

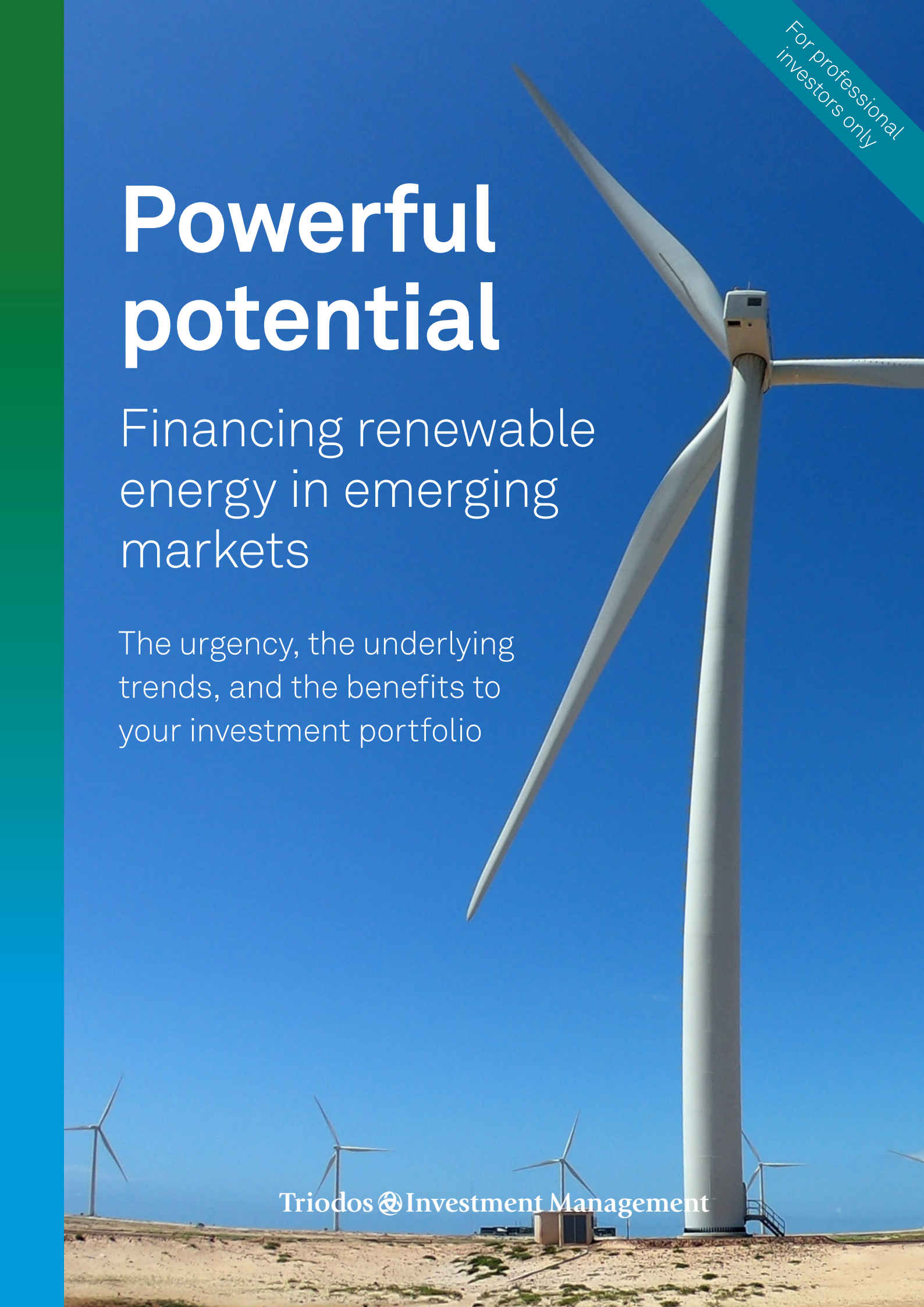
For professional
investors only

Powerful potential

Financing renewable
energy in emerging
markets

The urgency, the underlying
trends, and the benefits to
your investment portfolio

Triodos @ Investment Management



Achieving triple impact

Foreword by Jacco Minnaar



Energy: our lives and economies totally depend on it. We need it to turn on the lights, to keep food in the fridge and to charge our computers and mobile phones. We also need it to keep our schools, hospitals and factories going.

Like air and water, it is a necessity of life that many of us take for granted. We shouldn't. When looking at energy needs, we face a dual challenge. First, we must deal with an exponentially increasing demand for energy, especially in emerging markets. However, most of the less economically developed countries have weak energy systems which currently leave around 800 million people worldwide without access to energy.

At the same time, we also need to counter climate change by transforming our fossil-fuel based economies into systems based on clean, renewable sources of energy.

Now, more than ever, we need to build momentum to address these challenges. As an impact investor, Triodos Investment Management is committed to advancing the energy transition and improving access to energy in emerging countries. In doing so, we achieve triple impact by tackling climate change, supporting socio-economic development and improving access to what is generally considered to be a basic human right, while at the same time offering robust returns to investors.

This paper sheds light on the urgency and underlying trends of financing renewable energy in emerging markets. Moreover, by sharing our investment approach and solutions we inspire and invite financial players to explore how investing in this sector can fit your investment portfolio.

Jacco Minnaar,
Chair of the Board of Triodos Investment Management

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Executive summary

Financing renewable energy in emerging markets

The urgency, the underlying trends, and the benefits to your investment portfolio

Emerging markets and developing countries are facing a dual challenge. On the one hand, they are particularly vulnerable to climate change, lacking the financial power to prevent or adequately respond to the impacts of climate change.

On the other hand, a dependable and affordable energy supply is crucial to further socio-economic development. Many countries have underdeveloped energy systems that can scarcely cope with today's demand, let alone with increased demand in the future. Close to a billion people worldwide have no access to energy at all, especially in sub-Saharan Africa. At the same time, the population of emerging economies is expected to increase by a further 30% (around 1.8 billion people) by 2050¹.

Emerging markets are an increasingly important factor on the global energy market. Between 2019 and 2030 it is expected that the strongest growth in power demand will come from non-OECD countries, due to population growth, economic development and current electricity deficit.

Switching to renewable energy sources enables countries to strengthen their energy security and achieve greater independence by harnessing the vast local renewable energy sources that are available. Democratisation of energy through decentralisation of production and distribution is a powerful element in the energy transition. Energy is produced where it is consumed, allowing users such as companies and local communities to gain direct access, thus diminishing their dependence on an unreliable grid or the government and fostering their social-economic development.

