Alternative Financing Sources for Sustainable Transport: Public-Private Partnerships and Institutional Investors

Konrad Adenauer Foundation (KAF) and Partnership on Sustainable Low Carbon Transport (SLoCaT)
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List of Abbreviations

ADB	Asian Development Bank
AFR	Africa
AIGCC	Asia Investor Group on Climate Change
ASEAN	Association of Southeast Asian Nations
BCBS	Basel Committee of Banking Supervision
BRT	Bus Rapid Transit
CalPERS	California Public Employees' Retirement System
CBI	Climate Bonds Initiative
CDM	Clean Development Mechanism
COP21	21st Conference of the Parties
CTF	Clean Technology Fund
EAP	East Asia and the Pacific
EBRD	European Bank of Reconstruction and Development
ESG	Environment, Social, and Governance
GCF	Green Climate Fund
GDP	Gross Domestic Product
GHG	Green House Gas
GIZ	Gesellschaft für Internationale Zusammenarbeit
IDFC	International Development Finance Club
GIIA	Global Infrastructure Investor Association
IEA	International Energy Agency
IFC	International Finance Corporation
IFF	International Finance Facility
IGCC	Investors Group on Climate Change
IIGCC	Institutional Investor Group on Climate Change
INCR	Investor Network on Climate Risk
IKI	International Climate Initiative
JCM	Joint Crediting Mechanism
LAC	Latin America and Caribbean
LCI	Low Carbon Investment
LGS	Local Government Super
MDB	Multilateral Development Bank
MIRA	Macquarie Infrastructure and Real Assets
MOI	means of implementation
NAMA	Nationally Appropriate Mitigation Actions
NDF	Nordic Development Fund
ODA	official development assistance
OECD	Organization for Economic Cooperation and Development
PDC	Portfolio Decarbonization Coalition
PINAI	Philippines Investment Alliance for Infrastructure
PPF	Project Preparation Facility
PPP	public-private partnership
PRI	Principles for Responsible Investment
SDG	Sustainable Development Goals
SLoCaT	Sustainable Low Carbon Transport
SRI	socially responsible investing
TWG	Transport Working Group
UNEP FI	UNEP Finance Initiative
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank
WRI	World Resource Institute
2DS	Two Degree Scenario

I. Introduction

2015 is a critical year for the two major global processes on sustainable development and climate change. For sustainable development, the Post -2015 Development Framework[1] and a final list of Sustainable Development Goals (SDGs) are to be finalized by the Open Working Group on Sustainable Development Goals[2] and the General Assembly of the United Nations (UNGA)[3] in September 2015. The new global development agenda is anticipated to comprise four elements: a declaration, a set of SDGs, targets, and indicators, their means of implementation (MOI) a new Global Partnership for Development, and a framework for follow-up and review of implementation.

In the context of climate change, a global agreement is expected to be reached at the 21st Conference of the Parties (COP21) of the United Nations Framework Convention on Climate Change (UNFCCC) in Paris, France in December 2015. On the road to Paris, the Peruvian Presidency of COP20 and the incoming French Presidency of COP21 launched a Lima-Paris Action Agenda[4] to catalyze action on climate change by non-state actors. The agenda contributes to the objective of the UNFCCC to further increase ambition before 2020 and support the post-2020 implementation of a binding global agreement. It intends to contribute to closing the gap between climate change mitigation action committed or currently underway, and what science says is needed to limit global average temperature rise to less than 2°C above pre-industrial levels, as well as leading to greater action to strengthen resilience to the effects of climate change.

These international processes will set out quantified targets to guide the directions for sustainable development and climate change action in the next 15 years. In short, the international community is coming to a consensus on **what and how much needs to be done to achieve sustainable development goals and climate change mitigation and adaptation priorities.** The ongoing availability of funding will be a key issue for the success of the 2015 agreements on sustainable development and climate change.

The Role of the Transport Sector in Achieving Sustainable Development and Climate Change Targets

The role of the transport sector in achieving climate change and sustainable development action is indispensable. The transport sector is responsible for roughly 23% of global greenhouse gas emissions from fuel combustion[5] and is the fastest growing sector among all emissions sources. Land transport in particular is a major carbon emitter, and emissions are set to double by 2050, with the majority of this increase coming from the developing world. Any attempt at limiting global average temperature rise to 2°C without including bold mitigation strategies from the transport sector is likely to be unsuccessful.

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[1] No date. UNDESA. 2015 Time for Global Action. http://bit.ly/1ymqazg
[2] No date. UNDESA. Open Working Group on Sustainable Development Goals. http://bit.ly/1FQXmnx
[3] No date. UNGA. General Assembly of the United Nations. http://www.un.org/en/ga/
[4] 2014. UNFCCC. Lima-Paris Action Agenda. http://bit.ly/1ejZdWf
[5] 2009. International Energy Agency. Transport, Energy, and CO2. http://bit.ly/1Fh59d4

Wide scale reductions in transport emissions and other negative impacts can be achieved by scaling up proven strategies on passenger and freight transport to avoid unnecessary motorized trips, shift to low carbon modes and improve current transport systems. Additionally, it has been shown that it is actually less expensive to take a low carbon approach to transport than continuing on present trends, without compromising accessibility and mobility.[6]

In addition, sustainable transport is essential to supporting six main targets to realize the potential of the proposed sustainable development goals (SDGs) (i.e. improving rural access, improving urban access, improving national access & regional connectivity, improving road safety & security, reducing air pollution, and reducing GHG emissions), based on research and analysis by leading organizations and researchers. The targets aim to ensure that development of additional transport infrastructure and services is done in an economically, socially and environmentally sustainable manner, and to enhance the sustainability of existing transport infrastructure and services, along with the communities and industries that rely upon them.[7]

Considering the urgency and scope of change required by these commitments, **it is critical to quickly scale up current levels of funding for sustainable low carbon transport infrastructure and services.**[8] Much of the additional funding will be required to develop transport infrastructure and services that currently do not exist, particularly in the global South. The G7, at its recent summit, expressed the need to "[ensure] an appropriate level of public investment, **promoting quality infrastructure investment** to address shortfalls,"[9] and similar priorities for increasing infrastructure investments are reflected in recent statements from the G20[10] and IMF[11], as well as in the zero draft Addis Accord for the July 2015 Financing for Development (FfD) conference.[12] However, sustainability is rarely mentioned as an imperative for infrastructure investments in these sources.

How Much Money Is Needed to Scale Up Sustainable, Low Carbon Transport?

Multiple studies have attempted to quantify annual transport investment needs both globally and within the Asian region, with estimates ranging from up to US$1,412bn

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[6] https://www.itdp.org/a-global-high-shift-scenario/

[7] 2015. SLoCaT. "SLoCaT Results Framework on Sustainable, Lo Carbon Transport". http://slocat.net/sites/default/files/u10/rf-executive-summary-final.pdf. Accessed June 16, 2015

[8] "Sustainable transport" provides access to goods and services to support equitable development, while limiting adverse consequences to environmental, social and economic systems. Common sustainable transport investments include efficient passenger or freight railways and waterways, bus rapid transit, electric vehicles, non-motorized transport, and transit-oriented development. For more information on how the SLoCaT Partnership defines sustainable transport see www.slocat.net/resultsframework.

[9] 2015. G7 Germany. " Leaders' Declarataion G7 Summit 7-8- June 2015". . Accessed June 16, 2015

[10] 2015. G20. "Second Investment and Infrastructure Working Group Meeting held in Singapore". http://bit.ly/1LQJUj0. Accessed June 16, 2015.

