



Is it possible to prevent?

GLOBAL CLIMATE COLLAPSE



Climate Collapse

- The problem of the 21st century.
- Much worse than thought even 5 years ago
 - Climate change is faster
 - GHG emissions are higher than even the worse case assumptions
 - Climatic positive feedback
 - Arctic ice melting
 - Amazon burning down
 - Permafrost melting – methane release
 - Zero Action

Consequences

- 6 – 10°C temp rise
- No plant life between the tropics
- Antarctic & Greenland ice caps melt
- Sea level rises 100m
- Oceans turn acid
- +90% extinction rate

Why is nothing being done?

- Simply answer
 - money
- Complex answer
 - money

Simple Answer

- Stopping GHG emission is expensive
- Need to reduce emission by 95%
- Cost US\$50 to \$500 per t. C equil.
- Per capital Australian GHG emissions
 - ~20 tonnes
 - Cost \$2000 to \$20,000 pa.
- Public willingness to pay
 - \$120 pa!
 - All western countries
 - Stable for the last 15 years



Complex Answer

- Vested interests
 - Oil industry
- Infrastructure
- International co-operation

Vested Interests

- A number of very powerful groups opposed to change
- Oil Industry
 - Extracted 100 trillion barrels oil since 1860
 - 100 trillion barrels to be extracted over 40 years
 - Current value of this oil
 - No action on GHG emissions - \$50 trillion
 - Urgent action on GHG emissions - < \$10 trillion

Infrastructure

- Source of all our wealth
- Built over the last 100 years
 - 98% based on using fossil fuels
 - Interconnected
 - Has to be totally replaced
- What will it cost to replace?
 - Very difficult to get a firm answer on this
 - Estimates range from \$10 to \$200 trillion
 - ~0.5 to 10 years of total world GDP

International Co-operation

- All current ideas for solving climate collapse require international co-operation
- No country wants to pay the cost unless all other countries pay
- Need to get everyone to join at once
 - USA out until ?
 - China out until after 2050
 - India out
 - These three are 75% of future emissions

Any solution requires

- Closing the gap between what people will pay and what it will cost (>90%)
- Overcome all vested interests
- Replacement of all current infrastructure
- All countries agree

AND

- Accomplished in the next 10 years
- Is there any hope?

Solution

- Push all the costs on to future generation
- Why?
 - They receive most of the benefits
 - Will be much wealthier than us
 - They can't say no!
- How to do this?

Carbon Bank

- Limited number of countries establish a new bank – **Carbon Bank**
- Debt underwritten by the member countries
- Bank issues debt – **Carbon Bonds**
- Money raised from bonds is spent buying existing infrastructure and building new non-GHG emitting infrastructure
- Countries joining later are allocated a negotiated share of the total debt

