



Innovative Financing Models for Low Carbon Transitions

Prof Andy Gouldson, Dr Joel Millward-Hopkins

and Dr Rory Sullivan

University of Leeds

a.gouldson@leeds.ac.uk



Climate Change and Investment

- Stern (2007) estimated that the costs of avoiding climate change could be 1-2% of global GDP, but the costs of suffering climate change could be 5- 20% of global GDP p.a.
- Current levels of climate investment are 1/3 to 1/4 of those needed to avoid dangerous climate change.
- The need for an effective response to under-investment in climate mitigation is pressing.
- But the conditions for investment in low carbon development have hardly been ideal in the last few years.
- Market instability and policy uncertainty continue to limit private investment in many markets/sectors
- Budget deficits, austerity and neo-liberal agendas continue to limit public investment in many countries
- Innovative ways of substantially increasing investment in low carbon development are needed.



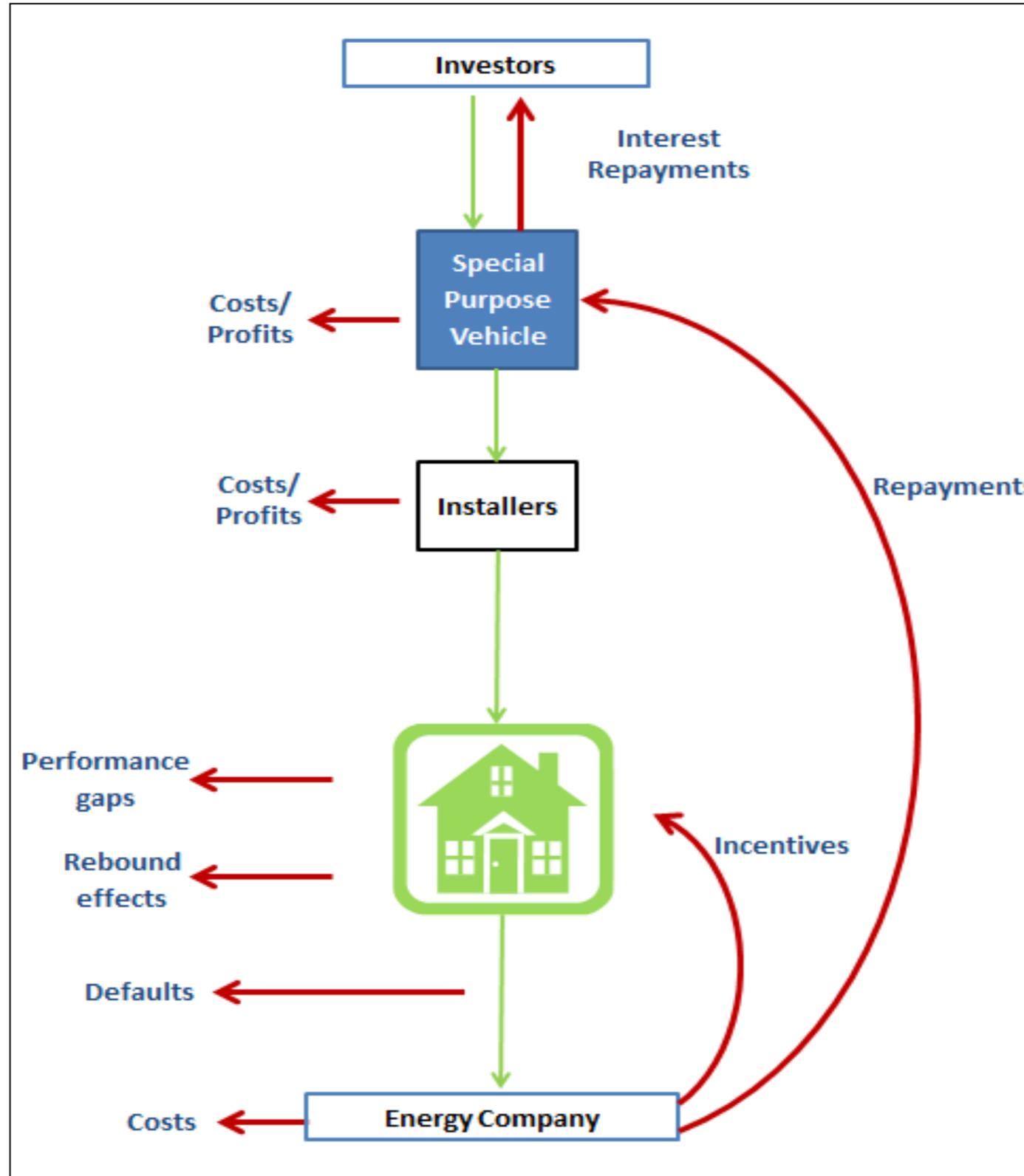
How this Relates to Energy Efficiency in Buildings

- Globally, 1/3 of all final energy and 1/2 of all electricity are consumed in buildings that are responsible for c1/3 of global carbon emissions.
- But many potentially attractive energy efficiency investments do not meet the short-term financial return criteria of businesses, investors, and individuals.
- Without a concerted push from policy, 2/3 of the economically viable potential to improve energy efficiency in buildings will remain unexploited by 2035.
- New forms of policy support, new institutional arrangements, new forms of finance and new business models are required if the energy efficiency opportunities in buildings are to be exploited.