[11] 2015. IMF. "FINANCING SUSTAINABLE DEVELOPMENT - Key Policy Issues and the Role of the IMF". http://bit.ly/1fe31IS. Accessed June 16, 2015

[12] 2015. United Nations. "The Addis Ababa Accord of the Third International Conference on Financing for Development". http://bit.ly/1G2CwAr. Accessed June 16 2015

globally, US$245bn for the Asia Pacific region, up to $90bn for South Asia, or $75bn for India alone, as shown in Table 1:[13]

Geographic scope	Total infrastructure need	Total transport infrastructure need	Timeframe	Annual transport infrastructure need	Source
Global	N/A	$11trn	2009-2030	$524bn	OECD (2011)
Global	$57trn	$24trn	2013-2030	$1,412bn	The Economist (2014)
Global	N/A	$45trn	2010-2050	$1,125bn	IEA (2014)
Asia Pacific[14]	$8trn	$2.45trn	2010-2020	$245bn	PWC (2014)
Asia[15]	$8trn	$2.25trn	2010-2020	$225bn	ADB Institute (Wignaraja, 2013)
South Asia[16]	$1.7-2.5trn	$400bn-700bn	2013-2020	$58-100bn	World Bank (2013a)
India	$1.1- 1.7trn	$340-595bn	2013-2020	$75bn	World Bank (2013a)
Russia	N/A	$753bn	2011-2020	$84bn	EBRD

Table 1. Projected Infrastructure Needs Globally and in the Asian region

The World Resources Institute (WRI) has estimated current global transport-related annual capital expenditures (excluding consumer spending) between $1.4trn and $2.1trn annually.[17] In aggregate, this investment consists of slightly more private investment than public. In 2010, 2% of public investment was international, mostly provided through official development assistance (ODA). Less than half a percent comes from climate-focused funds and institutions. Private investment, including both domestic and cross-border flows, is estimated to be between $814bn and $1.2trn per year. About three-quarters of private investment occurs in high-income countries.

Taking into account the WRI estimates and the investment estimates described in Table 1, it appears that **there is significant underinvestment in transport.** The public sector has traditionally taken the lead in financing sustainable transport infrastructure and services; yet there is a growing awareness that traditional financing sources (e.g. public sector funding, end user revenue and official development assistance) alone will be insufficient to scale up the needed funding to attain these targets.

In addition, SLoCaT's recent analysis on the role of climate finance in financing sustainable transport also shows that climate finance does not suffice to fill up this funding gap.[18] Climate finance involvement in the transport sector is quite limited compared to the energy sector and other sectors. As of April 2015, the Nationally Appropriate Mitigation Actions (NAMA) Facility is the only climate finance instrument funding a proportional number of projects (29%) in the transport sector relative to its contribution to energy related GHGs (about 23%). In addition, while 15% of Clean Technology Fund (CTF) projects and 10% of Nordic Development Fund (NDF) projects

[13] Variations among these estimates are likely due to differences in underlying modeling assumptions (e.g. definitions of infrastructure and transport, varying inflation rates, time frames, definitions of the 'Asia region', inclusion of operations and maintenance).
[14] Regions include East Asia, Southeast Asia, Pacific
[15] Represents member countries at the 8th Regional Environmentally Sustainable Transport Forum in Asia. http://bit.ly/1FGPvcA
[16] Countries include India, Pakistan, Sri Lanka, Nepal, Maldives, Bhutan, Bangladesh, Afghanistan
[17] 2014. World Resources Institute. The Trillion Dollar Question: Tracking Public and Private Investment in Transport. http://www.wri.org/sites/default/files/trillion_dollar_question_working_paper.pdf
[18] 2015. SLoCaT Climate Finance Transport Database: Slow Progress in Scaling-up Low Carbon Transport through Climate Finance. http://www.slocat.net/news/1447

are transport-related, other climate finance instruments (Clean Development Mechanism (CDM), International Climate Initiative (IKI), and Joint Crediting Mechanism (JCM)) have funded a relatively small number of projects in the transport sector. Thus, it is increasingly important to consider alternative resources to help bridge this funding gap for sustainable transport, including the use of institutional investors and public-private partnerships (PPPs).

PPPs are one potential strategy for scaling up sustainable low carbon transport infrastructure and services, which allow the public sector to engage the private sector in sharing efficiency and expertise, managing project risks, and optimizing life cycle costs, in addition to helping to provide needed capital. Institutional investors are influential in the global capital and investment market due to the considerable asset sizes. Various investor groups have demonstrated significant degree of interest, even commitment, to investments in sustainability and climate action, and are giving increasing emphasis to non-financial performance information, such as data sharing on environmental, social and economic sustainability performance. Thus, it is essential that the transport community explore the potential to leverage institutional investors in scaling up investment in sustainable transport infrastructure and services. To expand the role of alternative finance for sustainable transport, it will also be necessary to improve and scale up existing forms of PPPs, accelerate development of new approaches to PPPs, and employ new financial instruments for mobilizing financing and offsetting risk.

The involvement of PPPs and institutional investors in financing sustainable transport has been limited to date (e.g. see Figure 3 below); thus, this paper will investigate the current role of PPPs and institutional investment in sustainable transport and explore the potential drivers and barriers to increasing funding for sustainable transport from each of these sources.

II. PPPs and Institutional Investors as Alternative Sources for Financing of Infrastructure

PPPs are designed to combine the skills and resources of the public and private sectors to deliver facilities and services that are traditionally procured and delivered by the public sector. By harnessing the expertise and efficiencies of the private sector to develop transport infrastructure and manage transport operations, PPPs can enable governments to focus instead on the more primary responsibilities of policy, planning and regulation.[19]

PPPs can contribute to transport infrastructure and services by ensuring financial stability through risk allocation and economic diversification. This is especially beneficial in large-scale projects with high investment requirements for construction, operation, and maintenance (e.g. municipal-scale metro projects). Typically transport PPPs have been particularly suited to megaprojects such as expressways and motorways, bridges, high-speed rail and tunnels; however, there are a growing number of new style PPPs that are better suited to low carbon transport projects.[20]

[19] No date. Concession, Build-Operate-Transfer (BOT) and Design-Build-Operate (DBO) Projects. http://bit.ly/1FbJApk
[20] http://www.uncrd.or.jp/content/documents/21918EST-P7-BGP_SLoCaT.pdf

Table 2 provides a comparison of characteristics of the PPP types commonly used in the transport sector, which includes concessions, (design) build-operate-transfer ((D)BOT), build-own-operate-transfer (BOOT), and build-lease-transfer (BLT) models:

PPP Model	Concession	(D)BOT	BOOT	BLT
Asset Ownership	Public	Public	Private	Private
Contract Duration	Long (20-30 years)	Long (20-30 years)	Long (20-30 years)	Medium (10-15 years)
Private Sector Responsibility	Design, finance, construct, manage, maintain	Design, finance, construct, manage, maintain	Design, construct, own, manage, maintain, transfer	Capital expenditures
Private Sector Risk	High	High	High	Low-Medium
Compensation Terms	Tariff Revenue	Tariff Revenue	Tariff Revenue	Pre-set lease from government
Project Type	Brownfield/ Expansions	Greenfield	Greenfield	Greenfield

Table 2. Comparison of PPP Types

Institutional investors are a heterogeneous group of investors that populate global capital markets. The exact legal definition of institutional investors varies widely among different types of legal entities, from "straightforward profit-maximizing join stock companies" to "limited liability partnerships" (e.g. private equity firms) to subsidiaries of banks and insurance companies (e.g. mutual funds).[21] On the other hand, institutional investors are often coined as "intermediary investors" in the sense that they are financial institutions that manage and invest other people's money (except in the case of sovereign wealth funds, which can be seen as the state ownership agency for the funds).

Broader definitions aside, institutional investors can be classified into the following major categories: [22]

- **Mutual Fund:** An investment vehicle that buys a portfolio of securities selected by a professional investment adviser to meet a specified financial goal or investment objective. The assets managed by mutual funds globally amounted to approximately 31.38 trillion U.S. dollars in 2014.[23], with mutual funds in the U.S. accounting for approximately 50% of total assets in 2013.[24]

- **Pension Fund:** A pool of assets forming an independent legal entity funded by contributions to a pension plan for the exclusive purpose of financing pension plan benefits. Pensions funds investments in 2013 cumulatively reached US$ 30 trillion[27]. The Global Pension Assets study carried out by Towers Watson indicates that at the end of 2014, the top 16 major pension funds held more than US$ 36 billion of pension assets.[25]

[21] 2014. OECD. Institutional Investor Ownership Engagement. http://bit.ly/1cRq3DT
[22] 2008. Hao Jiang. The Role of Institutional Investors in Corporate Financing. http://bit.ly/1Koiva5
[23] 2015. Statista. "Total net assets of mutual funds worldwide from 2006 to 2014 (in trillion U.S. dollars)". http://bit.ly/1IhGVfB. Accessed June 16, 2015
[24] 2014. Investment Company Institute. 2014 Investment Company Fact Book: Chapter Two: Recent Mutual Fund Trends. http://www.icifactbook.org/fb_ch2.html
[25] 2015. Towers Watson. Global Pension Assets Study 2015. http://bit.ly/1Bfzweb

