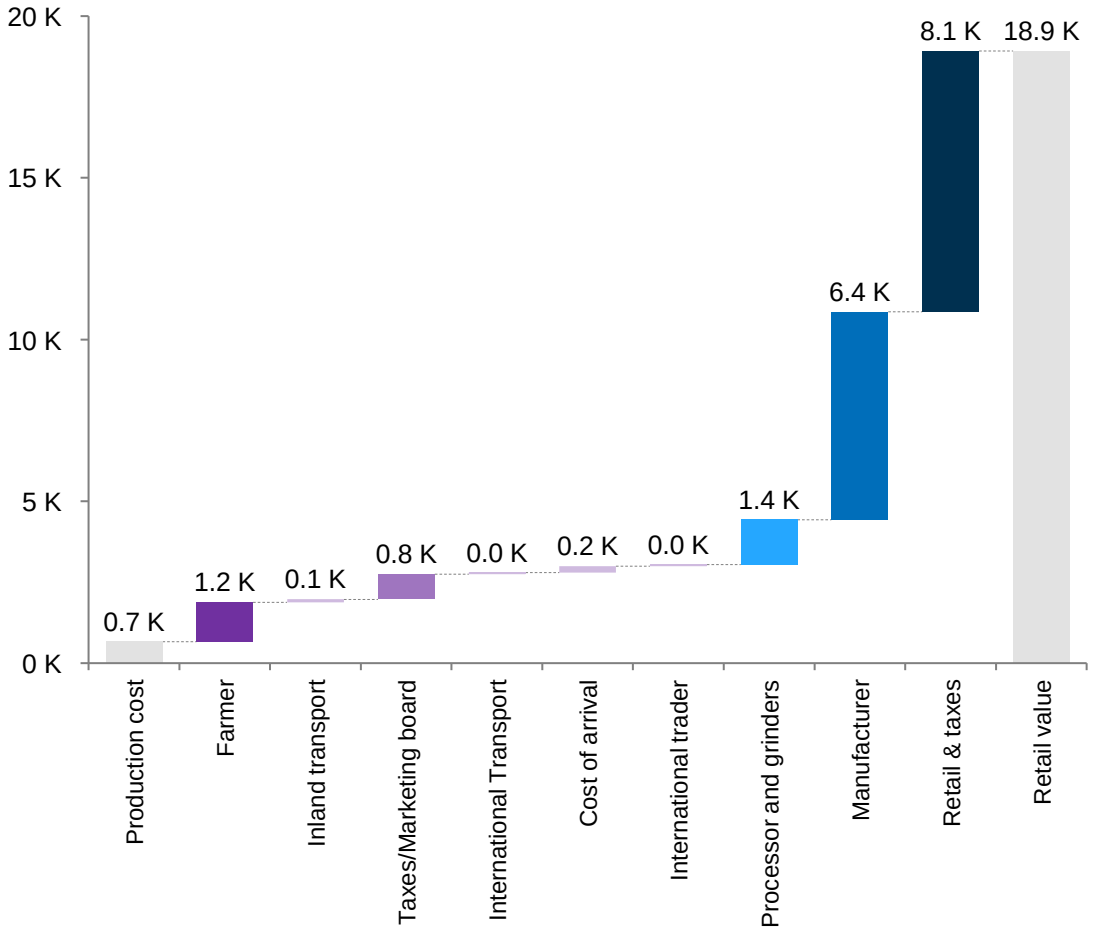
However, many investors are still reluctant due to short duration of incentives

- 5 years incentives are perceived as risky by investors (despite being renewable)
- Expansion of the incentive period could provide reassurance to investors, and help the government achieve its target

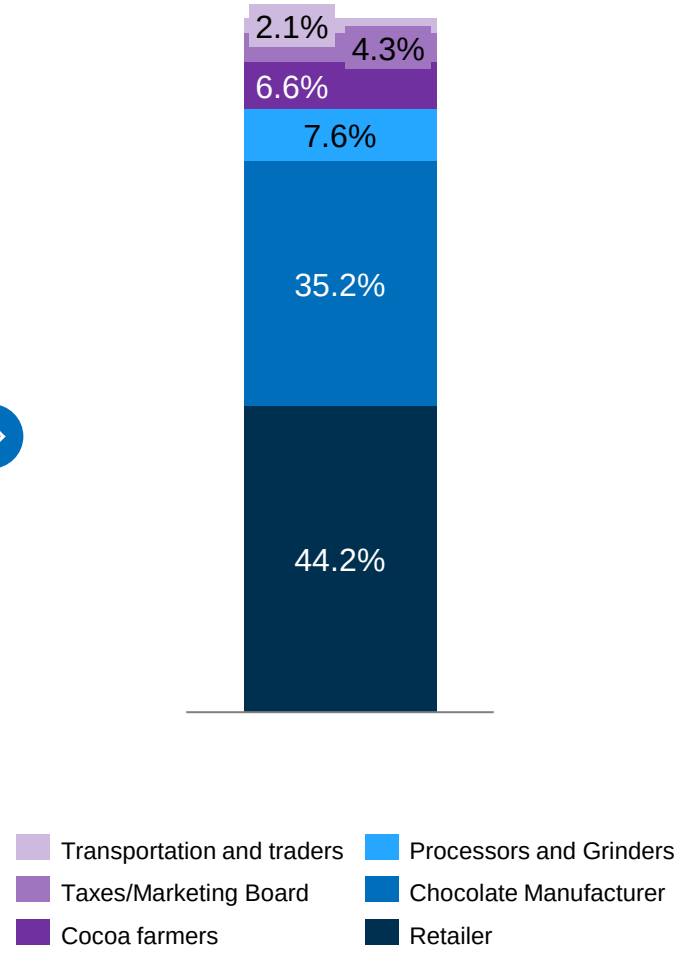
Source: World Bank (2019); Interview with Coffee and Cocoa Board (2021); Interviews with the private sector; Press Search

Back-up: Retailers and manufacturers collect ~80% of the value in the cocoa business

Value Distribution (US $ per ton of cocoa bean, 2014)



Share of profits by type of players (US $ per ton of cocoa bean)



- Increasing 1st level processing of cocoa helps to capture an additional 7.6% in the value
- A larger opportunity in terms of value resides in 2nd level processing with the manufacturing of chocolate

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Cashew: Agro-processing

Côte d'Ivoire is the largest producer of raw cashew nuts in the world, producing 20% (~800,000 tons) of the global cashew production in 2019. India is second with 18.7% (~740,000 tons).

Rice

Cocoa

Cashew

Rubber

Cotton

Cashew processing & machinery in Côte d'Ivoire: Executive Summary

Overview of cashew sector and key players

Côte d'Ivoire is the largest producer of raw cashew nuts globally, but cashew processing is primarily done in India and Vietnam

- Côte d'Ivoire is the largest producer of raw cashew nuts in the world, with 20% of the global production. India is second with 18.7%
- Close to 90% of the Ivoirian cashew is processed abroad: 56% in Vietnam and 28% in India (as of 2018)
- Olam is the largest processor in the country, accounting for 40% of locally processed cashew (the remaining capacity is shared among dozens of small-scale players)
- There is limited opportunity for Japanese machinery suppliers, given that Japanese companies have little advantage due to lower level of sophistication required

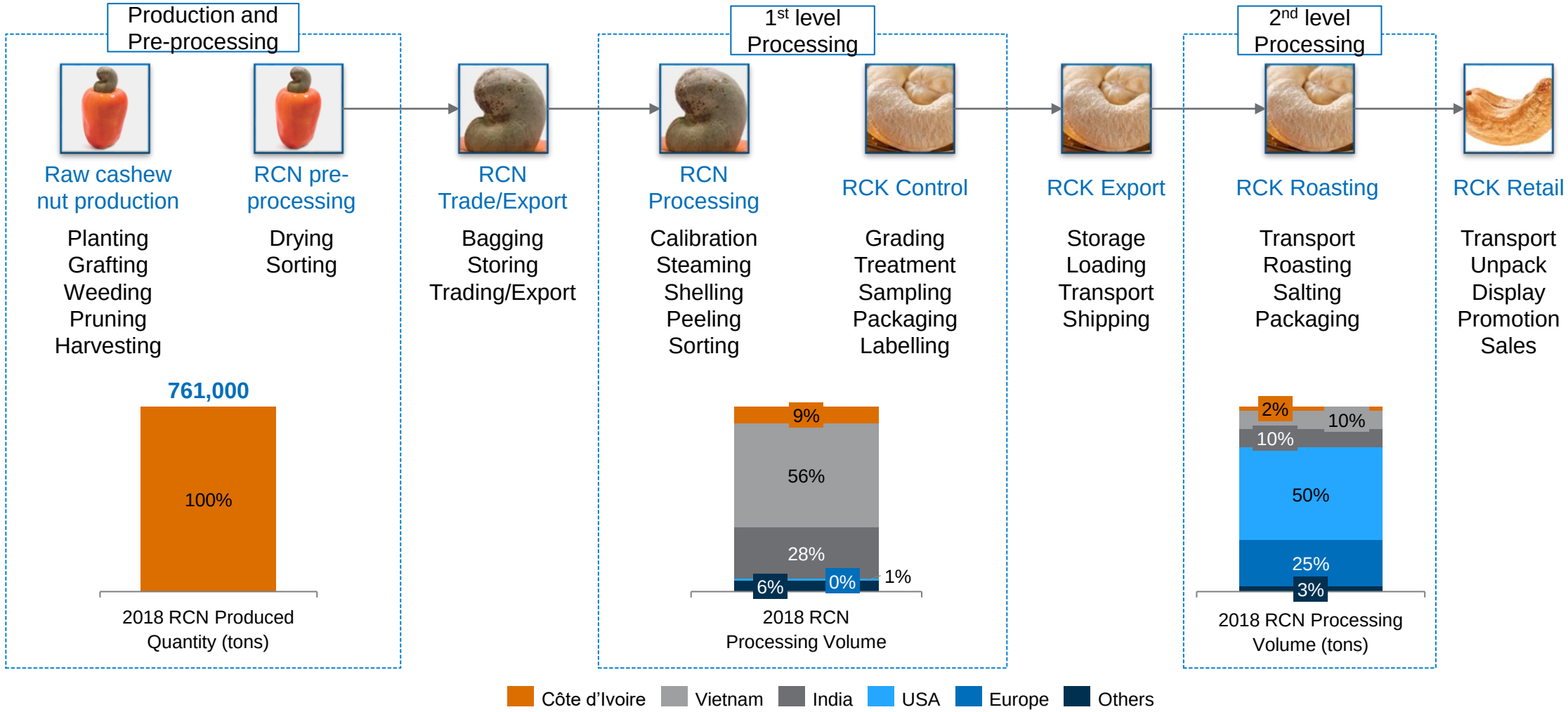
Challenges in the market

- Côte d'Ivoire raw cashew nuts processing cost is highest among peers, being ~3x as high as the one in Vietnam
  - High cost of processing can be explained by lower labor productivity, cost of machinery and spare parts and limited demand for by products and lower quality of cashew nuts
- Cashew nut processing needs to be done at a high standard (at least 65% of whole cashew) to be more profitable than exporting raw cashew nuts
  - Achieving high standard requires a skilled labor force and the use of processing machinery

Actions taken by the Government and support from Development Partners

- The government has provided a series of benefits for companies who agree to process cashew locally, including tax credits and custom exemption on machinery and bonus of 400 FCFA per kilogram of exported processed cashew nut
- The world bank provided a 285M$ loan to support the development of the value chain including the increase of processing capacity

