Backtracking Our Own Footsteps

Why Tax System Contributes

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The Policies That Hold Us Back from New Frontiers

Moratoriums and Berlin walls against new acreage

* We will lose the Arctic technology race if we only gain small openings every fourth year

Insufficient innovative drive

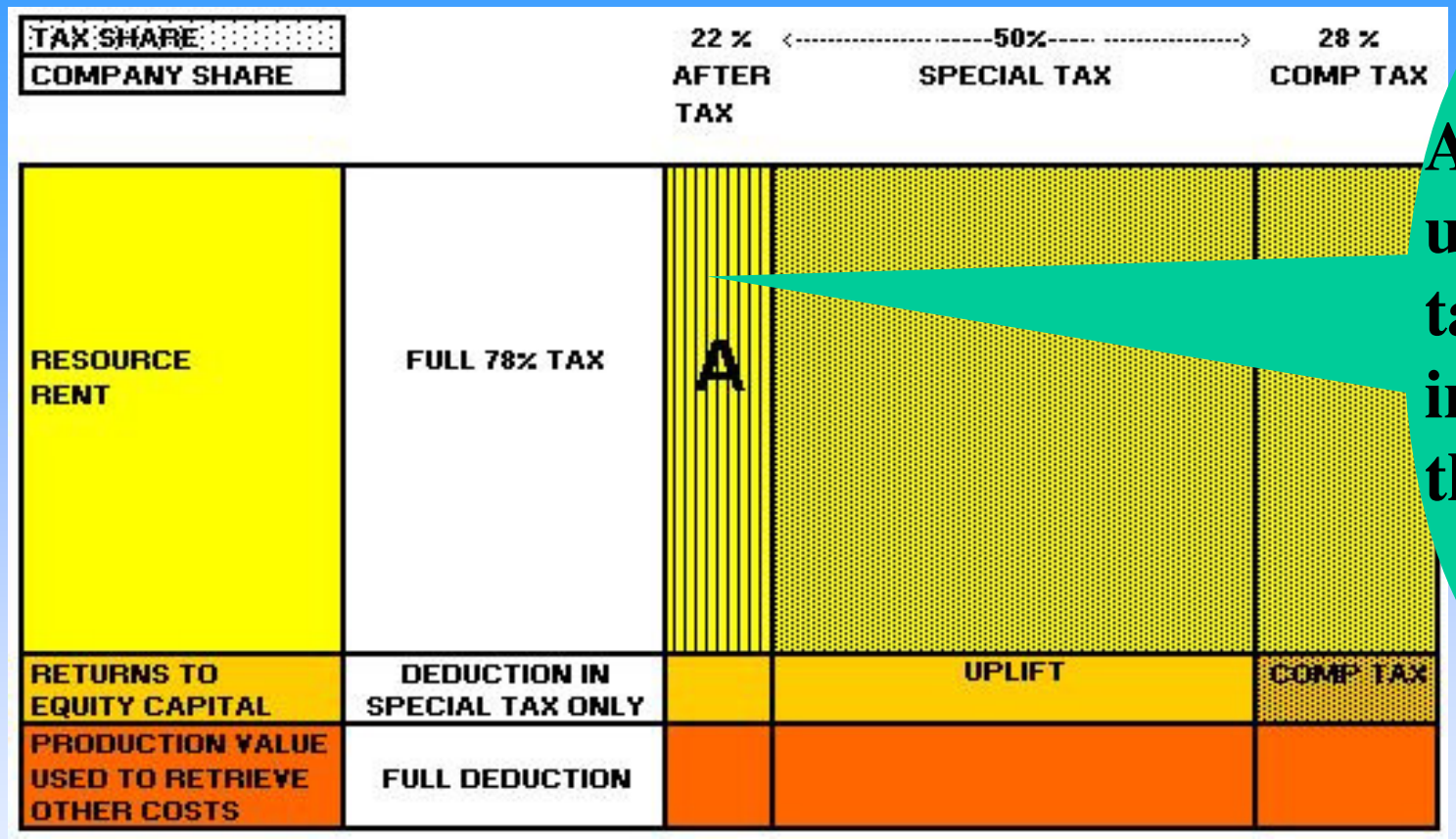
* Decision to approve Statoil/Hydro merger gave priority to companies' global interests at the cost of NCS diversity and competition.

* Risk that financial and R&D resources are diverted to environment/climate rather than E&P proper.

And then there is the tax system…

The Official Version

(Simplified for purpose of illustration.)



Area A is under-taxation in official theory.

* System emulates "cash flow taxation"; equal sharing cost/income 78%/22%.