- **Insurance Companies and Commercial Banks**: Institutional investors that constitute traditional asset managers. Global insurance companies managed approximately US$ 25 trillion in 2013[27]. Nonetheless, only US$ 41 billion can be classified as green or climate-smart investments, accordingly to International Finance Corporation (IFC).[26]

- **Sovereign Wealth Fund:** A state-owned investment fund composed of financial assets such as stocks, bonds, real estate, or other financial instruments funded by foreign exchange assets. Global sovereign wealth fund assets under management totaled US$ 6.3 trillion in 2013 and are expected to reach US$ 10 trillion by 2016.[27]

- **Hedge Fund:** An unregulated pool of money managed by an investment advisor, who typically has the right to have short positions, to borrow, and to make extensive use of derivatives. Hedge funds are one of the fastest-growing areas of institutional investing, with total assets increasing to more than US$ 360 billion in 2013 and total asset management reaching US$ 2.7 trillion in the same year.[28]

- **Private Equity Fund:** A pooled investment vehicle which invests its money in equity securities of companies that are not listed on a public exchange. Private equity funds are typically limited partnerships with a fixed term of ten years (often with annual extensions). At inception, institutional investors such as pension funds and endowments commit a certain amount of capital to private equity funds, which are run by the general partners. In 2013, global assets under management of private equity funds reached a total of $2.6 trillion[27]

Institutional investors are influential in the global capital and investment market due to the considerable asset sizes. According to OECD statistics,[29] institutional investors in the OECD region hold more than US$ 70 trillion in assets; in the case of Canada, the Netherlands, the United Kingdom, and the United States, assets of pension funds and insurance companies account for more than 60% of GDP in their respective countries. In addition, the growth of capital assets of institutional investors, such as investment funds, insurance companies, and pension funds have continued to grow rapidly in the last decade due to the growing importance of retirement plans and welfare policy reforms in developed and developing countries (Figure 1). It is reasonable to assume that these trends will continue in the future, especially in emerging economies that are increasing political stability and developing enabling frameworks that will allow them to attract a more global set of investors.

[26] 2014. United Nations. Press Release: Governments, Investors, and Financial Institutions to Mobilize US$200 billion by End by 2015 to Support Climate Action. http://bit.ly/1wK8MkQ
[27] 2015. Miceli, V., A. Wöhrmann, M. Wallace, and D. Steiner. Opportunities or threats? The Current and Future Role of Sovereign Wealth Funds in Financial Market. http://bit.ly/1LjdA7h
[28] 2014. Preqin Global Hedge Fund Report: Sample Pages. https://bitly.com/shorten/
[29] Della Croce, C., and J. Yermo. 2013. OECD. Institutional Investors and Infrastructure Financing. http://bit.ly/1F1teiW

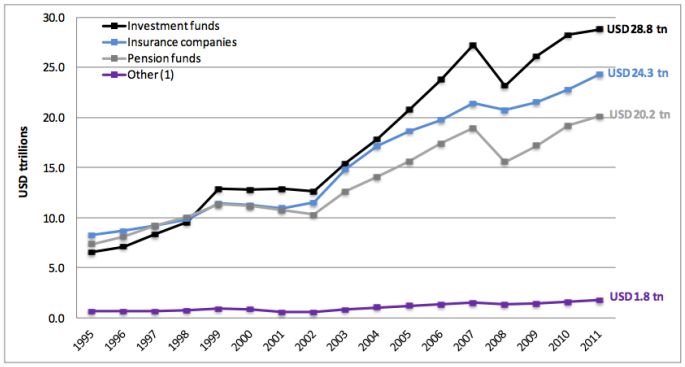

Figure 1. Total assets by type of institutional investors in the OECD region (1996-2011) OECD 2013

Due to fast growing assets managed by institutional investors globally and increasing needs for investing in long-term infrastructure assets (ranging from 15 to 100 years[30]), it is expected that institutional investors will play a critical role in financing in the infrastructure sector, particularly through PPPs for greenfield projects, due to their long term liabilities, diversification, and the ability to invest in large shares of the project.

III. PPPs and Institutional Investors in the Transport Sector

PPP and institutional investor involvement in the transport sector has not kept up with growing investment needs. According to World Bank (WB)'s Private Participation in Infrastructure (PPI) Database, [31] the number of PPP transport infrastructure projects increased from 36 in 1990 to a peak of 121 in 2006, but then declined to 49 in 2014. Nonetheless, total investment in transport infrastructure PPPs has increased from US$7.6 billion in 1990 to US$ 55.3 billion in 2014 (Figure 2). To date, the transport sector has attracted about US$ 473 billion of investment, thus trailiing the telecom sector (US$ 949 billion) and the energy sector (US$ 817 billion), although its sectorial share has been growing over time.[31]

[30] 2014. McKinsey & Company. Using PPPs to Fund Critical Greenfield infrastructure Projects. http://bit.ly/1J1e4Qy
[31] 2014. World Bank and PPIAF. Sector Data Snapshots. http://bit.ly/1QACC90

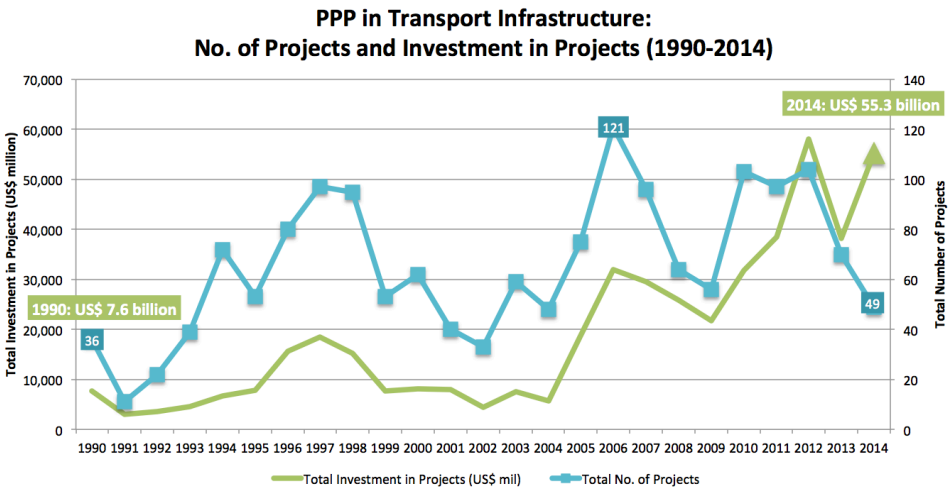

Figure 2. PPPs in Transport Infrastructure: Number of Projects and Total Investment in Projects per Year (1990-2014)[31]

Despite this upward trend, PPPs in transport infrastructure are still heavily focused on roadways (51%), seaports (16%) and airports (14%), and to date have lagged in sustainable transport investments (e.g. railroads make up less than one fifth of total investment) (Figure 3):

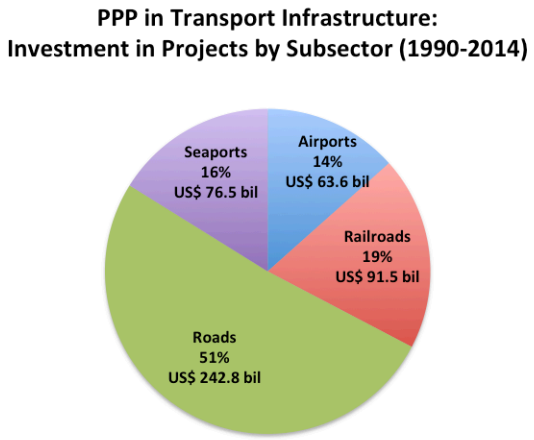

Figure 3. PPP in Transport Infrastructure: Investment in Projects by Subsector (1990-2014)[31]

Institutional investment in the transport sector has been extremely limited to date. In fact, the infrastructure sector in general has received very limited investment from the institutional investors. As one example, according to OECD's Annual Survey of Large Pension Funds,[32] major global pension funds and public pension reserve funds (PPRFs) exhibited similar asset growth trends in the context of "decreasing equities, increasing fixed income, and increasing alternatives investments in 2012 and 2013. The survey results indicate a slow growth of investment in alternative asset classes, including infrastructure, a sector into which most transport investments are classified.