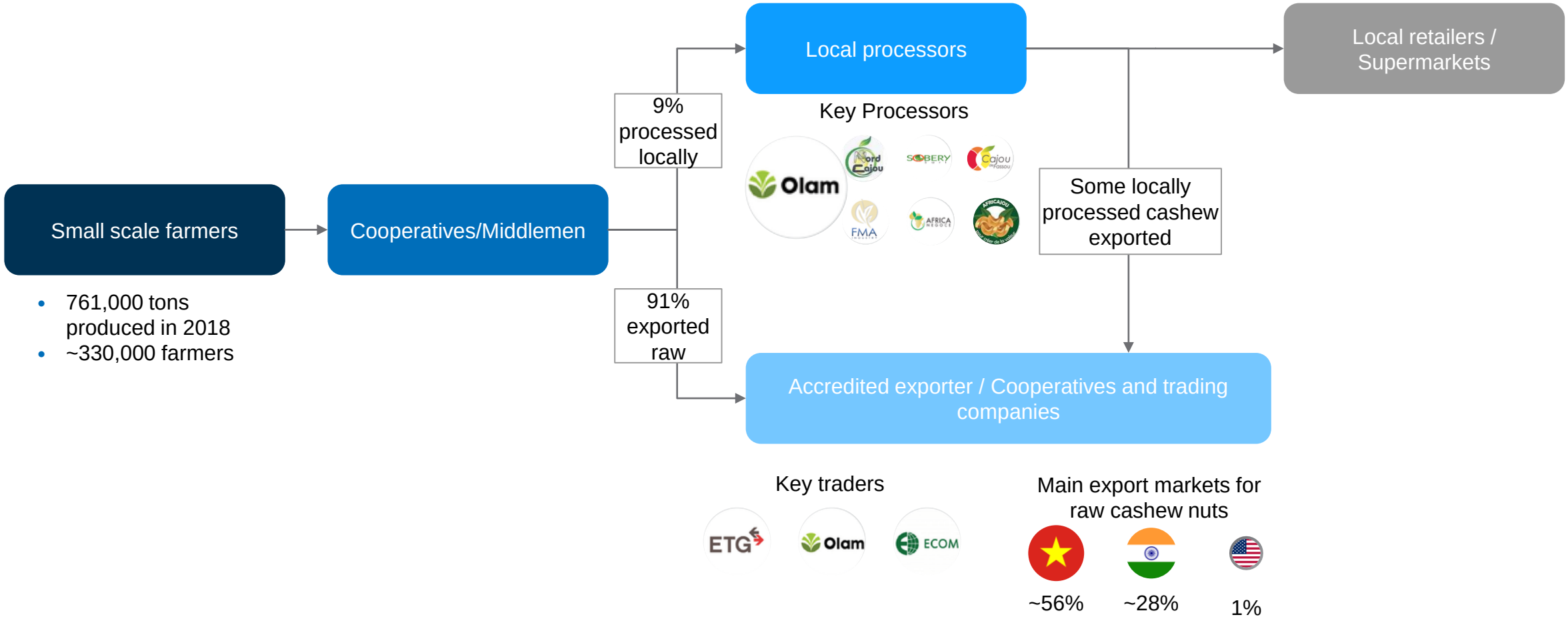
Currently Côte d'Ivoire processes only 9% of its raw cashew nut production presenting a strong upside potential



1. RCN – Raw Cashew Nuts 2. RCK – Raw Cashew Kernel
Source: Dutch Ministry of Foreign Affairs (2018); Asoko Insights; BCG Analysis

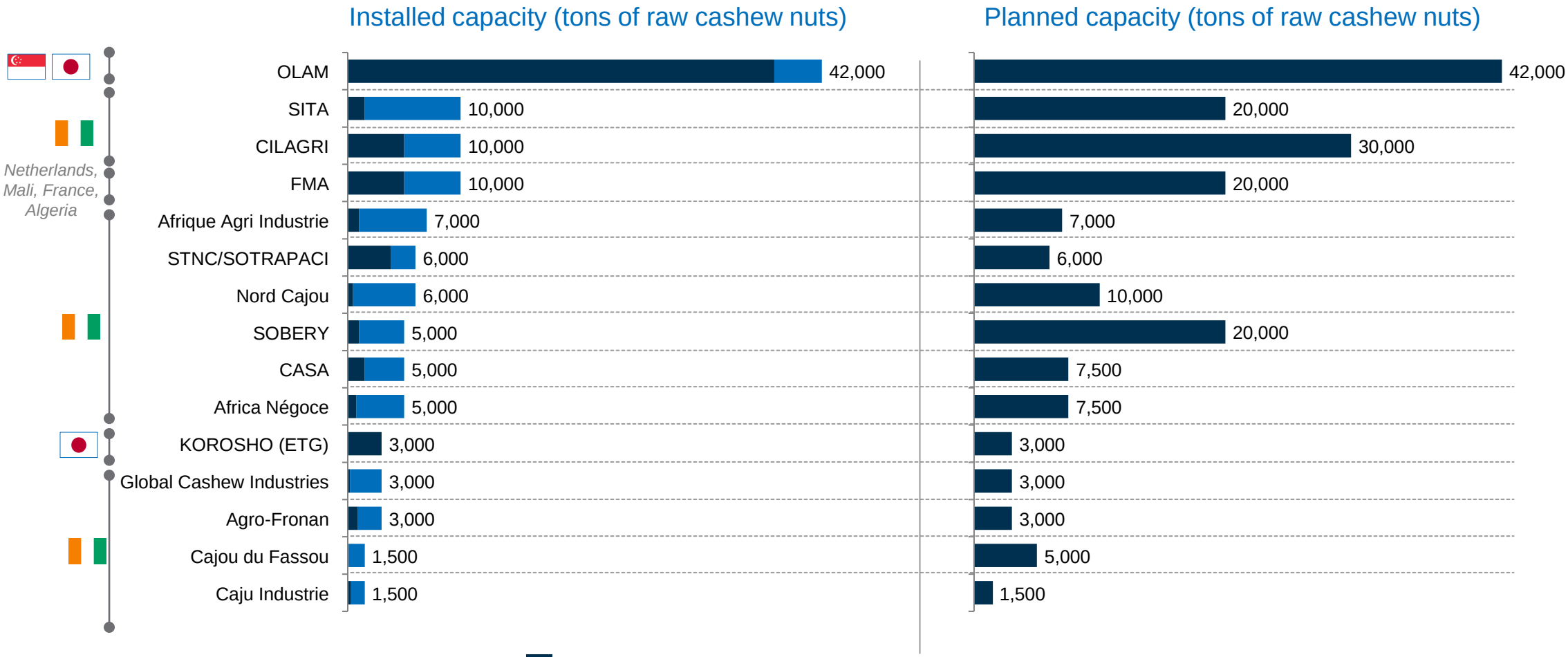
Cashew nut value chain: International trading players active in the market, while local processing is led by Olam

Non-exhaustive



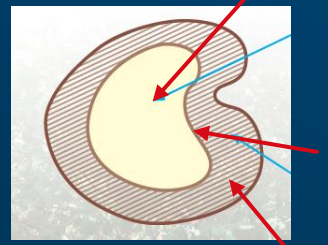
Source: Asoko Insight; BCG Analysis

Olam is the largest cashew nut processing player in Côte d'Ivoire



Source: Dutch Ministry of Foreign Affairs (2018)

The majority of first level processing machinery comes from **India** and **Vietnam** and has low engineering sophistication **leaving limited opportunity for Japanese machinery suppliers**



Cashew kernel
- 20% weight of the nut
- 48% lipids
- ~20% protids
- 26% glucids

Film covering the kernel

Shell
- 20% cashew nut liquid

Steaming

Process that helps to reduce the resistance of the shell

Cooker

Boiler

Shelling

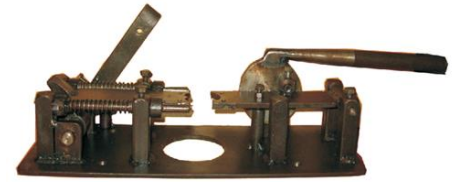
Process that separates the shell from the kernel

Manual Shelling Machine

Automatic shelling machine

Peeling

Process that removes the film surrounding the kernel



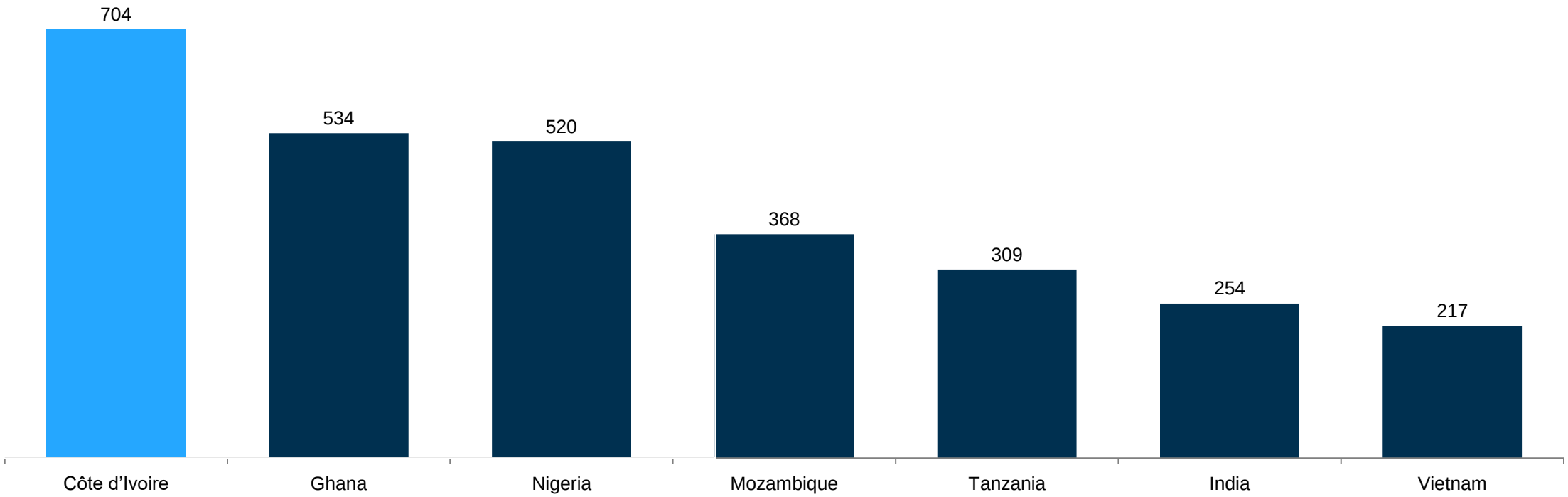
Manual Peeling Machine

Automatic Peeling Machine

Source: Burkina Faso Ministry of Industry (2017)

Côte d'Ivoire raw cashew nuts processing cost is highest among peers

RCN Processing cost (USD per tons)



1. RCN – Raw Cashew Nuts
Source: Cotton and Cashew Board (2017); Dutch Ministry of Foreign Affairs (2018)

A few constraints may explain high costs of processing cashew as compared to Vietnam and India

Lower labour productivity

Lower labour productivity when compared to Vietnam and India

Higher costs to acquire machinery and spare parts

Poor access to spare parts, costs and delays of repairs and most machinery is imported

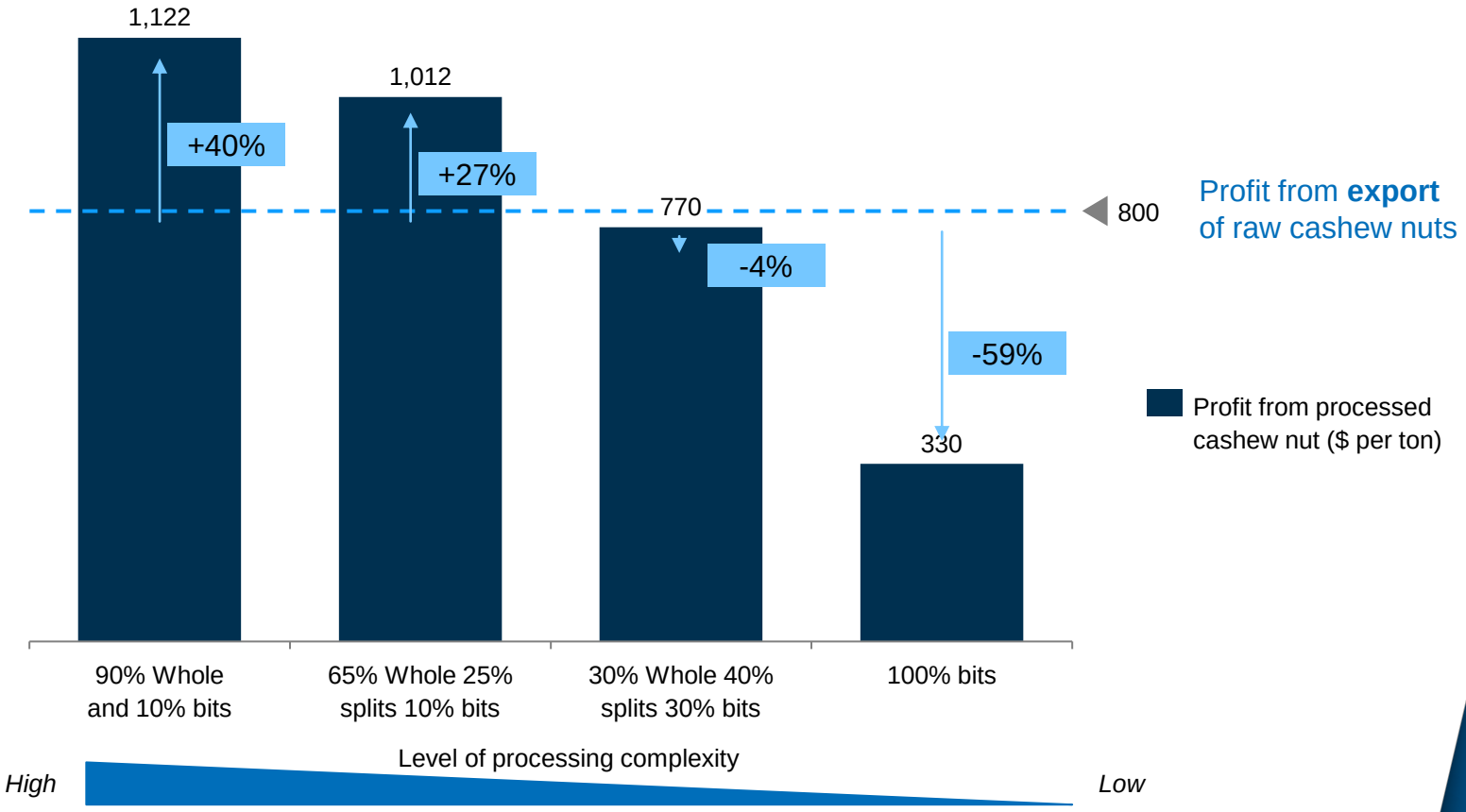
Limited demand for by-products

The possibility to produce CNSL[1], charcoal and compost is not fully exploited in Côte d'Ivoire