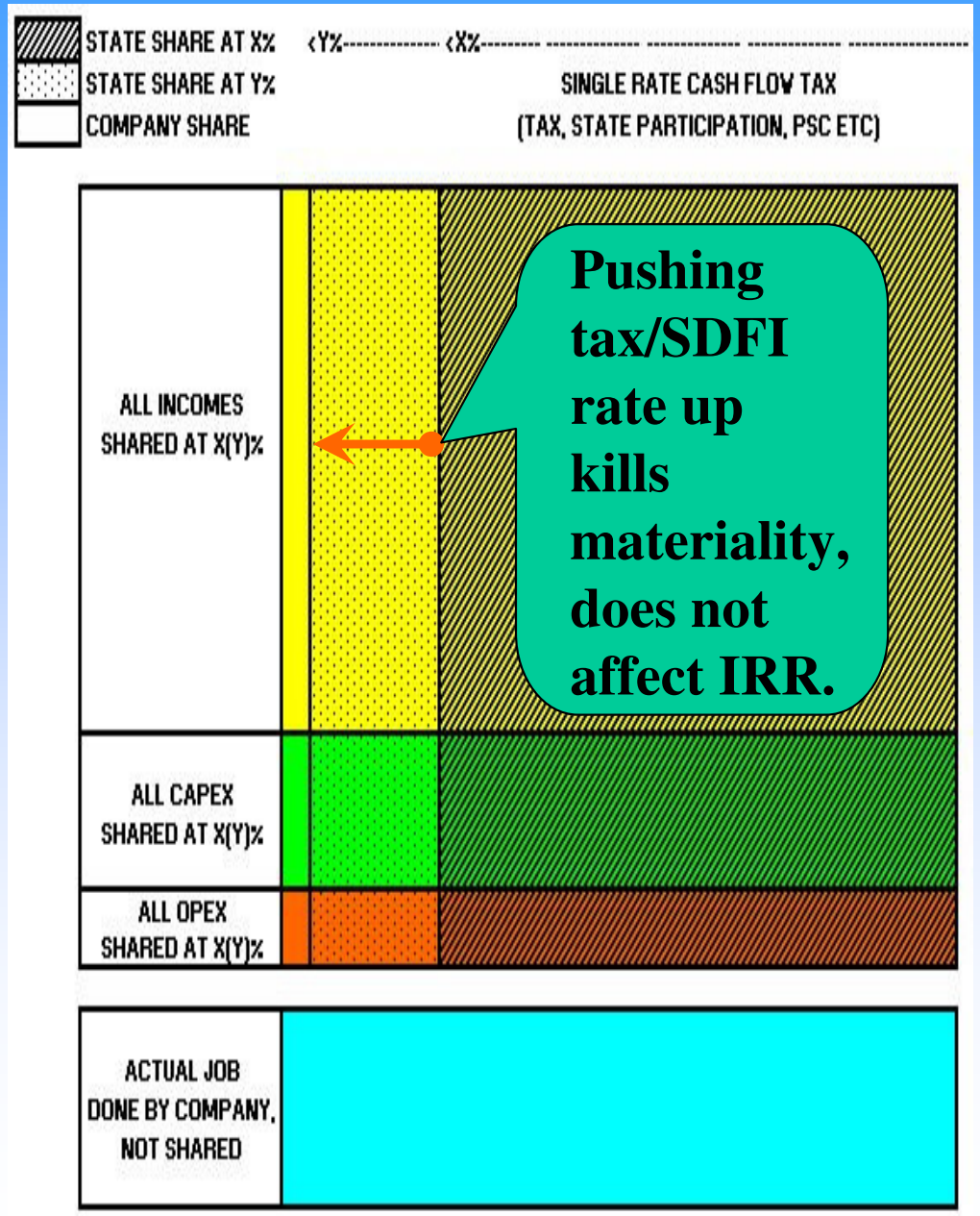
* Periodisation necessitates uplift = Opportunity cost of use of equity capital, deducted in Special Tax only.

* Correct because returns to equity capital is taxed at 28% in onshore tax.

* Production value not used to cover costs or returns to equity cap = clean profit = resource rent. Area A = Companies' part of resource rent, could in principle be close to zero without distorting investment decision - **IF ALL REAL COSTS ARE COVERED.**

Why Materiality Counts

(and IRR not so much)



* Cash flow tax is assumed ideal and neutral (everything shared in real time)

* Returns to capital always the same for state and company

* As tax -> 100%, NPV -> 0, but IRR stays the same.

* But actual job is the same at all tax rates. State doesn't share organisation and knowledge investment.

