DELIVERING OUR GREEN ENERGY FUTURE

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THE NEW CLIMATE ECONOMY

The Global Commission on the Economy and Climate

Grantham Research Institute on Climate Change and the Environment

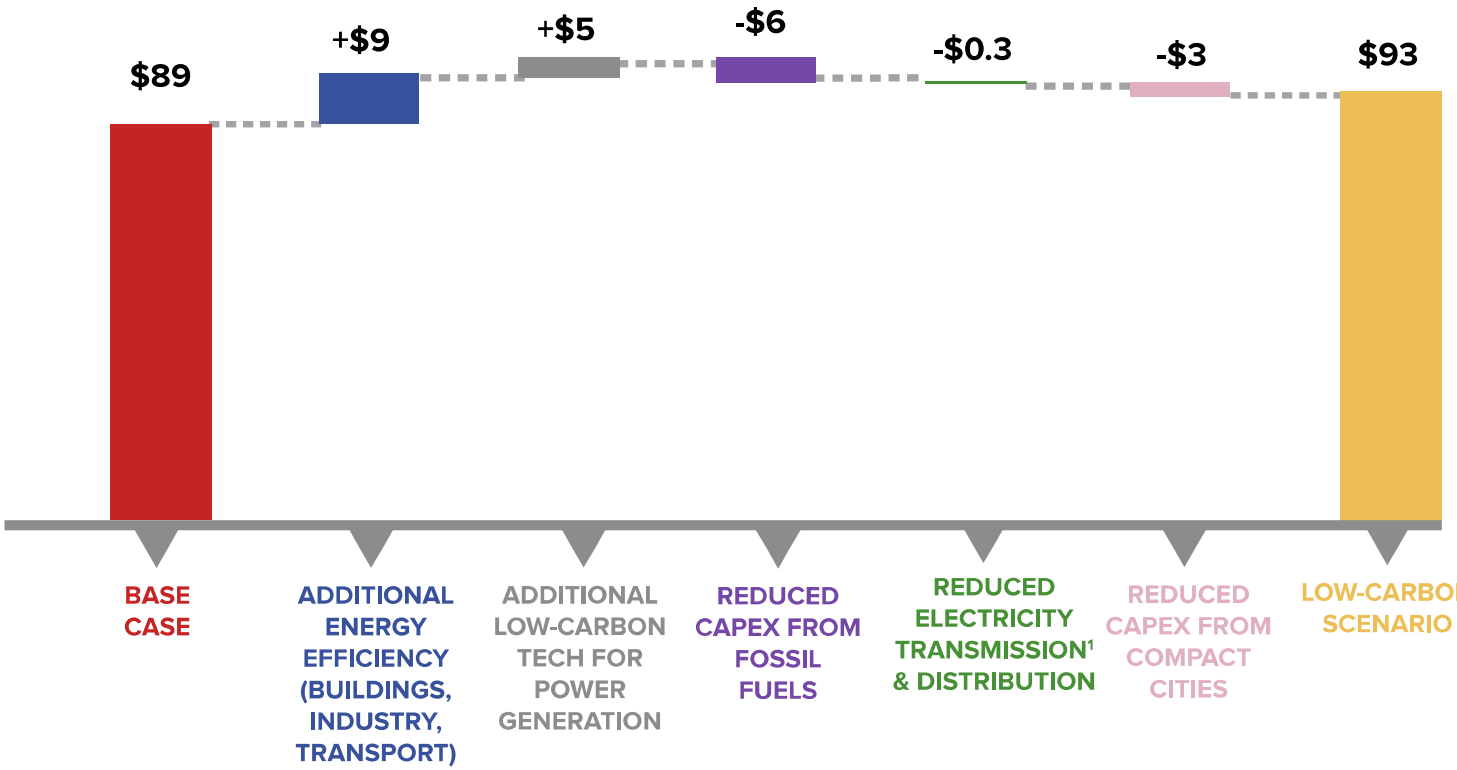
Main findings of the Commission:

- Economic growth and climate mitigation can be achieved together. We do not need to choose.
- A growing number of businesses, cities and countries are demonstrating this. Recent technological and policy developments mean that even more opportunities are available today.
- About US$ 90 trillion will be invested in infrastructure to 2030 – need to choose if it is low-carbon and climate resilient. Low-carbon would not cost much more, and fuel savings could fully offset additional investment costs.
- There are multiple economic benefits of action, e.g. reduced health costs from air pollution, less congestion & road deaths, enhanced energy, water and food security. In many cases these will outweigh the costs of action.
- But if we lock-in the wrong path, we risk significant economic and social impacts of climate change. Need to act urgently.

