ANALOGUES FOR LIABILITY MANAGEMENT

4th IEA International CCS Regulatory Network Meeting
(Paris, 9-10th May 2012)

CHRIS CLARKE

Visiting Fellow, Carbon Capture Legal Programme, Faculty of Laws

University College London
Centre for Law and the Environment, Bentham House
Endsleigh Gardens
London WC1H 0EG

Tel: 020-8348 5589 (Dir); 020-7679 1511 (Centre)
email: chris.clarke@ucl.ac.uk
www.ucl.ac.uk/cclp

Introduction

- CCS liability & financial security
- analogues
  - waste management
  - environmental liability
  - marine & nuclear regimes
- some possible lessons?

CCS liability

- CCS permit obligations (incl closure/post-closure)
- corrective measures where leakage or sig irregularity
- wider remediation under environmental laws
  - land, water, habitats & species, public health, etc
- surrender of emissions credits/allowances
- civil/common law liabilities
  - personal injury, property damage, economic loss
- financial security to cover some/all of the above
- transfer of responsibility *x* years after closure/cessation
  - subject to conditions & fault re-opener
- contribution to post-transfer costs

CCS liability (cont)

- nature of the problem:
  - long timescales, permanent containment, etc
  - large volumes & costs
  - novel technology, rapidly introduced, early stage in deployment
  - remoteness & inaccessibility of storage sites
  - channelling of liability to the storage operator
  - unusual nature of the emissions allowance/credit market & risk
  - financial security burden
  - ambiguities in the transfer of responsibility
  - immature nature of the science (development risk)
  - highly politicised debate/lack of consensus - regulatory risk
  - all in context of colossal de-carbonisation task & in the midst of economic recession (+ eurozone crisis)
- some liability risks probably underestimated?

Risk management task

- liability for environmental harm/health just one part of complex project risks
- Longannet FEED study:
  - construction all risks, environmental impairment liability, contractors pollution liability, general third party liability, property damage, delay in start up, business interruption, control of well, financial loss, professional indemnity, directors' & officers' liability, decommissioning all risks, employer's liability, motor third party
  - given the limitations of insurance to address the long-term liabilities & its inability to respond to numerous sub-surface risks, the focus needs to be on managing risks around site selection & long-term monitoring of the site's technical integrity
- need to be clear what risks we're talking about
  - habitats/species, bodily injury, own property damage, insolvency, business interruption, errors & omissions, etc?
  - liability to whom? govt? third party? contractual?

Financial security requirements

- adequate financial provision to meet all the obligations under the operating permit including:
  - monitoring, corrective measures, surrender of emissions allowances, updating of monitoring & provisional post-closure plans, site closure (including removal of facilities & sealing of the site), temporary continuation of injection following withdrawal of a permit, and required financial contribution to post-transfer funding
- key features of an acceptable instrument:
  - certainty, amount, liquidity, flexibility & duration
  - types of instruments accepted (bonds, LOCs, insurance, etc)
- principles for calculating the appropriate amount
  - technical assessment of costs & risks + decisions about discounting, phased pay-in periods, periodic review, etc

Background - catastrophe events

- Aznalcóllar/Boliden zinc/silver mine spill (Spain, 1998)
- Baia Mare gold mine cyanide spill (Romania, 2000)
- Ajka aluminium waste spill (Hungary, 2010)
- tanker oil spills:
  - Amoco Cadiz, Exxon Valdez, Braer, Prestige, Erika, etc
- nuclear accidents:
  - Three Mile Island (1978)
  - Chernobyl (1986)
  - Fukushima (2011)
- Deepwater Horizon/Macondo (2011)

