

Petroleum Industry
Training

Alaska Legislature

January 2022



INTRODUCTION





TRAINING SUMMARY

This workshop is a condensed version of the previous installments of the LB&A sponsored training on petroleum fiscal systems.

This training class was designed to give a high-level introduction to the oil and gas industry, petroleum fiscal systems and Alaska's petroleum taxation. The key concepts will be generally explained with an end goal of giving a preview of the challenges governments have in putting together laws, regulations and revenue sharing for hydrocarbon development.

EXPECTATIONS FOR THE WORKSHOP

PETROLEUM FISCAL DESIGN

- This is a training and information sharing session
- Our intent is to provide background and context on petroleum fiscal policy design and **not to discuss specific bills or regulations**
- We will not be offering opinions today on what to do – but can go over some of the pros and cons of certain actions or issues you may be considering or want to discuss
- This is for your benefit as the better informed you are the better prepared you will be for whatever proposed oil and gas fiscal issue comes before you
- Please do not hesitate to ask questions anytime during the presentation
- We are available through the evening and all day Tuesday for individual or small group follow up sessions to answer questions or provide additional detail

PETROLEUM FISCAL SYSTEM OVERVIEW

AGENDA

In this training session we will cover:

- Industry nomenclature and jargon
- What are Hydrocarbons
- High level industry background
- Global competition for investment capital
- Theory about petroleum fiscal system design
- Concept of government fair share
- Petroleum fiscal system “Tool Box”
- History of Alaska taxation of petroleum
- Current Alaska tax structure

NOMENCLATURE



INDUSTRY NOMENCLATURE

UNDERSTANDING PETROLEUM INDUSTRY TERMS

- The petroleum industry is full of terms and acronyms, many of which within the industry have specialist meanings
- In order to understand input provided by articles, books or consultant reports one must know the terms used and their meaning
- Sometimes, several terms can have the same general meaning, while other times terms that appear similar have very different and discrete meanings. (We will cover some of these today)
- Additionally, it's important to understand units of measurement and that they can vary globally
- If we use a term or jargon you are unfamiliar with, please ask us to explain and clarify

INDUSTRY NOMENCLATURE

UNDERSTANDING PETROLEUM INDUSTRY TERMS



- A good reference for oilfield terms, acronyms and concepts is the Schlumberger Oilfield Glossary
 - <https://www.glossary.oilfield.slb.com>
 - Google search “Schlumberger oilfield glossary”

INDUSTRY NOMENCLATURE

SOME TERMS ARE USED INTERCHANGEABLY

GOVERNMENT ENTITY

- Government
- State
- Sovereign
- Regulator

GOVERNMENT GUIDELINES

- Fiscal regime
- Fiscal policy
- Oil and gas taxation
- Petroleum Taxation

GOVERNMENT SHARE OF VALUE*

- Government take
- Government share
- State take
- State share

**Daniel Johnston has a paper on the many different/inconsistent ways this is calculated*

PRIVATE COMPANY

- Producer
- Oil company
- Oil and gas company
- Petroleum company
- Contractor
- Operator

INDUSTRY NOMENCLATURE

GROUPS OF SIMILAR TERMS BUT WITH VERY DIFFERENT MEANINGS

COMPANY TYPES

- Independent
- Midsize
- Major producer
- “IOC” international oil company
- “NOC” national oil company (government owned)

CONTRACT TYPES

- JV joint venture
- License
- Service agreements
- Unit agreement
- Processing
- Transportation
- Banking

ECONOMIC TERMS

- “IRR” internal rate of return
- “NPV” net present value
- “EMV” expected monetary value
- “ROI” return on investment

PRODUCTION AMOUNTS

- “bbl” barrel (oil)
- “Bopd” barrels of oil per day
- “cf” cubic foot (gas)
- “Mcf/d” thousands of cubic feet per day
- “MMBTU/d” millions of BTUs per day

HYDROCARBON BACKGROUND

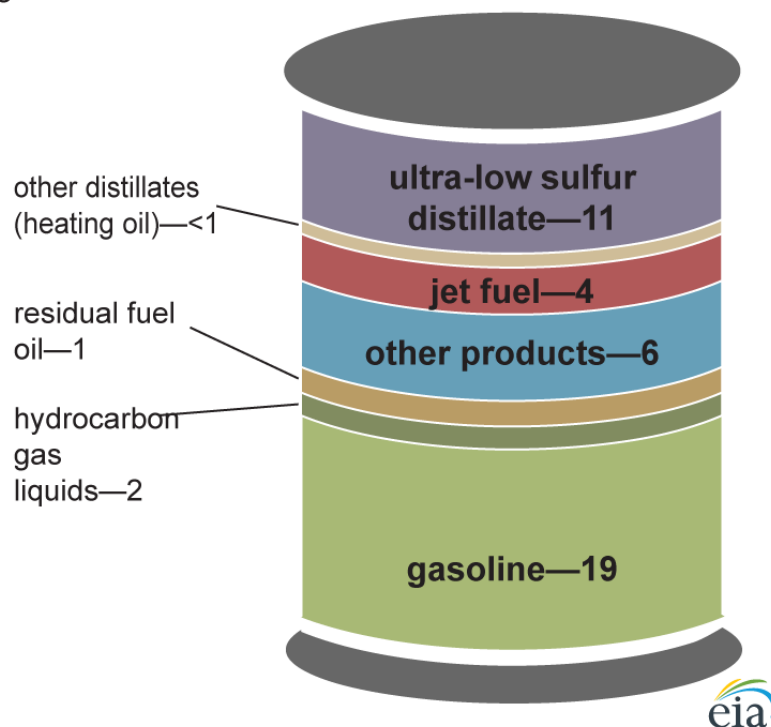


PRODUCTS DERIVED FROM OIL REFINING

LESS THAN HALF IS GASOLINE

Petroleum products made from a barrel of crude oil, 2018

gallons



- The figures to the left are averages. Different crudes and different refineries will have slightly different product yields.

Note: A 42-gallon (U.S.) barrel of crude oil yields about 45 gallons of petroleum products because of refinery processing gain. The sum of the product amounts in the image may not equal 45 because of independent rounding.

