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Climate Finance Roadmaps

Methodology framework to fill climate investment gaps

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Related CPI work:

Top-down Climate Finance Needs

Bottom-up Climate Finance Needs

Global Landscape of Climate Finance 2024

Understanding Global Concessional Climate Finance 2024

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Glossary

Bottom-up needs	The climate finance required by countries to reach their national climate targets, as stated in official documents such as Nationally Determined Contributions. These needs include both the finance required to be raised domestically and the financial support required from international (public and private) sources.
Top-down needs	The estimated climate finance to fund the actions needed across different sectors to keep the average global temperature rise within 1.5°C by the end of this century. These needs are typically derived using predictive models for different sectors. Climate-compatible scenarios developed by different institutions can differ widely in the data, assumptions, model used, and (geographic or sectoral) scope.
Financial market maturity	The level of development, sophistication, and efficiency of a financial market. The mature financial markets are characterized by features incluidng but not limited to diverse financial instruments, robust regulatory frameworks, transparency, high levels of liquidity, and active participation by both domestic and international investors.
Technology maturity	Also referred to as Technology Readiness Level (TRL), describes the stage of a technology's development and commercialization.
Real-economy actor	Entities directly engaged in producing goods or services within the economy, as opposed to financial-sector participants.
Capital mix	The composition of different types of financing used to fund a project or corporate, typically including proportions of debt versus equity. It also capture the distinctions between commercial financing (market-rate) and concessional financing (funding provided on more favorable terms, such as lower interest rates or longer repayment periods).
Guarantees	Commitments by a guarantor (usually a government or multilateral organization) to cover the losses of defaults. Guarantees making it easier for projects to attract financing in high-risk contexts by reducing the perceived risks.

Why we need Climate Finance Roadmaps

The world is facing a large and persistent climate finance gap, particularly in emerging markets and developing economies (EMDEs), as well as in certain underserved sectors, such as emission-intensive industries. To address this, decision-makers need to know which financial actors and types of finance are best suited to closing climate investment gaps in specific geographies and industries. **Climate Finance Roadmaps can help public and private capital allocators, as well as researchers and policymakers, to identify and prioritize climate interventions, and—crucially—to mobilize finance for such actions at scale.**

The need for this information is vital. While annual investment for climate mitigation and adaptation has reached approximately USD 1.5 trillion (CPI, 2024), **there is an estimated annua global climate finance gap of USD 6.1 trillion per year between now and 2030.**[1] Investments must increase by fivefold to avoid the worst impacts of climate change and related economic losses. With recent progress concentrated in a handful of countries—mainly developed economies and China—as well as technologies—mainly solar PV, wind, and electric vehicles, targeted Climate Finance Roadmaps can help to boost climate finance to EMDEs and sectors with high mitigation potential, such as agriculture, forestry, and other land use (AFOLU) and industry.

This work builds on CPI's tracking of climate finance flows, and collection and standardization of data on related climate finance needs. While extensive literature exists on climate investment barriers and risks in underserved markets, **there is a lack of research on the actors and actions required to close the identified finance gaps in different sectors and geographies.**

Climate Policy Initiative (CPI) has created this Methodology Framework to inform the creation of Climate Finance Roadmaps, with guidance on how to conduct analysis at every stage of the process. **Climate Finance Roadmaps for specific countries and sectors based on this methodology framework can inform on which financial actors and what types of finance are best suited to close the investment gap in different sectors and geographies, and to identify and prioritize interventions to mobilize climate finance at scale**.

[1] *In an average scenario. The estimated climate investment gap further increases to over USD 7 trillion per year between 2031-2050.*

Framework overview and purpose

This methodology framework lays out a robust approach to building Climate Finance Roadmaps, including guidance on how to conduct analysis at various stages of the process to fill climate finance gaps. This includes advice on data sources to estimate the investment gaps, variables to consider when assessing and matching investors' preferences with risks and characteristics of different markets, and ways to estimate the capital mix required, among others.

More specifically, the Climate Finance Roadmaps can help to identify:

- **Most suitable investors** in different markets, based on investors' preferences and characteristics, risk profile of each sector and geography, as well as availability of private capital;
- **Financial instruments required** to close the investment gaps most effectively, based on technology and financial market maturity;
- **Policy and regulatory measures needed** to overcome investment barriers and attract climate investments at the scale required; and
- **Robust methodology** for closing climate finance gaps that can be applied by various actors in local and regional contexts.

Climate Finance Roadmaps can help public and private capital allocators understand their potential roles in different regions and sectors, thinking through their various investment challenges, coordinating action, and ultimately directing capital more effectively to collectively achieve a net-zero pathway.

Climate Finance Roadmaps can also provide policymakers and regulators with a set of interventions needed in different regions and sectors to help them mobilize the right type of capital at scale.

At the country level, CPI's Climate Finance Roadmaps can support the development of more accurate net-zero investment plans which can be integrated in Nationally Determined Contributions (NDCs) and other national strategies and plans.

How the Climate Finance Roadmaps can be used

This document lays out CPI's proposed approach to building Climate Finance Roadmaps analyses, including methodological steps, assumptions made, data points required, and expected outputs of this work, among others.

Moving forward, CPI plans to test this methodology framework to develop Climate Finance Roadmaps for specific pilot geographies and sectors, using this as an opportunity to also validate and improve the elements of this approach. This methodology document is not meant to be prescriptive but rather to be used as a tool to help others develop similar analyses, providing guidance on key considerations, variables, and steps when building a Climate Finance Roadmap. We invite other organizations, capital allocators, and policymakers to adopt this framework for their own testing and to get in touch if they wish to jointly develop Roadmap analyses for specific sectors or geographies.

Whenever possible, we aim to leverage work already done by experts in each sector or geography rather than duplicate efforts. If, for example, a comprehensive assessment of risks and barriers for a certain market already exists, we will use existing studies rather than replicating the same assessment from scratch.

This document is published as a living methodology for experts and other stakeholders to comment on. We welcome feedback, suggestions for improvement, and ideas to refine and enhance our methodological approach and ensure that the resulting Roadmaps analyses are relevant and impactful. We welcome any inputs and contributions shared with us at costanza.strinati@cpiglobal.org.

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Overview of methodological steps (1/2)

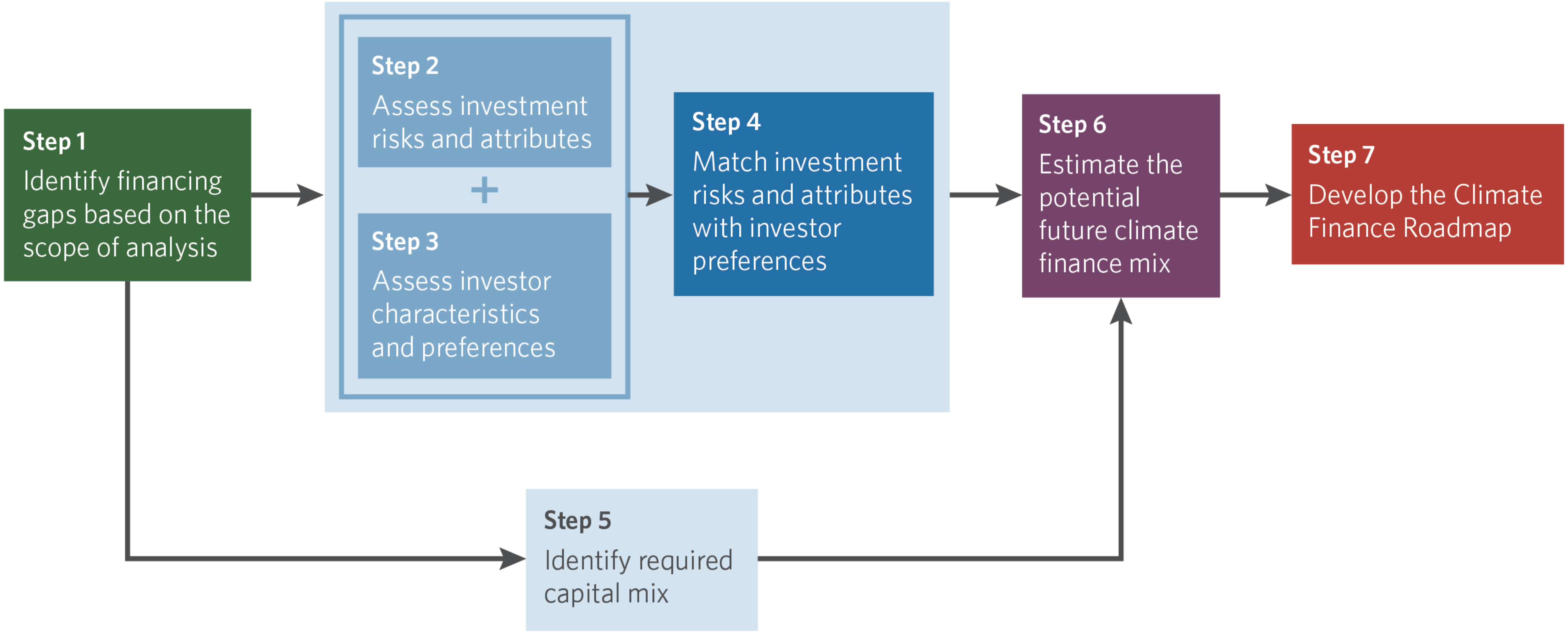
	Methodological step	Detailed action	Illustrative high-level example of output.	Slide #
1	**Identify financing gaps based on the scope of analysis**	Establish regional and (sub)sectoral scope of analysis and total climate finance needs and gaps for the selected region/sector.	*"Analysis of Energy Systems in South Asia found that this sector requires $450 billion/year in climate investment through 2050 in the region. Climate finance to energy systems in South Asia reached $120 billion/year in 2021/22, leaving a gap of $330 billion/year."*	10-14
2	**Assess investment risks and attributes**	Assess the risk profile and key characteristics of each region/subsector combination along eight risks and attributes identified as relevant for investment decisions.	A matrix scoring each region/subsector combination (e.g., South Asia-Renewables) along the eight risks and attributes identified (see Slide 20).	15-20
3	**Assess investor characteristics and preferences**	Assess nine key characteristics and preferences for 18 types of (public and private) investors, aligning with the investment risks and attributes identified in Step 2.	A matrix scoring each investor type (e.g., MDBs, commercial banks) along the eight characteristics and preference identified (see Slide 28-29).	21-29
4	**Match investment risks and attributes with investor preferences**	Assess the suitability of each investor type against each region/subsector, by matching investor preferences (as per Step 3) with investment risks and attributes (as per Step 2).	A matrix assigning a suitability score (ranging from "good match" to "no match") to each investor type against each region/subsector (see Slide 38). The matrix will help to highlight the most and least suitable investor types for each region/subsector, as well as where targeted measures would be needed to improve investment suitability.	30-38
5	**Identify required capital mix**	Estimate the finance type (i.e., debt/equity/concessional finance) and source (i.e., private/public) required in the region/sector based on technology and financial market maturity.	*"Given the medium level of financial market maturity in South Asia, we estimate that the public sector will continue to play a key role, providing 40-50% of all climate finance for Energy Systems in the region through 2050. The relatively mature subsector of renewable energy, will require about 60% of finance as commercial debt, 30% in equity, and 10% as concessional finance to cover the high up-front risks of certain technologies (e.g., geothermal) […]"*	39-46

Overview of methodological steps (2/2)

Methodological step		Detailed action	Illustrative high-level example of output.	Slide #
6	**Estimate the potential future climate finance mix**	Identify the types and amounts of capital that could be provided by different investor types. Estimate potential future capital mix and sources required in the region/sector by combining the type of capital required (as per Step 5) and the results of the suitability assessment (as per Step 4). Quantify the amount of capital required from each investor based on the investment gaps estimated in Step 1.	*"By 2050, we estimate that $250 billion/year could come from public-sector investors (or 30% of total climate finance needed for energy systems in South Asia). MDBs and bilateral DFIs could provide $90 billion/year; a 35% increase compared to current levels. Of this amount, 10% will be needed in the form of concessional finance. […]"*	47-53
7	**Develop the Climate Finance Roadmap**	Develop a data-driven narrative based on the findings from the previous steps and identify key actions and opportunities for policymakers and capital allocators to close the financing gap in the region/sector.	Key actions for public investors: *"MDBs will need to shift their investments from commercially viable renewables—already attracting private capital—to less mature technologies (e.g., green hydrogen). A 25% increase in concessional finance over the current level will require a paradigm shift in their investment modalities".* Opportunities for private investors: *"Corporations were found to be especially suited to invest in South Asia's energy storage subsector, with the potential to increase their investments in these technologies from current $0.5 billion/year to $15 billion/year by 2050".* Key actions for policymakers: *"Despite their potential suitability to invest in energy storage technologies, corporations in the region are currently faced with high governance risks due to a lack of clear regulations and incentives in most countries. Policy tools such as reverse auctions– already used in the region for solar and wind technologies—can help to reduce uncertainty and drive investments".*	54-59

Overview of proposed approach

The figure below shows how the different steps relate to each other and contribute to the final output of the Climate Finance Roadmap (Step 7). Not all must be sequential—some can be conducted in parallel, and the order of implementation may vary.