1. Cashew Nutshell Liquid
Source: Interviews; Dutch Ministry of Foreign Affairs, BCG Analysis

High quality output (65% whole nuts) required to make processing more attractive than exporting raw cashew nuts

Incremental profit from **selling processed** cashew vs. **exporting raw** cashew nuts ($ per ton)



Assumptions: price of raw cashew nut $800 per ton; price of whole cashew $6000 per ton; price of split cashew $4000 per ton; price of broken (bits) cashew $2000 per ton; processing cost $500 per ton; Kernel output rate – amount of kernel expected from raw cashew 22%;
Source: IFC – GAFSA (2015)

Implications

- Processing activity is highly risky but has strong potential to generate profits in the long-run
- Skilled processors and adequate machinery is paramount to obtain at least "65% whole, 25% splits, 10% bits" cashews

The Government and the World Bank have launched programs to improve the cashew nut value chain including an increase in processing

The Government has created incentives to increase processing capacity

The government has created a series of incentives valid for 5 years with possibility to renew of additional 2 years.

- Customs and VAT exemptions on new machinery and spare parts
- Tax credits for investors willing to increase the capacity or upgrade their processing units
- Bonus of 400 FCFA per kg of exported processed cashew nut

The World Bank has been supporting the Cashew value Chain with a USD 285 million loan between 2018 and 2023

	Goal	Activity	Value (USD M)
1	Reaching 200,000 tons of RCN capacity, creating 16,000 jobs	Creation of infrastructure for cashew nut processing in four processing zones	106.2
2	Bringing total capacity to 190,000 tons, improving RCN quality	Construction and rehabilitation of RCN storage facilities	17.6
3	Facilitating access to markets	Rehabilitation and maintenance of 2,100 km of roads, purchase of measuring instruments such as humidity meters, RCN quality analysis kits, marketing	19.8
4	Facilitating access to finance	Provision of subsidies and matching funds for micro-projects, a guarantee fund for RCN purchase, promotion of a system of intermediate storage	85.6
5	Improving cashew plantation productivity	Extending services for at least 300,000 producers, rehabilitation of 32,500 ha of plantations, organization of nurseries and specialized cashew support services	41.5
6	Improving value chain governance	Organizational strengthening of producers and cooperatives, establishment of an interprofessional organization, setting up a Cashew Technology and Innovation Center (CIAT) in Yamoussoukro and general incentives for private sector investment	14.4

Source: Ministry of Agriculture; World Bank (2018); Press Search

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Rubber: Agro-processing

With 790,000 tons output in 2019, Côte d'Ivoire is the largest producer of natural rubber in Africa but far behind the Thailand (4.9M tons) and Indonesia (3.3M tons)

Rice

Cocoa

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Rubber

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Rubber processing in Côte d'Ivoire: Executive Summary

Overview of cashew sector and key players

- With 790,000 tons, Côte d'Ivoire is the largest producer of natural rubber in Africa but far behind Thailand (4.9M tons) and Indonesia (3.3M tons)
- 77% of the production was locally transformed into Technical Specified Rubber (TSR), the remainder was exported as raw commodity to Malaysia
- SAPH (owned by Ivorian agribusiness group SIFCA) is the largest TSR producer in the country with 163,000 tons (27%) of installed capacity. Other players are: SOGB (10%), SCC (6%), CHC (5%) and SAIC – owned by Olam (3%)
- Despite the production of TSR, manufacturing of rubber goods is almost non-existent (less than 1% of production)
  - Given Côte d'Ivoire imports ~100M$ of rubber goods, there is a potential to manufacture non-tire rubber products, including mattresses, conveyor belts, gloves, contraceptives and shoes

Challenges in the market and Government actions

- Historically, Côte d'Ivoire has processed 100% of its rubber into TSR. However, processing capacity has not followed the production increase in the past 5 years due to difficulties to access to qualified labour and the high cost of machinery and spare parts
- To address the problem, the government has signed agreements with existing processors, offering them additional tax incentives to increase processing capacity

Significant share of TSR production done locally, while manufacturing of rubber goods for regional consumption is non-existent

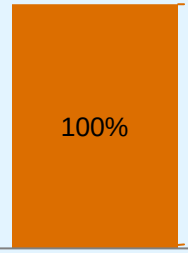
Preliminary

Production and pre-processing

Production
Tree planting
Tapping[1]

Processing
Coagulating

788,795



2019 Natural Rubber Produced Quantity (tons)

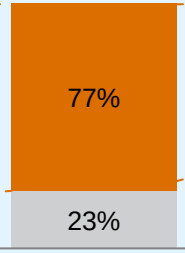
Latex export

Storing
Trading/Export

1st level processing

TSR[2] production

Coagulating
Shaping
Drying



2019 Natural Rubber Processing Quantity (tons)

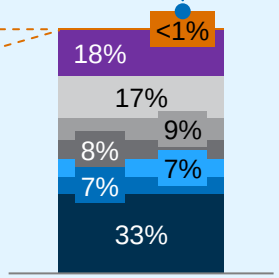
TSR export

Storage
Loading
Transport
Shipping

2nd level processing

Goods manufacturing

Production of goods (mostly tires)



2019 Natural rubber Processing Quantity (tons)

Retail

Transport Unpack
Display
Promotion
Sales

Less than 1% of rubber goods manufactured in Côte d'Ivoire

Côte d'Ivoire | China | Malaysia | USA | Germany | Spain | Belgium | Others

1. Tapping is the process of collecting liquid latex from trees. In Côte d'Ivoire a tree can produce 5kg of latex per year during 25 to 30 years 2.TSR – Technical Specified Rubber
Source: Interview with Hevea and Rubber Board; UN Comtrade; IFC (2015)

Back-up: Natural rubber value chain

Non-exhaustive

Production
Farmer/cooperatives
Output: raw natural rubber

Pre-processing
Farmer/cooperatives
Output: primary rubber products

1st Level Processing
Local factories
Output: semi-finished product

2nd Level Processing
Global industry
Output: finished products, semi-finished product

Rubber tree

Fresh latex

Natural coagulation

Controlled coagulation

Stabilized by adding ammonia

Cup lumps

23% of rubber is exported as cup lumps

Unsmoked sheets

Latex (stabilised)

Brown crepe

Standard block rubber (TSR Grades 10-50)

77% of rubber is exported as TSR

Air dried sheets (ADS), ribbed smoked sheets (RSS) (ADS/RSS1-5)

High-quality technically specified block/pale crepe rubber (H-TSR)

Latex concentrate (LCT)

Added to vehicle tyres, automotive Parts, shoe soles

Vehicle tyres rubber parts

RSS 5: High contamination level: tyres, automotive parts, shoe soles

RSS 1: Low contamination level: medical products, food industry

Premium vehicle tyres in food Industry

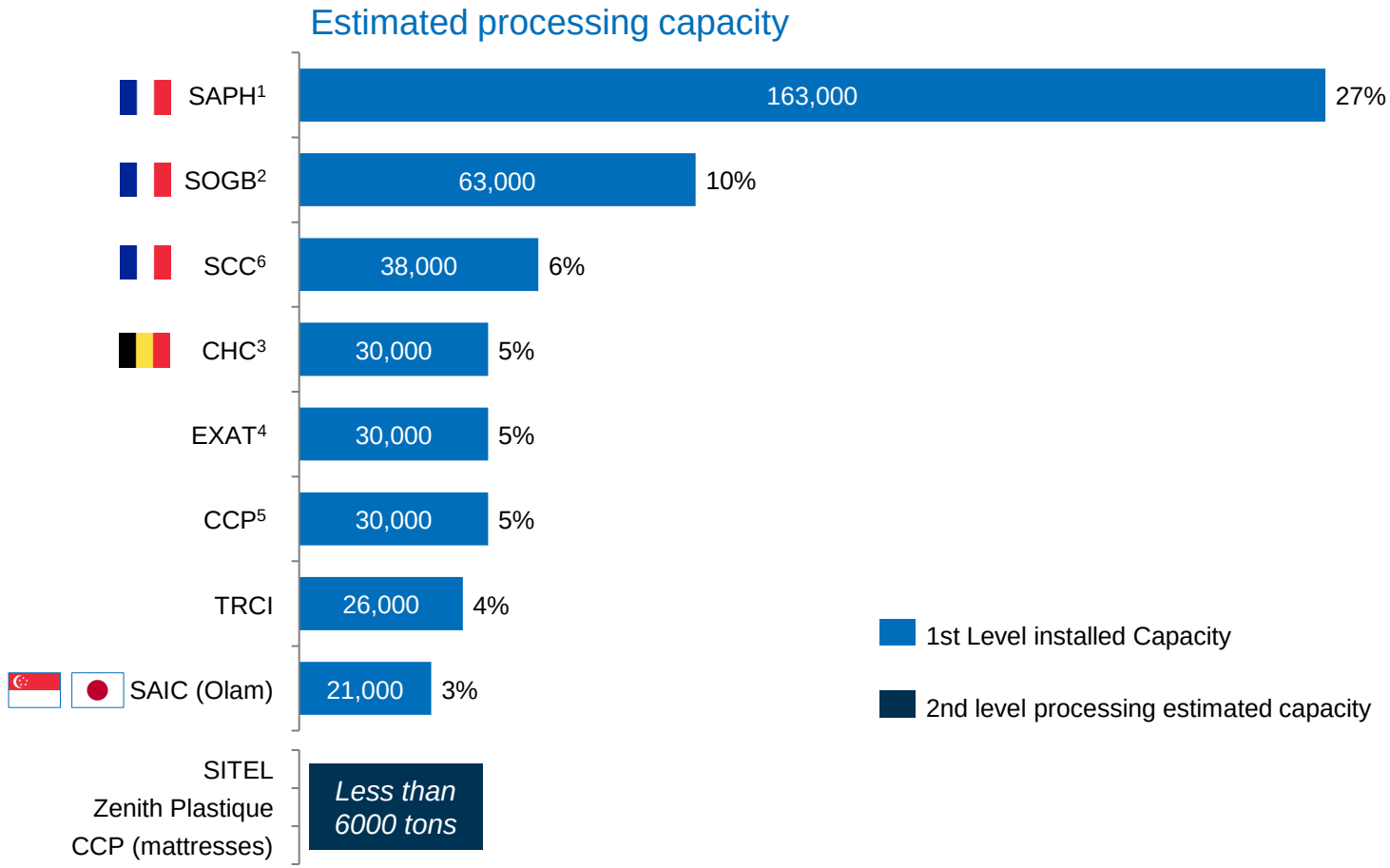
Latex dipped products. Condoms, etc.