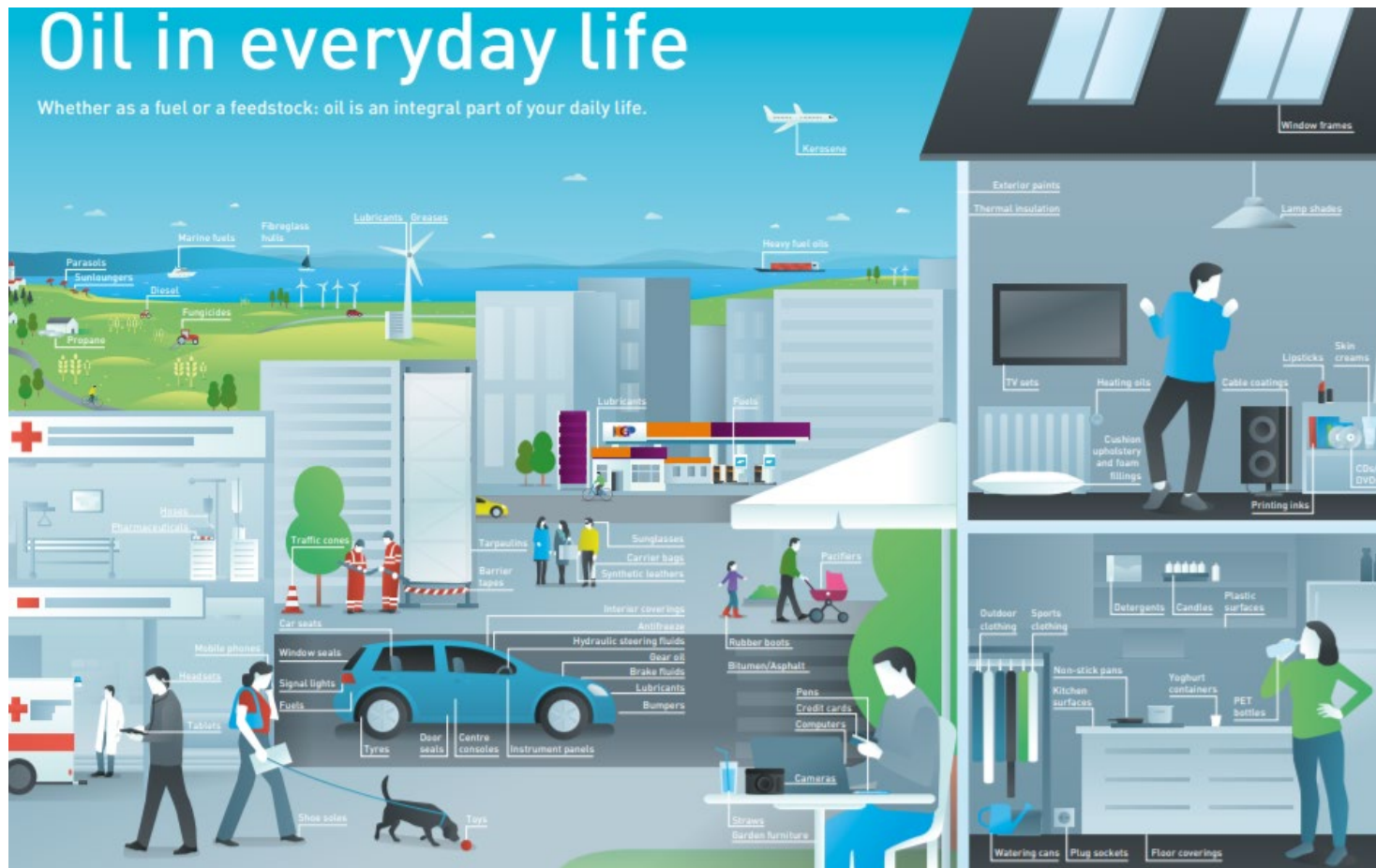
Source: U.S. Energy Information Administration, *Petroleum Supply Monthly*, April 2019, preliminary data.

eia

HYDROCARBONS ARE IN EVERYTHING

MODERN SOCIETY HIGHLY DEPENDENT ON FOSSIL FUELS

- Going green and the elimination of fossil fuels will not be rapid as hydrocarbons are present in almost every aspect of our daily lives



Source: International Association of Oil and Gas Producers

INSIGHT. INQUIRY. INGENUITY.

HYDROCARBONS ARE IN EVERYTHING

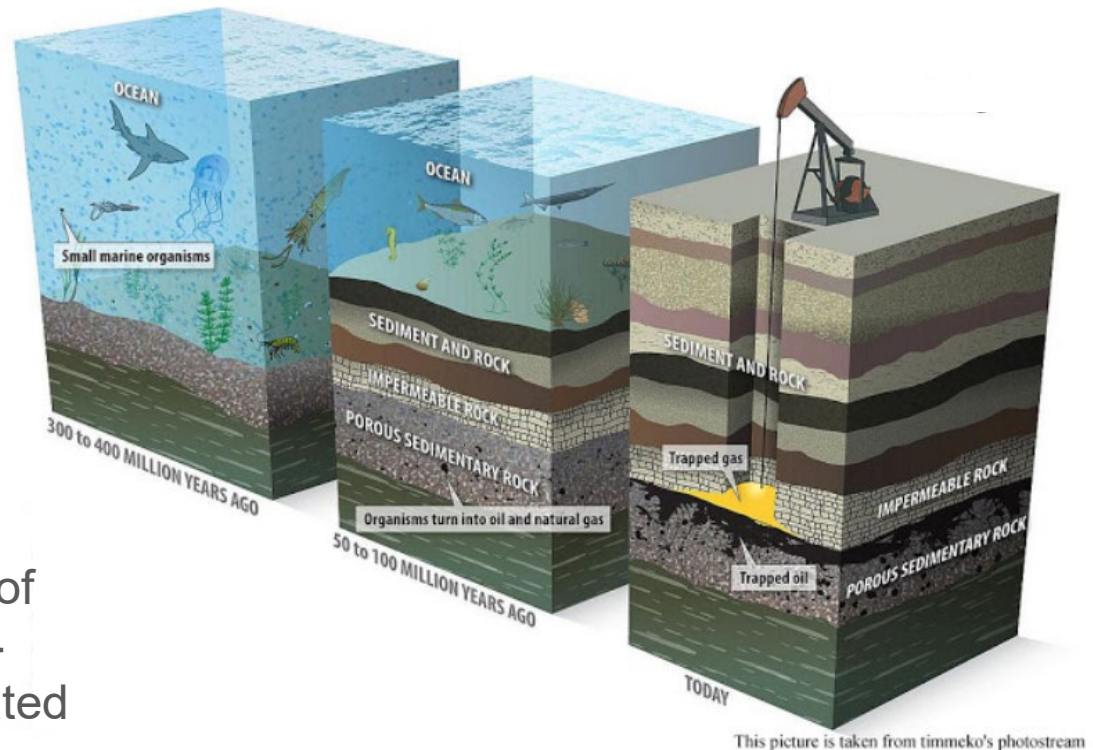
MODERN SOCIETY HIGHLY DEPENDENT ON FOSSIL FUELS

| | | | |
|--------------------|-----------------|---------------------|---------------------|
| Clothing | Ink | Heart Valves | Crayons |
| Parachutes | Telephones | Antiseptics | Deodorant |
| Pantyhose | Rubbing Alcohol | Carpets | Hearing Aids |
| Motorcycle helmets | Pillows | Shoes | Electrical tape |
| Safety glass | Nylon rope | Fertilizers | Hair coloring |
| Toilet seats | Candles | Credit cards | Aspirin |
| Golf balls | Detergents | Sunglasses | Glue |
| Fishing rods | Linoleum | Soft contact lenses | Trash bags |
| Hand lotion | Shampoo | Shaving cream | Footballs |
| Paint brushes | Balloons | Fan belts | Umbrellas |
| Luggage | Antifreeze | Tires | Dishwashing liquids |
| Toothbrushes | Toothpaste | Combs | Tents |
| Lipstick | Tennis rackets | House paint | Guitar strings |
| Ammonia | Eyeglasses | Ice chests | Life jackets |
| Cameras | Artificial turf | Artificial Limbs | Bandages |
| Dentures | Ballpoint pens | Nail polish | Caulking |
| Skis | Fishing lures | Perfumes | Shoe polish |
| Antihistamines | Cortisone | Dyes | Roofing |

MILLIONS OF YEARS TO CREATE

NON-RENEWABLE RESOURCE

- **Hydrocarbons:**
 - Petroleum/crude oil
 - Natural gas
 - Coal
 - Bitumen
 - “Fossil Fuels”
- Organic material dies and decomposes
- After 300-400 million years of heat and compression, non-renewable sources are created and ‘mined’
- Governments must consider that its petroleum resources are finite when designing fiscal policy



Source: Offshoreengineering.com

WHAT IS A HYDROCARBON?