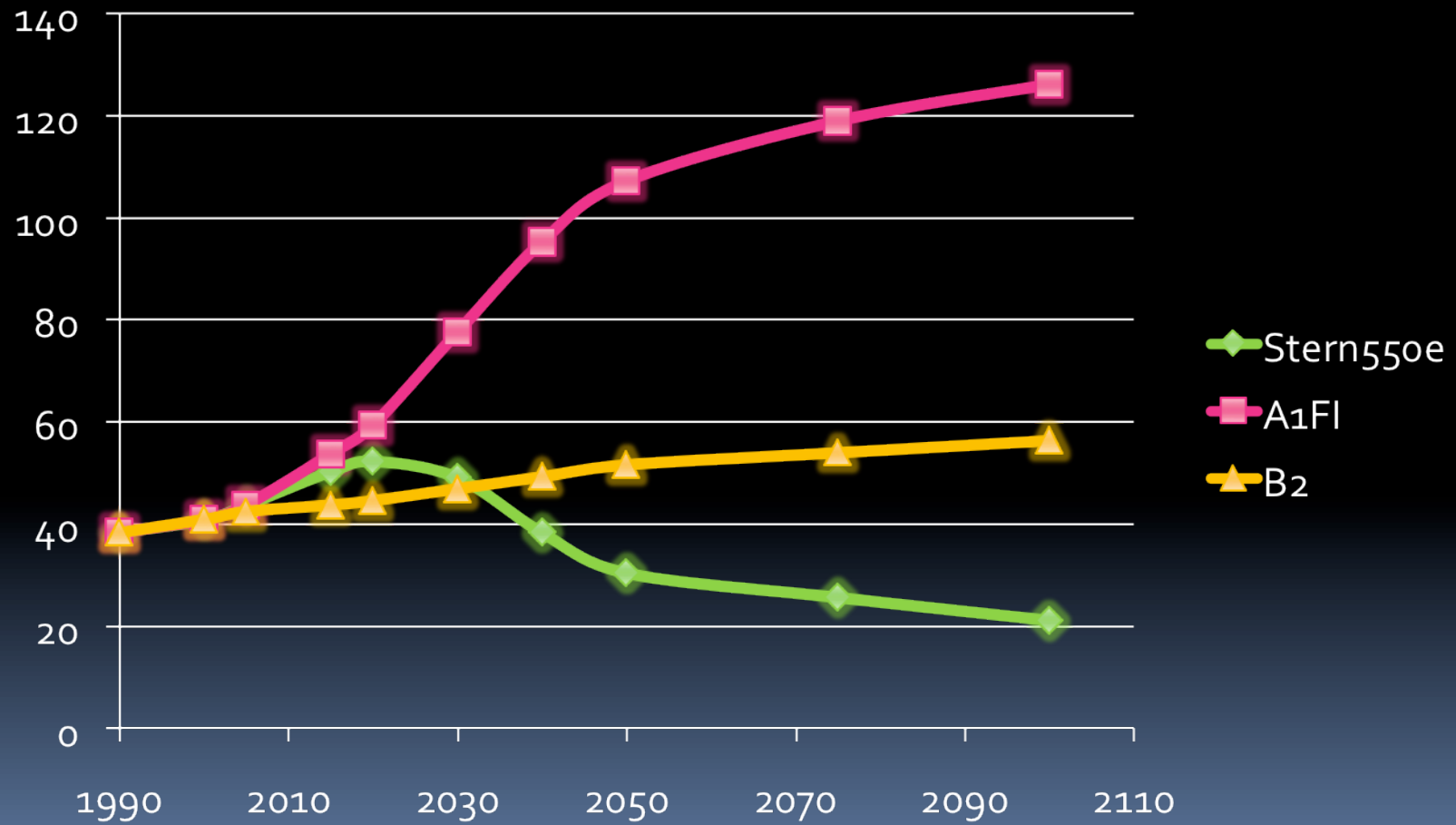
Carbon Bonds

- 50 year, sovereign-backed, inflation indexed, zero coupon bonds
- Zero coupon bonds
 - Standard bond
 - Pay no interest, sold at a discount to face value
 - Inflation-indexed, sovereign-backed bonds pay equivalent of 2.2% pa
 - Carbon bonds would sell for ~30% face value
 - No repayments for 50 years