Technological innovation and cost reductions have contributed to a faster growth in renewables than any other energy source in recent years. Along with innovative business and financing models, this has created momentum to boost clean, scalable energy solutions in emerging markets, further stimulated by the increasing demand for energy.

These trends build a strong case for investing in renewable energy in emerging countries, from the triple perspective of impact, risk and return. At Triodos Investment Management (Triodos IM), we are committed to contribute to the global sustainable energy transition. We build on our solid 25 year track record of renewable energy investments, our in-depth sector knowledge and a vast network of like-minded partners.

Technological innovation and cost reductions have contributed to a faster growth in renewables than any other energy source.

1 The energy challenge

Fossil fuels are a direct cause of climate change

Climate change is a fact of life. Around the world we are facing ever greater temperature extremes. Hot spells and heatwaves are hotter and more frequent. The record-breaking heatwave in the Siberian Arctic between January and June 2020 saw temperatures of more than 5°C above average in the far north of Russia. This caused permafrost to melt, buildings to collapse, and sparked an unusually early and intense forest fire season².

Rising sea levels, heavier rainfall and more frequent and intense droughts are among the effects of climate change. In turn, these effects lead to desertification, land degradation, a scarcity of clean water, loss of biodiversity, acidification of oceans, declining food security, and more inequality – to name but a few. It is widely acknowledged that if we do not counter global warming, the economic, environmental and social damage will be enormous.

Emerging markets are particularly vulnerable to climate change³. They are often limited in their ability to prevent and respond to the impacts of climate change and lack the financial strength to deal with the consequences. Climate change may hamper further development or even reverse the significant gains made in these countries. In short, climate change intensifies the effects of population growth, poverty, and rapid urbanisation⁴.

In the 2015 Paris Climate Agreement, the world community agreed to take action to limit global temperature rise preferably to 1.5°C. With more than 70% of greenhouse gas emissions attributable to the production and consumption of fossil fuels⁵, the energy sector plays a key role in achieving this goal. Keeping global warming limited to 1.5°C is only possible through a comprehensive worldwide transition from a fossil fuel-based economy to one based on renewable energy.

Energy at the heart of social-economic development

A dependable and affordable energy supply is crucial to socio-economic development and key to achieving many of the Sustainable Development Goals. Access to modern energy technology can make the difference between poverty and prosperity. If we do not address social and economic issues, we will not be able to solve the climate change problem. Yet, all social and economic development will be futile if we do not address this major challenge.

A reliable supply of energy will enable hospitals and health facilities to treat patients, schools to prepare children for the digital economy, communities to pump water, people to gain access to information and businesses to increase their productivity.

Globally, close to one billion people lack sufficient access to electricity, and millions suffer from frequent power outages, mainly in developing countries. And almost three billion people have no access to clean cooking facilities, relying on dirty fuels, such as charcoal, coal and animal waste⁶.

Lack of access to modern energy technology limits income generation, blunts efforts to escape poverty, affects the health of women and children and contributes to deforestation and climate change.

A dependable and affordable energy supply is crucial to socio-economic development.

Our impact objectives

The goal of Triodos IM's Emerging Markets Renewable Energy strategy is to stimulate the transition from the current fossil-based energy system to one based on renewable energy, in an economically sustainable and inclusive way.

As an impact investor, we aim to play a catalysing role to unlock new funding for greening emerging economies, taking the view that financing utility scale projects is equally important as financing access-to-energy projects for individuals. This is in line with Triodos IM's vision on energy and climate, which emphasises that financial institutions must take the leading role in addressing the climate emergency and enabling the necessary energy transition.





Impact framework

The interconnectedness of energy and social-economic development is captured in the impact management framework of our Renewable Energy in Emerging Markets strategy. Aligning our impact objectives with the UN Sustainable Development Goals (SDGs) allows us to efficiently communicate about the impact we make with our investments.

Officially known as 'Transforming our world: the 2030 Agenda for Sustainable Development', the SDGs were established in September 2015 and signed by 193

countries to define worldwide sustainable development priorities, set to be achieved by 2030. The 17 goals and 169 sub-goals are interlinked and equally important and call for close and active cooperation between all stakeholders. The SDGs offer a framework that allows companies and governments to demonstrate how they help to advance sustainable development, by minimising negative impact and by maximising positive impact on planet and society.

The table below outlines the impact objectives, activities and monitoring methods to ensure effective management and measurement of the impact of our Renewable Energy in Emerging Markets strategy. This is essential to understand whether the strategy is achieving the impact it seeks to deliver. The framework additionally allows investors to translate their impact intentions into tangible results and track their progress.

Impact goals	Impact objectives	Activities	Monitoring
 7 AFFORDABLE AND CLEAN ENERGY Clean and affordable energy and Energy Democracy (SDG 7)	Improve access to reliable (secure power supply) and affordable energy for all. Support countries, communities and commercial clients to be self-sufficient by producing energy where it's consumed	<ul style="list-style-type: none"> • Utility scale / grid connected investments • Captive Power / C&I • Off-grid systems investments 	# production converted into households # of commercial clients # new households connected
 8 DECENT WORK AND ECONOMIC GROWTH Stakeholder Engagement (SDG 8)	Projects are executed in close cooperation with local communities and promote economic opportunities within the area of influence of the project.	Invest in projects which have a positive impact on the local community (e.g. creating jobs, good employment terms and safe health & education facilities).	# construction jobs # of new direct jobs # of full-time-equivalent female employees. Compliance with IFC PS
 13 CLIMATE ACTION Climate action (SDG 13)	Generate clean energy and increase total share of renewable energy in the energy mix in emerging markets, thereby reducing carbon missions.	<ul style="list-style-type: none"> • Utility scale / grid connected investments • Captive Power / C&I • Off-grid systems investments 	# tonnes of CO ₂ emissions avoided # MW capacity # MWh production % electricity capacity added to the grid
 17 PARTNERSHIPS FOR THE GOALS Mobilising private sector investments for renewable energy projects (SDG 17)	Catalyse private sector funding for renewable energy projects in emerging markets by (co-) creating bankable structures and setting examples.	<ul style="list-style-type: none"> • Participate in syndicated A/B loan programs • Direct loans (deals with like-minded investors) • Equity investment in energy transition funds and financial platforms 	# of countries # of investments (and amount in USD) mobilized for energy projects # of direct investments # of A/B loans # Equity investments

* In calculation of CO₂ emissions avoided, production and capacity we use Platform Carbon Accounting Financials methodology.