INVESTMENT: Infrastructure capital spend is estimated to be marginally higher in a low-carbon scenario

GLOBAL INVESTMENT REQUIREMENTS; 2015 TO 2030, US$ TRILLION, CONSTANT 2010 DOLLARS

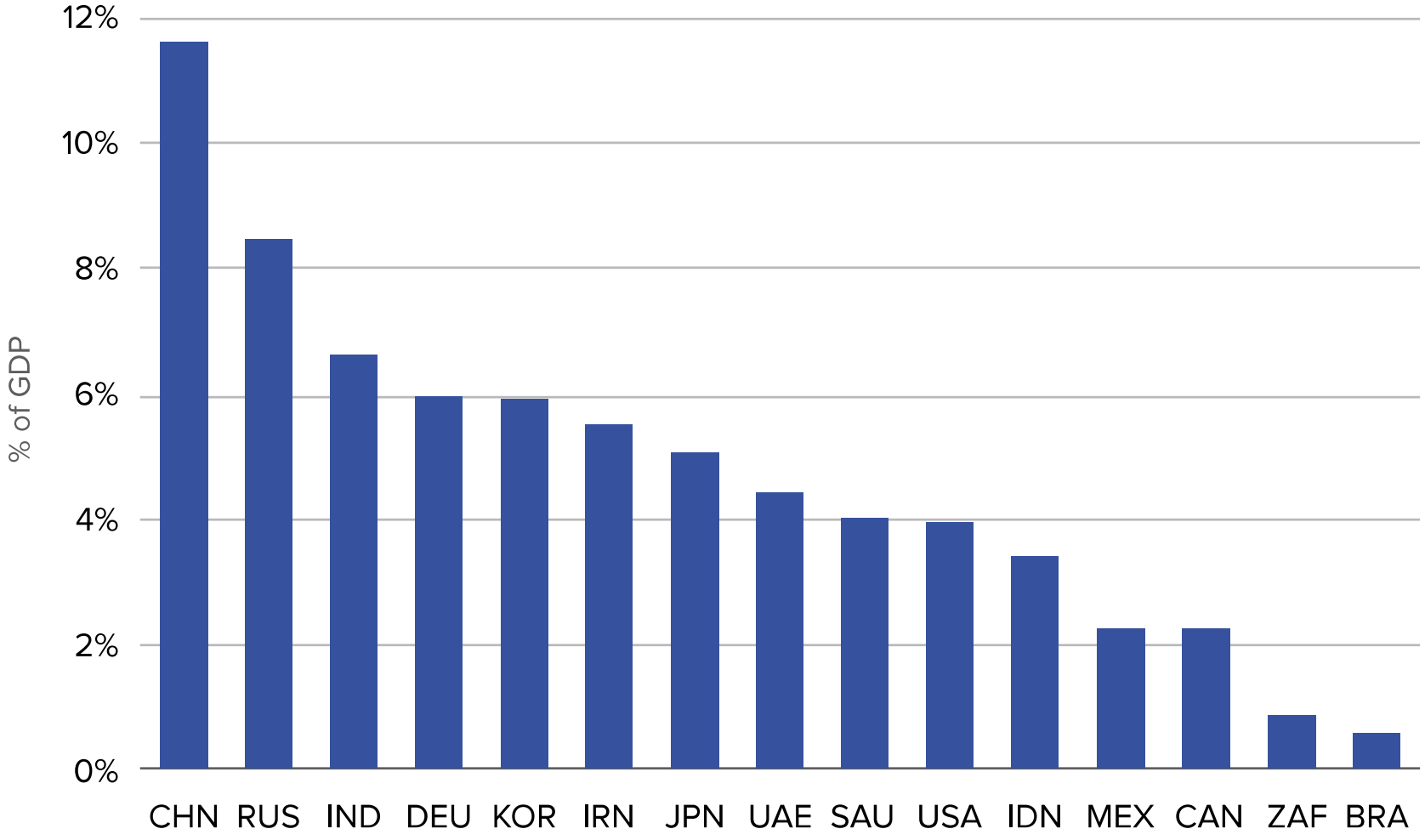
Indicative figures only
High rates of uncertainty



INCLUDING OPERATING EXPENDITURES WOULD LEAD TO A FURTHER REDUCTION OF US$5 TRILLION, FOR A POTENTIAL SAVING OF US$1 TRILLION.