[32] 2014. OECD. Annual Survey of Large Pension Funds and Public Pension Reserve Funds: Report on Pension Funds' Long Term Investments. http://bit.ly/1yql7t0

The OECD survey shows that direct infrastructure investment in the form of unlisted equity and debt was US$72.1 billion in 2012, accounting for only 0.9% of total assets under management of the surveyed 69 funds. The report concludes that while there is a slow increase in infrastructure investment, the slight increase does not correspond to the growing expression of interest by pension fund managers (e.g. CalPERS, the largest pension fund in the United States, plans to increase its target allocation to direct infrastructure from 0.4% in 2013 to 2.3% by 2018, for an eventual commitment of over US$7 billion)[32]. This confirms the lasting problem of "considerable barriers and disincentives, which limit such investments and the relevance and need for policy makers to address them."[33]

Institutional Investment & PPP in the Infrastructure Sector:
Case Study: Philippines Investment Alliance for Infrastructure (PINAI)

Headquarters: The Philippines
Year Established: 2012
Asset Size: US$ 625 million

The Philippines Investment Alliance for Infrastructure (PINAI) was established by a group of investors which include the Philippines' state pension fund, the Government Service Insurance System (GSIS), the Asian Development Bank (ADB), the Dutch pension asset manager Algemene Pensioen Groep (APG), and the Macquarie Group in 2012 to catalyze private sector investment, especially PPP projects in the infrastructure sector. Managed by Macquarie Infrastructure and Real Assets (MIRA), the private equity fund started with a total asset size of US$625 million with the target to finance 5 to 10 infrastructure projects worth a maximum of US$125 million.[34]

Citing the Philippine Development Plan, ADB stated that roughly 12% of the country's $120 billion investment requirements must come from the private sector,[35] and the PINAI fund provides an example of how a private equity fund can be set up with government involvement to help attract PPPs and institutional investment in an emerging economy. PINAI has the potential to offer additional financing for PPP projects in the Philippines' transport sector, which include a recent PPP for the South Line of the country's North-South Railway, which is considered one of 15 key projects for ASEAN connectivity.,.[36,37]

IV. Involvement of Institutional Investors in Financing for Sustainability and Climate Change

Various groups of institutional investors have demonstrated significant degree of interest, even commitment, to invest in the context of sustainability and climate change. According to Ernest and Young's Global Survey of Institutional Investors on Non-Financial Performance,[38] even though financial returns remain the main measure for evaluating investments, **institutional investors started giving more importance to non-financial performance information**, such as data on environmental, social and

[33] 2014. OECD. Institutional Investors and Long-term Investment. http://bit.ly/1xIJF17
[34] 2012. Rappler. ADB, GSIS, Macquarie set up $625-M Infra Fund. http://bit.ly/1x10S4y
[35] 2012. Rappler. ADB, GSIS, Macquarie set up $625-M Infra Fund. http://bit.ly/1x10S4y
[36] 2015. "ADB to Help Philippines Prepare its Largest-Ever PPP Project" http://www.adb.org/news/adb-help-philippines-prepare-its-largest-ever-ppp-project
[37] 2014. OECD. "Pooling Of Institutional Investors Capital – Selected Case Studies In Unlisted Equity Infrastructure ". http://bit.ly/1Kojze7
[38] 2014. Ernest and Young. Tomorrow's Investment Rules: Global Survey of Institutional Investors on non-financial performance. http://bit.ly/1gbtWIR

economic sustainability performance. Among the surveyed 163 institutional investors, more than 50% have over US$10 billion in equity assets under management. They were asked about their current investment practices and future needs, and the results show that 89% of surveyed institutional investors considered non-financial information when making decisions. The survey reveals that Environment, Social, and Governance (ESG) factors have started to take a more prominent role in developing nations.

Nonetheless, there is still a gap between general recognition of ESG factors in investment decision and their actual application. Some 35.7% of respondents said non-financial information was "essential" for minimizing risk, although only 19.5% of respondents conduct a structured, methodical evaluation of environmental and social impact statements and disclosures, and 35.5% of respondents have conducted "little or no review" on the environmental and social aspects of the company's performance. In addition, only 23.3% of respondents have actually used non-financial performance to play a "pivotal role" in the investment decision-making process in the last 12 months.

The Global Investor Coalition (2009)

In 2009, four of the largest regional climate change investor groups in the world, including the Institutional Investor Group on Climate Change (IIGCC, Europe),[39] the Ceres Investor Network on Climate Risk (INCR, United States),[40] Investors Group on Climate Change (IGCC, Australia and New Zealand),[41] and the Asia Investor Group on Climate Change (AIGCC, Asia),[42] have established the Global Investor Coalition[43] to provide a global platform for dialogue between and amongst investors and governments on international policy and investment practice related to climate change. The Coalition argues that as major shareowners and bondholders in the infrastructure, real estate and private equity industries, institutional investors are vulnerable to and concerned about the short and long-term impacts of climate change on their own investments. They assert that institutional investors can play a pivotal role in the world's transition to a low-carbon economy together with the government and other investors. The Coalition has released a Guide for Asset Owners on Climate Change Investment Solutions[44] to provide asset owners with a range of investment strategies to mainstream climate investments to investment portfolios and financial implications. The guide notes mitigation opportunities in the transport sector and details potential risks for transport and related sectors due to climate change impacts.

The Coalition is seen as one of the few global platforms for institutional investors to report on low carbon and climate change investment and practices. In addition to its annual reporting on investor practices relating to climate change,[45] it also launched the Low Carbon Investment Registry[46] to capture examples of low carbon investments made by institutional investors in the world. Between May and August 2014, 205 individual

[39] Institutional Investor Group on Climate Change. http://www.iigcc.org/
[40] Ceres Investor Network on Climate Risk http://www.ceres.org/investor-network/incr
[41] Investors Group on Climate Change. http://www.igcc.org.au/
[42] Asia Investor Group on Climate Change. http://asria.org/about-aigcc/
[43] No date. Global Investor Coalition. http://globalinvestorcoalition.org/
[44] 2014. Global Investor Coalition. Climate Change Investment Solutions: A Guide for Asset Owners. http://bit.ly/1cONmOM
[45] 2013. Global Investor Coalition on Climate Change. Global Investor Survey on Climate Change: 3rd Annual Report on Actions and Progress. http://bit.ly/1erkhKl
[46] No date. Global Investor Coalition. Low Carbon Investment Registry. http://bit.ly/1LBozsV

investment entries valued at US$ 24 billion were recorded in the database, providing a useful platform for investors to exchange information on how they have overcome limitations of low carbon investment and reporting in their public equity portfolios.

Another emerging coalition is the Global Infrastructure Investor Association (GIIA), which was formed in March 2015 to increase understanding of the positive role of private investors long-term infrastructure investment and to engage with governments, supra-national bodies and policy makers to develop supportive regulatory environments to reduce barriers to investment.[47] Currently, GIIA represent 25 leading infrastructure investors globally with more than €200 billion in infrastructure assets. GIIA intends to grow rapidly to about 100 members, and has not yet stated a formal position on sustainability issues.

Institutional Investment in Sustainability and Transport
Case Study: Local Government Super (LGS Australia) and the Sustainable Global Government Bond

Headquarters: Australia
Assets under management: US$ 7 billion
Strategy Inception Year: 2012

Local Government Super (LGS), an Australian pension fund that manages more than US$7 billion in assets from local government employees, is an institutional investor that actively utilizes ESG factors in its investment processes.