THE FUNDAMENTAL STRUCTURE

- **Hydrocarbon:** an organic compound containing only carbon and hydrogen.
- Oil and gas are comprised primarily of hydrocarbons along with a variety of impurities
- They are classified/named by the number of carbon atoms in the molecule
 - 1 Carbon – Methane
 - 2 Carbons – Ethane
 - 3 Carbons – Propane
 - 4 Carbons – Butane
 - 5+ Carbons – numerous products from LPGs and Natural Gas Liquids, all the way to asphalt

Source: Marriam-Webster, Britannica

HYDROCARBONS ARE NOT CREATED EQUAL

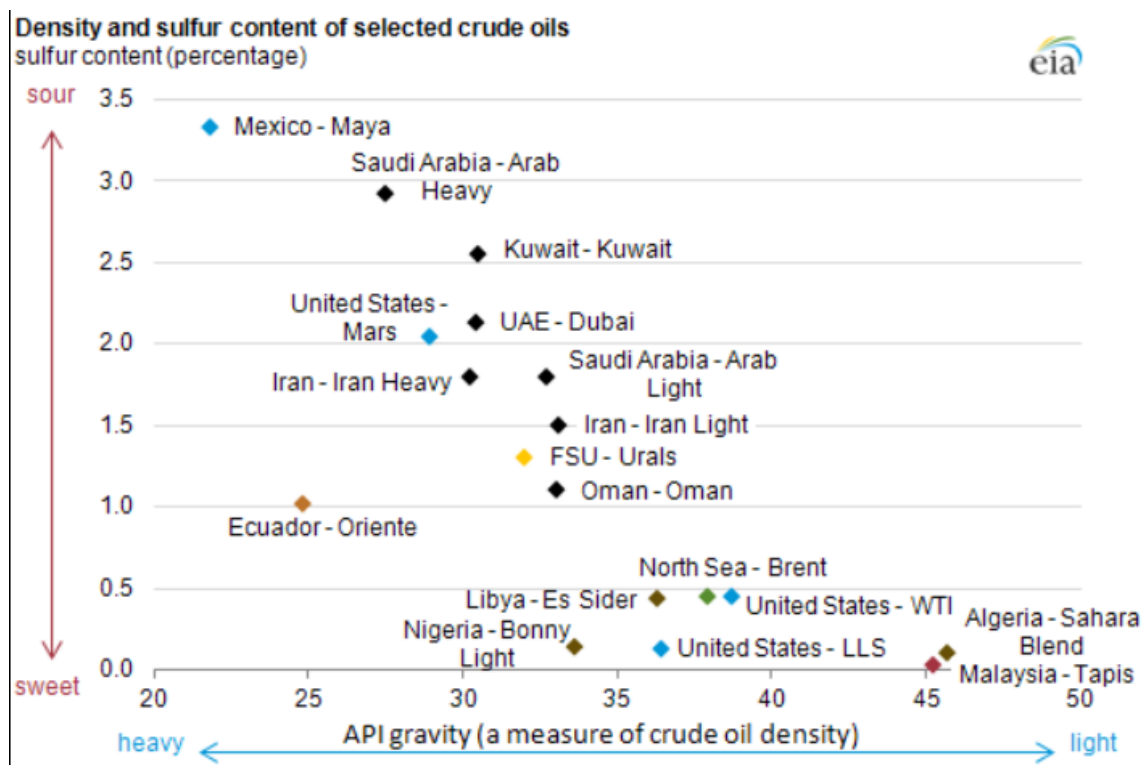
THERE ARE MANY KINDS OF CRUDE OIL

- The specifications of produced crude oil can vary quite significantly from one field to another
- The value of a barrel of crude oil, and the costs to produce that barrel, are a function of the specifications of the crude
- Crude types are commonly classified by **API Gravity**
 - A high API gravity or lighter crudes are similar to water
 - A low API gravity or heavy crudes are similar to peanut butter
- Crude quality can also be Sweet or Sour
 - Oil with sulfur content greater than 0.5% is considered sour
 - Sour crudes require more expensive specialty materials
- A refinery can only process crude within narrow specifications

HOW IS CRUDE OIL PRICED?

FOR ALASKA CRUDE OIL IT IS ANS WEST COAST

- Globally there are a number of marker crudes defined by their physical characteristics (light, heavy, sweet, sour) and location
- Other crude oils are then priced relative to these marker crudes with adjustments made for quality and location differentials



Source: EIA

ALL NATURAL GAS IS NOT THE SAME

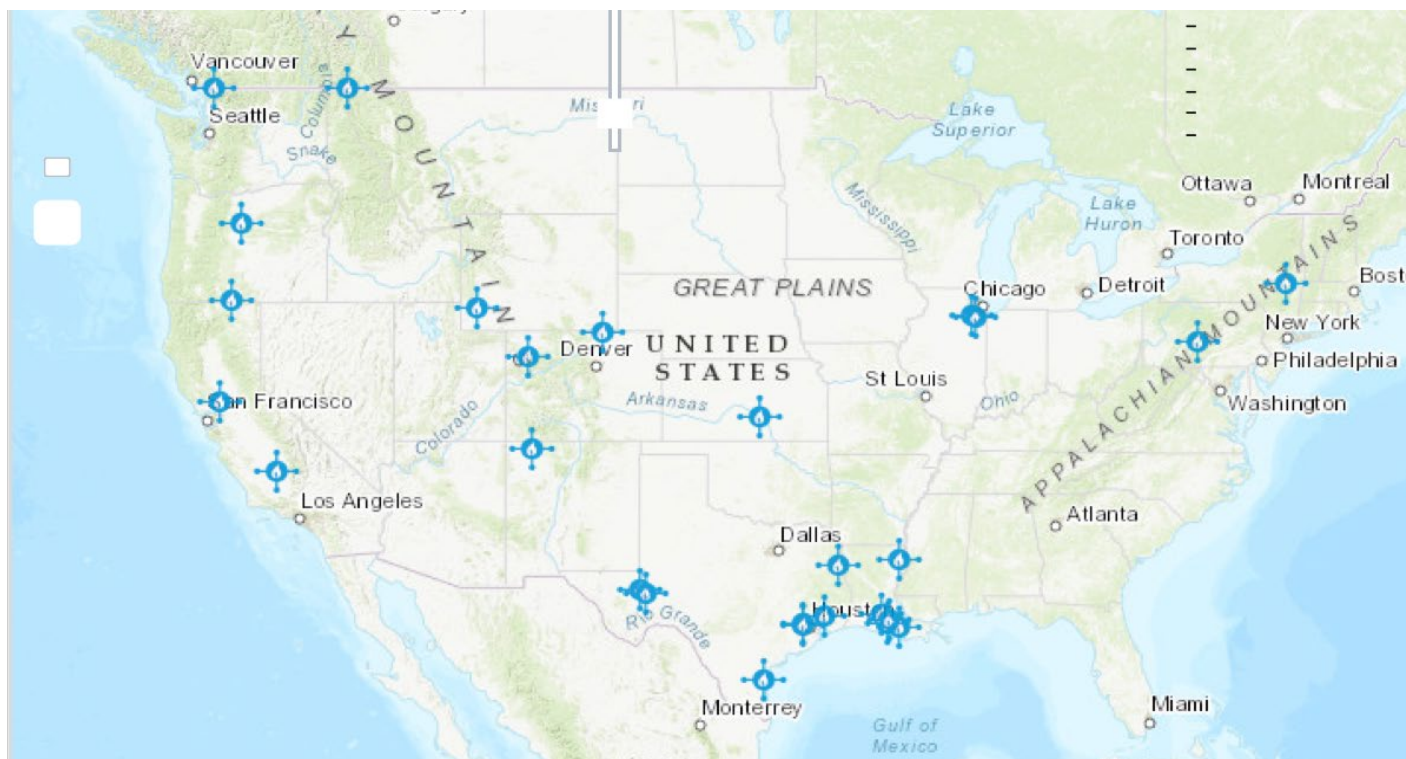
DIFFERENT PRODUCED GAS AND MARKET SPECIFICATIONS

- Produced gas can vary quite significantly from one field to another
- Natural gas is primarily made up of methane (**dry gas**), but can also include amounts of heavier hydrocarbons such as ethane and propane (**wet gas**)
- Dry gas tends to be produced from reservoirs with little crude oil (**non-associated gas**) and wet gas tends to be produced from predominately crude reservoirs (**associated gas**)
- Like crude, natural gas can be sweet or sour (contains **H₂S** or **CO₂**)
- End use markets require natural gas in a narrow range of heating content, otherwise known as BTU/cubic foot

HOW IS NATURAL GAS PRICED?