Step 1

Identify financing gaps based on scope of analysis

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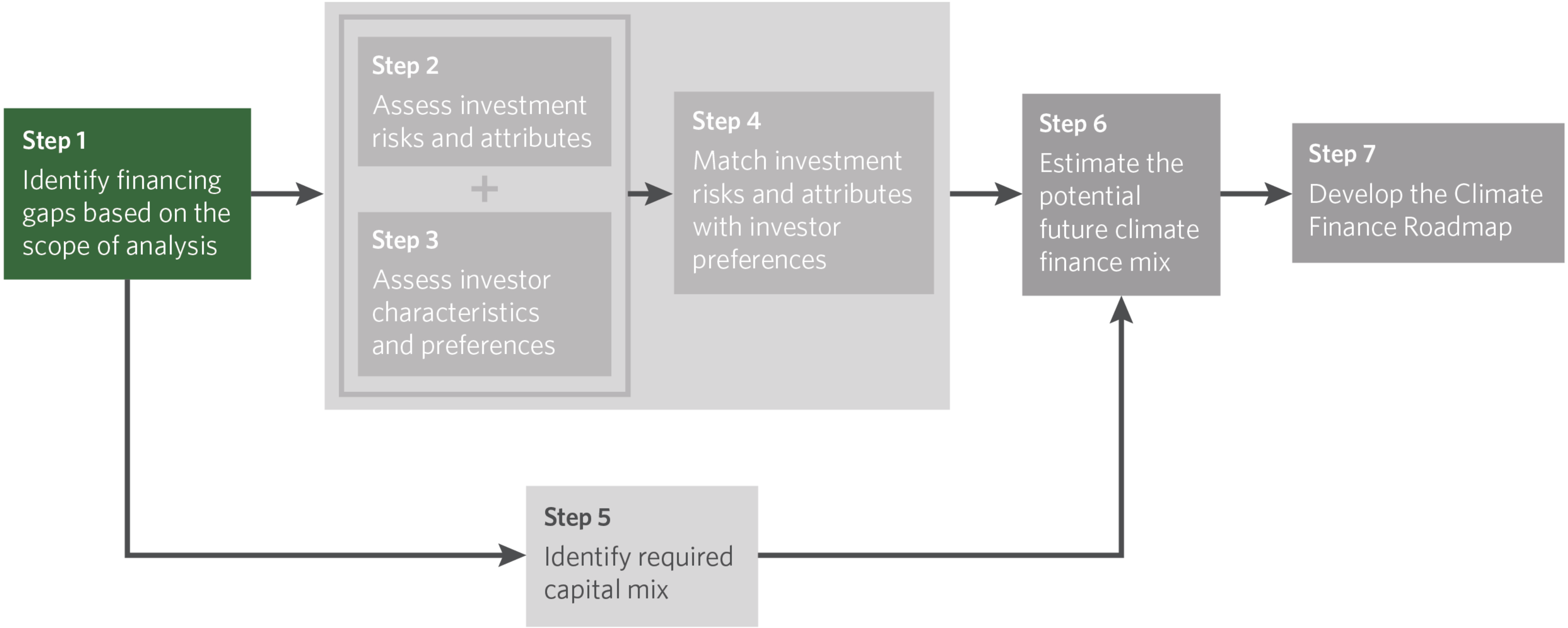
Step 1: Identify financing gaps based on scope of analysis



Step 1: Identify financing gaps based on scope of analysis

CPI's Climate Finance Roadmaps approach is developed to be applicable to different geographies and sectors at varying levels of granularity.

The first step in building a Climate Finance Roadmap is to define the scope of analysis. This could be a region or country (e.g., South Asia or India), a sector or subsector (e.g., energy systems or renewables), or a combination of the two (e.g., energy systems in South Asia). While the specific scope may depend on data availability, Climate Finance Roadmap analyses should be done at the most granular level possible.

The regions and sectors listed on this slide align with the taxonomy used for CPI's Global Landscape of Climate Finance (GLCF).[1] CPI can assess the climate finance gaps for each region/country and sector/subsector based on the extensive data it has collected on climate finance flows and needs.

Regions and sectors/subsectors for which flows and needs data is available

Regions

- Central Asia & Eastern Europe
- East Asia & Pacific
- Latin America & Caribbean
- Middle East & North Africa
- North America (excl. Mexico)
- South Asia
- Sub-Saharan Africa
- Other Oceania
- Western Europe

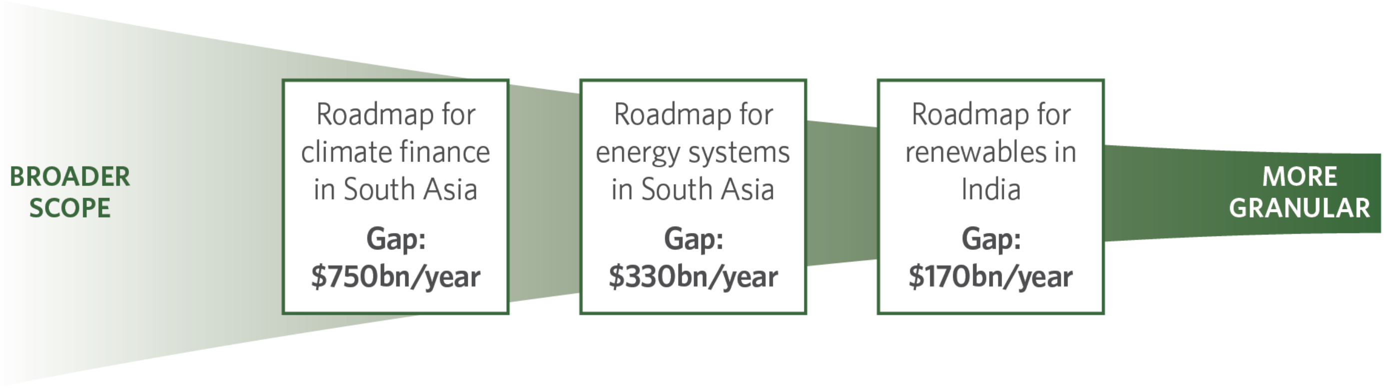
Sectors

- Energy systems
- Buildings & infrastructure
- Industry
- Transport
- AFOLU
- Adaptation
- Waste
- Water & wastewater

Subsectors

- Renewables: solar, wind, etc.
- Fossil fuels with CCS
- Energy storage
- District heating
- Low-emission fuels
- Transmission & distribution
- etc.

Examples of possible scopes of analysis



Note: All numbers are illustrative

[1] *The GLCF taxonomy is available in the GLCF Methodology document, available here.*

Step 1: Identify financing gaps based on scope of analysis

Decisions around the scope of analysis depend on individual country/region circumstances and circumstances and the primary focus and priorities of investors. Other factors influencing scoping decisions include the mitigation potential of different sectors, the quality of available data, and the climate vulnerability of different regions.

As the Climate Finance Roadmaps rely on the assessment of investment gaps (calculated as finance needs minus current finance flows), the quality of analysis at least partly depends on the availability of comprehensive and granular data on climate finance flows, and the existence of climate finance needs projections for specific regions and sectors.

The figure on this slide indicates the sectors for which analysis is currently feasible and impactful by illustrating the availability of climate finance data and needs projections—and the resulting investment gaps between the two, along with estimated mitigation potential. For sectors with limited tracking, additional data collection efforts (either of primary data or additional estimates) would be needed.

Sector	Mitigation potential (2030) GtCO2e[2]	Availability of flow data[3]			Availability of needs scenarios[4]	Estimated investment gap by 2050 USD tn/yr[5]
		Private	Public (international)	Public (domestic)		
Energy systems	13.6	Tracked	Tracked	Limited tracking	Tracked	2.1
AFOLU	14.5	Limited tracking	Tracked	Limited tracking	Tracked	1.3
Transport	3.8	Limited tracking	Tracked	Limited tracking	Tracked	2.7
Buildings and infrastructure	3.6	Limited tracking	Tracked	Limited tracking	Limited tracking	2.2
Industry	5.7	Not tracked	Limited tracking	Limited tracking	Limited tracking	1.1
Water and wastewater	0.75	Limited tracking	Tracked	Limited tracking	Not tracked	-
Other and cross-sectoral	-	Not tracked	Limited tracking	Limited tracking	Not tracked	-

[2] Average mitigation potential is sourced from the IPCC AR6 (2022).
[3] As per CPI's GLCF database, noting that climate finance flows data for the analysis could come from different sources.
[4] As per CPI's top-down needs database, noting that needs data for the analysis could come from different sources.
[5] Calculated as needs minus flows.

Illustrative Example

Step 1: Identify financing gaps based on scope of analysis

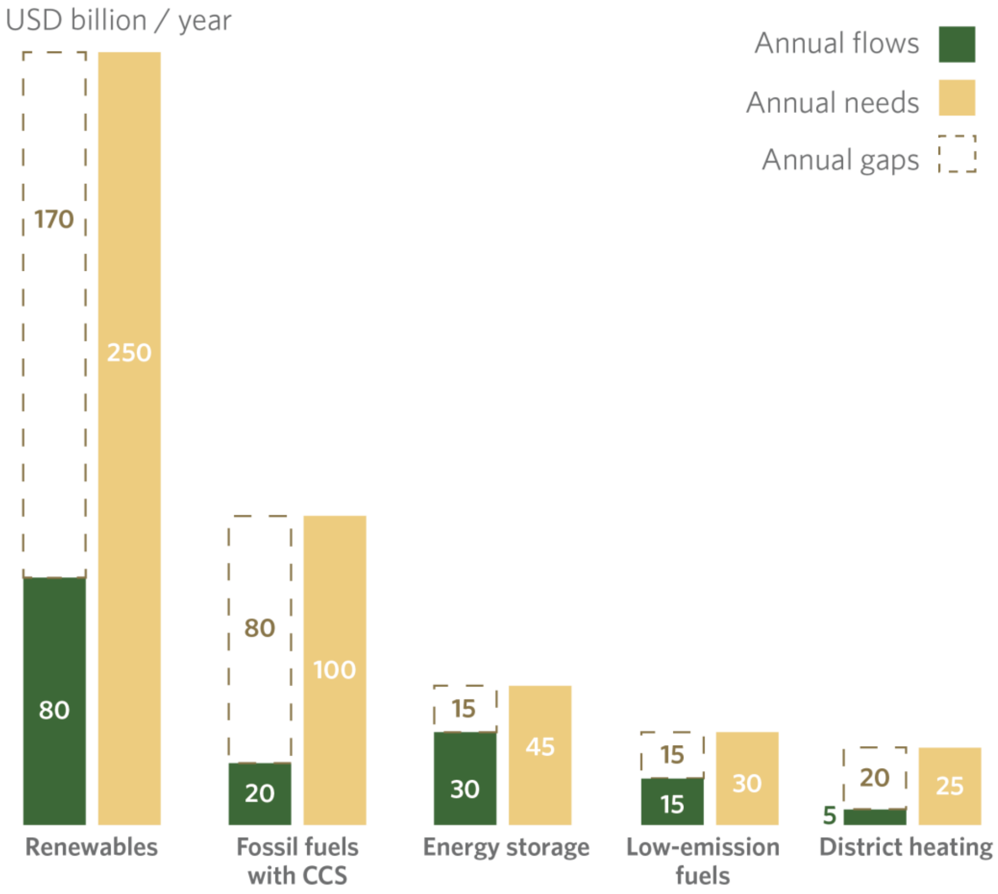
Climate finance gaps in energy systems in South Asia

Once the scope of analysis has been defined, the next step is to estimate funding gaps at the most granular level possible, based on the data available.

Data on climate finance flows can be drawn from CPI's GLCF database, which tracks annual climate investments by sector/ subsector, region/country, capital source, and financial instrument.

Climate investment needs can be identified using various methods, including top-down net-zero scenarios and bottom-up country-led assessments.[5] Data can be drawn from CPI's top-down needs database, which compiles and standardizes such estimations for various sectors from a wide range of net-zero scenarios. Alternatively, it could come from regional/country/sectoral-level assessments, where available.

Current climate finance flows: $450 bn in 2021/22*
Estimated need: $450 bn/year by 2050*



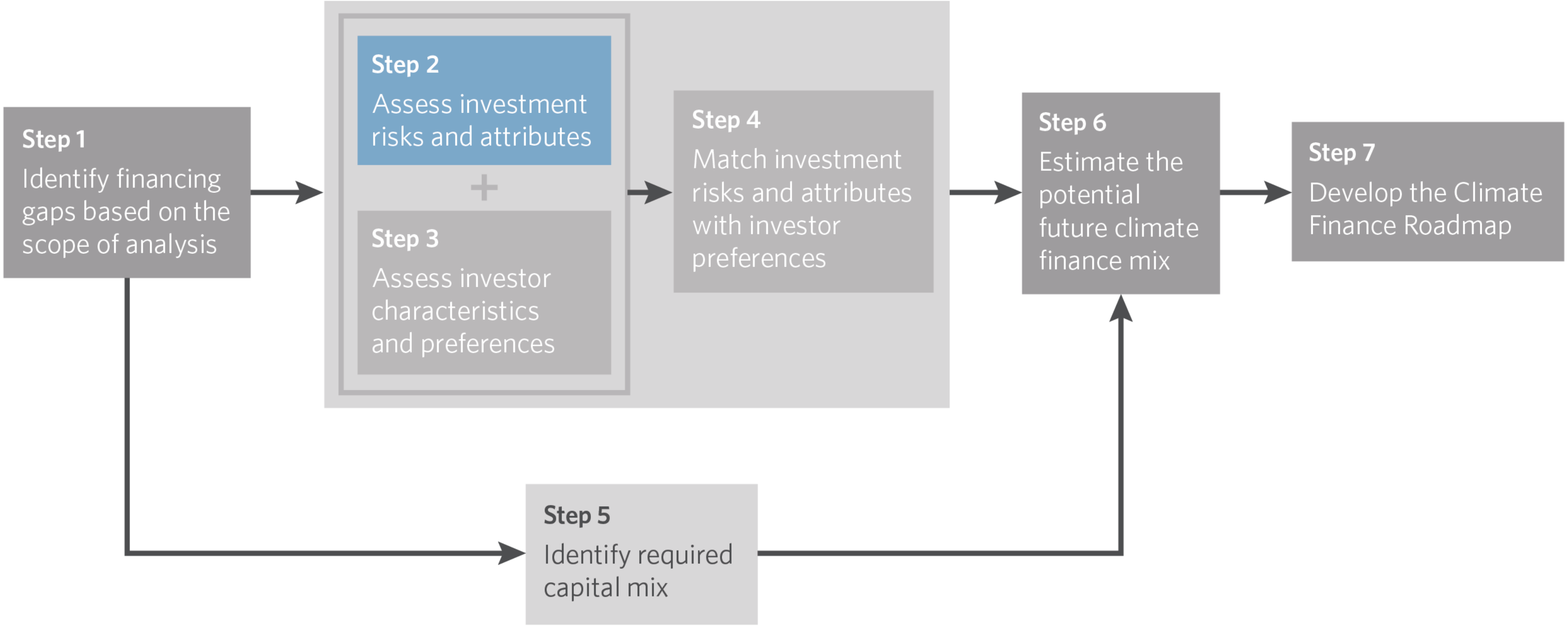
Note: All numbers are illustrative

[5] For information on CPI's top-down and bottom-up needs approaches see: https://www.climatepolicyinitiative.org/climate-finance-needs/

Step 2

Assess investment risks and attributes

Step 2: Assess investment risks and attributes



Step 2: Assess investment risks and attributes

Once the scope of analysis and financing gaps are defined in Step 1, the risk profile and key characteristics of each region/subsector combination within the selected scope can be laid out. This assessment aims to determine characteristics that influence investment decisions made by different investors types (see Step 3). Recognizing that not all risks have the same relevance to all sectors or geographies, a weighting system may be applied to certain risks during the assessment. In addition, consideration can be given to which risks are most relevant to the sector or geography being addressed during the matching process (see Slide 33).

Based on an extensive literature review, we have identified the following eight investment risks and attributes to provide a robust framework for a comprehensive assessment. These factors vary across geographies and technologies and can be further adapted to each region/subsector during analysis, as needed.