In 2012, LGS adopted the Sustainable Global Government Bond Strategy[48] to explicitly incorporate ESG indicators in all aspects of its investment process for bond selection and issuance by governments worldwide. Working with Omega Global Investors and MSCI Research, the strategy aims at steering investments to countries with lower debt levels, better regulatory frameworks, higher levels of transparency, and greater capacities to cope with current and future ESG contingencies.[49]

The strategy also calls to invest up to 15% of the LCS portfolio in green and climate bonds issued by the World Bank, European Investment Bank, and the Asian Development Bank, which have "explicitly funded" sovereign green projects in various parts of the world, including Colombia's sustainable urban transport system. The US$407 million project contains two components: the construction of bus rapid transit systems in four major cities in Colombia, and the rehabilitation of road networks, development of travel demand management policies, and urban renewal projects in two major cities.[50]

[47] http://www.giia.info/about-giia/objectives/
[48] 2012. Local Government Super. Global Sustainable Government Bonds Investment Paper. http://bit.ly/1erk9uu
[49] 2013. Global Investor Coalition on Climate Change. Global Investor Survey on Climate Change: 3rd Annual Report on Actions and Progress. http://bit.ly/1erkhKl
[50] 2013. Princiles for Responsible Investment. Local Government Super. http://bit.ly/1cXnmkv
* A basis point, or bp, is a common unit of measure for interest rates and other percentages in finance. One basis point is equal to 1/100th of 1%, or 0.01% (0.0001), and is used to denote the percentage change in a financial instrument. More in here.
** Tracking Error is the difference between a portfolio's returns and the benchmark or index it was meant to mimic or beat. Tracking error is sometimes called active risk. More in here.

Global Investor Commitments at the 2014 SG's Climate Summit

The four regional members of the Global Investor Coalition were also major contributors to the Global Investors Commitment at the UN Secretary General's Climate Summit 2014, along with Principles for Responsible Investment (PRI) and UNEP Finance Initiative (UNEP FI) to mobilize financing by end of 2015 to support climate action worldwide and the initial capitalization of the Green Climate Fund (GCF). 348 investors representing more than US$ 24 trillion of assets signed the joint action statement, and the commitment is considered the highest-profile joint effort ever made by institutional investors on climate change actions. While the commitment does not include any sector-specific pledges, potential areas of relevance for to the transport sector in the joint commitment include strengthening support for energy efficiency and low carbon technologies.[51]

The five major actions of the Global Investor Commitment are as followed (see Annex 1 for a detailed list of signatories in each action area):[52]

1. A coalition of institutional investors has committed to decarbonize US$100 billion in assets and to measure and disclose the carbon footprint of at least US$500 billion in assets under management through UNEP's Portfolio Decarbonization Coalition (PDC)

2. Three major pension funds from North America and Europe (along with seven other pension funds) announced they would accelerate their investments in low-carbon investments across asset classes up to more than $31 billion by 2020.

3. Commercial banks will provide US$30 billion in new climate finance by the end of 2015 by issuing green bonds and other innovative financing initiatives.

4. Non-institutional investors, including national, bilateral and regional development banks of the International Development Finance Club (IDFC) announced that they are on track to increase their direct green and climate financing to $100 billion per year for new climate finance activities by the end of 2015.

5. The insurance industry has committed to double its green investments to US$82 billion by the end of 2015 and announced it would increase the amount placed in climate smart investments to ten times the current amount by 2020.

Among the signatories to the Global Investor Commitment, it is noted that 21 institutional investors have included transport as one of their investment focus, with a majority of them focusing their investments in the rail and road sectors (12 investors each), and a minor portion of them investing in airports (8) and port facilities (4).[53]

[51] 2014. UN. Economic Drivers: Global Investors Action Statement. http://bit.ly/1HoTYhj
[52] 2014. UN. Press Release: Governments, Investors, and Financial Institutions to mobilize US$ 200 billion by End of 2015 to Support Climate Action. http://bit.ly/1wK8MkQ
[53] Special thanks to Catharina Wittel from the Konrad-Adenauer Foundation for compiling the preliminary overview matrix of the signatories of the Global Investor Commitment.

While there is increasing attention among the various institutional investor groups to climate change, sustainability actions and transport sector investment, specific examples in the area of sustainable transport are rare. Among the few examples is Ceres' Investment Network on Climate Risk (INCR), a network of 130 member organizations including pension funds, socially responsible investors (SRIs), labor unions, and other key investment stakeholders.

Institutional Investment and Sustainability in Transport: Case Study: Ceres Transport Initiatives

Headquarters: United States
Assets under management: US$ 13 trillion
Year established: 1989

Ceres is one of the largest investor networks in the world, grouping more than 130 investors in the U.S. with US$13 trillion of assets in 2014. As a non-profit organization advocating for sustainability leadership, Ceres has selected transport as one of seven initiatives to promote new investment opportunities for countries to transition to a low carbon economy.

Ceres' transport initiatives are mainly research projects focused on improving fuel economy standards of light- and heavy-duty vehicles, and other aspects of road transport. Some examples of Ceres' transport projects include the following:[54]

- Improving Fuel Economy Standards for Medium- and Heavy-Duty Trucks
- Improving Fuel Economy Standards for Light-Duty Vehicles
- Policy Framework Development for Electric Vehicles
- Pay-As-You-Drive Auto Insurance

In addition to its research on sustainable transport, Ceres is also active in engaging institutional investor members within its INCR to set specific goals to increase sustainability performance, such as increasing the fuel efficiency of investments.

While in most other cases, the investment focus of institutional investor is largely on alternative energy, real estate, forestry and agricultural land, some institutional investors have demonstrated a specific interest in the transport sector. One of them is the Environment Agency Pension Fund (UK), which is on track to have 25% of its holdings invested in companies and assets that make a positive contribution to a low carbon and climate resilient economy by 2015. [55] The strategy includes investments in companies with significant revenues (i.e. in excess of 20%) involved in energy efficiency, alternative energy, water and waste treatment and public transport. Another example is the Indian bank YES BANK and its corporate finance unit, which covers clean energy, transportation, and water and waste management.

Although institutional investors have exhibited growing recognition to investment in sustainability and climate change, the actual application of such investments have been very limited to date. The cases of Ceres and the above cited examples, along with the Global Investor Coalition and the Global Investor Commitment at the Climate Summit 2014, have demonstrated a significant degree of interest among institutional investors in financing sustainability, climate change, and/ or sustainable transport. However, specific information on actual investment project in sustainable transport is largely unavailable.

[54] No date. Ceres. Transportation Initiatives. http://www.ceres.org/industry-initiatives/transportation
[55] 2014. UNEP. "Financial Institutions Taking Action On Climate Change". http://bit.ly/Xo6pHQ

In addition, the Low Carbon Investment (LCI) Registry,[56] the first public online database on low carbon investment from institutional investors, indicates that out of 205 investment projects analyzed, the majority are energy-related (44%), followed by investments in energy efficient and low emissions buildings (15%), agriculture and forestry (8%), and industrial processes (7%). As shown in Figure 4, none of these were transport-related.

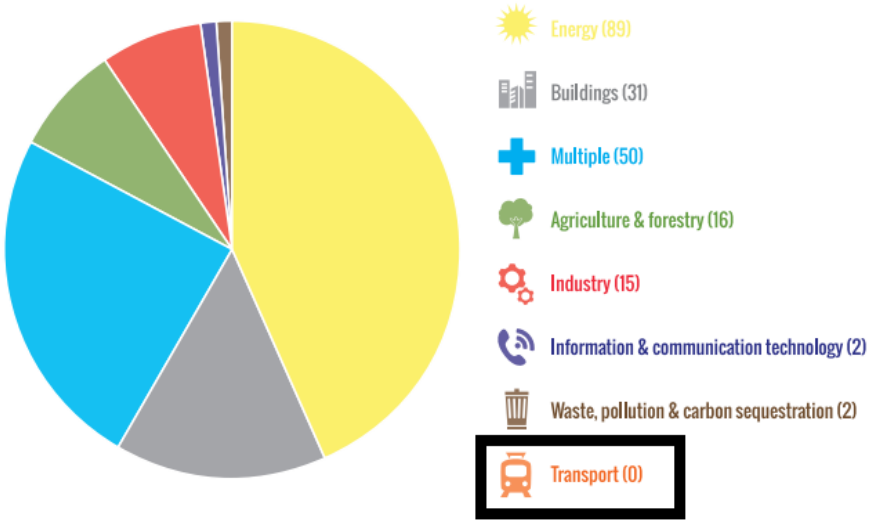

Figure 4. Low Carbon Investment Registry - investments by category

The lack of specific pilot projects (and consequently, objective and high quality project data on sustainable transport infrastructure investment) imposes significant barriers for institutional investors to assess potential risks and returns in the sustainable transport sector (e.g. public transport, energy efficient freight systems, non-motorized transport) compared with investments in other sectors. Without clear public data on pilot investment projects in the transport sector, institutional investors are likely to be less willing to invest in sustainable transport projects.