MORE REGIONAL VERSUS GLOBAL

- Like with crude, produced natural gas is priced relative to a pricing hub with adjustments for heating content, quality and location
- Unlike crude which trades in a defined price range globally, natural gas prices can vary quite significantly from region to region

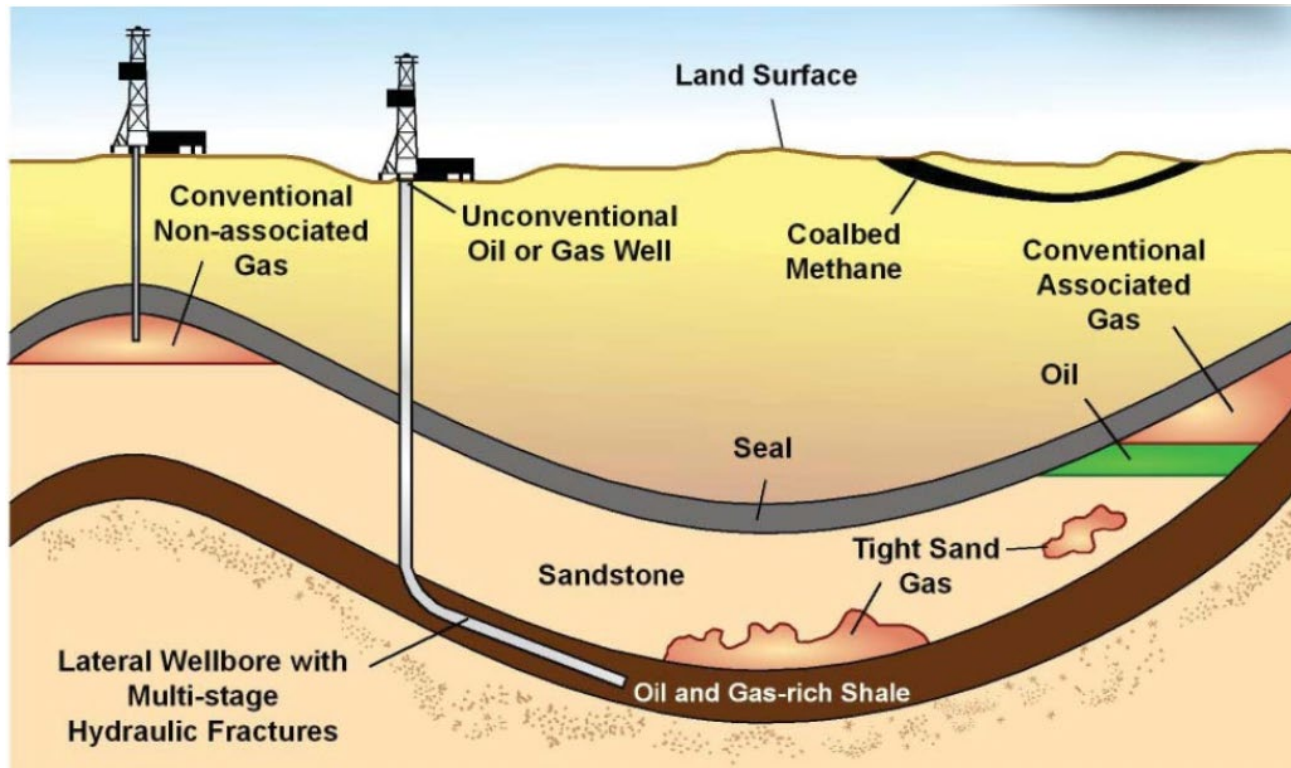


Source: EIA

HYDROCARBON RESERVOIRS ARE NOT UNIFORM

CONVENTIONAL AND UNCONVENTIONAL

- Evolving oil field technology has opened up new sources of both oil and gas
- New unconventional resources, such as shale formations, bring different unit cost structures as well as very different production profiles

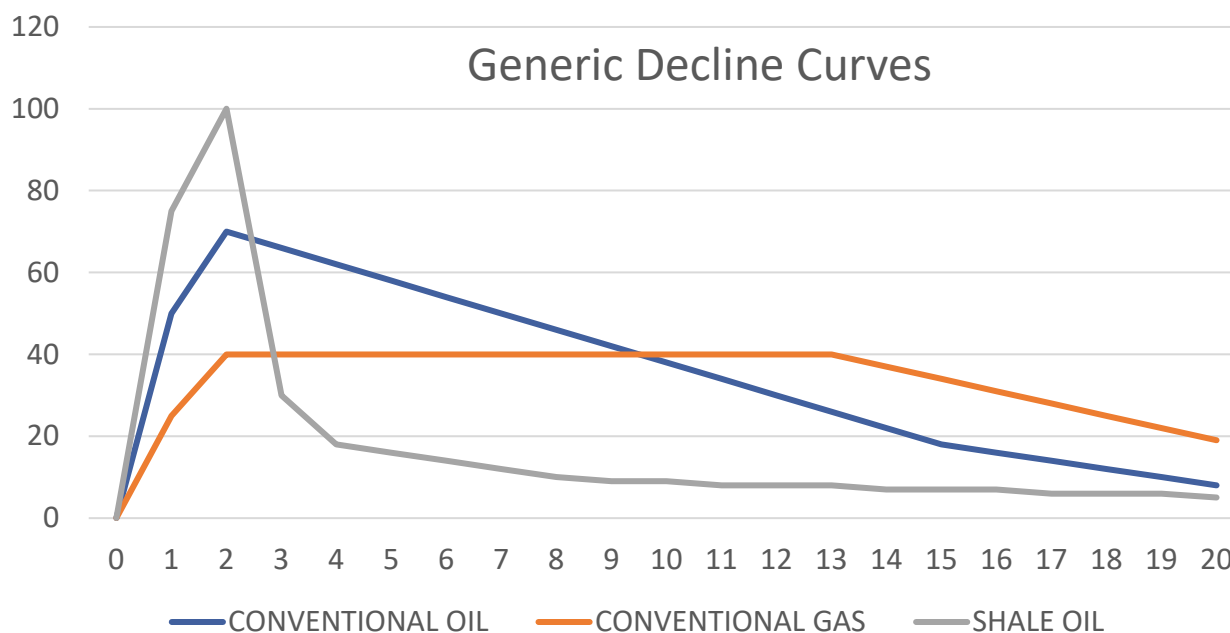


Source: EIA

PRODUCTION CURVES ARE NOT UNIFORM

SHAPE OF PRODUCTION CURVE CAN IMPACT FISCAL POLICY

- Conventional oil, unconventional oil and natural gas are produced very differently based on a number of physical and economic drivers
- Consequently, petroleum fiscal regimes must be responsive across a wide range of operations



QUANTIFYING AMOUNTS OF HYDROCARBONS

ALSO COMPARING OIL AND NATURAL GAS

- Oil is usually discussed in terms of barrels per unit of time such as **bopd** or barrels of oil per day
- Natural gas is usually discussed in terms of cubic feet or energy such as **MMcfd** or million of cubic feet per day or **MMBtu/d** or millions of BTUs per day
- When talking about oil and gas together they are discussed in terms of **boe** or barrels of oil equivalent
- On an energy equivalent basis 6000 cf of gas = 1 barrel of oil
 - e.g. An LNG plant design of 3.6 bcf/d would be 600,000 boepd
- On price parity basis \$1 MMBtu = \$6/barrel