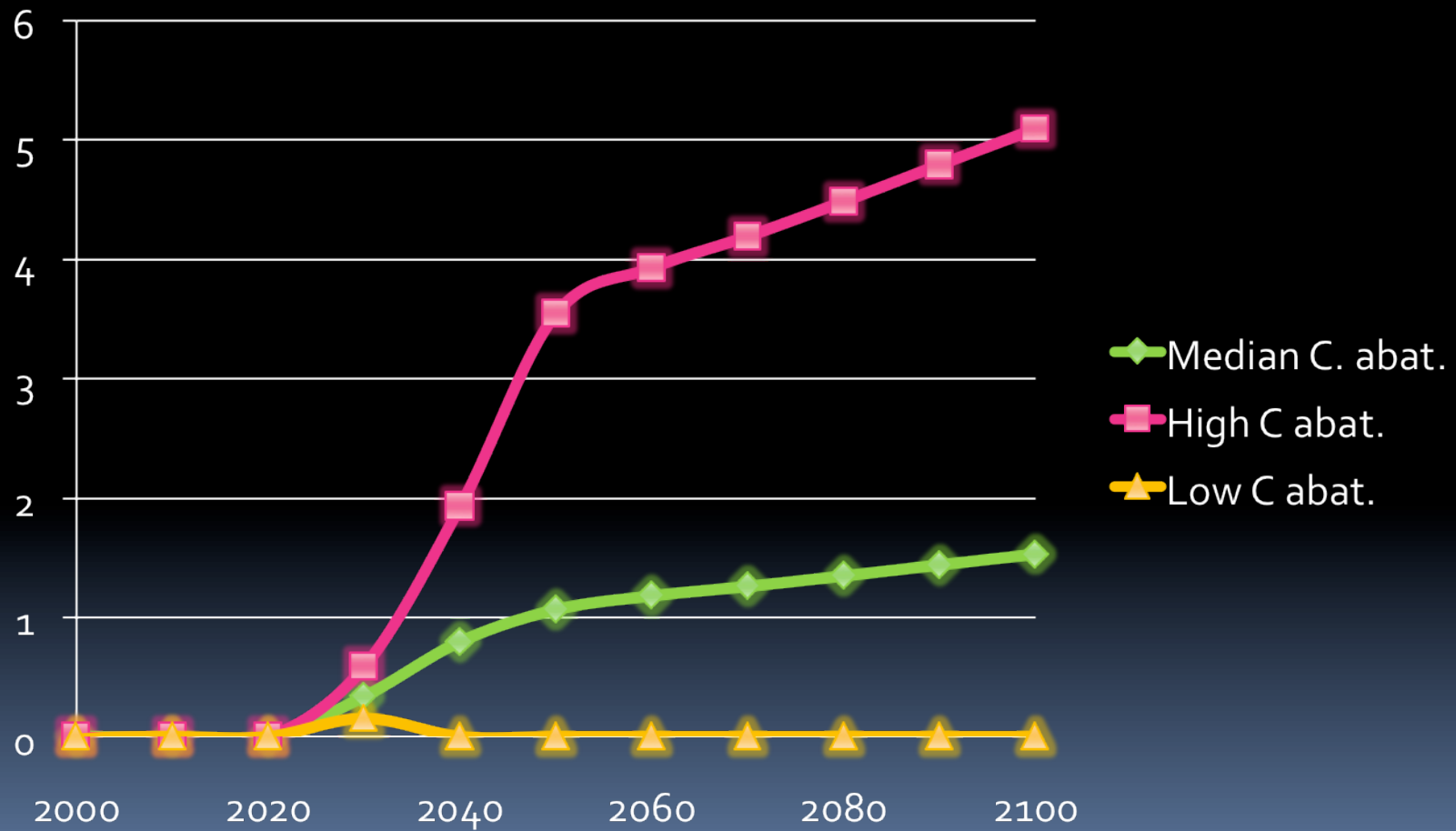
Assumptions

- Worst case emissions (IPCC A1F1)
- Anderson 2006 high and low carbon costs
- GDP growth rate
 - 2020-2050 3.90%
 - 2051-2100 2.35%
- Bond interest rate & term
 - 2.5% inflation indexed
 - 50 years
- US\$ 2000