V. Drivers of and Barriers to PPP and Institutional Investment in Sustainable Transport

Institutional investors have the potential to play a major role in long-term financing, especially in the infrastructure sector, due to their rapid growth in assets under management, increasing globalization of their investment portfolios, and their growing influence within the global economy. Their increasing interest in sustainability and climate change also paves the way for their further engagement in financing sustainable transport development. However, as with PPP financing, institutional investing is conditioned by a wide variety of factors, including the host country's regulatory framework readiness, favorable investment climate, proper risk management and

[56] 2014. Global Investor Coalition on Climate Change. ""Low Carbon Investment Registry - Analysis of Results". http://bit.ly/XPPoqg

allocation, viability issues, and available data for investment benchmark and pilot project assessment. These barriers will have to be overcome in order to scale up institutional investor involvement in sustainable transport infrastructure and services.

Drivers of Investing in Sustainable Transport

Institutional investors are generally considered to have high level of investment proficiency due to the established nature of their operations and their accessibility to companies, fund managers, and other business entities given their large asset size.[57] Their long-term liabilities and low appetite risk are often given as theoretical reasons why institutional investors are regarded as suitable sources for long-term finance and providers of long-term capital for transport infrastructure development. Heavy rail is an illustrative example of an attractive institutional investment, as it offers the multiple advantages of financing tangible assets (e.g. as compared to non-asset based finance), of increasing employment (e.g. through construction and maintenance), and providing long-run investment returns (e.g. with duration of useful asset life over 30 years).

Labelled green bonds[58] in the transport sector are one avenue to help link potential institutional investor demand for long-term investments with needed global investments in sustainable transport infrastructure and services. In July 2014, the Climate Bonds Initiative (CBI) estimated the universe of (labelled and unlabelled)[59] climate-themed bonds at $503 billion outstanding (of a total global bond market of $100 trillion)[60], with the transport sector making up more than 70% of this universe ($358 billion outstanding).[61] The dominance of the transport sector in the unlabelled bond market is mostly due to the inclusion of a number of large rail issuers that have a long history of using bonds to raise finance. The demand for labelled green bonds has grown rapidly in recent years, with total issuance growing from $3 billion in 2012 to $11 billion in 2013 and $37 billion in 2014.[62] Per CBI, labelled green bonds can widen the pool of potential investors, with an estimated $43 trillion worth of investors indicating a desire to buy green.[63]

Although CBI-tracked labelled green bond issuance, which totaled $7.15 billion through March 2015, significantly trails CBI's 2015 target of $100 billion,[64] CBI still expects a range of at least $50-70bn this year, and Bloomberg is projecting $80bn. CBI now considers $100bn a stretch goal for the year, with IFC confident in reaching this goal.[65] Though there is some scepticism that labelled green bonds will maintain a trend of rapid growth, they may outperform other bonds for two key reasons: first, the market's small size and novelty reduces liquidity in case of a selloff, and second, green bond owners

[57] 2014. Fox E. Introduction to Institutional Investing. http://bit.ly/1EzkbFB
[58] According to Climate Bonds Initiative (CBI), "Labelled green bonds are bonds that earmark proceeds for climate or environmental projects and have been labelled as 'green' by the issuer," (in contrast to other bonds that benefit the environment without explicit labelling). Since many green bond offerings are "self-labelled," CBI has created a climate bond certification scheme requiring third-party verification to ensure that funds are being used to contribute to climate change mitigation and adaptation.
[59] "Unlabelled" green bonds are those that contribute to reducing climate change and other environmental impacts without being branded with this specific goal in mind; railway bonds are a prime example.
[60] http://www.climatebonds.net
[61] 2014. CBI. Bonds and Climate Change: The State of the Market in 2014. Accessed Oct. 5, 2014.
[62] Energy Live News. Green bonds hit 'record $36.6bn in 2014'. Jan 26, 2015.
[63] Personal communication, Sean Kidney, Climate Bonds Initiative, April 24, 2015.
[64] No date. http://www.climatebonds.net. Accessed April 27, 2015.
[65] Personal communication, Sean Kidney, Climate Bonds Initiative, April 24, 2015.

are likely to be long-term investors holding them to maturity; thus they may ultimately be less volatile than their unlabelled counterparts.[66] These two factors may also make green bond particularly attractive to institutional investors, though enforceable standards will be essential to maintaining a strong green bond market, as investors urge additional safeguards to avoid greenwashed products that could discourage new retail buyers and wealth advisers.[67]

CBI's Transport Working Group (TWG) is in the initial stages of creating proposed eligibility criteria for low carbon transport assets linked to certified climate bonds.[68] These criteria propose the use of a transport sector-wide GHG emissions metric allowing all modes of transport to qualify, should the assets meet the required improvement (e.g.10% or 25%) over IEA 2DS emissions targets for 2015 to 2050[69]. Investments aimed at reducing CO2 per pkm/tkm would thus only qualify for labelled green bonds if they deliver a substantial emissions improvement (with specific thresholds still TBD). The proposed standards are a work in progress, and several outstanding questions remain (e.g. how and whether to distinguish rail infrastructure and rolling stock, intercity and urban rail, new and existing investments, and global and national standards). The proposed criteria were reviewed by the TWG in January 2015, which established broad support among the group for the proposed universal metrics. An updated draft guidance document, which includes refinements to the proposed standards, has just been released, and a publicly-available document is forthcoming.

To illustrate the application of TWG eligibility criteria, CBI asserts that nearly all metro rail systems are expected to meet the proposed criteria, along with most rail freight and intercity passenger systems,[70] and a number of rail bonds have been issued through the labelled green bond market to date, including a C$500m ($410m) bond from Ontario wholly dedicated to a light rail extension[71], and a £400m ($610m) green bond from Transport for London[72]. In addition, rail projects have been funded through a portion of green bonds from a broad range of issuers including ADB, the State of California, Department l'Essonne, EXIM India, Ile de France, KommunalBanken AS, and Orebro Kommun. Such issuances create an accessible point-of-entry for institutional investors into the sustainable transport sector.

Moving from the supply side to the demand side, it is important to note that a critical barrier to achieving an uptick in infrastructure investment in developing economies is often not a lack of available finance, but an insufficient pipeline of bankable projects for implementation. In response, multilateral development banks are strengthening project pipelines through dedicated project preparation facilities (PPFs), and a number of countries and regions have established infrastructure financing facilities (IFFs) to accelerate investments in infrastructure, including in the transport sector. These collective efforts have the potential to increase the scope and scale of sustainable transport projects in the context of PPPs and institutional investors alike.

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[66] 2015. Financial Times, Are green bonds a fair weather phenomenon?. Accessed Jan 29, 2015.
[67] 2015. Reuters, "'Green'" bond issuance booming, but standards are unclear, Accessed Jan 23, 2015.
[68] This description of the process is based on dialogue in January 2015 and is subject to change over time.
[69] CBI Low Carbon Transport Technical Working Group (TWG). Unpublished draft guidance. Accessed Jan 7, 2015.
[70] Personal communication, Sean Kidney, Climate Bonds Initiative, April 24, 2015.
[71] Climate Bonds. Bonds and Climate Change 2014. Canada Report, Accessed April 27, 2015.
[72] FastFT. Transport for London joins green bond bandwagon. Accessed April 27, 2015.

The SLoCaT Partnership and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) are conducting preliminary research into the potential of IFFs and PPFs to scale up global investments in sustainable transport. No comprehensive overview of IFFs and PPFs is currently available, and most available information from these facilities does not provide detailed information from a transport sector perspective. Thus, an analysis of the current state of IFFs and PPFs through the lens of sustainable transport will be useful to bridge knowledge gaps that hinder the movement of fundable transport projects from proposal to implementation. This research is intended to lead to ongoing efforts to raise the profile of sustainable transport among IFFs and PPFs, and thus to more closely link potential projects with potential sources of finance, including PPPs and institutional investors.

