Fostering and financing the low-carbon transition

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Grantham Research Institute on Climate Change and the Environment

Centre for Climate Change Economics and Policy

E·S·R·C Economic & Social Research Council

The Grantham Foundation for the Protection of the Environment

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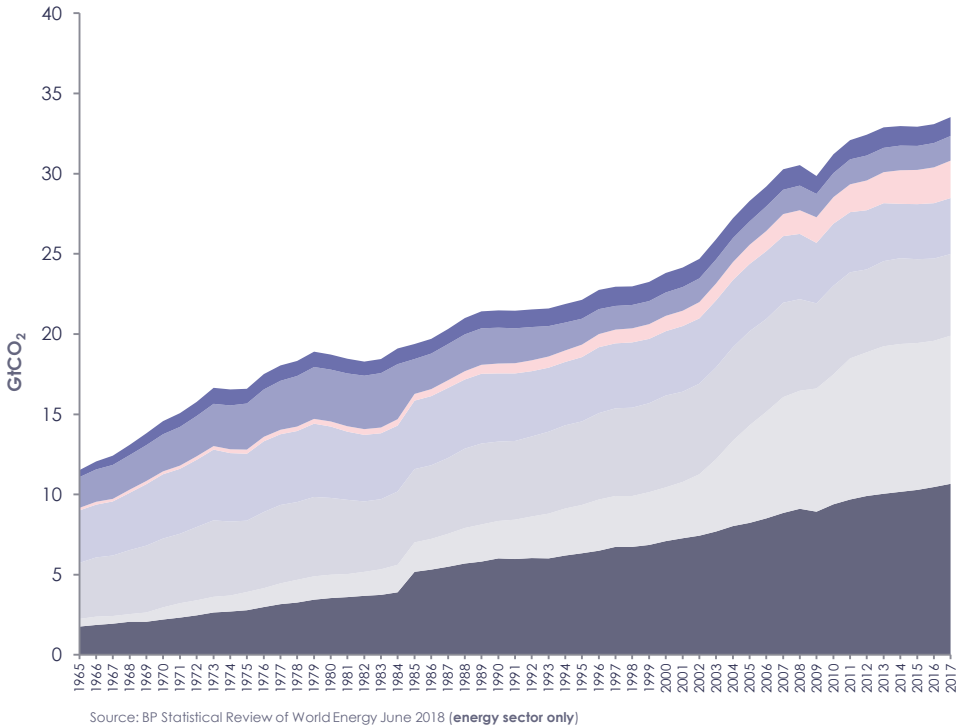
Urgency: the actions of the next decades are critical in establishing low-carbon development, growth and poverty reduction

Change in the next decades					At the same time (to meet Paris targets)
15 years	Infrastructure			2x	Investment of approximately US$ 90 trillion.
20 years	GDP			2x	Growth of approximately 3% per annum. Led by emerging and developing countries.
40 years	Urban Population			2x	Urban population will double in 40 years, Towns and cities shaped in the next 20.

The next decade is critical. Choices made on infrastructure and capital now will either lock us in to high emissions, or set us on a low-carbon growth path which can be sustainable and inclusive. Delay is dangerous

Global emissions are slowing down, but not fast enough



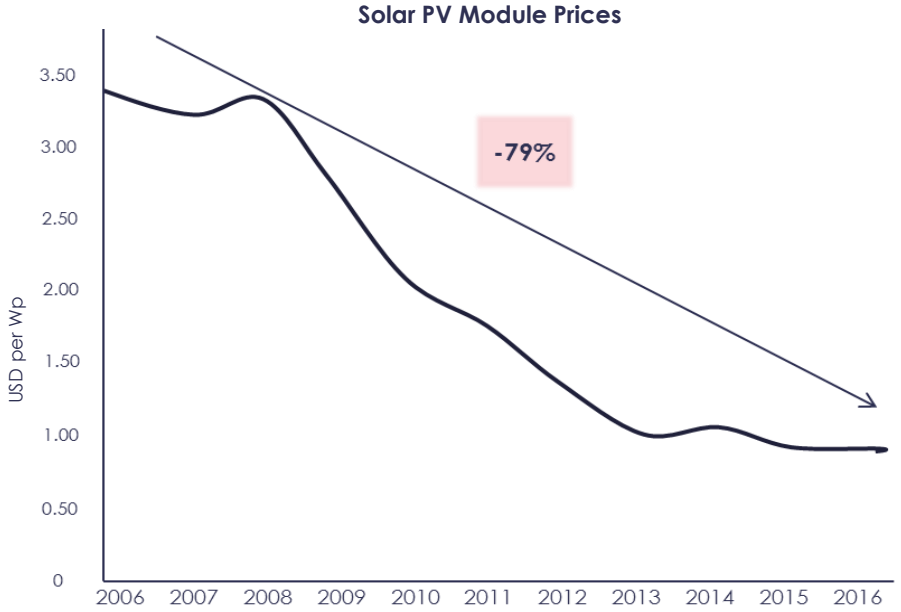
Source: BP Statistical Review of World Energy June 2018 (**energy sector only**)

