



# **Alameda County Employees' Retirement Association**

**Board of Trustees Off-Site Event  
Monday, October 29, 2018**



**Scott's Jack London Square  
#2 Broadway - Jack London Square, Oakland, CA 94607**

## **Trustees**

**Tarrell Gamble – Chair**

**George Wood - 1<sup>st</sup> Vice-Chair / Henry Levy - 2<sup>nd</sup> Vice –Chair**

**Dale Amaral / Ophelia Basgal / Keith Carson / Jaime Godfrey**

**Liz Koppenhaver / Elizabeth Rogers**

## **Alternate Trustees**

**Nancy Reilly / Darryl Walker**

**1**

**Jackie Speier**  
Congresswoman  
The Representative from  
CA - 14<sup>th</sup> District

**Current Political Climate**

**2**

**Margaret Jadallah**  
VERUS Investments

**Ken Mehlman**  
KKR Global Impact

**Ophir Bruck**  
US Network - PRI

**E S G Panel**

Environmental

Social

Governance

**3**

**Aymeric Saha**

MiDA - Mobilizing Institutional Investors  
to Develop Africa's Infrastructure  
NASP-USAID Investment Partnership

**EMERGING MARKETS - AFRICA**

**4**

**Catherine Wood**  
ARK - Invest

**DISRUPTIVE TECHNOLOGY**

**5**

**David Nelsen, CEO - ACERA**  
Presentation and Board Discussion

**STREAMLINING BOARD OPERATIONS**



**Alameda County Employees' Retirement Association**  
475 – 14<sup>th</sup> Street, Suite 1000, 10<sup>th</sup> Floor, Oakland, CA 94612  
Phone: (510) 628-3000 Fax: (510) 287-5412

~~~~~  
**Board Off-Site Event**  
**Monday, October 29, 2018**  
**8:00 a.m. to 3:00 p.m.**

**Scott's Jack London Square**  
**#2 Broadway - Jack London Square, Oakland, CA 94607**  
~~~~~

**AGENDA**

<b>08:00 – 09:00 a.m.</b>	<b>Continental Breakfast</b>	
<b>09:00 a.m.</b>	<b>Off-Site – Kick-Off</b>	<b>Tarrell Gamble, ACERA Board Chair</b>
<b>09:05 – 10:15 a.m.</b>	<b>Current Political Climate</b>	<b>Jackie Speier, Congresswoman</b> The Representative from CA-14 <sup>th</sup> District
<b>10:15 – 10:30 a.m.</b>	<b>Break (a.m.)</b>	
<b>10:30 – 11:30 a.m.</b>	<b>ESG Panel</b>	<b>Margaret Jadallah, VERUS Investments</b> Managing Director - <i>Panel Moderator</i> <b>Ken Mehlman, KKR Global Impact</b> Member & Global Head - <i>Panelist</i> <b>Ophir Bruck, US Network</b> Manager of <b>PRI</b> (Principles for Responsible Investment) - <i>Panelist</i>
<b>11:30 a.m. – 11:45 p.m.</b>	<b>Break (Buffet Lunch)</b>	
<b>11:45 – 12:45 p.m.</b>	<b>Emerging Markets-Africa</b>	<b>Aymeric Saha, MiDA – (Mobilizing Institutional Investors to Develop Africa's Infrastructure), Managing Director</b> <b>NASP-USAID Investment Partners</b>
<b>12:45 – 1:45 p.m.</b>	<b>Disruptive Technology</b>	<b>Catherine Wood, Ark Invest</b> Founder, CEO and CIO
<b>1:45 – 2:00 p.m.</b>	<b>Break (p.m.)</b>	
<b>2:00 – 3:00 p.m.</b>	<b>Streamlining Board Operations</b>	<b>Presentation and Board Discussion</b>
<b>3:00 p.m.</b>	<b>2018 – Board Off-Site Event</b>	<b>Tarrell Gamble, ACERA Board Chair</b>
	<b>Wrap-Up</b>	





**Alameda County Employees' Retirement Association**

475 – 14<sup>th</sup> Street, Suite 1000, 10<sup>th</sup> Floor, Oakland, CA 94612

Phone: (510) 628-3000 Fax: (510) 287-5412

~~~~~  
**Board Off-Site Event**

Monday, October 29, 2018

8:00 a.m. to 3:00 p.m.

**Scott's Jack London Square**

#2 Broadway - Jack London Square, Oakland, CA 94607

~~~~~  
**Continental Breakfast Menu**

**08:00 – 09:00 a.m.**

Fresh Seasonal Fruit, Hard-boiled Eggs, Non-Fat Yogurt,

Granola, Steel-Cut Oatmeal, Raisins, Almonds, Bran Muffins

Fresh Squeezed Orange Juice, Peerless European Royale Coffee, Hot Tea Service

**Classic Buffet Lunch Menu**

**11:30 a.m. – 02:00 p.m.**

**SALAD** – Scott's Mixed Greens and Traditional Sourdough Bread with Sweet Butter

**SIDES** – Scott's Fresh Vegetables and Garlic Mashed Potatoes

**PASTA STATION** – Roasted Vegetable Ravioli with Pesto Cream Sauce  
and Fresh Grated Parmesan Cheese

**Entrée**

Sliced Roasted Filet Mignon

Grilled Atlantic Salmon with Hollandaise Sauce







**Alameda County Employees' Retirement Association**

475 – 14<sup>th</sup> Street, Suite 1000, 10<sup>th</sup> Floor, Oakland, CA 94612

Phone: (510) 628-3000 Fax: (510) 287-5412

**Board Off-Site Event**

Monday, October 29, 2018

8:00 a.m. to 3:00 p.m.

**Scott's Jack London Square**

#2 Broadway - Jack London Square, Oakland, CA 94607

**Current Political Climate**

09:05 – 10:15 a.m.



CONGRESSWOMAN  
**JACKIE SPEIER**  
Proudly Representing San Francisco and the Peninsula

Jackie Speier (pronounced SPEAR) represents California's 14th Congressional District, which stretches from the southern portion of San Francisco through San Mateo County to East Palo Alto. She is a recognized champion of women's rights, privacy, and consumer safety—as well as an avowed opponent of government inefficiency and waste. In 2012, she was named to Newsweek's list of 150 "Fearless Women" in the world.







# **PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS**



OCTOBER 2018

ESG Panel

**ACERA Strategic Offsite**



# Overview

# An abbreviated history

- 1700s: The origins are rooted with early religious investors who promoted screens avoiding gambling, tobacco gaming and other “sin stocks.”
- 1968: Ford Foundation pioneered Program Related Investments. The IRS coined the term “program related investment” in the Tax code of 1969.
- 1971: Pax World Fund – considered the first socially responsible investment (SRI) mutual fund – avoids investments in weapons contractors. The fund offered an option to investors opposed to militarism and the Vietnam war.
- 1973: First 20<sup>th</sup> century shareholder resolution by religious organization filed by Episcopal Church through Interfaith Center of Corporate Responsibility.
- 1980s: Social investors supported the anti-apartheid movement by divesting from companies doing business in South Africa. As a practice based on values and moral principles, avoidance screening became one of the basic strategies of social investing.
- 1995: FB Heron Foundation championed Mission Related Investing.
- 2015: The Department of Labor issued new guidance confirming consistency with fiduciary duty of “economically targeted investments” by pension funds under ERISA.
- Today, many more strategies and approaches to screening have evolved.

Many key events throughout history have shaped the space and contributed to the current environment of ESG investing today.

# Defining the terms

## Investing with an intent that goes beyond generating financial returns

- **Socially Responsible Investing:** SRI is investing with one's values, screening out or not investing in certain companies or industries (negative screens), or only investing in particular companies because they exhibit desirable traits (positive screens).
- **Environmental, Social and/or Governance (ESG):** ESG investing refers to the integration of environmental, social and corporate governance information into investment decision-making to manage financially material ESG-related risks and enhance risk-adjusted returns
- **Active Ownership:** Investing with the purpose of encouraging companies to manage non-financial risks and run sustainable businesses in order to create long-term shareholder value. This can be exercised through shareholder advocacy or shareholder engagement, proxy voting and corporate resolutions.
- **Impact Investing:** Investing with the intent to create measurable social or environmental benefit in addition to financial return.
- Sustainable investing, mission-based investing and responsible investing are other monikers used.

While there are multiple ways to implement an ESG investment strategy, there is overlap amongst the various methodologies.



# Comparison of different approaches

	Socially Responsible Investing	ESG Integration	Active Ownership	Impact Investing
Level of impact	Lowest impact on the mission relative to other approaches	Medium to high impact on the mission relative to other approaches	Higher (direct) impact in terms of change; for a small equity share, investors can effect big changes	Higher impact relative to screening, although this comes with higher risk
Cost considerations	Least resource-intensive in terms of staff and expertise required to implement and monitor	Less resource-intensive in terms of staff and expertise required to implement and monitor	Higher resource requirements in order to actively follow and engage with companies' management	Highest in cost in terms of resources, oversight and due diligence
Implementation considerations	Difficult to implement in mutual funds or commingled funds, unless the investment manager has a screened product	For mutual funds, commingled funds and separate accounts, the onus is on the investment manager(s) to integrate ESG in the investment decision making process	For mutual funds, commingled funds and separate accounts, onus is on the investment manager to exercise active ownership on behalf of investors	Hardest to implement relative to other approaches, and often requires finding a specialist provider or partners to seek social-investment opportunities
	Easier to implement in direct investments and/or separate accounts	For direct investments, onus is on asset owner to incorporate ESG in the investment decision making process	For direct investments, asset owner can directly engage with investee companies	Similar to positive/best in class screening
				Limited implementation due to limited albeit growing corporate sustainability disclosure by companies

Lower implementation cost/lower impact

Higher implementation cost/higher impact

# Sustainable Development Goals

Figure 1: SDGs Mapped Against Environmental, Social, and Governance Categories



# Importance of data

## MSCI ESG RATING MODEL KEY ISSUES

ESG RATINGS | MORE DATA  
MORE CONTEXT  
MORE INFORMED DECISIONS

ENVIRONMENT PILLAR				SOCIAL PILLAR				GOVERNANCE PILLAR	
Climate Change	Natural Capital	Pollution & Waste	Env. Opportunities	Human Capital	Product Liability	Stakeholder Opposition	Social Opportunities	Corporate Governance	Corporate Behavior
Carbon Emissions	Water Stress	Toxic Emissions & Waste	Clean Tech	Labor Management	Product Safety & Quality	Controversial Sourcing	Access to Communication	Board	Business Ethics
Product Carbon Footprint	Biodiversity & Land Use	Packaging Material & Waste	Green Building	Health & Safety	Chemical Safety		Access to Finance	Pay	Anti-Competitive Practices
Financing Environmental Impact	Raw Material Sourcing	Electronic Waste	Renewable Energy	Human Capital Development	Financial Product Safety		Access to Health Care	Ownership	Corruption & Instability
Climate Change Vulnerability				Supply Chain Labor Standards	Privacy & Data Security		Opportunities in Nutrition & Health	Accounting	Financial System Instability
					Responsible Investment				Tax Transparency
					Insuring Health & Demographic Risk				

### Three-Step Process

- 1) Identify Key Issues By Industry
- 2) Measure Risk Exposure
- 3) Measure Risk Management



# ESG as a fiduciary

# What is responsible investment?

Incorporates 'value' and 'values-based' investing

**Responsible investment** is an approach to investing that aims to incorporate environmental, social and governance (ESG) factors into investment decisions, to better manage risk and generate sustainable, long-term returns.



# Approaches to responsible investment

## ESG Incorporation and active ownership



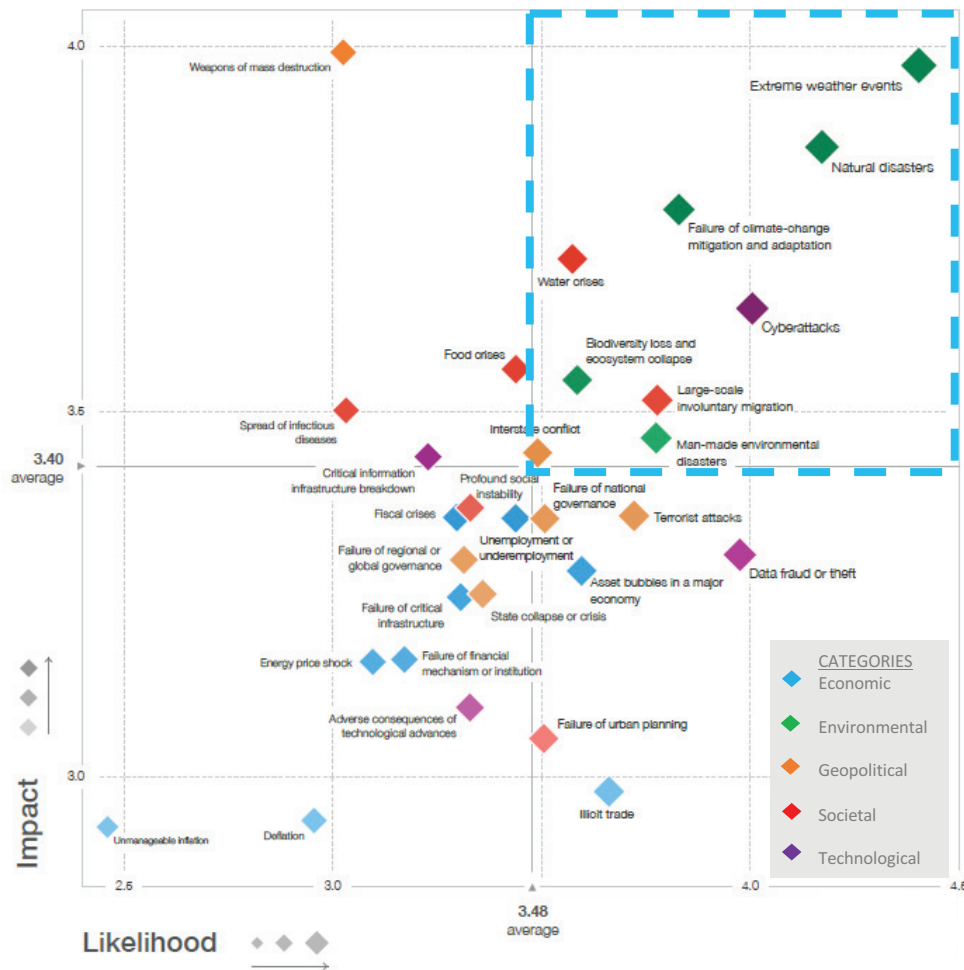


# The world is changing

Trends transforming business, marketplaces and society



# What are the risks of tomorrow?



## TOP GLOBAL RISKS

- ◆ Extreme weather events
- ◆ Natural disasters
- ◆ Failure of climate-change mitigation/adaption
- ◆ Cyber attacks
- ◆ Water crises
- ◆ Large scale involuntary migration
- ◆ Man-made environmental disasters
- ◆ Bio-diversity loss and ecosystem collapse

Source: World Economic Forum 2018 Global Risks report

## ESG issues can be material

Investors are increasingly focused on the impact of ESG factors



**"Nike's labor woes leave soiled footprint on image"**

THE WALL STREET JOURNAL

1997



**"BP set to pay largest environmental fine in US history for Gulf oil spill"**

theguardian

2010



**"Tokyo Electric executives to be charged over Fukushima nuclear disaster"**

REUTERS

2011



**"VW slumps to first net loss in 15 years and warns of scandal toll"**

FINANCIAL TIMES

2014



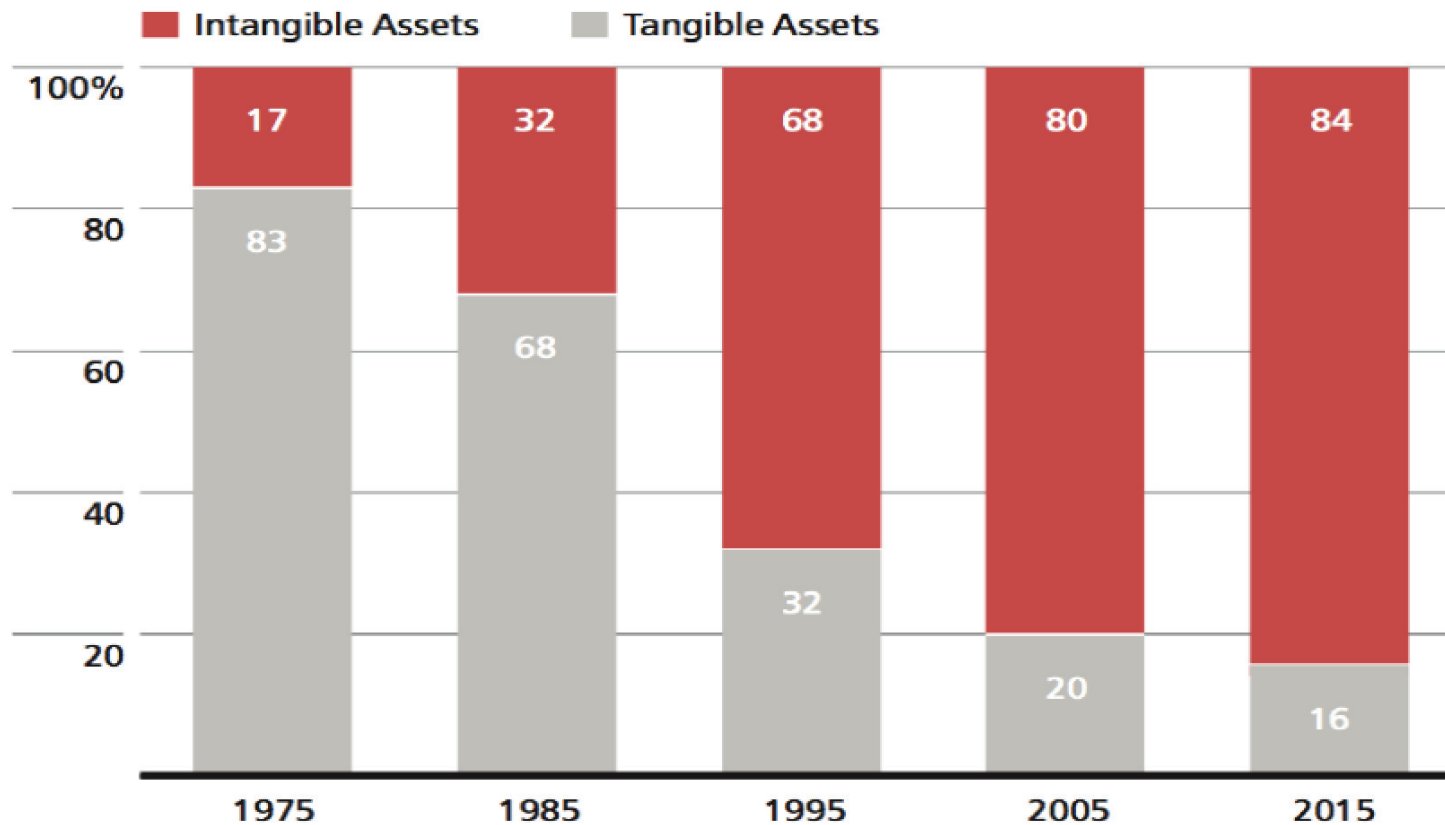
**"The sharing of 50M Facebook users' personal data led to the biggest ever one day drop in a company's market value"**

FINANCIAL TIMES

2018

## Valuation: The world has changed

### Components of S&P 500 Market Value

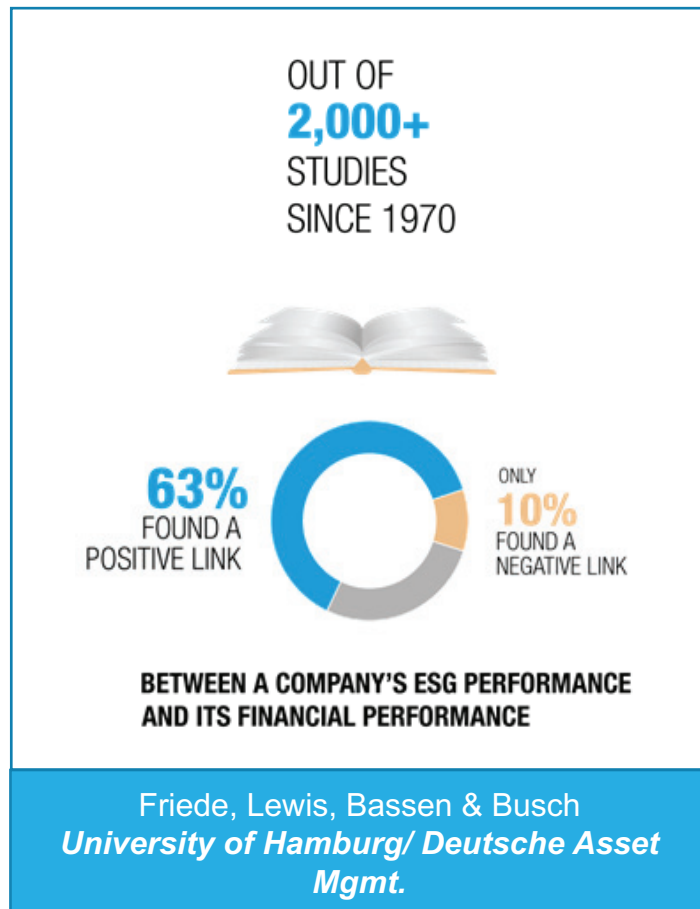


Source: Ocean Tomo, Ocean Tomo's Intangible Asset Market Value Study, January 2015.

# Growing academic evidence

ESG incorporation does not come at a cost

## Meta-study (December 2015)



## November 2009

"There are statistically significant positive abnormal returns associated with going long good corporate governance firms and shorting those with poor governance"

Cremers & Ferrell  
*Yale School of Management*

## November 2011

"Firms with high levels of job satisfaction, as measured by inclusion in the 'Best Companies to Work For in America', generate high long-run stock returns"

Edmans  
*The Wharton School*

## January 2012

"High-sustainability companies dramatically outperformed the low-sustainability ones in terms of both stock market and accounting measures."

Eccles, Ioannou & Serafeim  
*Harvard Business School*

## March 2015

"Responsibility and profitability are not incompatible but wholly complementary... 80% of the reviewed studies demonstrate that prudent sustainability practices have a positive influence on investment"

Clark, Feiner & Viehs  
*Oxford University*

## August 2015

"After successful engagements companies experience improved accounting performance and governance and increased institutional ownership"

Dimson, Karakas & Li,  
*Fox School of Business/  
University of Cambridge*

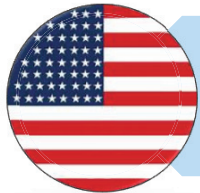
## January 2016

"Firm-size-adjusted carbon emissions have a positive and significant effect on loan spreads... suggesting that spread premia are driven by environmental risks rather than investor preferences"

Kleimeier & Viehs, *Oxford  
University/ Maastricht University*

# The changing regulatory environment

Examples of RI regulation around the world



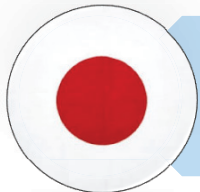
Government Accountability Office (GAO), Report on Retirement Plan Investing (May 2018)

**The US Department of Labour should “clarify whether the liability protection offered to qualifying default investment options allows use of ESG factors” and “provide further information to assist fiduciaries in investment management involving ESG factors (...)”**



Department for Work and Pensions, Occupational Pension Schemes (Investment) Regulations\* (June 2018)

**Trustees should “state their policies in relation to financially material considerations, including but not limited to ESG considerations (including climate change)”**



Financial Services Authority (FSA), Stewardship Code (2014) & Governance Code (2015)

**Institutional investors should “enhance the medium-to long-term return on investments...by improving and fostering investee companies’ corporate value and sustainable growth through constructive engagement, or purposeful dialogue.”**



European Commission Action Plan on Sustainable Finance (May 2018)

**Multiple regulatory proposals, including directive 2016/2341\* to require “integration of ESG risks” under delegated acts.**

*\*Proposed legislation*



# The changing regulatory environment

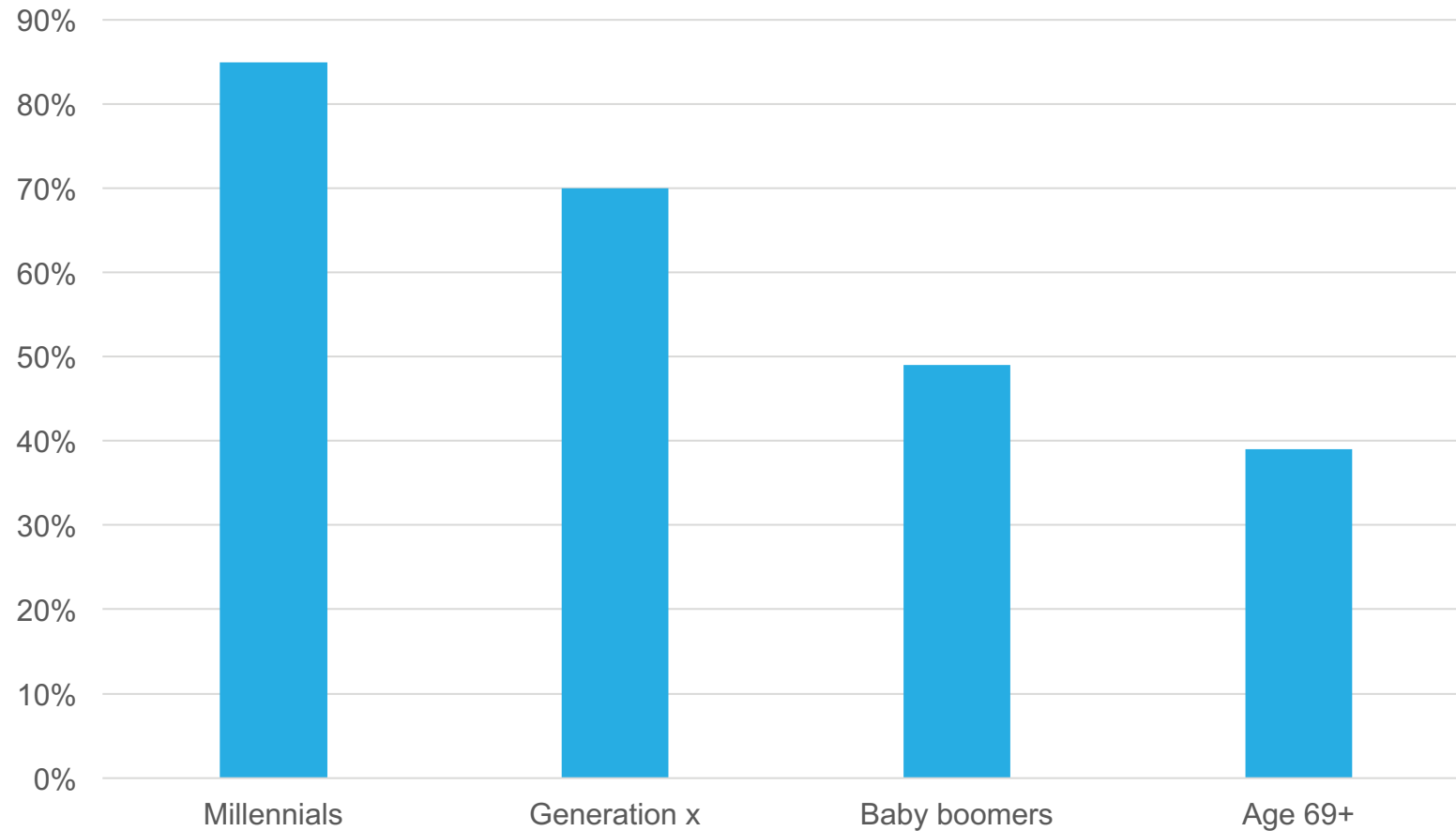
## ERISA guidance



- **USDOL Interpretive Bulletin 2015-01(29 CFR 2509.2015-01) Supplementary Information:**
  - “plan fiduciaries should appropriately consider factors that potentially influence risk and return. **Environmental, social, and governance issues may have a direct relationship to the economic value of the plan’s investment. In these instances, such issues are not merely collateral considerations or tie-breakers, but rather are proper components of the fiduciary’s primary analysis of the economic merits of competing investment choices.**”
  - “As in selecting investments, in selecting investment managers, the plan fiduciaries **must** reasonably conclude that the investment manager’s practices in selecting investments are consistent with the principles articulated in this guidance.”

## Beneficiary and other stakeholder interests

Are ESG issues important to investments?



Source: U.S. Trust (2015): Insights on Wealth and Worth Survey

# The PRI

Investor-led, supported by the United Nations

The PRI works with its international network of signatories to put the six Principles for Responsible Investment into practice. Its goals are to understand the investment implications of environmental, social and governance issues and to support signatories in integrating these issues into investment and ownership decisions.

The six Principles were **developed by investors** and are supported by the UN. They have more than 2,100 signatories from over 50 countries representing over US\$82 trillion of assets.

2

**UN PARTNERS:**

UNEP FINANCE INITIATIVE  
UN GLOBAL COMPACT



2100+

**SIGNATORIES:**

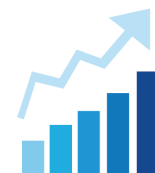
ASSET OWNERS  
INVESTMENT MANAGERS  
SERVICE PROVIDERS



82

**US\$ trn**

**ASSETS UNDER  
MANAGEMENT**



# One mission – Six principles

## The mission

"We believe that an economically efficient, sustainable global financial system is a necessity for long-term value creation. Such a system will reward long-term, responsible investment and benefit the environment and society as a whole.

The PRI will work to achieve this sustainable global financial system by encouraging adoption of the Principles and collaboration on their implementation; by fostering good governance, integrity and accountability; and by addressing obstacles to a sustainable financial system that lie within market practices, structures and regulation."

