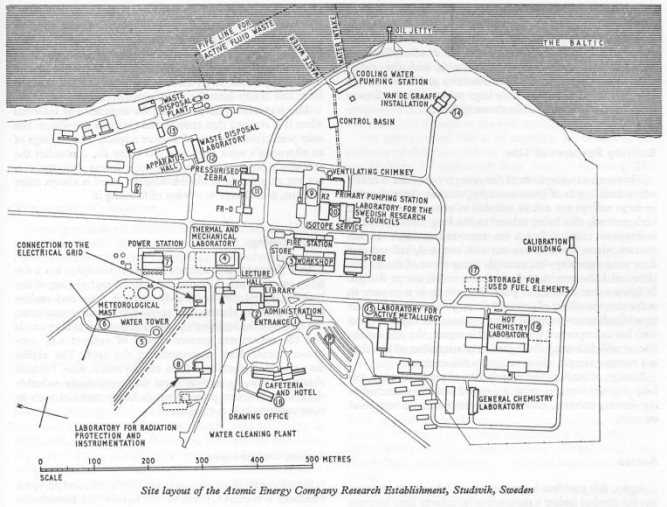

Site layout of the Atomic Energy Company Research Establishment, Studvik, Sweden

Reputation asset and environmental liability

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TEKEDO

The structure of this presentation

1. Introduction
2. Objectives
3. Environmental liabilities and estimation
4. Legislation
5. Standards and recommendations
6. Discussion and conclusions

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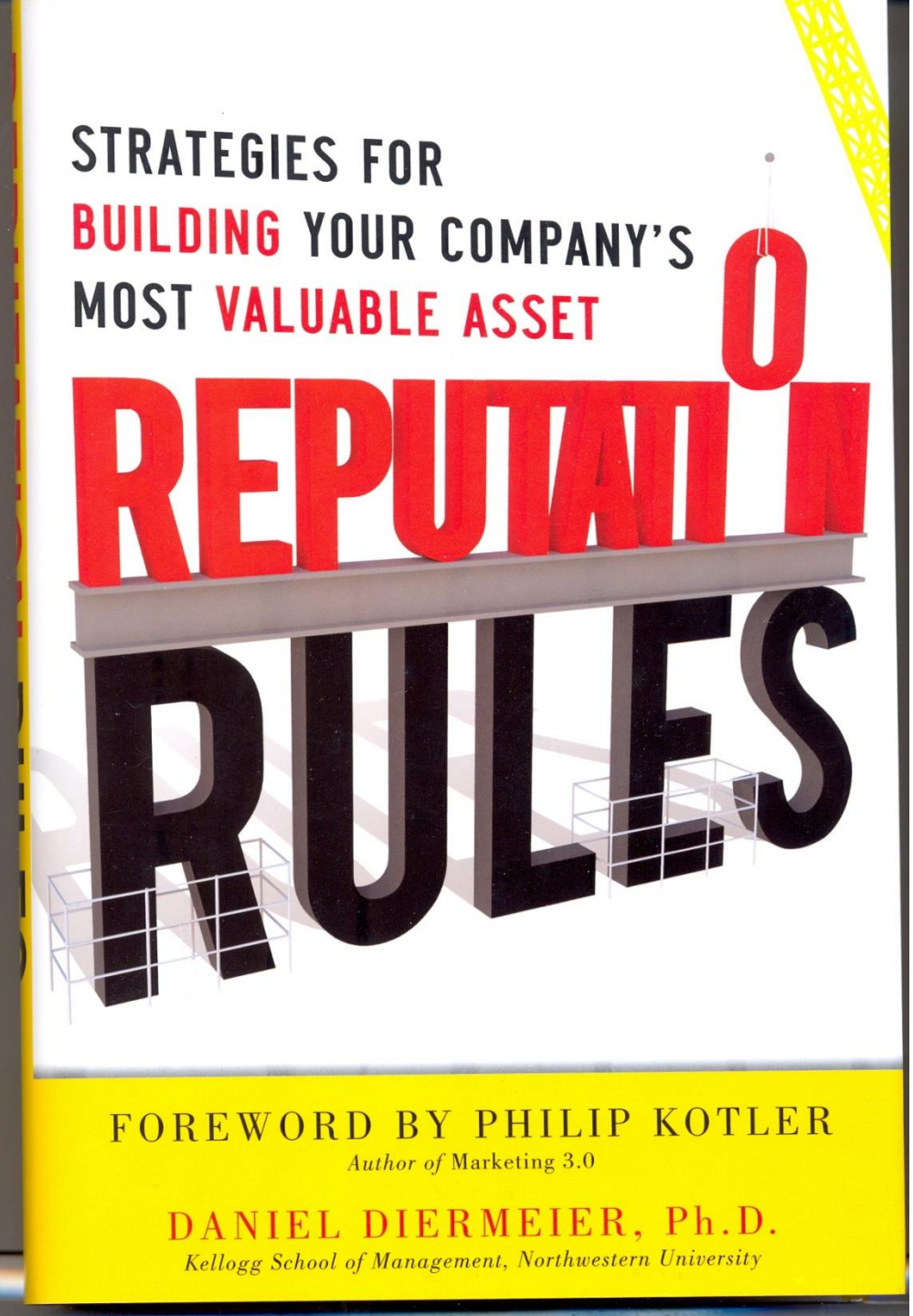
Value of a company & its shares