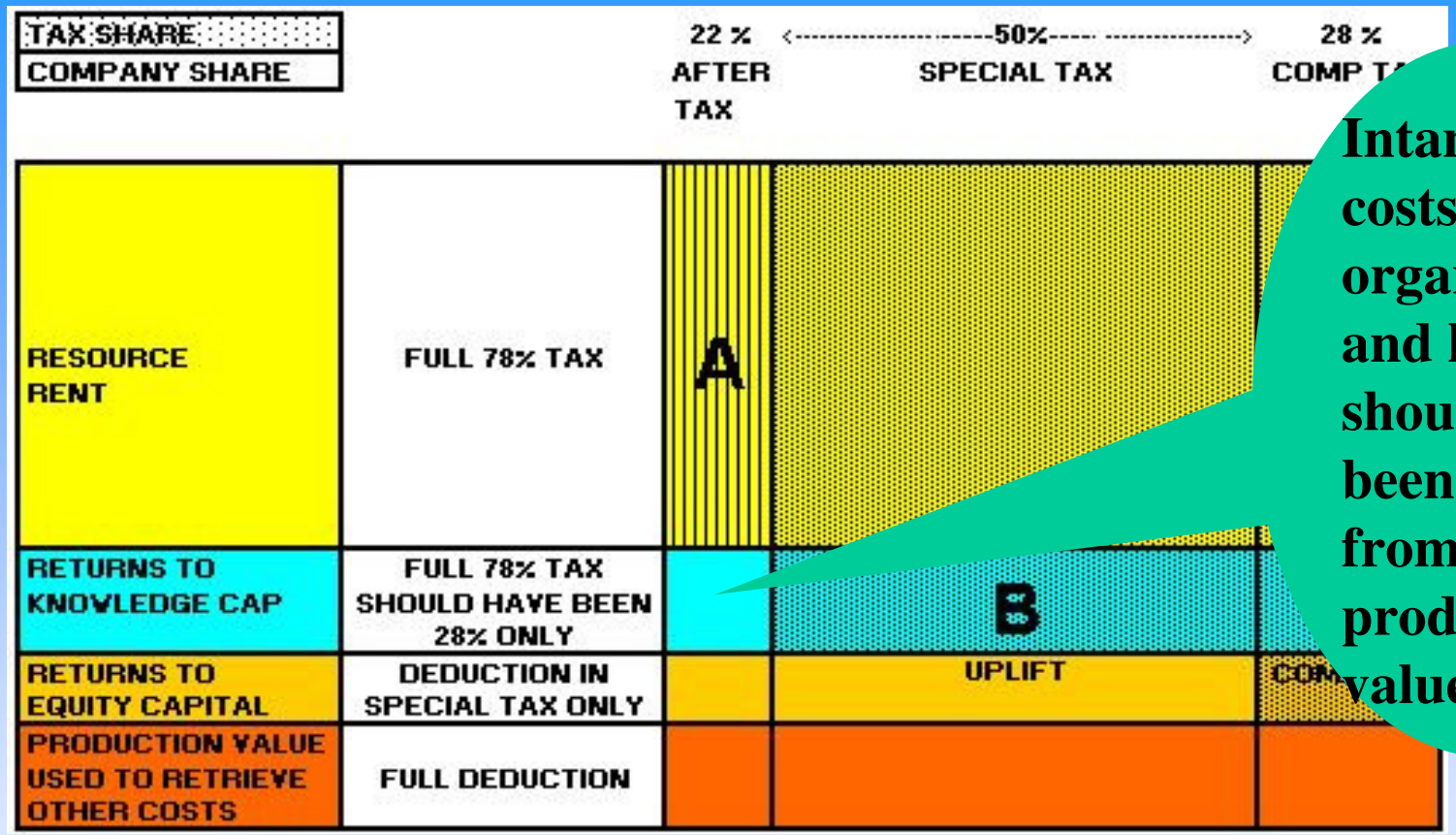
* Job is worth doing at X%, but not at Y%. Threshold determined by size of blue area.

* Few would celebrate even 100% IRR if investment after "sharing" with State is USD 10 and a big job must be done.

*** Cash flow tax only neutral if State pays out tax value of knowledge rent in cash!**

* Current system emulates cash flow tax but with periodisation

So Not All Costs Are Covered:



Intangible costs related to organisation and knowledge should have been recovered from production value.