**1** We will incorporate ESG issues into investment analysis and decision-making processes.

**2** We will be active owners and incorporate ESG issues into our ownership policies and practices.

**3** We will seek appropriate disclosure on ESG issues by the entities in which we invest.

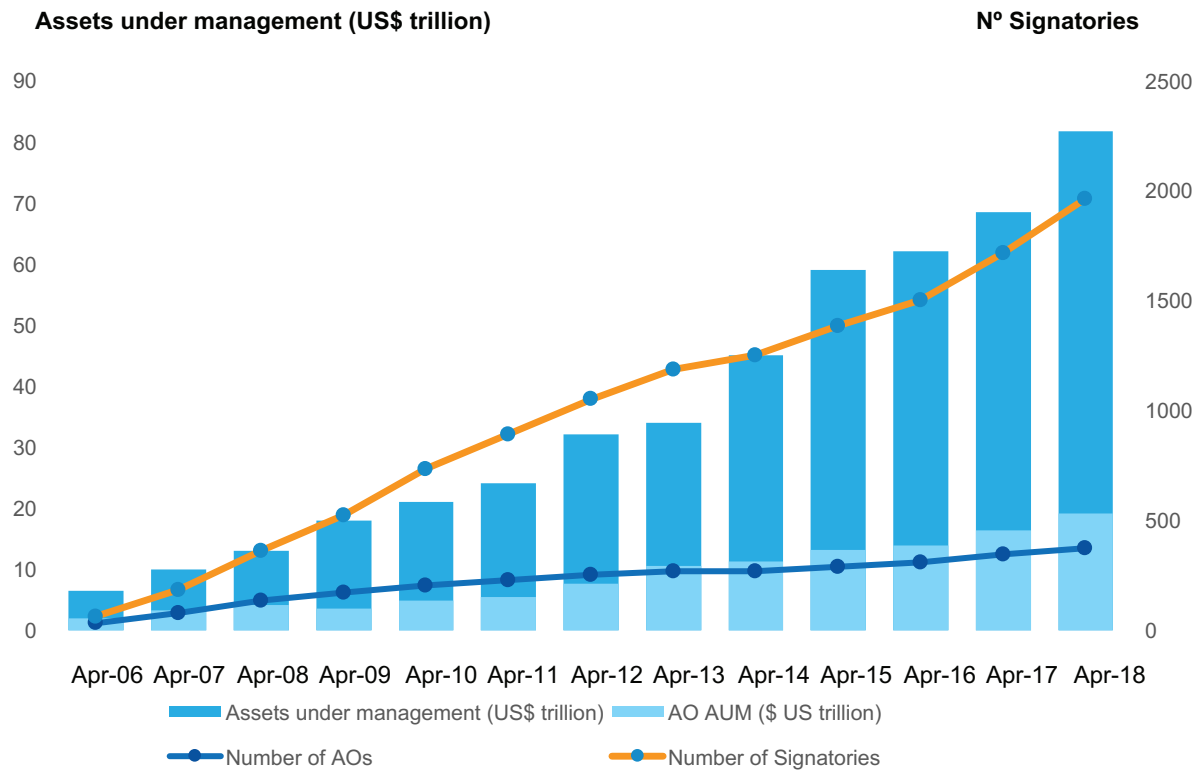
**4** We will promote acceptance and implementation of the Principles within the investment industry.

**5** We will work together to enhance our effectiveness in implementing the Principles.

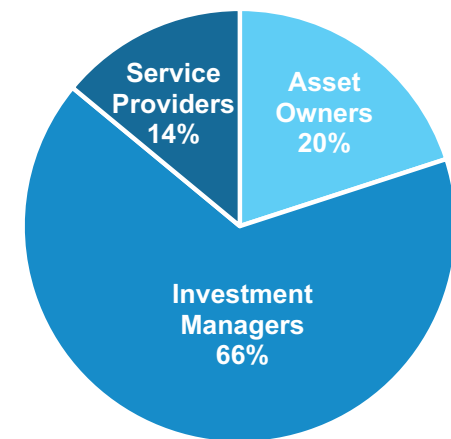
**6** We will each report on our activities and progress towards implementing the Principles.



## Growth in signatory base

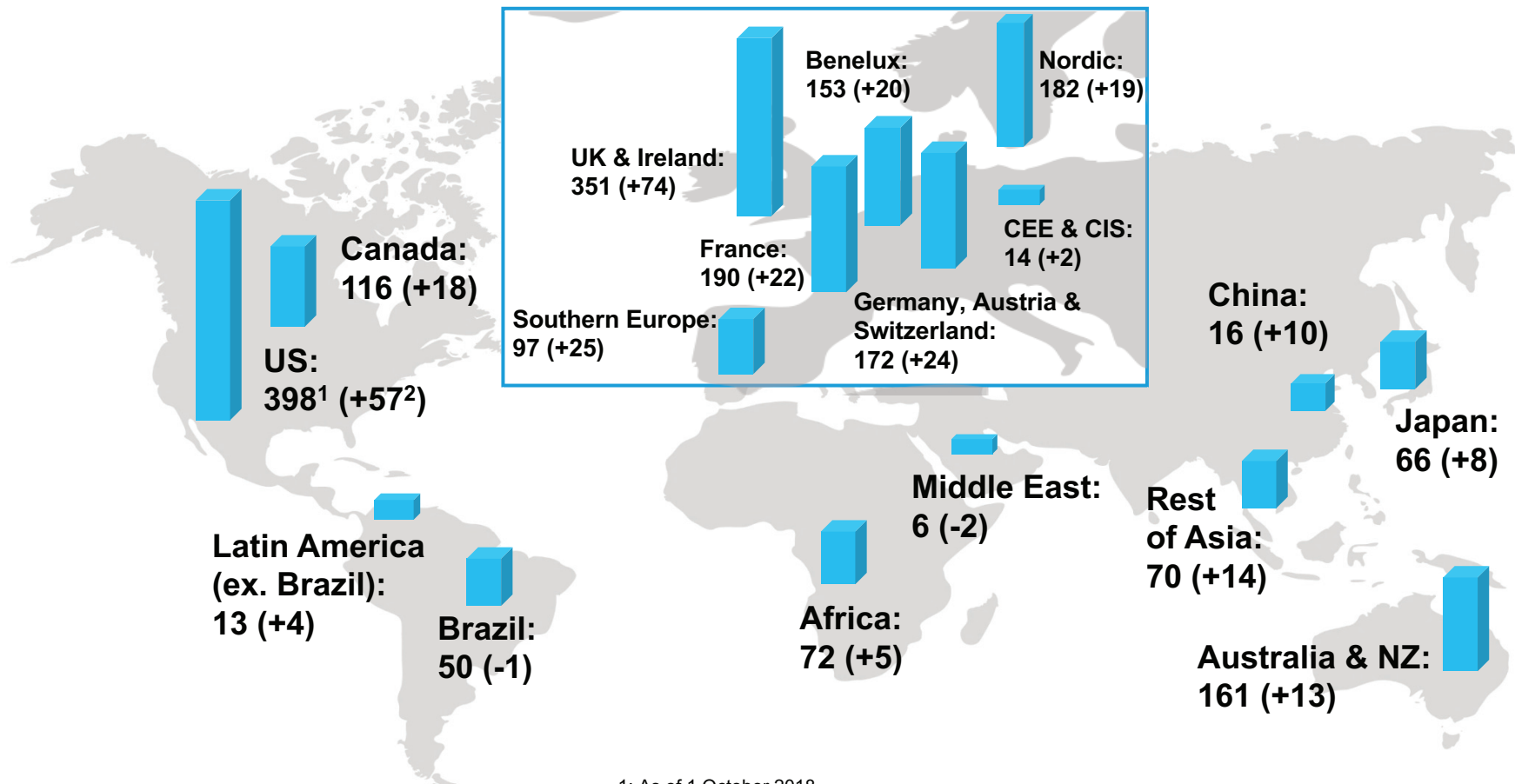


### Three types of signatories:



## More than 2,100 investors worldwide

Have adopted the Principles for Responsible Investment



1: As of 1 October 2018

2: Net new signatories over past 12 months



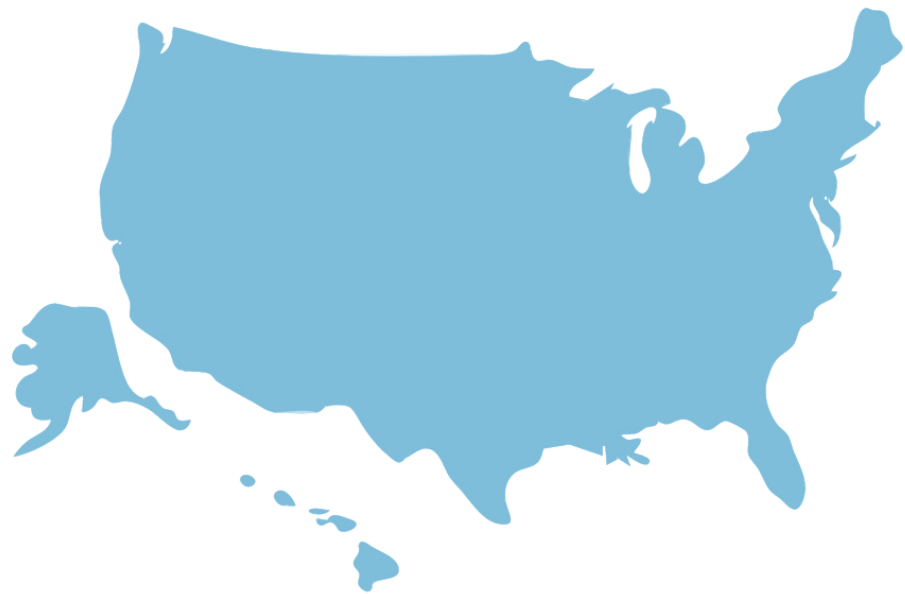
## PRI in the US

**398** Signatories

**44** Asset Owners

**306** Investment Managers

**48** Service Providers

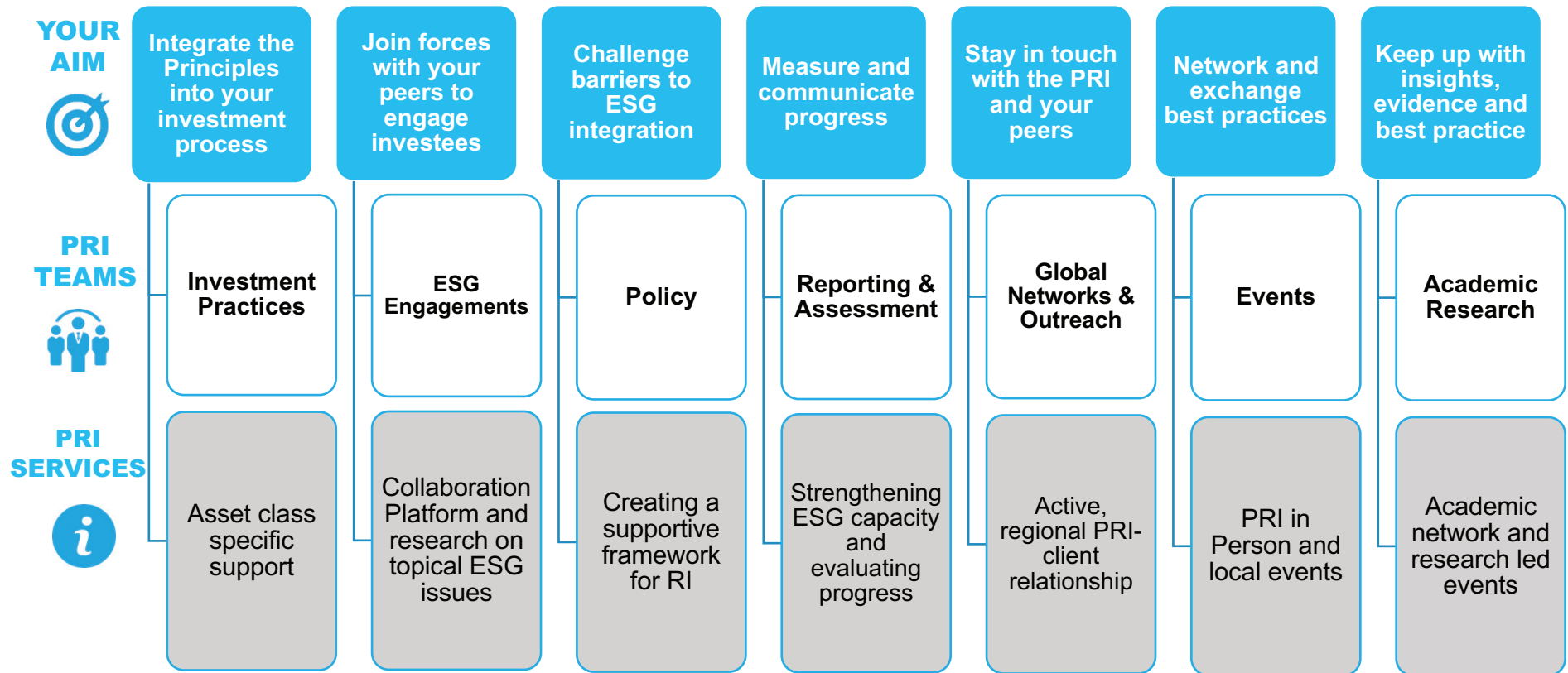


## US Asset Owner Signatories

Signatory Name	State	Signatory Name	State
Humboldt State University Advancement Foundation	CA	Presbyterian Church U.S.A. Foundation	IN
Los Angeles County Employees Retirement Association	CA	Unitarian Universalist Common Endowment Fund, LLC	MA
The Skoll Foundation	CA	Middletown Works Hourly and Salaried Union Retirees Health Care Fund	MA
San Francisco Employees Retirement System	CA	Harvard University Endowment	MA
Sierra Club Foundation	CA	The University of Maryland Foundation, Inc	MD
Loyola Marymount University	CA	Maryland State Retirement and Pension System	MD
California Public Employees' Retirement System CalPERS	CA	UAW Retiree Medical Benefits Trust	MI
California State Teachers' Retirement System CalSTRS	CA	Mercy	MO
University of California	CA	Mercy Investment Services, Inc.	MO
Connecticut Retirement Plans and Trust Funds (CRPTF)	CT	University of New Hampshire Foundation	NH
UFCW International Union Pension Plan for Employees	DC	New York State Local Retirement System	NY
World Resources Institute	DC	Teachers' Retirement System of the City of New York	NY
World Bank Group Retirement Benefit Plans	DC	New York City Employees Retirement System	NY
SEIU Pension Plans Master Trust	DC	United Nations Joint Staff Pension Fund	NY
International Finance Corporation (IFC)	DC	Nathan Cummings Foundation	NY
AFL-CIO Reserve Fund	DC	The Pension Board-UCC, Inc.	NY
United Nations Foundation	DC	Rockefeller Brothers Fund	NY
Employees' Retirement System of the State of Hawaii	HI	United Church Funds	NY
Northwestern University	IL	Treehouse Investments, LLC	NY
Wespath Investment Management (General Board of Pension and Health Benefits of the United Methodist Church)	IL	Bloomberg LP Retirement Plans	NY
Office of the Illinois State Treasurer	IL	The Episcopal Diocese of New York - Diocesan Investment Trust	NY
City of Chicago (City Treasurer's Office)	IL	Seattle City Employees' Retirement System (SCERS)	WA

# PRI services

What the PRI does for you



# Evolution and integration of ESG

# 4 Transformational Revolutions



## Information Revolution



## 4<sup>th</sup> Industrial Revolution



## Demographic Revolution



## Climate Change



What this means to Investors

# Big Problems to Solve

## ECONOMIC TIMES (INDIA)

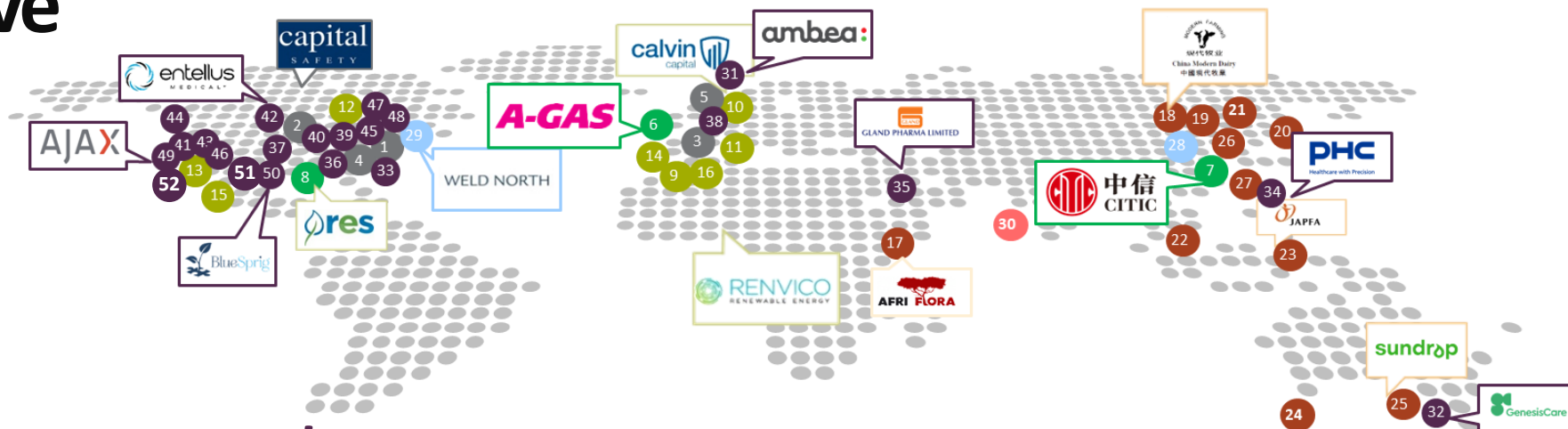
Generation of hazardous wastes is increasing at the rate of 2-5% per year in India

## BROOKINGS INSTITUTION

A global tipping point: Half the world is now middle class or wealthier

## WALL STREET JOURNAL

Storms are getting deadlier and causing more damage as more Americans live on the coast



# Over \$8 billion

invested behind SDG solutions-related themes and healthcare<sup>1</sup>

~\$700 million

### Industrial & Infrastructure Solutions

- 1 Bayonne Water & Wastewater Concession<sup>(2)</sup>  
Water infrastructure
- 2 Capital Safety<sup>(2)</sup>  
Safety Equipment
- 3 Coriance<sup>(2)</sup>  
District heating
- 4 Middletown Borough Authority Concession<sup>(2)</sup>  
Water infrastructure
- 5 South Staffordshire Plc<sup>(5)</sup>  
Water infrastructure

~\$600 million

### Environmental Management

- 6 A-Gas Group Limited  
Life-cycle management of gases and chemicals
- 7 CITIC Envirotech Ltd.<sup>(2)</sup>  
Water treatment and recycling
- 8 Resource Environmental Solutions (RES)  
Ecological solutions

~\$500 million

### Learning Resources & Workforce Development

- 28 Tarena  
Education service provider
- 29 Weld North<sup>(4)</sup>  
Digital ed-tech platform

~\$1.1 billion

### Next Generation Energy

- 9 ACCIONA Energia Internacional  
Renewable energy
- 10 Calvin Capital  
Gas and electricity smart metering
- 11 Renvico Renewable Energy  
Renewable energy
- 12 SSM Solar<sup>(2)</sup>  
Renewable energy
- 13 SunTap Energy RE LLC  
Renewable energy
- 14 T-Solar Global Operating Assets  
Renewable energy
- 15 Transphorm  
Power conversion technology
- 16 X-ELIO  
Renewable energy

~\$70 million

- 30 Magma Fincorp<sup>(2)</sup>  
Financial Services

~\$1.75 billion

### Responsible Production & Consumption

- 17 Afriflora<sup>(2)</sup>  
Sustainable, fair trade agriculture
- 18 Asia Dairy<sup>(2)</sup>  
Integrated dairy producer
- 19 COFCO Meat  
Integrated pork producer
- 20 Jiangsu Yuguan  
Agaricus mushroom producer
- 21 Ma Anshan Modern Farming<sup>(2)</sup>  
Integrated dairy producer
- 22 Masan Nutri-Science  
Integrated feed producer
- 23 PT Japfa Comfeed  
Integrated chicken feed and poultry producer
- 24 Santanol  
Sustainable forestry
- 25 Sundrop Farms  
Sustainable agriculture
- 26 Sunner Development  
Integrated poultry producer
- 27 Yuehai Feed Group  
Aquatic feed and nutrition solutions

~\$3.5 billion

### Health Care

- 31 Ambea AB  
Healthcare Provider
- 32 GenesisCare  
Healthcare Provider
- 33 PRA Health Sciences  
Contract Research Organization
- 34 Panasonic Healthcare  
Diagnostics/Life Science Tools
- 35 GlandPharma  
Biopharmaceuticals
- 36 Arbor Pharmaceuticals  
Biopharmaceuticals
- 37 Global Medical Response  
Ambulance Services
- 38 LGC Science Group  
Diagnostics/Life Science Tools
- 39 Covenant Surgical Partners  
Providers
- 40 Pharmacia  
Other Health Services
- 41 AcuFocus  
Medical Devices
- 42 Entellus  
Medical Devices
- 43 BridgeBio  
Biopharmaceuticals
- 44 EchoNus  
Diagnostics
- 45 Cohera Medical  
Medical Devices
- 46 Coherus BioSciences  
Biopharmaceuticals
- 47 Ebb Therapeutics  
Medical Devices
- 48 Slayback Pharma  
Generic Pharmaceuticals
- 49 Ajax Health  
Medical Devices
- 50 Blue Sprig  
Providers
- 51 Project Triton  
Services
- 52 Headlands Research  
Pharma Services



What this means to Investors

# New Scrutiny for All Companies

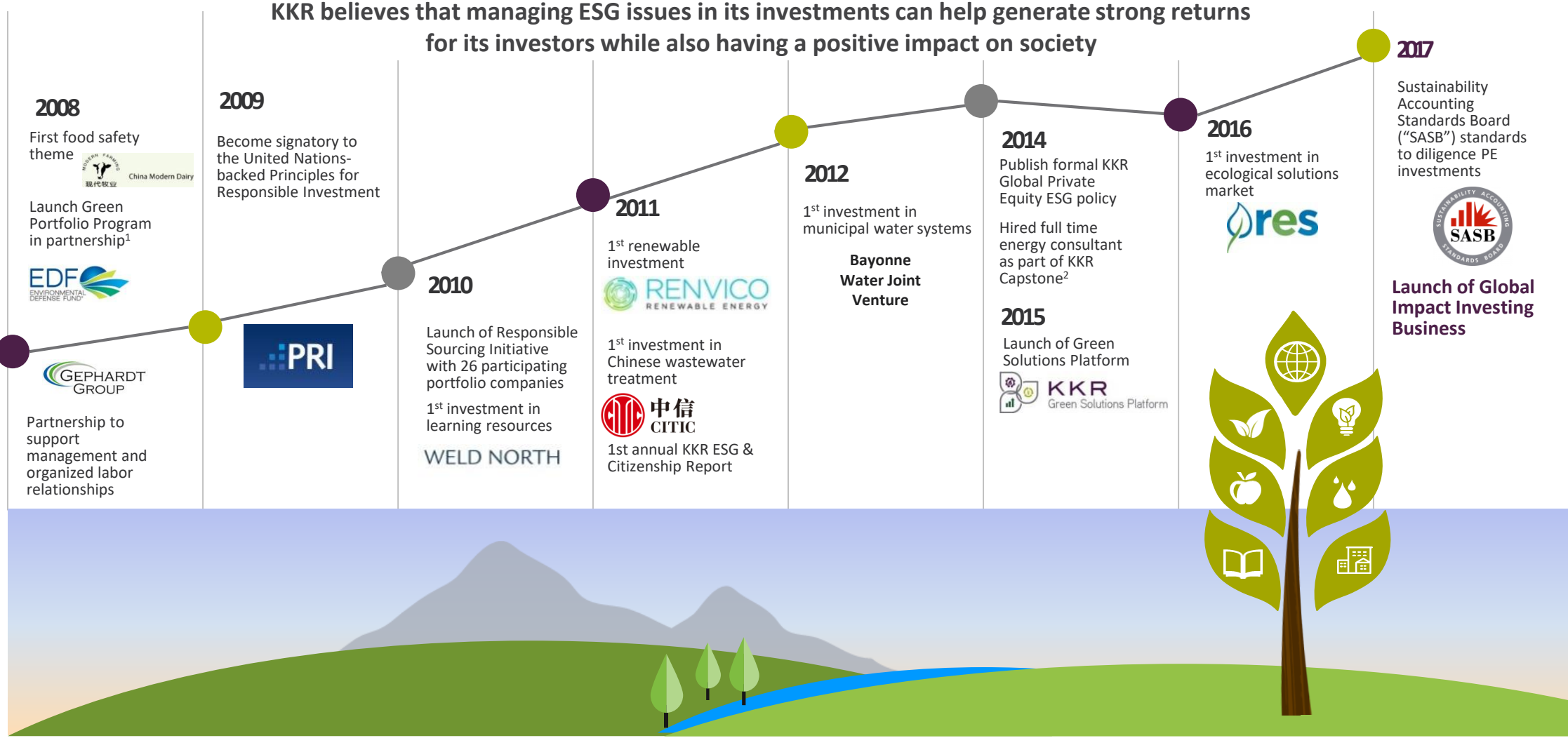


What this means to Investors

# A Volatile Environment in Which To Operate



# Create Shareholder Value Through Shared Value



(1) The KKR Green Solutions Platform, formerly known as the KKR Green Portfolio Program, launched in 2008 in partnership with the Environmental Defense Fund. In 2015, KKR decided to launch the Green Portfolio Platform as the Green Solutions Platform, a global program centered around three focus areas: eco-friendly, eco-innovation and eco-solutions.  
(2) KKR Capstone is not an affiliate or subsidiary of KKR. Please see Important Information for additional disclosures

# Create Shareholder Value Through Shared Value

A Decade of Creating Value through ESG Management



## Green Solutions Platform<sup>1</sup>

58 companies across 4 asset classes

**Business Benefits** (at 25 PCs as of October 15, 2014):

\$1.2 billion of cumulative costs avoided and additional revenue

### Environmental Benefits

- 2.3 MMT of greenhouse gas emissions
- 6.3 MT of waste
- 27 m<sup>3</sup> of water use

External Partner



## Responsible Sourcing Initiative

26 portfolio companies  
10 webinars

**Business Benefits:** Reduced disruptions and reputation risk

**Social Benefits:** Improved ESG management of supply chains

External Partner



## Integrity & Engagement

Access to best practices for ethical business

**Business Benefits:** Investments protected and more focus on regulatory compliance

**Social Benefits:** Reduced corruption and enhanced transparency

External Partner



## KKR Wellness Works

10 Portfolio Companies

### Business Benefits:

- Improved productivity
- Fewer sick days
- Control health care costs over time

**Social Benefits:** Engagement of 250k+ employees

US Only

External Partner



## Vets @ Work

41 Portfolio Companies

**Business Benefits:** Highly skilled work force

**Social Benefits:** High-quality jobs for nearly 62,500 U.S. veterans and military spouses (as of December 31, 2017)

US Only

## KKR Investment Examples<sup>(2)</sup>

Labor partnership & reduced energy use



Launched Serve Good product line, addressing sustainability issues in the food industry

Expanded employee ownership, improve performance & worker safety



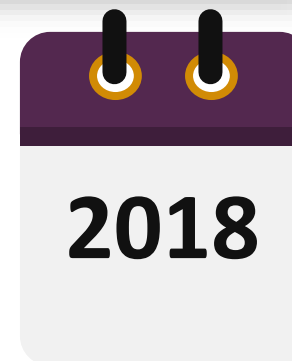
Built dedicated biogas and electricity generation facilities in each farm, and treated ~2.1mm m<sup>3</sup>/year of manure



Increased diversity to become industry leader in hiring women in tech



Achieved cost savings from reduced energy use



## Key 2018 Initiatives

- Diversity, Inclusion and Workplace Respect
- Data Privacy and Technology Best Practices

Note: Past performance is no guarantee of future results. Information as of June 30, 2018 unless otherwise noted. Illustrative programs. For full list of programs, please see [www.KKRESG.com](http://www.KKRESG.com)

1 The KKR Green Solutions Platform, formerly known as the KKR Green Portfolio Program, launched in 2008 in partnership with the Environmental Defense Fund. In 2015, KKR decided to launch the Green Portfolio Platform as the Green Solutions Platform, a global program centered around three focus areas: eco-friendly, eco-innovation and eco-solutions.

2 The companies shown represent companies where KKR has created value through ESG management. The specific portfolio companies identified are not representative of all of the securities purchased, sold or recommended for advisory clients, and it should not be assumed that the investment in the companies identified was or will be profitable.

# Invest in Solutions

## HOW DO WE DEFINE IMPACT

### 1 Contributes Solutions to United Nations Sustainable Development Goals

A company whose business model contributes solutions to a challenge (or challenges) identified by the UN Sustainable Development Goals (“SDGs”); such determination will be supported by BSR<sup>1</sup>.

### 2 Generates Impacts that are Measureable

A company whose positive contributions towards the SDGs are measurable and reportable using third-party metrics. Under KKR’s ownership, the company will set targets related to the impact of the product or service, and assess progress, which will be reported by KKR.

### 3 Seeks to Improve ESG Performance During KKR Ownership

A company that actively manages and seeks to improve its performance on relevant ESG-related issues—as guided by the Sustainability Accounting Standards Board (“SASB”) materiality analysis—during KKR’s ownership. During KKR’s ownership period, KKR will measure, monitor, score, and report on ESG-related performance to fund investors annually.

<sup>1</sup> BSR™ is a global nonprofit organization that works with its network of more than 250 member companies and other partners to build a just and sustainable world. Visit [www.bsr.org](http://www.bsr.org) for more information.

## WHERE WE WILL FOCUS AND WHY

### Industrial & Infrastructure Solutions

Circular and Sharing Related Business Models  
Efficiency Enhancement  
Advanced Materials  
Asset Integrity  
Safety  
Mobility  
Disaster Resilience & Urban Design

### Environmental Management

Air  
Water  
Waste  
Consulting  
Land Stabilization & Remediation

### Next Generation Energy

Renewable Energy  
Batters & Storage  
Energy Infrastructure  
Energy Services

### Responsible Production & Consumption

Circular & Sharing-Related Business Models  
Resource Optimization  
Transparent & Sustainable Supply Chains  
Healthy Living  
Hybrid Foods  
AgTech

### Learning Resources & Workforce Development

Personalized Solutions  
Professional Development  
Digital & Experiential Learning  
EdTech





# Important Information

This presentation is furnished upon request on a confidential basis exclusively to the named recipient to this presentation (the “Recipient”) and is not for redistribution or public use. The data and information presented are for informational purposes only. The information contained herein should be treated in a confidential manner and may not be transmitted, reproduced or used in whole or in part for any other purpose, nor may it be disclosed without the prior written consent of Kohlberg Kravis Roberts & Co. L.P. (together with its affiliates, “KKR”). By accepting this material, the Recipient agrees not to distribute or provide this information to any other person.

The information in this presentation is only as current as of the date indicated, and may be superseded by subsequent market events or for other reasons. Nothing contained herein constitutes investment, legal, tax or other advice nor is it to be relied on in making an investment or other decision. This presentation should not be viewed as a current or past recommendation or a solicitation of an offer to buy or sell any securities or to adopt any investment strategy.

The information in this presentation may contain projections or other forward-looking statements regarding future events, targets or expectations and is only current as of the date indicated. There is no assurance that such events or targets will be achieved, and may be significantly different from that shown here. The information in this presentation, including statements concerning financial market trends, is based on current market conditions, which will fluctuate and may be superseded by subsequent market events or for other reasons.

KKR Credit currently conducts its activities through the following advisory entities; KKR Credit Advisors (US) LLC, which is authorized and regulated by the SEC, KKR Credit Advisors (Ireland) Unlimited Company, which is authorized and regulated by the Central Bank of Ireland, and KKR Credit Advisors (EMEA) LLP, which is authorized and regulated by the Financial Conduct Authority. Employees of KKR Credit Advisors (US) LLC, and KKR Capital Markets LLC located in the United States are dual employees of Kohlberg Kravis Roberts & Co. L.P.

General discussions contained within this presentation regarding the market or market conditions represent the view of either the source cited or KKR. Nothing contained herein is intended to predict the performance of any investment. There can be no assurance that actual outcomes will match the assumptions or that actual returns will match any expected returns. The information contained herein is as of June 30 2018, unless otherwise indicated, is subject to change, and KKR assumes no obligation to update the information herein.