Investment risks					Investment attributes		
Technology risk	Governance risk	Financing risk	Physical climate risk	Market risk	Investment timeline/horizon	Average ticket size	Return
The risk stemming from investing in a technology, generally associated with the potential for that technology to fail or otherwise disrupt the expected return on the investment.	The risk related to adverse or unfavorable political, legal, or regulatory environments that may affect investment returns (e.g., sovereign and political risk).	The risk associated with the limited depth, access to, efficiency of, or maturity of financial markets, and the degree to which these factors may constrain investment returns and long-term refinancing (e.g., currency risk).	The degree to which the profitability of an investment could be negatively impacted by the effects of climate change.	The degree to which expected investment returns may be constrained by the current and projected market size and scope of climate interventions.	The project duration and how soon the investors can recoup their costs.	The size of a project and the upfront financial commitment, encompassing necessary expenses such as the purchase of equipment, installation and setup costs, and initial operating expenses.	The return that the investment is expected to render at the end of the payback period.

Step 2: Assess investment risks and attributes

Based on an extensive literature review, we recommend the below indicators to assess the investment risks for each region/subsector combination. The table also includes a non-exhaustive list of potential data sources that can be used to analyze and score investment risks, which will be supplemented by qualitative assessments and expert consultations where data is limited.

Once the exact data sources for the analysis are identified for each Climate Finance Roadmap, a set of criteria and thresholds for each investment risk can be created, based on which "low", "medium" or "high" risk scores can be assigned, depending on the sector/subsector considered.

		Indicators	Potential data sources
Investment risks	Technology risk	• Technology maturity/ technology readiness level (TRL) • Systems integration • Supply chain risk • Availability of local knowledge and technical skills	• TRL scores (e.g., from NASA or the IEA) • IESE's VC/PE Country Attractiveness Index: Education and Human Capital Indicator
Investment risks	Governance risk	• Political stability • Ease of doing business • Regulatory quality • Sovereign risk	• World Bank Governance Indicators for political stability • World Bank Ease of Doing Business Index • Climate Action Tracker rating for enabling regulations • IESE's VC/PE Country Attractiveness Index: Taxation, Investor Protection and Corporate Governance, and Entrepreneurial Opportunities Indicators • Sovereign Credit Ratings (e.g., Moody's or other)
Investment risks	Financing risk	• Currency risk • Financial market maturity • Indebtedness/credit rating risk	• IMF Financial Market Development Index • World Bank Global Financial Development Database • ERDB Financial Market Development Index • IESE's VCPE Country Attractiveness Index: Depth of Capital Market Indicator • Sovereign Credit Ratings (e.g., Moody's or other) • FDL's Public Dept Decompositions tool or similar index
Investment risks	Physical climate risk	• Physical climate risk (both acute and chronic) / climate vulnerability	• World Bank Climate Change Knowledge Portal country profiles • Sector-specific climate vulnerability assessments
Investment risks	Market risk	• Market size • Market growth potential • Presence of competing market structures and infrastructure (e.g., fossil fuel reliance) • Cost differential	• IESE's VCPE Country Attractiveness Index: Economic Activity Indicator • Economy size (GDP) (World Bank) • Projected economy growth rates (e.g., IMF) • Specific demand indicators (technology-dependent, e.g., exp. energy demand) • Qualitative assessment of competing market structure, or quantitative indicators, where available (e.g., fossil fuel dependence in energy mix or imports/exports)

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Step 2: Assess investment risks and attributes

We have also identified the below indicators for investment attributes to describe the necessary characteristics related to an investment's structure. The table also includes a non-exhaustive list of potential data sources that can be used to describe and analyze investment attributes. These can be supplemented by qualitative assessments and expert consultations where data is limited.

Once the exact data sources for the analysis are identified for each Climate Finance Roadmap, a set of criteria and thresholds for each investment attribute can be created, based on which "low", "medium" or "high" risk scores can be assigned, depending on the sector/subsector considered.

		Indicators	Potential data sources
Investment attributes	Investment timeline	• Investment lifetime • Investment payback period	• Average project lifetime (e.g., Statista's Low-carbon energy sources & power plants lifespan or energy sources and power plants lifetime by type data; Global Energy Monitor's asset-level database) • Average payback period
Investment attributes	Average ticket size	• Project size • Upfront financial commitment or expenditures	• Average project size (in US dollars): CPI's GLCF database (use the total investment amount/the number of project to estimate the average project size) • Average entry cost (e.g., IRENA's Installed cost data, etc.) • Global Energy Monitor's asset-level database
Investment attributes	Return	• Average return (project-level) • Market return	• IRR (internal rate of return), where available (project-level), though data sources are limited • WACC (weighted average cost of capital) at country/regional level • ROIC (return on invested capital): Listed company information from Bloomberg or annual report. When private project-level data is difficult to obtain, it is possible to use the data of a public company whose revenue (e.g., >50%) comes from the target technology.

Illustrative Example

Step 2: Assess investment risks and attributes

Assessment of investment risk and attributes for Energy Systems in South Asia

Investment risks and attributes should be assessed at the most granular level possible based on the data and information available. For example, if the selected scope for the analysis were energy systems in South Asia, investment risks and attributes should be assessed at the subsector level.

Assessment for each region/ subsector combination is done through a literature review, and data gathered for specific indicators, supplemented by expert interviews when appropriate (see Slides 18 and 19). "Low", "medium", or "high" scores are assigned at the country-level where possible and aggregated (e.g., using weighted averages) to assign regional scores. Additional weighting systems may be used to reflect the relevance of certain risks to specific sectors or geographies.

Region/subsector combinations with similar investment risks and attributes can be clustered for the matching exercise in Step 4.

REGION/SECTOR COMBINATION: ENERGY SYSTEMS IN SOUTH ASIA

	Renewables	Fossil fuels with CCs	Energy storage	District heating	Low-emission fuels	...
Investment risks						
Technology	LOW	LOW	HIGH	HIGH	LOW	...
Governance	MED	MED	MED	HIGH	MED	...
Financing	MED	MED	HIGH	HIGH	LOW	...
Physical climate	MED	LOW	MED	LOW	LOW	...
Market	LOW	LOW	MED	HIGH	MED	...
Investment attributes						
Investment timeline	MED	MED	LOW	MED	LOW	...
Average ticket size	MED	MED	LOW	LOW	LOW	...
Return	HIGH	HIGH	LOW	LOW	MED	...

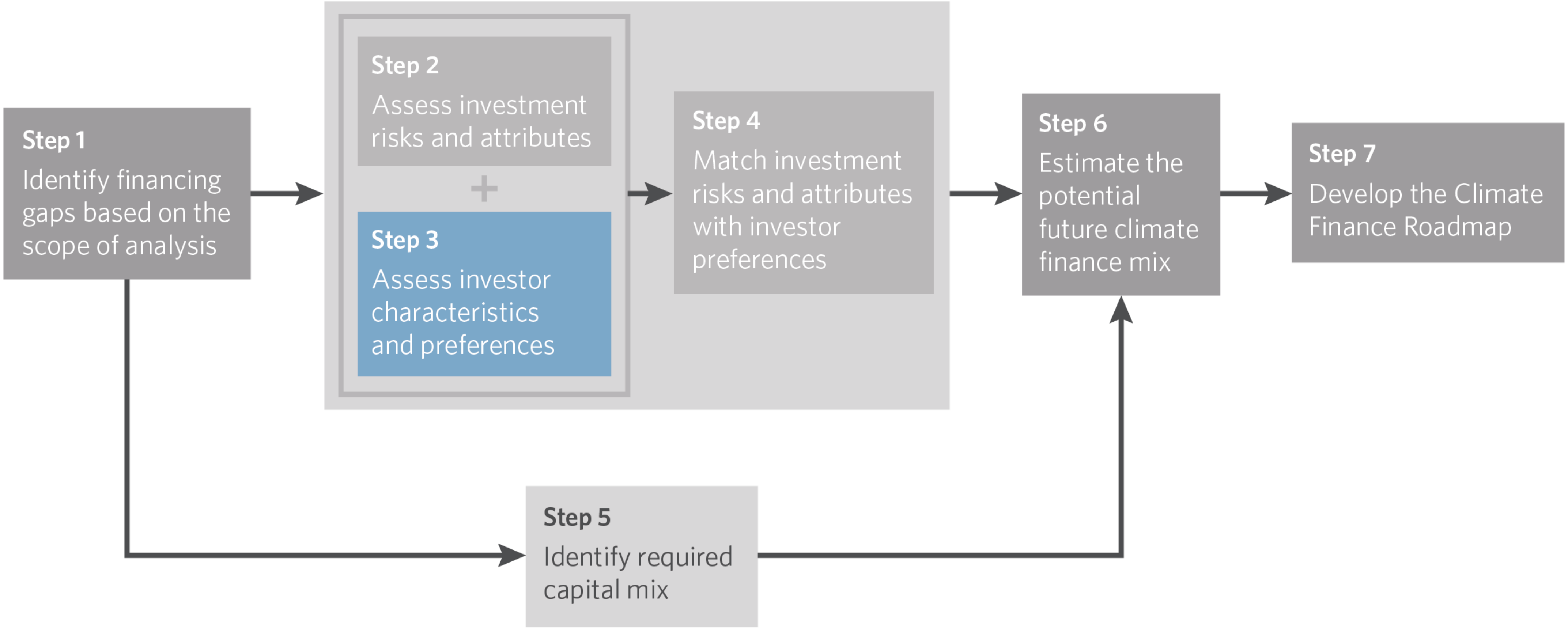
Potential to cluster subsectors with similar investment risks & attributes

Note: All figures and matching assessments are illustrative.
Generic "low", "medium", and "high" scores have been assigned for the purposes of this document specific thresholds for each score should be assigned during analysis. Exact thresholds are likely to vary based on the sector/subsector considered.

Step 3

Assess investor characteristics and preferences

Step 3: Assess investor characteristics and preferences



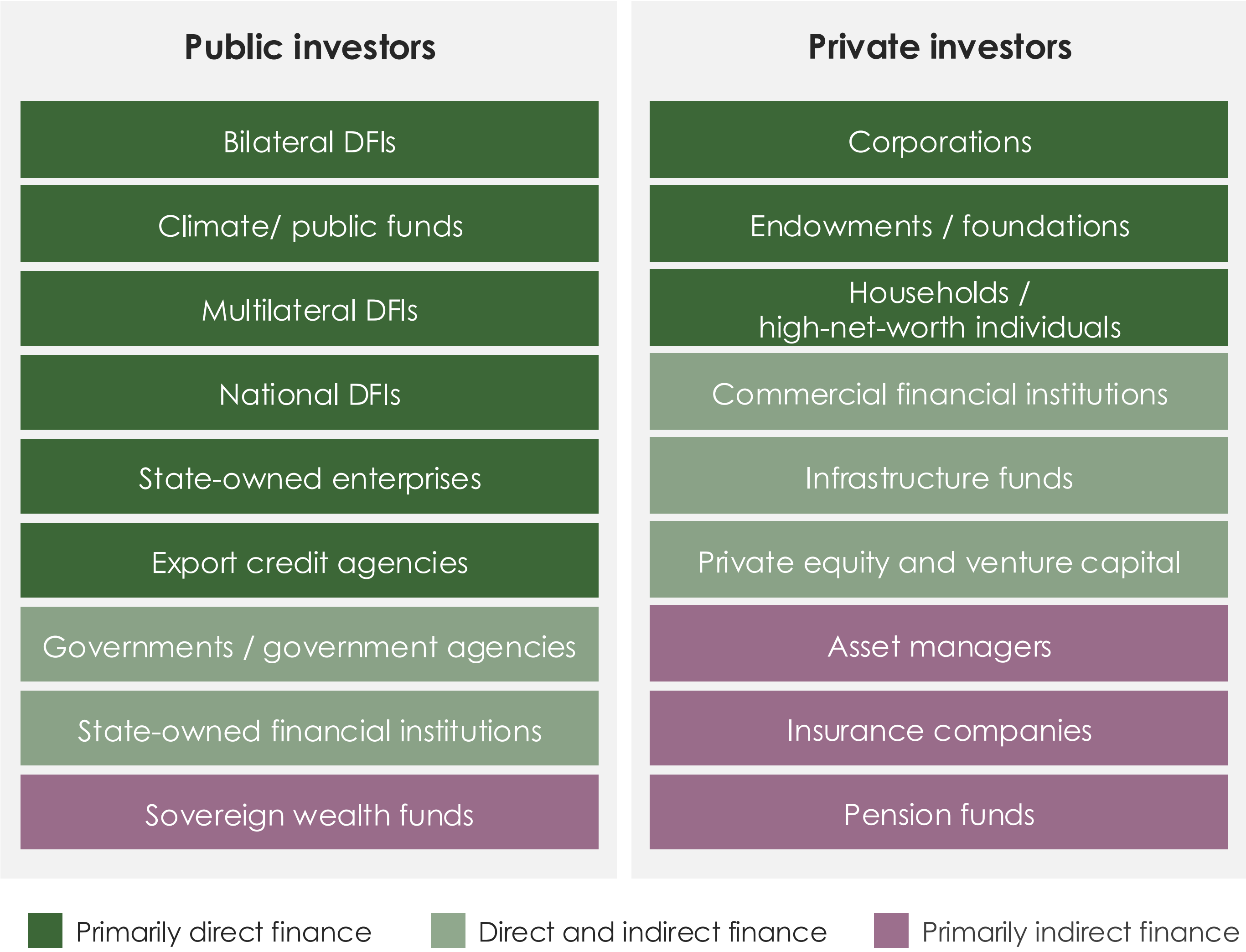
Step 3: Assess investor characteristics and preferences

Depending on their mandates and characteristics, different investors will have distinct investment preferences that affect their suitability to invest in certain regions and sectors.

The figure lists the public and private investors covered in the analysis. As indicated, some investor types (typically referred to as "real-economy actors") tend to invest directly in individual projects and assets providing project-level debt and equity, while others may primarily provide indirect funding e.g., by investing in funds or securities.

As the climate finance needs and gaps used as a starting point for this exercise refer exclusively to real-economy investments, **the role that each investor type can play in filling the financing gaps refers only to their real-economy/direct portion of investments**. Investors who primarily provide indirect finance would be included in the analysis, although only a small portion of their investments would be captured (i.e., their real economy/direct investments).

In parallel to this analysis, CPI is exploring the role of indirect finance in enabling real-economy investment; this aspect may be integrated in future methodology for Climate Finance Roadmaps analyses.