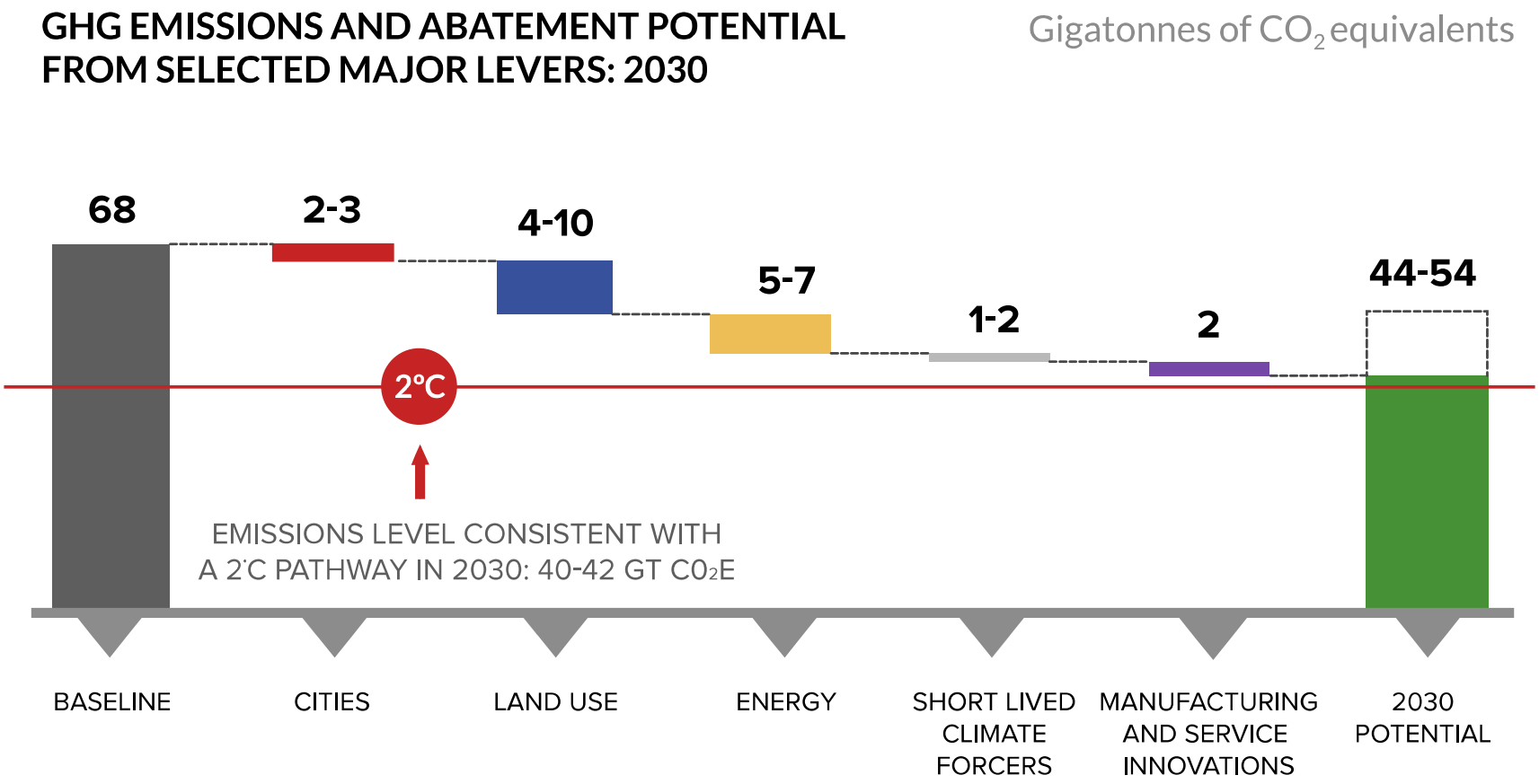
Source: OECD (2006, 2012), IEA ETP (2012), modelling by Climate Policy Initiative (CPI) for New Climate Economy, and New Climate Economy analysis.

