



Breaking the Climate Deadlock

Cutting the Cost: The Economic Benefits from Collaborative Climate Action

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The case for collaborative action on climate change

- Stern Review
 - Cost of action far less than the cost of inaction
- IPCC
 - Collaborative policies that equalise prices across countries are more cost effective than unilateral action
 - Emissions trading halves macroeconomic costs under Kyoto Protocol
- Limits of unilateral action
 - Free riders
 - Lack of single strategic actor
 - Carbon leakage

But some unanswered questions

- Despite clear evidence to support collaborative action insufficient progress has been made - unilateral measures remain more prevalent
 - But how much more costly are these individual measures?
 - What other economic benefits are countries foregoing as a result? Eg growth, jobs
 - Is it really necessary to work together, or can the same be achieved through a portfolio of individual efforts?

II. If all countries work together does it cost more, or less, per tonne of carbon dioxide to reduce emissions than if some countries or regions go it alone?

III. How does mitigation affect GDP and employment change when countries are working together or separately?

- Research undertaken using computer modelling of global, *energy generation, emissions (E3) and economic activity*
- Three key advantages of E3M(odell)G(lobal)
 - Disaggregated (can represent complex scenarios)
 - Econometric grounding (better accuracy)
 - Feedback linkages between energy, the environmental and the economy

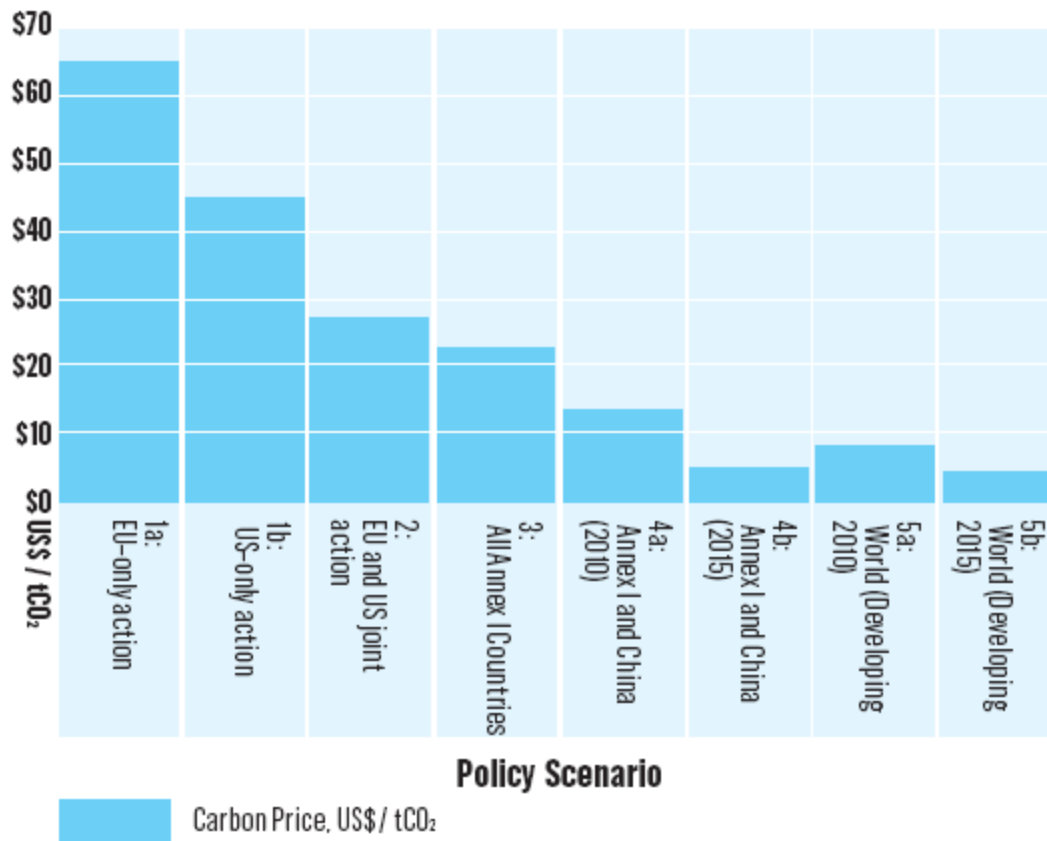
- The Modelling is based on three key steps
 - One: emission targets are chosen
 - Two: Policies and carbon price schedules chosen
 - Three: the model is run until emission targets are achieved
- Two pronged approach for achieving emission reductions
 - Carbon pricing (emissions trading & taxation)
 - Ambitious supporting policies and measures (eg revenue recycling, efficiency standards etc)