In our investment portfolio

Decentralised generation of clean energy – Run-of-the river hydropower in Nicaragua

Nicaragua has made huge progress in improving its energy supply. The electrification rate of the country has increased from less than 50% in 2002 to around 95% in 2018. Compared to other countries in the region, however, this is still relatively low. Especially in remote, rural areas where sometimes less than 40% of people have access to electricity. The country is committed to further improve its energy system by increasing the share of renewable energy in the energy mix. By 2030, renewables should represent 73% of total capacity installed.

In this dual ambition, private initiatives play an important role. One such initiative is the San Martín hydroelectric plant. This is a typical small-scale, 6 MW run-of-the-river hydro project with a dam of around 18 meters high to capture water in a small lake. While maintaining an ecological flow in the original riverbed, water is led through a buried 'penstock' (steel pipe) to the turbine house three kilometres further downstream (and 82 meters lower), where it passes through the turbines and back to the riverbed. The electricity generated is around 26 GWh per year. This is equivalent to the consumption of around 43,000 households, based on a monthly average use of 600 KWh. The electricity is delivered to the grid through transmission lines that feed into the substation of the distribution company.

Generating clean energy, the hydroelectric plant contributes to countering climate change by saving up to 20,000 tons of CO₂ emissions per year. The energy it produces is a direct substitution for imported heavy fuel which is utilised in outdated plants; the project is the equivalent of 2,000 tonnes of oil-equivalent per annum. The project also increases the reliability of energy supply by adding decentralised generation capacity to the system, facilitating distribution expansion in the poor and remote area where the project is located.

The San Martín hydroelectric plant became operational in July 2019. Triodos Groenfonds and Belgian development bank Bio have financed the project. Triodos Groenfonds has provided a EUR 5 million B loan.



Interview

Fund managers Angeles Toledo Rodriguez and Greig Blackie share their insights



Financing renewable energy projects in emerging markets requires expertise, experience and a strong network. At Triodos Investment Management we have all three, developed over decades investing in many different projects.

We generate a triple impact effect with each investment, which stimulates social and economic development, whilst also having a positive impact on the climate by contributing to a sustainable energy transition.

Thorough risk assessment

“Investing comes with risks. Systemic risks, either economic or political, are inherent in investing in emerging markets. The environmental and social risks also need careful assessment, especially those of utility-scale projects”, explains Toledo. “Possible negative impacts must be thoroughly examined and always compensated, for example by replanting trees or financially and socially supporting the relocation of people, or by making sure that communities directly benefit from the project.”

“For us, the environmental and social risk assessment is vitally important. Creating a positive impact for local communities requires more than a quick scan of the risk – in fact we go the extra mile with detailed onsite environmental and social due diligence”, adds Blackie. “In addition to applying strict ESG criteria, we aim to achieve this positive impact by simultaneously improving the access to affordable energy and by identifying potential development opportunities, which bring social and economic benefits to the local communities. We typically do this together with the developer or owner of the projects.”

We know what we are doing

“It is crucial to build and retain knowledge of the mechanics of renewable energy markets in emerging countries - for example understanding fall-back scenarios or insurance conditions if a client is unable to meet their repayments. This is enhanced by having a strong network of trusted partners”, continues Toledo. “This is not something you can build up overnight. We have a track record of more than 20 years financing projects in emerging countries and over 30 years financing renewable energy projects. This combined knowledge is firmly anchored in our funds and in every transaction we do.”

“As we usually enter a contract for at least 15 years, we will agree on a set price with the off taker of the energy. This is usually the national electricity company, owned or supported by the government”, Toledo remarks. “Through working with a network of reputable partners, we enjoy strong structures and negotiation power should it be needed at government level, for example some of the institutions benefit from a preferred creditor status, which also benefits us when cooperating with them. To further mitigate risks, we always hedge our positions in local currencies back to hard currencies. As a result, we are able to offer a well-balanced portfolio across technologies, financial instruments and geographies results in an acceptable risk profile and competitive risk adjusted return for investors.”

Set the example

“Most importantly, we must lead by example. It’s one thing to talk about the urgency for change and the opportunities that brings, however, it’s crucial that we also take action”, concludes Blackie. “Nearly 40 years ago, in the early 80s, we financed the first wind turbines in the Netherlands, and today we are still a pioneer in the energy transition! It is now time to further increase our impact through financing the sustainable energy transition in emerging markets and inspire other private investors to join us, ultimately unlocking even more funding.”

For us, both the environmental and social risk assessment is extremely important.

2 Financing renewable energy in emerging markets

Energy trends, with a focus on emerging markets

The growing world population leads to a higher demand for energy⁷ in the future, as does higher global income. Higher household income links to increased energy consumption, such as energy intensive diets, housing and transport. More prosperous countries and economies will have more energy intensive needs and push up the demand for energy.

Emerging markets are an increasingly important factor on the global energy market. It is expected that between 2019 and 2030 the strongest growth in power demand will come from non-OECD countries, due to population growth⁸ (over one billion people population growth in China, India and especially Africa by 2040), economic development and current electricity deficit.

Figure 1 shows the expected growth in power demand in selected countries/regions⁹.

The world has made striking progress regarding access to electricity in the last 10 years, far more than in previous decades. During this period, the number of people without access to electricity fell from about 1.2 billion to 789 million¹⁰. Although this is good