In this presentation, the reported impact of initiatives of the Green Portfolio Program is based on internal analysis of KKR Capstone and information provided by the applicable portfolio company. Impacts of such initiatives are estimates that have not been verified by a third party and are not necessarily reported according to established voluntary standards or protocols. KKR does not guarantee the accuracy, adequacy or completeness of such information. They may also reflect the influence of external factors, such as macroeconomic or industry trends. There is no guarantee that results shown will be replicated in the future and actual results may be better or worse in future years. For more information on the methodology and terms used in the Green Portfolio Program, please see <http://green.kkr.com>.

This presentation contains certain information about previous KKR investments. This information is provided solely to illustrate KKR’s investment experience and the processes and strategies used by KKR in the past with respect to other investment funds. Any performance information in this presentation relating to KKR’s previous investments is not intended to be indicative of the strategy’s future results, and there can be no assurance that strategy will achieve comparable results or that the Fund will be able to implement its investment strategy or achieve its investment objectives. In many cases these previous investments are not representative of investments that may be made by the Fund. Accordingly, the information provided in this presentation regarding the investment performance of KKR’s private funds is provided solely for background purposes to illustrate KKR’s investment experience in these strategies and should not be considered as an indication of future performance of KKR or the strategy. Investors should note that the carried interest and management fee terms of the strategy may differ from those of prior KKR funds and, depending on the circumstances, may be higher (resulting in reduced returns). This presentation does not constitute an offer to sell, or a solicitation of an offer to purchase, any security of any other investment fund managed or offered by KKR or its affiliates referred to in this presentation.

The presentation contains certain information about previous KKR investments comprising KKR’s UN SDG solutions-oriented investments in sub-sectors similar to the target impact sub-sectors as identified by the KKR Global Impact team that were made globally from January 1, 2008 to June 30, 2018 that, in the estimation of the KKR Global Impact team, possess, to varying degrees, impact-related qualities. The determination and assessment by the KKR Global Impact team of which investments to include involve significant judgment and may differ from another party’s review of KKR’s investments. Another party’s assessment may exclude certain companies or include comparable companies not represented. While KKR believes that our prior private equity and growth equity experience has prepared KKR well to identify and make investments in the strategy’s opportunity set, the investments included were not made by funds focused solely on impact-oriented investments and would not necessarily be considered appropriate investments for the strategy. For example, some of the investments included are larger than the \$100 million threshold for equity check sizes identified for the strategy. KKR believes January 1, 2008, is an appropriate reference point as it is in 2008 that KKR began to formalize its efforts around ESG and stakeholder management. Since that time, the KKR private equity teams have pursued opportunities in sub-sectors that are similar to the impact sub-sectors that will be pursued by the strategy.

References to “KKR Capstone” or “Capstone” are to all or any of KKR Capstone Americas LLC, KKR Capstone EMEA LLP, KKR Capstone EMEA (International) LLP, KKR Capstone Asia Limited, and their affiliates, which are owned and controlled by their senior management. KKR Capstone is not a subsidiary or affiliate of KKR. KKR Capstone operates under several consulting agreements with KKR and uses the “KKR” name under license from KKR. References to operating executives, operating experts, or operating consultants are to employees of KKR Capstone and not to employees of KKR. In this presentation, the impact of initiatives in which KKR Capstone has been involved is based on KKR Capstone’s internal analysis and information provided by the applicable portfolio company. Impacts of such initiatives are estimates that have not been verified by a third party and are not based on any established standards or protocols. They may also reflect the influence of external factors, such as macroeconomic or industry trends, that are unrelated to the initiative presented.



# Important Information (continued)

KKR Credit currently conducts its activities through the following advisory entities: KKR Credit Advisors (US) LLC, which is authorized and regulated by the SEC, KKR Credit Advisors (Ireland) Unlimited Company, which is authorized and regulated by the Central Bank of Ireland, and KKR Credit Advisors (EMEA) LLP, which is authorized and regulated by the Financial Conduct Authority. Employees of KKR Credit Advisors (US) LLC, -and KKR Capital Markets LLC located in the United States are dual employees of Kohlberg Kravis Roberts & Co. L.P.

A summary of certain risks that may be relevant to the strategy are set out below. The Memorandum will contain a more detailed description of these risks and information on additional risks that are not referred to herein.

**Investments in Social and Environmental Impact Investments** - The strategy's focus on social and environmental impact investments subjects it to a variety of risks, not all of which can be foreseen or quantified. When evaluating potential investment opportunities, in addition to financial return, an investment's potential to achieve a positive social or environmental impact will be considered. As a result, the opportunity set for potential investments will necessarily be smaller than it would otherwise be if the strategy were seeking to make investments solely on the basis of financial returns, and the General Partner may forgo opportunities that are attractive from a financial perspective if they do not also meet the strategy's social and environmental impact criteria. In addition, although KKR believes that pursuing positive social and environmental impact does not have to negatively affect an investment's financial returns, and it can even enhance a portfolio company's profitability, it is possible that a company's dual focus on financial success and positive social and environmental impact may from time to time require it to make decisions that favor one goal at the expense of the other. Any determination about whether or not a potential investment is expected to produce a positive social or environmental impact will be made in the General Partner's sole discretion. The determination about what constitutes a positive social impact is inherently subjective, and what KKR considers to be socially beneficial may not necessarily reflect the views of all prospective investors. In addition, it is possible that the companies in which the strategy invests are unable to obtain or realize the positive social or environmental impact that they seek to deliver.

**Reliance on Key Management Personnel** - The success of the strategy will depend, in large part, upon the skill and expertise of certain KKR professionals. In the event of the death, disability or departure of any of the key KKR professionals, the business and the performance of the strategy may be adversely affected.

**Highly Competitive Market for Investment Opportunities** - The strategy of the strategy is based, in part, upon the premise that investments will be available for purchase at prices that KKR considers favorable and which are commensurate with the strategy's investment program. The activity of identifying, completing and realizing attractive investment opportunities is highly competitive and involves a significant degree of uncertainty. The strategy will compete for investment opportunities with other private investment vehicles, as well as the public debt markets, individuals and financial institutions, including investment banks, commercial banks and insurance companies, business development companies, strategic industry acquirers, hedge funds and other institutional investors. It is possible that competition for appropriate investment opportunities may increase and such supply-side competition may adversely affect the terms upon which investments can be made by the strategy. To the extent that current market conditions change or change more quickly than KKR currently anticipates, investment opportunities may cease to be available to the strategy.

**Limitations of Related Performance** - The performance shown herein is not the performance of the strategy and is not an indication of how the strategy would have performed in the past or will perform in the future. The strategy's performance in the future will be different from the performance shown due to factors including, but not limited to, differences in cash flows, fees, expenses, performance calculation methods, and portfolio sizes and composition. The performance presented reflects the performance of accounts managed by KKR utilizing a strategy substantially similar to that which will be utilized for the strategy.

References to "Senior Advisors" and "Industry Advisors" are to individuals who are engaged, as consultants, to assist KKR with sourcing or developing investments and a variety of other matters. These individuals are not employees of KKR. The portion of the compensation paid to Senior Advisors and Industry Advisors that is related to fund activities, such as sourcing investments or monitoring portfolio companies, will be borne by the relevant funds. References to "KKR Advisors" are to individuals who were formerly employees of KKR and are engaged as consultants for KKR. None of the compensation of KKR Advisors is borne by the funds.

## Slide 3:

(1) As of June 30, 2018. Italicized deals represent Infrastructure investments. The healthcare companies shown represent KKR's health care-related private equity investments since March 2010, as identified by the Americas Health Care team that were made globally by the KKR private equity funds, KKR-managed separately managed accounts, and KKR Health Care Strategic Growth. The remaining companies represent KKR's SDG solutions-oriented themes which are investments in the sub-sectors similar to the Global Impact Verticals as identified by the KKR Global Impact team that were made globally from January 1, 2008 to June 30, 2018 by the KKR private equity, growth equity and infrastructure funds and KKR-managed separately managed accounts, including investments made by other KKR industry teams (as these companies add to our impact knowledge and relationships), and including investments made by the KKR balance sheet. Such determination and assessment involves significant judgment and may differ from another party's review of the criteria used. Another party's assessment may include comparable companies not represented above. The specific portfolio companies identified are not representative of all of the securities purchased, sold or recommended for advisory clients, and it should not be assumed that the investment in the companies identified was or will be profitable. Financial Inclusion is not part of the key themes, but KKR Global Impact is keen to evaluate opportunities that fall under this solutions-oriented theme.

(2) KKR has exited this investment.

(3) Financial Inclusion experience included because we believe the Fund may opportunistically pursue investments in this space; however, Financial Inclusion is not one of the five key Global Impact Verticals in which we expect the Fund will invest.

(4) KKR exited Weld North Education and Performance Matters in Q1 2018; pro forma for these divestitures, Weld North consists of Learning House, Intellify and VC investments.

(5) KKR announced the sale of the remaining 75% equity stake in South Staffordshire in April 2018, transaction expected to close in Q3 2018

# Understanding and defining your values

## Bringing it all together – next steps



# 1 Define organisational vision and purpose

**It is important for a board to have clear shared understandings of:**

- Primary purpose of the plan
- Any additional goals (e.g. meet members' expectations/values, reputation)
- Values of the organisation
- Trustees' personal values

Bring together mission, purpose and values – formalise them by integrating them into your governance i.e. Investment Policy

## 2 Develop an ESG investment principle/belief

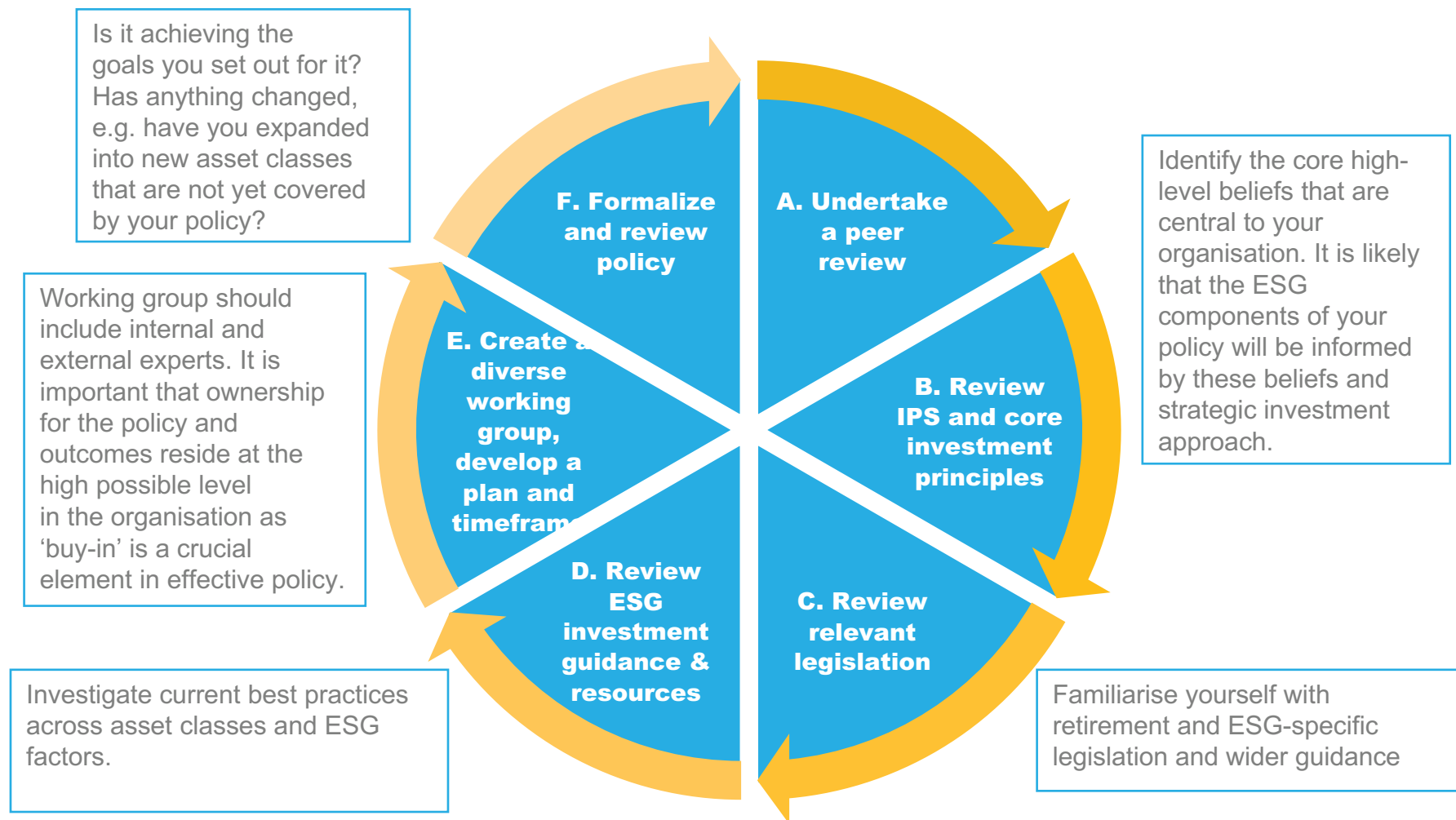
- Taking into account financial relevance of sustainability issues
- Taking into account your beneficiaries' expectations and values
- Examples – how closely do these statements match your own convictions and guiding principles?

A sustainable, viable world is necessary in order to generate sufficient returns over the long term. ...Making sustainability an integral part of the investment policy therefore contributes to returns over the long term.  
**PFZW, Netherlands**

Long-term value creation requires effective management of three forms of capital: financial, physical and human  
**CalPERS, USA**

Good governance is good business and contributes to sustainable values. We continually consider all risks in our investment process, including those relating to environmental, social and corporate governance factors.  
**Ontario Teachers' Pension Plan, Canada**

### 3 Writing policy and formalizing ESG approach



## 4 Align expectations

### Working with investment consultants and managers

Integrate ESG considerations into manager and consultant selection, appointment and monitoring, to:

- Act as an additional measure in the performance management measurement of investment managers. For signatories, the PRI provides a global benchmark to do this.
- Act as a key differentiator in qualitative comparisons on investment strategy and style between investment managers and service providers
- Provide impetus to investment consultants, many of whom have yet to integrate well-established ESG risk management into core advisory services





## 5 Report annually on progress and expect similar reports from managers and consultants



*Assessment Report*



*Transparency Report*



## 6 Review and update policy & approach

- **Plan and monitor:**
  - KPIs, incentives and organisational structures;
  - Governance, culture, behaviour and responsibilities
- **Revise** investment policy, strategic asset allocation and manager RFPs
- **Adjust** strategy as needed





## **Alameda County Employees' Retirement Association**

475 – 14<sup>th</sup> Street, Suite 1000, 10<sup>th</sup> Floor, Oakland, CA 94612

Phone: (510) 628-3000 Fax: (510) 287-5412

---

### **Board Off-Site Event**

Monday, October 29, 2018

8:00 a.m. to 3:00 p.m.

### **Scott's Jack London Square**

#2 Broadway - Jack London Square, Oakland, CA 94607

---

### **Emerging Markets - Africa**

11:45 – 12:45 p.m.

**SuperReturn**  
**Africa**



**AYMERIC SAHA**

Managing Director at MiDA

### **PROFILE**

---

Aymeric Saha is the Managing Director of MiDA or "Mobilizing Institutional Investors to Develop Africa's Infrastructure," a partnership between the U.S. National Association of Securities Professionals (NASP) and the United States Agency for International Development (USAID). The initiative mobilizes, advises, and expands opportunities for U.S. institutional investors - pension funds, insurance companies, foundations and endowments – into infrastructure investments in Sub-Saharan Africa in seeking higher returns while making a meaningful impact on development in the region. In 2017, MiDA members have closed on new deals totaling close to \$500 million. The initiative will be showcased at the next G20 Heads of State Summit in Argentina in November 2018 as a successful model for mobilizing private sector financing for infrastructure in developing countries. MiDA's investor network extends to 70 U.S. pension funds, foundations, and endowments with close to \$3 trillion in assets under management. As part of his duties, Mr. Saha oversees a team of investment and legal experts, program resources, and several joint operations with the World Bank and the United Nations Economic Commission for Africa. He recently led a joint publication with Mercer - one of the most influential pension consultant firms with a global reach - on "Institutional Investments in African Public Infrastructure."



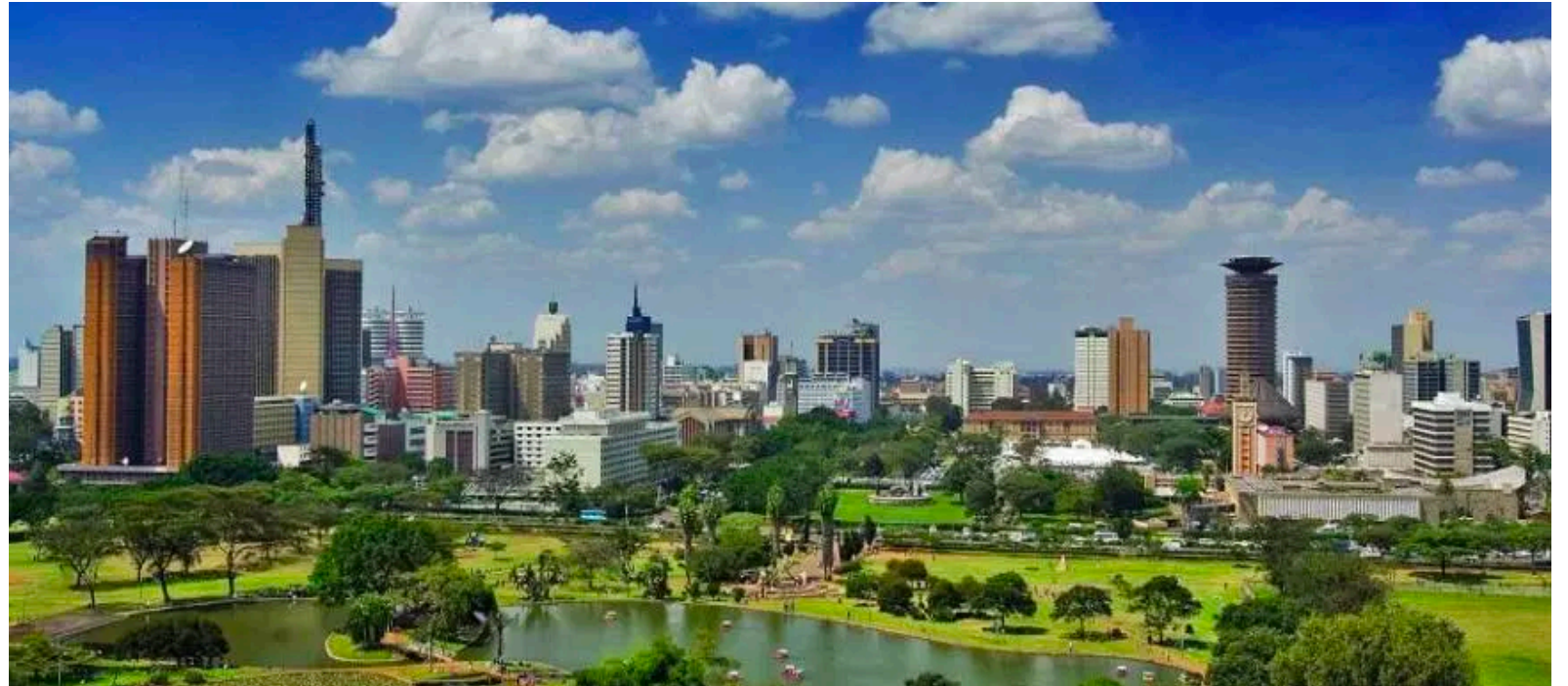
*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## **ACERA Board Off-site Meeting Oakland, October 2018**

By Aymeric Saha – Managing Director, MiDA



***A NASP-USAID INVESTMENT PARTNERSHIP***  
**Mobilizing Institutional Investors to Develop Africa's Infrastructure**



Updates on MiDA activities in Nairobi, Kenya



***A NASP-USAID INVESTMENT PARTNERSHIP***  
**Mobilizing Institutional Investors to Develop Africa's Infrastructure**



Updates on MiDA activities Dakar, Senegal

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

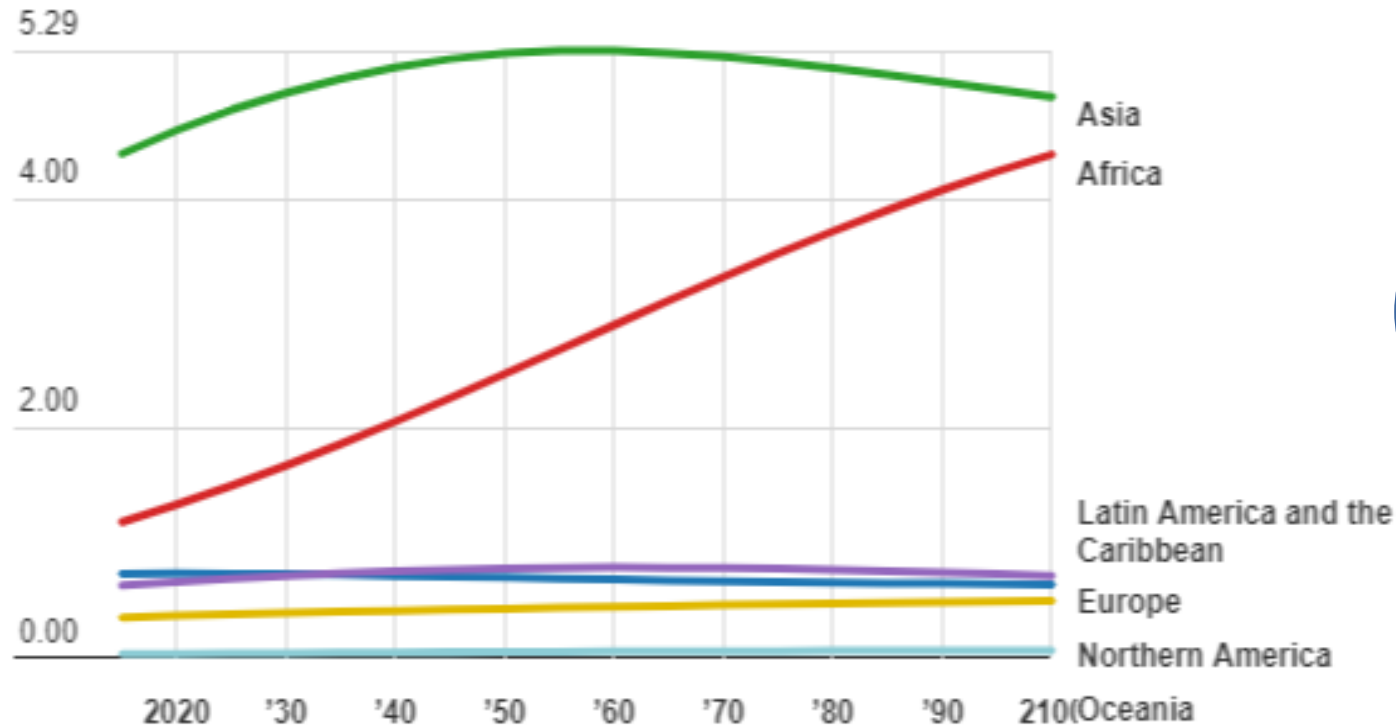
# African Markets in Review

**“Africa will benefit from strong fundamentals.. to 2025 and beyond.. will help drive rapid growth” - McKinsey Global Institute: Lions On The Move II: Realizing The Potential Of Africa's Economies September 2016**



**A NASP-USAID INVESTMENT PARTNERSHIP**  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## UN Regional Population Projections (Billions, 2015 - 2100)

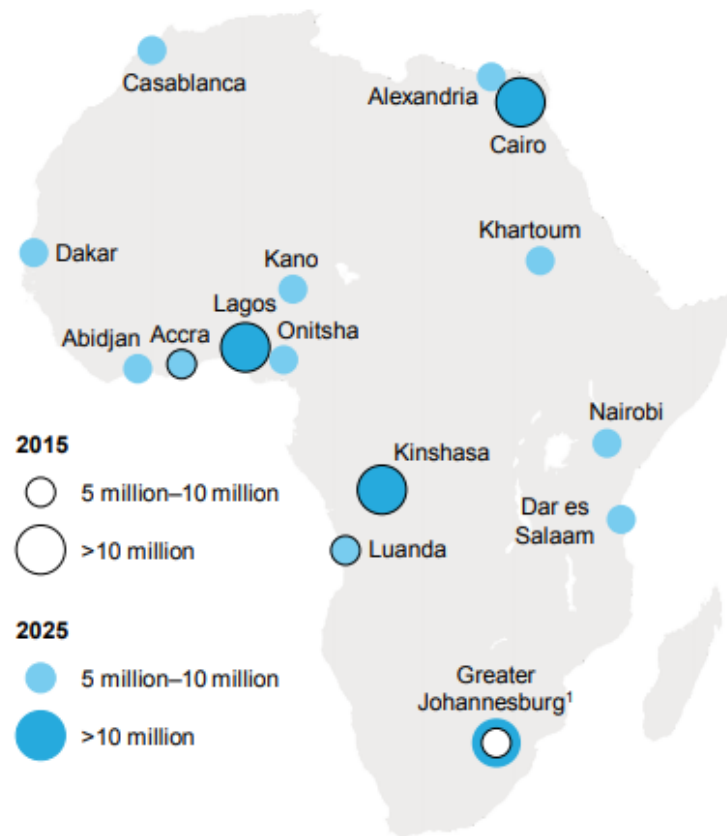


**2 BILLION PEOPLE BY 2040  
25% OF GLOBAL POPULATION  
CHINA & INDIA WORKFORCE**

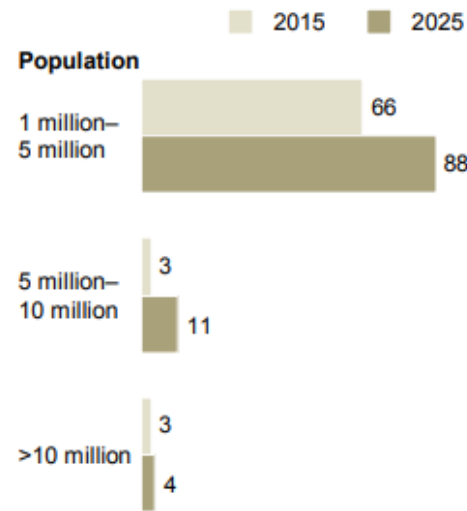
**A NASP-USAID INVESTMENT PARTNERSHIP**  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

**By 2025, Africa will have 15 large cities with more than five million inhabitants each, as around 190 million more people live in urban areas**

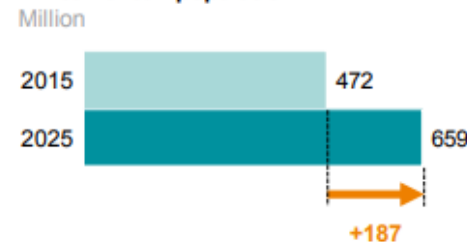
**African cities with more than 5 million people each**



**Number of African cities**



**African urban population**



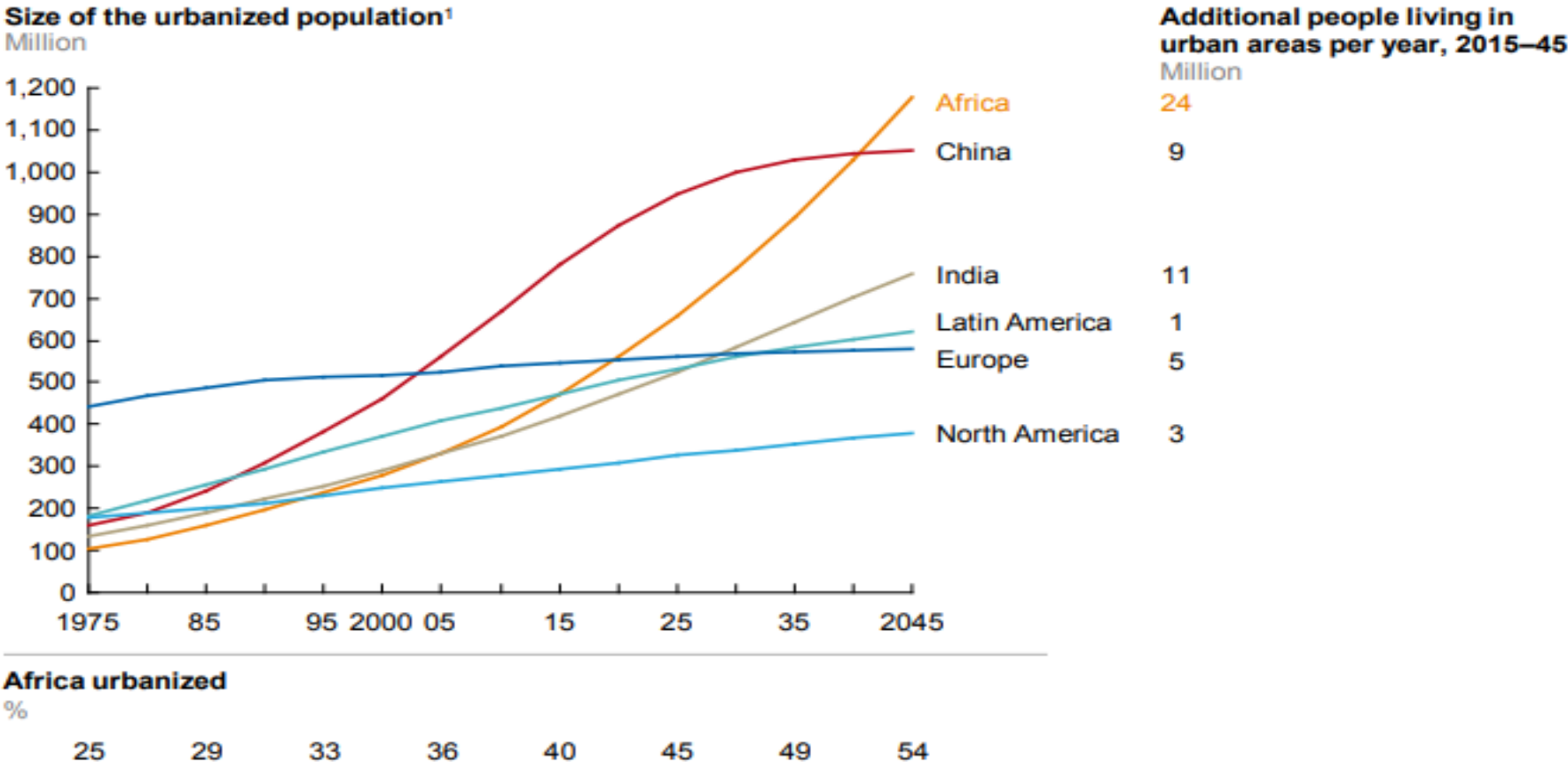
Cities are key to capturing Africa's consumer opportunity.

1 Greater Johannesburg includes the City of Johannesburg, Ekurhuleni, and the West Rand.

A NASP-USAID INVESTMENT PARTNERSHIP

Mobilizing Institutional Investors to Develop Africa’s Infrastructure

Africa is urbanizing faster than any other region; its cities are expected to gain 24 million people each year until 2045



<sup>1</sup> Population living in urban areas. UN forecasts last adjusted in 2014.