Source: Chanchaichujit/Saavedra-Rosas 2018; Rothemeyer/Sommer 2013

Processed conducted in Côte d'Ivoire

SAPH is the largest 1st level processor, owning 27% of the ~608,000 total installed capacity

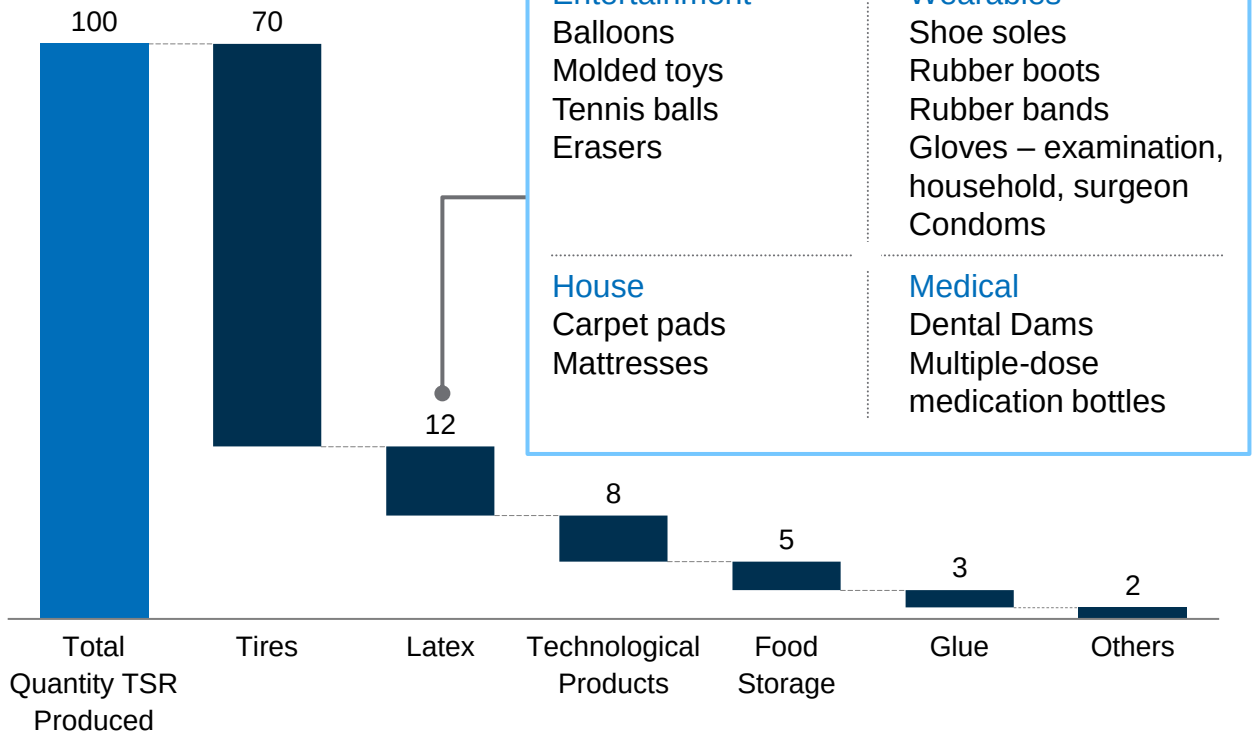
Non-exhaustive



1. Societe Africaine de Plantations d'Hévéa (SAPH) 2. SOGB – Societé de Caoutchouc de Grand-Bereby (SOGB) 3. CHC – Compagnie Hévéicole de Cavally 4. EXAT - Exploitation Agricole Tehui (EXAT) 5. CCP – Compagnie du Caoutchouc de Pakidié (CCP) 6. SCC – Sud Camoe Caoutchouc 7. SITEL – Societe Ivoirienne de Traitement de Latex
Source: IFC (2015); Interview with Hevea and Oil Palm Board; Company Websites (2021)

Processing of latex made products could be the way forward for Côte d'Ivoire

Global share of natural rubber Products (%)



Entertainment
Balloons
Molded toys
Tennis balls
Erasers

Wearables
Shoe soles
Rubber boots
Rubber bands
Gloves – examination, household, surgeon
Condoms

House
Carpet pads
Mattresses

Medical
Dental Dams
Multiple-dose medication bottles

2019 trade value of Côte d'Ivoire imports - rubber articles (M$)

Tires	62.4
Mattresses	8.4
Conveyor Belts	6.4
Gloves	4.0
Contraceptives/ Teats	2.7
Others	16.5
Total	100.4

Potential opportunity

Regional demand for tires is too low to justify investments in tire manufacturing

There are small opportunities to manufacture non-tire rubber products like mattresses, conveyor belts, gloves, contraceptives, teats and shoes (currently locally made)

Fonte: Business Biodiversity EU; Renal and Urology News; UN Comtrade

A few constraints may explain low rubber processing in Côte d'Ivoire

Access to qualified labour

Skilled labour is required to ensure sustainable production and processing of natural rubber. Scarcity of skilled labour is, thus, a major constraint to rubber processing

Mechanization & Maintenance

Poor access to spare parts, costs and delays of repairs and high cost of machinery as most is imported

Access to raw materials

Dependency on imported raw materials such as polymers and intermediates (subject to price fluctuations) used to manufacture rubber goods

Government of Côte d'Ivoire natural rubber processing boost program

New Investments

1. 4-year customs and VAT exemption on machinery, spare parts acquired locally or imported
   - The value of spares should not exceed the value of initial investment on machinery and goods by 20% (Zone A), 40% (Zone B), 60% (Zone C)
2. 4-year VAT exemption on services and feasibility studies linked to increase of rubber processing capacity

Increase or maintenance of processing capacity

3. Additional 10-year tax credit depending on the zone, processing capacity and size of the investment

	ZONE A	ZONE B	ZONE C
Large Enterprises[1]	25%	35%	50%
Small and Medium Enterprises[2]	37,5%	52.5%	75%

Local content

4. Additional 5% tax credit for enterprises with minimum 40% Ivoirian investment with a clause stating that the share cannot reduce for 20 years

1. Mininum investment for large enterprises – 304,900 Euros (excl VAT) 2. minimum investment for SMEs – 76,000 Euros
Source: Interview with Hevea and oil Palm Board; Giz (2020)

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Cotton: Agro-processing

Côte d'Ivoire produced 495,000 tons of cotton seed in 2019, most of which is hand-picked, rain fed and requires minimum use of chemicals, making the Ivoirian cotton suitable to manufacture premium fabric

Rice

Cocoa

Cashew

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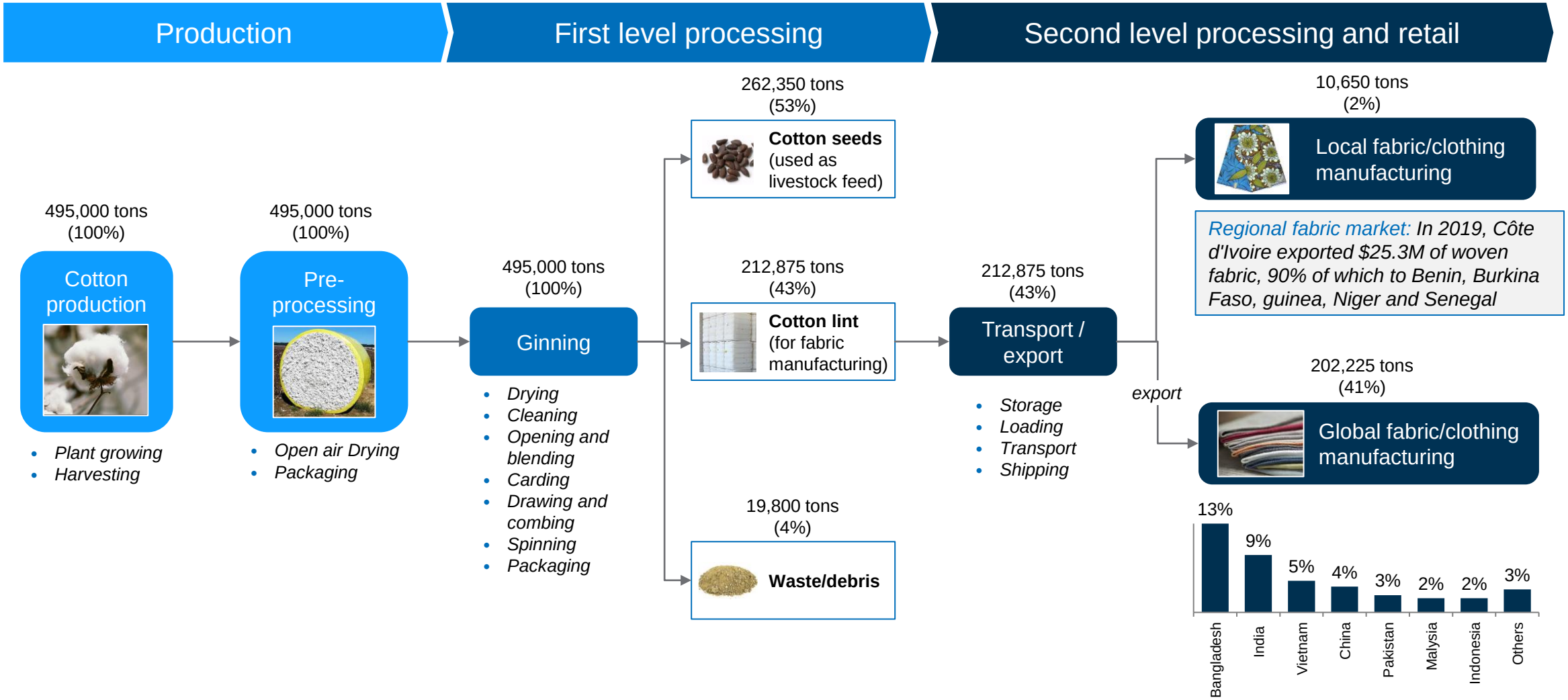
Cotton value chain: Low level of local fabric manufacturing, but regional market for woven fabric already exists



Source: USDA (2020); BCG Analysis

Top 3 players own 85% of ginning capacity, Olam is #4 with 11%

Organization of the sector

Organization: The Ivoirian Cotton sector is organized in zones each one led by an organization which controls production (supply of intrants to farmers), purchasing, transformation and export.

Production/Ginning: Ivoire Coton and COIC control 68% of the production and have 65% of the ginning capacity. Olam owns 11% of the ginning capacity in its two facilities located in the North of Côte d'Ivoire.

Fabric Manufacturing: a limited number of spinning and weaving facilities are run by Uniwax and Seritex to produce decorated fabric (wax "pagne").

Opportunities for the private sector

Potential opportunities for the private sector in fabric manufacturing leveraging the sustainable nature of Ivorian cotton (hand-picked, rain-fed, use of limited chemical).

Sector was deprioritized due to lower interest from Japanese companies

Ginning capacity of key players in the sector

Company	Facility	District	Capacity (tons/year)	Share (%)
Ivoire coton	Boundiali (2)	Savanes	205,000	32.3%
	Dianra	Woroba		
	M' Bengue	Savanes		
COIC[2]	Korhogo (4)	Savanes	155,000	24.4%
	Lataha	Savanes	50,000	7.9%
CIDT[1]	Bouake	Vallee du Bandama	130,000	20.5%
	Mankono	Woroba		
	Seguela	Woroba		
SECO[3] Olam	Ferkessedougou	Savanes	70,000	11.0%
	Ouangolodogou	Savanes		
Global cotton	Gonfreville	Vallee du Bandama	25,000	3.9%

1. CIDT – Compagnie Ivoirienne pour le Developpement du Textile (CIDT) 2. COIC – Compagnie Ivoirienne de Coton 3. SECO-OLAM - Societe d'Exploitation Cotonniere 4. Failure to provide intrants to farmers can result in suspension of the Agreement (SICOSA was removed from the zoning due to its failure to fulfill its obligations)
Source: InterCoton; USDA (2020), World Bank (2020)

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Agro-processing & machinery

Cereals, Fruit and Vegetables: Yield is a critical challenge in CI

Food Crops

Yield

Low yield as compared to peers[1] across crops

- Cereals (42% lower)
- Beverages (75% decline in yield over the last decade)
- F&V (70% lower)

Low yield driven by

- Lack of research, availability and access to improved seeds
- Low fertilizer usage
  - Only 0.011 ton/ ha fertilizer used in Côte d'Ivoire vs. 0.15 ton/ ha in peers[1]
- Limited mechanization
  - Peers[1] at 20x[2] tractor penetration versus Côte d'Ivoire

Critical challenge

Land

Only 36% of the total agricultural land is used for farming

- Large pockets of land not cultivated/ developed

<2% of the land is under irrigation

- Most of the farming is rain-fed, can increase crop intensity and land cultivated by increasing land under irrigation