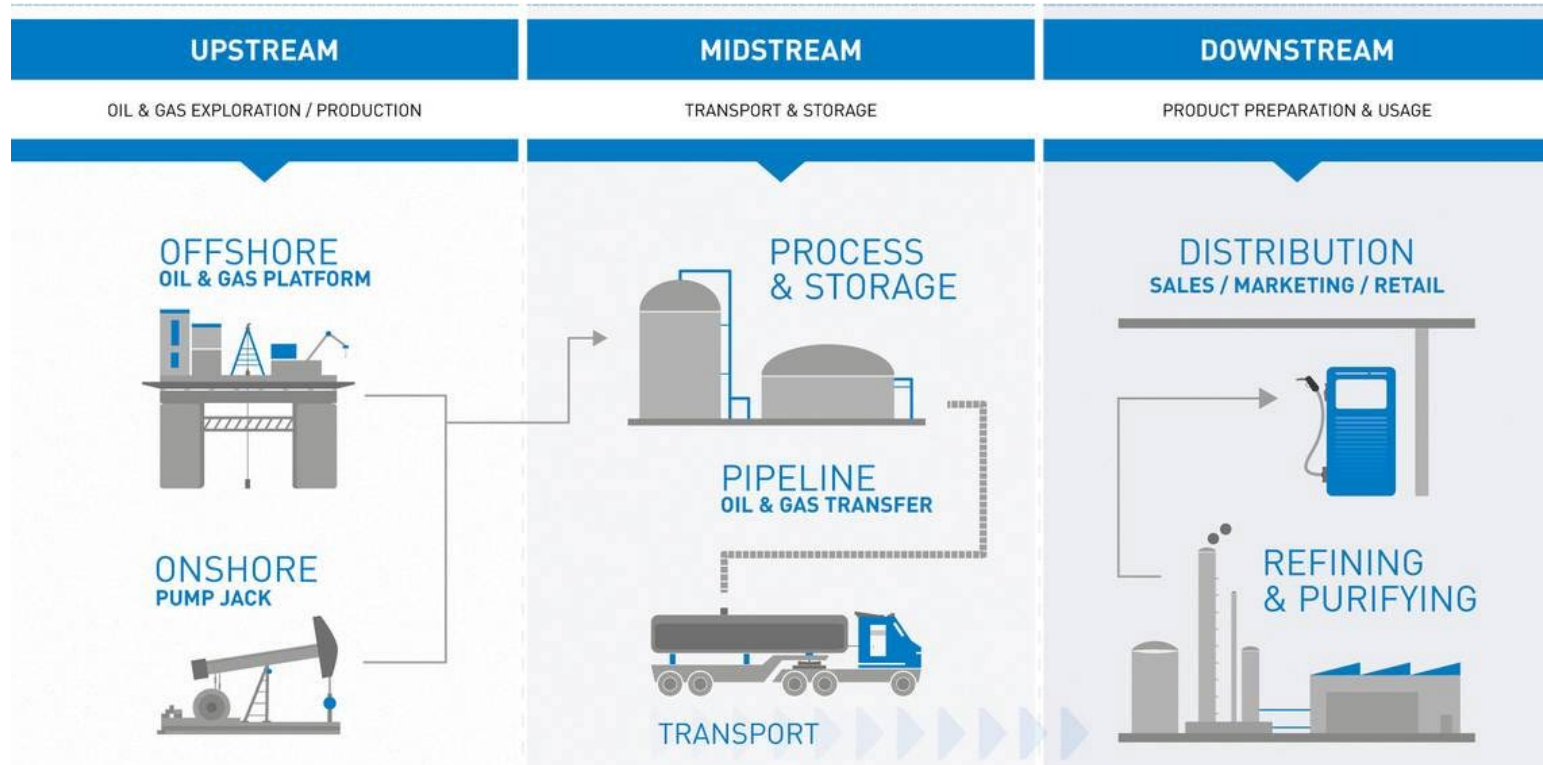
A GLOBAL INDUSTRY



THE OIL AND GAS VALUE CHAIN

FROM A GEOLOGIC PROSPECT TO END USER

- The oil and gas industry is broadly categorized into 3 sectors: **Upstream**, **Midstream**, and **Downstream**
- Petroleum fiscal systems usually only address the upstream

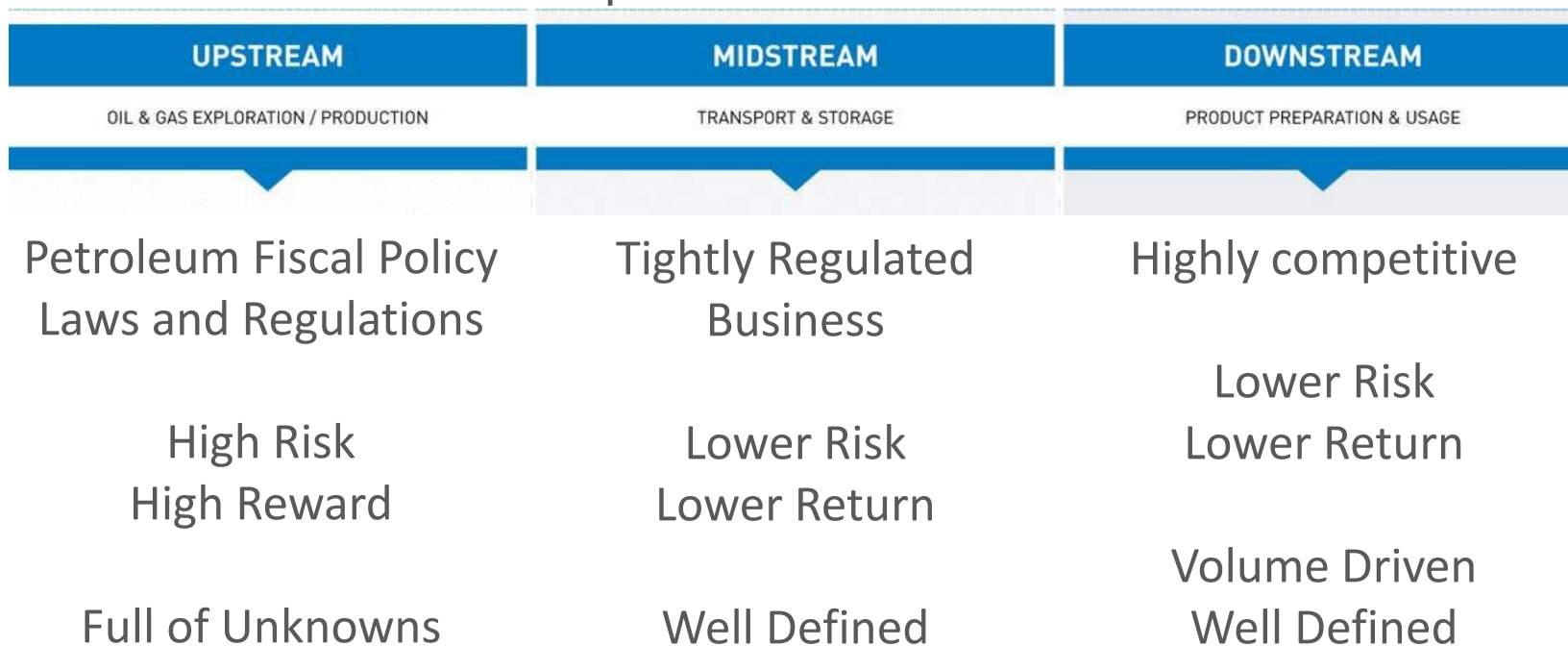


Source: www.ecom-e.com

“REGULATING” THE VALUE CHAIN

MYRIAD OF LAWS, REGULATIONS, DIRECTIVES, ETC.

