Committee on Climate Change

Building a Low-Carbon Economy – The UK's Contribution to Tackling Climate Change

www.theccc.org.uk

Structure of the presentation

1. The 2050 target

2. The first three budgets

3. Wider social and economic impacts of budgets

1. The 2050 target

(i) Required global emissions reduction

(ii) Appropriate UK contribution

(iii) Technologies for meeting required reductions

(i) Required global emissions reduction

What's changed?

- Advances in science
- Actual emissions higher than forecast

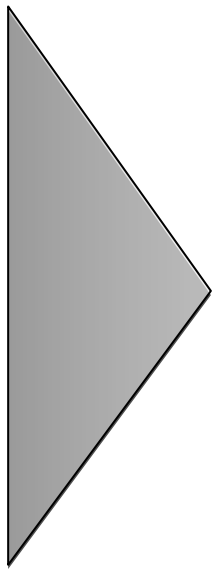
Assessment of damage

Decision rule

- keep temperature change close to 2˚ C
- and probability of 4˚ C increase at very low level (less than 1%)

Global trajectories considered

- Early or later peak (2015 vs. 2030)
- 3%/4% annual emissions reduction



Required global emissions reduction of 50%

- 20-24 $GtCO_2e$ emissions in 2050
- 8-10 $GtCO_2e$ in 2100

(ii) Appropriate UK contribution

50% global reduction

Burden share

- Alternative methodologies (contract and converge, intensity convergence, triptych etc.)
- Equal per capita emissions:
  - 20-24 $GtCO_2e$ total at global level in 2050
  - Implies 2.1-2.6 tCO_2e per capita

2.1-2.6 CO_2e per capita gives a UK reduction of at least 80% in 2050

All GHGs

Aviation and shipping included

(iii) Meeting required reductions

Reducing power sector emissions:

Renewables (wind, marine, biomass, solar), nuclear, CCS

Application of power to transport and heat

Reducing transport emissions:

- Fuel efficiency
- Electric/plug-in hybrids
- Sustainable Bio fuels

Reducing heat emissions:

- Energy efficiency
- Behaviour change
- Electric heat (e.g. heat pumps, storage heating)
- Biomass boilers
- CCS in industry

2. The first three budgets

(i) Level of budget (factors we have considered, CCC proposals)

(ii) Use of credits to meet budget

(iii) Feasible emissions reductions

(i) Level of budget: factors considered

The path to 2050

- 2020 ambition needed to make path to 2050 technically feasible
- Early action needed as contribution to global emission containment