ENERGY: Economic value of premature deaths from PM2.5 air pollution



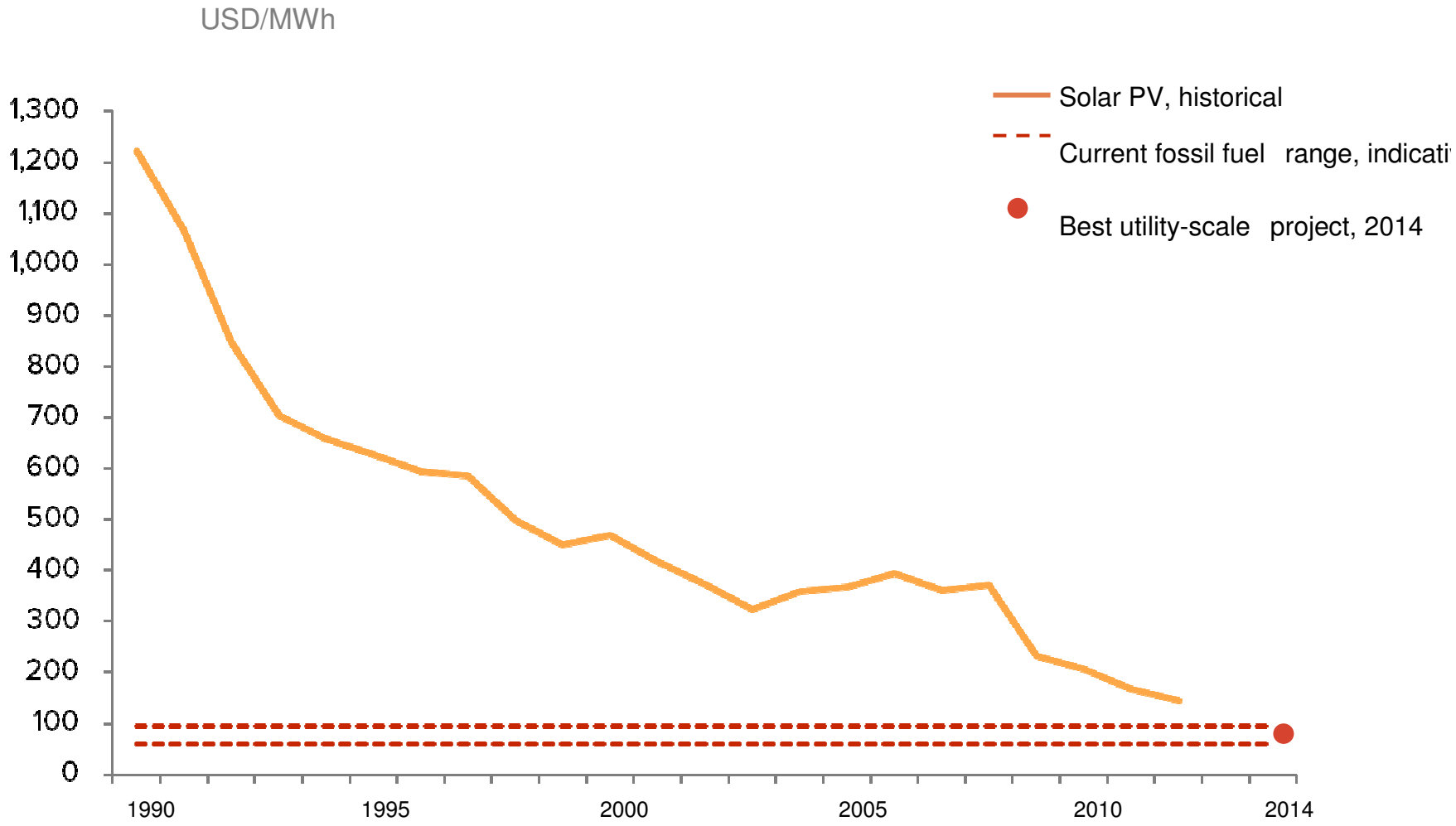
Source: NCE estimate, based on WHO mortality data