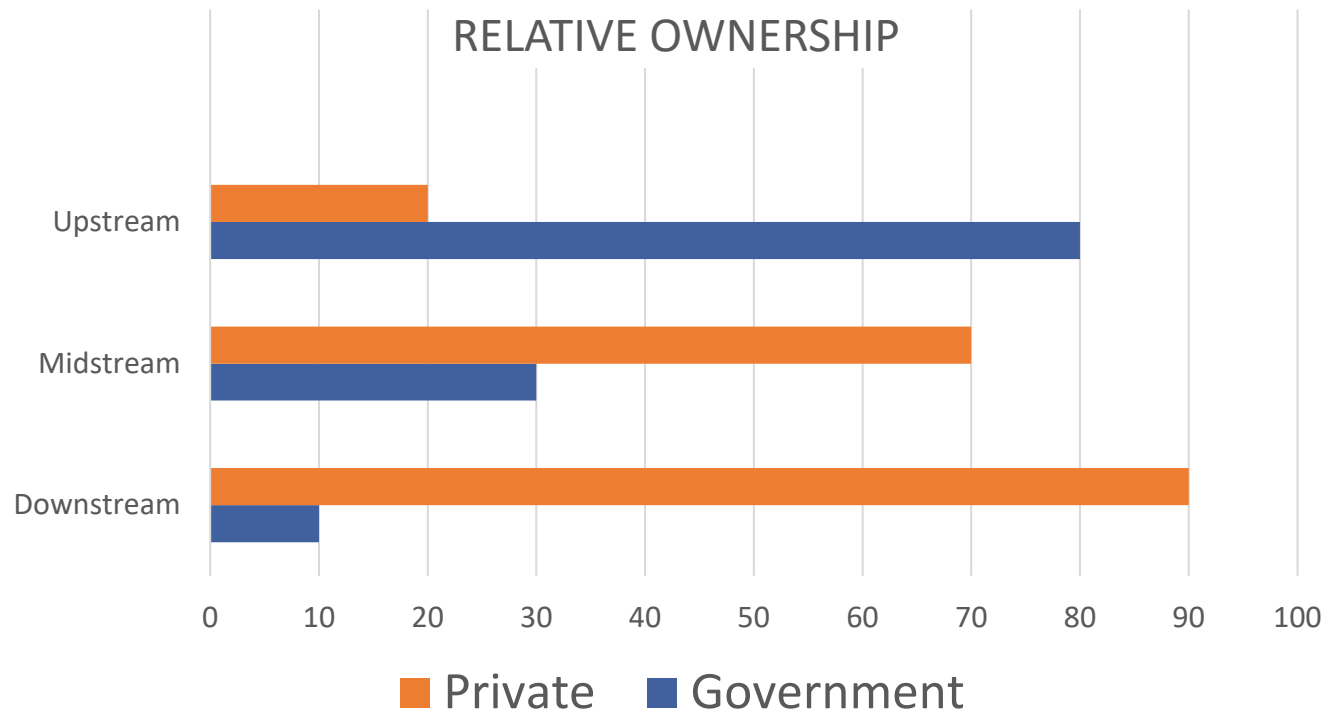
- The value of oil and gas is determined by market prices (i.e. the downstream) less the costs to get from the wellhead to the market
- Upstream fiscal policies need to ensure that midstream and downstream costs are kept to a reasonable minimum



OWNERSHIP VARIES ACROSS THE VALUE CHAIN

OWNERSHIP DISPARITY OF MAIN SEGMENTS

- Minerals in the ground are primarily controlled by governments, while midstream and downstream infrastructure is primarily controlled by private companies



WHO ARE THE MAIN UPSTREAM PLAYERS?

A THREE-LEGGED STOOL

- Three Principal Players
 - Governments or resource owners
 - Energy companies
 - Service companies
- Governments grant the right to others to develop and monetize their oil and gas (and other mineral resources)
 - Like Alaska, many governments are just the regulatory authority and are not directly involved in operations. Their role is to enforce applicable laws and regulations and to ensure the resource is optimally developed, and fairly valued
 - At the other end of the spectrum, besides being the regulatory authority, other governments participate in petroleum operations through their **NOC** or national oil company
 - A few countries further divide the regulatory function into one agency as the regulator and another agency as the commercial participant

WHO ARE THE MAIN UPSTREAM PLAYERS

A THREE-LEGGED STOOL

- Energy companies fulfill many roles while providing necessary capital, people and technology resources
 - Upstream exploration, appraisal and development
 - Midstream transportation and infrastructure
 - Downstream petrochemicals, refining and retail marketing
 - Most importantly they bring experience, especially for large project management
- Service companies provide the tools, technology and manpower resources that the energy companies employ to:
 - Explore for hydrocarbons
 - Drill and produce hydrocarbons
 - Responsibly abandon operations

COMPETING FOR CAPITAL AND MARKETS

WHY GOVERNMENTS NEED OIL COMPANIES

- Governments, who control the vast majority of mineral resources globally, generally lack the requisite resources to effectively and efficiently develop their mineral riches
- The necessary investment **capital**, trained **personnel**, **technology** are largely held by the private sector
- Every year, sometimes multiple times throughout the year, in boardrooms across the globe oil companies will discuss **the relative attractiveness of investing across the globe, including Alaska and the Lower 48**
- With large deposits of stranded gas potential projects have to compete for markets in addition to competing for capital

DYNAMIC INDUSTRY



ANALYSES ARE STATIC, THE INDUSTRY IS NOT

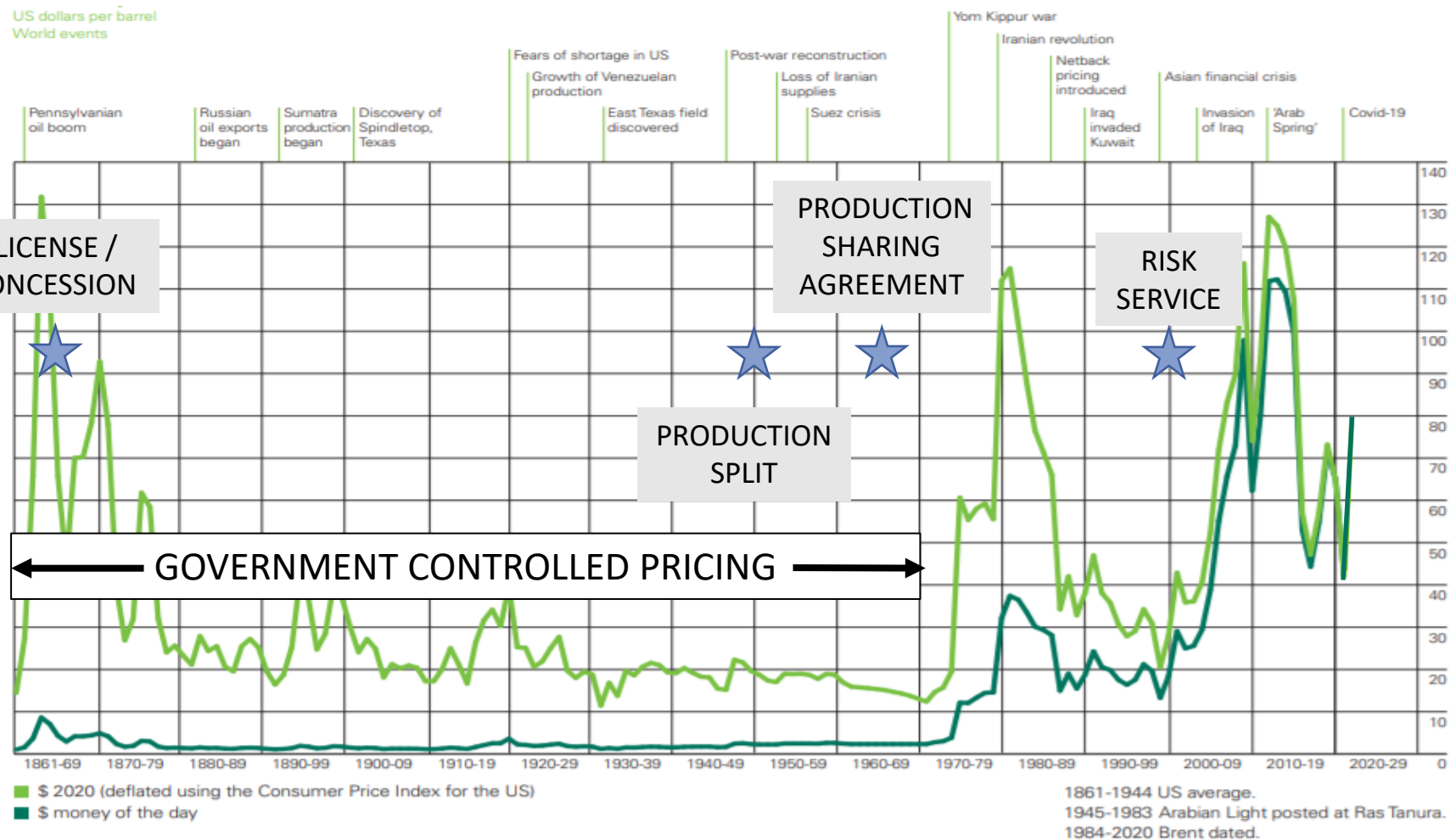
CHANGE IS CONSTANT

- The Petroleum industry is continually changing and evolving, thus it's important to balance preparing for the future while addressing the present....
- ... in a global market, where no single region, player, or component is isolated from another, and...
-Where governments **like Alaska** need to set petroleum fiscal policy that is responsive to a complex and sophisticated business environment in a **global competition for oil company investment dollars**