***A NASP-USAID INVESTMENT PARTNERSHIP***  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

**\$4 TRILLION DOLLARS  
CONSUMER AND  
BUSINESS SPENDING  
IN 2015**

**Consumer and business spending in Africa represents a \$4 trillion opportunity**

<b>Consumer and business spending, 2015</b> \$ billion, 2015 prices		<b>Growth, 2015–25</b> \$ billion, 2015 prices	<b>Growth rate, 2015–25</b> %
Consumer	1,420	645	3.8
Business	2,560	970	3.3
<b>Total</b>	<b>3,980</b>	<b>1,615</b>	<b>3.5</b>

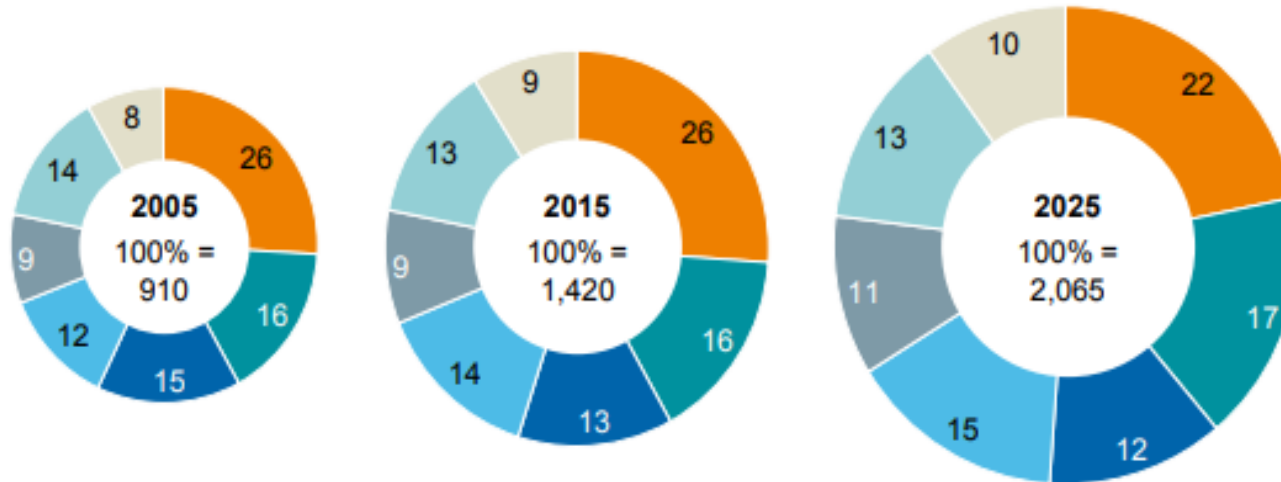
SOURCE: Oxford Economics; IHS; McKinsey Global Institute analysis

**A NASP-USAID INVESTMENT PARTNERSHIP**  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

**The regional share of household consumption is projected to grow by \$645 billion by 2025**

Total household consumption, 2005–25  
%; \$ billion, 2015 prices

- Nigeria
- Egypt
- South Africa
- East Africa
- Francophone Africa<sup>1</sup>
- Rest of North Africa
- Rest of sub-Saharan Africa



<sup>1</sup> Includes 15 countries in Central and West Africa; excludes North Africa and East Africa.  
NOTE: Numbers may not sum due to rounding.

SOURCE: Oxford Economics: IHS; African Development Bank; McKinsey Global Institute analysis

**5% GROWTH IN  
HOUSEHOLD  
SPENDING LAST 15  
YEARS**

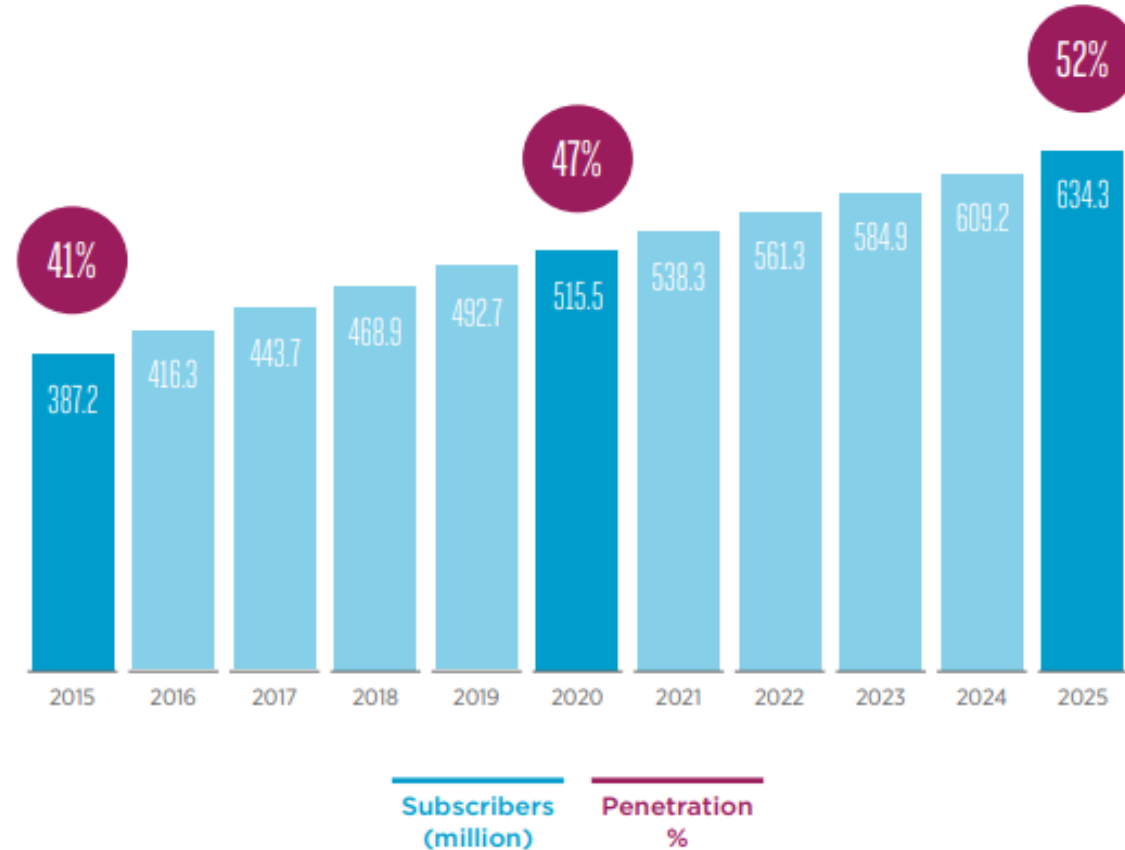
**A NASP-USAID INVESTMENT PARTNERSHIP**  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

Figure 1

Source: GSMA Intelligence

**Sub-Saharan Africa unique mobile subscribers**

50% penetration of  
smart phones by 2020

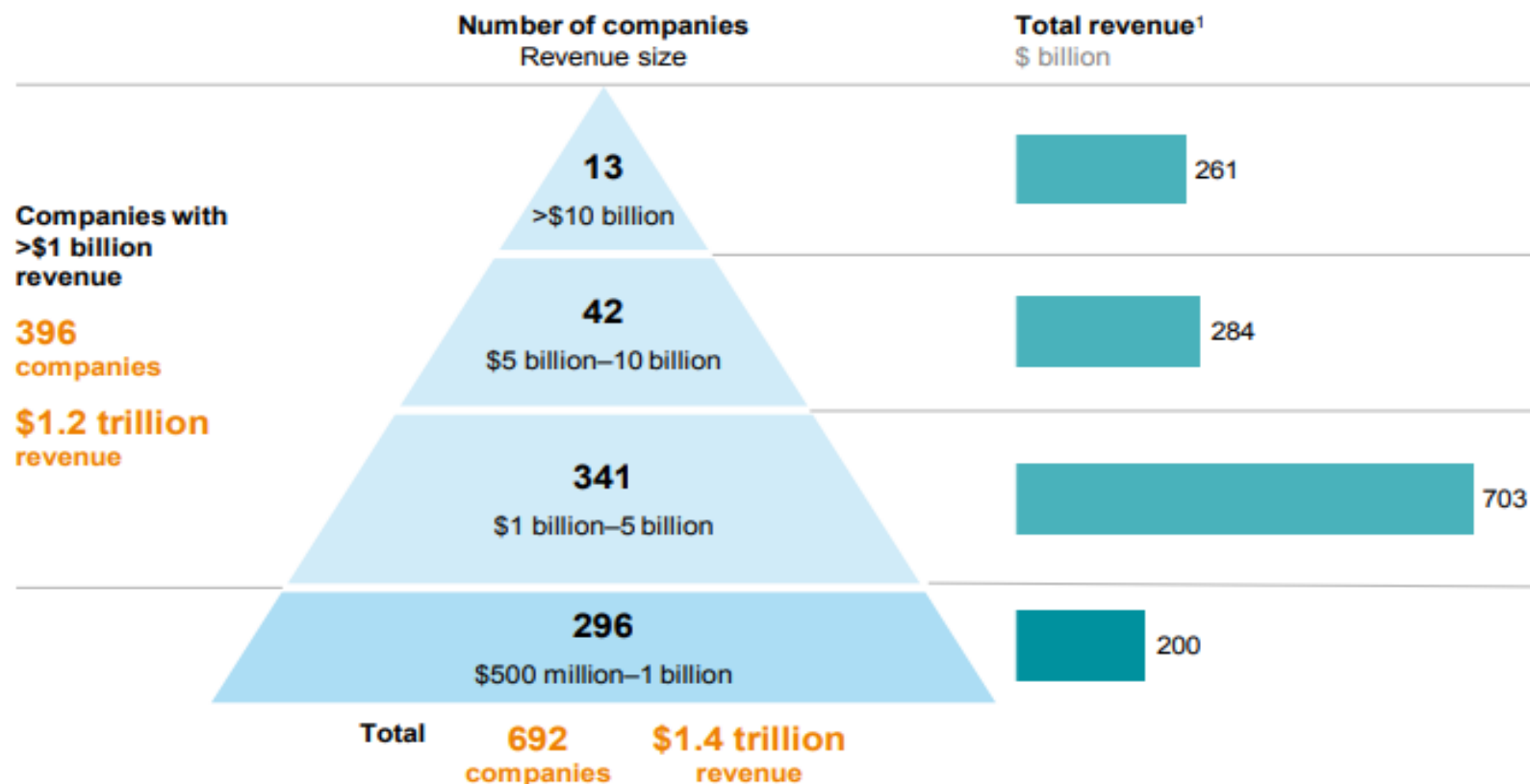


## A NASP-USAID INVESTMENT PARTNERSHIP

Mobilizing Institutional Investors to Develop Africa's Infrastructure

**Around 700 companies in Africa account for \$1.4 trillion in revenue**

Breakdown of companies by revenue size, April 2016



400+ companies  
with over \$1  
billion rev  
Most profitable

<sup>1</sup> 2014 or most recent data.



*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## Rich continent with abundance of resources world's largest reserves

- **60 PERCENT** OF THE WORLD'S ARABLE CROPLAND
- **THE WORLD'S LARGEST RESERVES PRECIOUS COMMODITIES** (VANADIUM, DIAMONDS, MANGANESE, PHOSPHATE, PLATINUM-GROUP METALS, COBALT, ALUMINUM, CHROMIUM, AND GOLD)
- **10 PERCENT** OF GLOBAL EXPORTS OF OIL AND GAS





*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

# Introducing MiDA

NASP-USAID Investment Partnership

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## Introducing MiDA

“NASP and USAID are joining forces as the global agenda for mobilizing institutional investors for Infrastructure is undeniably moving forward, with many high-level initiatives now underway at the United Nations, World Bank, IMF, African Development Bank, and the G-20.”

“The prevailing international consensus suggests that institutional investors, primarily pension funds, can play a key role in filling the infrastructure finance gap based on the alignment between the need for enhanced yields and longer tenors to meet their liability structure, and infrastructure assets potential to provide predictable inflation-adjusted cash flows that have low correlations with existing investment returns. And nowhere is the lack of infrastructure more crucial, transformational, and potentially profitable than in sub-Saharan Africa, which needs close \$100 billion per year to fill its infrastructure gap, mainly in energy, transportation, water, and telecommunications.”

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## Overview: Introducing MiDA

- MiDA is a collaborative agreement signed between NASP and USAID in mid-2016
- The objective is to increase the flow of institutional investor assets into the financing of infrastructure in Africa
- The institutional investors are both U.S. institutions that make up the membership of the NASP and similar investors in Africa
- MiDA is exposing U.S. institutional investors to opportunities to co-invest with African counterparts in Africa's infrastructure

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## MiDA Key Activities

- Identifying possible infrastructure investment opportunities in SSA
- Mobilizing African partners – including Africa pensions and asset managers
  - Facilitating co-investments between U.S. and African pension funds
- Supporting new/existing infrastructure vehicles
  - Pension funds Consortium and Infrastructure debt fund in Kenya/East Africa
  - Refinancing two dozen existing power plans in South Africa
  - West Africa housing finance bonds
- Conducting Research/Education
  - Direct exposure to opportunities in Africa and meeting local managers/projects
  - Sponsoring an in-depth study with Mercer Investment Consulting of “Investment Opportunities in African Public Infrastructure – Challenges and Opportunities”

Pension, Foundation, Insurance	Title
New York State Common Retirement Fund	Chief Investment Officer
Chicago Teachers' Pension Fund	Director of Investments/ Chief Investment Officer
New York City Employee Retirement System (NYCERS)	President/Trustee
New York State Insurance Fund	Chairman, Investment Committee
City of Chicago Treasurer	Trustee
Dallas Employees' Retirement Fund	Executive Director
Baltimore Employees Retirement System	Executive Director
Casey Family Foundation	Chief Investment Officer
The California Public Employees' Retirement System (CalPERS)	Chair of Investment Committee
Chicago Teachers' Pension Fund	Executive Director
Teachers Retirement System of Illinois	Executive Director
Employees Retirement System of Texas	Chief Investment Officer
Dallas Employees Retirement System Trustee	Trustee
Teachers Retirement System of Texas	Chair of the board
The Prudential Insurance Company of America	Chief Investment Officer – Retirement Business
City of Philadelphia	Deputy City Treasurer
Federal Reserve Office of Employee Benefits	Actuary, Senior Investment Associate
General Retirement System and Police and Fire Retirement System of the City of Detroit	Executive Director
the City of Atlanta; Trustee for both City of Atlanta Police and Firefighters Pension Funds; member of the Municipal CFO Forum	Chief Financial Officer
City and County of San Francisco Employees Retirement System	Commissioner
Los Angeles County Employees Retirement Association (LACERA)	Chair of the Board of Investments
The California State Teachers' Retirement System (CalSTRS)	Director of Inflation Sensitive
Service Employees International Union (SEIU)	Deputy Director
UAW Retiree Medical Benefits Trust	Managing Director
City of Philadelphia	Treasurer

Members  
30 U.S. Pensions, foundations, and insurance have joined our efforts

Have added:  
Pension consultants \*

African partners \*



*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

# Opportunities for Investing in African Infrastructure

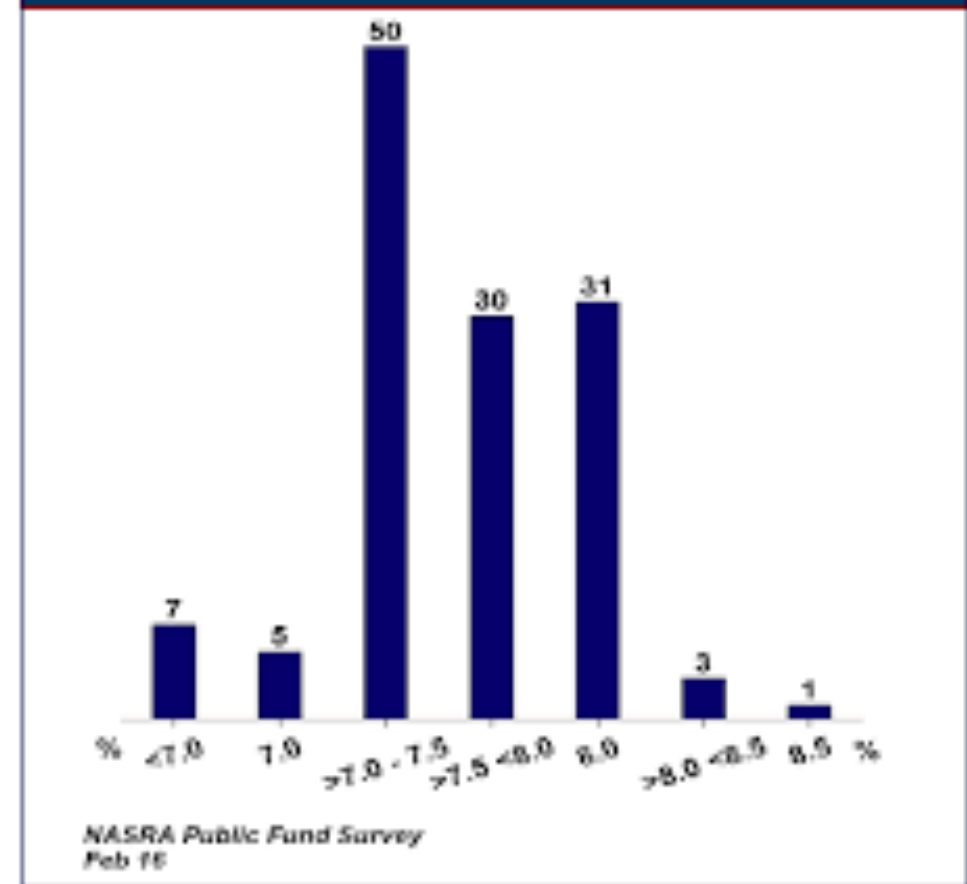


*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## Factors driving change

- Most U.S. public pensions plans need 7% - 8% in investment returns to meet obligations
- Current low interest rates mean increasing underfunded liabilities
- This has prompted growth in alternative assets (private equity, private debt, real estate, **infrastructure**)
- Investors are looking for more opportunistic returns in **emerging & frontier markets – Africa, Asia, LatAM**

Figure 5: Distribution of investment return assumptions

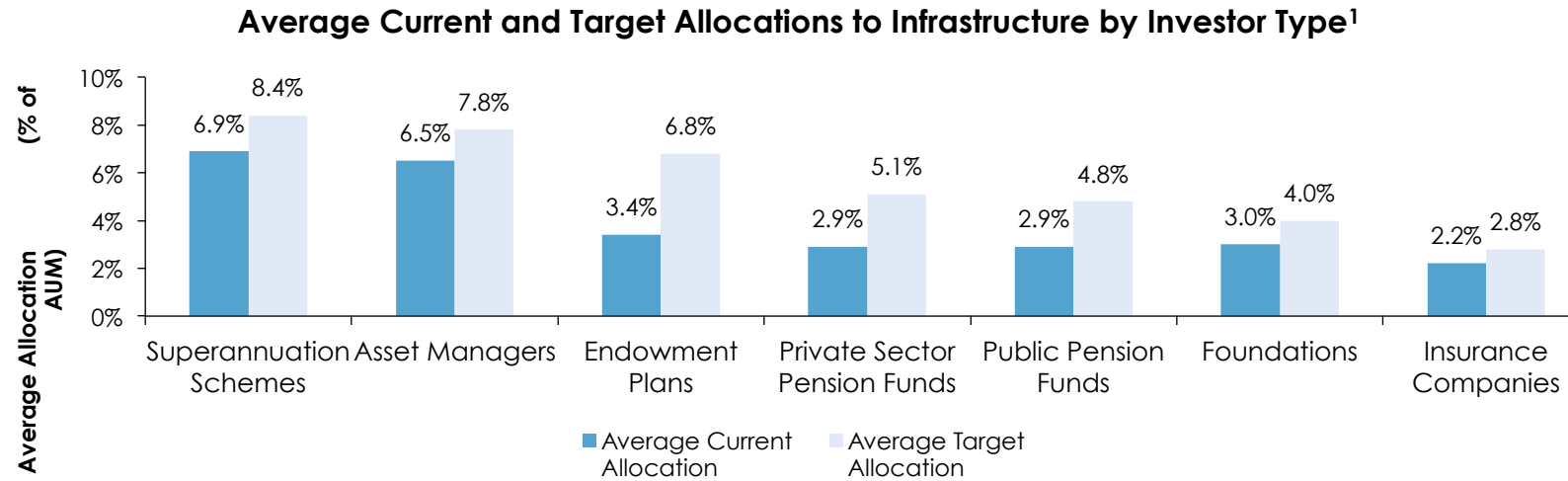


# Benefits of Infrastructure Investments to Pension Plans

---

High stable yields	➡	<ul style="list-style-type: none"><li>• Attractive risk adjusted returns</li></ul>
Low correlation	➡	<ul style="list-style-type: none"><li>• Low beta relative to traditional asset classes portfolio diversification</li></ul>
Duration hedging	➡	<ul style="list-style-type: none"><li>• Long lived assets to match liability duration 15 to 99 year cash flows</li></ul>
Inflation protection	➡	<ul style="list-style-type: none"><li>• Regulation or concession within pricing</li></ul>
Low cyclical	➡	<ul style="list-style-type: none"><li>• Inelastic demand and monopolistic position support stable cash flows</li></ul>
Risk transfer	➡	<ul style="list-style-type: none"><li>• Risks transferred to subcontractors or back to public entity via partnership arrangements</li></ul>
Low volatility	➡	<ul style="list-style-type: none"><li>• Limited exposure to economic downturns</li></ul>
Greenfield projects	➡	<ul style="list-style-type: none"><li>• Job creation</li></ul>

# Investor Allocations to Infrastructure – Great opportunity for Growth



Jurisdiction	Typical Pension Fund Allocation to Infrastructure
Western Europe	3% - 5%
Australia	5% -10%
Canada	5% -10%
U.S.	0% - 5%

<sup>1</sup>Investor universe includes investors in 80 countries worldwide Source: Preqin, Stonepeak Infrastructure Partners, PCA

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## GIH - Investor Perceptions of Infrastructure 2017



**90.3%** of investors want to increase their investment into infrastructure

This is an increase from 65% last year

● 2017 ● 2016



**37.5%** of investors invest in emerging markets

This is an increase from 20% last year

● 2017 ● 2016

Of those already investing in emerging markets



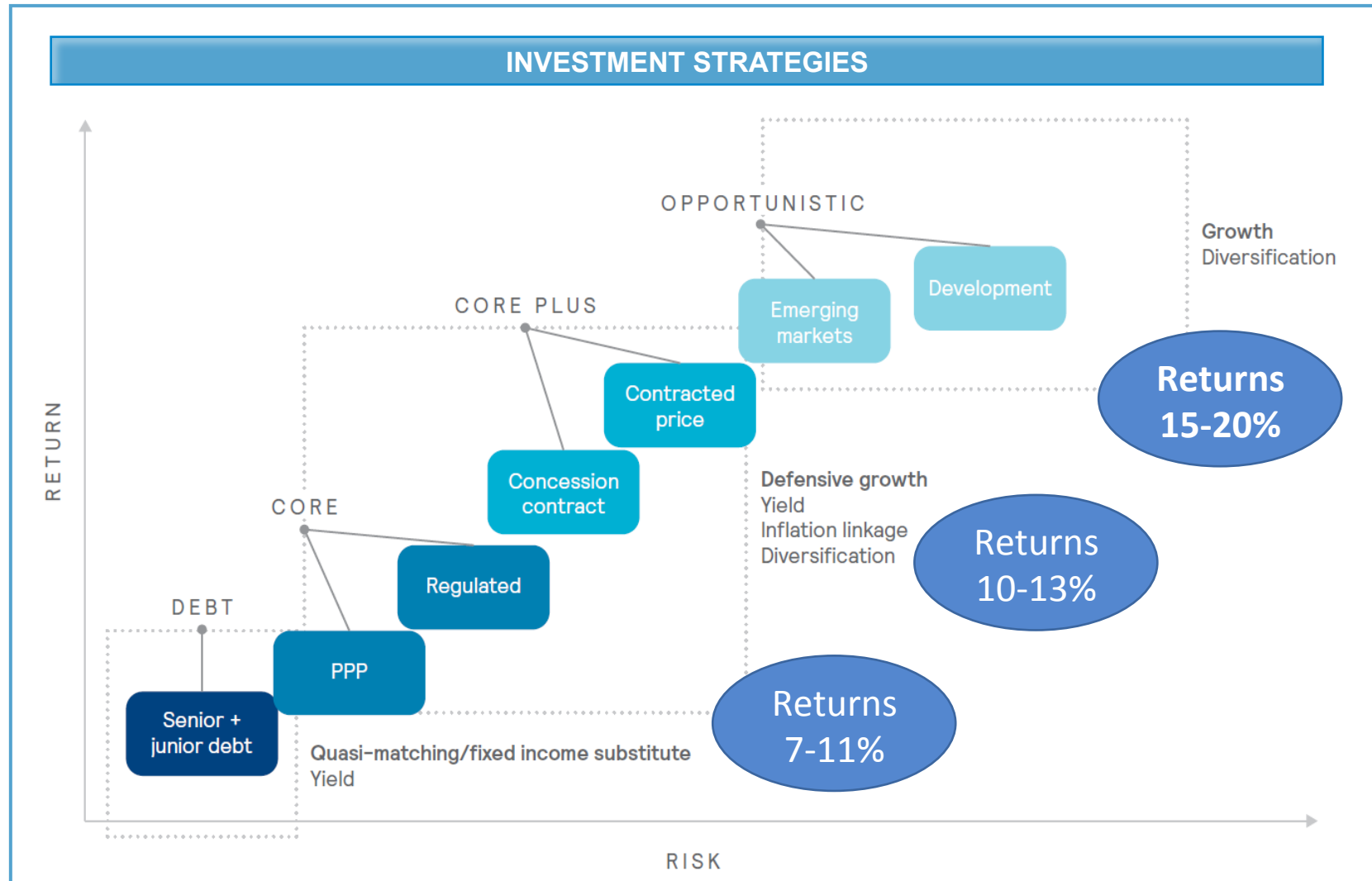
want to increase their investment

Investors most optimistic about deal-flow in **EMERGING MARKETS**



**85%** of respondents expect the pipeline of projects will grow

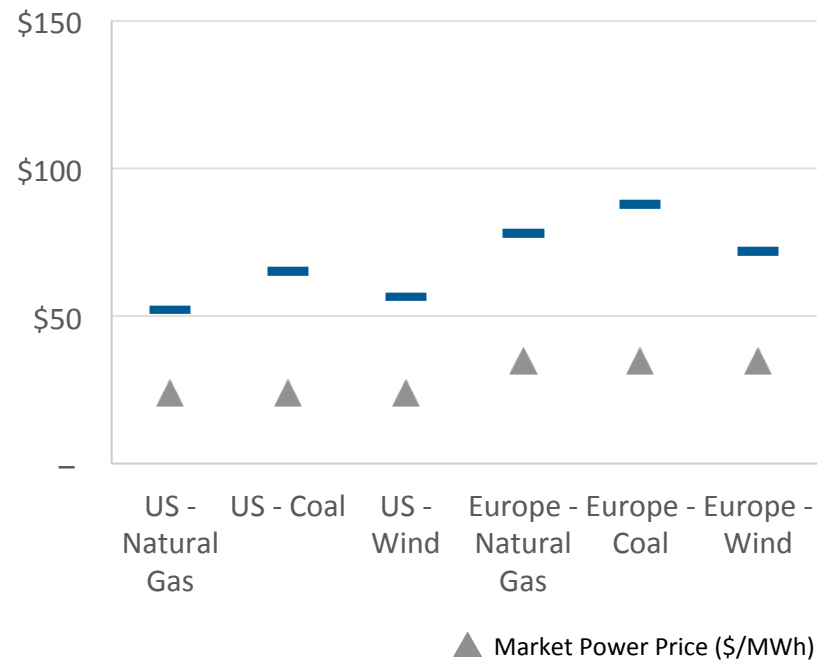
# Infrastructure Risk-Reward Profile



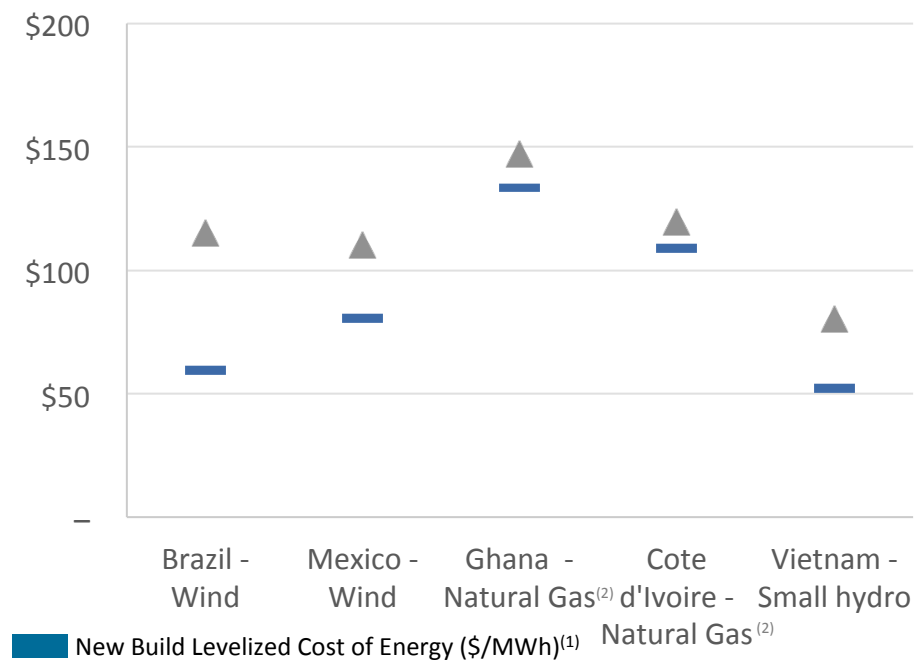
Source: Mercer, PCA

# High-Growth Economies Support New Build Power

U.S. & Europe Cost of Power vs. New Build Cost (\$/MWh)



Developing Countries Cost of Power vs. New Build Cost (\$/MWh)



**New generation capacity additions will be driven mainly by developing markets where there is a fundamental need for power. High growth and capacity short markets can create opportunities for development of competitively priced, modern power projects that can reduce power costs.**

(1) Levelized cost of electricity is the long-term electricity price required to achieve a required standardized equity hurdle rate for the power projects across various technologies.

(2) Assuming long term oil price at commencement of operations of ~\$100/bbl in 2018/19 based on the IHS forward curve.

Source: Bloomberg New Energy Finance, IHS, World Energy Outlook, AEMO, UTE, TASC. Market power prices shown are historical wholesale power prices, or their market equivalent. New build levelized cost prices are shown as bid.