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Step 3: Assess investor characteristics and preferences

This methodology focuses exclusively on real-economy/project-level investments. The key preferences and characteristics that influence the investment decisions of each investor type is assessed via a literature review and data gathered on specific indicators (see Slides 25 and 26), as well as interviews with targeted investors. This assessment is tailored to the specific geographical/sectoral scope of the given Climate Finance Roadmap (see Step 1). The investor preferences and characteristics criteria below were identified through an extensive literature review.

Investor preferences				Investor characteristics			
Matched against investment risks and attributes identified in Step 2				*Used for context to evaluate potential capital shifts in Step 6 and 7*			
Risk tolerance level	Preferred investment horizon	Preferred ticket size	Return requirement	Investor objective(s)	Financial instruments deployed	Regulatory constraints or mandates	Available capital
The level of risk or uncertainty an investor is willing to take on. Specific risks that an investor may be particularly sensitive can weigh more heavily on overall risk tolerance if proper risk-mitigation measures are lacking.	The average amount of time an investor expects to remain invested in a project or company, which depends on the investor's strategy and how long a project takes to return a profit or physically last.	The average amount (in dollars) an investor is willing commit in a single investment at a time, in line with the investor's capacity and strategies.	The percent increase an investor expects from each investment over a specified timeline. This is usually one of the most important indicators for financial investor and may vary depending on the type of capital provided.	The purpose, priorities, and obligations of the investor that guide the institution's investment strategy.	The type of capital/financial instruments the investor can provide e.g., grants, low-cost debt, project-level debt and/or equity, balance-sheet debt and/or equity.	Regulatory constraints or mandates set by the authorities that guide how investors can use capital (e.g., Basel II/III for banks, Solvency II for insurer, IORP II Directive for pension etc.).	The maximum amount of funds that an investor can allocate for investments in the relevant climate sector.

For multi-asset investors—whose preferences and characteristics may vary depending on the specific client—the assessment would seek to take these differences into account and aim to verify the approach with industry experts. In the absence of relevant data, a certain investor type may be excluded, given that they account for a relatively small portion of total direct climate investments.

Step 3: Assess investor characteristics and preferences

Based on an extensive literature review, we identified the following indicators to assess key investor preferences. The table also includes a non-exhaustive list of potential data sources that can be used to analyze and score investor preferences.

		Indicators	Potential data sources
Investor preferences	Risk tolerance level	• Tolerance level for overall risk • Tolerance level for specific risks (i.e., technology, governance, financing, market, and physical climate risks)	• Qualitative assessment of risk tolerance • Existence of mandatory monetary liabilities • Expert consultations
	Preferred investment timeline	• Preference on payback period or investment timeline	• Quantitative analysis based on literature review/common practices • Assessment of preferred investment horizon based on expert consultations
	Preferred ticket size	• Average size of investment	• Quantitative analysis based on literature review/common practices • Assessment of investor typical ticket size based on expert consultations • CPI GLCF baseline data on project size • Assets under management (AUM) could be used as a proxy to estimate expected ticket size when direct data is not available; the assumption is that larger AUM allows for larger ticket sizes to deploy capital efficiently. This should be verified with sector experts.
	Return requirement	• Expected or preferred return on investment	• Quantitative analysis based on literature review/common practices • Assessment of preferred rate of return on investment based on expert consultations

Step 3: Assess investor characteristics and preferences

Similarly, we have identified the following indicators for investor characteristics and a non-exhaustive list of potential data sources to analyze and score them.

		Indicators	Potential data sources
Investor characteristics	Investor objective(s)	• Investor purpose or priorities • Investor obligations	• Assessment of stated objectives in investor statements and reports • Expert consultations
Investor characteristics	Financial instruments deployed	• Most frequent or preferred mechanisms used by investor	• GLCF dataset • Assessment of preferred instruments based on literature review and expert consultations
Investor characteristics	Regulatory constraints or mandates	• Existence of regulatory constraints or mandates	• Assessment of regulators and mandates based on literature review and expert consultations focusing on key regulations such as Basel II/III for the banking sector, Solvency II for insurance companies, IORP II Directive (Institutions for Occupational Retirement Provision) for pension funds' risk management, governance, and ensuring financial stability to protect stakeholders, etc.. This assessment would be done at the country/regional level.
Investor characteristics	Available capital	• Total available capital	• Proposed approach to estimating available capital is detailed in Slide 27 • Literature review and expert consultations

Step 3: Assess investor characteristics and preferences

The **total capital available** for climate investments from each investor type should be estimated for the specific region/subsector. This is calculated as the product of (i) current investment capacity, (ii) projected growth rate, and (iii) the share of capital that could be realistically allocated to climate finance in the region/subsector.

The available capital calculated for each investor type can be used as an ultimate threshold to estimate the future climate finance mix in Step 6 and make adjustments to the estimated future capital mix as needed (see Slide 53).

	Private investors	Public investors
Total investment capacity today	• Different indicators can be used for each investor type: e.g., current AUM for asset managers, or total assets for banks and asset owners such as pension funds.	• Current AUM for state-owned financial institutions, total assets for MDBs and sovereign funds. • Government's green budget.
×		
Growth rate	• Global average GDP growth rate—with the assumption that private capital will grow in line with the economy. • Depending on the region/subsector, other more accurate indicators may be considered (e.g., the growth rates of specific technologies).	• GDP growth rate can be used as baseline. • A multiplier could be applied for countries with high national climate ambitions (e.g., as shown in NDCs) or for investors with strong climate commitments.
×		
Share of capital that could be allocated to the clean technology	This component reflects: o Stewardship mandates on prohibited/priority sectors. o Current exposure to fossil fuel assets, with the assumption that some of this could be reallocated to climate initiatives after an average lock-up period (e.g., of 10-15 years). o Asset allocation strategies, where institutional investors, such as pension funds, typically allocate only a small portion of their funds to project-level investment (as per OECD pension data). This share will be validated through expert interviews with stakeholders.	This component reflects: o Constraints on government budget allocations (e.g., mandatory spending on other sectors and debt distress) to identify potential public funding for clean tech projects. o Current exposure to fossil fuel assets, with the assumption that some of these funds could be redirected to climate initiatives. o The assumption that public funders have greater flexibility in increasing their overall capital. This share will be validated through expert interviews with stakeholders.

Illustrative Example

Step 3: Assess investor characteristics and preferences

The **assessment of investor preferences** is done at the most granular level possible based on the data and information available. For example, if the selected scope for the analysis is Energy Systems in South Asia, the assessment should be done for each investor type (private and public) defined in Slide 23, considering specific investors' preferences for the selected region and sector.

When data/information is available, the assessment of risk tolerance level for each investor is done for each individual risk.

For each investor, the assessment is done through literature review and expert interviews, supplemented by data gathered for specific indicators.

	INVESTORS (Focus on direct investments)	INVESTOR TYPE				
	Investor preferences	#1	#2	# 3	#4	...
Risk tolerance level	Technology	LOW	LOW	MED	MED	...
Risk tolerance level	Governance	MED	MED	HIGH	MED	...
Risk tolerance level	Financing	MED	MED	HIGH	HIGH	...
Risk tolerance level	Physical climate	MED	MED	MED	HIGH	...
Risk tolerance level	Market	MED	HIGH	HIGH	LOW	...
	Preferred investment horizon	MED	LOW	MED	HIGH	...
	Preferred ticket size	MED	LOW	LOW	LOW	...
	Return requirement	HIGH	HIGH	MED	HIGH	...

Note: All figures and matching assessments are illustrative. For the purpose of this document generic "low", "medium", "high" scores are assigned: specific thresholds for each score will be assigned during the analysis. Exact thresholds are likely to vary depending on the sector/subsector considered. For "Preferred investment horizon", "High -> Low" ratings represent "Short -> Long" timeframes. For "Preferred ticket size", "High -> Low" represents "Large -> Small" overall investment amounts.

Illustrative Example

Step 3: Assess investor characteristics and preferences

Similarly, the **assessment of investor characteristics** is done at the most granular level possible based on the data and information available. This assessment is largely independent of the region/sector focus. If or when some characteristics might change based on the scope of the analysis (e.g., investors deploying different instruments across different regions), this should be taken into account.

For each investor, the assessment is done through literature review and expert interviews, supplemented by data gathered for specific indicators.

Information gathered on investor characteristics will be used to refine the matching between investment risks and attributes with investor preferences in Step 6 (see Slides 49-53). For example, knowing that an investor typically only provides market-rate debt, would lead us to exclude it as future provider for markets or technologies that may require equity capital.

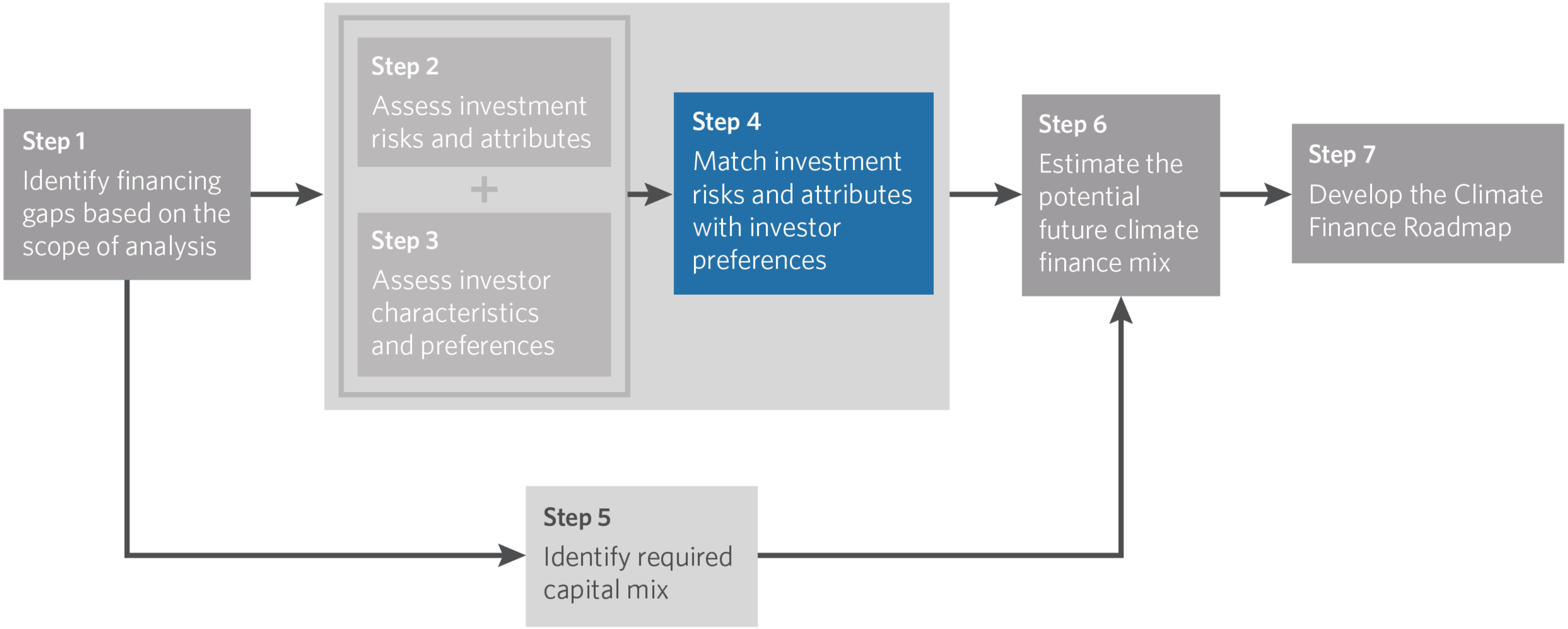
Investor characteristics	INVESTOR TYPE #1	#2	# 3	#4	...
Investor objective(s)	Support developing economies	Further government objectives	Fund charitable activities	High profitability	...
Financial instruments deployed	Low-cost debt Equity Grants	Low-cost debt Equity	Market-rate debt Equity	Market-rate debt	...
Regulatory constraints or mandates	Mandates exist	Mandates exist	N/A	N/A	...
Available capital	$1.1 trillion/year	$800 billion/year	$7 trillion/year	$2.7 trillion/year	...

Note: All information is illustrative

Step 4

Match investment risks and attributes with investor preferences

Step 4: Match investment risks/attributes with investor preferences



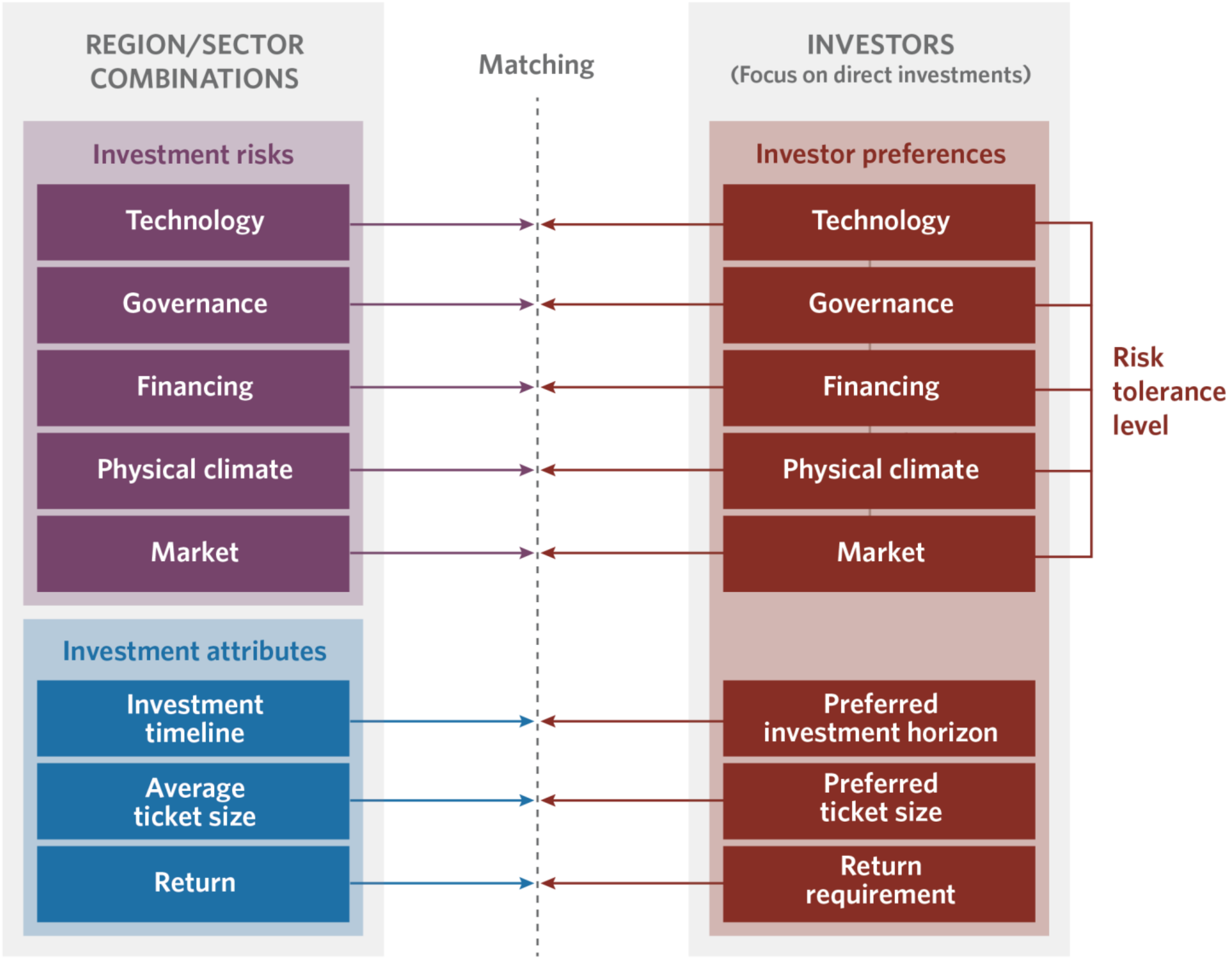
CLIMATE POLICY INITIATIVE

Step 4: Match investment risks/attributes with investor preferences

The next step is to identify the suitability of each investor for each region/subsector combination. This is done by matching scores for investment risks and attributes (as per Step 2), and investor preferences (as per Step 3).