Cautionary tales

- RCRA Subtitle C - hazardous waste TSDFs (1976/1982)
  - EIL market expands, then crashes - small facilities close
- CERCLA (1980)
  - financial assurance requirements not implemented; 20+ years litigation about CGL policy wordings & exclusions, etc
- RCRA Subtitle I - USTs (1986)
  - state-level requirements, SMEs couldn't meet - govts subsidised, some went bust
- Umwelthaftungsgesetz (UHG) (1990)
  - DM 160m per facility - regulation not implemented; new policy wordings introduced (UHV), but diverged from stat requirements
- Environmental Liability Directive (2004)
  - compulsory ins/security rejected - 8 MSs chose to adopt it, but problems with implementation & continued reluctance in markets

Wide application

- financial assurance/resp requirements applied, eg:
  - surface & hard rock mining
  - oil & gas exploration, production & decommissioning
  - the trans-Alaska pipeline
  - underground storage tanks
  - underground injection wells
  - waste treatment, storage & disposal facilities (incl PCBs)/landfills/etc
  - used oil recycling operations
  - public drinking water supply
  - radioactive substance facilities
  - dry cleaning establishments
- also more widely as contractual obligations
  - completion of works, storage & transport of hazardous goods, remediation of damage, professional indemnity, etc

RCRA Subtitle C: TDSFs

- owners/ops of units that manage haz waste required to:
  - demonstrate financial assurance for closure & post-closure
    - ceasing operation, closing the unit, cleaning up any contamination
    - long-term maintenance, monitoring, record keeping during post-closure care period (min 30 years)
    - costs based on paying third party to perform tasks, adjusted annually
  - maintain accident liability cover, for sudden & non-sudden occurrences
    - sudden: at least $1m per occurrence & $2m aggregate
    - non-sudden: at least $3m per occurrence & $6m aggregate
  - allowable instruments/mechanisms
    - insurance, trust fund, surety bond, letter of credit, financial test, corporate guarantee
    - detailed requirements and/or standard wordings for each

RCRA financial tests

- Alternative 1. Owner/op must meet each of following:
  - net working capital = 6x current closure, post-closure, plugging & abandonment cost estimates
  - tangible net worth is greater than $10m
  - 90% total assets located in the US or at least 6x closure, etc cost ests
- and must satisfy two of following three ratios:
  - liabilities to net worth ration less than 2
  - current assets to current liabilities ratio greater than 1.5
  - net income (plus depreciation, depletion, amortization) to liabilities ratio greater than 0.1
- Alternative 2. Owner/operator must meet each of following:
  - tangible net worth at least 6x current closure, etc cost estimates
  - tangible net worth is greater than $10m
  - 90% of total assets in the US, or at least 6x current closure, etc, costs
  - current bond rating for most recent bond issuance AAA-BBB (S&P)/equiv

EU landfill directive: UK

- Directive 1999/31/EC:
  - adequate financial provision, prior to start of disposal operations, to ensure that permit & closure (incl after-care) obligations are met
  - operator responsible for monitoring, analysis & groundwater for as long as the comp auth considers likely to cause a hazard to env
- UK guidance:
  - adequate = sufficient, secure & available when required
  - haz & non-haz waste: plan after-care for 60 years + contingency fund thereafter (residual returned upon permit surrender)
  - no discounting to net pres value, unless consistent/proven return
  - env monitoring, capping, cap maintenance, leachate management, landfill gas management, surface water management, security, site reports, specified events (with cost profile over time)

UK landfill (cont)