Actions with economic benefits could deliver most of the greenhouse gas abatement needed by 2030



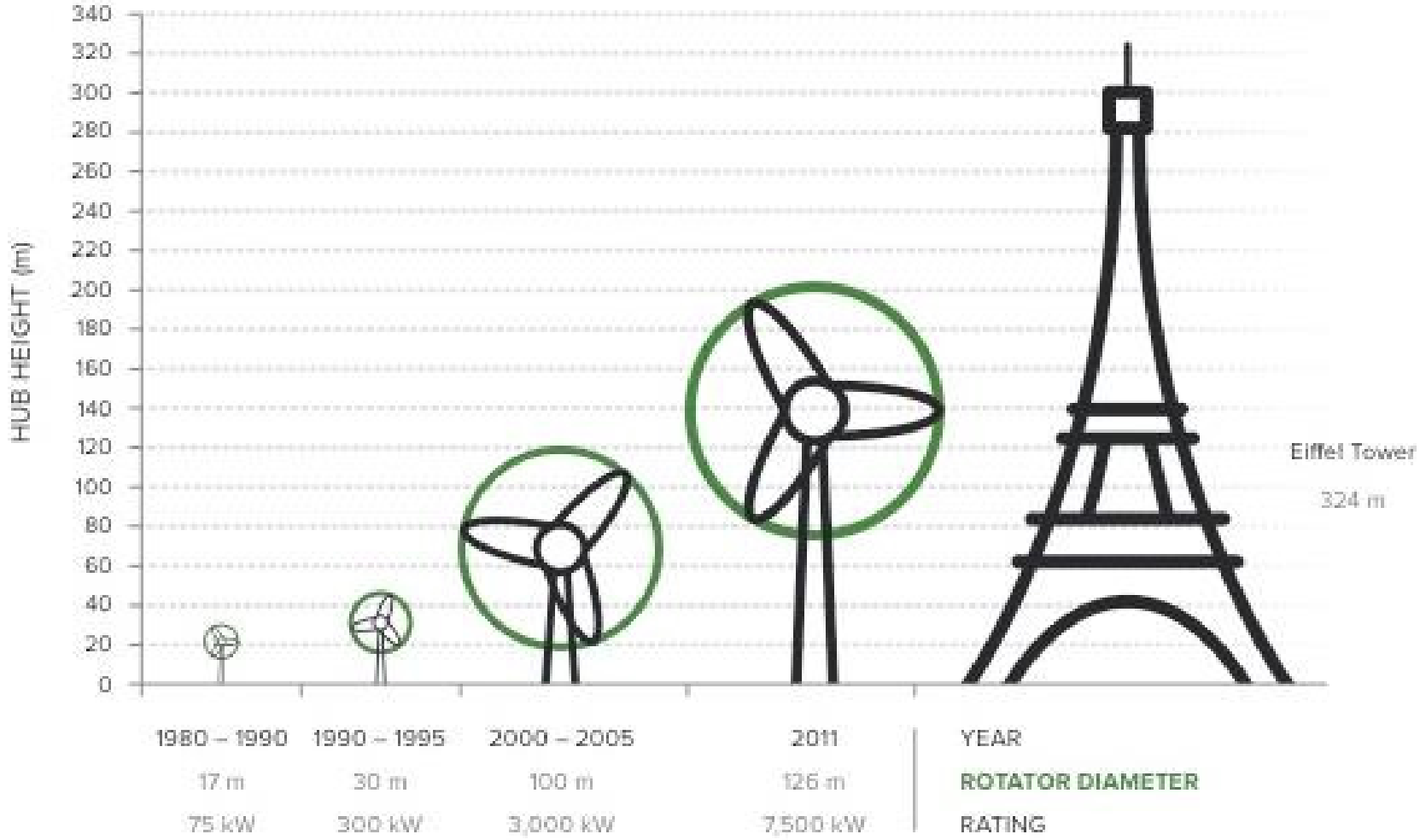
Source: Emissions estimates: IPCC AR5; New Climate Economy analysis based on expert input and multiple data sources