- Frequent subject in management literature
- Value comprises
  - Value according to financial statements
  - Intangible assetts and liabilities
- A company's future <= several prerequisites which are frequently ranked
- Personnel often highest ranking & advertised
  (in spite of the fact that some companies abuse their staff)



Value of a company, continued

- Often second: its good name and reputation
- Growing awareness
- Often discussed in conjunction with various scandals
- More pertinent to be proactive than reactive

About confidence building

- Not window dressing that can be delegated to some bureau that makes advertising
- Must be for real – agreement between word and deed (or else worse than before)
- => all relevant aspects need be covered
- All with different inherent difficulties
- Perhaps toughest of them all: *Environmental liability*

New & complex technologies

- Frequently put forward that drawbacks of new & exotic technologies – e g nuclear power - are overestimated in relation to well-known hazards (e g walking in staircases)
- But such potential problems cannot be dismissed by simply referring to a superstitious populace
- As a matter of fact:
  - Accidents do happen
  - Environmental liabilities are frequently underestimated

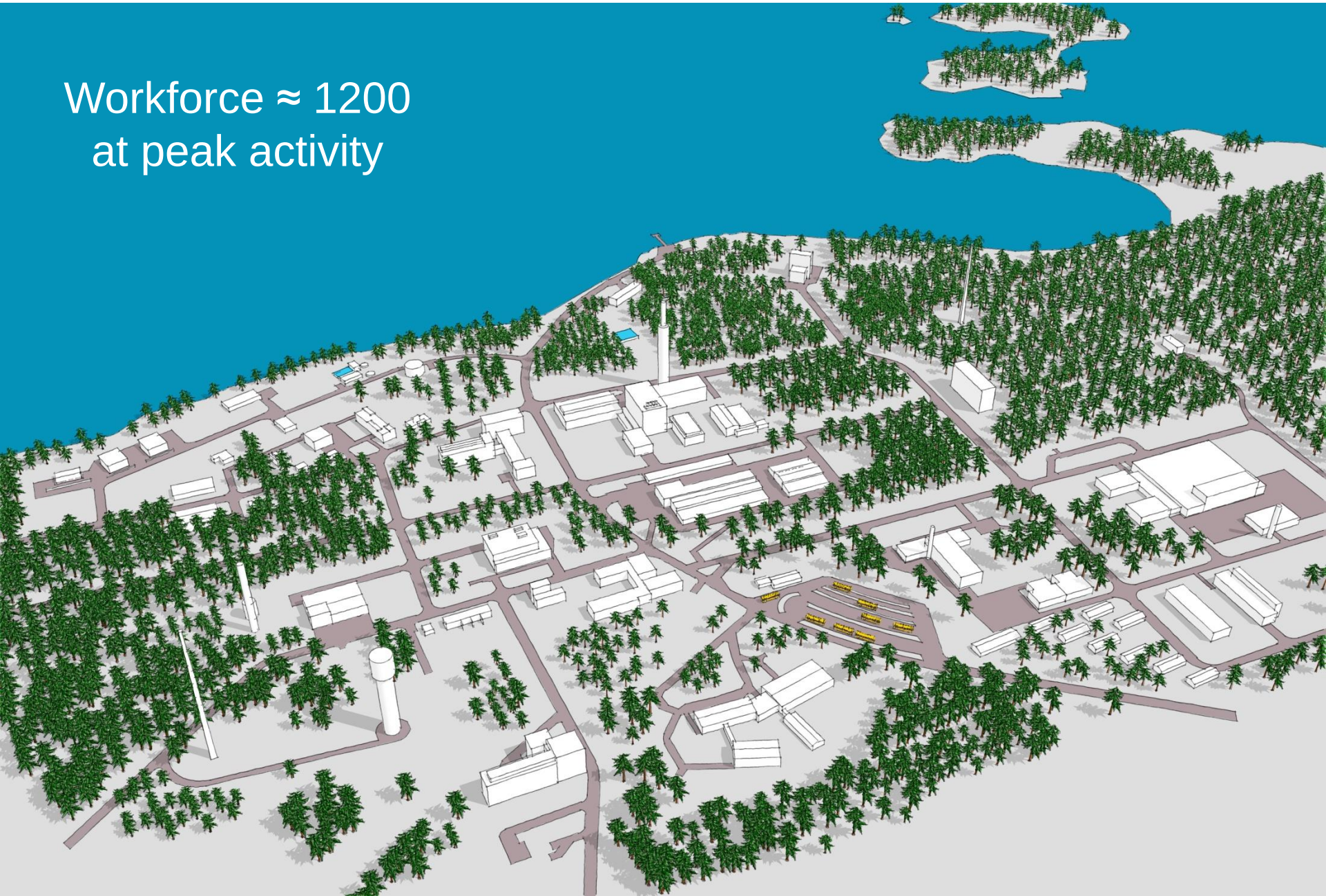
Reasonable level of ambition regarding safety and environmental liability