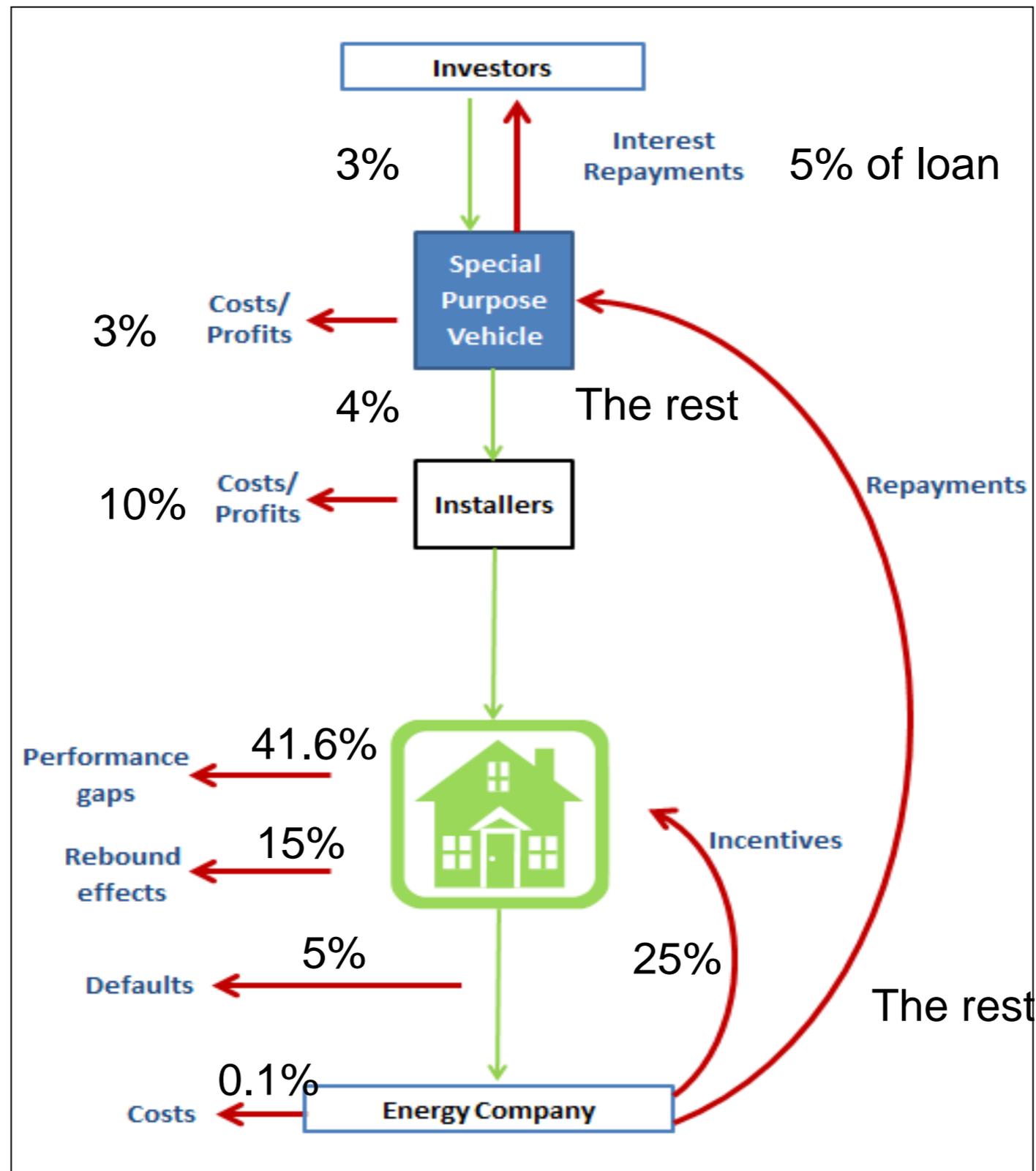
The Potential of Revolving Funds

- In 2008, the IEA argued that one way of mobilising investment in the built environment might be to establish revolving funds for building refurbishment and retrofit (IEA, 2008).
- Revolving funds are where the savings from investments are collected and reinvested to either reduce the need for new finance or to increase the impact of what finance there is.
- Such funds have been adopted in various contexts but there has never been a formal academic evaluation of the contribution that such funds can make.
- What could they look like, how could they work, what could they contribute?