Country	GHG emissions ($GtCO_2$) (2017)	Trend (past 5 years) ($GtCO_2$ in 2013)
Japan	1.2	(1.3)
Russia	1.5	(1.5)
India	2.3	(1.9)
EU (28)	3.5	(3.6)
USA	5	(5.3)
China	9.2	(9.2)
Rest of World	10.7	(10)
Total	33.5	(33)

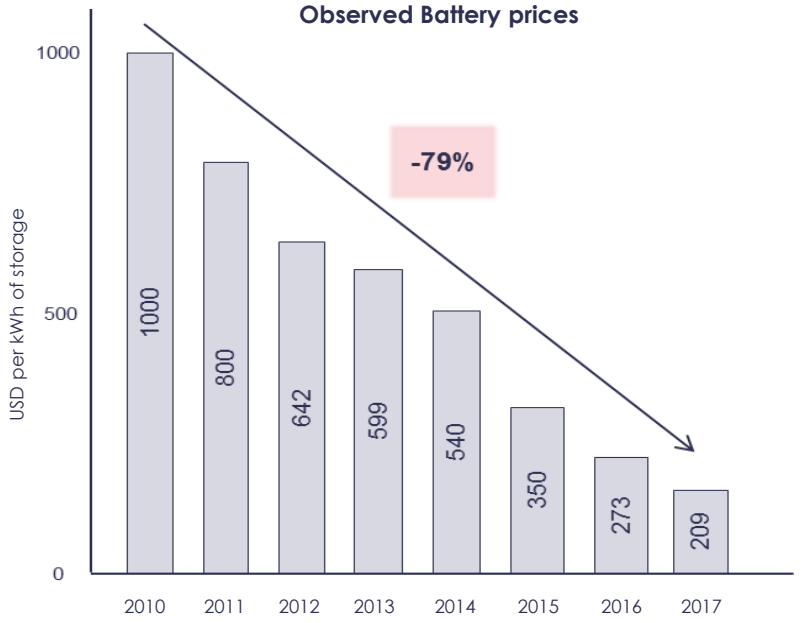
Worrying increases in 2016 and 2017, EU, US falling, China plateauing.

Strong investment in sustainable infrastructure will support meeting the global agenda, and accelerate growth which is sustainable and inclusive

The notion of "costs of action" are also being transformed by rapid technological advances and cost reductions



Source: EIA, 2017



Source: Bloomberg New Energy Finance, 2017

Renewables with storage now competitive in power in many parts of the world.
Capital costs for renewables continue to fall much faster than those for conventional technologies.

The growth story of the 21st century: strong, sustainable, inclusive

5 - 10 years		Investment in sustainable infrastructure can boost shorter-run demand and growth, sharpen supply, reduce poverty and support sustainable development.
>10 years		Spur innovation, creativity and growth in the medium term, unleash new waves of innovation and discovery.
>20 years		Low-carbon is the only feasible longer-run growth on offer; high carbon growth self destructs.

- **Beyond "costs of inaction outweigh costs of action" and "it is possible to combine climate responsibility and growth"; the drive to the low-carbon economy is the key engine of growth.**
- **Delivers cities where we can move and breathe; stronger communities; ecosystems that are more productive and resilient.**
- **Investments necessary now of similar or lower cost then conventional, particularly if bring down cost of capital. Resource efficiency is key.**

Must manage a 'just transition' in a process of rapid change. Has to fit with the other major transitions taking place: geographical, structural (services), digital…