- Approach sufficiently robust to withstand the scrutiny of various parties, including
  - Regulatory Authorities
  - Interested parties
  - Educated public
- Tests of time (no skeletons in any closet)

Industrial activities and environmental liabilities – example of nuclear power

- Estimated already in 1979 that costs for decommissioning corresponds to ≈ 10 -15 % of that for new build
- Level generally in agreement with modern estimates
- Level typically much higher for
  - Old facilities
  - Research facilities

The ”national laboratory” at Studsvik ≈ 1964



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Environmental liability management

- Difficult to navigate & even large and competent companies often face difficulties
- Justifiably, one might wonder why extraordinarily competent companies, e. g. in the area of nuclear technology, would allow themselves to have to endure the embarrassment of
  - first holding out the prospect of more or less exact estimates
  - and later having to present large deviations that may even vary from time to time.

Environmental liability management, continued

- Technical reasons briefly summarized in the following – several previous publications by present authors
- Also a question of mind-set, strategy and tools – main objective of the present paper

Objectives

- To support companies in their quest for a pertinent strategy to
  - strengthen their good reputation
  - ameliorate their associated business opportunities
- Facilitate for Authorities to find appropriate focus

- Summarize prerequisites in legislation, standards, guidelines, recommendations, articles and books.

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Cost estimation & environmental liabilities

- Purpose of cost estimation in conjunction with environmental liabilities:
  - Ensure sufficient but not superfluous funding
  - (Usually) NOT for execution of the actual decommissioning work
- An estimate has a meaning only if the uncertainty is known
- ± 20 % may be attainable in favourable cases

Important considerations for accurate cost predictions

- *Selection of methods*, including alternative methods in case surprises are encountered
- *Radiological surveying*, need not be comprehensive but should be dimensioned for cost estimation
- *Attention to "cost raisers"*, i e items for which uncertainty may be high

Important considerations for accurate cost predictions

- Cost structuring & good data bases reflecting historical costs
- Selection of method:
  - Bottom up, also called the summation method
  - Parametric method
- (In the nuclear area bottom up is usually used for early stage estimations; in other areas the parametric method is used)

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Some prerequisites

- Industrial production is necessary for well-being & welfare of man
- Consequently, the following is accepted
  - Use of natural resources
  - Handling & use of hazardous substances
  - Risks for injuries and damage
- Health and environment must be protected
- Development must be sustainable

Some prerequisites, contd

- Protection of health & environment together with sustainability sole responsibility of the operator / owner
- Legislation in place to ensure compliance,
- but does not lift any responsibility
- Environmental liabilities last forever
- They can only be lifted by a decision of a competent body (e g the Government) after completion of remediation

LEGISLATION detailed versus general	**Detailed**	**General**
Effort needed to determine what may be required	Low	High
Freedom to select optimum solution with regard to protection of health & environment, sustainability, cost and other factors	Low	High

- Observe that general legislation is just as binding and committing as detailed

Examples of general legislation in the Swedish Environmental Code

"Persons who pursue an activity ... must possess the knowledge that is necessary in view of the nature and scope of the activity or measure to protect human health and the environment against damage or detriment."
"Persons who pursue an activity ... shall implement protective measures ... that are necessary in order to prevent ...detriment to human health or the environment ... "
"... the best possible technology shall be used in connection with professional activities."