Investor characteristics (see Step 3) are used in Step 6 to refine the role of each investor in the future climate finance mix, as well as in Step 7 to evaluate potential interventions needed in the event that there is no match between investment risk and attributes, and investor preferences.

For this matching exercise, the optimal level of granularity would enable the assessment of investor tolerance for each type of risk. This is important for certain technologies in developing markets, as certain investor types may have a higher tolerance for specific risks. For example, MDBs are likely to have a higher tolerance for governance risk than private investors, but not necessarily for other risks. If data granularity does not allow assessment of tolerance levels for each risk type, each investor type's overall risk tolerance level can be used and matched with overall investment risk.



Step 4: Match investment risks/attributes with investor preferences

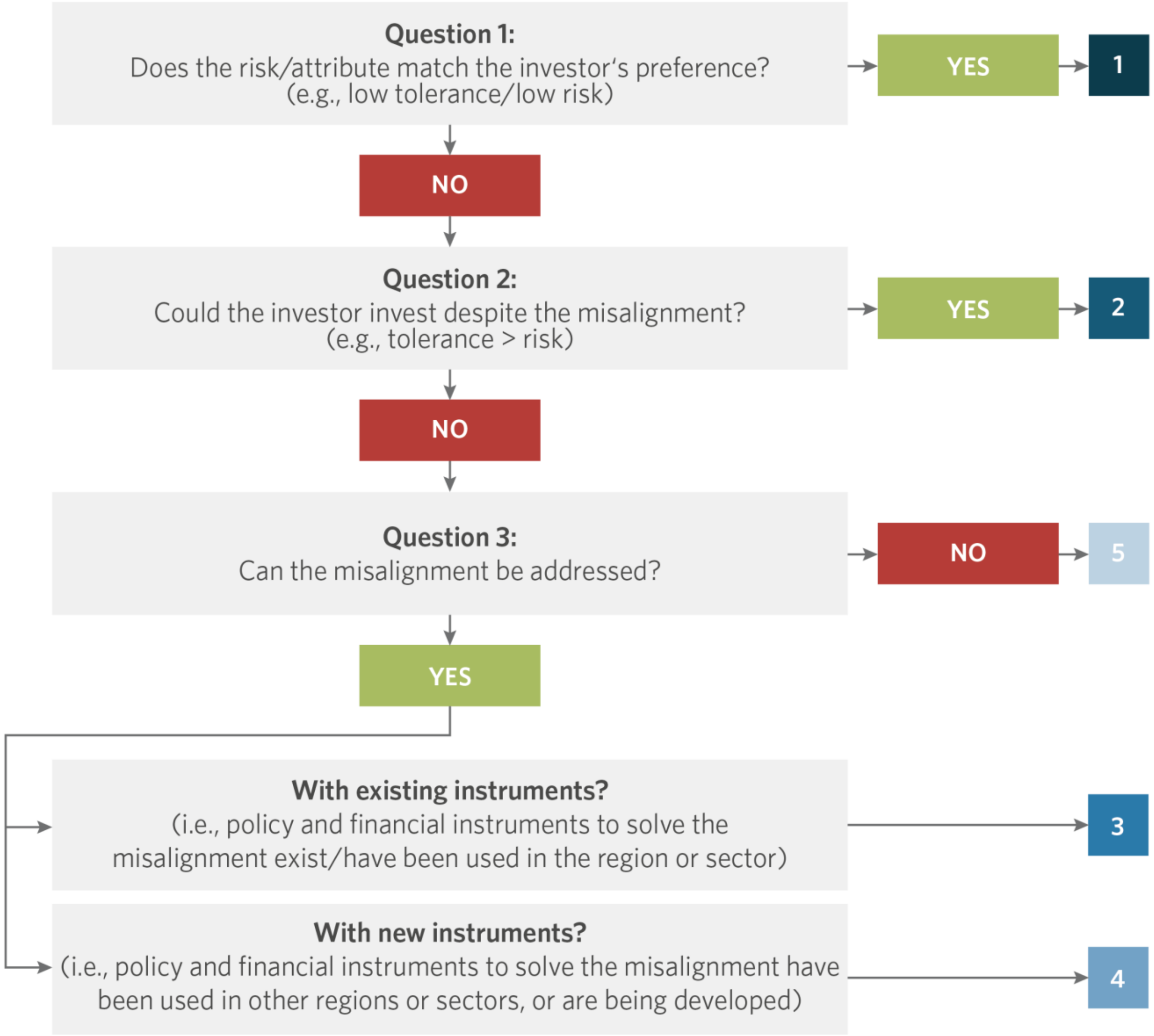
Preference/risk matching

The matching exercise involves assigning scores based on a series of questions designed to assess the suitability of investment risks/attributes against investor preferences.

This matching exercise—conducted for each investment and investor type– results in a score of 1-5 as defined below (see Slide 34 for an example).

SCORING KEY

1	PERFECT MATCH
2	SUBOPTIMAL MATCH
3	MISALIGNED BUT ADDRESSABLE
4	MISALIGNED BUT POTENTIALLY ADDRESSABLE
5	NO MATCH



Illustrative Example

Step 4: Match investment risks/attributes with investor preferences

Matching for investor type #1 and renewables in South Asia

In this example, all investor preferences are a *perfect match* (score of 1), except for market risk, where we observe a *suboptimal match* (score=2). This means that the investor's tolerance level is higher than the assessed market risk. In this case, while this type of investor may still be willing to invest in the region/subsector, there may be other investment opportunities where market risk levels better match its preference.

Investment risks	South Asia - Renewables	Matching	Investor type #1	Investor preferences	
Technology	LOW	1	LOW	Technology	Risk tolerance level
Governance	MED	1	MED	Governance	
Financing	MED	1	MED	Financing	
Physical climate	MED	1	MED	Physical climate	
Market	LOW	2	MED	Market	
Investment attributes					
Investment timeline	MED	1	MED	Preferred investment horizon	
Average ticket size	MED	1	MED	Preferred ticket size	
Return	HIGH	1	HIGH	Return requirement	

Note: All scores are illustrative

SCORING KEY

1	PERFECT MATCH
2	SUBOPTIMAL MATCH
3	MISALIGNED BUT ADDRESSABLE
4	MISALIGNED BUT POTENTIALLY ADDRESSABLE
5	NO MATCH

Illustrative Example

Step 4: Match investment risks/attributes with investor preferences

Matching investment risks and attributes for renewables in South Asia with investor preferences of all investor types

The results of the individual matching exercise we will be summarised in interim matrices—one for each region/subsector combination assigning matching scores (from 1 to 5) for each investor type defined in Slide 23.

The example shows an illustrative interim matrix for renewables in South Asia with four investor types. All scores are illustrative and based on the assessment done in Step 3 (see Slide 28).

	South Asia - Renewables	Investor type #1	Investor type #2	Investor type #3	Investor type #4	Investor preferences
Investment risks						
Technology	LOW	1	1	2	2	Technology
Governance	MED	1	1	2	1	Governance
Financing	MED	1	1	1	3	Financing
Physical climate	MED	1	1	1	5	Physical climate
Market	LOW	2	2	2	2	Market
Investment attributes						
Investment timeline	MED	1	5	1	5	Preferred investment horizon
Average ticket size	MED	1	4	3	3	Preferred ticket size
Return	HIGH	1	1	2	1	Return requirement

Risk tolerance level

Note: All scores are illustrative

Step 4: Match investment risks/attributes with investor preferences

Investor suitability

After the preference/risk matching is completed (see Slide 34), all matching scores are evaluated together to assess the overall suitability of each investor type for the relevant region/subsector. This slide illustrates the conversion of different combinations of preference/risk matching scores to overall investor suitability scores. This exercise should be conducted for each region/subsector combination and investor type (see example in Slide 37).

Where feasible, scoring may be evaluated and adjusted based on qualitative factors and expert consultations.

INVESTOR SUITABILITY SCORE	EXAMPLES OF PREFERENCE/ RISK SCORES
GOOD MATCH **Mostly scores = 1 and no more than two scores = 2** No intervention needed; the investor type is already suited to invest in the region/subsector.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2
SUBOPTIMAL MATCH **More than two scores = 2, remaining scores = 1** No intervention is needed, but due to risk tolerance and preferences, the investor type may invest more efficently in other regions/subsectors.	1 1 1 1 1 2 2 2 1 1 1 2 2 2 2 2
MISALIGNED BUT ADDRESSABLE **At least one score = 3** The investor type is potentially a good match, but targeted measures (based on existing/available instruments) would ne needed to improve investment sustainability.	1 1 1 1 1 2 2 3 1 1 1 2 2 2 3 3
MISALIGNED BUT POTENTIALLY ADDRESSABLE **At least one score = 4** The investor type is potentially a good match, but targeted measures (using new instruments) would be needed to improve investment sustainability.	1 1 1 1 1 2 2 4 1 1 1 2 2 2 3 4
NO MATCH **At least one score = 5** The investor type is not suited to invest in the regional/subsector and misalignments cannot be addressed.	1 1 1 1 1 1 1 5 1 1 1 2 2 3 4 5

Illustrative Example

Step 4: Match investment risks/attributes with investor preferences

Assigning overall investor suitability scores for renewables in South Asia for all Investor types

The figure illustrates the translation of preference/risk matching scores into overall investor suitability scores for the example of renewables in South Asia (as per Slide 35).

	South Asia - Renewables	Investor type #1	Investor type #2	Investor type #3	Investor type #4	Investor preferences
Investment risks						
Technology	LOW	1	1	2	2	Technology
Governance	MED	1	1	2	1	Governance
Financing	MED	1	1	1	3	Financing
Physical climate	MED	1	1	1	5	Physical climate
Market	LOW	2	2	2	2	Market
Investment attributes						
Investment timeline	MED	1	5	1	5	Preferred investment horizon
Average ticket size	MED	1	4	3	3	Preferred ticket size
Return	HIGH	1	1	2	1	Return requirement
Investor suitability scores:		✓	✗	?	✗	

Risk tolerance level

Note: All scores are illustrative

Illustrative Example

Step 4: Match investment risks/attributes with investor preferences

Matching of investment risks/ attributes and investor preferences for energy systems in South Asia

The outcome of the matching exercise in Step 4 will be a final matrix summarizing investors' suitability for each region/subsector combination.

Final investor suitability scores resulting from this exercise should be validated with experts.

REGION/SECTOR COMBINATION: ENERGY SYSTEMS IN SOUTH ASIA

		Renewables	Fossil fuels with CCs	Energy storage	District heating	Low-emission fuels	...
Public sector	Bilateral DFIs	Good match	No match	Misaligned but addressable	Suboptimal match	Good match	...
	Public funds	Suboptimal match	Suboptimal match	Misaligned but addressable	Suboptimal match	Suboptimal match	...
	Multilateral DFIs	Good match	No match	Misaligned but potentially addressable	Suboptimal match	Misaligned but addressable	...
	National DFIs	Suboptimal match	Suboptimal match	Good match	Good match	Misaligned but addressable	...
	SOEs	Suboptimal match	Misaligned but addressable	No match	Suboptimal match	Good match	...
	ECAs	Suboptimal match	No match	Suboptimal match	No match	Good match	...
	Governments	Misaligned but potentially addressable	Misaligned but addressable	Suboptimal match	Good match	Suboptimal match	...
	SOFIs	Suboptimal match	Good match	Misaligned but potentially addressable	Misaligned but addressable	Suboptimal match	...
	SWFs	Suboptimal match	Misaligned but potentially addressable	Suboptimal match	Misaligned but addressable	Good match	...
Private sector	Corporations	Good match	Suboptimal match	Misaligned but potentially addressable	Misaligned but potentially addressable	No match	...
	Foundations	Misaligned but addressable	Good match	Good match	Suboptimal match	Suboptimal match	...
	Households	Suboptimal match	No match	Misaligned but addressable	Misaligned but addressable	Good match	...
	Commercial FIs	Suboptimal match	Good match	Good match	Misaligned but addressable	No match	...
	Asset managers	Good match	Good match	No match	No match	Misaligned but addressable	...
	Infrasctructure funds	Suboptimal match	Suboptimal match	Misaligned but potentially addressable	Misaligned but potentially addressable	No match	...
	Insurances	Suboptimal match	Suboptimal match	Suboptimal match	Misaligned but addressable	No match	...
	Pension funds	Good match	Suboptimal match	No match	No match	Misaligned but addressable	...
	PE and VCs	No match	Misaligned but potentially addressable	Suboptimal match	Misaligned but addressable	Suboptimal match	...