A Generic Revolving Fund



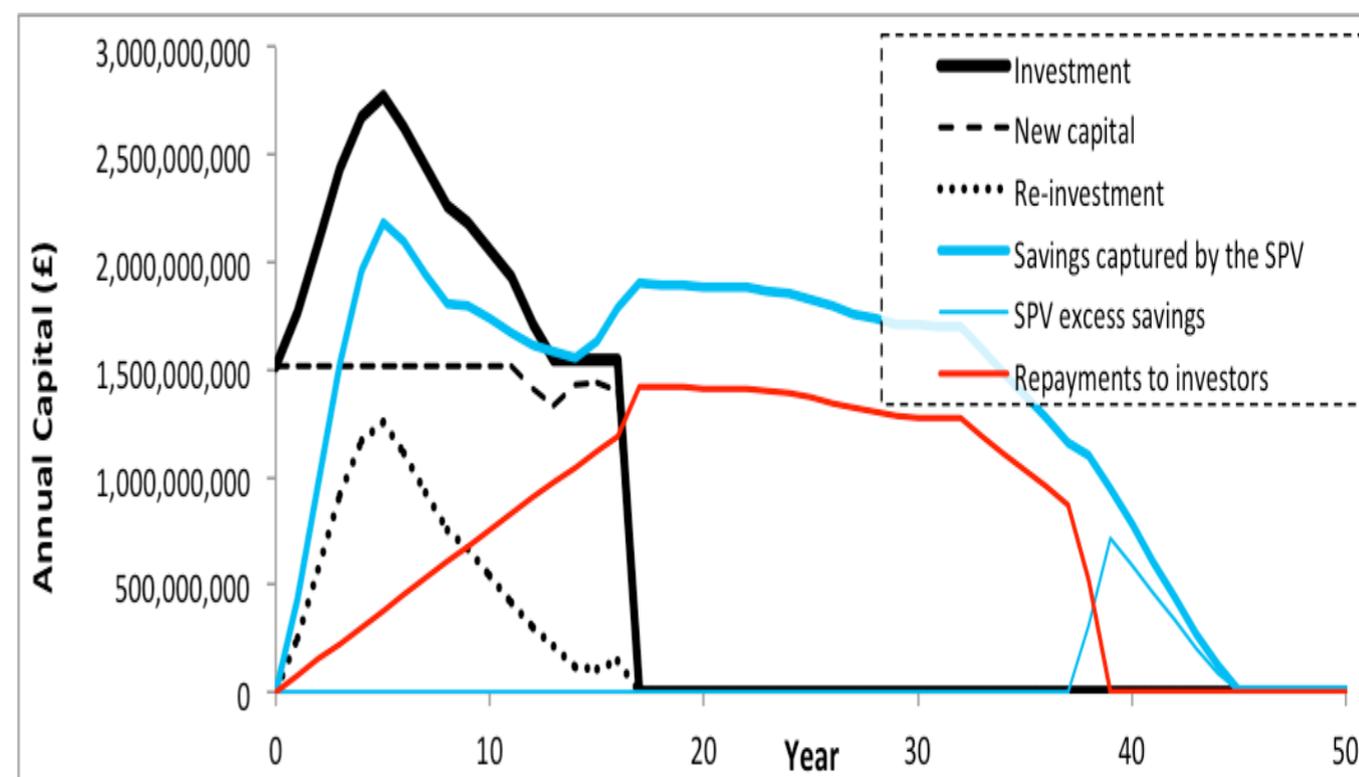
A Revolving Fund for Domestic Retrofit



- Max investment levels p.a.
- Max exploitation of available potential of any option p.a.
- Scope for limited optimisation, i.e. by pay-back period