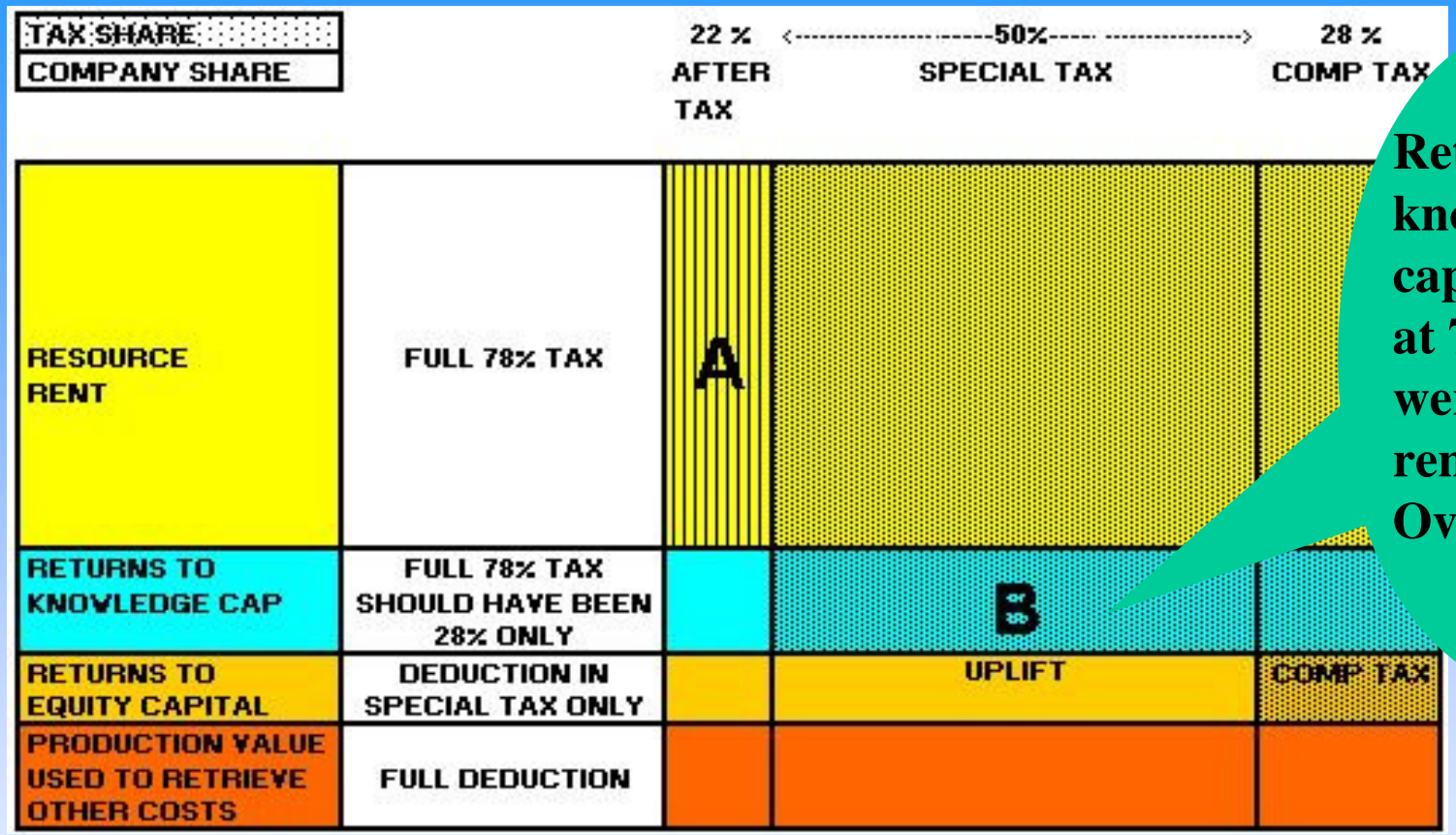
*** Principle of materiality (financial volume) = Post-tax reward must be sufficient to justify use of organisation and knowledge - *which are real cost*.**

*** Tangible costs, including documented costs related to organisation and knowledge acquisition are expended. But value creation capability beyond documented costs is an intangible knowledge equity capital just as real as financial equity capital. (For short knowledge capital and equity capital.)**

*** This intangible and "invisible" capital is not proportional to normal capex and certainly not to post-tax capex, but depends on complexity of entire job. Also risk departure from average is included in concept.**

***The opportunity cost of using this capital is knowledge rent (blue sector) that should have been recovered from production value, but it is not.**

Knowledge Rent is Over-Taxed:



Returns to knowledge capital is taxed at 78% as if it were resource rent. Area B = Over-taxation.