***A NASP-USAID INVESTMENT PARTNERSHIP***  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

# Performance of African Infrastructure Funds

Name of Fund	Fund Manager	Type of Investments (sectors)	Fund size (\$US Million)	Vintage Year	Lifespan of fund	Net IRR (in US \$ terms)
<b>South African Infrastructure Fund</b>	African Infrastructure Investment Managers (AIIM)	Infrastructure (projects)	350	1996	Liquidated 7/2016	24%
<b>ECP Fund I</b>	Emerging Capital Partners (ECP)	Telecom & ICT, infrastructure & logistics, consumer & financial services corporates	407	2000	NA	26%
<b>Actis Energy I</b>	Actis	Energy	606	2003	Liquidated 12/2007	20%
<b>Pan Africa Infrastructure Development Fund I</b>	Harith	Infrastructure (projects and investments in project developers)	630	2005	15 years	0.06%
<b>Actis Energy Infrastructure II</b>	Actis	Energy (Pan-EM fund with 30-40% targeted for Africa)	752	2008	NA	16%



*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## MERCER-MIDA Report



***“Risk Perceptions  
Among Assets  
May Be  
Overblown”***

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

## MiDA and Mercer: Investigating Opportunities for Impact

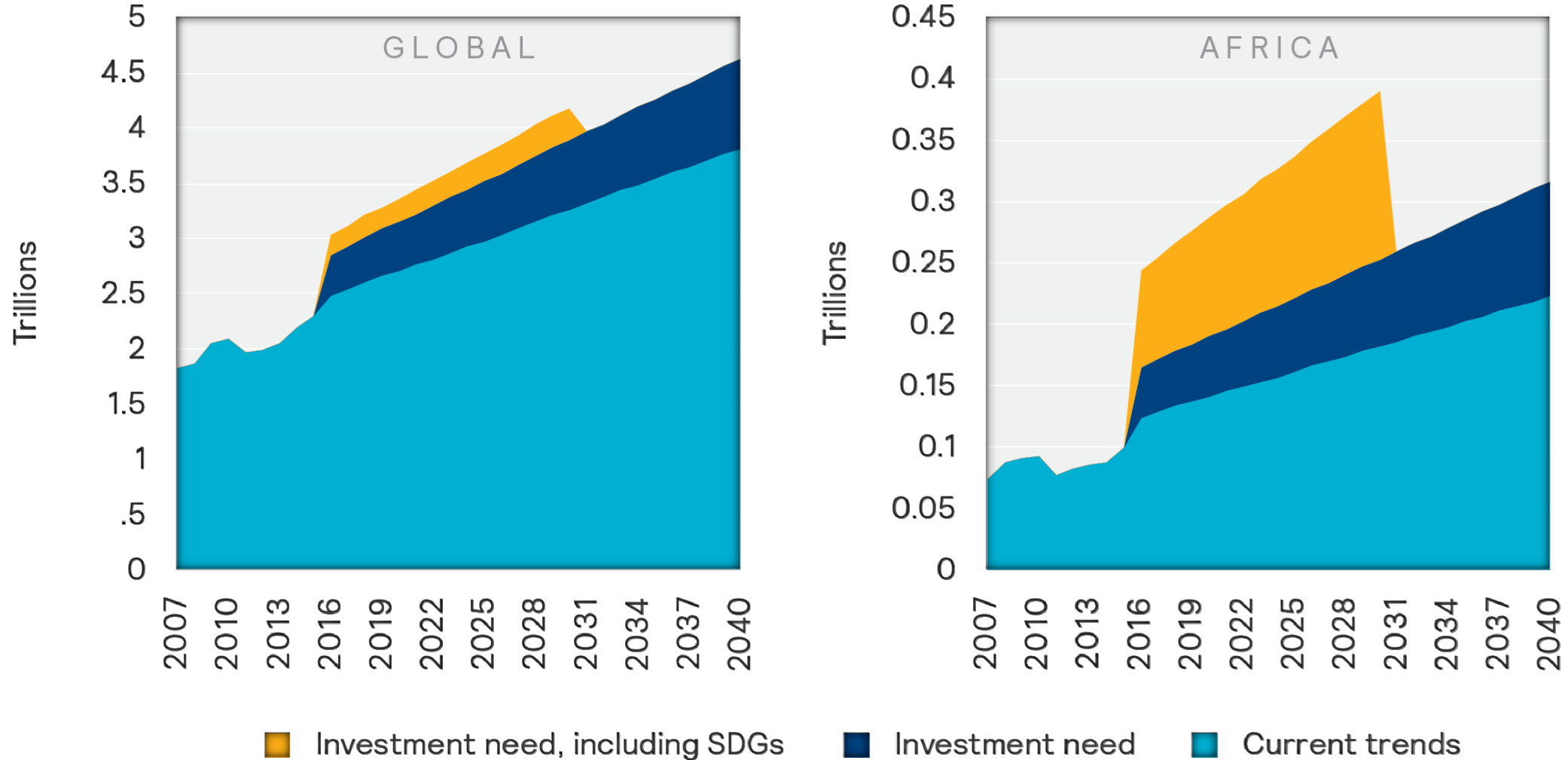
### **Asset Owner Interviews**

- CalPERS
- PensionDanmark
- NYSCRF
- OMERS
- OTPP
- ABP
- WSIB
- Casey Family Programs

### **Asset Manager Interviews**

- Actis
- AIIM
- Investec
- LionWorks Capital

# Infrastructure Spending Projections : Global and Africa, in trillions USD

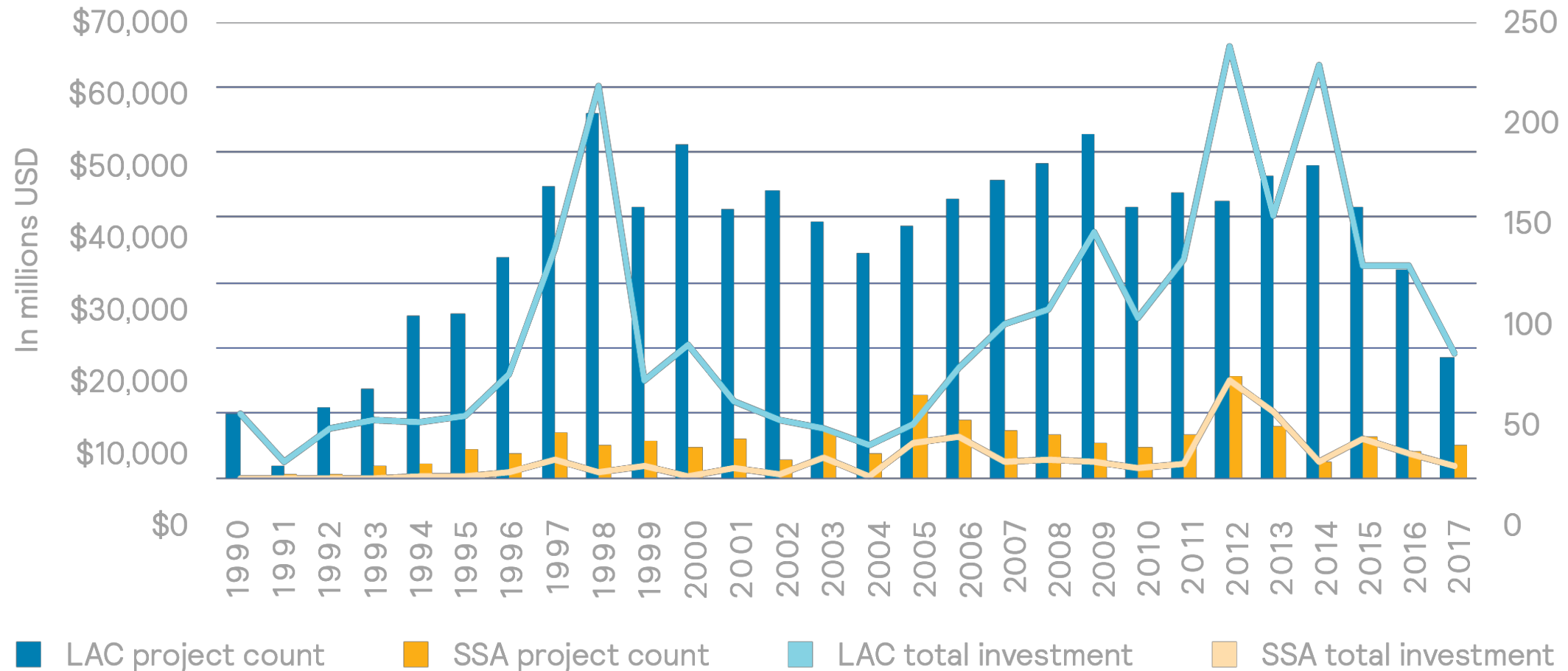


SDGs = Sustainable Development Goals

Global Infrastructure Hub (2018). **Infrastructure Outlook: Africa.**

See: <https://outlook.gihub.org/region/Africa>.

# Infrastructure Transaction Value and Count – A Regional Comparison of LatAM, LAC, and SSA



Source: World Bank Private Participation in Infrastructure (PPI) Database, available at <http://ppi.worldbank.org/visualization/ppi.html>.

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

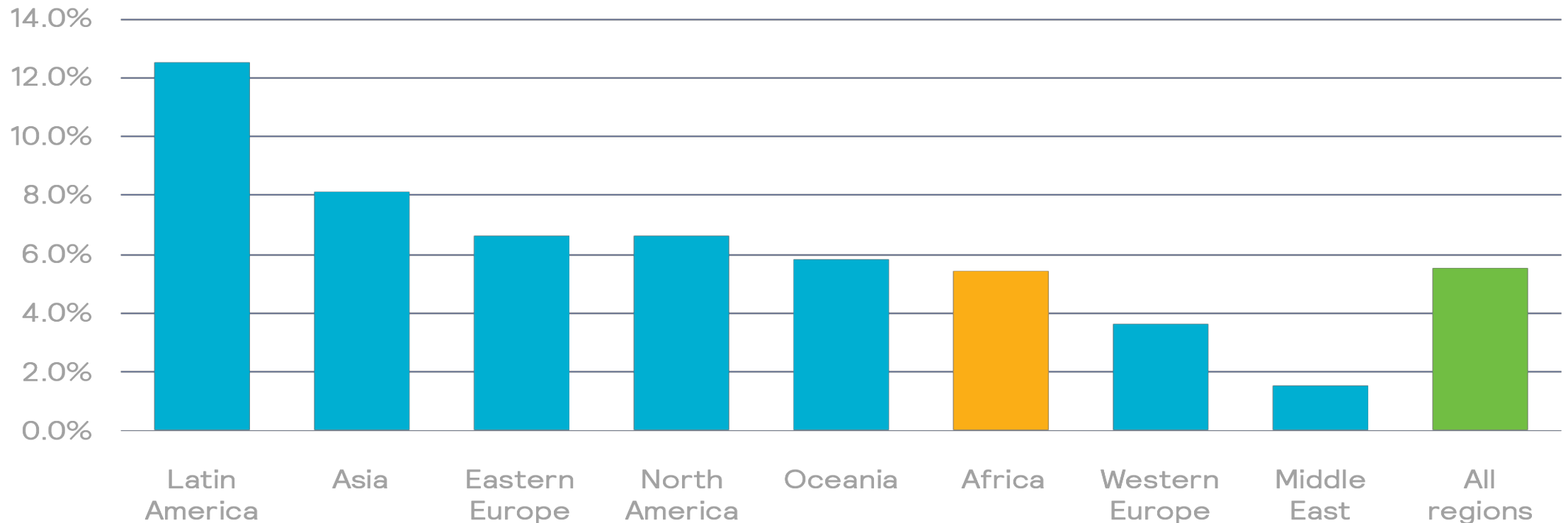
## Mitigating risks of investing in SSA infrastructure

- **Project Preparation Facilities**
  - providing a pipeline of projects
- **Public-Private Partnerships**
  - Increasing transparency, market rules, and competition in private sector dealings with government partners
- **Project financing structures**
  - asset is a long-term contract with the public sector
- **MDB & DFI credit enhancements**
  - reducing political & commercial risks
- **Inflation linked project revenues**
  - reducing the impact of exchange rate fluctuations

# Africa Risk Perceptions: Overblown?

## Project Finance Default Rate 1990 – 2016

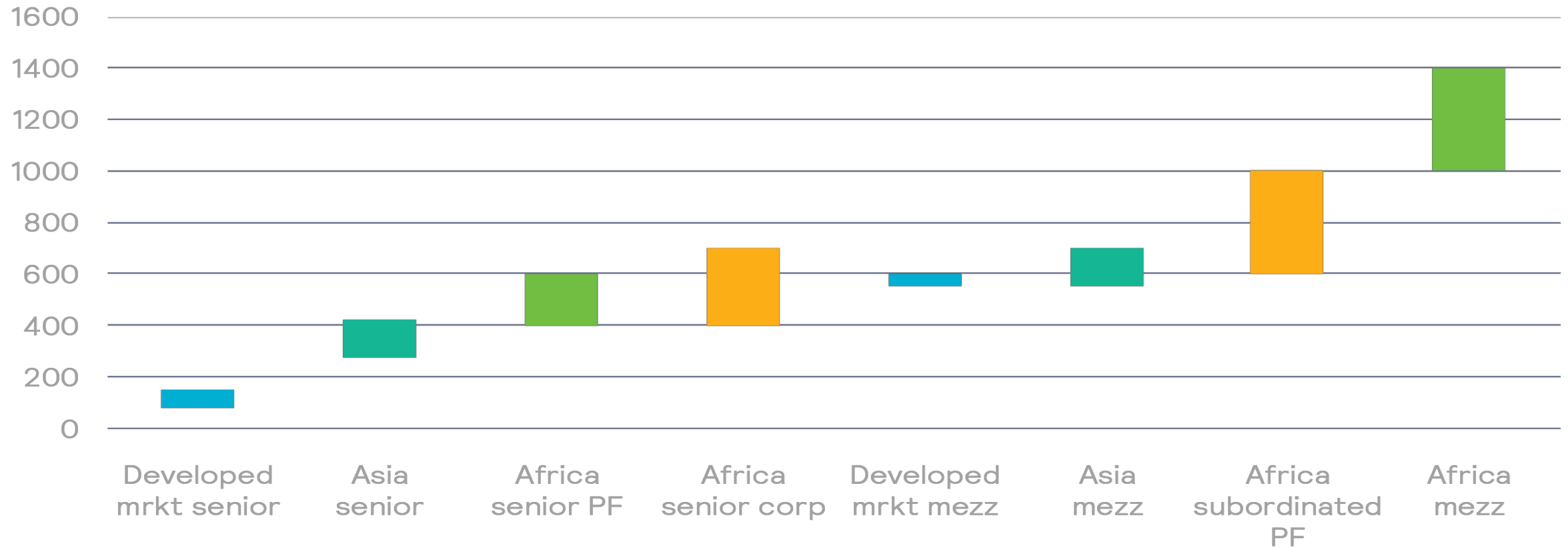
Despite higher perceived risks, investors have not experienced higher project finance default rates in Africa compared to other markets.



Source: Moody's Investors Service. *Default and Recovery Rates for Project Finance Bank Loans, 1983–2016* (2018), p. 24, available at [https://www.moody.com/research/Moodys-Default-and-recovery-rates-for-project-finance-bank-loans--PR\\_380331](https://www.moody.com/research/Moodys-Default-and-recovery-rates-for-project-finance-bank-loans--PR_380331).

# Current Infrastructure Debt Spreads, In Basis Points

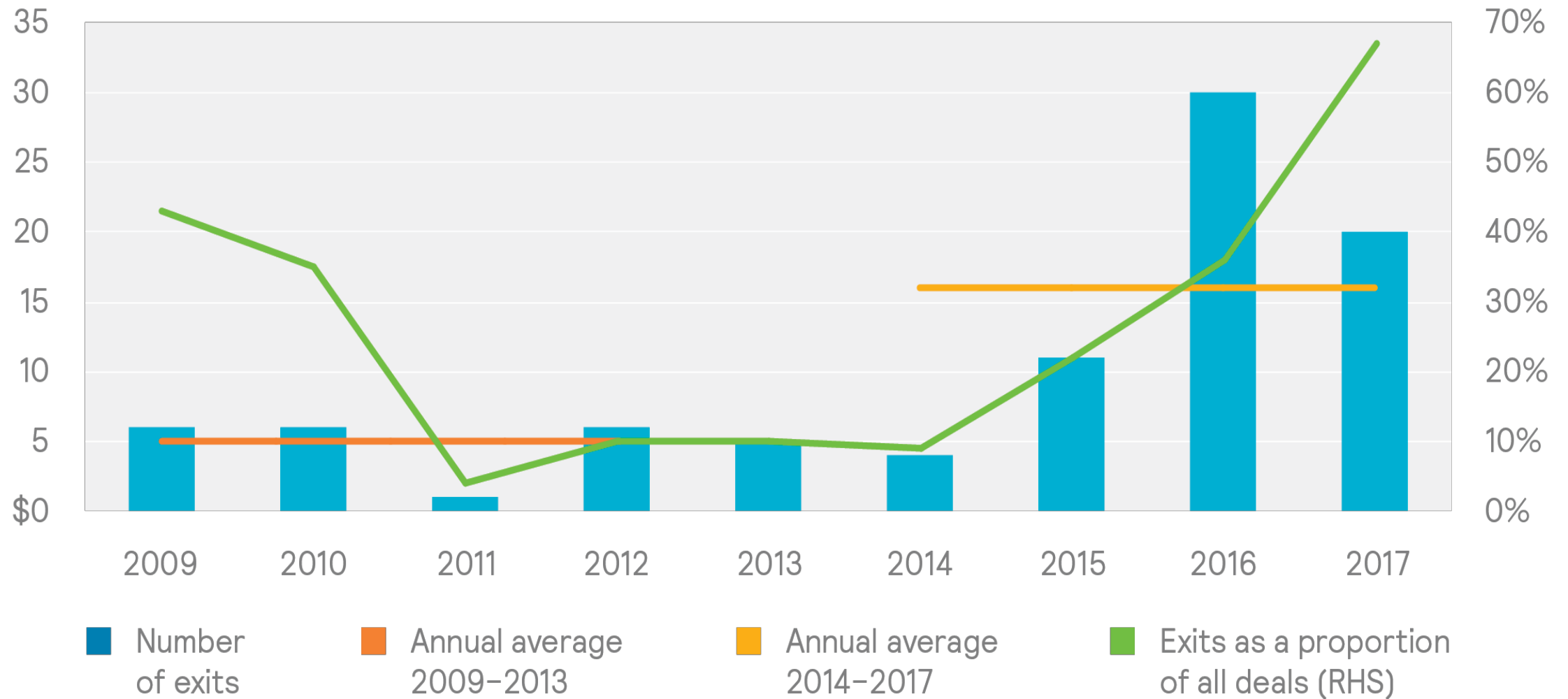
Higher perceived risk is compensated with higher spreads: African senior project finance and corporate debt priced in line with developed market mezzanine debt.



Source: Investec Asset Management, Industry Expert Interviews as of May 2018.



# An Improving African Exit Environment: Number of Exits Per Year 2009-2017



Source: AIIM. *An Analysis of the PE Exit Environment in African Infrastructure 2009-2017* (2017), p. 4, available at <https://aiimafrica.com/>.

## Key Recommendations to Drive Impact and Growth

- Collaborative Investing/Club Deals
- Education on Risk Mitigation
- Engaging Local Investors
- Development Finance Institutions Investment Partnerships
- Enhanced Refinancing Opportunities
- Aligning with Climate and Sustainability Targets

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure



MiDA 3<sup>rd</sup> Investor  
Delegation To Africa  
Nairobi, Kenya April 2019

*A NASP-USAID INVESTMENT PARTNERSHIP*  
Mobilizing Institutional Investors to Develop Africa's Infrastructure

**Thank You**  
Any Questions?



African Private Equity and  
Venture Capital Association

# The Case for Private Equity in Africa

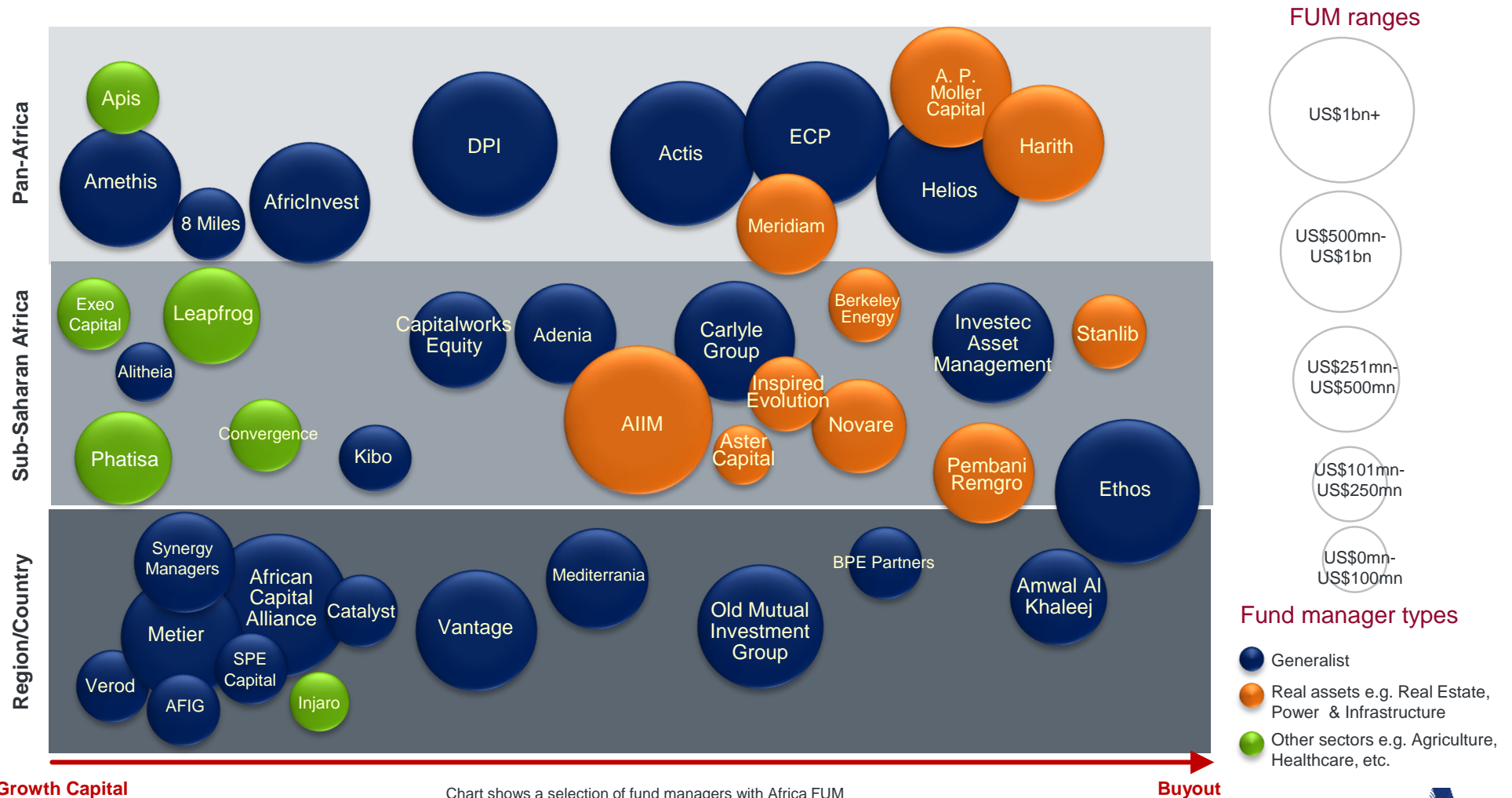
ALAMEDA COUNTY EMPLOYEES'  
RETIREMENT ASSOCIATION  
BOARD OF RETIREMENT ANNUAL OFF-SITE

Michelle Kathryn Essomé  
Chief Executive Officer  
Monday, 29<sup>th</sup> October 2018