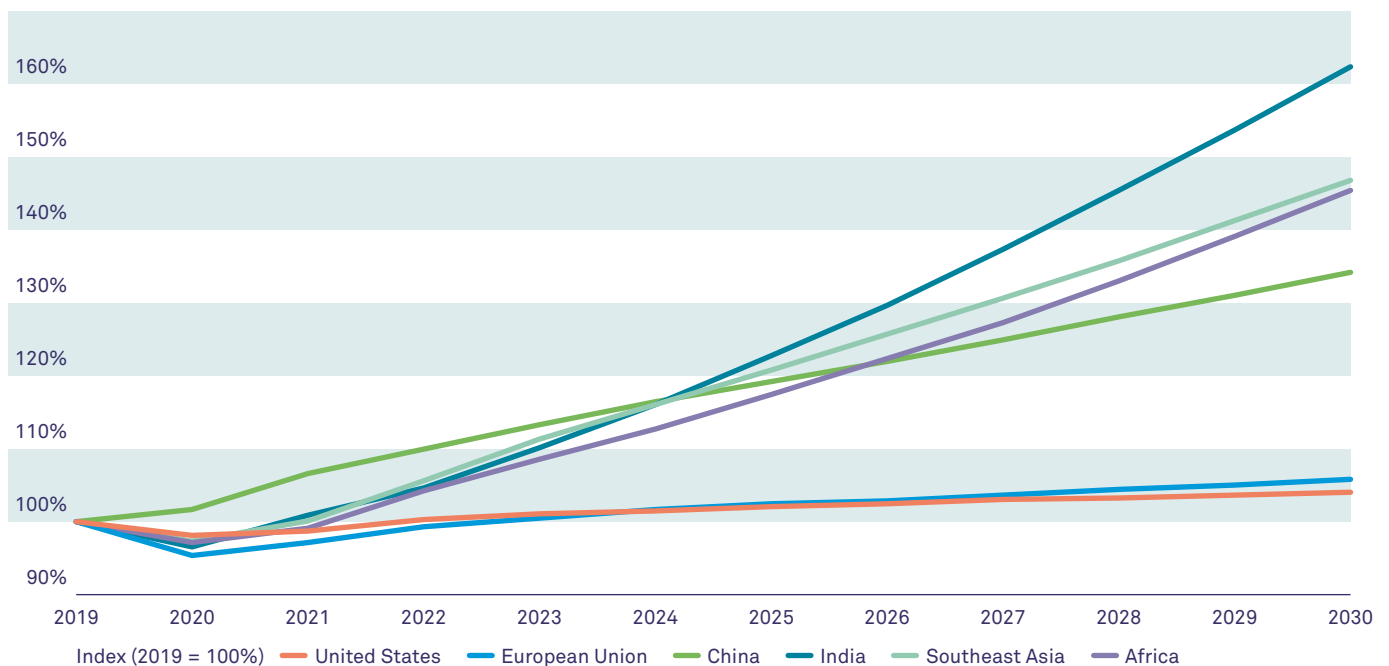
progress, it still means that one in ten people still have no access to electricity.

The world's access deficit is increasingly concentrated in sub-Saharan Africa, where 580 million people lacked access to electricity in 2019. While the number of people without access to electricity has steadily declined since 2013, it is now set to increase in 2020 as a result of the COVID-19 pandemic, pushing many countries further away from achieving the goal of universal access by 2030¹¹.

In addition, major disparities in access to electricity exist between urban and rural areas. In 2018, the unserved rural population of 668 million represented 85% of the global access deficit. Between 2010 and 2018, access to electricity in rural areas rose from 70% to 80%. In urban areas, access is already close to universal, but growth in access has barely kept up with population growth.

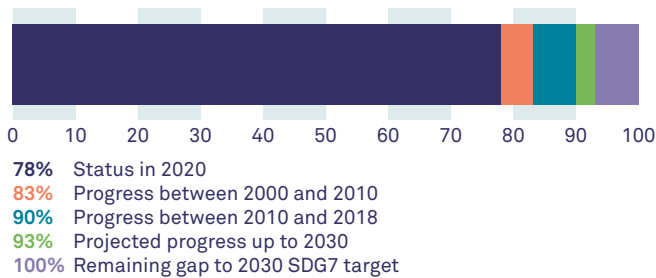
Closely linked to access to electricity is access to clean cooking facilities. According to the International Energy Agency (IEA), more than 2.6 billion people worldwide still do not have access to clean cooking

Figure 1 Electricity demand outlook in selected regions/countries in the Stated Policies Scenario, 2019-2030



Source: IEA

Figure 2 Percentage of population with access to electricity



Source: World Bank, IEA

facilities. Household air pollution, mostly from cooking smoke, is linked to around 2.5 million premature deaths annually. Again, this deficit is most strongly felt in sub-Saharan Africa ¹².

Switching to renewable energy sources enables countries to strengthen their energy security and achieve greater independence by harnessing the vast indigenous renewable energy sources that are available. Many emerging countries rely heavily on fossil fuel imports, which makes them very vulnerable to price volatility. Furthermore, this will reduce indoor

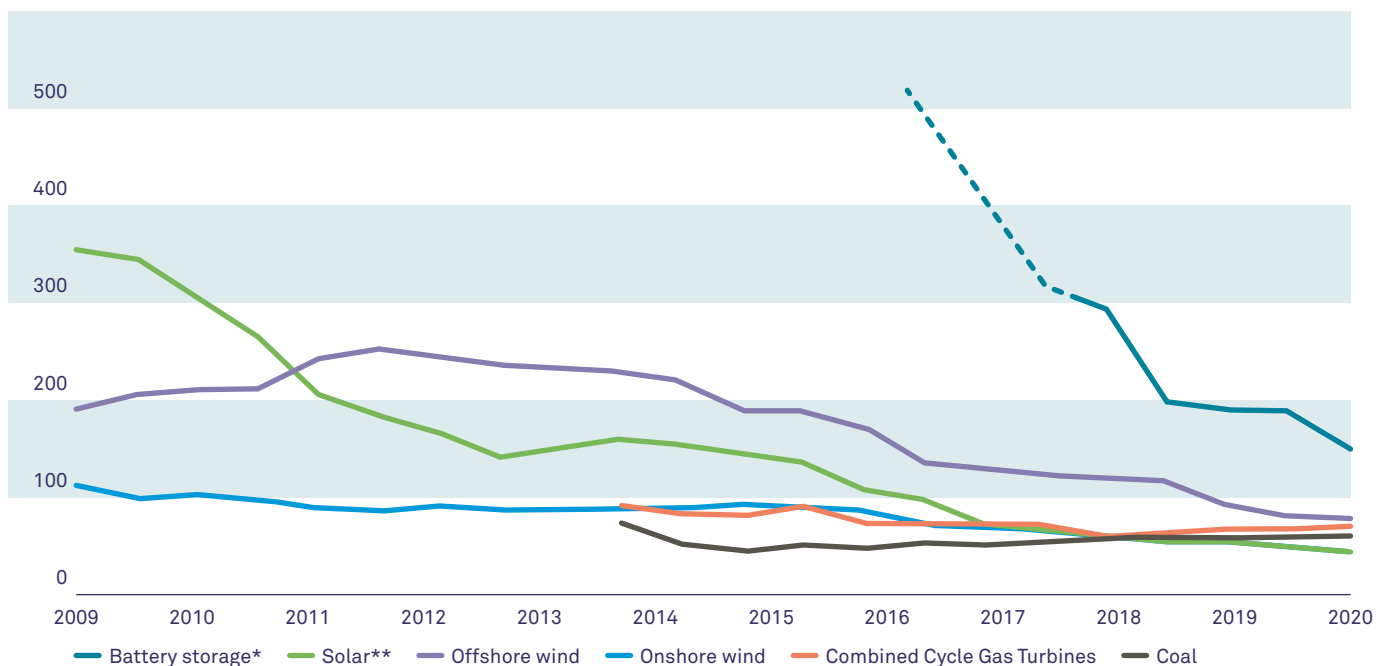
air pollution, improving health and quality of life for millions around the world.