Eight scenarios modelled: from EU-only to global agreement

POLICY SCENARIO	REGION	ANNUAL CO ₂ EMISSIONS ¹⁰ IN 2020 FOR ACTING REGION	TOTAL EMISSIONS ABATED COMPARED TO BAU (MtCO ₂)
Reference	World	74 per cent higher than 1990	0
1a	EU	30 per cent less than in 1990	1277
1b	US	30 per cent less than in 1990	2359
2	EU and US	30 per cent less than in 1990	2520
3	Annex I	30 per cent less than in 1990	3898
4a	Annex I and China	Annex I: 30 per cent less than in 1990 China: return to 2010 levels	8853
4b	Annex I and China	Annex I: 30 per cent less than in 1990 China: return to 2015 levels	6096
5a	World	Annex I: 30 per cent less than in 1990 Non-Annex I: return to 2010 levels	10739
5b	World	Annex I: 30 per cent less than in 1990 Non-Annex I: return to 2015 levels	9112

Key Findings: Carbon Price (1)

Carbon price needed to reach emission reduction targets drops dramatically as more countries collaborate: \$65 to \$4-8/tCO₂



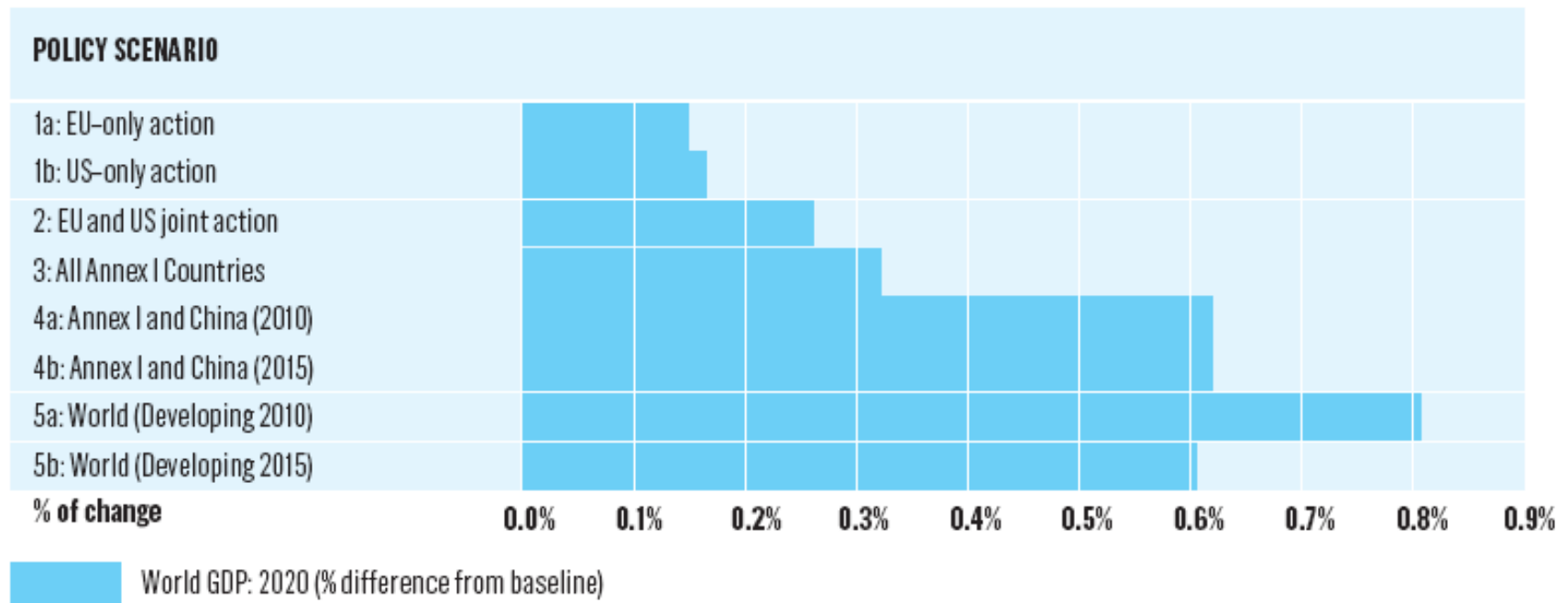
Key Findings: Carbon Price (2)

- Very low prices only valid with strong, coordinated, international policies in place (tax & regulate)
- Reductions driven by three factors
 - Carbon trading provides opportunities to seek out reductions where cheapest
 - The greater the range of opportunities, the lower the cost (dev'g countries in particular increase range)
 - The Demand for low-cost mitigation drives innovation and scale, with ongoing +ve feedbacks
- The dramatic fall in carbon prices shows the greater level of ambition achievable multilaterally than unilaterally

Key Findings: GDP (1)