ENERGY: The cost of solar PV is dropping fast

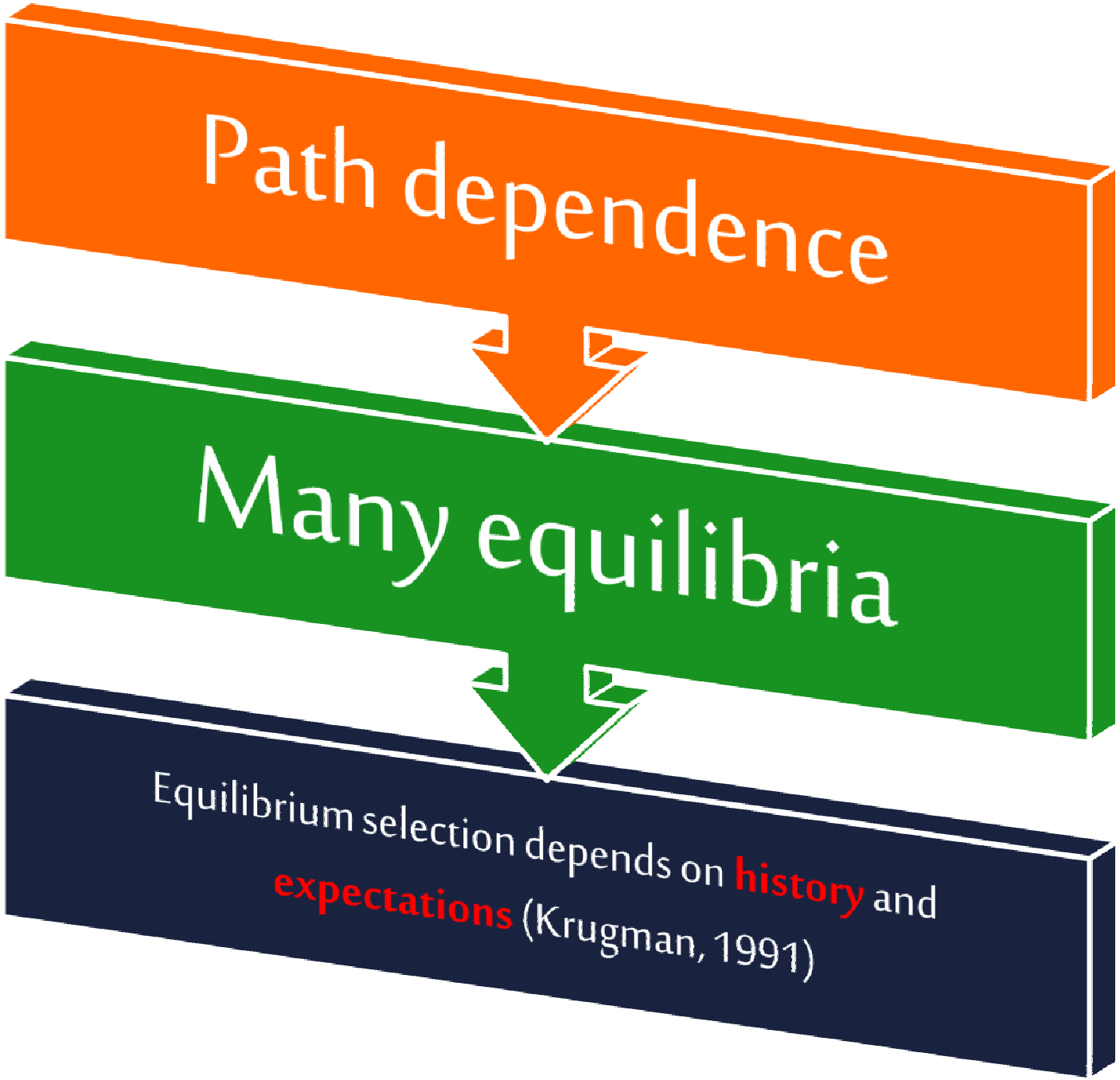


Sources: Citi Research 2012; G. F Nemet, "Beyond the learning curve", Energy Policy 34, 3218-3232 (2006)

Wind turbines have evolved to have 100 times more power generation capabilities than 30 years ago