A major development is that the generation and storage costs of renewables have decreased significantly over the past years and are now (almost) on a par with fossil fuels (figure 3). With costs expected to drop even further, renewable energy has become a viable economic alternative to fossil fuel. Moreover, many developing countries and emerging economies may leapfrog directly to more advanced energy technologies that are low cost, reliable, environmentally friendly and well suited to serving dispersed rural populations, without having to transform an extensive existing system.

COVID-19 – limited effect

In its updated Renewables 2020 report, published in November 2020, the IEA's main case scenario forecasts an increase in net renewable electricity capacity additions of almost 4% higher than in 2019. This means the world would have installed over 198 GW of renewable capacity this year, breaking another record and accounting for almost 90% of the increase in total power capacity.

Figure 3 Levelised cost of energy, USD per MWh, 2019 prices



* Estimated using battery-pack prices before 2018 ** Average of fixed and tracking systems Source: The Economist, May 2020

In 2021, the IEA expects renewables will achieve another record expansion, with almost 218 GW becoming operational – a 10% increase from 2020. This rebound would be driven by the commissioning of delayed projects in markets where construction and supply chains were disrupted due to COVID-19, apart from continuous growth in some markets where the pre-pandemic project pipeline was strong as a result of economic attractiveness and uninterrupted policy support¹³.

The current crisis should be regarded as a “chance to tailor economic recovery programs to accelerate the phase-out of polluting processes and the adoption of cost-competitive sustainable technologies”¹⁴. The role of banks and other financial institutions will become even more important, as growing deficits leave governments with less scope for investing in sustainable development.

Read Triodos IM’s vision paper ‘[Investing for economic transformation](#)’ for a more granular look into different trends that determine the post-COVID-19 investment landscape. In this paper, we describe the direct and immediate consequences of the crisis, and what the longer-term and structural effects might be. And most importantly, we explore what impact these trends will have on the sustainable economy and on the investment landscape.

Global trends in renewable energy: capacity, costs and investments

The Global Trends in Renewable Energy 2020¹⁵ outlines several important trends in renewable energy, including investments. By financing renewable energy in emerging countries, we connect to and further stimulate these positive trends:

- The world invested USD 282.2 billion in new renewable energy capacity (excluding large hydro) in 2019. This was a mere 1% higher than the total for the previous year, and it was 10% below the record figure of USD 315.1 billion set in 2017.
- However, the amount of new renewable power added in 2019 was the highest ever, at 184 gigawatts, a full 20GW more than in 2018. Steep falls in capital costs have meant that more capacity in wind and solar can now be added than ever before, for the same cost.
- Developing countries continued to outpace developed economies in renewables investment.

In 2019, they committed USD 152.2 billion, compared to USD 130 billion for developed countries.

- Once again, renewables dwarfed conventional generation sources in terms of both capacity additions and investment. Nearly 78% of the net gigawatts of generating capacity added globally in 2019 were in wind, solar, biomass and waste, geothermal and small hydro. Investment in renewables, excluding large hydro, was more than three times that in new fossil fuel plants.
- The all-in, or levelised, cost of electricity continued to fall for wind and solar, thanks to technology improvements, economies of scale and fierce competition in auctions. For solar PV, it stood in the second half of 2019 some 83% lower than a decade earlier, while the equivalent reductions for onshore and offshore wind were 49% and 51% respectively.

Strong investment case

Technological innovation and falling costs have contributed to a faster growth of renewables than any other energy source in recent years. Along with innovative business and financing models – ranging from community and third-party ownership to public-private partnerships – a transformation has created the momentum to boost clean, scalable energy solutions in emerging markets. This positive momentum is supported by an ever-growing demand for energy, especially in emerging countries. In addition, governments around the world are coming to recognise renewable energy as an important part of their country’s energy portfolio.

In the following chapter, you can read more about how to invest in the energy transition in emerging economies.

In our investment portfolio

Replacing dirty coal – Solar energy in Pakistan

Power shortage problems in Pakistan affect the daily lives of millions of people and significantly hinder economic development in Pakistan. Furthermore, almost 30% of the population does not have access to energy. As the country depends heavily on fossil fuel imports, it is very vulnerable to global oil price volatility.

The government underwrites the importance of adding renewable energy sources to the energy mix to close the gap between energy demand and supply. It plans to increase the share of renewable energy in total power generation to 30% by 2030 (wind, solar, small hydro and biomass). It has also set a target for large scale hydropower of 30% (more than 50 MW). Currently, the share of renewable energy stands at a meagre 4%, even though the country has huge renewable energy potential, particularly wind and solar.

Sixty kilometres from Karachi, the largest city in and business hub of Pakistan, a 50 MW solar park has been constructed. Gharo Solar will deliver green energy to the grid, replacing coal-fired energy and boost the country's energy self-reliance. The park will provide 190,000 people with clean energy and save 54,000 tonnes of CO₂ emissions per year.

Triodos Groenfonds has provided USD 7.25 million of funding via a B loan participation with Dutch development bank FMO as lender of record.



3 Renewable energy in emerging markets in your investment portfolio

As the previous chapter has shown, by investing in renewable energy in emerging countries, we stimulate social and economic development and contribute to mitigating climate change, thus achieving triple impact. Supply and demand developments provide ample investment opportunities.

We currently invest in renewable energy in emerging markets through Triodos Groenfonds and Hivos-Triodos Fund.

On page 18 of this paper, you can find a short description of our emerging markets renewable energy investment solutions.

Impact, risk and return in balance

Triodos IM bases all its investment decisions upon the relationship between impact, risk and return. This is also the case for our Renewable Energy in Emerging Markets strategy. With this strategy, we aim to offer investors access to an impactful portfolio of solid and well spread investments in the renewable energy

sector in emerging markets, thereby contributing to the energy transition and to affordable and clean energy while also providing competitive risk-adjusted returns.

Proven technologies

While the projects our funds invest in can be new and often in an initial stage, the technologies are not. Our emerging markets renewable energy portfolio consists of projects in proven technologies with reputable developers and likeminded impact investors.

Renewable energy generation solutions are usually categorised as on-grid and off-grid. On-grid solutions are traditional power projects connected to a national or state utility grid, with onshore and offshore wind, solar and hydropower as main technologies. Following our environmental and social standards, we only invest in small-scale, run-of-the-river hydro projects.