# THE AFRICAN PRIVATE EQUITY LANDSCAPE

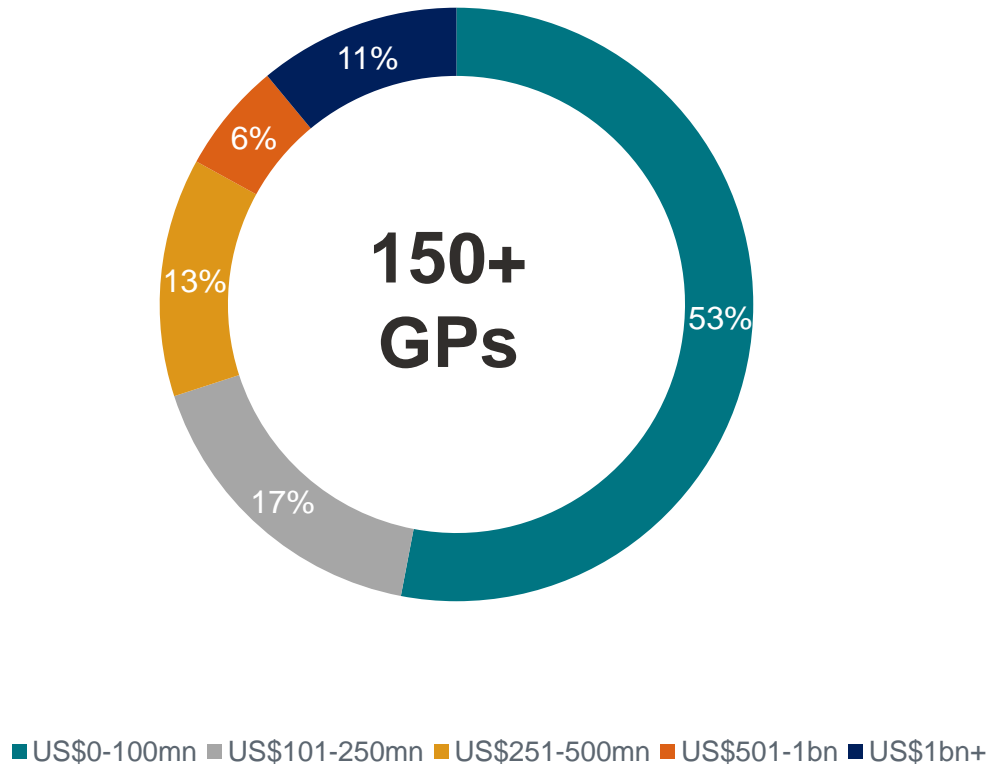
# A deepening and growing market





# African PE landscape: fund managers

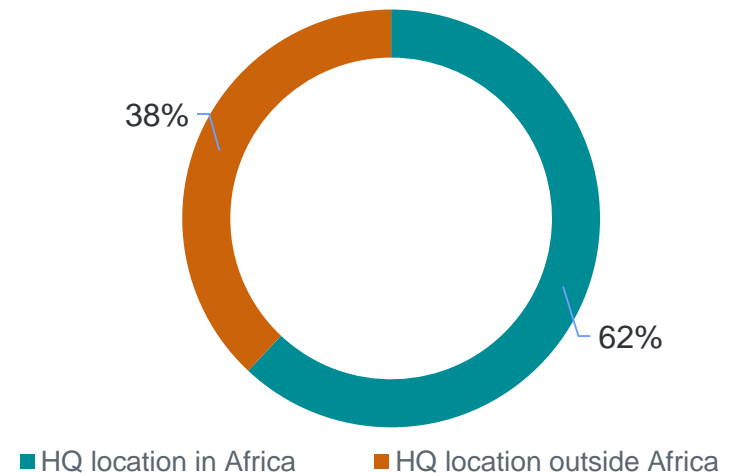
Segmentation by fund manager size



Median fund manager size, based on total African funds raised

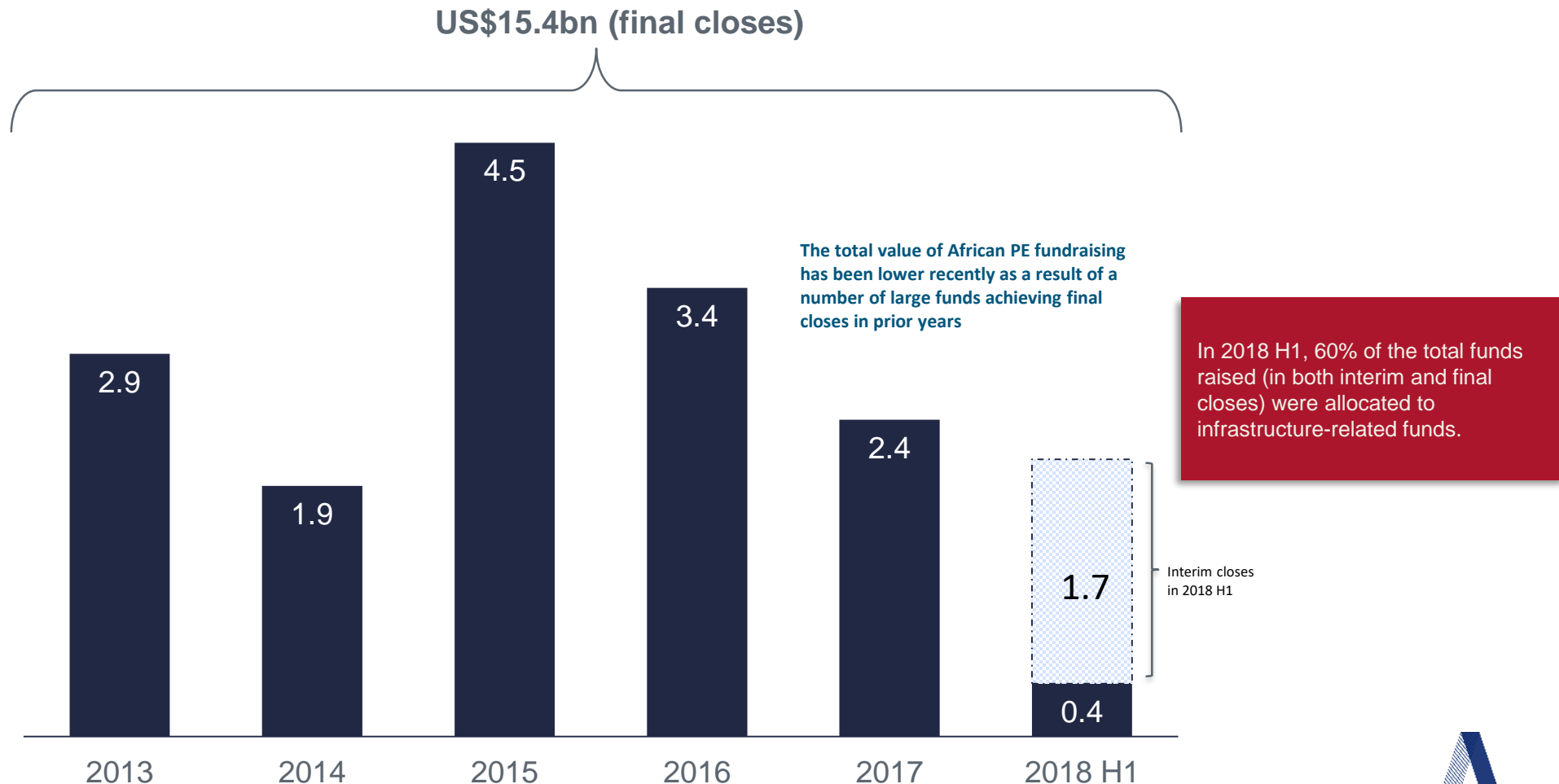
**US\$100mn**

% share of fund managers by HQ location



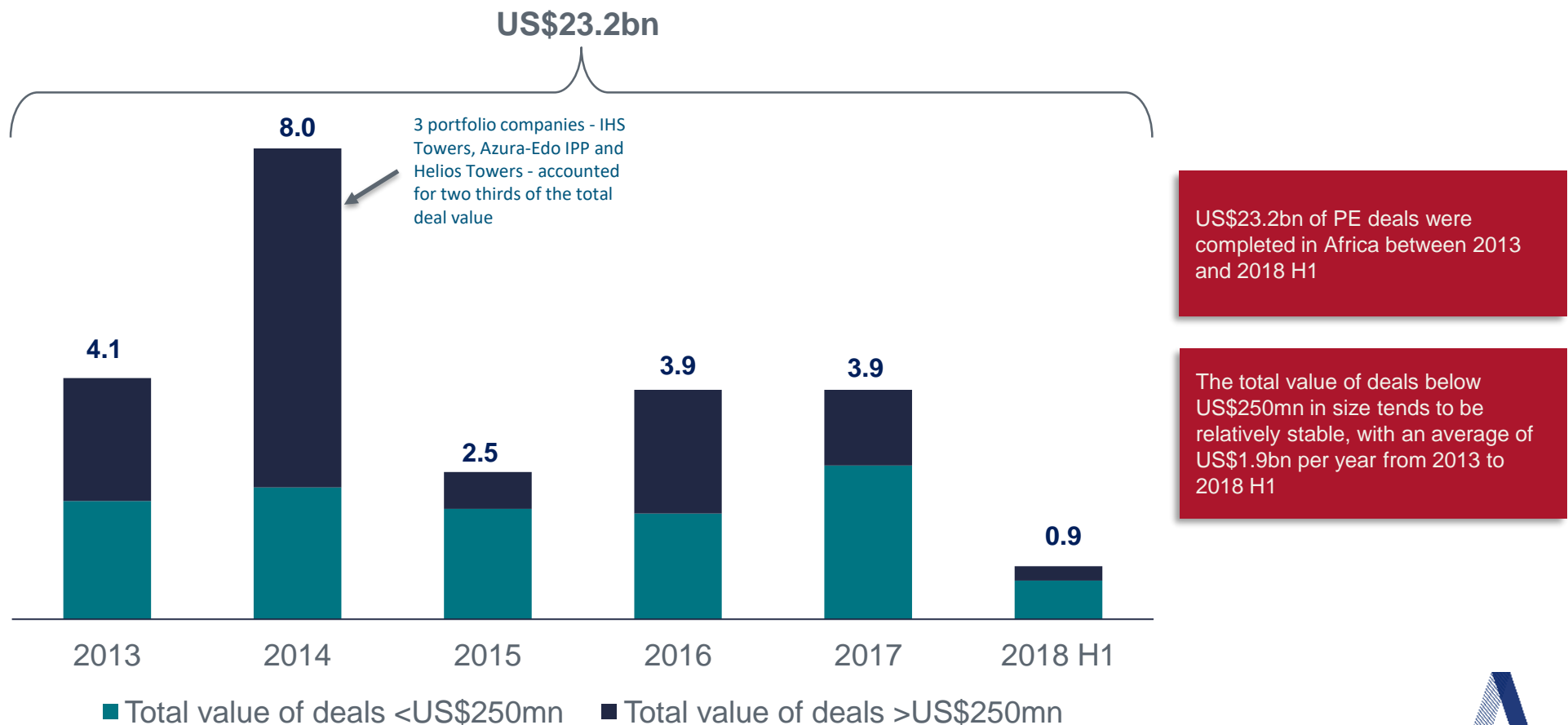
# African PE landscape: fundraising

## Total value of African PE fundraising, by year of final close, US\$bn



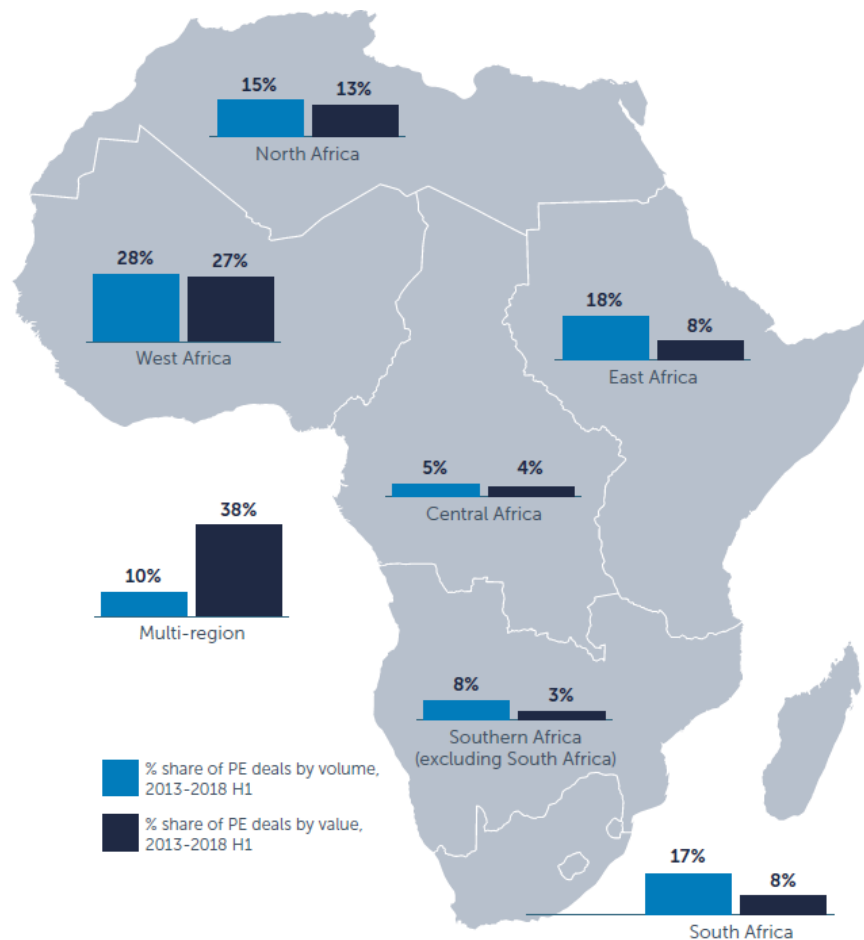
# African PE landscape: deals

## Value of African PE deals, by year and deal size range, US\$bn



# African PE landscape: deals

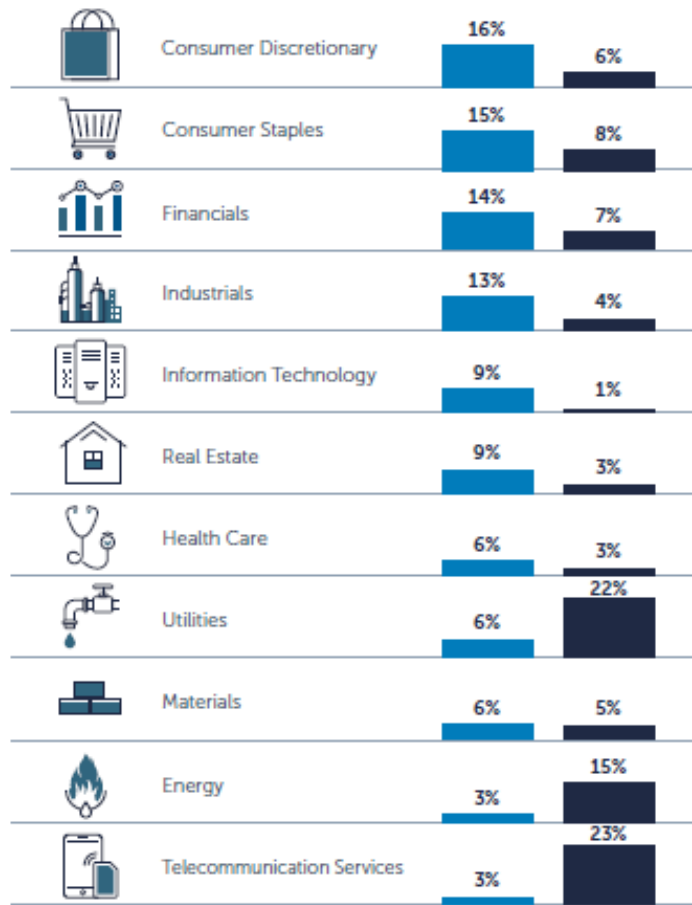
## Share of volume and value of African PE deals, by region, 2013 – 2018 H1



West Africa accounted for the greatest share of PE deals by volume, attracting 28% of African PE deals from 2013 to 2018 H1, while multi-region deals accounted for the greatest share by value (38%)

# African PE landscape: deals

## Share of volume and value of African PE deals, by sector, 2013 – 2018H1



Consumer Discretionary, Consumer Staples and Financials accounted for 45% of PE deals in Africa from 2013 to 2018 H1

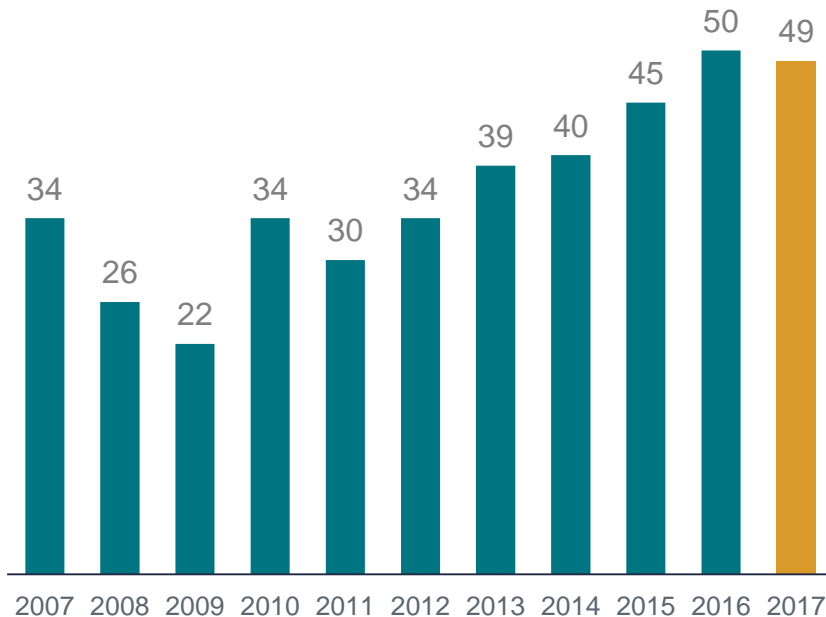
Telecommunication Services, Utilities and Energy attracted the lion's share of PE deal value in Africa from 2013 to 2018 H1, accounting for 60%

Investors are continuing to leverage on the consumer story, but also identifying opportunities linked to Africa's rapid urbanisation and infrastructure gap

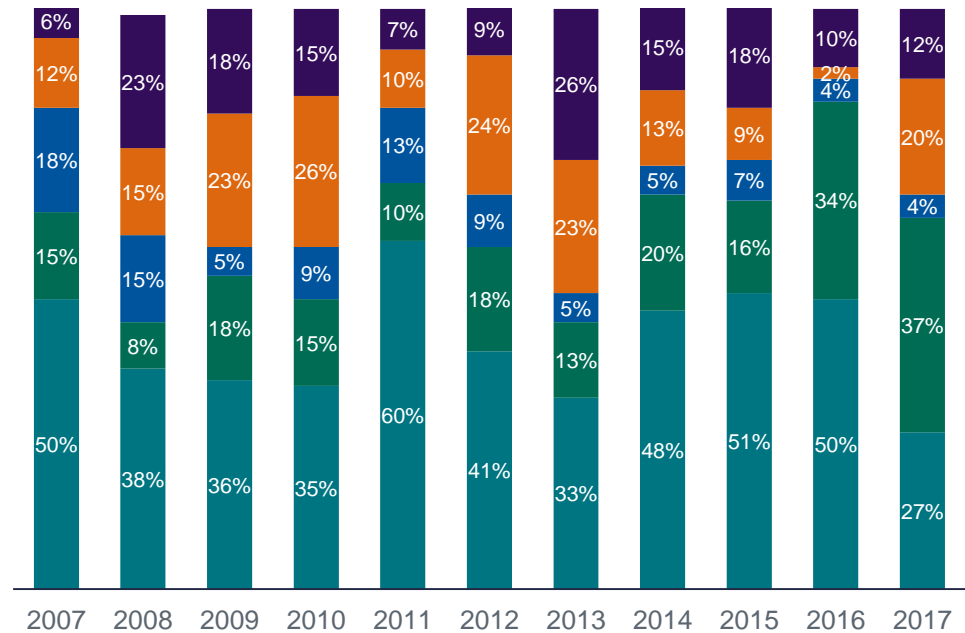
■ % share of PE deals by volume, 2013-2018 H1  
 ■ % share of PE deals by value, 2013-2018 H1

# African PE landscape: exits

Number of PE exits in Africa, 2007–2017



Exit route, by year, 2007–2017



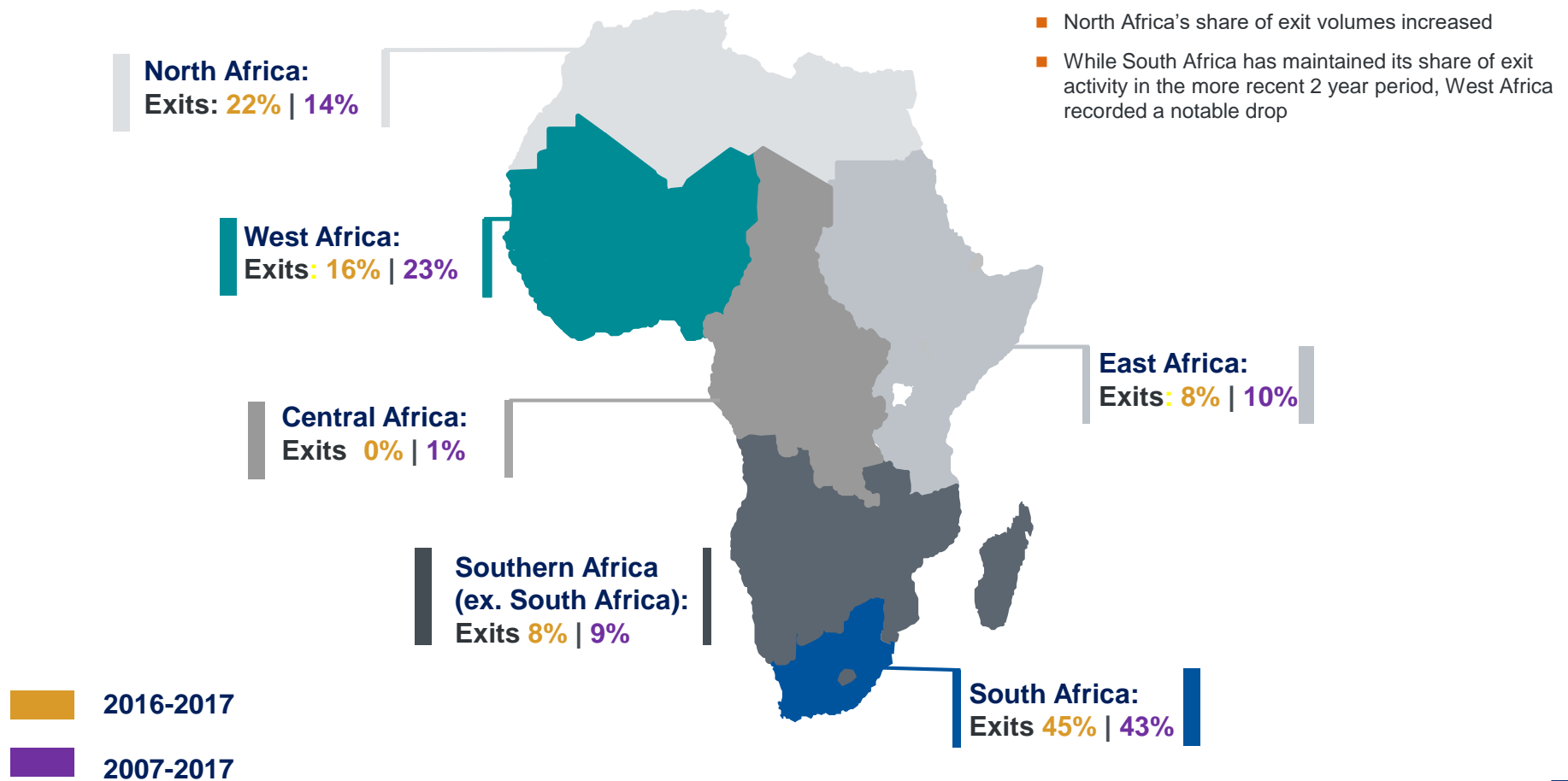
## Key Findings:

- In 2017, PE exit activity remained resilient despite challenging exit environments. The number of PE exits in 2017 was only slightly below the peak in 2016 (50 exits)
- Exits to PE & other financial buyers continued to increase in 2017 (37%) and now represent the most common exit route. This is likely to be due to the large amount of capital raised by PE firms in 2014–2016 and PE firms needing to invest the capital raised



# African PE landscape: exits by region

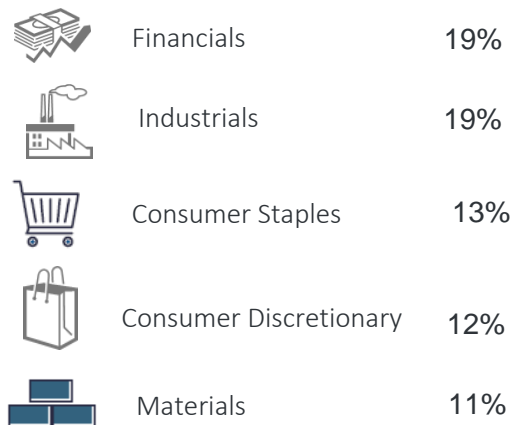
Regional view of exits activity, 2007-2017



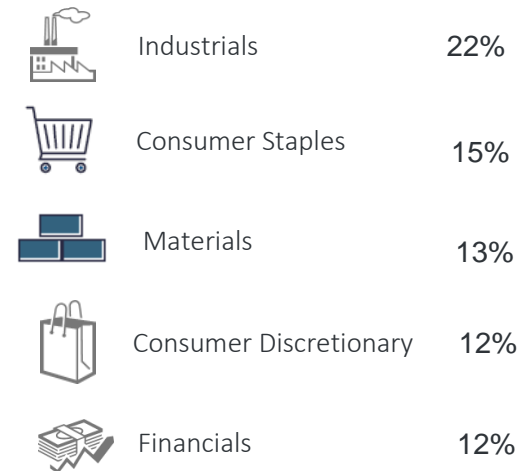


# African PE Landscape: exits

## Top 5 sectors by number of exits, 2007 – 2017



## Top 5 sectors by number of exits, 2016 – 2017



### Key Findings:

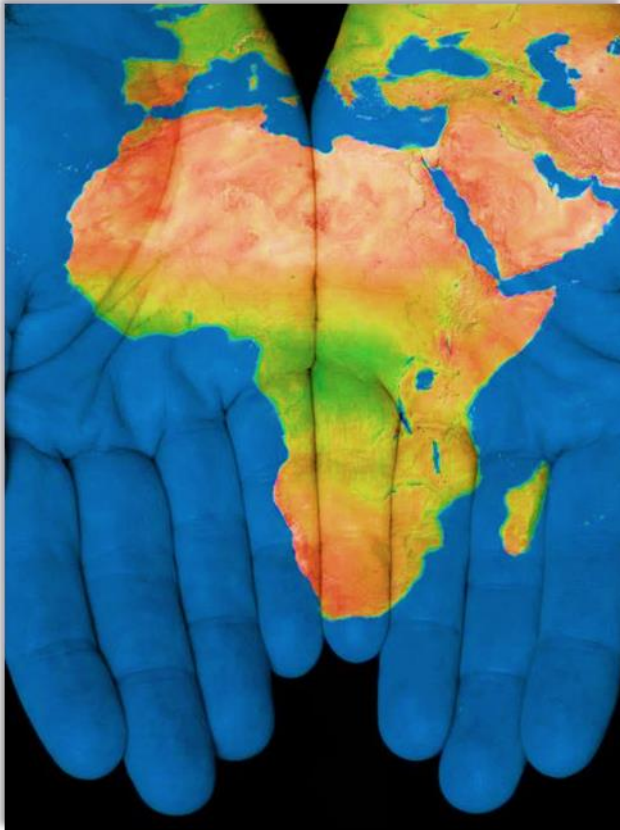
- Industrials remains the top sector for PE exits in 2007- 2017
- While the top 5 sectors have remained the same for the more recent period, Industrials, Consumer Staples and Materials have gained in their share of exit activity



# Why Africa? Why Now?

# Why you should invest in African PE now?

---



## The African PE investment cycle is at a pivotal point

- Increasing geographical diversity with more deals being done in more countries
- Consumer theme still persistent, but being supported by a broader range of sectors
- Infrastructure related activity presents a large opportunity for private investments
- Entry valuations are still attractive relative to listed equity

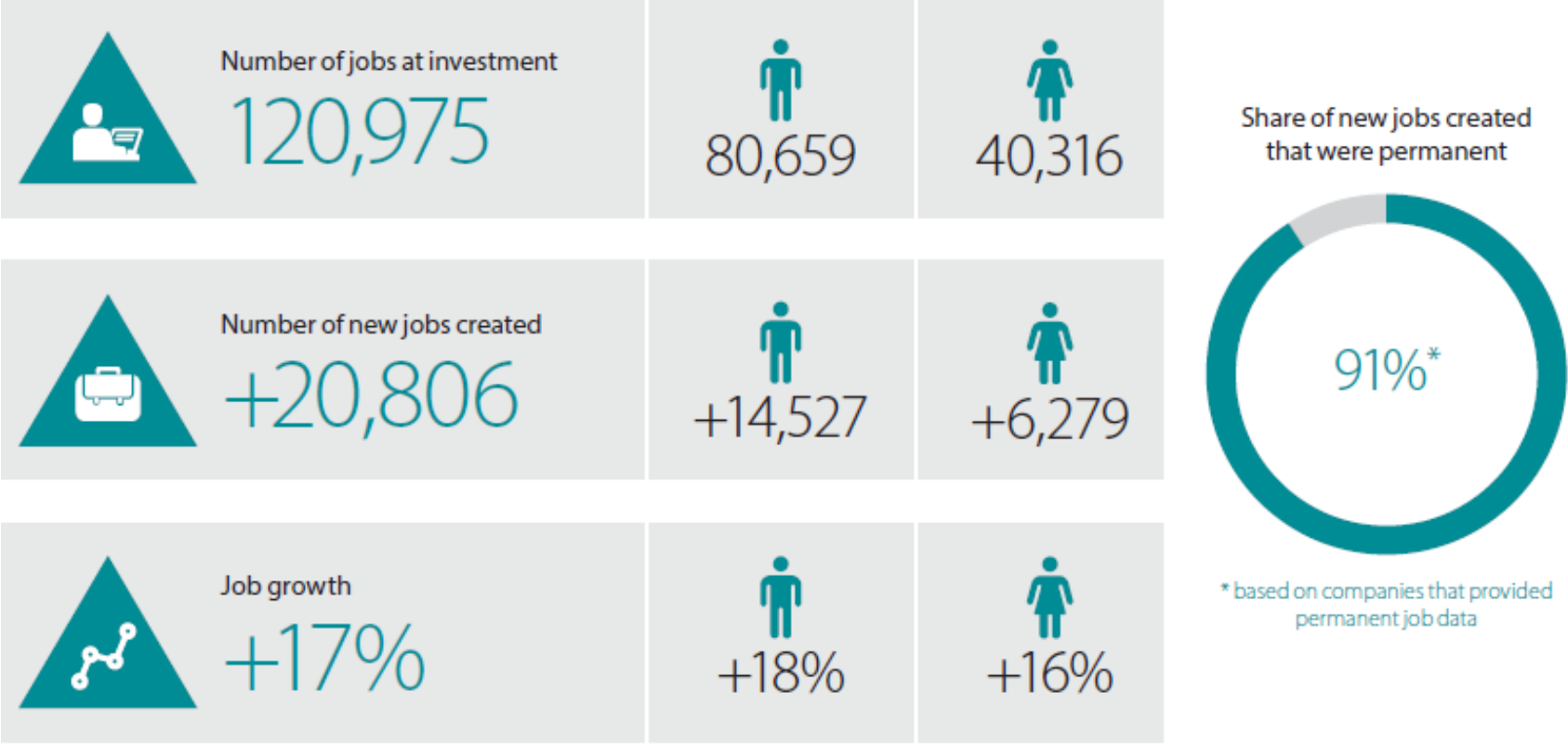
## Exit routes are expanding

- Africa's growth prospects remain attractive to strategic buyers
- Increasing PE-PE trade sales indicates a maturing African PE industry
- Growing number of exiting PE houses signifies a PE industry with more GPs having a proven track record
- IPOs are providing a viable exit route in some markets

## Compelling investment themes emerging

- Stabilising economies and quickening growth in some established markets combined with resilience in some newer markets provide diverse investable opportunities
- Microeconomic themes also provide many attractive opportunities across countries and sectors

# Job Creation and ESG



Source: AVCA 2017 Africa Sustainability Study: “ESG, Job Creation and Job Quality”



# ABOUT AVCA

# Championing private investment in Africa

Sole pan-African industry body for private equity and venture capital in Africa



- **Independent** industry research
- **Dynamic** market intelligence
- **Proprietary** and **comprehensive** pan-African database of funds, deals and exits



- AVCA's **PE Masterclass** aims to build knowledge of asset class in Africa amongst LPs
- Supporting first-time fund managers through **emerging GP programme**



- Annual **Research-led Conference**: the go-to private equity and venture capital gathering in Africa
- Ability to support **LP industry assessment**

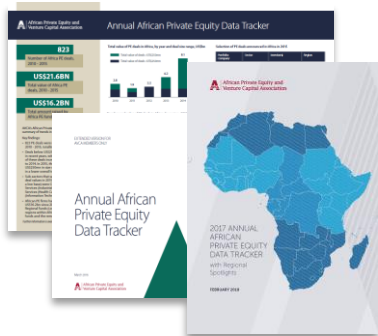


- AVCA Board of Directors comprises some of **most experienced GPs in Africa**
- **Expert Committees** driving industry education
- **Championing the industry** to advance the investment ecosystem

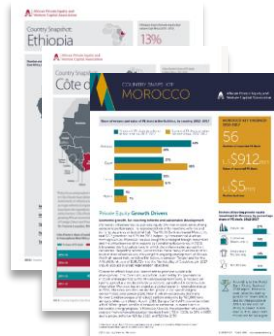




# Current and upcoming AVCA research



Half Year & Annual African Private Equity Data Tracker and Regional Spotlights



Country Spotlight: Ethiopia, Ivory Coast & Morocco



African Private Equity and Venture Capital Performance Benchmark



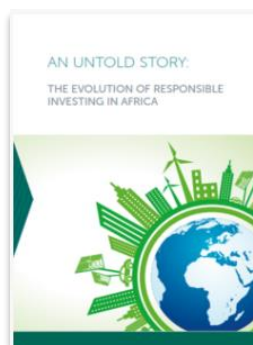
Annual Limited Partner Survey



AVCA / EY Exits Study



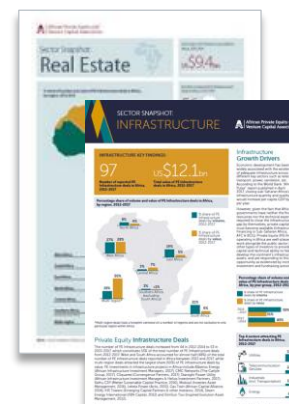
Africa Sustainability Study: ESG, Job Creation, Job Quality and Corporate Governance



The Untold Story: ESG & Impact Investing in Africa



Special Report: Africa Volatility and Uncertainty



Sector Spotlight: Infrastructure



AVCA/PwC African PE Exits by IPO Study





# Upcoming AVCA events

---

**The 16th Annual  
AVCA Conference**

**Nairobi, Kenya**

**GP - LP Summit & Welcome Cocktails**  
**1<sup>st</sup> April 2019**

**AVCA Conference**  
**2<sup>nd</sup> – 3<sup>rd</sup> April 2019**

 **avcaconference.com**





African Private Equity and  
Venture Capital Association

# Contact us

📍 37 North Row  
Third Floor  
London W1K 6DH  
United Kingdom

☎ +44 (0)20 3874 7008

🌐 [www.avca-africa.org](http://www.avca-africa.org)

✉ [conference@avca-africa.org](mailto:conference@avca-africa.org)

✉ [events@avca-africa.org](mailto:events@avca-africa.org)

✉ [memberservices@avca-africa.org](mailto:memberservices@avca-africa.org)

✉ [research@avca-africa.org](mailto:research@avca-africa.org)



ARK INVEST

# BIG IDEAS

# 2018

DISRUPTIVE INNOVATION



## TAKING ADVANTAGE OF FOUR MARKET INEFFICIENCIES

---

ARK focuses solely on disruptive innovation to take advantage of four market inefficiencies:

1. **The Market's Short-Term Time Horizon** — ARK believes there is a time arbitrage to take advantage of. We seek opportunities that offer growth over 3-5 years the market ignores or underestimates.
2. **The Passive Public Markets** — ARK believes innovative public companies with forward looking growth are the most inefficiently priced part of the market.
3. **The Silo-ization of Wall Street** — ARK's analysts are organized by cross-sector disruptive innovation themes to capitalize on the convergence of research.
4. **The Closed-off Research and Investment Mentality** — ARK uses an Open Research Ecosystem that combines top-down and bottom-up research. It is designed to identify disruptive innovation early, allowing for organized exchange of insights between the portfolio manager, director of research, analysts, and external sources.

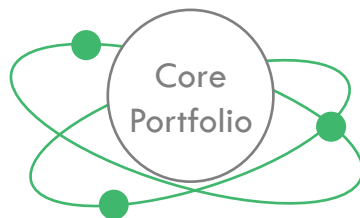
# HOW TO USE DISRUPTIVE INNOVATION STRATEGIES

1. **Portfolio diversification** — thematic investing in disruptive innovation can offer a low correlation of relative returns to traditional growth strategies and negative correlation to value strategies.
2. **Source of alpha** — a top-down approach looks at secular trends and ecosystems to find attractive growth opportunities across sectors.
3. **Hedge for index-based strategies** — a constant focus on secular changes and disruptive innovation can offer a portfolio hedge in a rapidly changing world and complement traditional strategies.

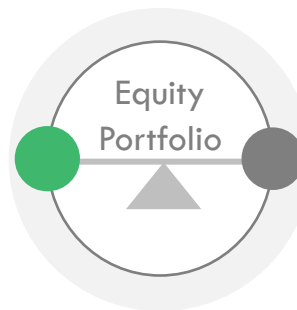
GROWTH STRATEGY



SATELLITE STRATEGY



HEDGE





## About ARK Invest

Rooted in over 40 years of experience, ARK Invest aims to identify large-scale investment opportunities resulting from technological change. ARK Invest focuses solely on offering investment solutions that capture disruptive innovation in the public markets.

**WE BELIEVE  
INNOVATION IS KEY TO  
GROWTH.**

## ARK INVEST | BIG IDEAS 2018

## About Big Ideas

“Big Ideas” is ARK’s annual publication showcasing a selection of innovations that we believe will accelerate the pace of change. The research presented in the following slides aims to illustrate how these ideas are transforming the way the world works and delivering outsized growth opportunities across different industries.