Crop intensity is ~ 30% lower than other SSA2 countries

Supply Chain

High wastage due to inadequate storage infrastructure

- Average food wastage 1.7x of peers
  - ~10% wastage in Côte d'Ivoire versus 6% in peers1
- Key reason is lack of sufficient refrigerated storage facilities

Post harvest supply chain infrastructure underdeveloped

- High cost of transport
- Inadequate distribution channels
- Limited availability of information & data
- Lack of finance

1. Developing Small Farm Nations comprising of 93 nations across Africa, Asia and South America are considered as peers 2. Sub Saharan Africa hp/ha calculated as total hp per 1000 ha of harvested land in 2014. Côte d'Ivoire has 1.13 hp/ha versus peers (small farm, developing nations) at 20.1
Source: FAO, World Bank

Cash crops: Yield and value addition are critical challenges in CI

Cash Crops

Yield

Low yield across crops when compared with historic yield and peer average

- Cashew (350% lower)[1]
- Cotton (62% lower) [2]
- Rubber (10-15% lower than historic yield, peak in 2000) [3]
- Cocoa (30-35% lower than historic yield)[4]

Largely driven by:

- Lack of inputs - high yield seeds, fertilizers
- Low farm mechanization
- Poor farming practices

Critical challenge

Land

Only 22% of the total agricultural land is used for cash crops cultivation

- Large pockets of land are not cultivated/ developed due to government policies or distributed holding

Low crop intensity as compared to peers

Plantation of crops that have negative environmental impact (e.g., palm) threaten sustainability of agri practices and growth

Supply Chain

Inadequate farm eco-system and infra

- Limited presence of contract manuf. or guaranteed price agreements
- High cost of collection, distribution, and transportation to urban/ export markets

Limited financing support for small farmers (E.g., Rubber)[5]

Small farm suited storage solutions leading to wastage

Value Addition

Limited local transformation ecosystem

- Average processing is ~ 30% for cocoa, 8% for cashew and ~ 5% for other cash crops
- 2-5x value addition potential lost as produce is exported as cash crop[6]

Critical challenge

1. Cashew nut yield in Côte d'Ivoire 0.38 ton/ha vs 1.36 ton/ha in peers. 2. Cotton yield in Côte d'Ivoire 0.98 ton/ha vs 1.58 ton/ha in peers 3. Rubber yield has fallen from 1.87 ton/ha in 2000 to 1.65 ton/ha in 2014 4. Cocoa yield has fallen from 0.77 ton/ha in 2000 to 0.58 ton/ha in 2014 5. Rubber plantations have significant upfront cost of US$500-1,000/ha 6. Value addition potential has been calculated as difference between export price of cocoa beans and export price of processed cocoa products like cocoa butter, chocolates, etc.
Note: Côte d'Ivoire peer nations are small far,, developing countries
Source: FAOSTAT, press search, Agri reports

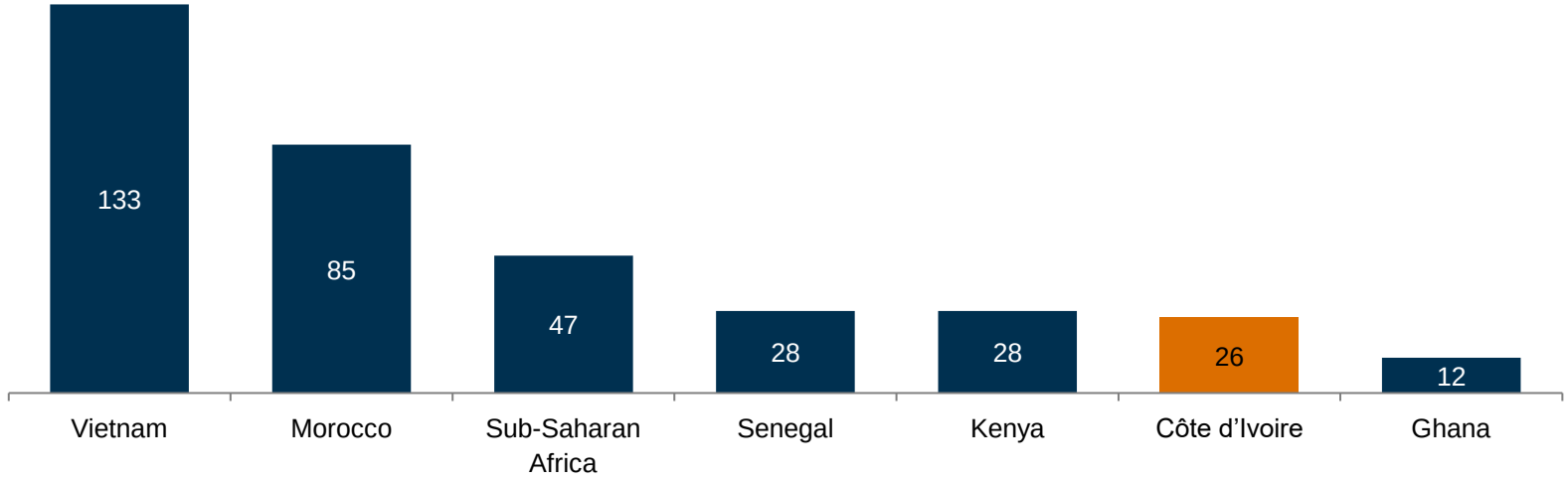
Despite representing 23% of GDP, Agriculture only accounts for 11% of bank lending

Private banks are reluctant to provide credit to small farmers and MSMEs. Available credit has interest higher than the average rate of returns (e.g. for machinery interests' rate can go over 20%).

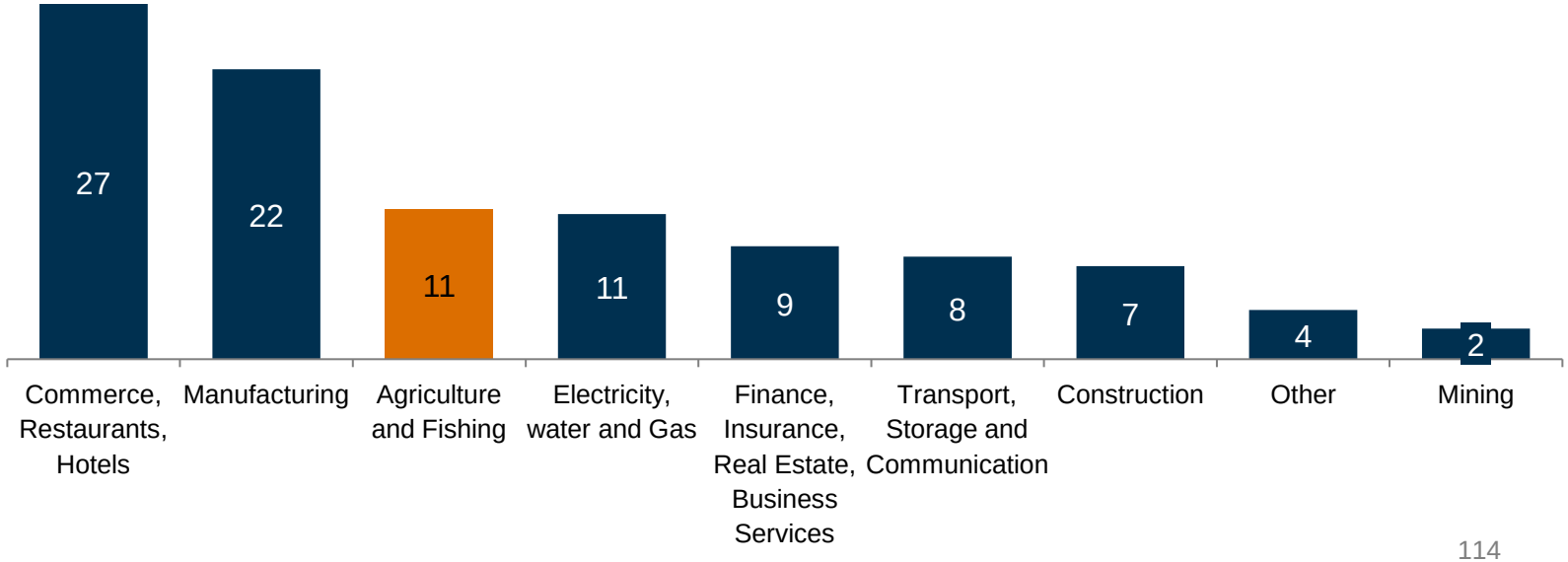
Small farmers and MSMEs are too risky: lack of proper registration or identification and low digitization (e.g., only 10-15% of cocoa value chain is digitized, digitization rate in non-export crops like rice have been minimal)

Source: World Bank (2020)

Credit to private sector as percent of GDP (2017)



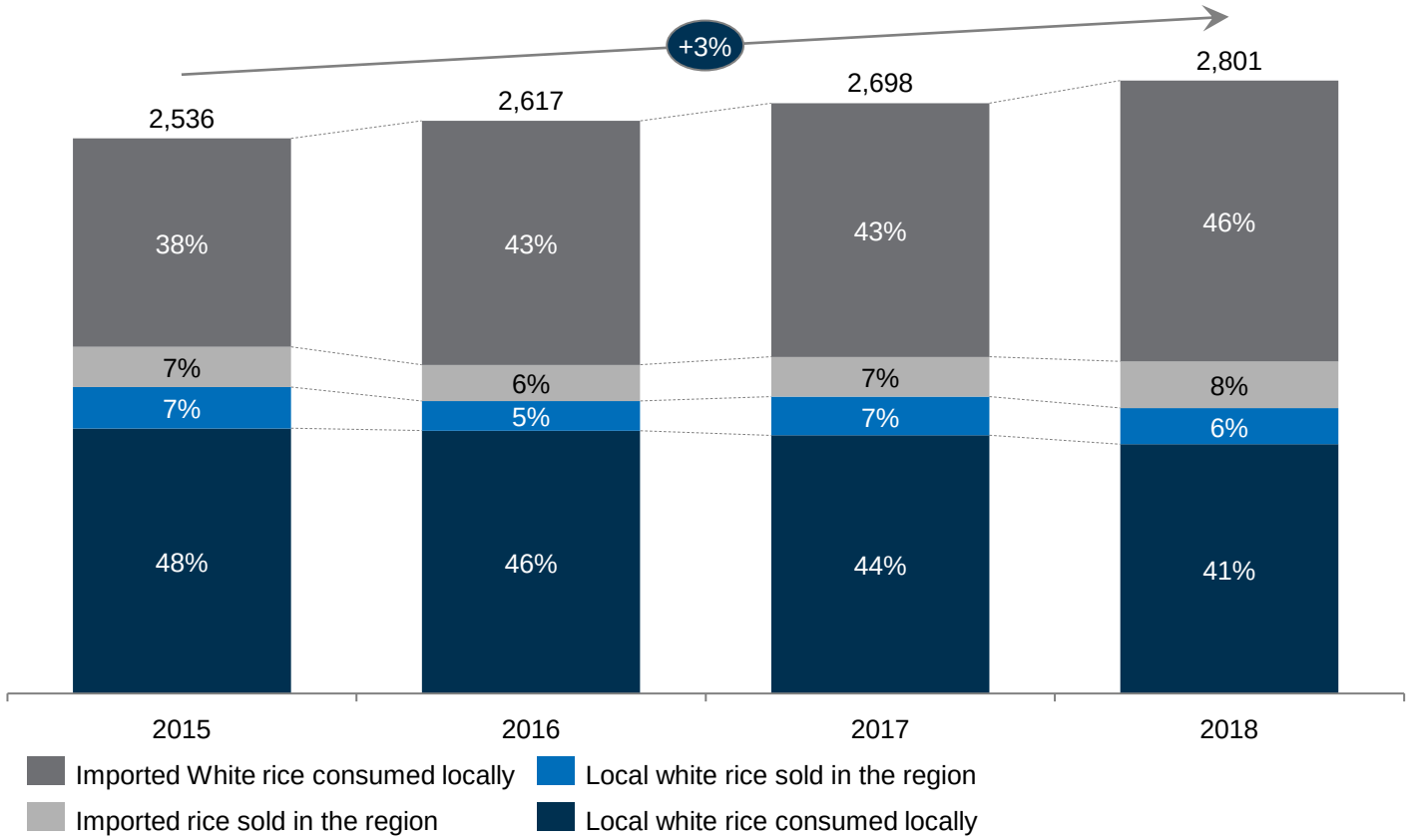
Bank credit by sector in 2017 (%)



Rice: Overview

Share of imported rice has been increasing, reaching 53% in 2018

Total available rice – Local production and imports (1000s tons)



Findings

The share of imported rice has increased since 2013 to reach 53% in 2018.