Off-grid solutions are decentralised facilities, for example distributed energy service companies, ‘behind the meter’ commercial and industrial projects

Figure 4 Triodos Emerging Markets Renewable Energy Strategy



(often rooftop solar) and mini-grids that are typically used in rural areas or islands. These systems are not connected to the national grid but to specific villages or industries.

Asset allocation and risk profile

Given certain imperfections in the senior debt markets for renewable energy projects in emerging markets, especially in the utility-scale segment, development finance institutions (DFIs) and multilateral development banks (MDBs) play a significant role as syndicate leaders and lenders of record. Where possible, our funds will participate via a B loan structure, which enables them to benefit from the local or regional presence, experience and preferred creditor status that MDBs have. This status reduces certain country risks and therefore improves the risk-return profile of their portfolio.

Following a barbell strategy, the core (70%) of Triodos' renewable energy in emerging markets portfolio consists of direct investments in long-term senior debt facilities to renewable energy projects with relatively low risks. Up to 10% of the funds will be allocated to innovative debt or mezzanine instruments to help assist with the riskier aspects of projects such as the construction phase. The funds also seek to stimulate innovation through equity investments (20%) in investment funds dedicated to the energy transition in emerging markets (via limited partnerships). By adding higher risk debt and energy transition funds to the portfolio, the return potential will improve, as well as the measurable contribution to environmental impact.

Financial instruments

We provide long-term senior debt – B loans or parallel loans – and invest through fund of funds, mezzanine finance, direct investment and/or blended finance structures.

The core of the portfolio consists of *direct* investments in long-term senior debt facilities to renewable energy projects (solar PV, wind and run-of-the-river hydro), across the utility scale, Commercial & Industrial and (to a limited extent) off-grid segments. Part of the portfolio will be allocated to *indirect* investments in energy transition funds (equity) and in financial institutions with a special focus on the renewable energy sector.

Long-term senior debt

The core portfolio consists predominantly of long-term senior debt facilities to grid-connected, utility-scale renewable energy projects (project finance). These long-term senior debt facilities are usually structured as B loans or parallel loans (see appendix for a more detailed explanation of the different financial instruments we use). The projects financed have the following characteristics:

- most of these projects have state-owned utilities as off-takers. Several of them enjoy additional government support;
- the power purchase agreements (PPAs) between suppliers and off-takers are usually 'take-or-pay', meaning that the amount of deliverable electricity agreed upon will be paid for, regardless of whether the electricity was taken or not;
- in most countries, clean power/electricity plants have dispatch priority; their electricity will be supplied first to the system by dispatch centres;
- PPAs have tenors that exceed the tenor of the senior debt and often have a term of 20 years;
- PPA tariffs for projects are US dollar or euro denominated;
- all projects have Debt Service Reserve Accounts with a financial cash reserve of usually six months debt service;
- most projects have dividend lock-up arrangements in case debt service cover ratios drop below certain thresholds;

“By setting up relatively early-stage green power projects, we are setting an example, proving that the technology works and demonstrating that it's bankable. That will pave the way for domestic and regional financial institutions to play their role in due course, as significant amounts of capital will be needed to also facilitate the energy transition in emerging markets.”

Gerrit-Jan Brunink, Senior Investment Officer

Triodos Renewable Energy in Emerging Markets Strategy

Indicative portfolio allocation and characteristics

Target asset allocation



Debt	80%
Equity	20%

At least 70% senior debt, up to 10% sub-debt or convertible debt.

Target segments



Direct*	80%
Indirect & innovation**	20%

* Utility-scale and Commercial & Industrial
 ** E.g. energy transition funds, green financial institutions, mini-grids.

Diversified regional allocation



Africa	25%
Eastern Europe & Central Asia	25%
Asia	25%
Latin America	25%

Up to 20% of NAV can be invested in the same country
 Up to 40% of NAV can be invested in the same region.

Risk allocation senior debt

	Senior debt	Target allocation
Risk return buckets low ↓ high	1-2	0%
	3-4	0%
	5-6	70%
	7-8	
	9-10	30%
	11-12	
	13-14	0%

Internal credit risk model determines the individual project's credit risk rating.

Diversified technology allocation



The Strategy Manager aims to create a well-diversified portfolio across technologies following the local trends.

Single project limit for senior debt is 10% of NAV.

- some projects have other arrangements, such as cash sweeps (which kick in below certain Debt Service Cover thresholds, triggering additional repayments) or sponsor support throughout the term of the loans (to mitigate for specific project risks not covered by other stakeholders).

Wide geographical reach

The portfolio's geographical allocation primarily focuses on countries on the OECD Development Assistance Committee list of Official Development Assistance¹⁶ recipients (OECD DAC list), aiming to spread investments fairly across regions and countries.

The role of alternative investments in a well-balanced investment portfolio

Based on Markowitz's Modern Portfolio Theory, Ortec Finance, a leading provider of technology and solutions for risk and return management, has analysed the effects of Triodos Investment Management (Triodos IM) Private Impact Strategies, Triodos Groenfonds, Triodos Energy Transition Europe Fund (formerly Triodos Renewables Europe Fund) and Triodos Microfinance Fund on the risk-return characteristics of a well-diversified investment portfolio. This [research](#) was carried out on request of Triodos IM.

In general, adding the Triodos IM funds results in an improvement of the risk-return characteristics of both an asset-only portfolio and a portfolio with known liabilities. In the case of an asset-only portfolio, the improvement is significant. For liability-driven portfolio the improvement is less pronounced because the development of interest rates is dominant.

Adding value

Triodos IM Private Debt and Equity funds can add value to a well-diversified portfolio for two key reasons:

1. Historically, they have favourable risk-return characteristics compared to other standard possible investments.
2. They have shown relatively low correlation with common risk drivers since their inception, yielding high diversification benefits.

This general conclusion holds for both asset-only and liability-driven portfolios. Adding the funds to an asset-only portfolio results in a significant improvement in its risk-return characteristics. For a liability-driven portfolio this positive effect is less pronounced, leading to better returns and/or less risk for the beneficiaries. Here, the development of interest rates plays a more significant role compared to the asset-only case.

Compared to equity and fixed income products, Triodos IM Private Debt and Equity funds have relatively steady returns with low volatility in the medium and longer term, along with a favourable risk-return ratio (i.e. a high Sharpe ratio). In addition, the Triodos funds have a low or even negative correlation to important risk drivers.

Both qualities – a high Sharpe ratio and low correlation to risk drivers – enhance the desirability of the funds in the optimisation of an investment portfolio. Triodos IM Private Debt and Equity funds add the most value for risk-averse to risk-neutral investors.