PROPOSED BUDGETS

2008-12
2013-17
2018-22

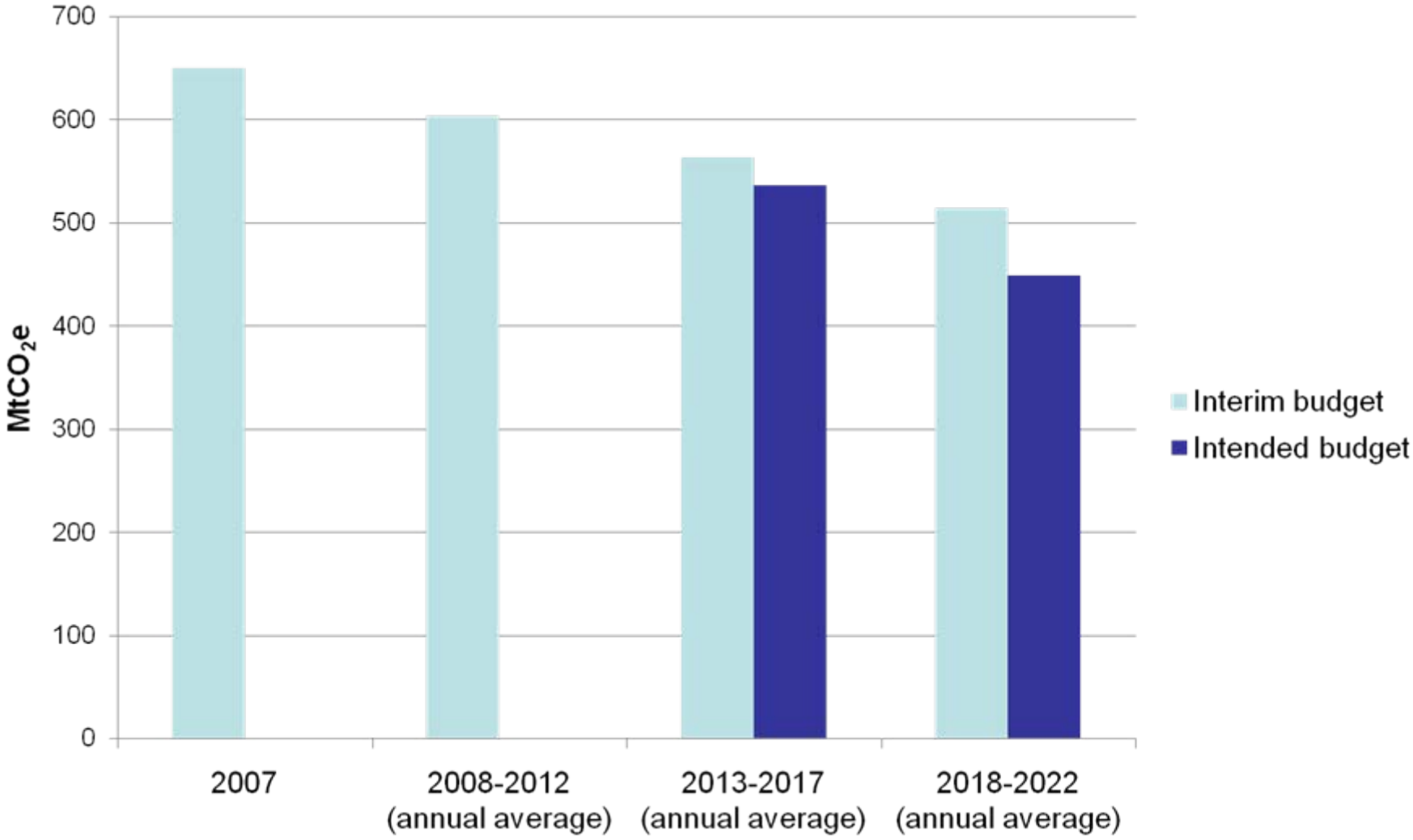
European Union strategies

- 30% reduction in GHG by 2020 versus 1990 if global deal at Copenhagen
- 20% unilateral cut

Bottom up sector by sector analysis

- Technical feasibility
- Costs of achieving reductions
- Policies in place or needed to drive emissions reductions

(i) Level of budget (cont.): Emissions ceilings



(i) Level of budget (cont.): treatment of aviation and shipping

Aviation

- European and UK shares of international emissions can be defined
- No major competitiveness problems with EU only policies
- In EU 20% and 30% targets, and within UK shares of these targets
- In EU ETS – capped from 2012
- But included in EU ETS on arbitrary "allocation" basis, making reconciliation with national budget inclusion complex

- Do not include in formal legal 'budget'
- But allow for in budget setting
- And Committee to monitor progress and policies

Shipping

- Precise UK or even European share difficult to define
- Dangers that European only policies (e.g. inclusion within the EU ETS) could produce carbon leakage
- Not in EU 20% and 30% targets
- Not in EU ETS

- Do not include in formal legal 'budget'
- But allow for in budget setting
- Committee to monitor progress and policies
- Global sectoral deal ideal way forward

(ii) Use of credits to meet targets

Pros

- Minimise costs
- Promise of finance flow may help in global deal negotiations
- Finance flow helps achieve low carbon developing economies

Cons

- Essential for developed economies to drive domestic emissions reductions and illustrate feasibility of low carbon economy
- CDM type credits (versus notional BAU) can never be as robust as allowances within cap and trade system

Committee distinguishes between:

- European Union Allowances (EUAs) in EU ETS
- Offset credits (e.g. CDM)

Committee position

- No restrictions on use of EUAs to meet budget
- Restrictions on use of offset credits
- No purchase by government to meet Interim budget
- Purchase may be appropriate to transition between Interim and Intended budgets
- This strategy is consistent with meeting 2050 target