OIL PRICES ARE ANYTHING BUT STATIC

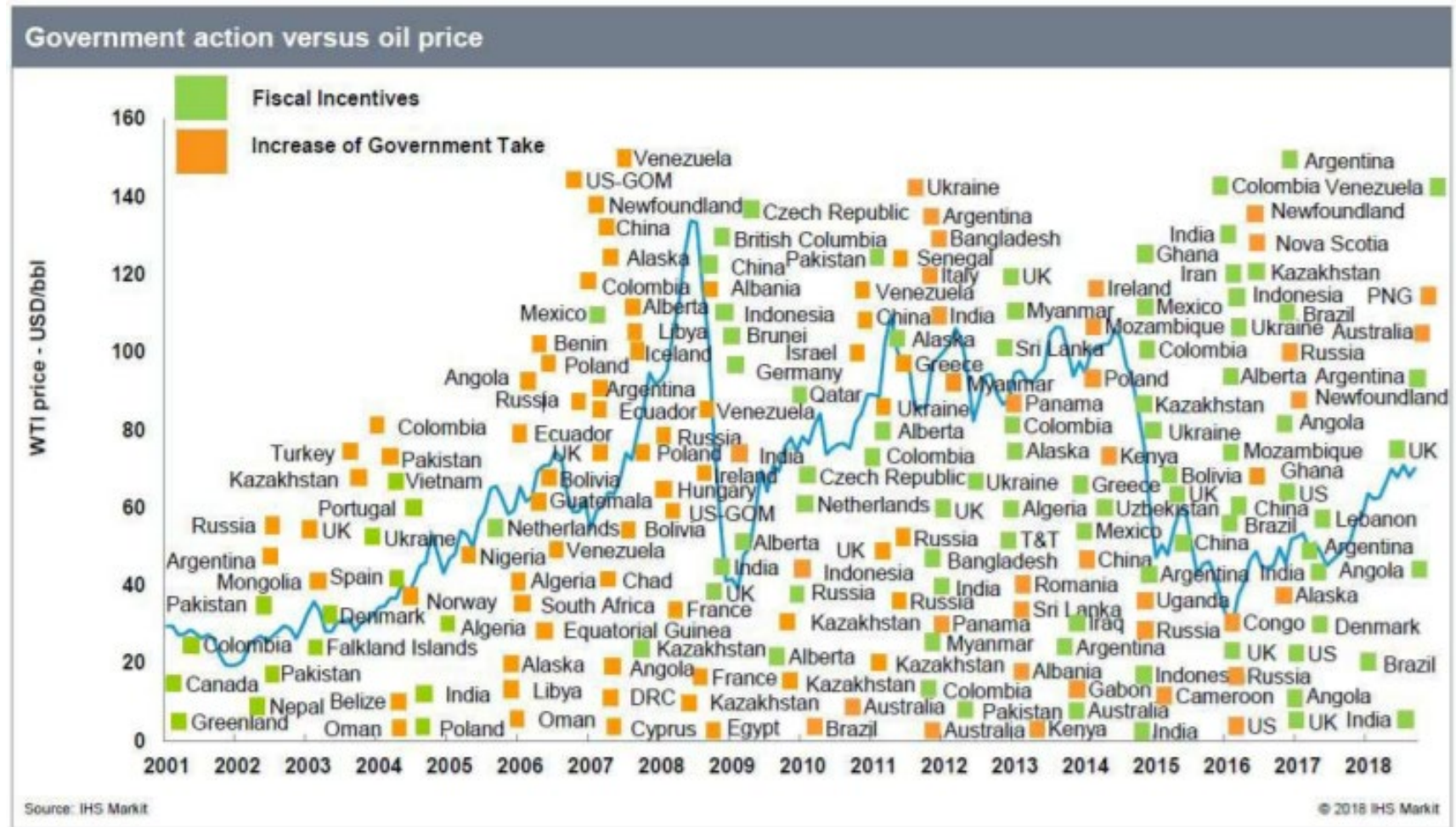
FISCAL SYSTEMS MUST WORK ACROSS WIDE RANGE OF PRICE



BP Statistical Review of World Energy 2021

COMPETING REGIMES ARE NOT STATIC

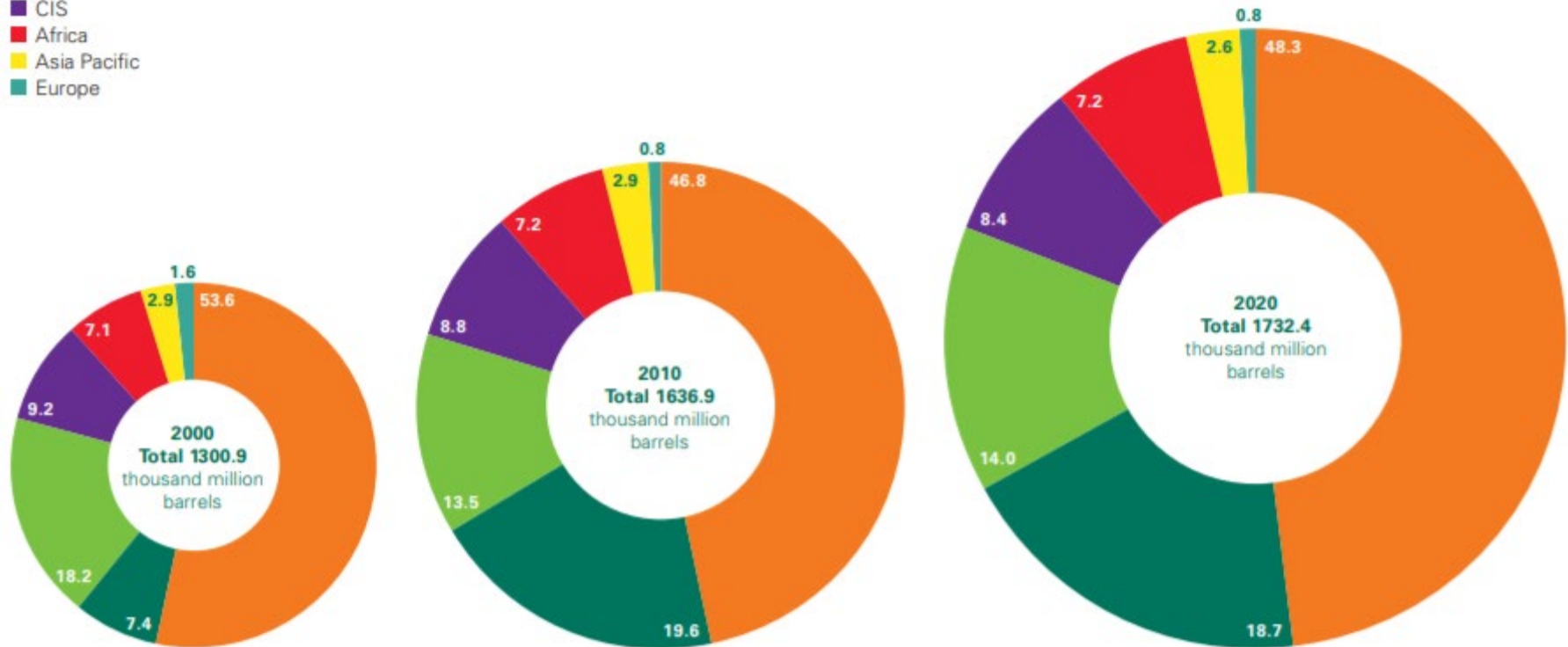
THE COMPETITION IS CONTINUALLY CHANGING/ADAPTING