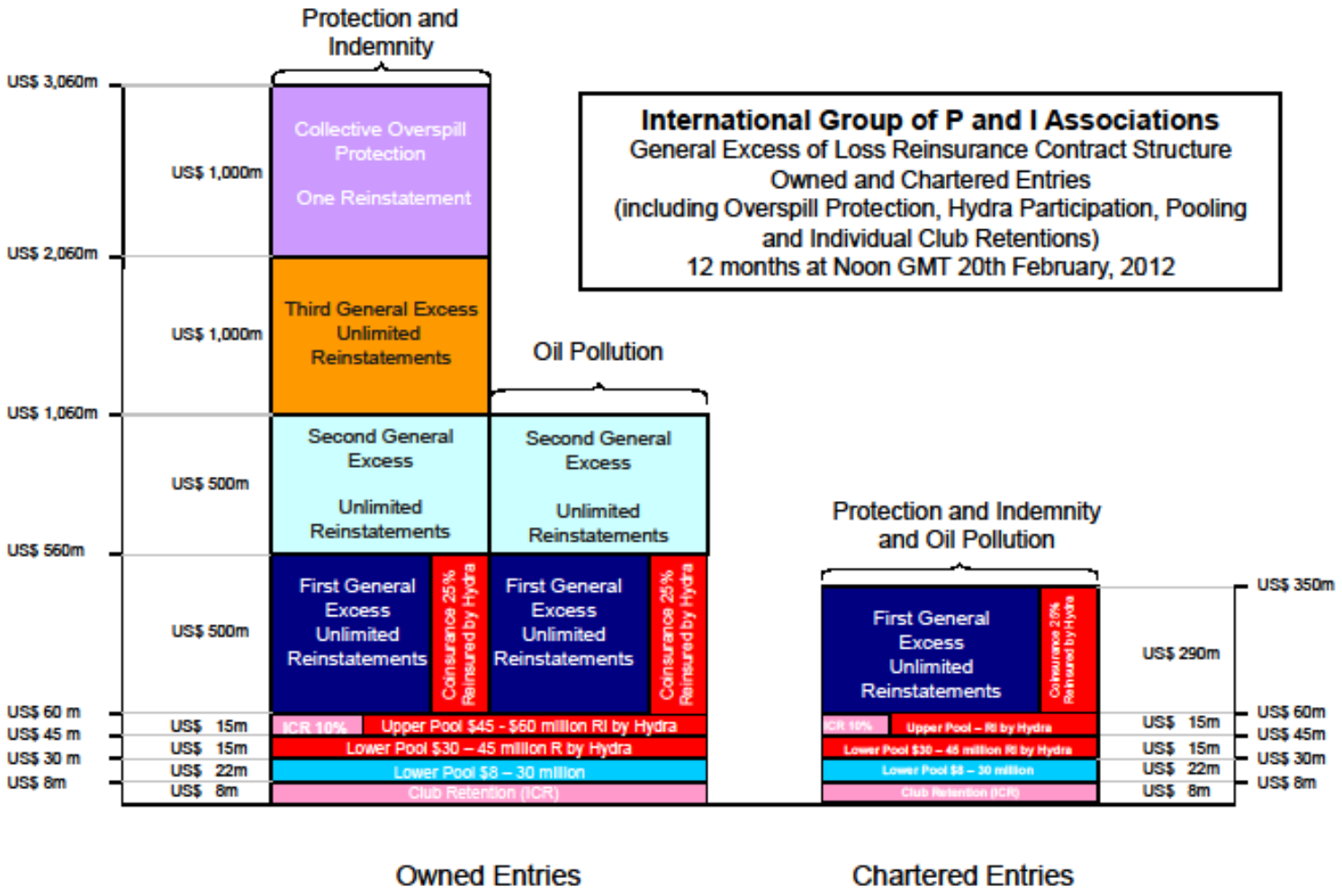
- specified events:
  - hazards & potential risks of particular site, including impact on the environment should control measures fail
  - taking into account the likelihood of their occurrence
    - examples of theoretical events, with estimated likelihood of occurrence during a 60-year after-care period & works likely to be required
  - only require financial provision for justified & definable specified events - to be agreed with operator early in application process
  - not cover potential third party claims arising from pollution incidents
- acceptable mechanisms:
  - renewable bonds, escrow accounts, cash deposits with the Agency, local authority deed agreement, trust based investment portfolios
  - not accept provision in accounts, parent company guarantees (commercial landfills), overdrafts, annually renewed insurance
- NB: *re Celtic Extraction Ltd (in liquidation)* (1999)