Each section highlights a technologically enabled innovation and provides a short research analysis, before briefly sizing the investment opportunity.



CRISPR  
Genome-  
Editing



Mobility-  
as-a-Service  
(MaaS)



Frictionless  
Value  
Transfers



Deep  
Learning



Robotics



3D Printing

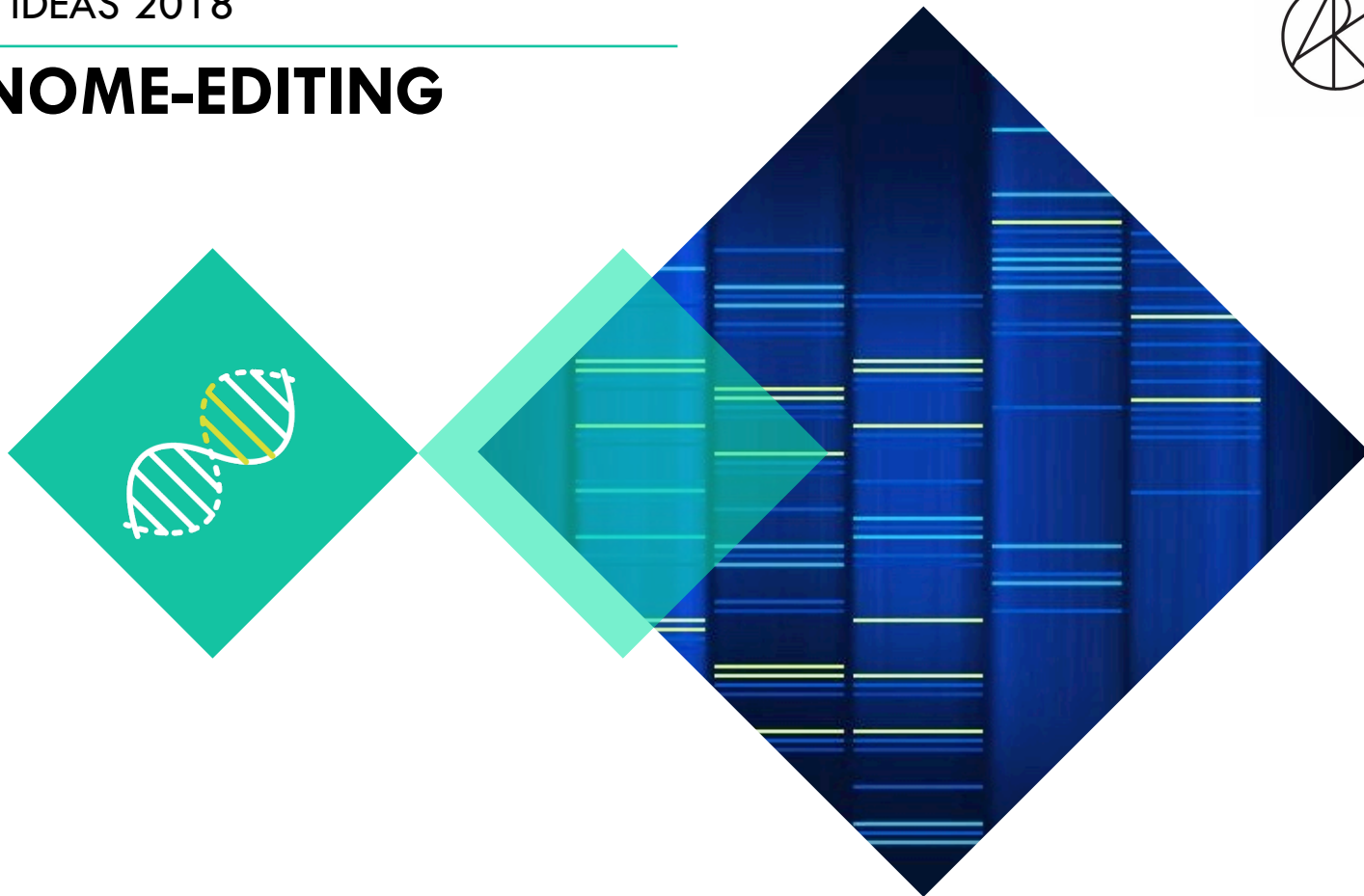


Cryptoassets





# CRISPR GENOME-EDITING

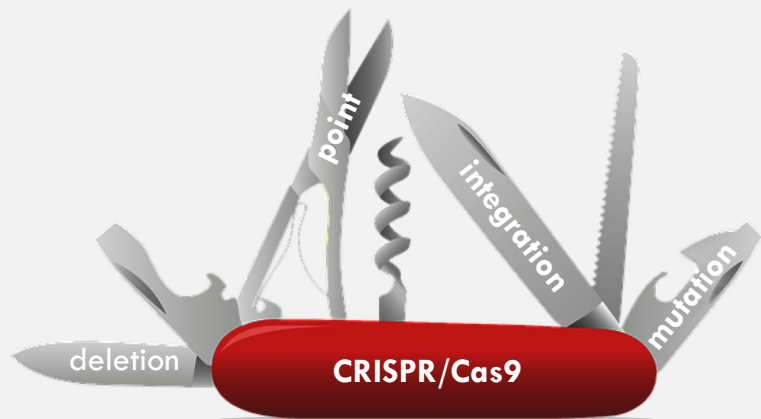


## CHEAP AND RAPID “WRITE” CAPABILITIES ENABLE GENOME MODIFICATION



ARK believes that CRISPR is a genome-editing platform that will address the world's most salient health issues. It is like a “molecular swiss army knife” with a rapidly expanding number of tools that perform different functions:

### Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR)



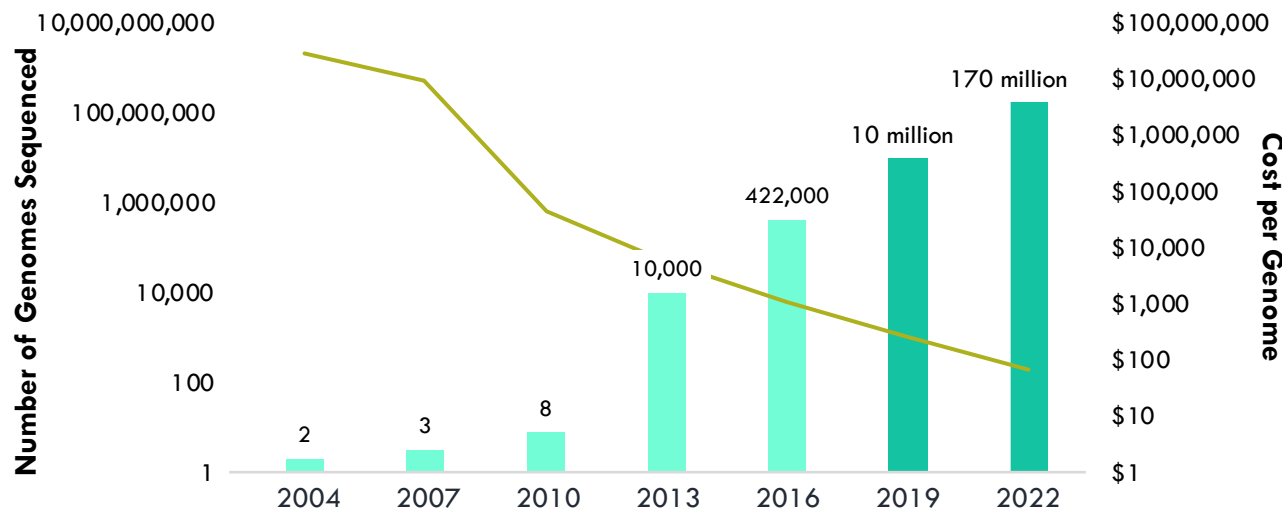
- **Cut** DNA/RNA at a single point or in stretches
- **Insert** DNA/RNA and create novel gene sequences
- **Activate and Silence** genes without making permanent changes
- **Regulate** protein expression levels epigenetically
- **Record and Timestamp** biological events
- **Track** the movement of specific biological molecules
- **Identify** the presence of specific cancer mutations and bacteria
- **Locate** molecules without making changes
- **Target and Destroy** specific viral and bacterial DNA and RNA
- **Interrogate** gene function multiplexed
- **Activate** drug release at a specified trigger

# THE NUMBER OF HUMAN GENOMES SEQUENCED SHOULD SOAR



By 2022, the cost of sequencing or “reading” the DNA of a full human genome should drop below \$100, creating an explosion in the number of whole human genomes sequenced.

**Genomes Sequenced As Cost Per Genome Declines**  
(log scale)



## KEY EXPECTATIONS

- 2018-2021: NovaSeq instruments and chemistries should drive sequencing costs down by ~40% per year
- 2021: Cost/Genome ~\$100
- 2022: ~170 million human genomes should be sequenced

# THE COST OF EDITING DNA MUTATIONS IS DROPPING PRECIPITOUSLY



The cost of CRISPR, or “editing” DNA, is dropping, as is its time-to-manufacture, accelerating the pace of innovation.

	ZFNs*	TALENs**	CRISPR
Year of First Human Cell Modification	2003	2009	2012
Time to Manufacture (days)	22	10	5
Cost (per pair of nuclease)	~\$5,500	~\$360 per pair	~\$30 per pair

Newer Genome-Editing Techniques



## THE CRISPR ADVANTAGE

- Increases research thanks to lower costs and ease of use
- Reduces manufacturing time thanks to operational efficiencies
- Re-invigorates opportunities in regenerative medicine, such as stem cell research

\*ZFNs: Zinc Finger Nucleases \*\*TALENs: Transcription activator-like effector nuclease

Source: ARK Investment Management LLC, 2017

## USE CASE: AGRICULTURE



CRISPR should increase the yields of livestock, crops, and aquaculture in different ways:



- Breed TB- and other disease-resistant cattle
- Shift breeding practices from random to more scientific techniques
- Raise pigs with lower fat content
- Increase the milk yield of cows



- Yield more productive, pesticide-free, and weather/bug resistant crops
- Enhance taste and nutritional value
- Surface new seed variants for hard-to-modify crops like wheat and rice



- Cut gestation periods in half
- Increase the conversion of feed into weight
- Sterilize farmed fish to protect wildlife
- Breed disease-resistant fish to avoid food poisoning

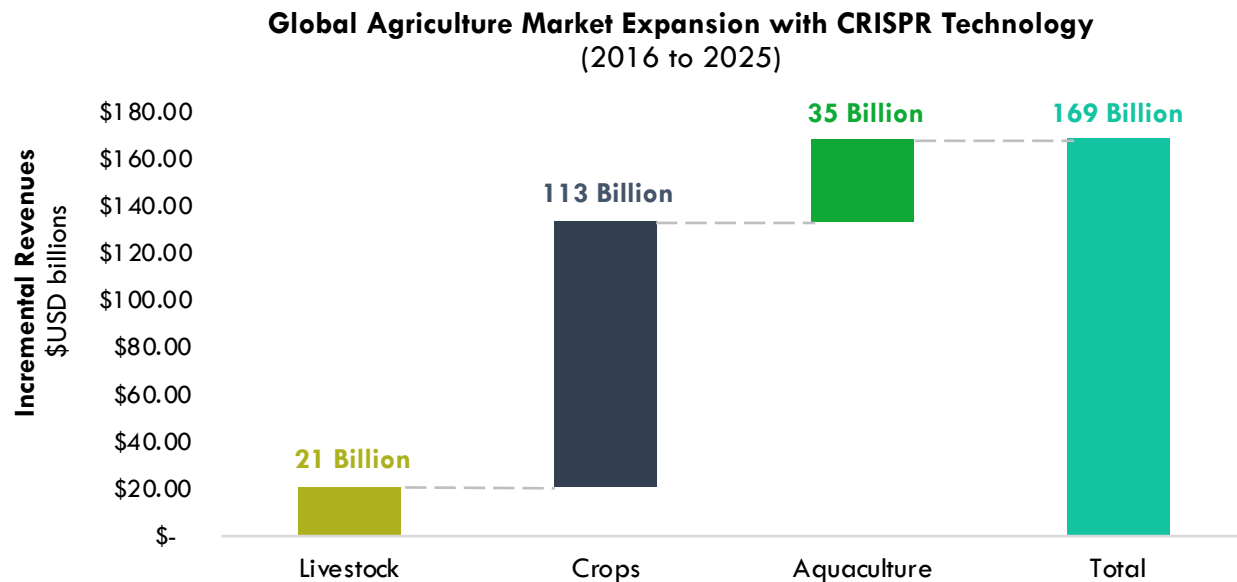
### CRISPR

- Minimizes environmental footprint
- Avoids traditional GMO's in which foreign DNA infiltrates genes
- Aids small, family-owned farms with breeding techniques that lower the risk of disease
- Meets global demand for a diversified diet
- Reduces energy consumption associated with inefficient farmed fishing methods

# USE CASE: AGRICULTURE



By 2025, CRISPR could expand the agricultural market by an estimated \$170 billion, sustaining projected growth in the global population.



CRISPR should have the first commercial impact in agriculture:

- 2020: CRISPR could enable the first commercial waxy corn variety
- 2025: CRISPR may increase food yield by an estimated 585 trillion calories
- 2025: CRISPR may increase agricultural productivity enough to feed an additional 800 million people

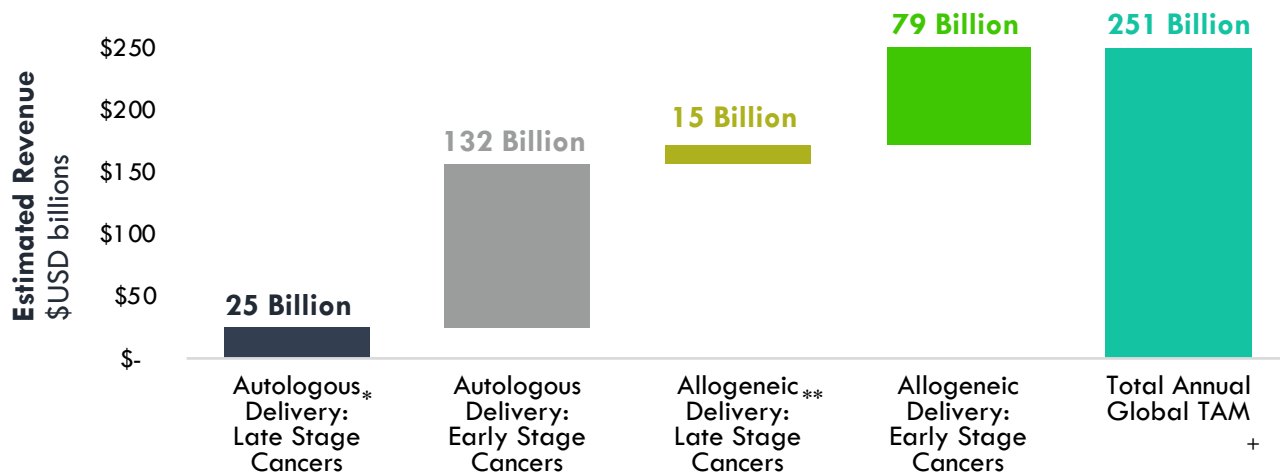
# USE CASE: CAR-T



Globally, CAR-T cancer therapy could generate \$250 billion per year in revenues, with royalties payable to CRISPR companies.

- Chimeric Antigen Receptor T-cell (CAR-T) therapy is a novel immunotherapy that modifies a patient's own T-cells to target and kill malignant cells while keeping healthy cells intact.
- CAR-T therapy is in its infancy: CRISPR could enhance the safety and efficacy of next generation CAR-T therapies.

## Global Addressable Market Estimate For CAR-T



Forecasts are inherently limited and cannot be relied upon.

\*Autologous: involves one individual as both donor and recipient. \*\*Allogeneic: involves different individuals of the same species

<sup>+</sup>TAM: Total Addressable Market | Source: ARK Investment Management LLC, 2017



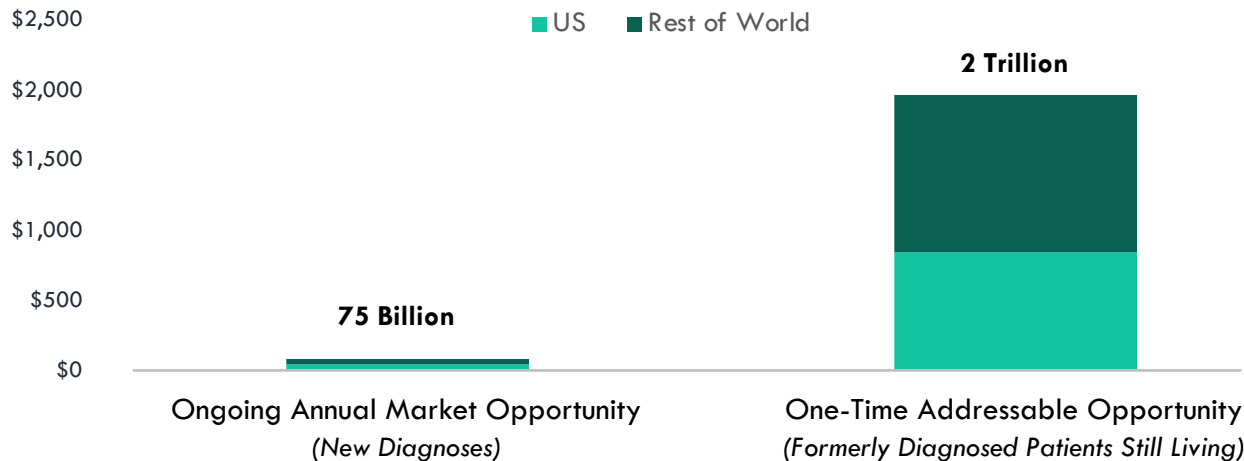
# USE CASE: MONOGENIC DISEASE



CRISPR should dominate the \$75 billion annual addressable monogenic disease market.  
Only 5% of diseases caused by a single gene have any available treatment today.

## CRISPR's Total Addressable Market: Monogenic Diseases

(prices based on cures, \$USD billions)



- CRISPR can address 10,000 monogenic diseases, of which only 5% have any treatments today
- 1 in 100 live human births results in a monogenic disease
- ARK expects CRISPR to enter human trials in 2018

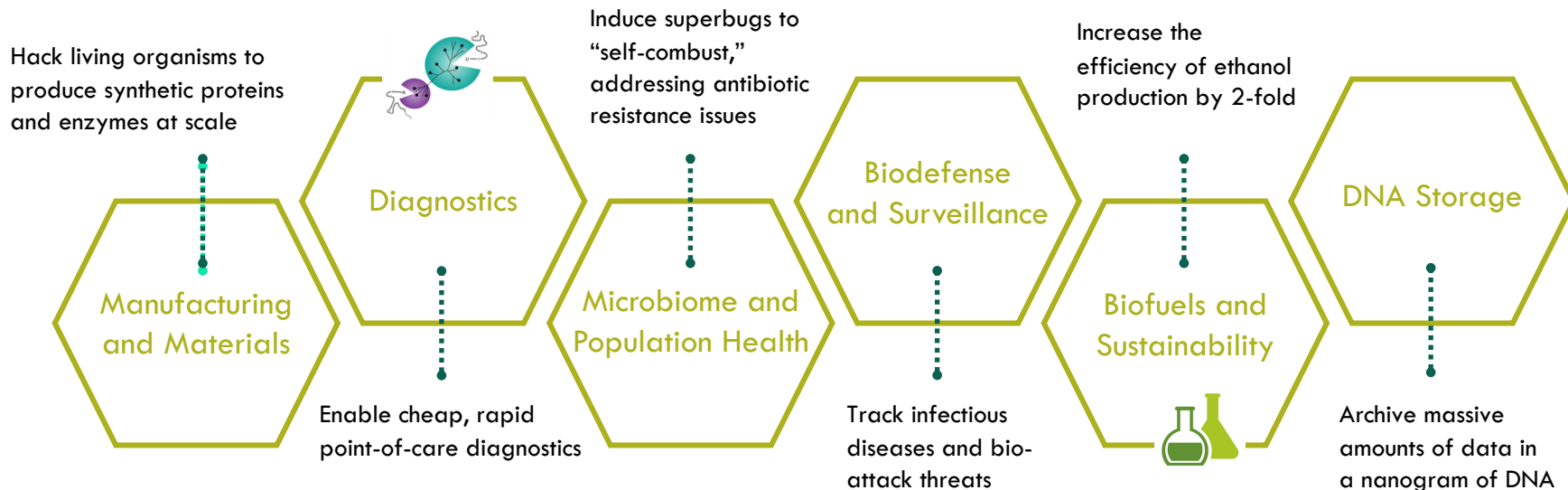
Forecasts are inherently limited and cannot be relied upon.

Source: ARK Investment Management LLC, 2017; Genetic Explanation: Sense and Nonsense. Gruber, Jeremy & Krinsky, Sheldon. 2013

## BASED ON ARK'S RESEARCH...



CRISPR's toolbox should disrupt more than therapeutics and agriculture.





# MOBILITY-AS-A-SERVICE



# TODAY, WE SEE TWO TRANSFORMATIONS IN THE MOBILITY SPACE



Autonomous platforms, or Mobility-as-a-Service (MaaS), will come in many different forms, including:

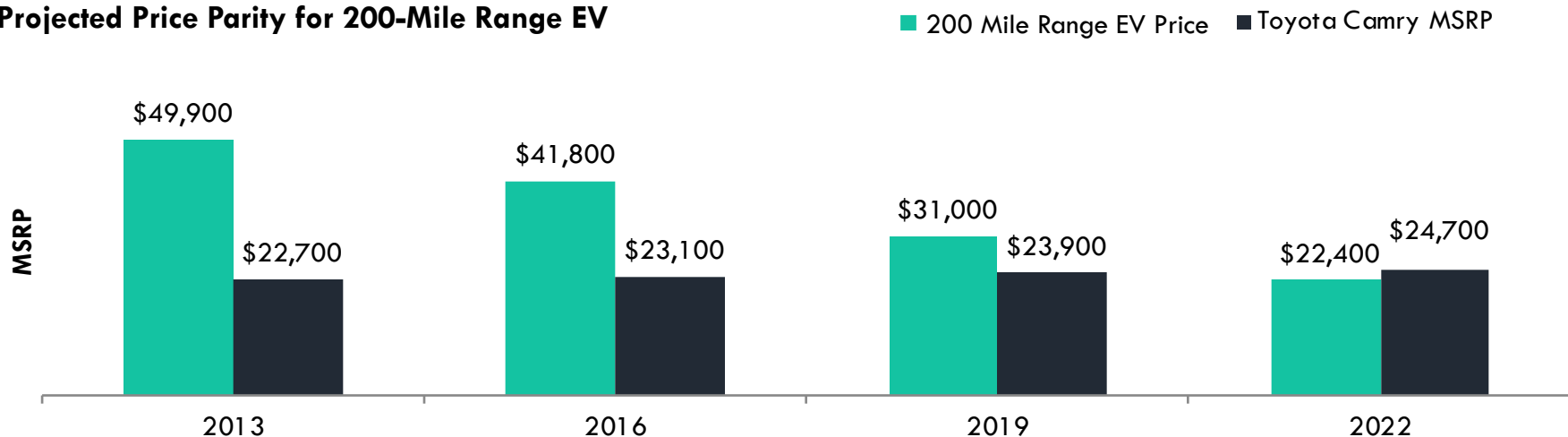


# ARK BELIEVES ELECTRIC VEHICLES WILL DOMINATE TRANSPORTATION



Because battery costs have declined faster than most analysts anticipated, ARK foresees a wholesale shift to electric vehicles (EVs). By 2022 EVs should be cheaper than comparable gas-powered cars.

## Projected Price Parity for 200-Mile Range EV



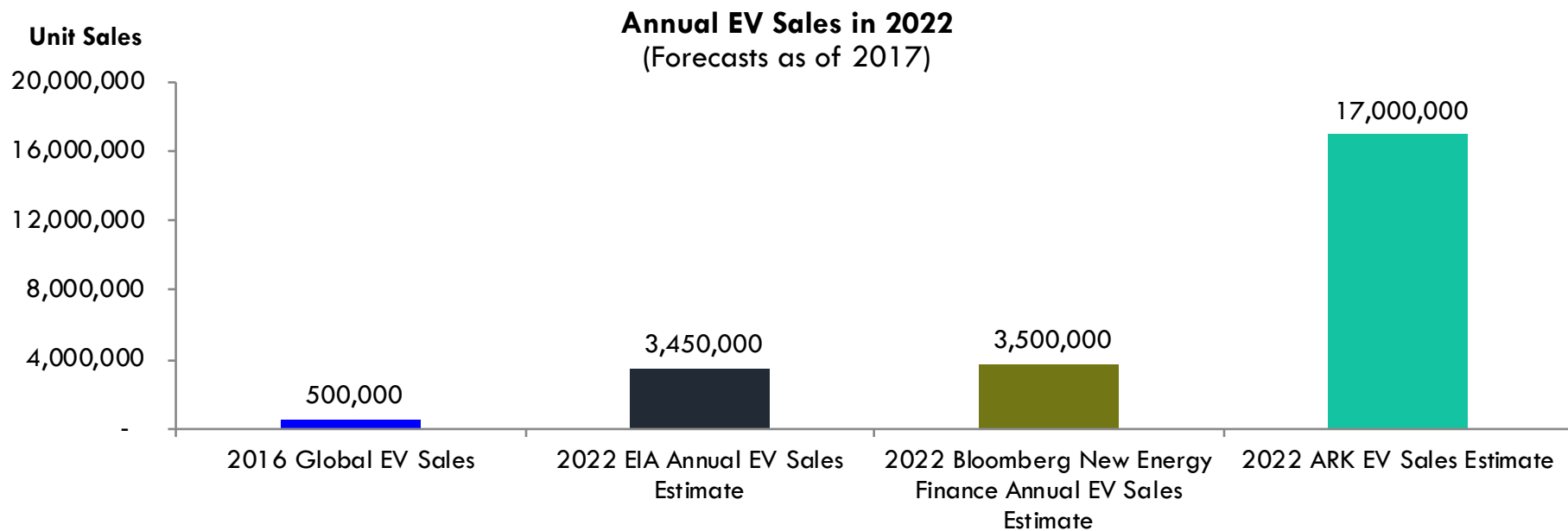
Forecasts are inherently limited and cannot be relied upon.

Sources: ARK Investment Management LLC, 2017 | ARK's expectation for EV MSRP (Manufacturer's Suggested Retail Price) parity is largely based on decreasing lithium-ion battery costs. Other factors could influence MSRP. The MSRP prices shown do not include any government subsidies.

## BASED ON ARK'S RESEARCH...



...the demand for EVs should be orders of magnitude higher than current forecasts.



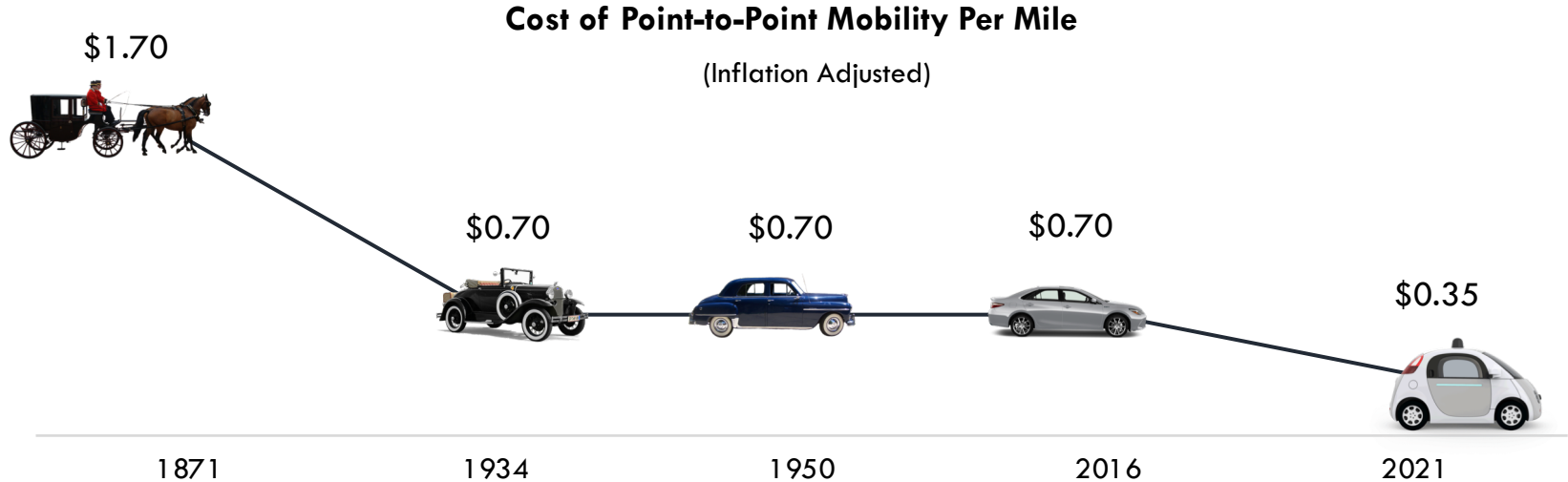
Forecasts are inherently limited and cannot be relied upon.

Sources: ARK Investment Management LLC, 2017; Bloomberg New Energy Finance, U.S. Energy Information Administration, EV-volumes.com

# PERSONAL MOBILITY SHOULD BECOME MORE AFFORDABLE



The price of personal mobility has not changed since the Model T.



Forecasts are inherently limited and cannot be relied upon.

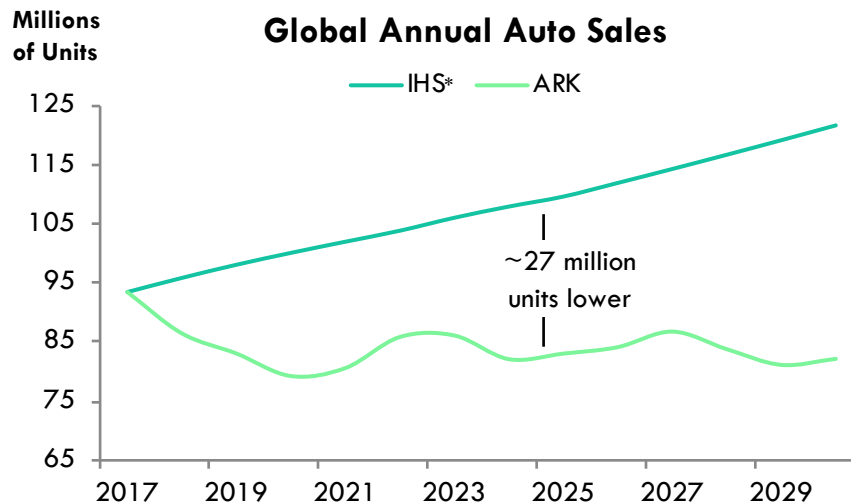
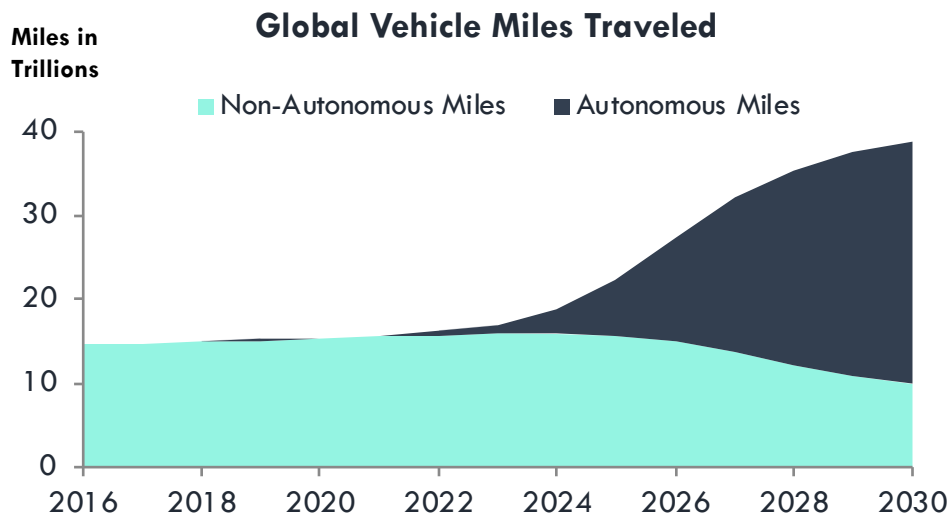
Sources: ARK Investment Management LLC, 2017 | Morton Salt Company Records, American Automobile Association (AAA)



# MAAS RESULTS IN MORE MILES TRAVELED AND FEWER CARS SOLD



While ARK expects global vehicle miles to increase two- to three-fold, auto sales should be flat to down, thanks to the higher utilization of taxi fleets.