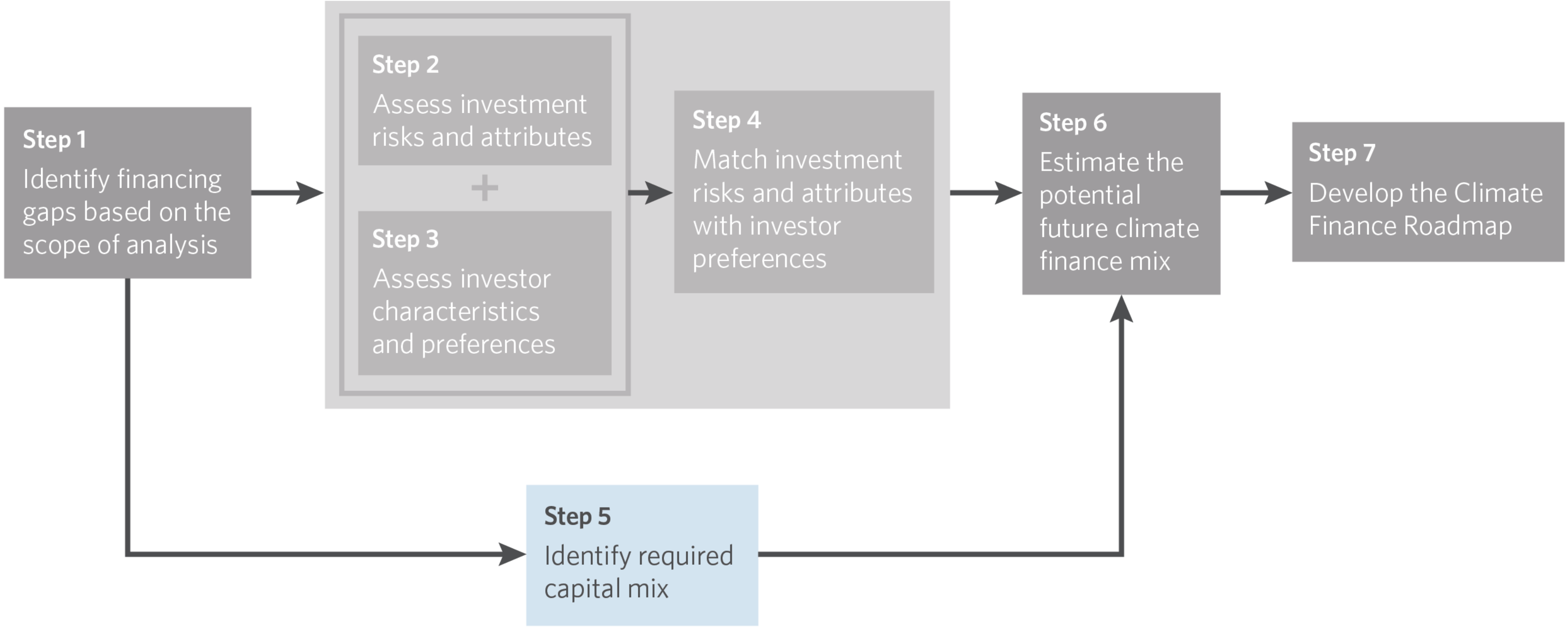
Note: All scores are illustrative

Scoring key: ✓ Good match; ✓ Suboptimal match; ? Misaligned but addressable; ? Misaligned but potentially addressable; × No match

Step 5

Identify required capital mix

Step 5: Identify required capital mix



Step 5: Identify required capital mix

Once the amount of climate finance needed in each region/sector is defined (as per Step 1), we need to understand what type of capital would be required to provide it (e.g., debt vs equity; commercial vs concessional). Estimating the required capital mix helps to narrow down which of the investor types matched in Step 4 (see Slide 39) could realistically invest in each region/subsector combination based on their preferred investment instruments and available capital (to be done in Step 6).

The future climate mix will be a function of:

(i) The future capital structure of each subsector, which will determine the type of instruments required over time and depends on the *maturity of each technology*; and

(ii) The availability of different types of capital in the region, which depends on the *maturity of financial markets*.

The table below shows how these two factors can influence the climate finance mix, and how they can be used to estimate capital structure over time. The existence of policy incentives (for both low-carbon solutions and high-carbon alternatives) and/or mechanisms to mitigate regional and technology risks (e.g., performance or off-taker guarantees) in the market should also be considered when estimating the required future capital mix as they might affect the availability of and/or need for certain types of capital. Similarly, we would consider the potential impact of future interest rate policy changes, which might affect investor decisions around the type of capital they deploy.

	Hypothesis	Indicative data sources
Technology maturity	Technologies typically require and attract different types of financing depending on their stage of maturity and development. For instance, technologies at the early stages of research and development require more concessional finance (e.g., grants), while fully commercial technologies may attract private equity or institutional investors. Therefore, an assessment of both the current and projected technology maturity impacts the projected climate finance mix between private and public finance, and different instruments over time.	• TRL scores (e.g., from NASA or the IEA) • Ranking of the most attractive markets for RE investment (e.g., Climatescope by BNEF, or cumulated deployment of tech and presence of production supply chain • Qualitative assessment of projected development and demand • Expert consultations
Financial market maturity	The future climate finance mix will also depend on the financial structures and maturity of the public and private financial markets in the given region, including the availability and cost of private commercial capital over time. Assessing current and projected growth along these indicators can indicate which actors are likely to play a bigger role in investing in certain areas and which instruments could be deployed over time.	• Financial maturity indexes (e.g., from the IMF, World Bank, and ERDB) • Expert consultations • Case studies

CLIMATE POLICY INITIATIVE

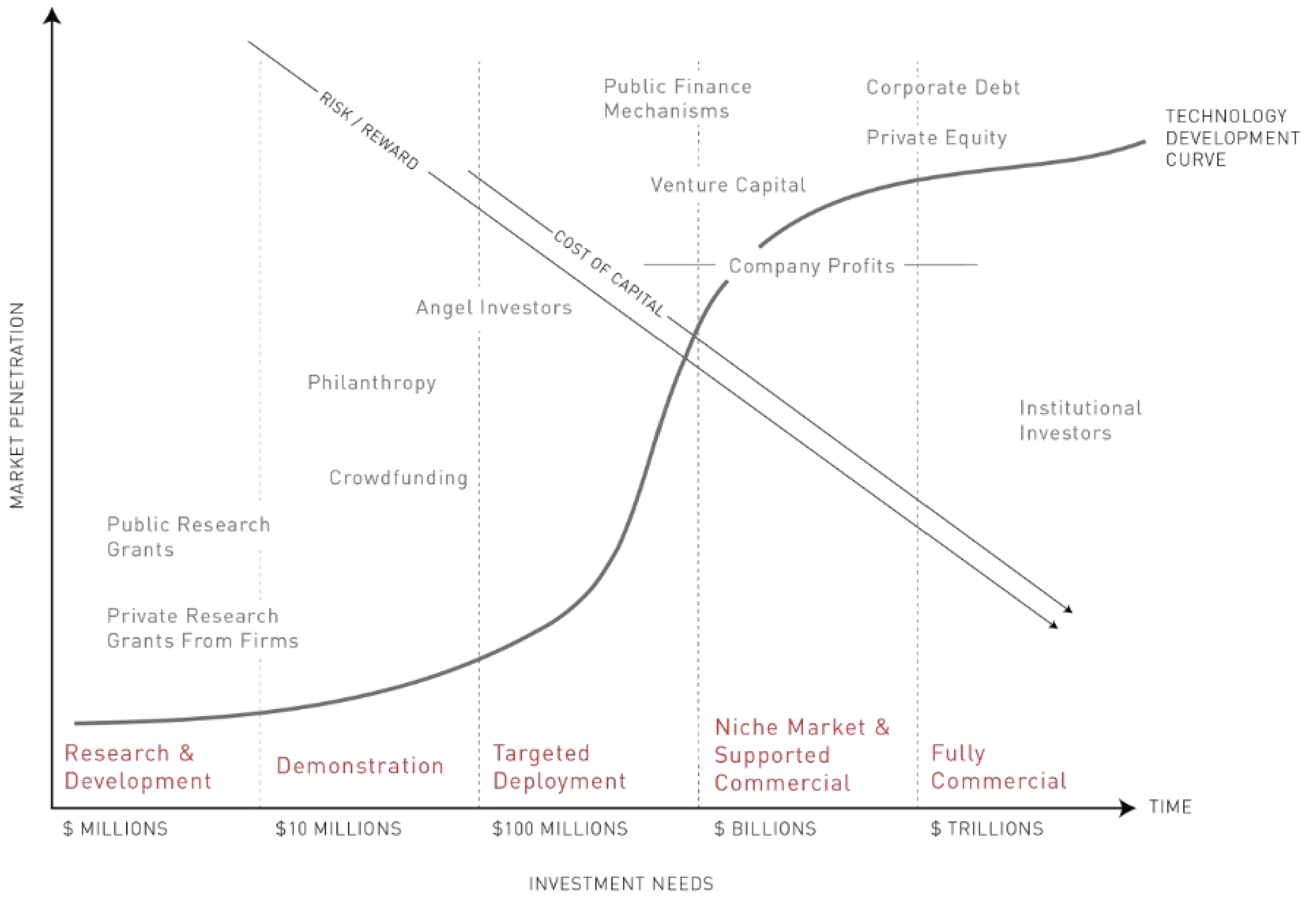
Step 5: Identify required capital mix

While development curves can vary significantly across technologies and sectors, the risk-return profile of a new technology decreases as these mature over time and expand their market penetration.

Based on the specific risk/return profile, each development stage may attract and require different types of investors and/or capital, as shown in the graph.

Different investor types are willing to bear different risks and returns, with some taking on greater risk for higher potential returns at the earlier stages of technology development and others taking on lower risk in exchange for lower returns as the technology matures.

Position of financial actors along the technology development curve



Source: CPI and ClimateWorks (2018), Deep decarbonization by 2050: Rethinking the role of climate finance.

CLIMATE POLICY INITIATIVE

Step 5: Identify required capital mix

Different financial instruments accommodate different risk and return profiles.

Commercial financial instruments usually have traditional (market-rate) risk-return expectations.

In contrast, **concessional instruments** typically accommodate higher risks for the same financial return or may require no return to support early-stage, high-risk, innovative projects.

Risk mitigation instruments such as guarantees and insurance are excluded from the calculations as the focus is on direct (real economy) investments. Capital committed through risk mitigation instruments may never materialize as financial outflows for climate projects, given that their disbursements are contingent upon uncertain future events. Nevertheless, given their importance in addressing specific investment risks and barriers, the Roadmap analysis considers the role that these instruments can play in catalyzing direct investment and close investment gaps (see "key interventions needed in the market" on Slide 56).

Financial instrument taxonomy and characteristics

Type		Characteristics	
Commercial financial instruments	Market-rate (traditional risk-return profile) equity and debt	**Equity** • Higher risk, higher return expectation • Accept lower maturity of both technology and market	**Debt** • Lower risk, lower return expectation • Accept higher maturity of both technology and market
Concessional financial instruments	Low-cost debt	• Accommodate higher risks for the same financial return • Patient capital	
	Grants	• Accept no return or lower return • Accept high risk • Patient capital	

Source: Adjusted from UZH (2022), Blended-Finance_When-To-Use-Each-Instrument_Phase-1-final.pdf (ibf-uzh.ch).

Note: "Equity" covers different types of equity capital, including junior equity. Similarly "debt "covers different types of debt capital, including guaranteed loans.

Step 5: Identify required capital mix

After assessing the current technology and financial market maturity as “low”, “medium”, or “high”, the likelihood of these scores changing over time (e.g., by 2050 or another target year) is considered.

Using 2050 as the target year, the assumption is that current scores of “low” and “medium” will progress by one level by the end of the period (e.g., “low” maturity evolving to “medium” maturity by 2050). A “high” score today will remain “high” in the future.

These scores, in combination with CPI’s GLCF baseline data(where available), are then used to estimate the future capital mix for 2050. The assumption is that less mature markets are likely to follow a similar development trajectory as more mature markets have done in the past.

For instance, for a market currently with “medium” technology and financial market maturity (projected to evolve to “high” in 2050), we assume that the 2050 capital mix will look similar to the current capital mix in a market that currently scores “high” along both variables.

Possible combinations of financial maturity and technical maturity

Maturity score	2024	2050	2024	2050
Financial	HIGH	HIGH	MED	HIGH
Technology	HIGH	HIGH	LOW	MED
Financial	HIGH	HIGH	LOW	MED
Technology	MED	HIGH	LOW	MED
Financial	HIGH	HIGH	LOW	MED
Technology	LOW	MED	MED	HIGH
Financial	MED	HIGH	LOW	MED
Technology	HIGH	HIGH	HIGH	HIGH
Financial	MED	HIGH		
Technology	MED	HIGH		

Illustrative Example

Step 5: Identify required capital mix

Estimating future capital mix for offshore wind power in South Asia

In this illustrative example, offshore wind in South Asia was found to have "medium" technology and financial market maturity, with both projected to reach "high" maturity by 2050.

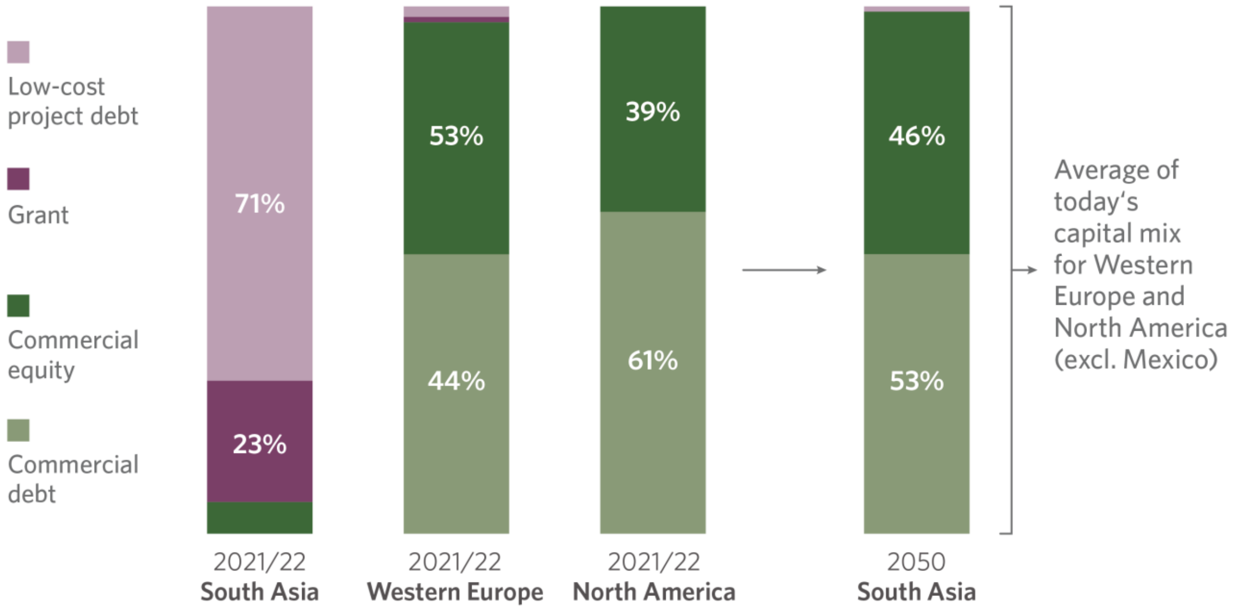
Using CPI's GLCF baseline data, we see that in 2021/22 (the latest years for which data is available), in regions with "high" technology and financial market maturity (i.e., Western Europe and North America) offshore wind technologies were generally financed via a combination of commercial debt (53%) and equity (46%). We therefore assume that this will also be the 2050 capital mix for offshore wind in South Asia.