ELD financial security: Spain

- Ley 26/2007, de 23 de octubre, de Resp Ambiental, etc
- Annex III ops must have financial security to cover liabs
- insurance, guarantee or ad hoc technical reserves
- minimum required amount based on env risk assessment
  - max requirement €20m (per facility), but liability unlimited
- exemptions:
  - ops likely to cause damage remediation less than €300,000
  - between €300k & €2m, if verified EMAS or ISO 14001
  - use of plant health products/biocides in agriculture & forestry
- sectoral (& operator) environmental risk assessments
- implementation delayed until risk analysis complete
- products emerging, but insurers still uneasy

IMO Conventions/P&I clubs

- 3 tiers:
  - Civil Liability Convention (CLC) (1992/Nov 2003)
    - strict liability on shipowner + liability limit (linked to tonnage) & compulsory liability insurance
  - Fund Convention (1992) + Supplementary Fund (2003/5)
    - paid by cargo receivers (+ shipowner contribution)
  - $138m $\Rightarrow$ $312m $\Rightarrow$ $1,152m
- P&I Clubs + International Group (13 P&I Clubs)
  - $\Rightarrow$ $8m club protection
  - $\Rightarrow$ $60m shared between clubs, partially reinsured by captive
  - $\Rightarrow$ $2.06bn general XS prog in 3 layers (comm reinsurance $500m)
  - $\Rightarrow$ $3.06bn collective overspill
  - maximum pooling capacity $\Rightarrow$ approx $7bn