Risk-adjusted returns of the projects in portfolio and pipeline are attractive and offer added value for investors searching for yield and impact. Moreover, they contribute to diversification of investors' portfolio. The low correlation with other investments results in additional value in a portfolio context.

In our investment portfolio

Blended finance facility for utility-scale projects in Asia and Africa

Climate Investor One (CIO) is a blended finance facility investing in solar, wind and run-of-the-river hydropower projects across emerging countries, primarily in Africa and Asia. The facility is managed by Climate Fund Managers (CFM) and consists of a Development Fund and a Construction Equity Fund (CEF).

Triodos Groenfonds has taken an equity position in CIO's CEF, thereby contributing to the construction of approximately 30 utility-scale energy projects across developing markets. The expected portfolio of projects will generate more than 5,100 GWh per year of clean electricity; enough to supply around 13 million households per year. The aggregate expected carbon emission savings amount to 1.9 million tonnes CO₂ per year.

CEF builds its projects 'all equity' and is currently active in the development and construction of projects in various countries in Africa and Asia (the most advanced projects are currently being developed and built in Uganda, Djibouti, Senegal, Nigeria and in India (3) and Vietnam (2).

In the renewable energy sector in emerging markets, there is a significant need for reputable companies that can professionally develop, build and manage projects and undertake these projects such that they become 'bankable'. By investing in CIO, we participate in this and on top of that, we create opportunities for the fund to come in at project level with senior debt once these projects are operational and leveraged.

Community development

CFM is strongly committed to providing positive social and economic impact for the communities where its projects are built. This is shown by the allocation of funds specifically for community development throughout the entire lifecycle of the project. Four percent of the development funds are allocated for community development opportunities which are identified through a community needs assessment, whereas during the construction phase, part of the construction budget (between 0.35 and 0.5% and based on the total construction cost) is spent on community benefits, spread over the construction period. During the operation period, 1% of annual operating revenues is allocated to community development.

CFM has a particularly strong commitment to gender equality. It applies a 'gender' lens to investing, recognising that men and women experience the effects of climate change and (lack of) access to energy differently and disproportionately. It therefore developed a dedicated gender integration action plan, which outlines its commitments at company level (gender policy, network and training) and project level (gender assessment, recruitment and stakeholder engagement).

Community development programmes often include gender-specific initiatives that target women in governance, as employees and as entrepreneurs.

Time to scale up investments

Technological innovation and cost reductions have contributed to a faster growth in renewables than any other energy source in recent years. Along with innovative business and financing models, this has created momentum to boost clean, scalable energy solutions in emerging markets, further stimulated by the increasing demand for energy.

As we have shown in this paper, these trends build a strong case for investing in renewable energy in emerging countries, both from an impact, risk and return perspective. At Triodos Investment Management, we are committed to contribute to the global sustainable energy transition. Join us.

Established leader in renewable energy investments

Triodos Investment Management (Triodos IM) combines expert skill and broad experience to play a catalysing role to unlock more funding for greening emerging economies. Since 1987, Triodos Group, of which Triodos IM is part, has built up project finance experience in the renewable energy sector in Europe, financing hundreds of projects. Over the past 25 years, we have also gained a great deal of investment experience in emerging markets, working with a significant international network of partners in 50 emerging economies who also have the ambition to contribute to the global clean energy transition. As an organisation, Triodos IM successfully provides an experienced platform for private sector investors to invest in renewable energy in emerging markets, combining strong impact and competitive risk-adjusted returns.

Our investment solutions

Triodos Groenfonds

Established in 1990, Triodos Groenfonds is the oldest green investment fund in the Netherlands. With more than EUR 1 billion in assets under management, the fund invests in senior debt loans to projects in the Netherlands that meet the Triodos lending criteria and have obtained a green certificate from the Dutch government. Sectors include renewable energy, organic farming, nature and landscape and sustainable real estate.

With close to 70% (as per end December 2020), renewable energy is the largest sector within the investment portfolio. Since 2014, Triodos Groenfonds finances wind, solar and hydro projects in emerging markets. These projects are also eligible for a green certificate. The fund may invest up to 20% of its net assets in renewable energy projects in 46 designated emerging countries. Currently, about 6% of the fund's capital is invested in 12 different emerging countries.

Hivos-Triodos Fund

Established in 1994, Hivos-Triodos Fund is a joint initiative of Triodos Bank and Hivos Foundation and one of the first global movers in financial inclusion investments. The combination of public and private funding from Hivos and Triodos Bank respectively remains a great example of an effective and successful blended finance fund. Today, the fund invests in scalable enterprises in emerging markets to catalyse a sustainable, inclusive and green economy.

Triodos Group

Worldwide pioneer in renewable energy

#1 in sustainable energy deals in the world for past 5 consecutive years

30+ years of experience in renewable energy

40+ Dedicated renewable energy professionals

70+ renewables transactions per year

500+ single new deals in our books

2.25+ billion dollars invested in renewable energy

As per December 2020

The fund invests in these decentralised renewable energy solutions to enable access to clean, affordable and reliable energy for residential and productive use. Most of these solutions are still in an early stage of their life cycle and need catalytic funding to further mature.

To unlock more funding for the energy transition in emerging economies, we aim to launch a new fund. This fund will focus entirely on financing renewable energy projects in emerging countries. Contact our Investor Relations team for more information about our emerging markets renewable energy strategy and our investment solutions.

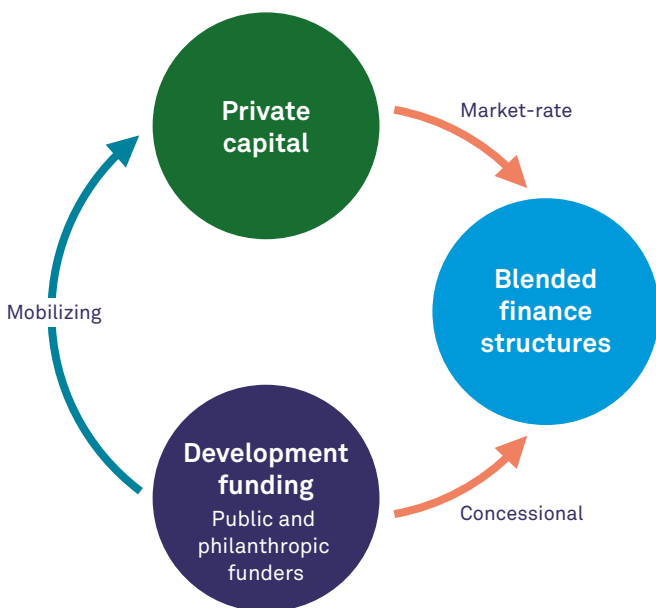
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Glossary

Blended finance structures

Blended finance is the use of catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development. Blended finance is a structuring approach that allows organisations with different objectives to invest alongside each other while achieving their own objectives (whether financial return, social impact, or a blend of both).