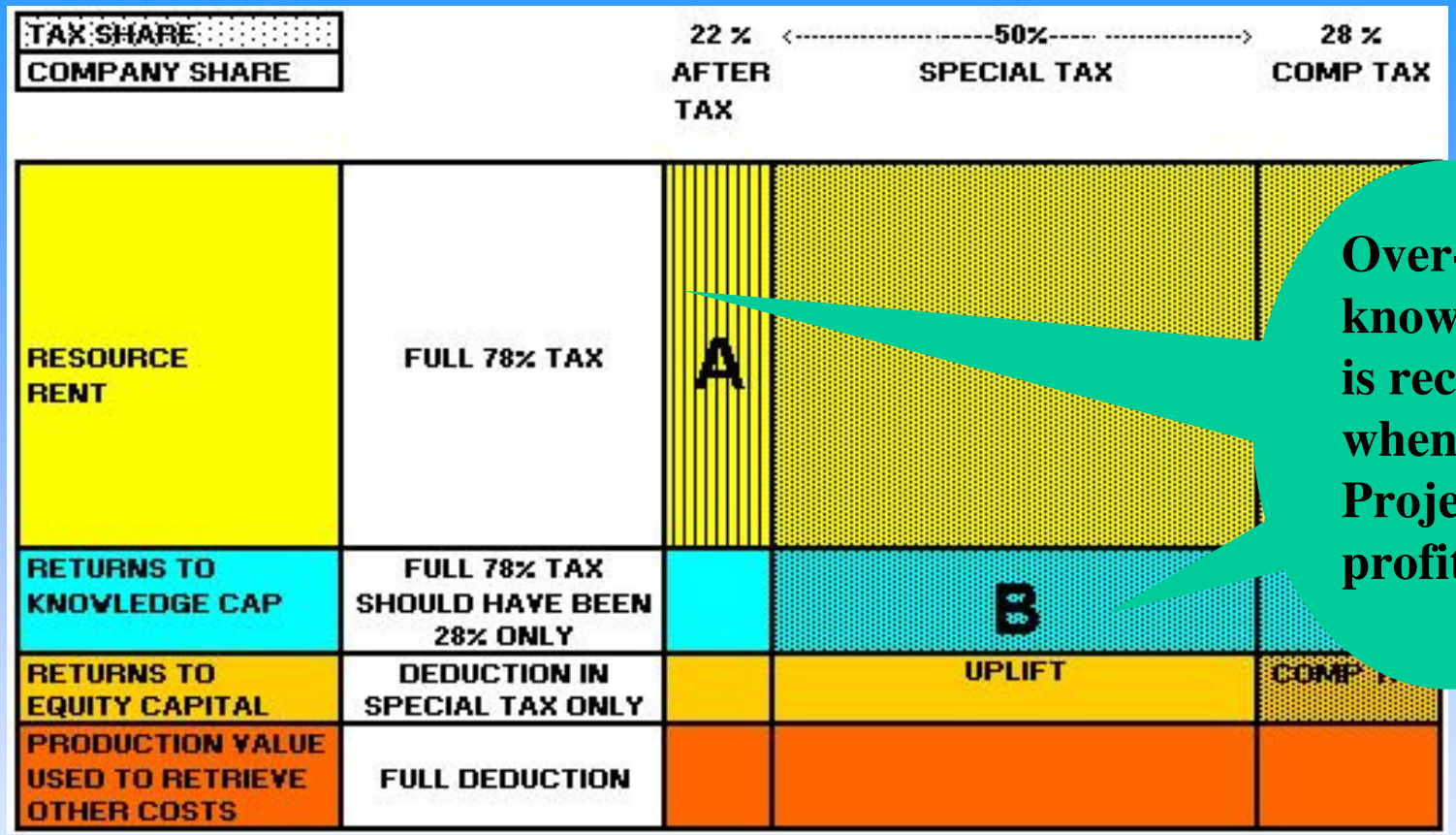
* Returns to knowledge capital (blue sector) should be treated just like returns to equity capital.

* Both rents are considered normal taxable income in onshore tax (28%) and should therefore not be expended in company tax base.

* But neither is resource rent and should not be taxed as resource rent (78%), which is the consequence of current system.

* There should therefore have been a shelter for knowledge rent in the tax base for Special Tax (50%), just like uplift is a shelter for equity capital rent. Tax value of lacking shelter is Area B.

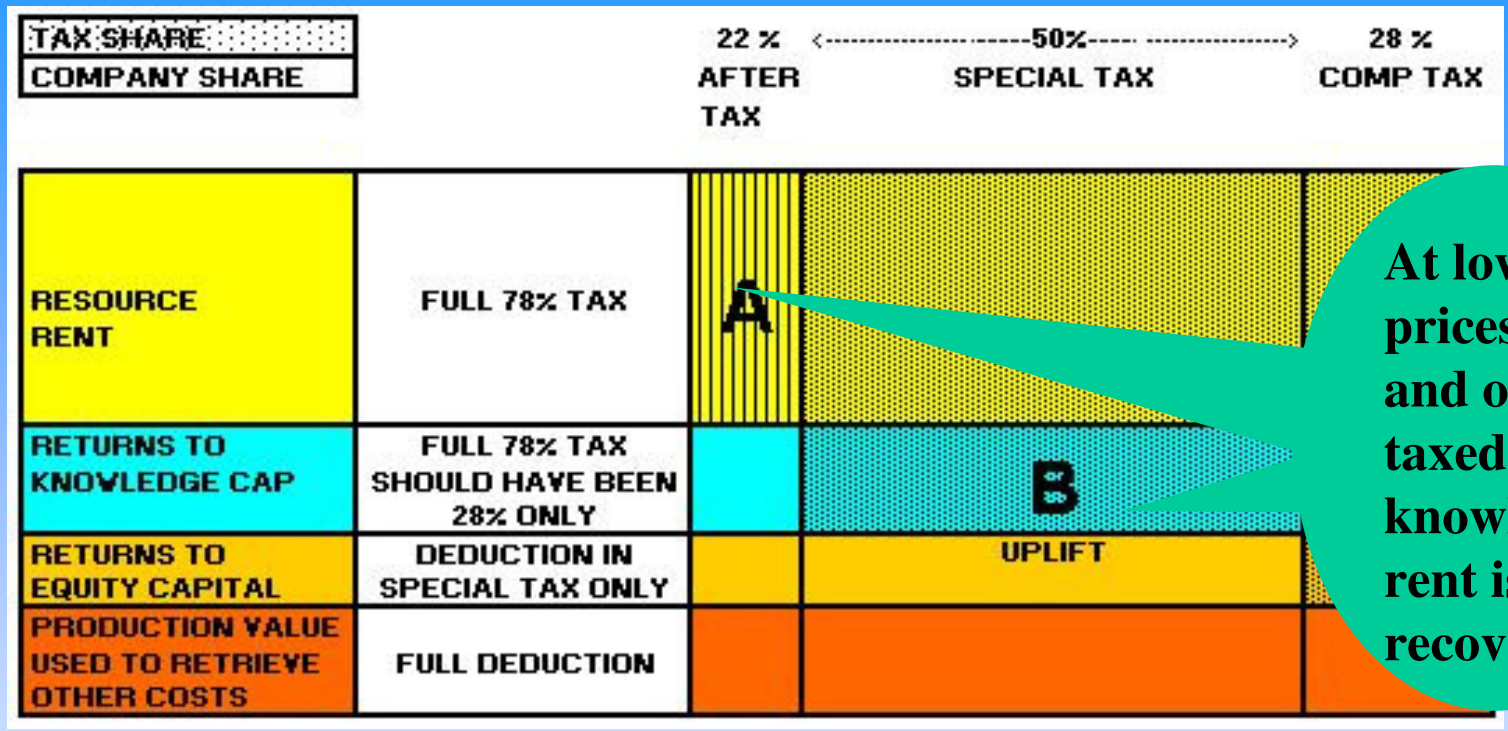
Tax Burden must Be Recovered:



* The only reason why companies are willing to do the job of exploring for and developing oil and gas resources is that the over-taxation (area B) in practise is recovered by the post-tax share of the resource rent (area A)

* The project is profitable for the company only if A>B.

System too Poor at Low Prices:

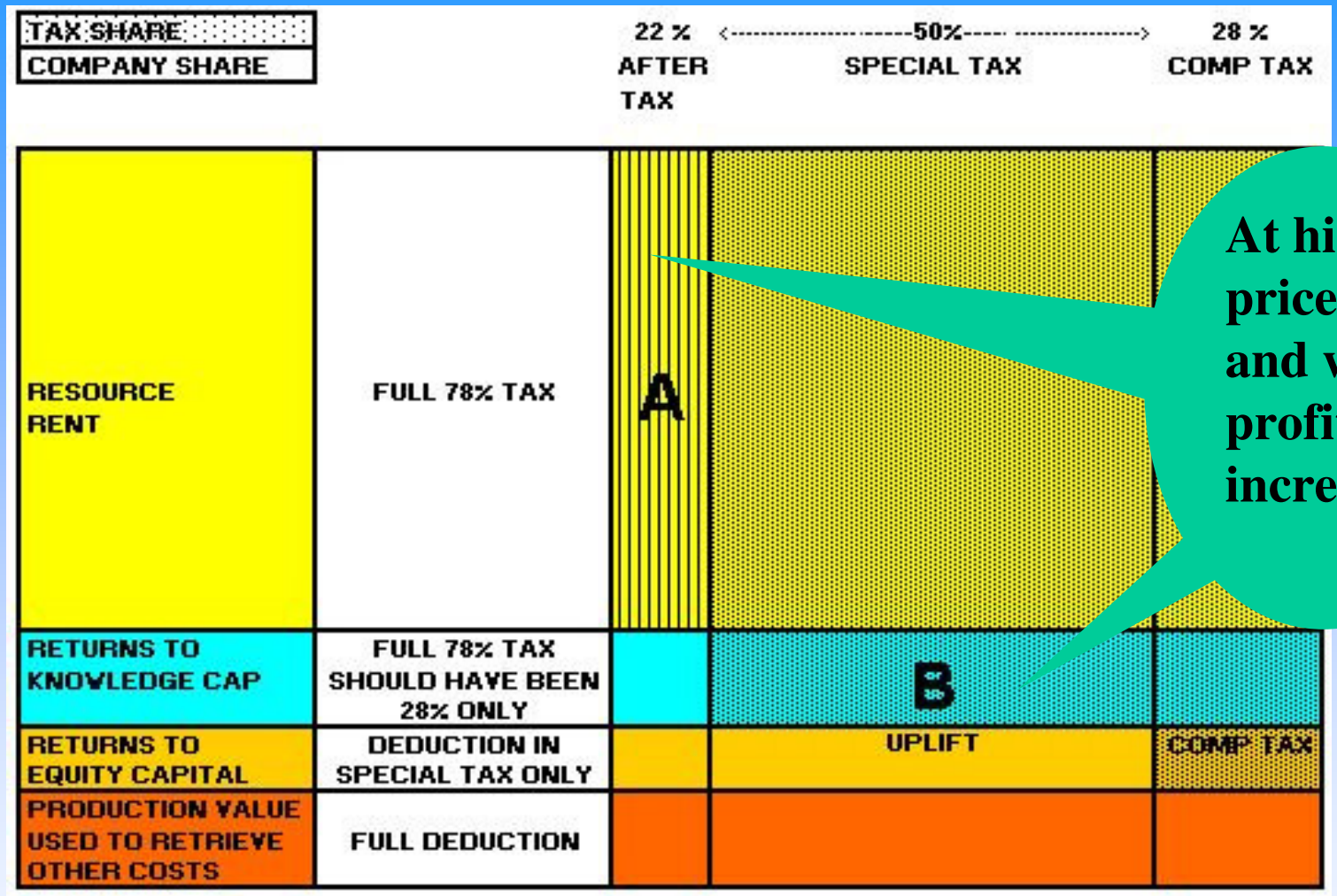


* As oil (gas) prices change, resource rent declines and A declines.

* The rest of the project remains the same and requires the same costs and investment of equity capital and knowledge capital. (Not quite right since costs may be influenced by activity level, but this is second-order effect.)

* Over-taxed knowledge rent is not recovered. Project is not viable when A<B.