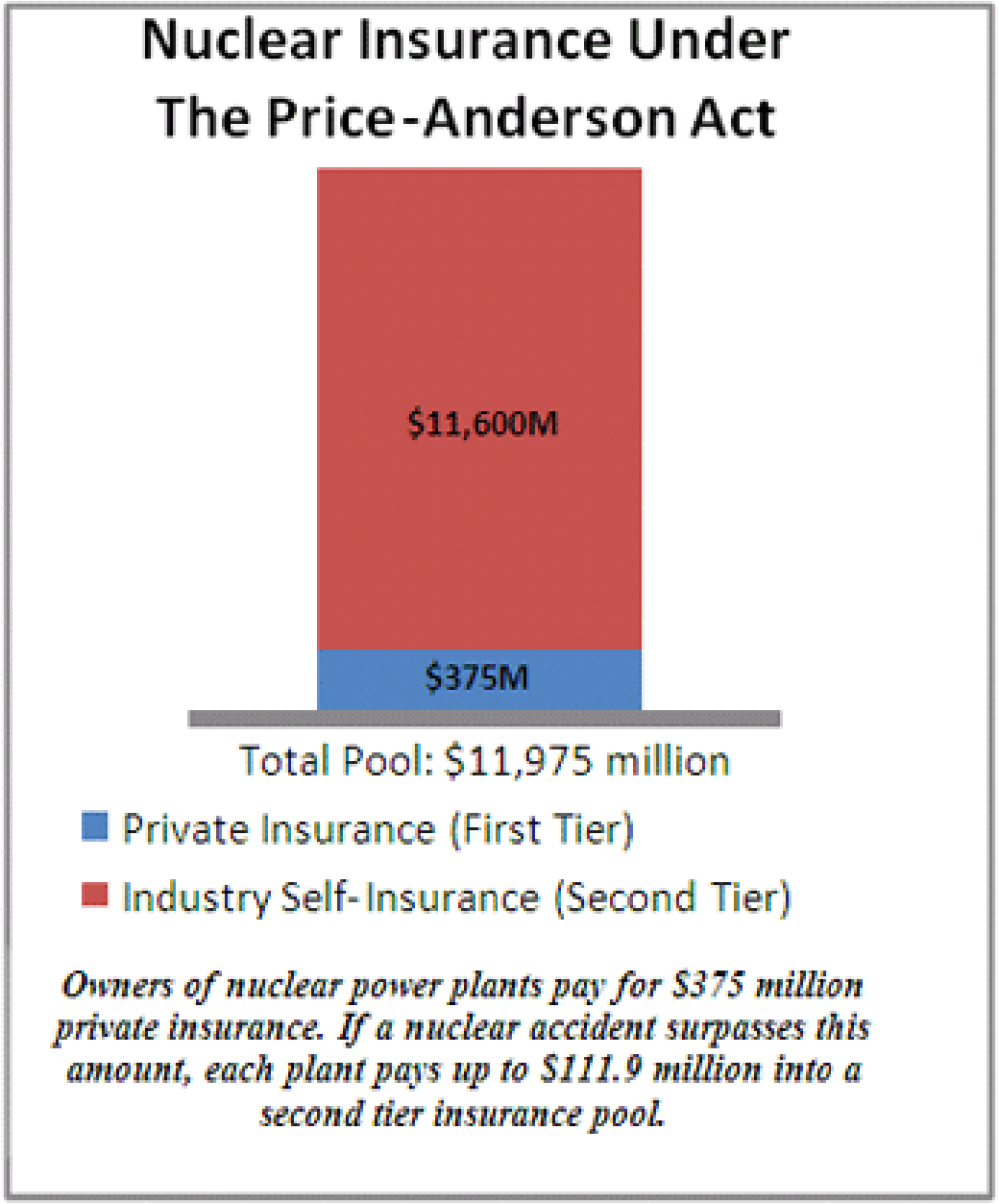

International Group of P and I Associations
General Excess of Loss Reinsurance Contract Structure
Owned and Chartered Entries
(including Overspill Protection, Hydra Participation, Pooling and Individual Club Retentions)
12 months at Noon GMT 20th February, 2012
Protection and Indemnity
Oil Pollution
Protection and Indemnity and Oil Pollution
US$ 3,060m
US$ 2,060m
US$ 1,060m
US$ 560m
US$ 60 m
US$ 45 m
US$ 30 m
US$ 8m
US$ 1,000m
US$ 1,000m
US$ 500m
US$ 500m
US$ 15m
US$ 15m
US$ 22m
US$ 8m
Collective Overspill Protection
One Reinstatement
Third General Excess Unlimited Reinstatements
Second General Excess
Unlimited Reinstatements
Second General Excess
Unlimited Reinstatements
First General Excess Unlimited Reinstatements
Coinsurance 25% Reinsured by Hydra
First General Excess Unlimited Reinstatements
Coinsurance 25% Reinsured by Hydra
ICR 10%
Upper Pool $45 - $60 million RI by Hydra
Lower Pool $30 – 45 million R by Hydra
Lower Pool $8 – 30 million
Club Retention (ICR)
First General Excess Unlimited Reinstatements
Coinsurance 25% Reinsured by Hydra
US$ 290m
US$ 350m
US$ 60m
US$ 45m
US$ 30m
US$ 8m
US$ 15m
US$ 15m
US$ 22m
US$ 8m
Owned Entries
Chartered Entries

Nuclear: Paris/Brussels (1960/63)

- main principles:
  - liability channelled exclusively to operator
  - strict/absolute liability (except for acts of war, etc)
  - property, health & loss of life (not envl damage or econ loss)
  - operator liability capped at min amounts (state can raise)
  - mandatory financial security for operator liability
- 3-tier structure: individual + state + collective states
- 2004 protocols raising levels & broadening coverage:
  - operator, not less than €700m (UK proposal €1,200m); installation state, €500m; collective states, €300m
  - four new categories of harm: economic loss, reinstatement of impaired environment, loss of income, cost of preventive measures

Nuclear: Price-Anderson (1957)

- two aims:
  - ensure adequate funds to satisfy liability claims for personal injury/prop damage in event of nucl accident at comm nucl plant
  - encourage private investment in commercial nuclear power
- cap/ceiling on total liability of licensee
- single insurance pool (American Nuclear Insurers)
- two tiers of cover for each reactor unit:
  - $375m private insurance (ave premium $830,000)
  - if damage in excess of $375m, pro-rated share up to $111.9m each
  - x104 reactors = $11.6bn
- all other prop/casualty ins policies in US exclude nuclear
- TMI (1979) approx $71m paid in claims & costs