In general, local rice is perceived as of a lower quality than the imported rice, even if progress has been made in recent years

Major traders importing rice to Côte d'Ivoire

SDTM[1] (Carré d'Or) imports 50-60% of Ivoirian rice. It is supplied by Louis Dreyfus Company and Olam Asia

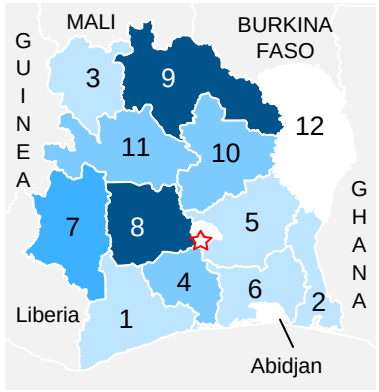
Remaining imports are shared by:

- AGRIEX – Phoenix
- Nouvelles GEDIS – General Distribution
- Export Trading Group (ETG)
- Compagnie d'Investissement Cerealiers (CIC)

1. SDTM – Societe de Distribution de Toutes Merchandises

Source: Expert Interview; Interview National Chamber of Agriculture; IFC (2015); SNDR 2020-2030 Plan; WFP (2018); BCG Analysis

Distribution of domestic rice production in 2019



1. Bas-Sassandra
2. Comoe
3. Denguele
4. Goh-Djiboua
5. Lacs
6. Lagunes
7. Montagnes
8. Sassandra-Marahoue
9. Savanes
10. Vallee du bandama
11. Woroba
12. Zanzan

☆ Yamoussoukro

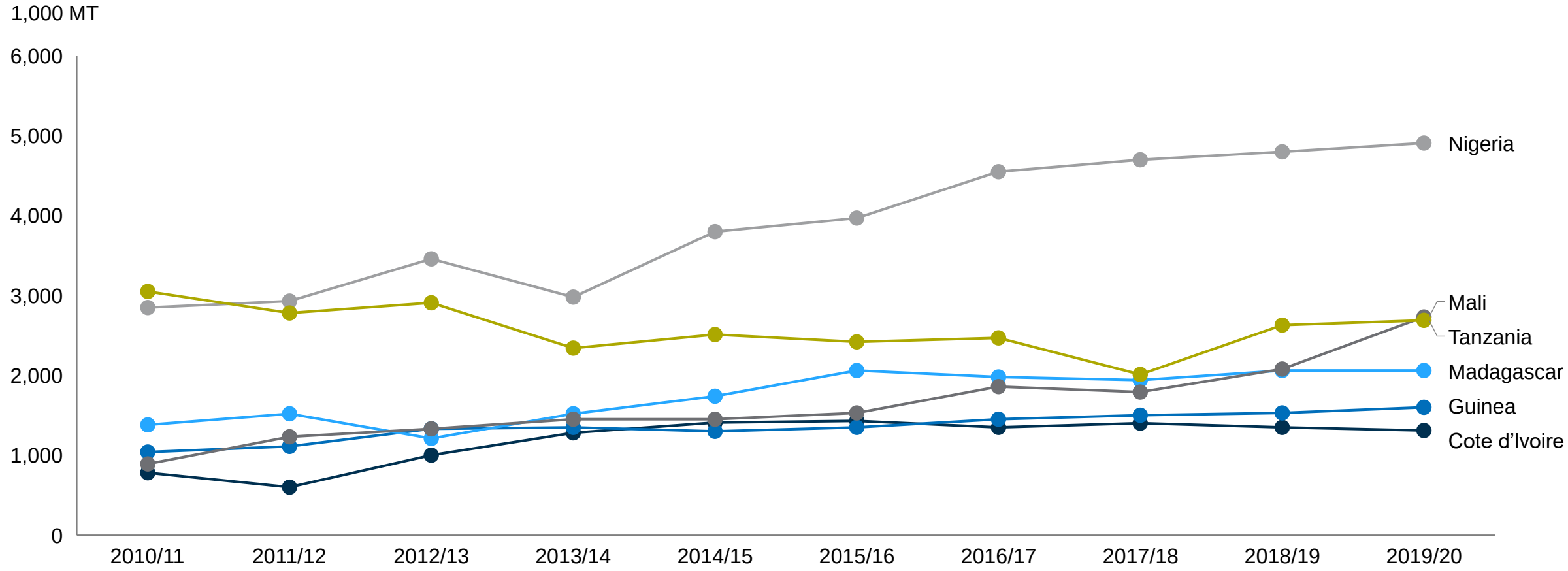
Share of national production:

Less than 1%
1-5%
5-10%
10-20%
20-30%

District	Rough production (MT)	Share of Nat'l production	Consumed locally
Bas-Sassandra	58,324	3.1%	74.6%
Comoe	55,596	3.0%	59.9%
Denguele	69,681	3.7%	75.9%
Goh-Djiboua	175,569	9.3%	51.1%
Lacs	31,199	1.7%	41.4%
Lagunes	22,259	1.2%	53.3%
Montagnes	301,302	16.0%	56.2%
Sassandra-Marahoue	536,660	28.5%	38.6%
Savanes	404,582	21.5%	73.5%
Vallee du bandama	106,364	5.6%	30.9%
Zanzan	105,416	5.6%	69.4%
Yamoussoukro	6,983	0.4%	45.8%

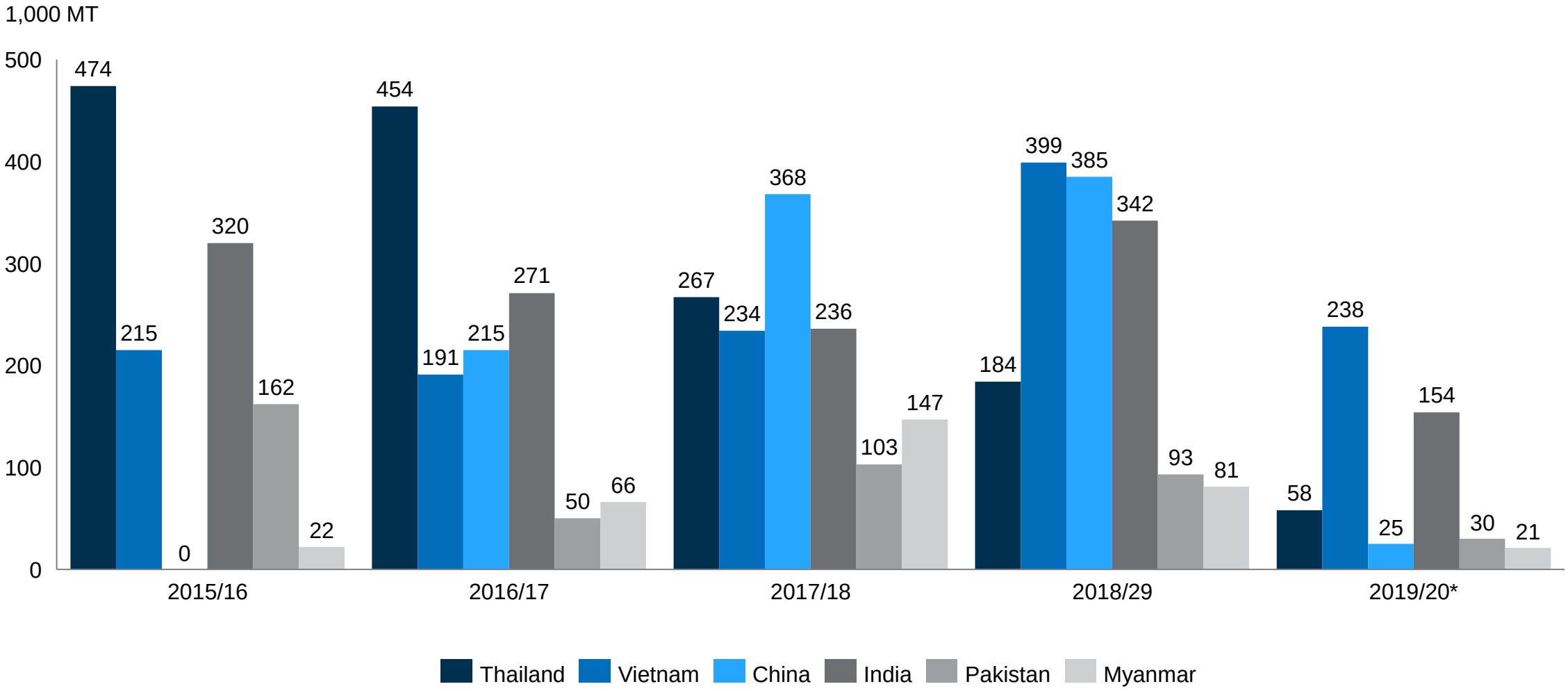
Note: Abidjan/Yamoussoukro not listed, accounting for less than 1% of production
Source: USDA (2020), GOCI

Côte d'Ivoire rice production has been stagnant while other countries (e.g., Nigeria and Mali) are increasing production



Source: USDA (2020), USDA PS&D *USDA/Post estimates

Major rice suppliers to Côte d'Ivoire



Source: USDA (2020), Trade Data Monitor (TDM) *YTD, October 2019 — March 2020

Rice processing

Large scale transformation units are scarce in Côte d'Ivoire but could grow fast in the coming years

Quantity of collected paddy in 2016 by processing units

Size of processing units	Number of units in the country	Quantity of paddy collected (tons)	Paddy collected per production site (tons/site)	Paddy collected (%)
Less than 1 tons per hour	2,635	534,158	203	72%
Between 1 and 2 tons per hour	283	192,024	679	26%
More than 2 tons per hour	6	12,389	2,065	2%
Total	2924	738571	253	100%

Opportunities to supply rice processing machinery will increase as industrial units grow in the country

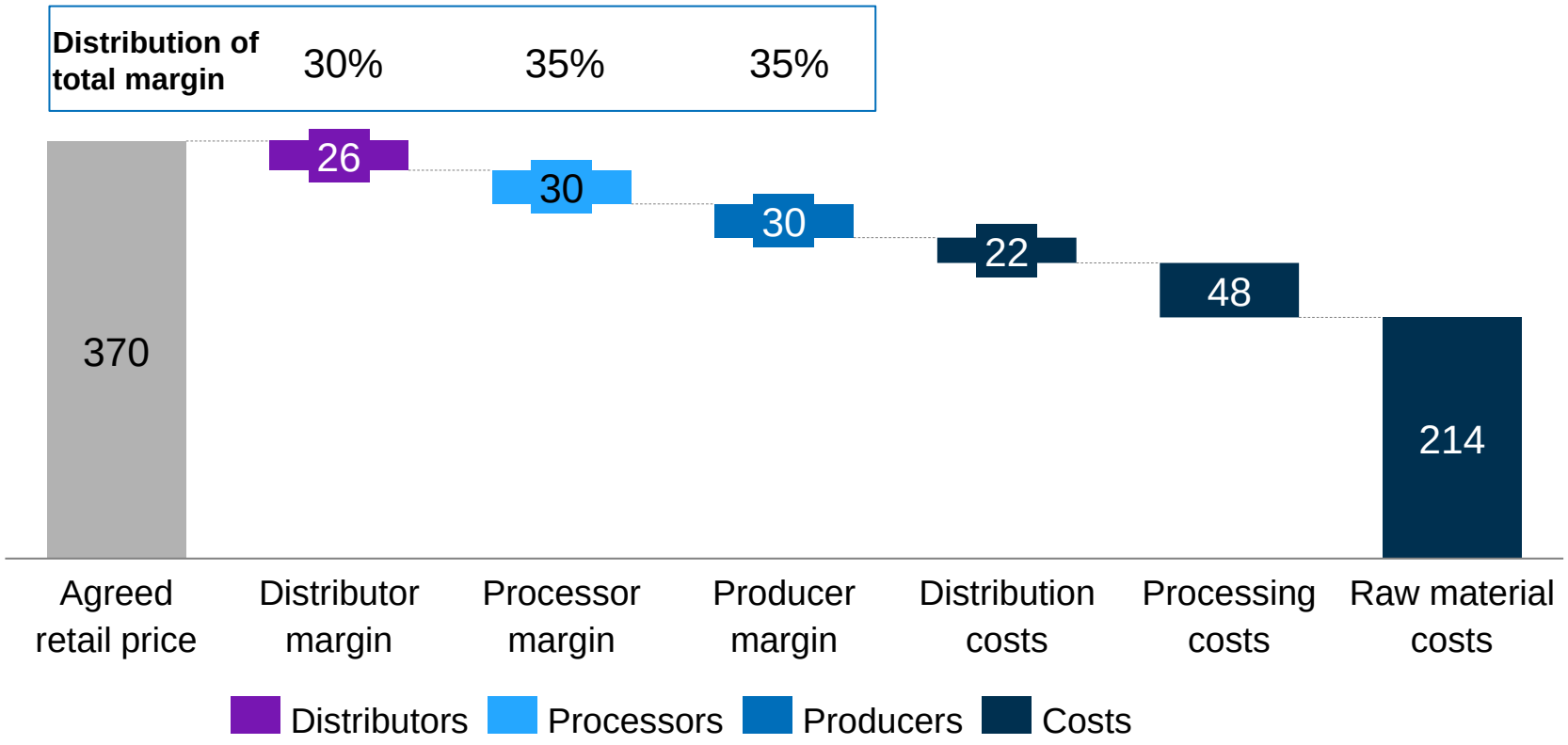
Units projected by the SNDR[1] (status as of 2020)