Forecasts are inherently limited and cannot be relied upon.

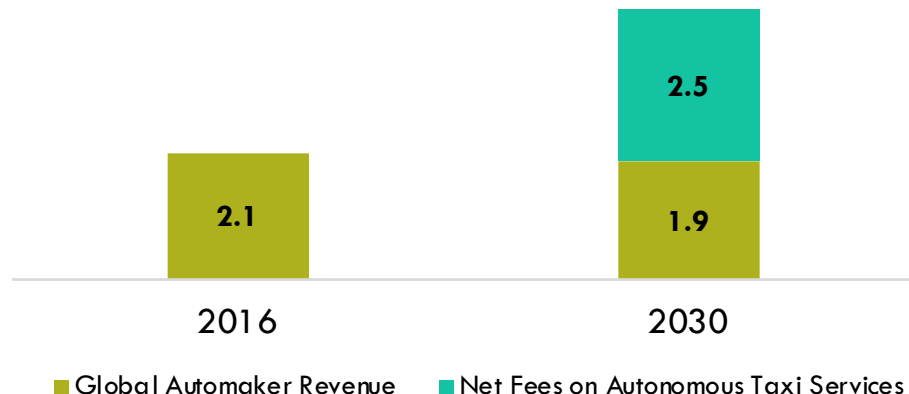
\*IHS Markit Ltd. | Sources: ARK Investment Management LLC, 2017; IHS Markit, The Federal Highway Administration (FHWA), and the Research and Innovative Technology Administration (RITA)

# PLATFORM PROVIDERS COULD BE THE BIG WINNERS

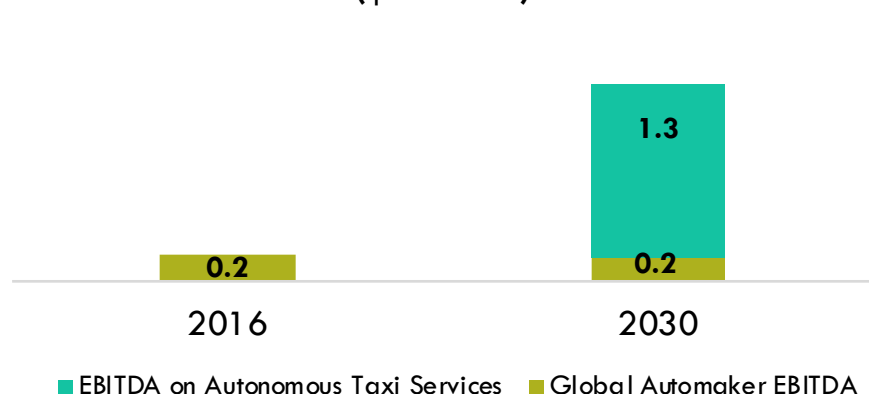


ARK believes autonomous platform providers will be roughly 9 times more valuable than the automakers. Likely candidates are Baidu, Alphabet, and Tesla.

**Revenues of Automakers and Autonomous Platform Providers (\$ Trillions)**



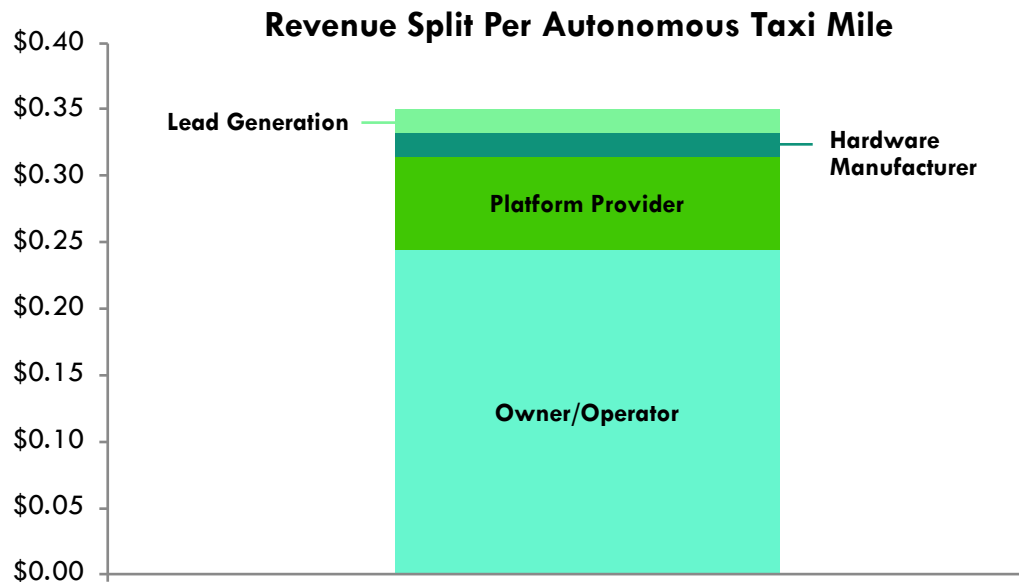
**EBITDA for Automakers and Autonomous Platform Providers (\$ Trillions)**



# THE REVENUE FROM AUTONOMOUS TAXI SERVICES WILL BE SHARED



Autonomous MaaS revenue probably will be split among owners, platform providers, manufacturers, and lead generators.

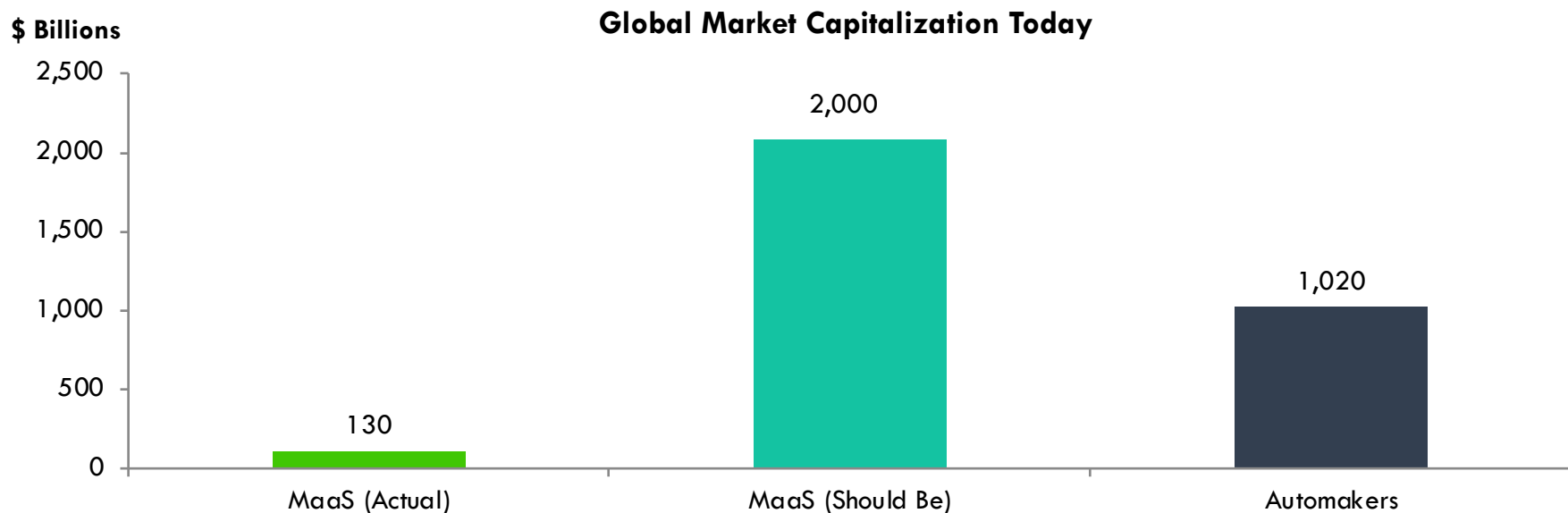


- **Lead Generation:** A share of revenue-per-mile could go towards lead generation and/or traffic acquisition.
- **Hardware Manufacturer:** Today vehicle manufacturers earn roughly 1 penny per mile traveled. In the autonomous MaaS market, hardware manufacturers should benefit either from upfront sales or a recurring revenue stream from autonomous taxis with much higher utilization rates.
- **Platform Provider:** Much like ridesharing firms take a cut of per mile revenues today, we expect MaaS platforms to take a similar, if not higher, share of revenues because they are offering more value than today's ridesharing firms. The share of revenue that MaaS platform firms will command will depend on how much of the technology stack and data pool they control.
- **Owner/Operator:** Owners of the vehicles could be individuals, auto companies, taxi firms, or commercial fleet operators. We expect them to garner most of the revenues and be responsible for most of the maintenance.

## ARK'S RESEARCH SHOWS...



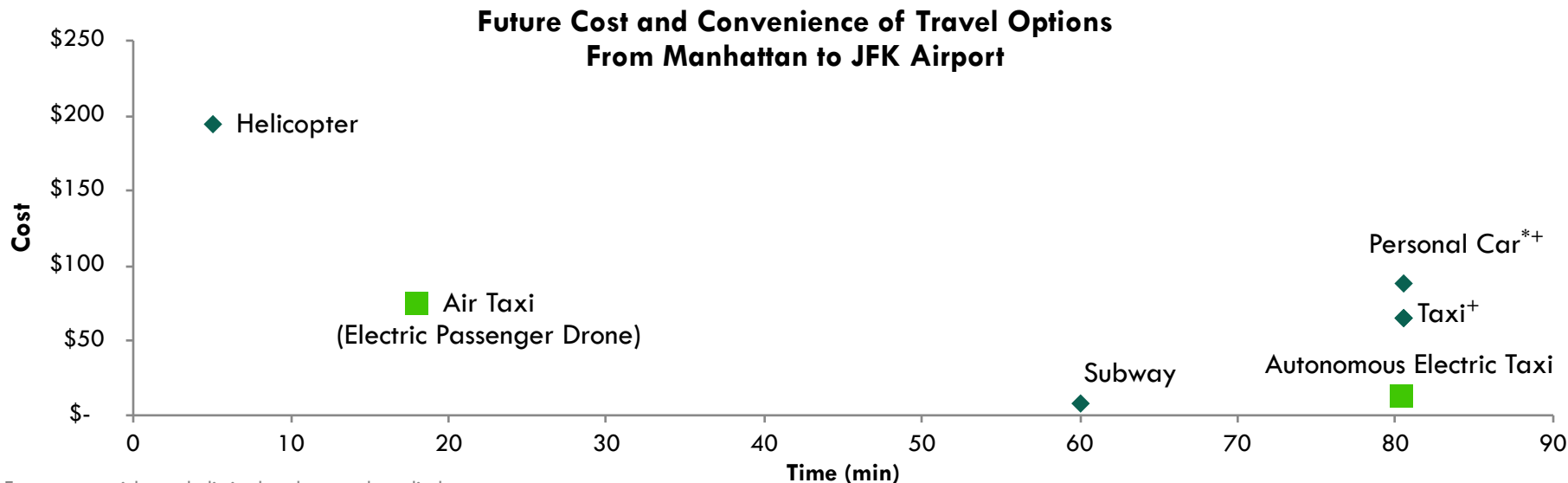
...that MaaS should be valued today at \$1-3 trillion dollars.



# TRANSPORTATION BY AIR



By the early 2020s, ARK believes air taxis should be able to transport a passenger to the airport for the same price as a taxi, but in a fraction of the time. Alternatively, autonomous electric taxis likely will be able to transport passengers for the price of a subway ride today.



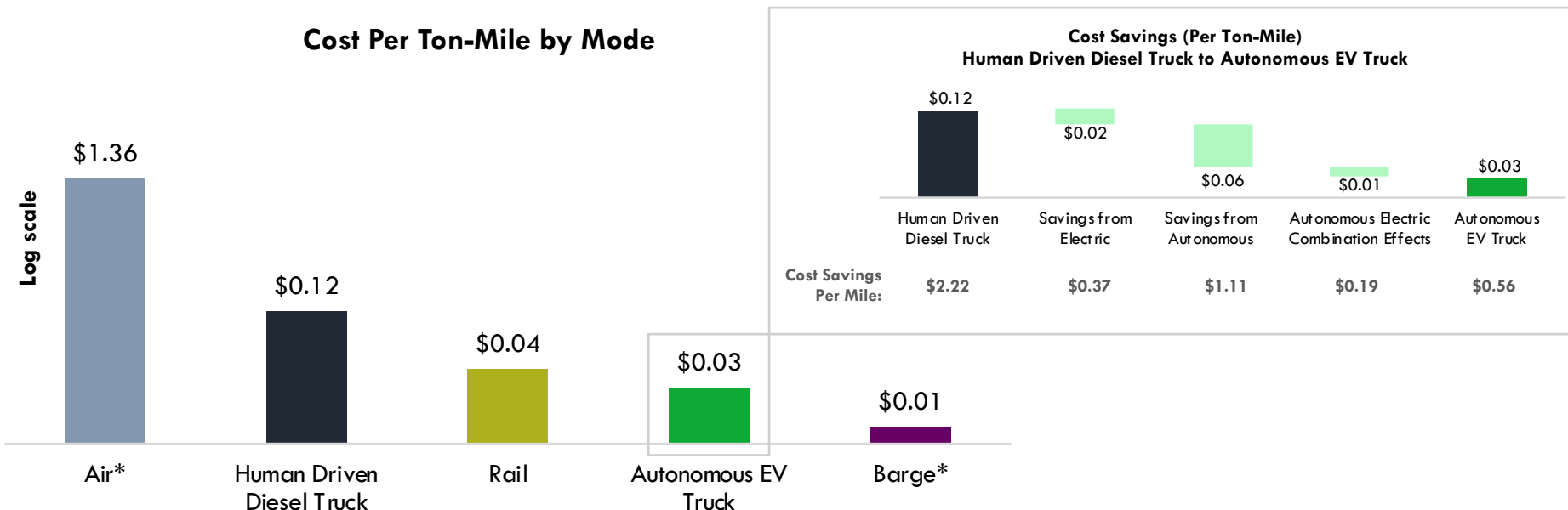
Forecasts are inherently limited and cannot be relied upon.

Sources: ARK Investment Management LLC, 2017 | \*Includes parking for four days +15% increase in traffic due to autonomous

Data: <https://blade.flyblade.com/p/bounce>; <https://www.panynj.gov/airports/jfk-airtrain.html>



ARK's research shows autonomous electric trucks should offer a shipping option less expensive than rail, on a cost per ton-mile basis.

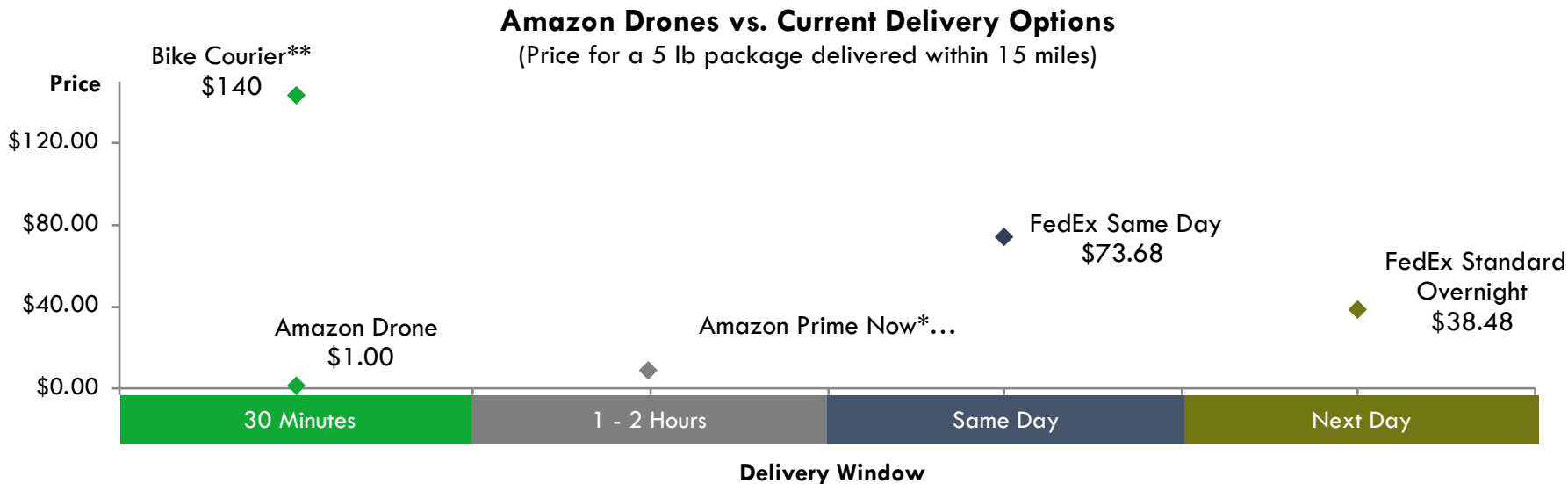


Forecasts are inherently limited and cannot be relied upon.

\*Note: Cost per ton-mile for air and barge is using 2014 and 2011 data, respectively (latest available) Sources: ARK Investment Management LLC, 2017; Research and Innovative Technology Administration (RITA), Association of American Railroads (AAR), and the National Transportation Library (NTL)



ARK's research shows Amazon drones should be able to deliver a 5 lb package in 30 minutes for \$1.



\* Prices given are for members with a subscription. An Amazon Prime subscription is \$99 per year. One hour delivery is \$7.99 and two hour delivery is free.

\*\* Most couriers do not travel more than 10 miles. This is an estimate for a 10 mile delivery.

Forecasts are inherently limited and cannot be relied upon.

Sources: ARK Investment Management LLC, 2017



©2018, ARK Investment Management LLC. No part of this material may be reproduced in any form, or referred to in any other publication, without the express written permission of ARK Investment Management LLC ("ARK").

The content of this presentation is for informational purposes only and is subject to change without notice. This presentation does not constitute, either explicitly or implicitly, any provision of services or products by ARK and investors are encouraged to consult counsel and/or other investment professionals as to whether a particular investment management service is suitable for their investment needs. All statements made regarding companies or securities are strictly beliefs and points of view held by ARK and are not endorsements by ARK of any company or security or recommendations by ARK to buy, sell or hold any security. Historical results are not indications of future results. Certain of the statements contained in this presentation may be statements of future expectations and other forward-looking statements that are based on ARK's current views and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in such statements. The matters discussed in this presentation may also involve risks and uncertainties described from time to time in ARK's filings with the U.S. Securities and Exchange Commission. ARK assumes no obligation to update any forward-looking information contained in this presentation. Certain information was obtained from sources that ARK believes to be reliable; however, ARK does not guarantee the accuracy or completeness of any information obtained from any third party. ARK and its clients as well as its related persons may (but do not necessarily) have financial interests in securities or issuers that are discussed.

ARK's statements are not an endorsement of any company or a recommendation to buy, sell or hold any security. For a list of all purchases and sales made by ARK for client accounts during the past year that could be considered by the SEC as recommendations go to [http://ark-invest.com/wp-content/trades/ARK\\_Trades.pdf](http://ark-invest.com/wp-content/trades/ARK_Trades.pdf).

It should not be assumed that recommendations made in the future will be profitable or will equal the performance of the securities in this list. For full disclosures <http://ark-invest.com/terms-of-use>.

Please note, companies that ARK believes are capitalizing on disruptive innovation and developing technologies to displace older technologies or create new markets may not in fact do so and/or may face political or legal attacks from competitors, industry groups, or local and national governments. ARK aims to educate investors and to size the potential opportunity of CRISPR Genome-Editing and Mobility-as-a-Service (MaaS), noting that risks and uncertainties may impact our projections and research models. Investors should use the content presented for informational purposes only, and be aware of market risk, disruptive innovation risk, regulatory risk, and risks related to these innovations, such as: **Industrials Sector Risk.** The industrials sector includes companies engaged in the aerospace and defense industry, electrical engineering, machinery, and professional services. Companies in the industrials sector may be adversely affected by changes in government regulation, world events and economic conditions. In addition, companies in the industrials sector may be adversely affected by environmental damages, product liability claims and exchange rates. *Aerospace and Defense Company Risk.* Companies in the aerospace and defense industry rely to a large extent on U.S. (and other) Government demand for their products and services and may be significantly affected by changes in government regulations and spending, as well as economic conditions and industry consolidation. *Professional Services Company Risk.* Professional services companies may be materially impacted by economic conditions and related fluctuations in client demand for marketing, business, technology and other consulting services. Professional services companies' success depends in large part on attracting and retaining key employees and a failure to do so could adversely affect a company's business. There are relatively few barriers to entry into the professional services market, and new competitors could readily seek to compete in one or more market segments, which could adversely affect a professional services company's operating results through pricing pressure and loss of market share. **Information Technology Sector Risk.** The information technology sector includes companies engaged in internet software and services, technology hardware and storage peripherals, electronic equipment instruments and components, and semiconductors and semiconductor equipment. Information technology companies face intense competition, both domestically and internationally, which may have an adverse effect on profit margins. These companies may have limited product lines, markets, financial resources or personnel. The products of information technology companies may face rapid product obsolescence due to technological developments and frequent new product introduction, unpredictable changes in growth rates and competition for the services of qualified personnel. Failure to introduce new products, develop and maintain a loyal customer base, or achieve general market acceptance for their products could have a material adverse effect on a company's business. Companies in the information technology sector are heavily dependent on intellectual property and the loss of patent, copyright and trademark protections may adversely affect the profitability of these companies.

**Health Care Sector Risk.** The health care sector may be affected by government regulations and government health care programs, restrictions on government reimbursement for medical expenses, increases or decreases in the cost of medical products and services and product liability claims, among other factors. Many health care companies are: (i) heavily dependent on patent protection and intellectual property rights and the expiration of a patent may adversely affect their profitability; (ii) subject to extensive litigation based on product liability and similar claims; and (iii) subject to competitive forces that may make it difficult to raise prices and, in fact, may result in price discounting. Many health care products and services may be subject to regulatory approvals. The process of obtaining such approvals may be long and costly, and delays or failure to receive such approvals may negatively impact the business of such companies. Additional or more stringent laws and regulations enacted in the future could have a material adverse effect on such companies in the health care sector. In addition, issuers in the health care sector include issuers having their principal activities in the biotechnology industry, medical laboratories and research, drug laboratories and research and drug manufacturers, which have the additional risks described below. **Biotechnology Company Risk.** A biotechnology company's valuation can often be based largely on the potential or actual performance of a limited number of products and can accordingly be greatly affected if one of its products proves, among other things, unsafe, ineffective or unprofitable. Biotechnology companies are subject to regulation by, and the restrictions of, the U.S. Food and Drug Administration, the U.S. Environmental Protection Agency, state and local governments, and foreign regulatory authorities. **Pharmaceutical Company Risk.** Companies in the pharmaceutical industry can be significantly affected by, among other things, government approval of products and services, government regulation and reimbursement rates, product liability claims, patent expirations and protection and intense competition.





ALAMEDA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

475 14th Street, Suite 1000, Oakland, CA 94612 (800) 838-1932 (510) 628-3000 fax: (510) 268-9574 [www.acera.org](http://www.acera.org)

DATE: October 29, 2018  
TO: Members of the Board of Retirement *DW*  
FROM: Dave Nelsen, Chief Executive Officer  
SUBJECT: Board Off-Site: Streamlining Board Operations

---

As you know, the final item on the Board Off-Site agenda is titled, "Streamlining Board Operations". Over the past two years, a number of Board members have suggested possible items or changes to practices that could provide efficiencies, save resources, or save time. The purpose of this item on the agenda is to introduce some of these topics to gauge your interest in pursuing these ideas in the coming months or year. Below is a list of suggestions provided to me that can be briefly introduced at the meeting, and engage in a quick discussion about whether there is a desire to further evaluate the ideas.

1. *Board Agenda Software:* A representative of a software company used by the Board of Supervisors, Granicus, will make a brief presentation about the software, and explain the capabilities. These include enhanced web-based agendas, paperless Board packets, and broadcasted Board meetings over the web.
2. *Consolidate the Work of the Board into Fewer Committees:* ACERA has more operating committees than our peers, and each committee requires staffing, reports, and time for Board members and the public to attend. It would be possible to conduct the work of the Board into fewer committee meetings.
3. *Expand the Use of the Consent Calendar:* There are items brought to the Board as action items that could be added to the consent calendar. A good example of this are Pay Codes.
4. *Modify the Delegated Authority of the Investment Department to Approve Investments:* Currently, the Board has delegated deals of \$25 million or less to the discretion of staff. This dollar limit is fairly low for a fund of ACERA's size. Modifying this limit could allow more time at the Investment Committee meetings for policy discussions and education items.
5. *Look at the Frequency of Certain Staff Reports:* Staff reports take time to prepare, and take time on agendas. Modifying the frequency of some reports may save valuable Board/Committee and staff time. A recent example of this was reducing the frequency of Investment status reports to twice annually.

While we will not have time to fully discuss all the pros and cons of each of the above items, there should be the opportunity to decide whether to bring the item to an appropriate committee for fu



## govAccess

Websites designed for today's citizen



## govMeetings

Meeting agendas, video and boards management



## govDelivery

Targeted email, text and social media communications



## govRecords

Paperless records management



## Digital Engagement Services

A strategic team of experts delivering managed services



# Peak Agenda Management



# Granicus Peak Agenda Management



PEAK AGENDA  
MANAGEMENT

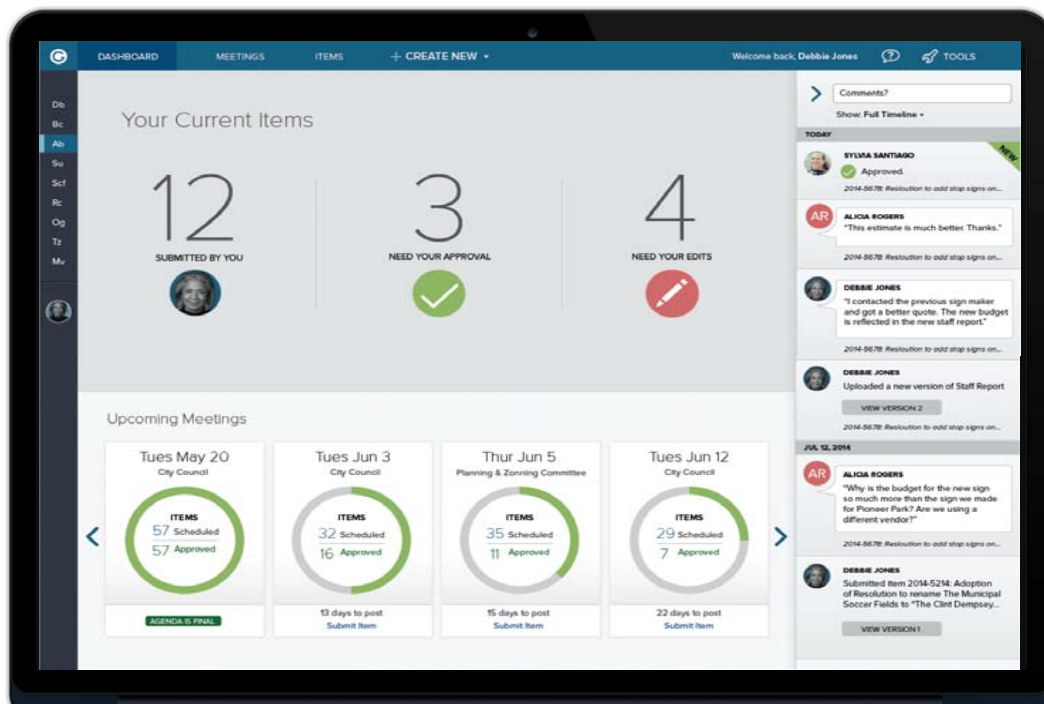
- **Fast and Easy** Intuitiveness of the application allows clerks to quickly get up to speed but also ramp up new staff with ease
- **Innovative Usability Dashboard** Quick access to important items, tailored to your responsibilities
- **Agenda Item Creation and Workflow** Easily create agenda items and route through sequential or concurrent approval phases
- **Continual Innovation** Always adding features, supporting a modern technology for the modern demands of citizens and staff



# Best-in-Class Usability

## DASHBOARD

Quickly access information tailored to your responsibilities and view latest comments via the timeline on agenda information



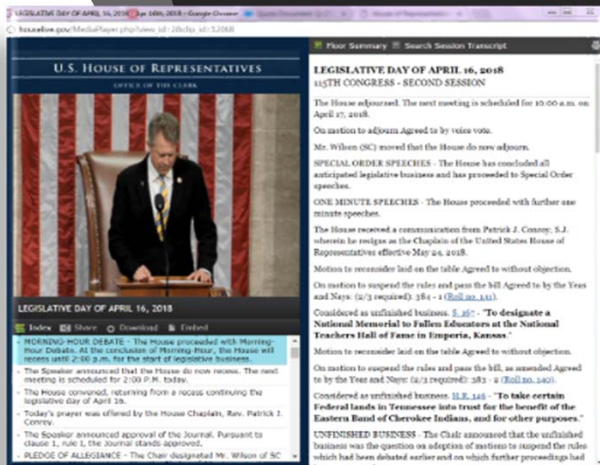


# Granicus Video

---

2018





# Granicus Video



- MANAGE AND BROADCAST GOVERNMENT MEDIA ONLINE
- Give citizens convenient access to live and archived streaming through your website, and promote it through communications channels
- BUILD TRUST AND TRANSPARENCY WITHOUT EXTRA STAFF
- Reduce public inquiries with searchable, self-service access online
- REACH A BROADER AUDIENCE
- Import agendas and index video live to eliminate hours of work and improve ability for citizens to find footage about issues of interest
- TRACK METRICS
- Understand and measure public participation with in-depth video analytics



# Granicus Streaming Video

- Live event streaming
- Index video live
- Encoding appliance
- Intelligent media routing
- Proactive systems monitoring
- Import and parse agendas
- Link relevant documents
- Create text transcripts
- Reports and analytics
- Closed captioning
- Advanced search of video content
- Downloadable media