Another key driver for increasing sustainable transport investments is the growing movement to divest from fossil fuels. As described in the previous section, UNEP's Portfolio Decarbonization Coalition (PDC) intends to achieve GHG emissions reductions by mobilizing a critical mass of institutional investors committed to gradually decarbonizing their portfolios (see Annex 1).[73] Between September 2014 and COP21, PDC intends to assemble a coalition of investors who in aggregate will commit to decarbonizing at least $100 billion in institutional equity investment (e.g. legislation proposed in December 2014 would require the California Public Employees' Retirement System (CalPERS), with a $400 billion investment portfolio, to divest from coal[74]). The decarbonisation movement also creates a new set of variables for MDB investment patterns (e.g. in July 2014, the World Bank ceased investments in coal-fired power plants) and could have a direct and significant impact on MDB transport investments. Since many of these investments have traditionally been built upon long-term and carbon-intensive assets, the divestment movement may thus open up new avenues for PPP in sustainable transport.

With ongoing discussion and implementation of fossil fuel divestment and carbon pricing at global, regional, national and local levels (along with the increasing volatility of petroleum prices worldwide), the risk of "stranded assets" for investors in fossil fuels continues to grow.

Maximizing national climate change mitigation ambitions requires optimizing contributions from the transport sector, as any attempt at limiting global average temperature rise to less than 2°C without including the transport sector is infeasible. Intended Nationally Determined Contributions (INDCs) represent a bottom-up, nationally-determined process to communicate mitigation targets and strategies, and are poised to play an integral role in the negotiations leading up to COP21. Starting in 2016, countries will have to operationalize the transport components of their INDCs to ensure that INDC targets are ultimately realized. Thus, if a binding global climate agreement is in fact secured at COP21, the biggest driver of PPP and institutional investments in more sustainable transport projects may ultimately prove to be a stick rather than a carrot.

Barriers to Investing in Sustainable Transport

[73] N.d. Porfolio Decarbonization Coalition. Homepage. Accessed Feb 10, 2015.
[74] 2014. SLoCaT Partnership. Results Framework on Sustainable Transport. Accessed Feb 1, 2015.

Regardless of the favorable disposition of institutional investors, financing for sustainable transport is not as straightforward as it seems, which is fundamentally due to the difficulties in **defining and measuring "green investing.**" In the case of pension funds, investors can adopt either "socially responsible investing" (SRI) or "environmental, social, and governance" (ESG) guidelines as the *approaches to increase their exposure* to green asset investment, but not necessarily as direct investment strategies, as these approaches look at "environmental impacts on a *relative* basis, without necessarily targeting particular green assets in absolute terms."[75] The most straightforward way to define direct green investment is through green bonds or private equity-style investments in green projects, yet asset allocation for these vehicles is still very limited.

Government regulatory frameworks and environmental policies (or the lack thereof) are some of the biggest barriers to green investing in transport. According to OECD's policy note,[75] there is a widespread absence of appropriate, specific **regulatory frameworks to address market failure**, which often leads to the mispricing of green investments compared to traditional, more carbon-intensive alternative investments. Also, many countries do not maintain consistent and well-defined **environmental policies** over time, with regulations changing continually due to political and social contingencies. The lack of consistent, predictable institutional support can erode investor confidence that green investments will deliver risk-adjusted returns that are commercially attractive and competitive compared with more resource-intensive investments.

In the specific context of the transport sector, many transport modes have **volatile potential economic rates of return (ERR)** and at the same time **lack sufficient pilot projects** to learn from. This volatility is largely due to the difficulties in forecasting ridership and passenger demand, as they can be affected by operational contingencies such as competition between alternative routes and modes, fuel pricing and tax policies, housing and land-use development and property management in the transport system's vicinity. In the case of greenfield transport projects, investment risks are especially high, although they may also come with higher expected returns. While transport PPP projects often require substantial leverage from the private sector to facilitate the financial arrangement, high volatility and system revenue may cause risk-adverse banks and investors less likely to participate in transport investments.

In 2010, the Basel Committee of Banking Supervision (BCBS) adopted the Basel III financial regulatory framework[76] to strengthen bank capital requirements by increasing bank liquidity and decreasing bank leverage. This was achieved through reform measures designed to improve regulation, supervision and risk management within the banking sector. A focus of Basel III is to foster greater resilience at the level of individual banks in order to reduce the risk of system-wide shocks similar to the financial crisis in 2008. On the one hand, Basel III will likely drive banks away from sourcing short-term funding arrangements to more long-term funding, but on the other hand, Basel III potentially causes investors to become more risk-adverse and less attracted to bank debt or equity issuance. As a result, the adoption of Basel III will potentially cause banks to be less likely to provide loans for traditional asset-heavy transport infrastructure investments (e.g. roadways, railways), which have a relatively low degree of liquidity,

[75] 2012. G20/ OECD Policy Note on Pension Fund Financing for Green Infrastructure and Initiatives. http://bit.ly/1LkzxDO

[76] 2010. Basel Committee on Banking Supervision. Basel III: A Global Regulatory Framework For More Resilient Banks and Banking Systems. http://www.bis.org/publ/bcbs189.pdf

though this could potentially create an opportunity for smaller-scale sustainable transport investments (e.g. bus fleet renewal, non-motorized transport) that can be more quickly deployed to achieve development goals and meet climate change targets.

Furthermore, transport PPPs often have long contract durations, ranging from 10 to 30 (or more) contract years, and the **risk profile** of these projects may change through the construction to the operation stages. Institutional investors may therefore prefer to buy out the sponsor's equity during the operational stage or invest in long-term bonds that replace initial bank loans, which are backed by the cash flow of the asset. In this regard, **inflexibility in contract renegotiation and refinancing** can be a significant deterrent to institutional investors, especially if the host country's regulatory framework is not sufficiently transparent, predictable, and mature.

In addition, the complex nature of direct investments to transport infrastructure requires sufficient capacity of institutional investors to source assets, carry out due diligence, and maintain assets and investments. OECD estimates that direct infrastructure investments (let alone investments in transport or sustainability projects) made by pension funds worldwide accounted for less than 1% of total assets in 2011,[77] partly because many pension funds lack the in-house capacity to make investment directly,[78] and thus, investors would have to rely on financial intermediaries to execute these transactions.

Lastly, the lack of **objective, high quality data** on investments in sustainable transport can make it difficult for institutional investors to assess relevant investment risks and understand correlations with investment returns of other types of assets. Although sustainability-related investments can raise an investor's perceived social responsibility, institutional investors are still primarily financially-driven and thus it is unlikely that they would invest in projects with limited projections of investment risks and returns.

VI. Conclusions

In sum, optimizing the potential contribution of institutional investors and PPPs to sustainable transport development will involve expanding and accelerating potential investment drivers and overcoming current obstacles to investment. Additionally, market dynamics to drive investment in sustainable transport can be complemented by concerted efforts among national and local government entities, private sector entities, and global policy makers.

The role of PPPs and institutional investors in driving sustainable transport investment is still quite early in its development curve; thus, on the one hand the sustainable transport community is faced with limited examples and a lack of clear trends, while on the other hand the community is presented with an opportunity to maximizing potential advantages in these emerging investment areas. In this section, we draw general conclusions on the current state of PPPs and institutional investors vis-à-vis sustainable

[77] 2012. G20/ OECD Policy Note on Pension Fund Financing for Green Infrastructure and Initiatives. http://bit.ly/1LkzxDO

[78] 2013. Rajiv Sharma. The Potential of Private Institutional Investors for the Financing of Transport Infrastructure. OECD Discussion Paper No. 2013-14. http://bit.ly/1dwStnC

transport investments, with the goal of optimizing these alternative financing sources to achieve broader climate change and sustainable development objectives.

First, sustainable transport infrastructure and services investment needs are too great to be borne by the public sector alone; thus, alternative sources of financing must be a critical component.

Global transport-related annual capital expenditures are estimated between $1.4trn and $2.1trn annually, which consists of slightly more private investment than public.[79] Currently 60% of global annual transport infrastructure investment is directed to OECD countries, and 40% of investment is directed to non-OECD countries. Yet, per IEA,[80] in order to meet a 2DS or 4DS scenario, it is necessary that 60% of investment be directed to non-OECD countries and 40% to OECD countries (i.e. the current ratio must be reversed). Thus, funding for needed investments in non-OECD countries must increase 50% from current levels, and it is unlikely that the public sector is in a position to increase funding by this amount. **Therefore, greater emphasis on private sector financing will be required to meet development goals in the transport sector.**

Second, PPPs have shown potential in a limited set of transport subsectors, but the current trend is insufficient to keep pace with needed investments in sustainable transport

Although PPPs offer the potential to allow rapid scale-up of sustainable transport under ideal conditions, this strategy may also increase overall project costs if not done right. While global demand for sustainable transport infrastructure and services continues to rise, transport PPPs have shown a downturn in recent years, and the bulk of transport PPPs continue to be concentrated in less-sustainable sub-sectors such as airports and toll roads. According to the MDB Working Group on Sustainable Transport, more than half of the transport operations of the members of the working group are in the road sector in 2013 (115 projects).[81] This trend will have to be reversed if PPPs are to make a substantive contribution to the estimated US$3 trillion net transitional investment required to increase the sustainability of both existing and new transport systems and to mitigate climate change for the period 2015-2015, of which over 80% is related to low-carbon modes such as railways and mass transit.[82]

Third, institutional investors hold a considerable share in the world's capital assets and are a potentially significant, yet largely untapped, source of long-term financing for transport infrastructure and services.