- 0.2 to 2t/h: 2,500 units
- 5t/h: 30 units (10 were completed)
- 12t/h: 1 unit (completed)

1. SNDR – National Rice Development Strategy
Source: WFP (2015)

Distributors, processors and producers each capture similar share of the margin on 1kg of semi-luxurious white rice

Cost and margin distribution (in FCFA/kg of white rice)



1. Distribution costs include transport, handling, storage and taxes 2. Processing costs include cleaning, drying, storage, electricity, water, labour, packaging 3. Raw material costs include intrants, cleaning, spraying, harvesting, drying, transport to processing units
Source: University of Montpellier; SNDR 2020-2030; WFP (2018)

- Main stakeholders of the rice value chain have decided to fix the price of 1 Kg to be between 350 and 400 FCFA to stay competitive with imported rice whose price is between 450 and 475 FCFA.
- The net share of total margin in final retail price is 23% in Côte d'Ivoire, a value significantly lower than the one in Senegal (35.4 to 43.9%)
- In the long-run, the value chain would gain from the introduction of high-quality seeds and farming machinery

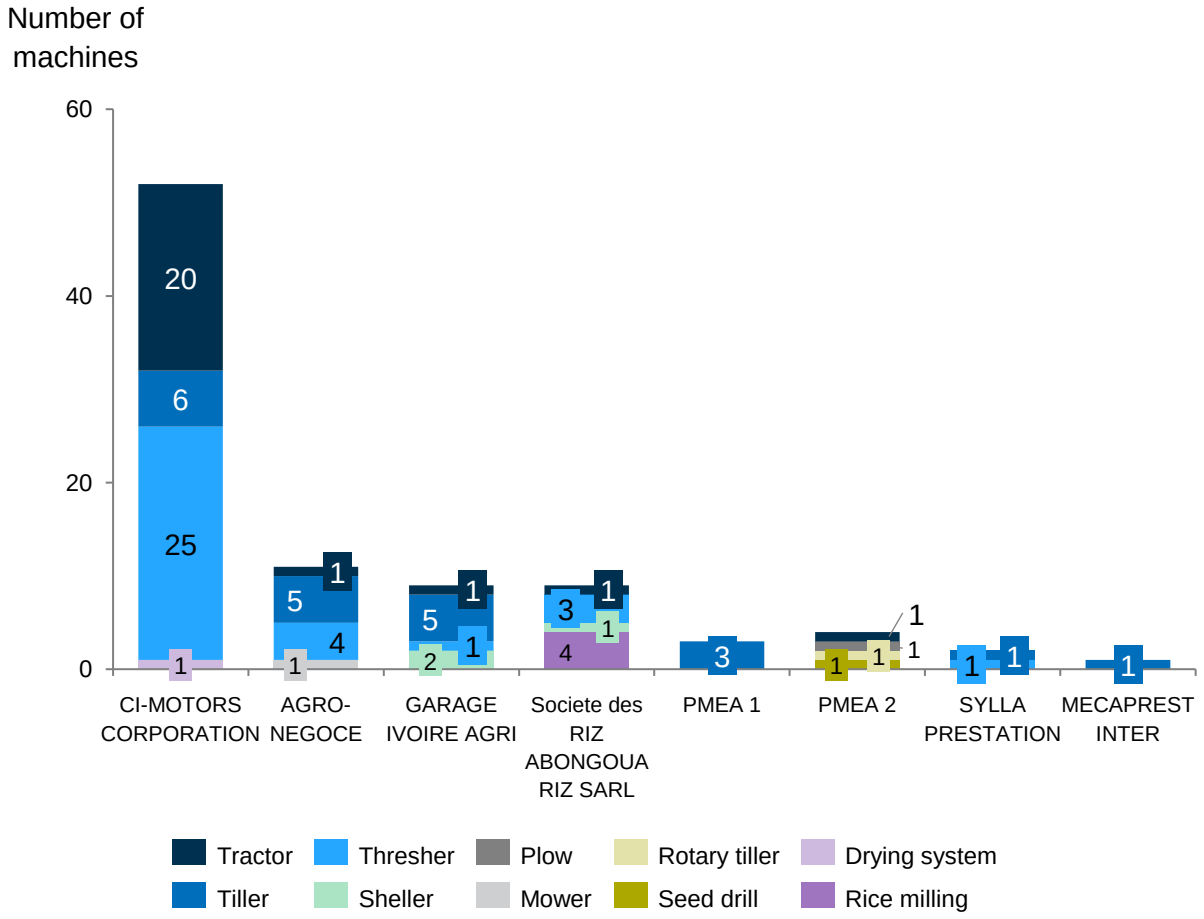
JICA survey results: Size and location of activity of service providers

N°	PMEA NAME	LOCATION	Total Nº Employees
1	GRACE AGRICOLE CI	Yamoussoukro, M'Bahiakro	-
2	CAP BERE	District de savanes, Tonpki, Région du Béré	-
3	CI MOTORS	District de Yamoussoukro, région du Gbèkè	21
4	MECA PREST INTER	Région Agneby Tiassa	5
5	SYLLA PRESTATIONS	Région du Goh	3
6	AGRONEGOCES	Région du Hambol, région du Gbèkè	15
7	GARAGE IVOIRE AGRI (GIA)	Région du haut Sassandra, Cavally	26
8	AGRO KROBIS	Moronou,béré, Goh	-
9	FERM BIO	District du belier	-
10	SIMAPRES	GBEKE, IFFOU, HAMBOL, LA ME, INDENIE DUABLIN,	-
11	SAMI	District des Savanes	-
12	GBEKE PREST AGRI	GBEKE, HAMBOL, BERE	-
13	PAYSAN AUTONOME	District de Yamoussoukro	-

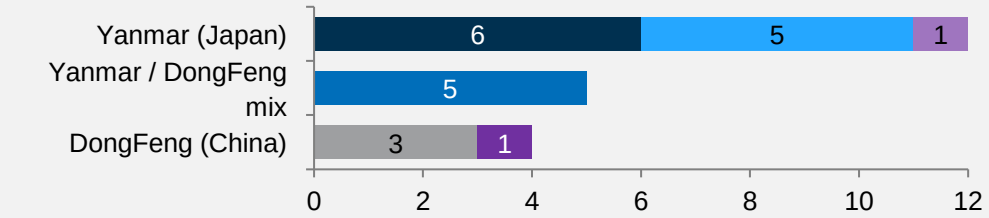
Source: JICA survey of 8 machinery service providers as part of PRORIL II project

JICA survey results: Machinery type and brand per fleet

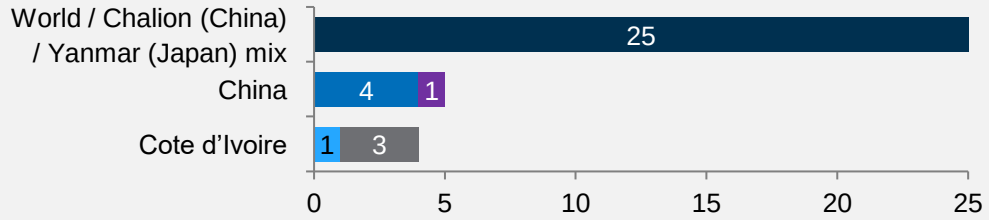
Number and type of machinery used across contractors



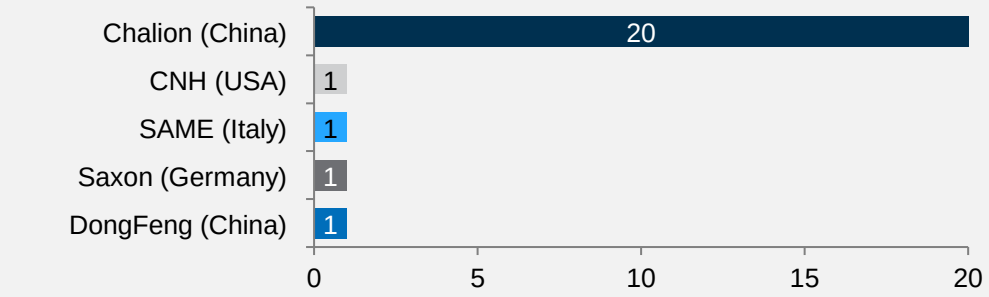
Brands deep-dive: Tractors



Brands deep-dive: Tillers



Brands deep-dive: Threshers



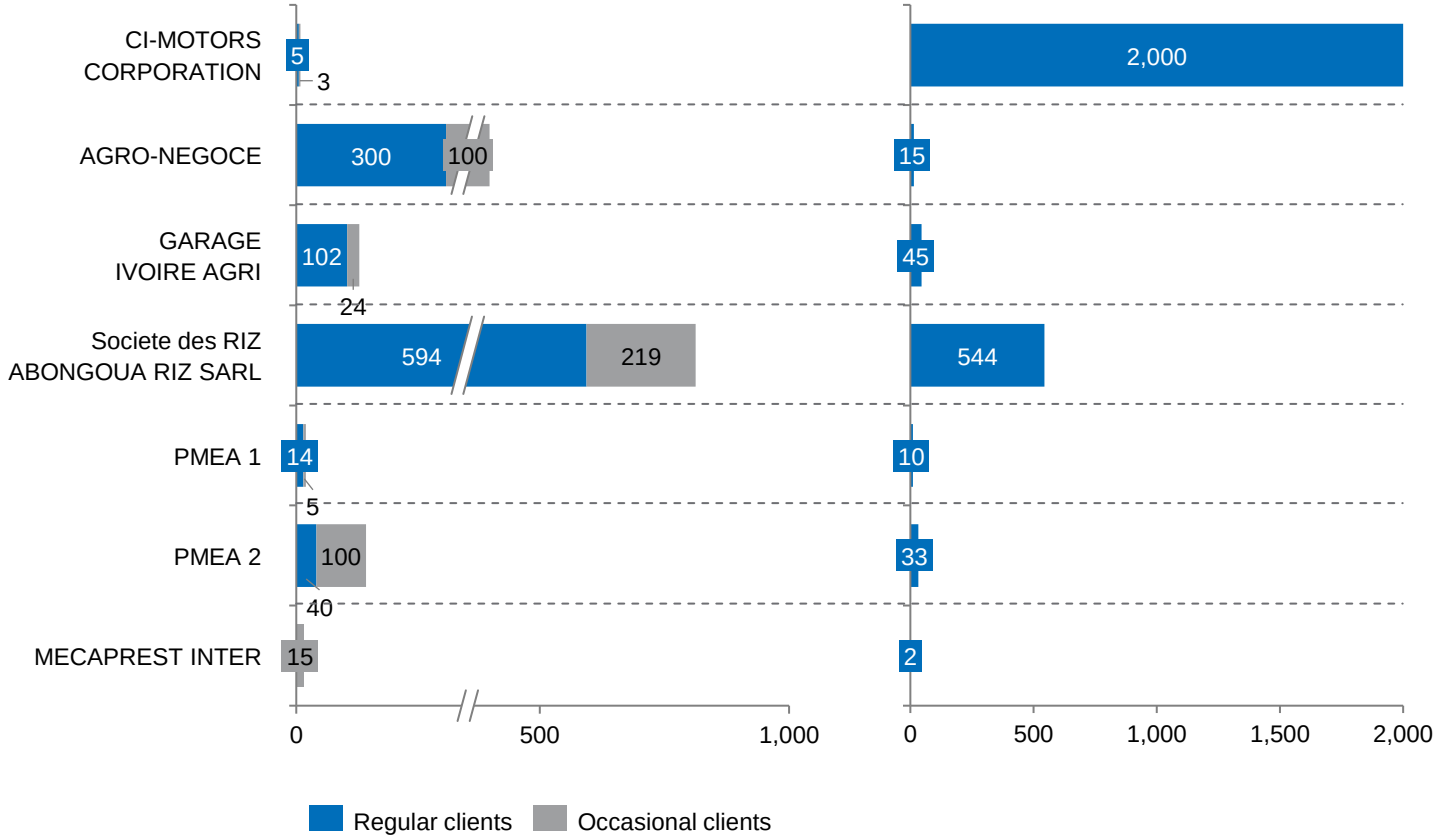
CI-MOTORS CORPORATION
AGRO-NEGOCE
GARAGE IVOIRE AGRI
Societe des RIZ ABONGOUA RIZ SARL
PMEA 1
PMEA 2
SYLLA PRESTATION
MECAPREST INTER