System too Good at High Prices:



*** Conversely, as oil (gas) prices increase, resource rent increases and A is much larger than B. Oil companies acquire a windfall profit.**

*** This adds a regressive element because relative value of over-taxation of knowledge rent decreases at higher oil (gas) price, just like the same effect on uplift causes a progressive element. The net effect depends on the relative size of financial and knowledge capital.**

Oil Price Related Consequences:

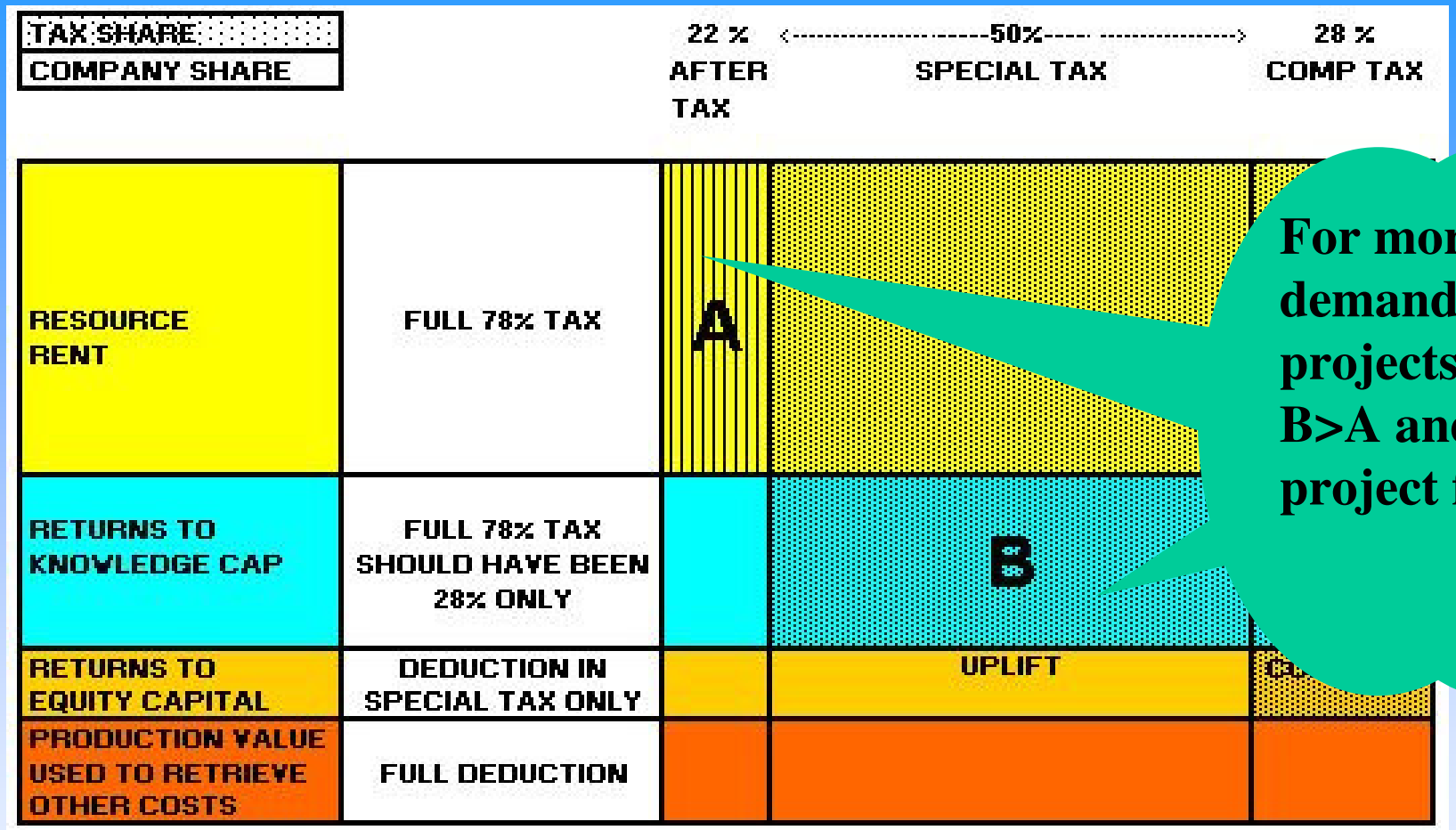
* Tax system doesn't protect against oil price variability. To the contrary, it exacerbates the cyclical effects on activity.