Revolving Funds at the National Scale: A National Retrofit Scheme for the UK

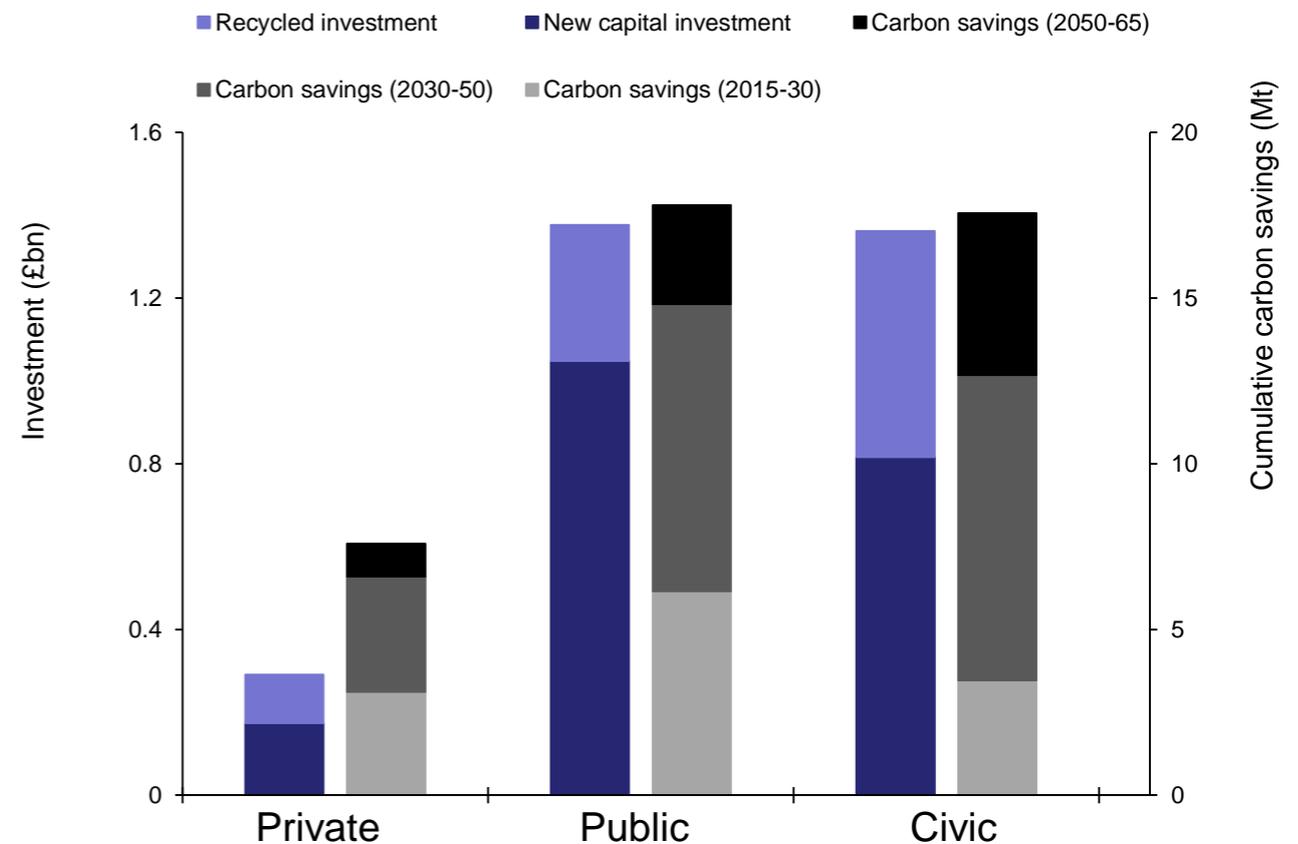
- Total investment required across the UK - £34.7 billion
- **A revolving fund reduces the cost by £9.5 bn from recycled investment**
- All options exploited within 17 years.
- **Can be self-funding - all loans repaid to investors in 38 years.**
- Investments would reduce UK domestic carbon emissions by 9 megatonnes (MT) per year \approx c6.5% of their 2012 level.
- Over the lifetime of the investments, total carbon savings of 363 MT would be generated \approx **77% of the UK's 2012 emissions.**



Revolving Funds at the City Scale

Private, Public and Civic Modes of Finance

- Private profit driven scheme has access to capital and could be up and running quickly.
- **Socially oriented public scheme** could also access capital but **would invest nearly 5 x as much as a private scheme** and **deliver 3x the carbon savings by 2030 and 2.6x by 2050.**
- **Civic community oriented scheme** finds it harder to access capital and starts slowly but still **invests 5x as much as the private scheme** and **delivers 1.4x more carbon savings by 2030 and 2.3x as much by 2050.**
- Spillover benefits from the public **and civic scheme much more**





Key Findings (1)

- With a revolving fund, an extensive domestic sector retrofit scheme could be made essentially cost-neutral, albeit with significant up-front investments that would only pay for themselves over an extended period of time.
- The up-front investment costs of such a scheme could be significantly reduced through the creation of a revolving fund.
- The investment needs and the associated investment gaps discussed at the beginning of this paper might be significantly reduced if revolving funds were widely deployed.



Key Findings (2)

- Different models exist with different roles for public, private or civic actors either as enablers, owners, investors, deliverers, governors. The direct impacts of such funds depend on the ways in which they are applied and governed.
- The public sector probably has to play a significant enabling role if revolving funds are to be widely adopted – this means providing policy certainty, introducing enabling policies, lowering risk and cost of capital, lengthening time horizons, securing public interest outcomes...
- Thereafter, revolving funds could be financed and run by public, private or civic actors for either private or public benefit.
- Private schemes may be expedient but public and civic schemes have far greater potential for investment, carbon reduction and wider benefit.