Source: JICA survey of 8 machinery service providers as part of PRORIL II project

JICA survey results: Number of customers, farming size and payment method

Number of customers by contractor

Area covered per client (ha)
(represents largest client area)



Accepted payment type and timing

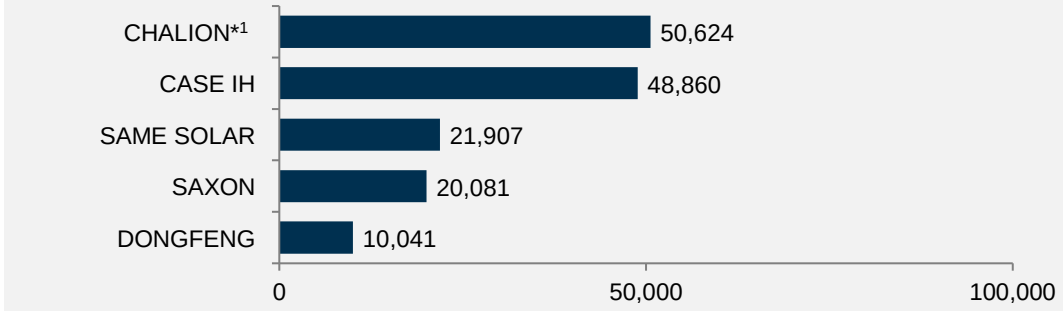
Payment accepted	*Payment in advance*	*Payment on-site*	*Payment at harvest*
Cash only	✓		✓
	✓	✓	✓
	✓	✓	✓
			✓
	✓		✓
		✓	
		✓	

Source: JICA survey of 8 machinery service providers as part of PRORIL II project

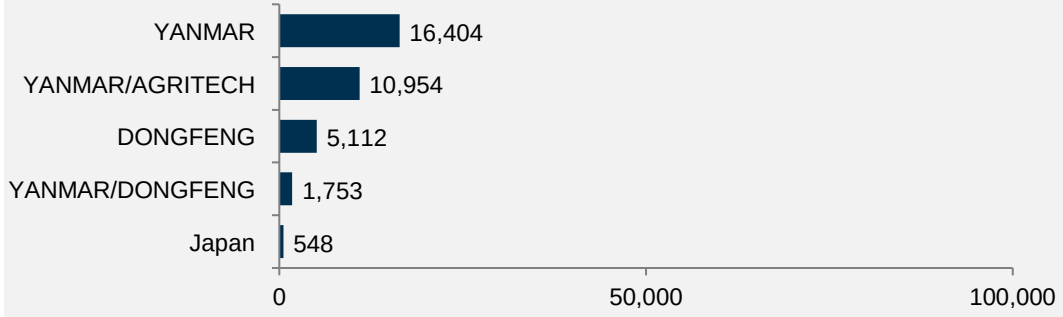
JICA survey results: Benchmarking cost of acquisition

Cost of Acquisition (USD)

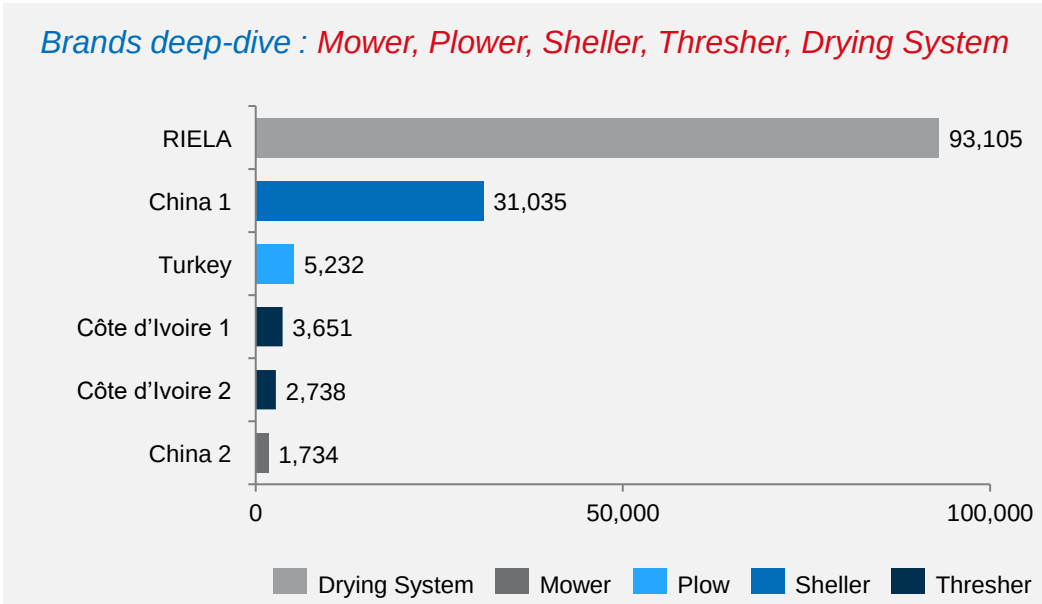
Brands deep-dive: Tractors



Brands deep-dive : Tillers

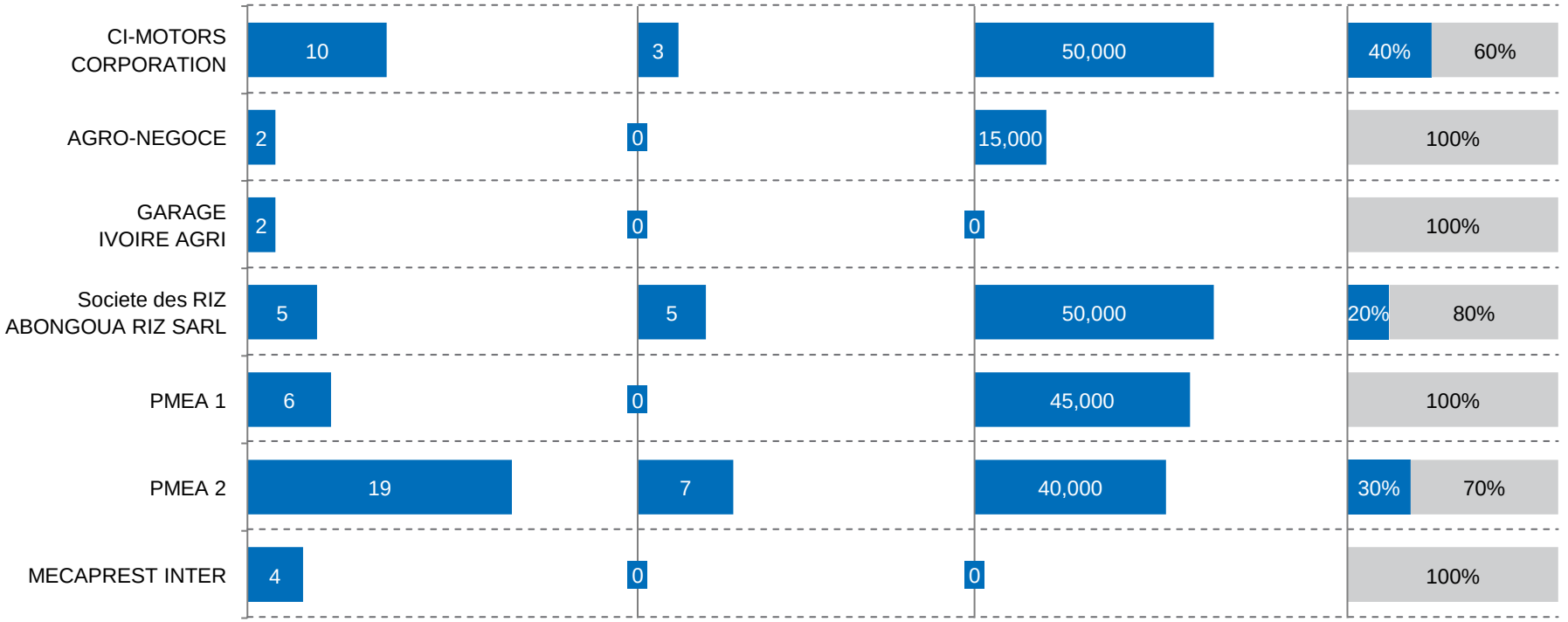


Brands deep-dive : Mower, Plower, Sheller, Thresher, Drying System



1. Bundled with tools 2. Exchange rate: 1USD = 548 FCFA
Source: JICA survey of 8 machinery service providers as part of PRORIL II project

JICA survey results: Frequency and cost of machinery breakdown



Access to replacement parts

Distance to closest machinery parts store
- *(sometimes fabricate own parts)*
-
-
200 km (sometimes fabricate own parts)
6 km
234 km (sometimes fabricate own parts)
-

Source: JICA survey of 8 machinery service providers as part of PRORIL II project
1. Respondent who do not take their machine to the repair shop either attempt to repair on-site or have an in-house mechanic

Cashew processing

Majority of first level processing machinery comes from India and Vietnam

Cashew processing machinery Origin and Year of Installation

Processing unit	Place	Calibration	Steaming	Shelling	Peeling	Sorting	Roasting	Salting	Packaging
OLAM	Bouaké/ Dimbokro	*Data not available*							
CILAGRI	Abidjan	2018 VIE	2018 IND	2018 VIE	2018 ITA	2018 CHN	2018 ITA (plan)	2018 ITA (plan)	*No data*
STNC/SOTRAPACI	Abidjan	2017 VIE	2017 VIE	2017 VIE/CHN	2017 VIE/IND	VIE/CHN/IND			2017 VIE
KOROSHO	Yamoussoukro	*Data not available*							
CASA	Bouaké	2014 VIE	2014 IND	2014/15 IND	x 2015 VIE	2015 CHN			2014 IND
Cajou du Fassou	Yamoussoukro	2018 CI	2018 CI	2014 VIE/CHN	2014 CHN	2014 CI	2014 CI		2014 CHN
Global Cashew Industries	Odienné	2014 VIE	2014 VIE	2014 CHN	2014 VIE/IND	CHN			2014 VIE
Agro-Fronan	Fronan	2016 CI	2016 CI	2016/8 VIE/SL	2016 VIE	*No data*			*No data*
SOBERY	Bouaké	2014 VIE/CI	2014 IND	2018 VIE	2014 IND	2015 CHN			2015 VIE
SITA	Odienné	2017 VIE	2017 VIE	2017 VIE	2017 VIE	2017 VIE	2017 VIE		*No data*
Caju Industrie	Kolia	2015 IND	2015 IND	2015 IND	2016 VIE	*No data*			2015 IND
FMA	Korhogo	2016 VIE	2016 VIE	2016 VIE	2016 VIE	2016 CHN			2016 VIE
Afrique Agri Industrie	Bondoukou	2014 IND	2014 IND	2014 VIE/IND	2014 VIE/IND	*No data*			2014 IND
Nord Cajou	Séguéla	2016 VIE	2016 VIE	2016 VIE	2016 VIE	2016 VIE			2016 VIE
Africa Négoce	Bouaké	*No data*	2015 VIE	2015 VIE/CHN	2015 VIE/IND	*No data*			2015 IND

CI – Côte d'Ivoire
CHN – China
IND – India
ITA – Italy
VIE – Vietnam
Mix

Source: UK Ministry of Foreign Affairs (2018)

Note: SL – Sri Lanka


JICA

Unused Slides