Examples of general legislation in the Swedish Environmental Code, contd

"Persons who pursue an activity or take a measure shall conserve raw materials and energy and reuse and recycle them wherever possible. ... "
"The rules of consideration ... shall be applicable where compliance cannot be deemed unreasonable. ... "
"Persons who pursue or have pursued an activity ... that causes damage or detriment to the environment shall be responsible, until such time as the damage or detriment ceases, for remedying it ...."

Example of detailed legislation – requirements on accounting and financial reporting – IAS/IFRS

IAS = International Accounting Standards

IFRS = International Financial Reporting Standards

- Applicable to large companies in many countries (e g in the EU)

IAS chapter 37

on "*provisions, contingent liabilities and contingent assets*"

"*decommissioning costs for an oil installation or a nuclear power station*" constitutes a liability
"*Except in extreme cases, an entity will be able to determine a range of possible outcomes and can therefore make an estimate of the obligation that is sufficiently reliable to use in recognising a provision*"
"*In the extremely rare case where no reliable estimate can be made, a liability exists that cannot be recognized. That liability is disclosed as a contingent liability ...* "

EU commission – no legislation, but a recommendation

- It states that funds, preferably segregated ones, should be set aside during the operation of the various facilities to cover all future costs
- It recommends that recurrent cost calculations be made and that they are reviewed by a competent authority
- This is essentially what has been in place in Sweden for around 35 years

Examples of other acts

- annual reporting
- accounting
- working environment
- permitting
- chemical substances
- radiation protection
- nuclear activities
- acceptance of waste at landfills
- penal law

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Standards and recommendations, e t c

- Summarize the best of knowledge and technologies in various areas
- Are not legally binding
- An individual company is not obligated to follow
- Alternative routes must be taken with caution, however, since such a company will have to come up with all the proof needed on the suitability of the alternative chosen

In the area of nuclear technology

- IAEA = International Atomic Energy Agency (that operates under the auspices of the UN)
  - Safety standards
  - Safety guides
  - Other
- OECD/NEA (NEA = Nuclear Energy Agency)
  - Reports

Standards from ASTM International
(originally the American Society for Testing and Materials)

- Decommissioning plans
- Cost and liability estimation
- Disclosure of environmental liabilities
- Practice for environmental assessments
- Practice for environmental surveys

ASTM standard on cost estimation

- Similar to IAS but provides more detail
- Development of scenarios
- Weighed average to be calculated based on costs for each scenario
- Emphasises necessity to disclose uncertainty in estimate:
  - "*The estimator should select that measure which most clearly communicates to the user the nature of the uncertainty being evaluated*".

Other organizations and other sources

- Cost estimation organizations
  - AACE = the Association for the Advancement of Cost Engineering
  - ISPA = the International Society for Parametric Analysis
- A large number of conference proceedings, journal articles and books.

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A major obstacle against appropriate cost estimation and associated funding

- Very difficult for technical people realize need of cost estimates for
  - the sole purpose of appropriate funding
  - long before it is warranted from the point of view of actual technical preparations
- ⇔ proper mind-set & strategy essential
- Purpose to actually fulfil obligations & honestly earn an excellent reputation

Taxed and untaxed assetts

- A survey in Sweden has unveiled that many (non-nuclear) companies
  - Do not declare their environmental liabilities
  - Or declare them using taxed money – on grounds of applying the precautionary principle with regard to the tax authorities
- Might appear to be cautious and appropriate, BUT ...