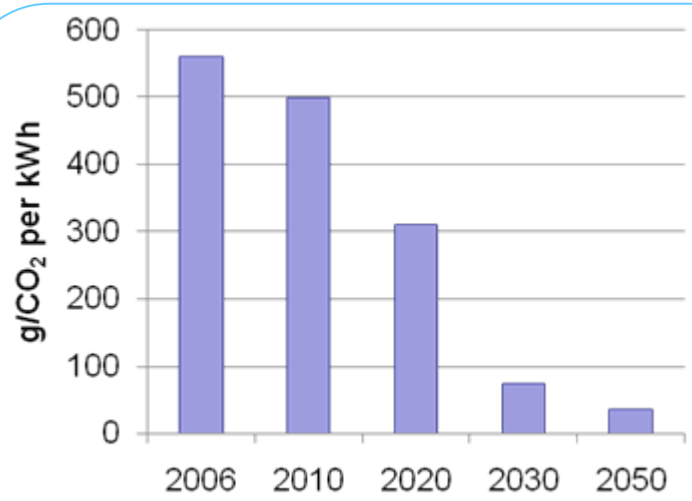
(ii) Use of credits to meet targets (cont.): credit purchase as a proportion of total emissions reduction effort

	Interim budget		Intended budget	
	$MtCO_2$	% of total reduction	$MtCO_2$	% of total reduction
Traded sector				
Domestic and EUA reduction	73	91%	106	87%
Bought in CDM and other offsets	8	9%	16	13%
Total	80		122	
Non-traded sector				
Domestic and EUA reduction	49	100%	49	68%
Bought in CDM and other offsets	0	0%	23	32%
Total	49		72	
Whole economy				
Domestic and EUA reduction	121	94%	155	80%
Bought in CDM and other offsets	8	6%	39	20%
Total	129		194	

(iii) Feasible emissions reductions - Power

Power

- Renewable and nuclear
- Preparation for CCS
- Required policies
  - EU ETS longer term extension
  - CCS demonstration
  - Price/non-price policies to drive renewables



Scenarios

- 40% emission reduction by 2020
  - 30% of electricity supply renewable, nuclear in 2020s
  - Less renewables (e.g. 25%) and some nuclear by 2020
- Costing 0.2% of GDP
- Average carbon intensity in 2020 around 300g/kWh, from current 500g/kWh

(iii) Feasible emissions reductions – Power (cont.): CCC position on coal generation

No role for conventional coal beyond early 2020s

CCS not proven at production scale

New coal investment only with full expectation of retrofit in early 2020s

Policy options:

- Requirement for retrofit
- Carbon price underpin
- Carbon intensity limits (g/kWh)

(iii) Feasible emissions reductions – Energy use in buildings and industry

Our approach

- Technical potential
- Cost effective potential
- Realistically achievable potential

Residential

- Technical potential over 100 $MtCO_2$
- Realistic potential
  - Energy efficiency potential 22 $MtCO_2$
  - Renewable heat potential 10 $MtCO_2$
- Policy
  - Supplier Obligation
  - EPCs
  - Appliance standards
  - Renewable heat

Commercial

- Technical potential over 30 $MtCO_2$ in energy efficiency and micro-generation
- Realistic potential 5-11$MtCO_2$.
- 50% covered by caps
- Need for wider policy coverage

Industrial

- Technical potential 7 $MtCO_2$
- Realistic potential 4-6 $MtCO_2$
- 95% covered by caps

(iii) Feasible emissions reductions – Transport

Committee on Climate Change

Improved carbon efficiency of vehicles

Cars: Improved fuel efficiency, electric/plug in hybrids offer potential for 12 $MtCO_2$ emission reduction by 2020

Vans : Fuel efficiency improvement, electric/plug in hybrids offer potential for at least 3 $MtCO_2$ in 2020

HGVs: Fuel efficiency improvement offers potential for at least1 $MtCO_2$ in 2020

Need ambitious EU targets and domestic implementing mechanisms(information, fiscal levers)

Demand side measures: indicative

Eco driving: 3 $MtCO_2$

Journey planning and modal shift

Demand Management:

- Eddington Review

Information and encouragement. Response is inherently uncertain

(iii) Feasible emissions reductions - scenarios

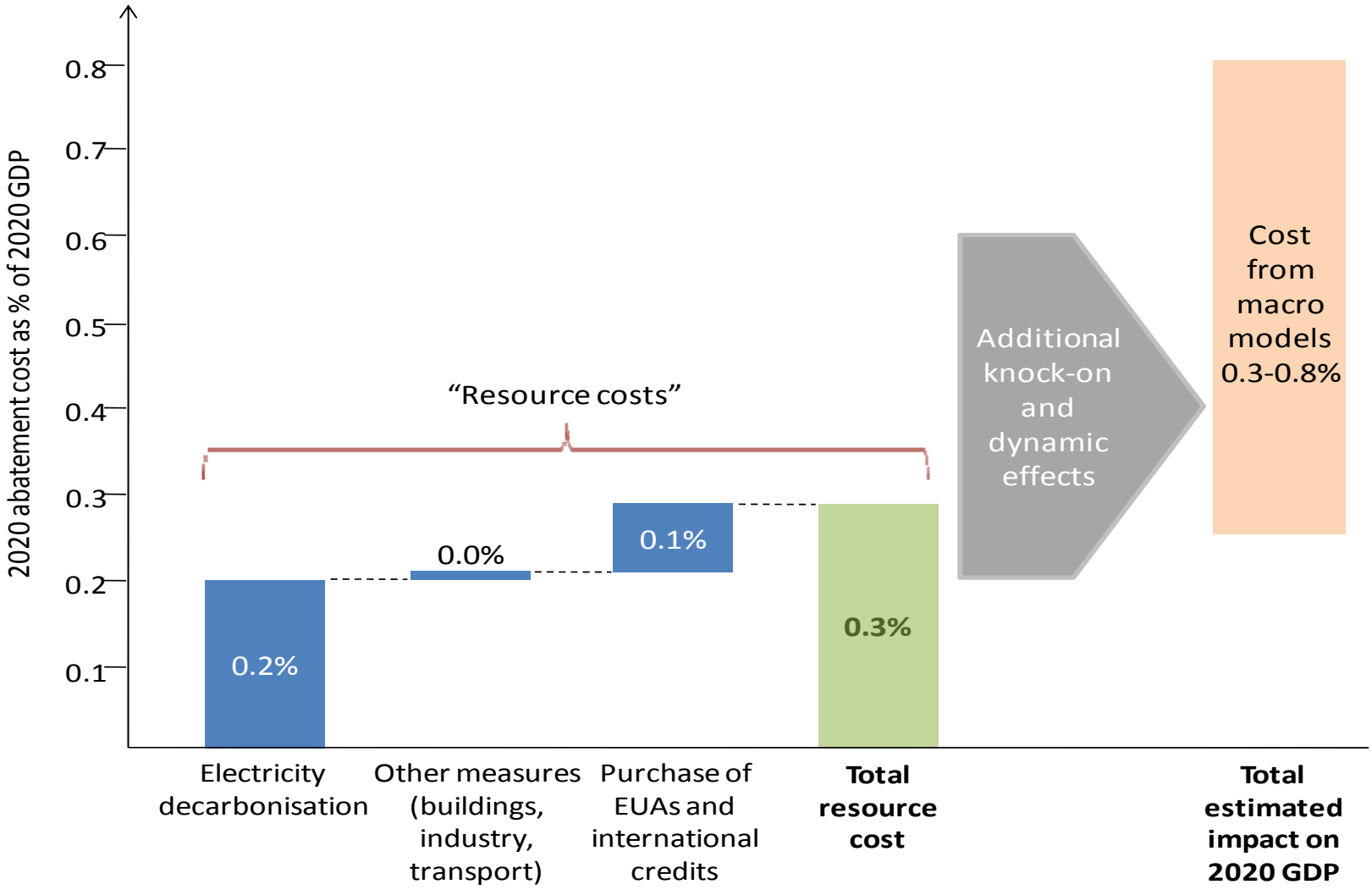
Criteria:

- Cost per tonne of carbon saved
- Measures required on the path to 80% in 2050
- Practical given constraints on deliverability

Current Ambition	Current detailed policies plus 30% renewable power generation
Extended Ambition	Existing policies plus policy intent
Stretch Ambition	Includes measures where there is no current policy or commitment

- Extended Ambition delivers Interim Budget
- Intended Budget requires either credit purchase or some Stretch Ambition actions

(iii) Feasible emissions reductions – resource cost of meeting the Intended budget



3. Wider social and economic impacts of budgets

Competitiveness	• Risk in specific sectors accounting for less than 1% of UK GDP and employment • Risk can be mitigated by appropriate policy e.g. free allowance allocation , border carbon price adjustments, sectoral agreements
Fuel Poverty	1.7 million increase in fuel poverty numbers but mitigation possible at manageable cost
Security of supply	• Technical: supply intermittency manageable • Geopolitical and economic volatility: positive impact of reduced dependence on imported oil and gas
Fiscal	• Positive impacts from auctioning (£9 bn p.a.) • Negative VED and fuel duty effect (£4 bn p.a.) • £500 m p.a. to offset fuel poverty effects
Regional	Significant difference in pattern of opportunities and challenges: important role for devolved administrations