This final capital mix should then be validated through expert stakeholder interviews and peer review.

Assessment of technology and financial market maturity

	2024			→	2050
	South Asia	Western Europe	North America		South Asia
Financial maturity score	MED	HIGH	HIGH	→	HIGH
Technology maturity score	MED	HIGH	HIGH		HIGH

Assessment of future capital mix



Note: All figures and matching assessments are illustrative

Illustrative Example

Step 5: Identify required capital mix

Breakdown of future capital structure for energy systems in South Asia

The assessment of technology and financial market maturity is done at the most granular level possible, informing estimates for the future capital mix for each region/subsector combination.

The final output under Step 5 is a matrix summarizing the projected breakdown by financial instrument type for each region/subsector under a 2050 scenario.

The final breakdown should be validated by experts through stakeholder interviews and peer review.

Financial maturity score: MEDIUM

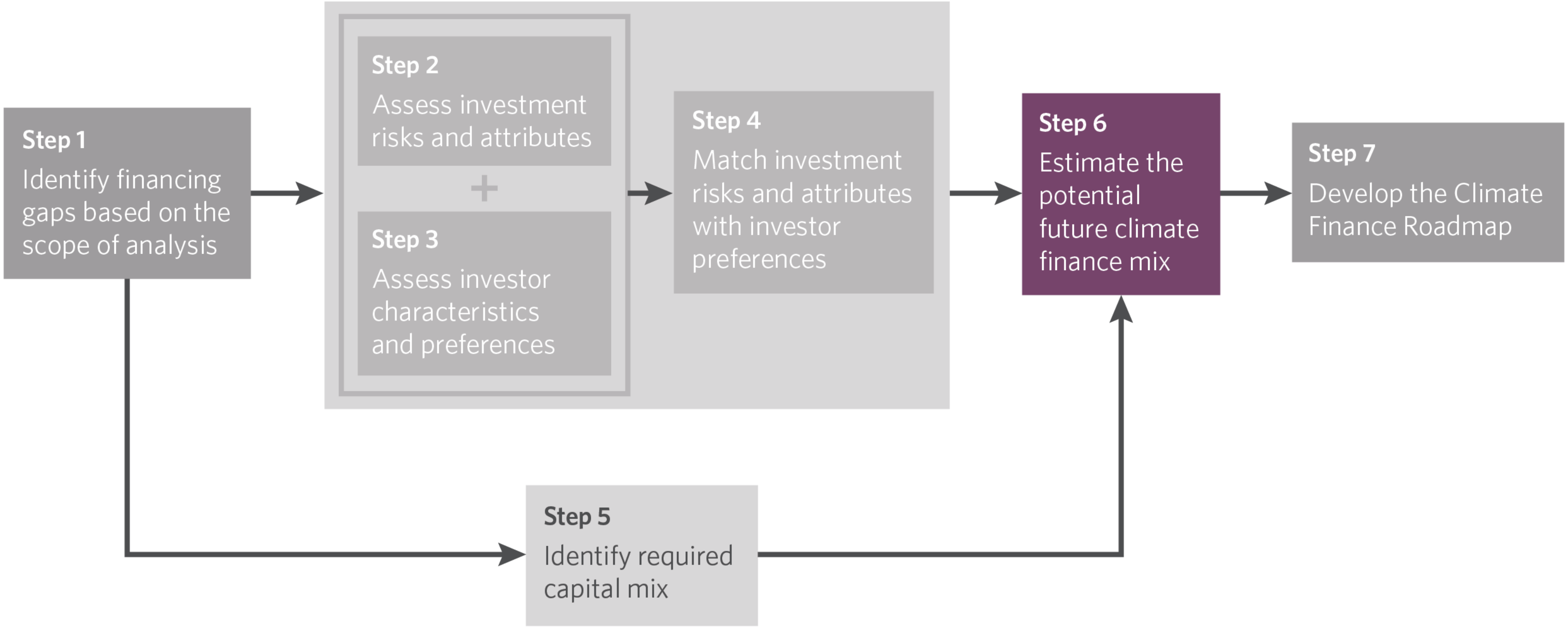
Technology maturity score		Concessional finance		Commercial finance	
		Grant	Low-cost debt	Market-rate debt	Equity
HIGH	South Asia - Renewables	10%	25%	35%	30%
HIGH	South Asia - Fossil fuels with CCs	10%	20%	30%	40%
LOW	South Asia - Energy storage	40%	15%	20%	25%
HIGH	South Asia - District heating	15%	20%	45%	20%
MEDIUM	South Asia - Low-emission fuels	15%	10%	40%	35%

Note: All figures and matching assessments are illustrative

Step 6

Estimate the potential future climate finance mix

Step 6: Estimate the potential future climate finance mix



Step 6: Estimate the potential future climate finance mix

Step 6 determines which investor types could contribute to the future climate finance mix in the analyzed region/subsector.

This is done by combining the required future capital mix (as per Step 5; Slide 46) with the financial instruments deployed by different investors (as per Step 3; Slide 29).

Investors assessed at this stage are those for which investment risks and attributes match their preferences (as per Step 4; Slide 38). **Investor types found to be a *good* or *suboptimal* match are prioritized.** *Misaligned* investors would be considered for the final mix when financing gaps (the difference between needs and available capital) are significant in the region/sector, with the caveat that interventions would be needed to make financing opportunities more attractive.

				Concessional finance		Commercial finance	
				Grants	Low-cost debt	Market-rate debt	Equity
Step 5 (slide 46)		South Asia - Renewables		10%	25%	35%	30%
			Financial instruments deployed				
Step 3 (slide 29)	Public sector	Investor type #1	Low-cost debt Equity Grants	✓	✓	-	✓
	Public sector	Investor type #2	Low-cost debt Equity	-	✓	-	✓
	Private sector	Investor type #3	Market-rate debt Equity	-	-	✓	✓
	Private sector	Investor type #4	Market-rate debt	-	-	✓	-
	Private sector	Investor type ...	...	...	...	...	...

Note: All figures and matching assessments are illustrative

Illustrative Example

Step 6: Estimate the potential future climate finance mix

Renewables in South Asia

In this simplified example, we address only four types of investors: multilateral development finance institutions (DFIs), export credit agencies (ECAs), foundations, and pension funds.

Grants make up 10% of the illustrative future capital mix, provided by multilateral DFIs in the case that no other investor type is found to provide grants in the region.

Low-cost debt (25% of the future capital mix) could come from a mix of multilateral DFIs (*good match*) and ECAs (*suboptimal match*). These two types of public-sector investors are also able to provide equity capital.

In the absence of other suitable private investors, foundations (*misaligned but potentially addressable* match) could provide all **private equity**, but new instruments would be needed to introduce this funding type to the region.

Step 5

	Concessional finance		Commercial finance	
	Grants	Low-cost debt	Market-rate debt	Equity
South Asia - Renewables	10%	25%	35%	30%

Step 3

		Financial instruments deployed	Grants	Low-cost debt	Market-rate debt	Equity
Public sector	Multilateral DFIs ✓ GOOD MATCH	Low-cost debt Equity Grants	✓	✓	-	✓
Public sector	ECAs ✓ SUBOPTIMAL MATCH	Low-cost debt Equity	-	✓	-	✓
Private sector	Foundations ? MISALIGNED BUT POTENTIALLY ADDRESSABLE	Market-rate debt Equity	-	-	✓	✓
Private sector	Pension funds ✓ GOOD MATCH	Market-rate debt	-	-	✓	-

Note: All figures and matching assessments are illustrative

Step 6: Estimate the potential future climate finance mix

The outcome of this exercise is an enhanced matrix matching each region/subsector with the most suitable investor types based on:

- Final investor suitability scores (as per Step 4; Slide 38);
- The financial instruments each investor type is able/willing to deploy (as per Step 3; Slide 29); and
- The type of capital needed for each region/subsector (as per Step 5; Slide 46).

This helps to immediately identify the **investor types that can realistically provide the form of capital needed in each region/subsector**.

		Financial instruments deployed	South Asia – Renewables	South Asia – Fossil fuels with CCS	South Asia – Energy storage	South Asia – District heating	South Asia – Low-emission fuels
Public sector	Investor type #1	Low-cost debt Equity Grants	✓	✓	✓	✓	✓
Public sector	Investor type #2	Low-cost debt Equity	✓	✓	✓	✓	✓
Private sector	Investor type #3	Market-rate debt Equity	✓	✓	✓	✗	✓
Private sector	Investor type #4	Market-rate debt	✓	✓	✓	✗	✓
Private sector	Investor type ...	...					

Note: All figures and matching assessments are illustrative

CLIMATE POLICY INITIATIVE

Illustrative Example

Step 6: Estimate the potential future climate finance mix

Future capital allocation for renewables in South Asia

The following approach can be used quantitatively allocate future capital needed by investor type and financial instrument:

1. Use the required future capital mix (as per Step 5; Slide 45) to find the public vs private split.
2. Allocate capital needs among matched private and public investors using averages (as per the example on this slide).

The allocation for each region/subsector will be subject to further revision based on the total available capital for each investor type (see Slide 53).

		Concessional finance		Commercial finance	
	Needs	Grants	Low-cost debt	Market-rate debt	Equity
South Asia – Renewables	$200bn	10%	25%	35%	30%
		35% = $70bn		65% = $130bn	

Example of allocation of needs

Concessional finance:

- **Grants:**
  Investor type #2, provides:
  70*10% / 35% = $20bn
- **Low-cost debt:**
  2 investors (type #1 and #2), each provides:
  70*25% / 35% / 2 = $25bn

Commercial finance:

- **Market-rate debt:**
  Investor types #3 and #4, variously provide:
  130*35% / 65% / 2 = $35bn
- **Equity:**
  Investor types #1 and #3, variously provide:
  130*30% / 65% / 2 = $30bn

			South Asia – Renewables
	Climate finance needs ($ bn/year)		200
Public sector	Investor type #1	Low-cost debt Equity Grants	25 30 20
Public sector	Investor type #2	Low-cost debt Equity	25 5
Private sector	Investor type #3	Market-rate debt Equity	35 30
Private sector	Investor type #4	Market-rate debt	35
Private sector	Investor type ...	...	...

Note: All numbers are illustrative

CLIMATE POLICY INITIATIVE

Illustrative Example

Step 6: Estimate the potential future climate finance mix

Future capital allocation for energy systems in South Asia

After quantitatively allocating capital for each region/subsector individually, the total allocation for each investor (see “Total” column) can be aggregated and compared with the total available capital for each investor. Slide 27 describes how available capital can be calculated for each investor.

The calculated gap between allocated capital and available capital serves as the threshold to test the feasibility of allocation.

If there is a capital gap, adjustments may be made where possible. If adjustments are not realistic, recommendations (e.g., for policy interventions) can be made to mobilize additional capital to close the gap.

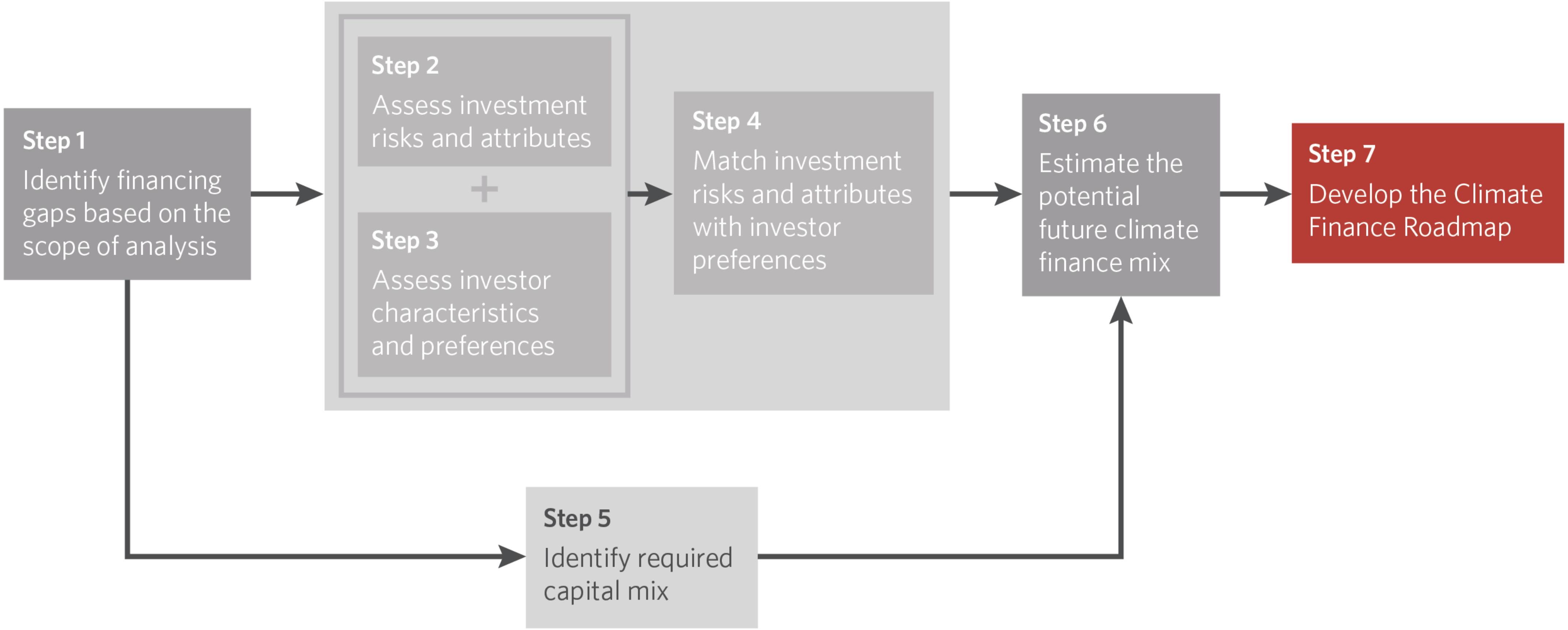
	Climate finance needs ($ bn/year)		South Asia – Renewables	South Asia – Fossil fuels with CCS	South Asia – Energy storage	South Asia – District heating	South Asia – Low-emission fuels	Total	Available capital (Calculated in Step 3 (Slide 27))	Gap
Public sector	Investor type #1	Low-cost debt Equity Grants	25 5 20	50 45 35	125 60 80	110 30 35	80 55 45	800	1,000	200
Public sector	Investor type #2	Low-cost debt Equity	25 5	15 10	35 20	65 25	55 30	245	200	-45
Private sector	Investor type #3	Market-rate debt Equity	35 50	...	...	...	...	...	...	...
Private sector	Investor type #4	Market-rate debt	35	...	...	...	...	...	...	...
Private sector	Investor type ...	...	...	...	...	...	...	...	...	...