Taxed and untaxed assets, contd

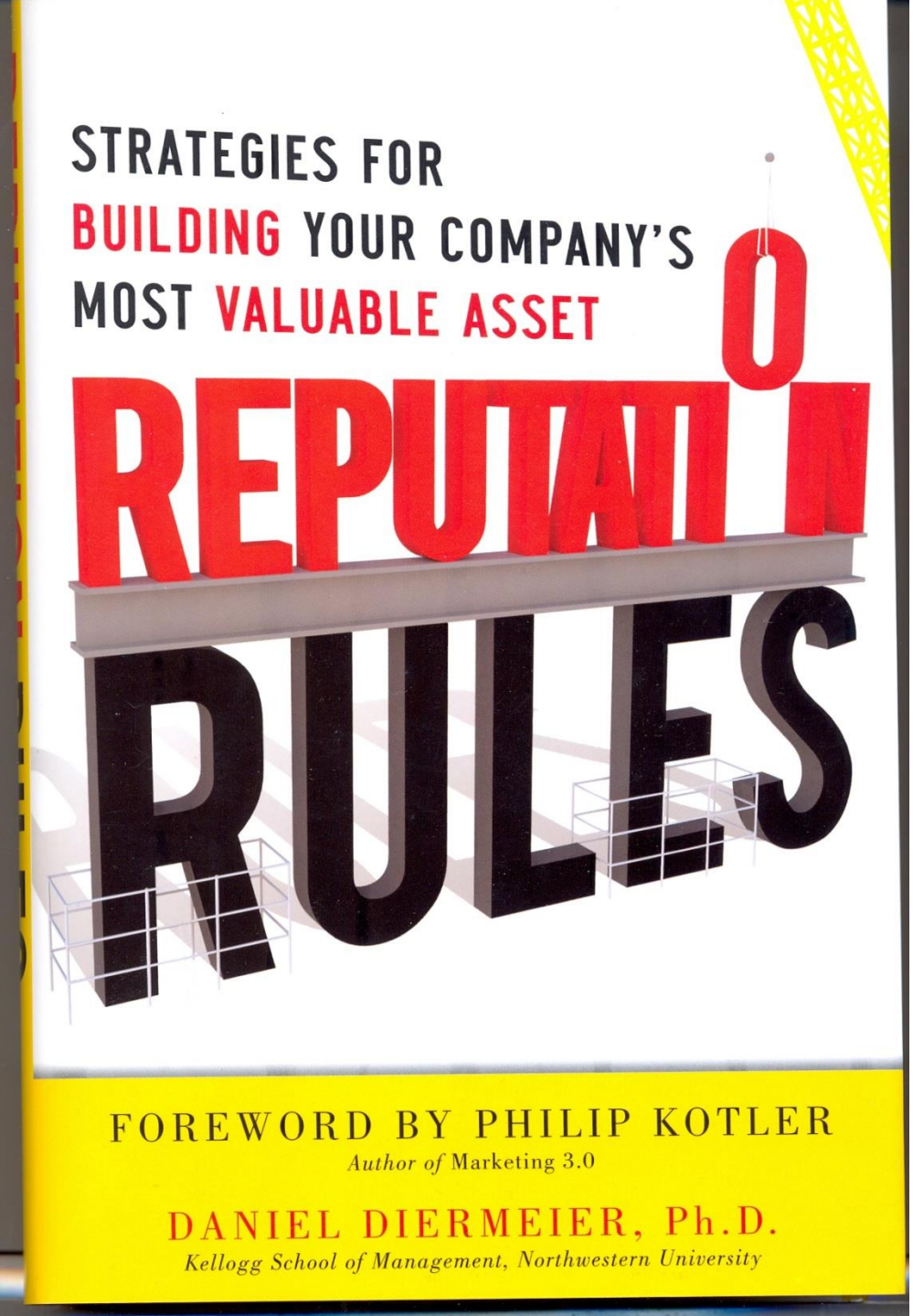
- It was established already in 1977 that untaxed money should be used
- Use of taxed money influences neither profits nor bonuses
- Paying for decommissioning and remediation with taxed money does, however
- Thus, setting aside of taxed assets constitutes an efficient roadblock against responsible action with regard to decommissioning and remediation

Historic and new liabilities

- In Sweden, much of the liabilities developed before the year 1969 are paid by the taxpayers
- For later liabilities PPP applies (PPP = Polluter Pays Principle)
- Thus, more and more of “modern” cases are expected
- together with the associated “moments of truth” with regard to environmental liabilities

Recommendations

- To identify the goals of the company with regard to a good reputation and the associated benefits
- To – based on this goal – determine appropriate mind-set and strategy
- To compile the legislation as well as standards and recommendations e t c
- To carry out cost estimates with the ambition and precision warranted with regard to the strategy
- To set aside appropriate untaxed funds



REMEMBER!

Your company's most valuable asset may well be your good name and reputation

Thank you
for your attention!