Institutional investors are influential in the global capital and investment market due to their considerable asset holdings. According to OECD statistics,[83] institutional investors

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[79] 2014. World Resources Institute. The Trillion Dollar Question: Tracking Public and Private Investment in Transport. http://www.wri.org/sites/default/files/trillion_dollar_question_working_paper.pdf
[80] 2014. International Energy Agency. World Energy Investment Outlook: Special Report. http://bit.ly/1y4EAU9
[81] 2015. EBRD. Progress Report (2013-2014) of the MDB Working Group on Sustainable Transport. Accessed Mar 3, 2015.
[82] Nelson, D, Herve-Mignucci, M, Goggins, A, Szambelan, S, and Zuckerman, J. 2014.
[83] Della Croce, C., and J. Yermo. 2013. OECD. Institutional Investors and Infrastructure Financing. http://bit.ly/1F1teiW

in the OECD region hold more than US$ 70 trillion in assets; in the case of Canada, the Netherlands, the United Kingdom, and the United States, assets of pension funds and insurance companies account for more than 60% of GDP in their respective countries. In addition, the growth of the capital assets of institutional investors have continued to grow rapidly in the last decade due to the rising attention on retirement plans and welfare policy reforms in both developed and developing countries

Fourth, while institutional investors have signaled a growing interest in green investing, they have followed with little concrete action on sustainable transport

Various investor groups have demonstrated a significant degree of interest in investing in sustainability and climate change. Studies show that even though financial returns remain the main measure for evaluating investments, **part of institutional investors have begun stressing non-financial performance**, and Environment, Social, and Governance (ESG) factors have started to take a more prominent role. Nonetheless, there is still a significant gap between efforts to measure ESG factors and the application of these factors among institutional investors, largely due to challenges in connecting ESG factors to the financial performance of investment projects. In addition, the Global Investor Coalition provides a global platform for dialogue among investors and governments on international policy and investment practice related to climate change; however, dialogue in this area has not yielded concrete investment activity to date. (e.g. transport initiatives to date from the Ceres Investor Network on Climate Risk, one of the largest global investment networks, have focused on transport research projects, which have not been followed with direct investments in transport infrastructure and services).

Finally, concerted efforts to leverage alternative funding sources are needed to scale up sustainable transport infrastructure and services to achieve transformational change and meet crucial global priorities

The sustainable transport community must seize opportunities to increase involvement from PPPs and institutional investors to meet rising global needs for sustainable transport infrastructure and services. To optimize the contributions of **PPPs**, governments must provide stable legal frameworks to help outline roles and responsibilities of all parties within PPP projects, and enforceable dispute-resolution mechanisms must be established to protect the rights of all parties. To ensure a greater use of PPP in transport there is a need for a much larger pipeline of investment projects (which may be addressed in part by growing activity of PPFs). It is also essential to ensure coordination among planning and operating entities to establish robust revenue and ridership models based on sound assumptions. Finally, to meet the goals of global transport development needs with required scale and speed, it is important that PPP leaders deepen their commitments, and that PPP followers make strides to catch up to the leaders.

On the other hand, increased involvement from **institutional investors** in sustainable transport is likely to be driven by a combination of internal and external factors that can affect supply and demand for such investments (e.g. top-down implementation of carbon pricing through the UNFCCC framework, bottom-up expansion of sustainable transport project pipelines through PPFs and IFFs, municipal and institutional fossil-fuel divestment efforts). Such involvement can also be catalyzed by aligning institutional investors to fund transport PPPs, either through direct investments (e.g. through

aggregation of projects to achieve needed critical mass for institutional investors) or indirect investments (e.g. through the use of labeled green bond financing for projects in the sustainable transport sector). Finally, ongoing efforts by the SLoCaT Partnership to reach out directly to institutional investors to reveal more specific investment preferences may also help to further clarify their potential to scale up sustainable transport infrastructure and services to meet climate change targets and achieve sustainable development goals.

Annex 1: Signatories of the Global Investor Commitment at the Climate Summit 2014

Portfolio Decarbonization Coalition	
Target	Expediently decarbonize US$100 billion and to measure and disclose the carbon footprint of at least US$500 billion in assets under management
Signatories	• The Fourth Swedish National Pension Fund's (AP4/Fjärde AP-Fonden) • Amundi • CDP • China International Capital Corporation (CICC) • United Nations Environment Programme Finance Initiative (UNEP FI)
Pension Funds and Low Carbon Investments	
Target	Accelerate their investments in low-carbon investments across asset classes up to more than $31 billion by 2020
Signatories	• California Public Employees' Retirement System (CalPERS) • Ontario Teachers' Pension Plan • PensionDanmark • Alberta Investment Management Corporation • British Columbia Investment Management Corporation • California State Teachers' Retirement System • Government Employees' Pension Fund of South Africa • New York State Common Retirement Fund • New Zealand Superannuation Fund • Office of the New York City Comptroller
Commercial Banks and Green Bonds Issuance	
Target	Provide US$30 billion in new climate finance by the end of 2015 by issuing green bonds and other innovative financing initiatives
Signatories	• ACTIAM • Addenda Capital • AP1/Första AP-Fonden (The First Swedish National Pension Fund) • AP2/Andra AP-Fonden (The Second Swedish National Pension Fund) • AP3 /Tredje AP-fonden (The Third Swedish National Pension Fund) • AP4/Fjärde AP-Fonden (The Fourth Swedish National Pension Fund) • Aviva Investors • BNP Paribas Investment Partners • California Teachers' State Retirement Systems (CalSTRS) • Calvert Investments • F&C Investments • Mirova • MN Investments • Natixis Asset Management • NEI Investments • Pax World Management — • Zurich Insurance Group • Ceres Investor Network on Climate Risk (representing over 100 investors

	in North America with USD 13 trillion of AUM) • Investor Group on Climate Change (representing investors in Australia & New Zealand with USD 1 trillion of AUM)
International Development Finance Club (IDFC) and Climate Financing	
Target	Increase direct green/climate financing to $100 billion-a-year for new climate finance activities by the end of 2015
Signatories	• Black Sea Trade and Development Bank (BSTDB) • Croatian Bank for Reconstruction and Development (HBOR) • Industrial Development Bank of Turkey (TSKB) • Agence Française de Développement (AFD) • KfW Bankengruppe • Vnesheconombank (VEB) • Central American Bank for Economic Integration (BCIE/CABEI) • Bancoldex S.A. • Banco Estado (BE) • Nacional Financiera (NAFIN) • Corporación Financiera de Desarrollo S.A. (COFIDE) • Development Bank of Latin America (CAF) • Banco Nacional de Desenvolvimento Econômico e Social (BNDES) • Caisse de Dépôt et de Gestion (CDG) • Development Bank of Southern Africa (DBSA) • Banque Ouest Africaine de Développement (BOAD) • Burundi/Eastern and Southern Africa and Regional Offices (Nairobi, Bujumbura, Harare and Mauritius) (PTA) • Small Industries Development Bank of India (SIDBI) • China Development Bank (CDB) • Korea Finance Corporation (KoFC) • Indonesia Exim Bank • Islamic Corporation for the Development of the Private Sector (ICD) • Japan International Cooperation Agency (JICA)
Green Investment of Insurance Industry	
Targets	Double green investments to US$82 billion by the end of 2015 and increase the amount placed in climate smart investments to ten times the current amount, by 2020
Signatories	• International Cooperative and Mutual Insurance Federation (ICMIF) • International Insurance Society (IIS)