Nuclear Insurance Under
The Price-Anderson Act
$11,600M
$375M
Total Pool: $11,975 million
Private Insurance (First Tier)
Industry Self-Insurance (Second Tier)
Owners of nuclear power plants pay for $375 million private insurance. If a nuclear accident surpasses this amount, each plant pays up to $111.9 million into a second tier insurance pool.

Distinctions

- political issue v technical problems
  - what is financial security meant to achieve?
  - a practical measure for reducing public risk to acceptable level?
  - or removal of all conceivable risk from public responsibility?
- contingent risks/fortuities v unavoidable obligations
  - closure, site reclamation/removal, monitoring - measurable & certain to occur
  - corrective action, surrender of allowances/credits, etc - contingent
- risk transfer products v non-risk transfer
  - true insurance v funding & guarantee instruments
  - very different animals, different capacities & implications, etc

Risk transfer - insurance

- basic features:
  - insurer capacity, reserves, solvency requirements
  - defined & tested policy wordings, exclusions, etc
  - policy period + renewals
  - premiums
  - limits of indemnity: per occurrence & aggregate
  - reinstatements (if aggregate exhausted)
  - deductibles & sub-limits for specified risks
  - claims handling
  - risk assessment/risk management support
  - reinsurance support (& retrocession, etc)
- specific CCS liability cover or EIL + endorsements
  - current EIL capacity approx $50-100m (?)
  - CCS liability est. $100m (tiered)

Non-risk transfer

- cash deposit, escrow, letter of credit (LOC), bank or insurance bond (payment or performance), trust fund, corporate guarantee, financial test, etc
- different implications for balance sheet, borrowing, etc
- priced as percentage of sum assured
- fully funded by assured, repayment of all drawn downs
- in principle, available for duration of risk/requirement
- can include phased financing
  - eg, deposit 20-25% of required sum at outset, then 2% per year throughout operating period, to achieve 70-100% at time of closure through accumulation & investment income
  - tax advantages + provider carries risk of early draw down, etc

Possible lessons

- needs to be taken more seriously at policy stage
  - real risk management/financial services expertise
  - both policy design & implementation/regulation
- key issue is the amount
  - if small-moderate, relatively routine
  - if large, feasible, but possibly difficult & expensive
  - if catastrophe level, need radical solutions
- there has to be a limit on probability of occurrence
  - to demand full funding from all operators for ultra-low probability events would involve massive opportunity costs
  - but every major incident requires policy re-think
- need greater clarity/decision on tolerance of risk
  - if ultra-high standard set, review desirability of the activity

Possible lessons (cont)

- CCS not alone - other industries facing similar security demands (eg, EU offshore proposals et al)
- carbon credit/emissions allowance risk, potential joker in the pack
  - need greater clarity on max probable release, then price to short-medium term
  - alternatively, govt or pool to underwrite risk above certain price (probably relatively high, in order to protect ETS?)
  - real problem is political nature of credit/allowance market
- govt or pool support might be needed for risks above market capacity
- alternative is to rely on financial test/corp guarantee
  - capacity restriction on market entry + poss enforcement problems?

Possible lessons (cont)

- insurers have every reason to be cautious here
  - history of losses & unpredictable regulation/litigation
  - fiduciary duty to protect co assets
  - caught between demand for fin sec support & tightening solvency requirements (Solvency II Directive, etc)
- more attention to regulating fin sec providers?
  - simple credit rating not enough
- scale of de-carbonisation project under-estimated
- political/regulatory risks considerable
  - regulations in 2050 onwards unimaginable today
- liability rules likely to tighten in years ahead
  - eg, *Raffinerie Mediterranee* (rebuttable presumption, etc)