* Since the oil price is cyclical, the range of price expectations increases by project lead time and length. At the top of the cycle, the weighted average future price scenario is lower than the current price and the short term price expectation.

* Under high prices, system will encourage short term projects that will generate income within same high price cycle (development of existing discoveries, production wells rather than exploration wells, low-risk exploration and exploration in mature areas rather than high-risk/frontier exploration).

* Reduced Special Tax will improve all projects but cause larger oil price variability problem. More projects will be implemented, but windfall profits caused by price increases will increase for already viable projects.

Demanding Projects Punished:



* More demanding projects require more investment of organisation and knowledge.

* As more of the production value has to be used to recover knowledge rent, B grows and A declines. The system grows progressively worse.

* Conversely, the easiest projects that only require application of known off-the-shelf technology and routine organisation are rewarded.

* System discourages use of knowledge to reduce costs, since only returns from tangible capex are sheltered against Special Tax.

CURRENT NCS TAX SYSTEM

(Other factors equal, some items in the high price cycle only.)

Encourages or is too good for	*Discourages or is too poor for*
HIGH OIL/GAS PRICES	LOW OIL/GAS PRICES
SHORT TERM PROJECTS	LONG TERM PROJECTS
RAPID EXTRACTION	SLOWER EXTRACTION
LOW RISK PROJECTS	HIGH RISK PROJECTS
CAPITAL CONSTAINED COMPANIES	CAPACITY CONSTRAINED COMPANIES
COMPANIES WITH POOR GLOBAL REACH	COMPANIES WITH MANY GLOBAL OPTIONS
DEVELOPMENT OF KNOWN RESERVES	EXPLORATION
PRODUCTION WELLS	EXPLORATION WELLS
MATURE AREAS	FRONTIER AREAS
LARGE VOLUMES	SMALL VOLUMES
CAPITAL INTENSIVE	KNOWLEDGE INTENSIVE
PROVEN TECHNOLOGY	NEW TECHNOLOGY
"MUST HAVE" TECHNOLOGY	COST REDUCING TECHNOLOGY
SCALE-UP PROJECTS (TROLL GAS)	COMPLEX PROJECTS (TROLL OIL)

Why have we done so well in spite of this?

> Driven by large fields and technological necessity

> More homogenous projects in NCS history, now more difficult to make "all sizes fit one"

> SDFI share variation has allowed some flexibility

> Norwegian companies have had limited international options

Why has this problem not been more focused?

> Companies are concerned about materiality but use different language, some include it in hurdle rates

> Onshore projects not very demanding

> Many host countries in practise negotiate tax and other terms

> Ad hoc tax changes compensate for price cycles (but causes loss of predictability)

> Other Western systems good at materiality

> Some systems do differentiate with regard to complexity, e. g. GoM with lower royalty at larger depths

> Mainstream economic theory does not allow for knowledge capital/rent, no do general accounting rules

Just a Theoretical Exercise, Since Knowledge Rent Can't Be Identified?

*** Hard to find alternative to some kind of knowledge rent shelter:**

> Special Tax reduction is not targeted, shot down already once because of windfall profit problem.

> Undifferentiated bottom shelter has similar problem.

> Ignoring problem means leaving huge resources unused, and eternal mismatch between government take and true resource rent, one way or the other.

> Ignoring problem also means strong contribution to "backtracking our own footsteps", inadequate technology drive and so on.

*** Methods for measuring knowledge capital/rent do exist, but need improvement and better fit to petroleum industry**

> Can be used for system reform guidance, not as variable in tax system since these must be related to project, not company.

What Could a Better System Look Like?

*** We cannot achieve perfect fit, but we can build flexibility into permanent system:**

> Develop generalised algorithm to index approximate project complexity objectively (e. g. water depth, distance from shore, resource size, reservoir properties).

> Production allowance (per produced unit) as function of this index.

*** We must accept higher government take from extreme windfall profits as part of comprehensive reform that takes care of knowledge rent "in the bottom".**

> How can this be done without negative cost incentives from higher Special Tax?

> Some kind of SDFI variability?

*** Minimum solution: Differentiate between regions**

*** Very tough to find good answers. It will take time and much research to develop a new design, but it must be done.**