Note: All numbers are illustrative

Step 7

Develop the Climate Finance Roadmap

Step 7: Develop the Climate Finance Roadmap



CLIMATE POLICY INITIATIVE

Step 7: Develop the Climate Finance Roadmap

The final Climate Finance Roadmap analysis aims to contextualize the results of the analysis of Steps 2-6 to provide recommendations for capital allocators and policymakers on key actions needed to close the climate investment gaps in the target region/sector.

This analysis can identify...	... and answer various questions such as:
Investors already playing a significant role in the region/sector that will need to increase their financing	• Is the additional capital required within the investment capacity of the investor group? • How much finance is currently flowing to harmful activities; and can some of the additional climate finance required be sourced by reallocating such funding (e.g., that going to fossil fuels)? • Are there any restrictions that would need to be lifted (e.g., limitations around portfolio exposure to certain assets/sectors for specific investors)?
Investors who are currently providing little to no capital in the region/sector but have the potential to play a much bigger role	• Are there any barriers/risks that need to be addressed? • Are there any policies or regulations missing? • Are there any financial instruments or structures that could help address any mismatches?
Key interventions needed in the market	• What key policies and regulations need to be introduced in the market? • What key financial instruments (e.g., risk mitigation instruments) and/or structures already used in the region/sector need to be scaled up? • What new financial instruments (e.g., risk mitigation instruments) and/or structures need to be introduced or developed in the region/sector?

While the exact research questions depend on the scope and audience of each Climate Finance Roadmap, Slides 57-59 provide some examples of analyses that would be possible through this work.

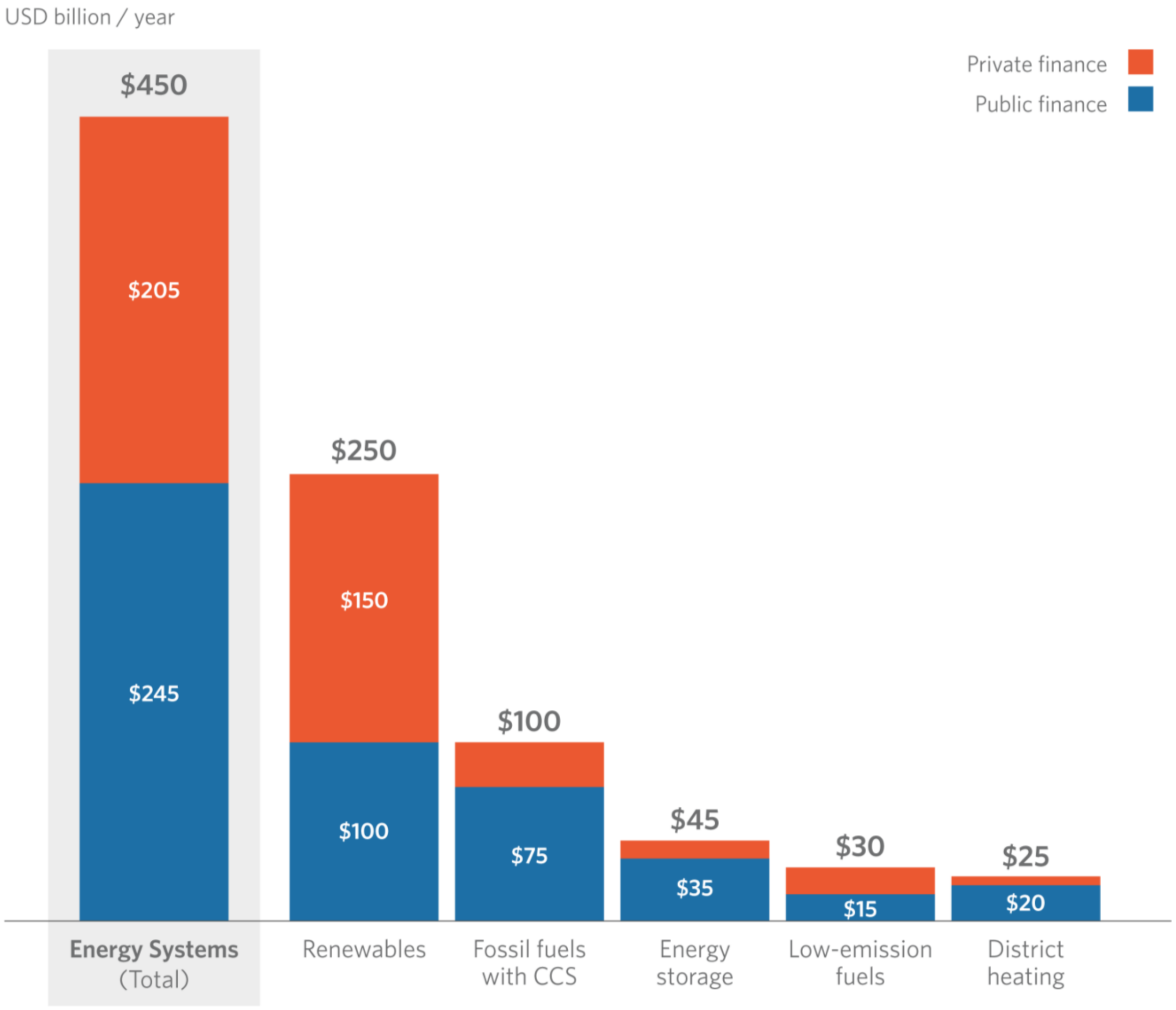
Illustrative Example

Step 7: Develop the Climate Finance Roadmap

Estimating future needs by public/private investor type for energy systems in South Asia

A Climate Finance Roadmap analysis can help to respond to questions such as:

- How much finance could come from private vs public investors in each (sub)sector and region?
- Which (sub)sectors should public investors focus on to ensure effective use of public finance and avoid crowding out of private capital?



Note: All numbers all illustrative

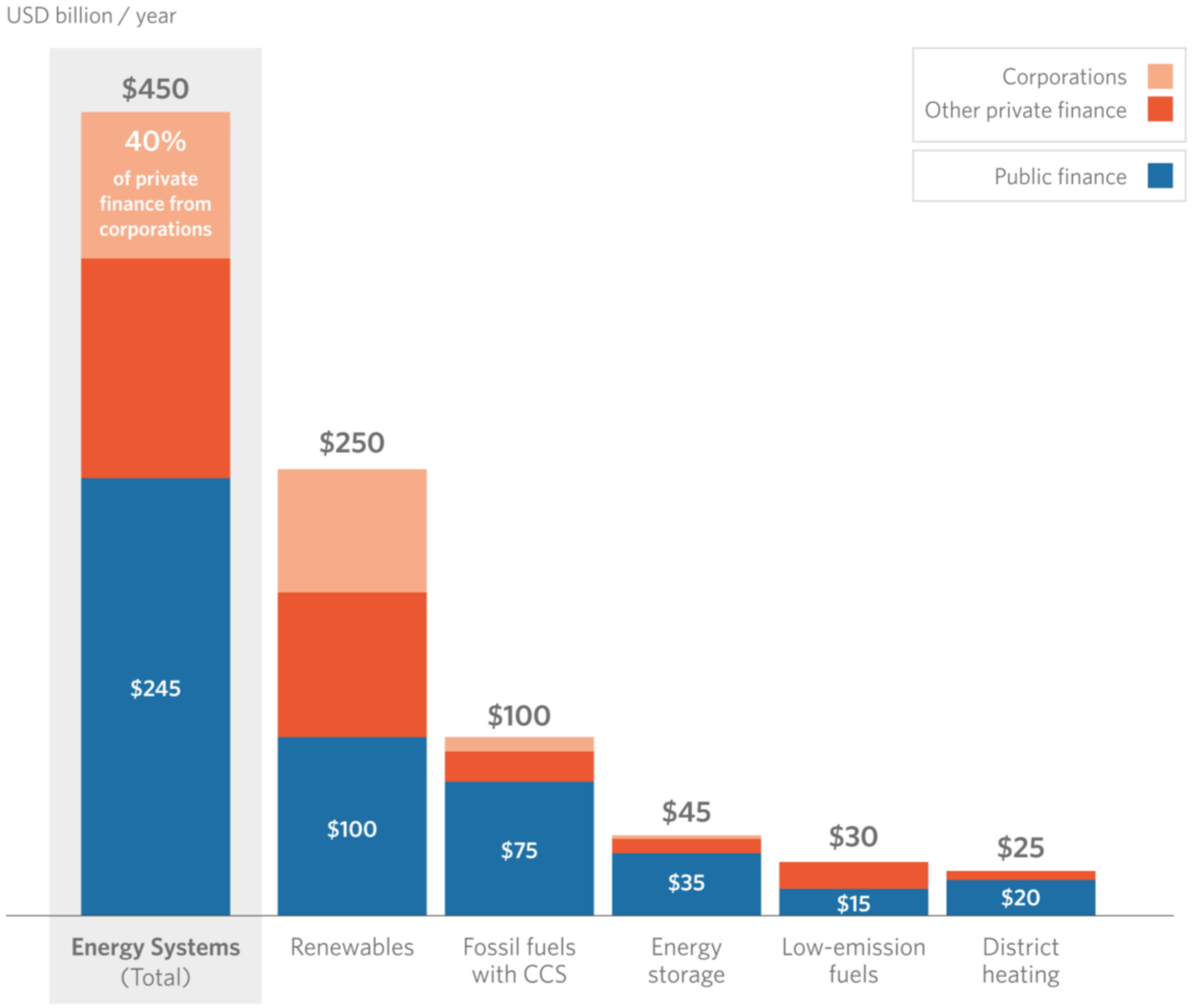
Illustrative Example

Step 7: Develop the Climate Finance Roadmap

Estimating future needs by type of investor for energy systems in South Asia

A Climate Finance Roadmap analysis can help to respond to questions such as:

- What role can different investors play in different sectors/subsectors?
- What are some key climate investment opportunities for each investor type (e.g., corporations) based on their preferences and characteristics?
- Are current investments made by a specific investor type (e.g., corporations) in line with their potential for 2030/2050?



Note: All numbers all illustrative

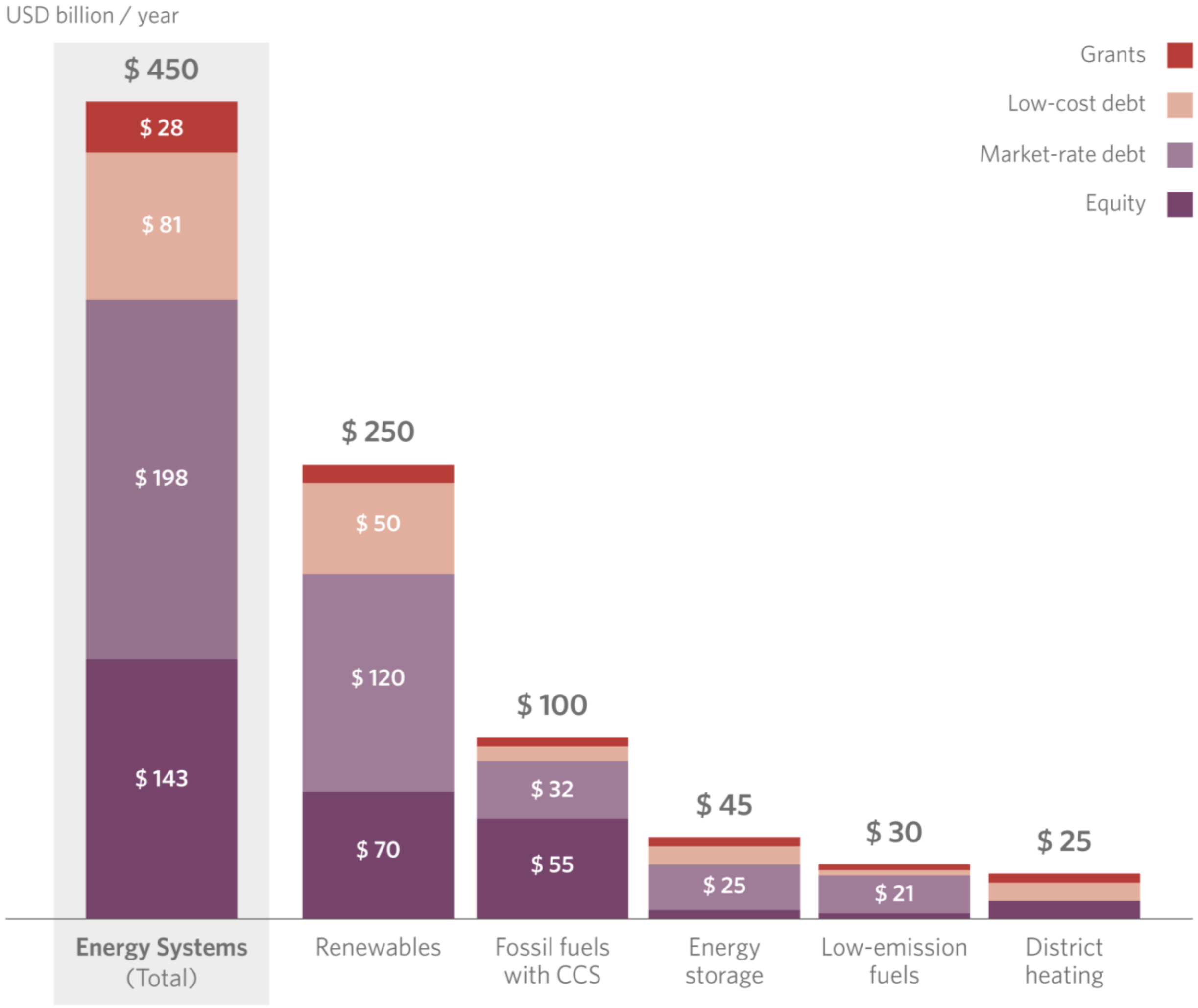
Illustrative Example

Step 7: Develop the Climate Finance Roadmap

Estimating the breakdown of future climate finance by type of instrument for energy systems in South Asia

A Climate Finance Roadmap analysis can help to respond to questions such as:

- How is the sector going to be financed in the future?
- What is the role of different types of capital (e.g., equity), and which investors are best placed to provide these?
- What role could concessional finance play in different (sub)sectors?



Note: All numbers all illustrative

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