Impact of ambitious action on GDP is minor but positive:
action increases rather than reduces economic growth

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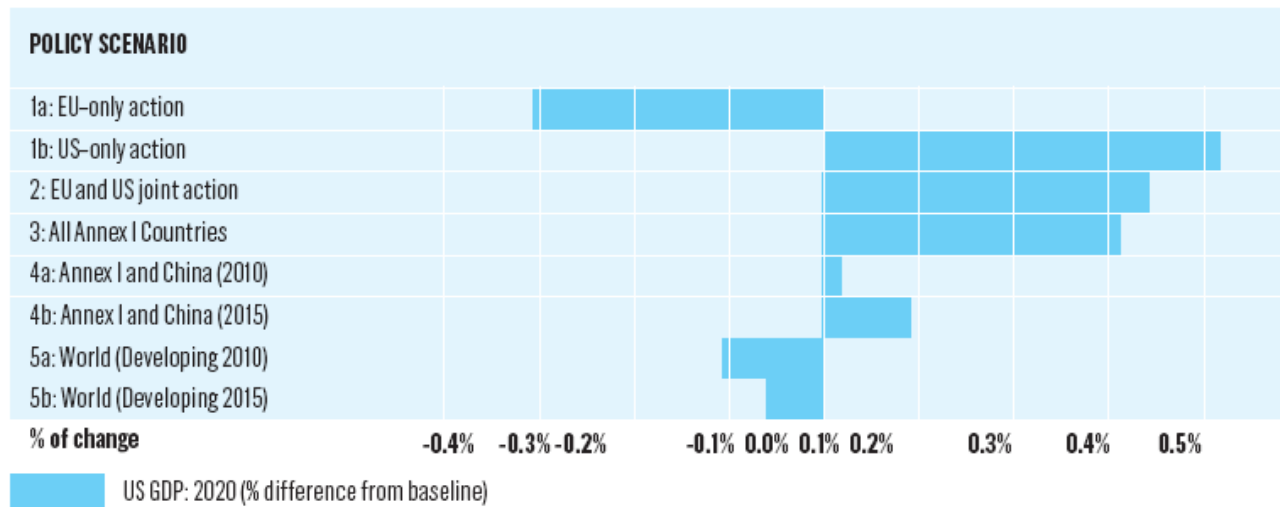


Key Findings: GDP (2)

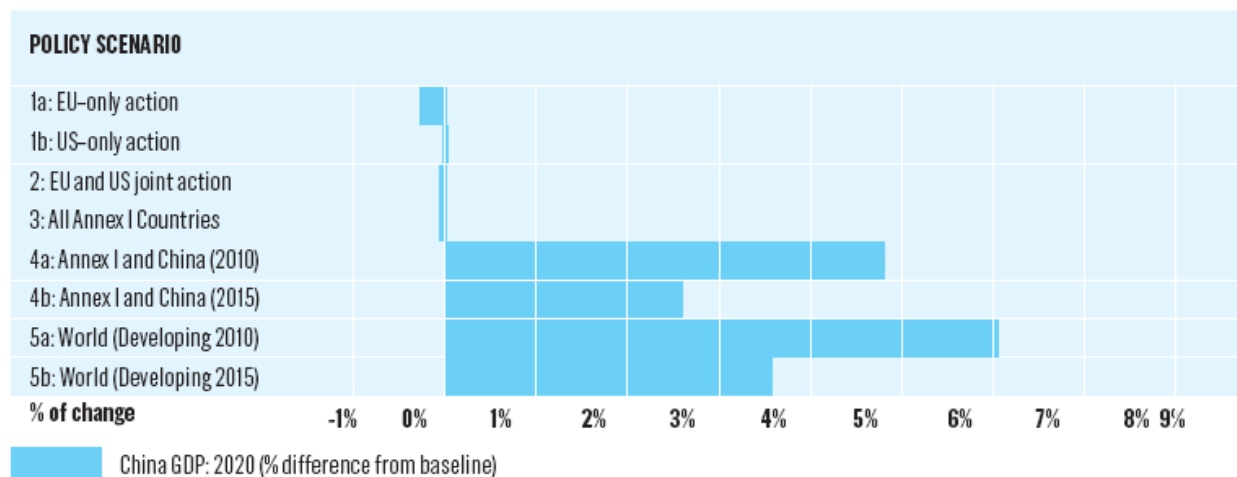
- Global GDP increase above baseline by 0.8% in 2020 under global deal
- Individual country effects range from -0.1% (US) to +6% (China)
- Dev'g countries benefit from taking *more* ambitious action not less: due to +ve impacts of low-carbon technology
- First-mover advantage real and potentially substantive eg EU GDP increases by 1.3% above baseline in 2020
- Sector impacts: electricity generation, heavy electricity users, industries dominated by multi-nationals (eg motor vehicles) all benefit with greater collaboration