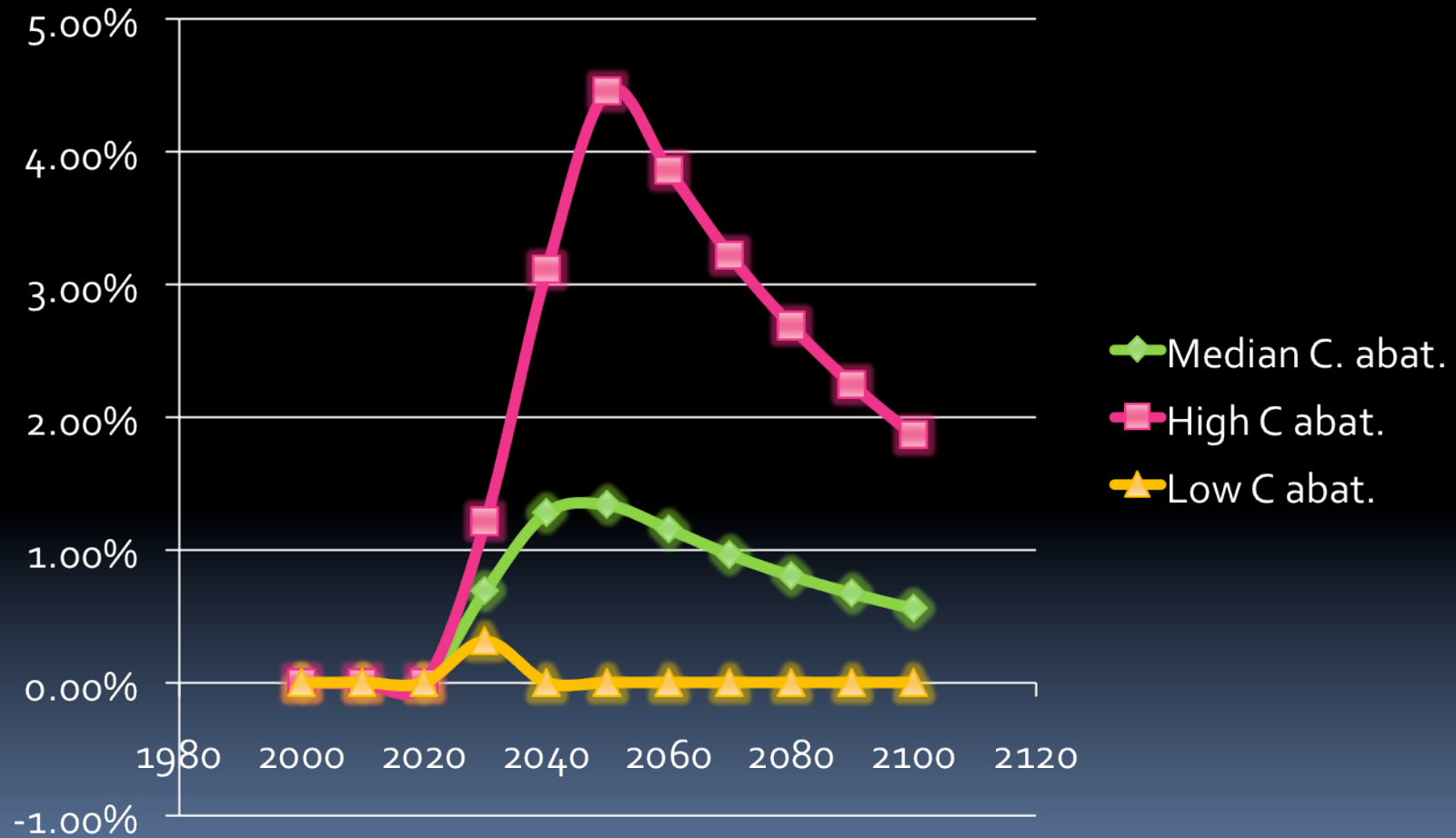
CO₂ Emissions



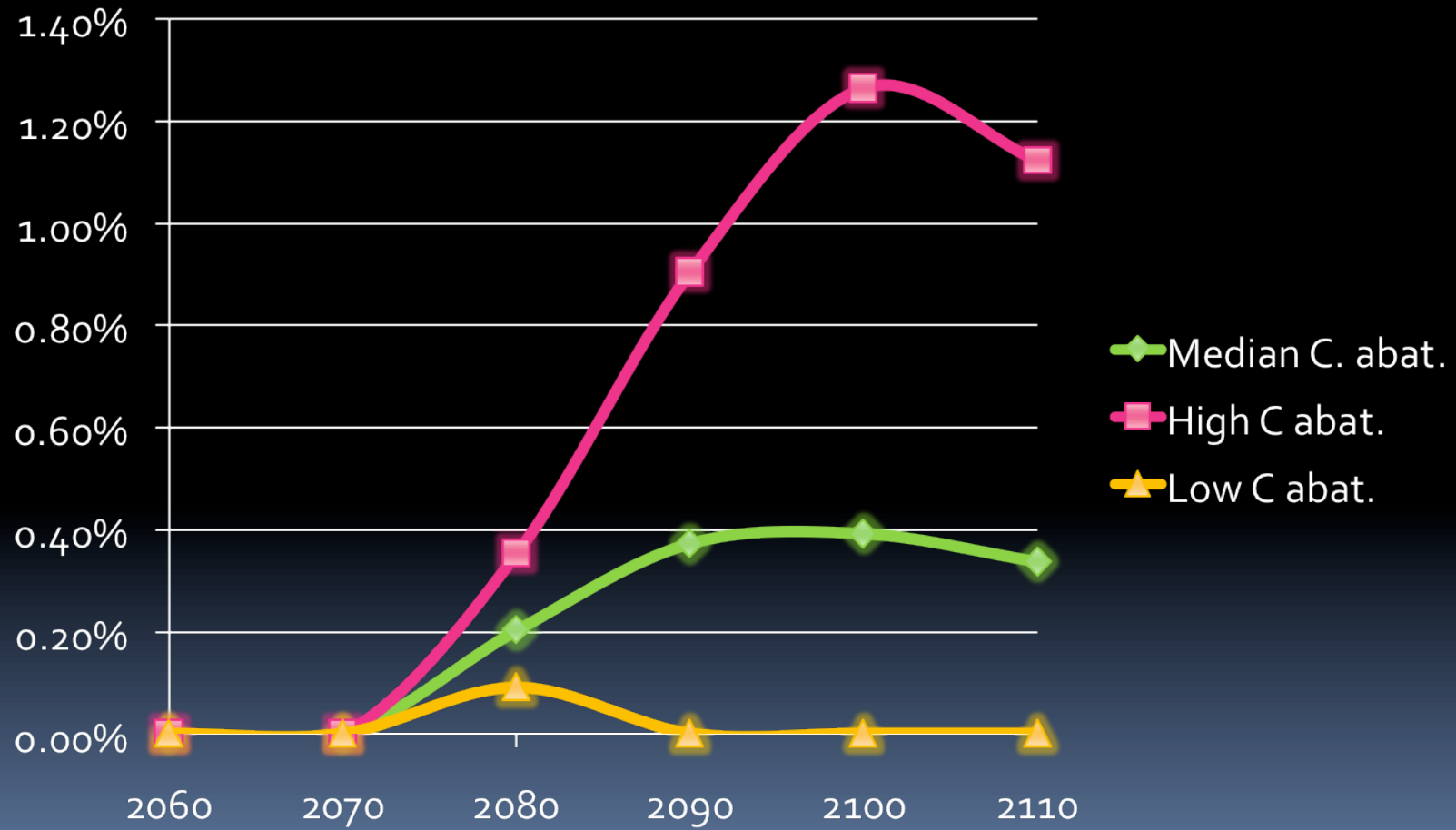
Bonds issued



Expenditure % GDP



Cost % GDP



Other areas

- How to get all countries to join in?
 - Game theory
 - No deadlines
- How to best spend the money
- What preliminary activities are needed?



Questions