Sources: Cityfix.com, NY Times, LSE and NCE Cities – Paper 03 Accessibility in Cities: Transport and Urban Form, p 10-11


Path dependence
Many equilibria
Equilibrium selection depends on history and expectations (Krugman, 1991)

Competitiveness

Many definitions ~ ‘relative performance’

- Whole-economy
    - Many dimensions – focus on relative productivity
- Sectors and business
    - Many dimensions – focus on market shares/relocation

Impact of carbon policy

- Production costs
- Declining/growing markets with changing cost base – counterfactual?
- Asymmetric application globally

‘Ex ante’ and ‘ex post’ studies give different results

*David Grover, Shreeder G. and Zenghelis D., (2014 forthcoming) ‘The competitiveness impact of a UK carbon price: what does the data say?’ GRI Policy Paper

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Why a lack of impact?

Why low resposiveness?

- Inertia and ‘border effects’ and ‘home bias’ McCallum (1995)
- Agglomeration and vertical specialisation: Krugman (2008); Yi (2003); Meyer and Head (2002)
- Forward looking - business decisions based on capital lifetimes
- Drivers of investment/location decisions: changes in access to markets; access to raw materials; access to skilled labour; access to technology; fiscal incentives; political stability, legal jurisdiction; infrastructural networks
- Expectations determine investment
    - Will policy differentials last?
    - What will energy prices do
    - capital and ii) operating costs in a) conventional and b) renewable energy?
- Distinguish SR carbon price and investment costs from LR operating costs. For example, up front energy investment costs may save longer run operating costs (as well as reduce emissions)

But weak policy base = not sufficiently tested?

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Policy to limit adjustment costs

Policy responses to level the playing field*

- First-best is a consistent global carbon policy regime
- Sectoral agreements: steel; cars; bunkers
- Carbon price for all sectors, but with lump-sum distribution to carbon-intensive. Impact on 'leakage'? "Take money and run"
- Compensation through reductions in corporate or income taxes?
- Border carbon adjustment - level the playing field: full-price signals to consumers (efficient, minimises 'leakage'; WTO? Embedded?)
- Role of innovation and R&D policy. Deployment support. Industrial policy and 'picking winners' vs. transparent non-discriminatory policies (e.g. standards or pricing)
- Political economy - losers shout louder….potential winners are potential: easier to lobby for lower energy costs than lower wages

*Bassi S., and Zenghelis, D. (2014) 'Burden or opportunity? How UK emissions reductions policies affect the competitiveness of businesses' – GRI Policy Paper

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Policy to help exploit new markets and opportunities

- •Transition support
- • Re-skilling; re-tooling
- • Labour mismatch – mobility, housing, structural reform
- •New markets
- • Require genuine and credible commitment. Policy uncertainty
- • Economies with flexible institutions – do not inhibit flow of resources from declining productivity to new more productive sectors - better able to manage structural adjustment and change
- • Regulations that raise costs may be in interests of sector - witness the reverse fortunes of US cars. US chemicals?
- • Short run macroeconomic position in the cycle – can crowd in investment

*Bassi S., and Zenghelis, D. (2014) 'Burden or opportunity? How UK emissions reductions policies affect the competitiveness of businesses' – GRI Policy Paper

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Policy recommendations

Early action – full steam ahead, not gradual or delay.

Credible/stable policies to reduce policy risk, institutions, regulations, contractual mechanisms, national submissions to intl' climate agreements.

Clean energy R&D not sufficiently ambitious; risks creating greater lock-in to dirty infrastructure that is costly to reverse.

Government support to include underwriting national green infrastructure projects and supporting basic clean energy research.

Once kick-started, low-carbon economy could be more innovative/productive than a high-carbon economy. Innovation 'spillovers' are 40 per cent greater in low-carbon innovation than in conventional innovation.

Carbon taxes need only be temporary because the energy and economic system will become locked-in to a low-carbon technology base.

Shale gas and CCS helpful as a bridge to full decarbonisation, but risk delaying or disrupting the transition to fully clean technology. Policy to discourage – or 'lock-out' – gas without carbon capture and storage in long run.

Innovation will determine our ability to get more out of resources we have. In a complex system; easier to drive change than to predict it ➔ leadership!

End