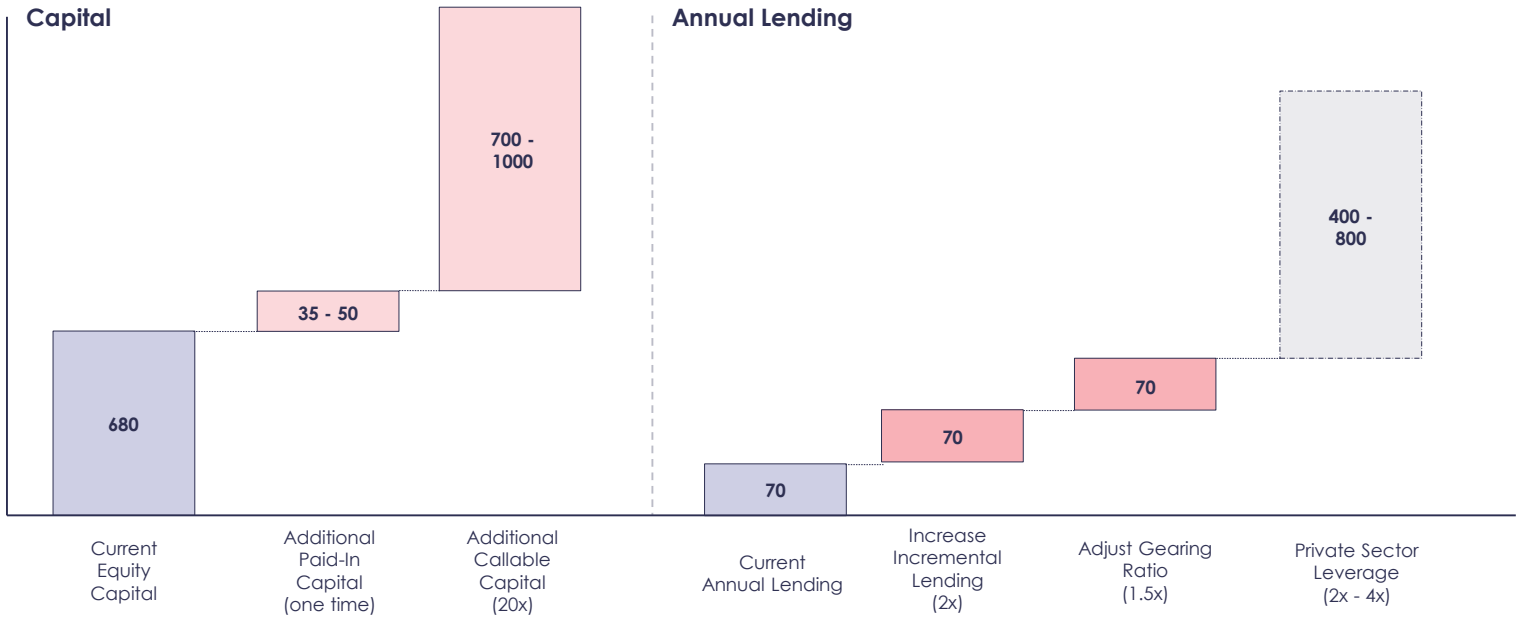
Quality and quantity of investment required will be determined by sound policy and government direction

Market Failure	Description	Policy Options
Greenhouse gasses (GHGs)	Negative externality because of the damage that emissions inflict on others.	Carbon tax/ cap-and-trade/ regulation of GHG emissions (standards)
Research, development and deployment (R,D&D)	Supporting innovation and dissemination.	Tax breaks, support for demonstration/deployment, publicly funded research.
Imperfection in risk/capital markets	Imperfect information assessment of risks; understanding of new projects/technologies.	Risk sharing/reduction through guarantees, long-term contracts; convening power for co-financing.
Networks	Coordination of multiple supporting networks and systems.	Investment in infrastructure to support integration of new technologies in electricity grids, public transport, broadband, recycling. Planning of cities.
Information	Lack of awareness of technologies, actions or support.	Labelling and information requirements on cars, domestic appliances, products more generally; awareness of options
Co-benefits	Consideration of benefits beyond market rewards.	Valuing ecosystems and biodiversity, recognising impacts on health

Different market failures point to the use of different instruments, but the collection should be mutually reinforcing.

Government-induced policy risk is the biggest deterrent to investment worldwide. Bringing down the cost of capital is essential to supporting investment

Development banks can play a key in moving from “billions” to “trillions” to finance the new global agenda



The MDBs have a crucial role to play in helping reduce government-induced risk through the use of their instruments (global equity, long-term loans, and guarantees.) They also bring trust and convening power.

Private sector has a central role to foster productive and profitable private capital for sustainable investments

Institution	Climate Change Commitments	Outcomes
AP FJÄRDE AP-FONDEN FOURTH SWEDISH NATIONAL PENSION FUND	Committed to invest US$3.2 billion in passive investment funds. Intend to reduce climate risk in assets to 2020, currently 31% of global equity portfolio in low-carbon assets.	Achieved return (after costs) on total portfolio of 9.1% in 2017.
Legal & General INVESTMENT MANAGEMENT	In 2017 committed to engage 84 of the world's largest companies in 6 key sectors on climate actions. If companies that do not meet minimum standards will be removed from all funds in LGIM's Future World range, where cannot divest will vote against reappointing chair of board.	Seen improvements relating to disclosure, transparency, governance and strategy from major emitters
generation	Focus investment approach on long-term performance by integrating sustainability analysis into decision-making . Has US$18.5 billion under management.	Global Equity fund has produced annual returns of 13.5% since launch. Benchmark (MSCI World index) returned 7.5% over same period.

Heed stability warnings of chair of FSB (Mark Carney) and advance recommendations of the Bloomberg Task Force on Climate-related Financial Disclosures. Transparency and information is essential.

Three forces present us with a special opportunity to move beyond incremental action and deliver on the global agenda: time to accelerate

%

Historically **low interest rates and no shortage of global savings.**
Search for growth.

Rapid technological change and falls in cost
(digital, materials, biotech…)

International agreements have **provided political direction** and evidence that collaboration is possible and will continue

Seizing the opportunity requires a radical change. Most of what we currently do will have to be done differently (technologies, institutions, business models, city planning processes, natural resource management…)

We have in our hands a new and very attractive way forward, the growth story of the 21st century. Major countries are moving, so too industry and finance. But next two decades are critical: imperative to accelerate