Blended finance is especially suitable for investing in developing countries, as it addresses the (sometimes) poor risk-return characteristics – both real and perceived – of investments in such countries relative to comparable investments elsewhere. Blended finance creates investable opportunities in developing countries which leads to more development impact.¹⁷



Source: Convergence Blended Finance

Project finance

1. B loans

B loans are senior (project finance) loans issued by multilateral development banks (MDBs) and development finance institutions (DFIs). MDBs are international financial institutions, set up by sovereign states. They have the common task of fostering economic and social progress in developing countries by financing projects, supporting investment and generating capital for the benefit of all global citizens. DFIs are specialised development organisations that are usually majority owned by national governments. DFIs invest in private sector projects in low and middle-income countries to promote job creation and sustainable economic growth.

MDB or DFI act as Lender of Record and syndicate part of the loan, the B Loan, whilst retaining part of the loan, the A loan. B Loans usually have a higher recovery rate than other loans, as they benefit from their MDB/DFI connection, as these have strong government relations, preferred credit status (MDBs), extensive credit process and due diligence, strong sector knowledge, country risk expertise, conservative loan structuring, active project monitoring and dedicated restructuring teams.

2. Parallel loans

Parallel loans are senior project finance loans provided to a borrower in parallel with other lenders, with similar terms and conditions, often in a club deal or potentially via an arranger¹⁸.

It may not always be possible to participate in a B loan structure with a DFI. In that case, a parallel loan on similar terms and conditions in a syndicate with a DFI can be provided.

Direct equity

Ownership interest in a company, mostly junior in the capital structure and subordinated to all other debt instruments.

Fund-of-funds

Triodos IM also participates in energy transition funds enabled through Limited Partnerships. These, in the form of fund-of-funds, enhance the diversification, return and impact characteristics of our portfolio. Such partnerships give exposure to new segments and technologies, adding to the innovative character of the fund. Moreover, they can create co-investment and pipeline opportunities. These funds of funds predominantly use equity, mezzanine and, occasionally, debt participation instruments.

Mezzanine

A type of funding with characteristics of both debt and equity, typically subordinated to senior debt. As such, it is considered part of a company's risk-bearing capital. Examples include preferred shares and subordinated (convertible) debt. The terms mezzanine financing and quasi-equity are often interchangeable.

Notes

- 1 <https://ourworldindata.org/grapher/population-of-all-world-regions-including-the-un-projection-until-2100?tab=chart&time=2016..latest®ion=World>
- 2 <https://www.worldweatherattribution.org/wp-content/uploads/WWA-Prolonged-heat-Siberia-2020.pdf>
- 3 <https://www.un.org/press/en/2019/gaef3516.doc.htm>
- 4 [https://www.europarl.europa.eu/RegData/etudes/etudes/join/2007/393511/IPOL-ENVI_ET\(2007\)393511_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/etudes/join/2007/393511/IPOL-ENVI_ET(2007)393511_EN.pdf)
- 5 Climate Watch 2017. <https://www.climatewatchdata.org/ghg-emissions?breakBy=sector&chartType=percentage>
- 6 Access to energy | Sustainable Energy for All (seforall.org)
- 7 According to the World Energy Outlook 2020, global energy demand rebounds to its pre-crisis level in early 2023 if COVID-19 can be brought under control in 2021, but this is delayed until 2025 in the event of a prolonged pandemic and deeper slump. Prior to the crisis, energy demand was projected to grow by 12% between 2019 and 2030. Growth over this period is now 9% in the Stated Policies scenario, and only 4% in the Delayed Recovery scenario. With demand in advanced economies on a declining trend, all of the increase comes from emerging market and developing economies, led by India. World Energy Outlook 2020 – Analysis – IEA
- 8 The world's population is expected to increase by 2 billion in the next 30 years, from 7.7 billion currently to 9.7 billion in 2050, with nine countries making up more than half the projected growth: India, Nigeria, Pakistan, Congo, Ethiopia, Tanzania, Indonesia, Egypt and the US. <https://www.un.org/development/desa/en/news/population/world-population-prospects-2019.html>
- 9 Outlook for electricity – World Energy Outlook 2020 – Analysis – IEA
- 10 Source: Tracking SDG 7: Energy Progress Report 2020. A joint report published in May 2020 by the International Energy Agency, International Renewable Energy Agency, United Nations Statistics Division, the World Bank and the World Health Organisation. <https://www.iea.org/reports/tracking-sdg7-the-energy-progress-report-2020>
- 11 Access to electricity – SDG7: Data and Projections – Analysis – IEA
- 12 Access to clean cooking – SDG7: Data and Projections – Analysis – IEA
- 13 <https://www.iea.org/reports/renewables-2020/renewable-electricity-2#abstract>
- 14 https://www.fs-unep-centre.org/wp-content/uploads/2020/06/GTR_2020.pdf
- 15 https://www.fs-unep-centre.org/wp-content/uploads/2020/06/GTR_2020.pdf
- 16 <http://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/daclist.htm>
- 17 Definition according to Convergence Blended Finance: <https://www.convergence.finance/blended-finance>
- 18 <https://www.investopedia.com/terms/p/parallelloan.asp#:~:text=A%20parallel%20loan%20is%20a,to%20the%20other%27s%20local%20subsidiary.>

Suggested reading and listening

- Triodos Bank Vision paper: [Towards a low carbon economy](#)
- BrightTalk Webinar with Triodos Renewable Energy investment managers about [Financing green energy in emerging markets](#), 2019
- [Accelerating the energy transition](#)
- White paper: the role of Impact Alternatives in an investment portfolio – Analysis by Ortec Finance – December 2019 – [What the heart already knew](#)

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Triodos Investment Management (Triodos IM) is a globally active impact investor. We see impact investing as a driving force in the transition to a green, inclusive and resilient economy.

We have built up in-depth knowledge throughout our 25+ years of impact investing in sectors such as Energy and Climate, Financial Inclusion and Sustainable Food and Agriculture. Triodos IM also invests in listed companies that support sustainable solutions for the future. Assets under management as per end of June 2020: EUR 4.9 billion.

Triodos IM is a wholly owned subsidiary of Triodos Bank, a leading expert in sustainable banking.

Investing in positive change

For more information about our impact investment strategies and solutions, please contact our Investor Relations team at:

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