Key Findings: GDP (3)

US



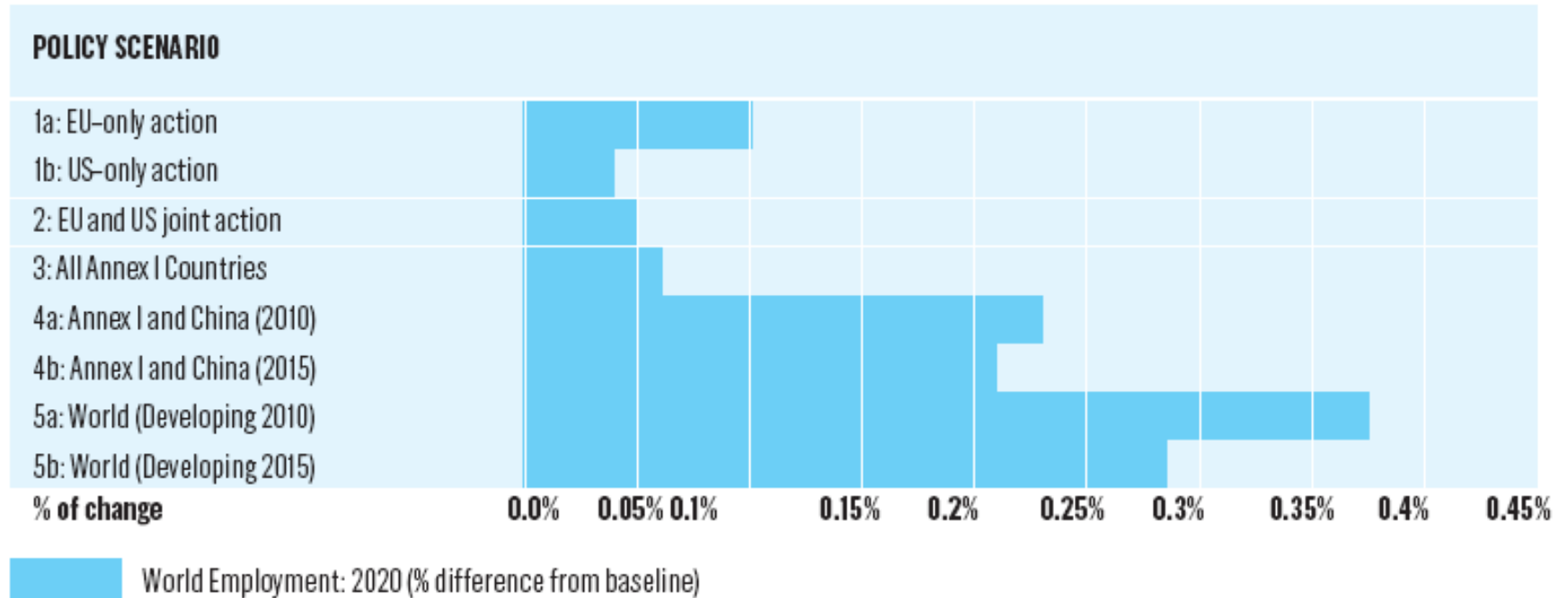
CHINA



Key Findings: Jobs (1)

The impact of ambitious action on job levels is minor but positive: *ambitious action helps fuel job creation.*

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Key Findings: Jobs (2)

- Up to 10 million additional jobs created under a global agreement in 2020
- If only EU or only US take action then these regions see 1.1 and 1.7 million new jobs respectively in 2020. Other regions may lose job under unilateral scenarios.
- China benefits most from a global agreement: 5 million new jobs in 2020.
- Although numbers are small in global terms, results do show that ambitious action does not cost net jobs.
- Total figures also hide considerable variation in sectors: both positive and negative

Some things to bear in mind when interpreting results...

- Model assumptions: perfect policy implementation, low transaction costs, technology adoption rates = both under and over estimation of costs and benefits
- Focus on energy-CO2 only ignores other low-cost mitigation options eg REDD. Costs lower still? Probably.
- No consideration of climate impacts from unconstrained CO2 emission growth: overestimate benefits from baseline scenario.

Conclusions and Recommendations

- Ambitious climate action needn't cost economic growth or jobs
- Collaborative action involving all countries can raise GDP and employment, while driving down the cost of mitigation
- But this will require close, coordinated and progressive new policies, measures and global carbon pricing.
- Those who act first gain real benefits
- Policy makers should embrace a 'Green New Deal' in Copenhagen to accelerate shift to a low-carbon global economy.