OIL SUPPLY CONTINUES TO GROW

20 YEARS OF PRODUCTION AND RESERVES INCREASED 33%

- Middle East
- S. & Cent. America
- North America
- CIS
- Africa
- Asia Pacific
- Europe

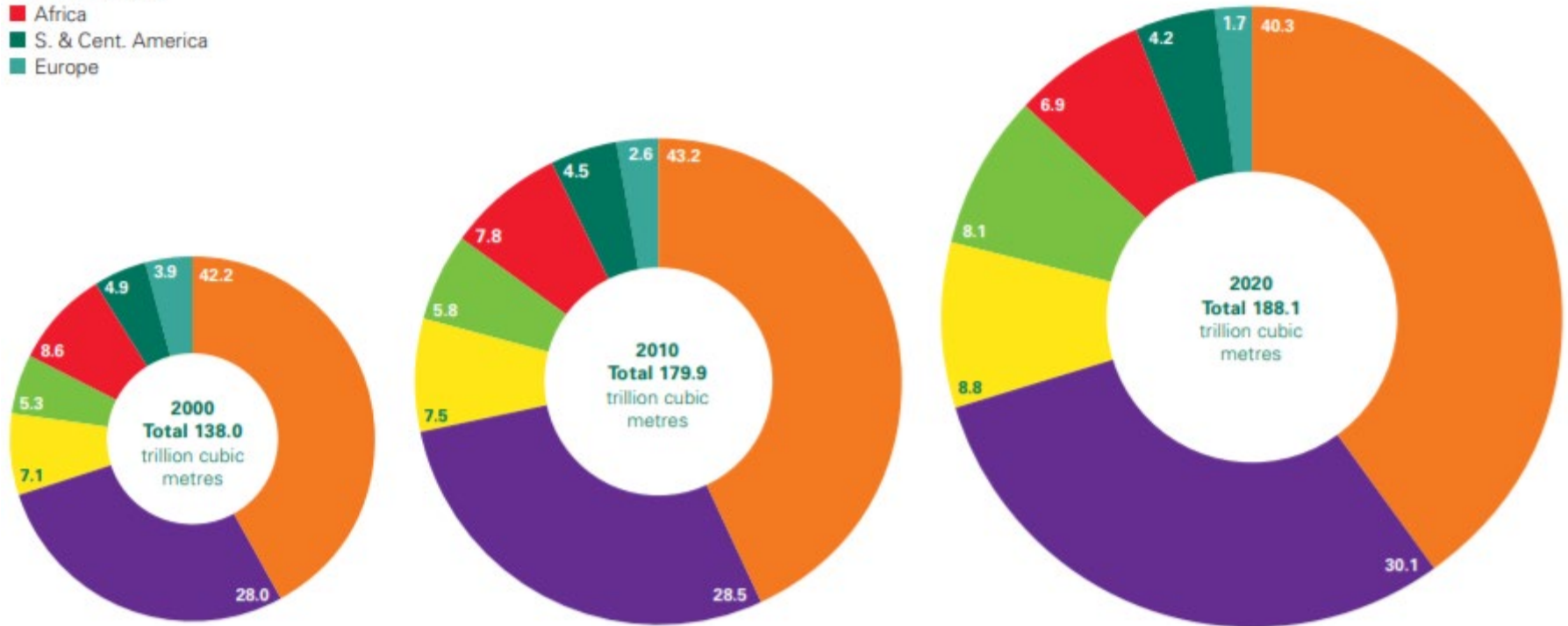


BP Statistical Review of World Energy 2019

GAS SUPPLY GROWS, SHIFTS

20 YEARS OF PRODUCTION AND RESERVES INCREASED 40%

- Middle East
- CIS
- Asia Pacific
- North America
- Africa
- S. & Cent. America
- Europe

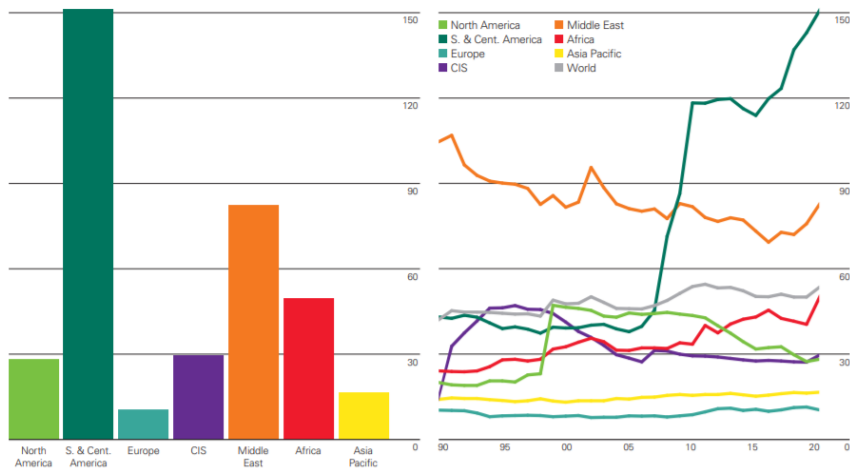


BP Statistical Review of World Energy 2019

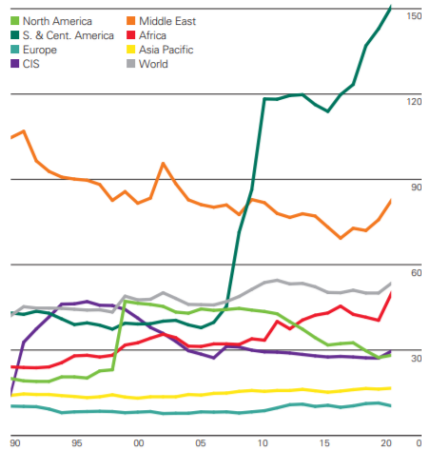
IS REGIME LONG OR SHORT?

SUPPLY/DEMAND BALANCE DEFINE FISCAL POLICIES

2020 by region

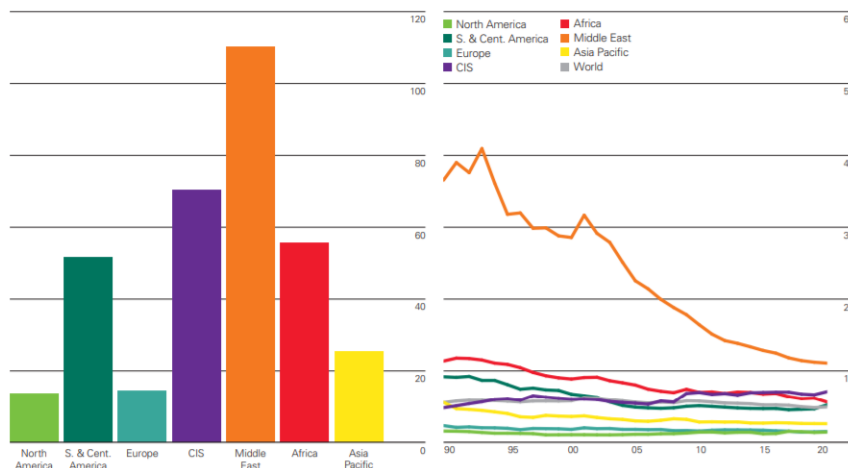


History

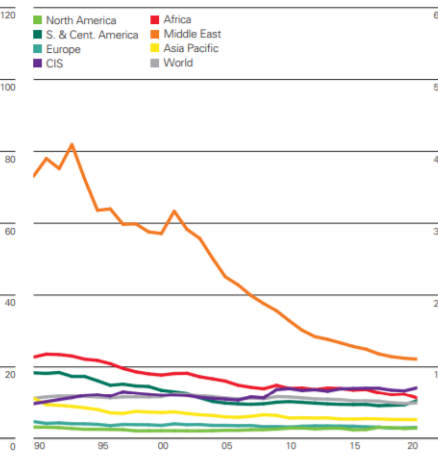


OIL

2020 by region



History

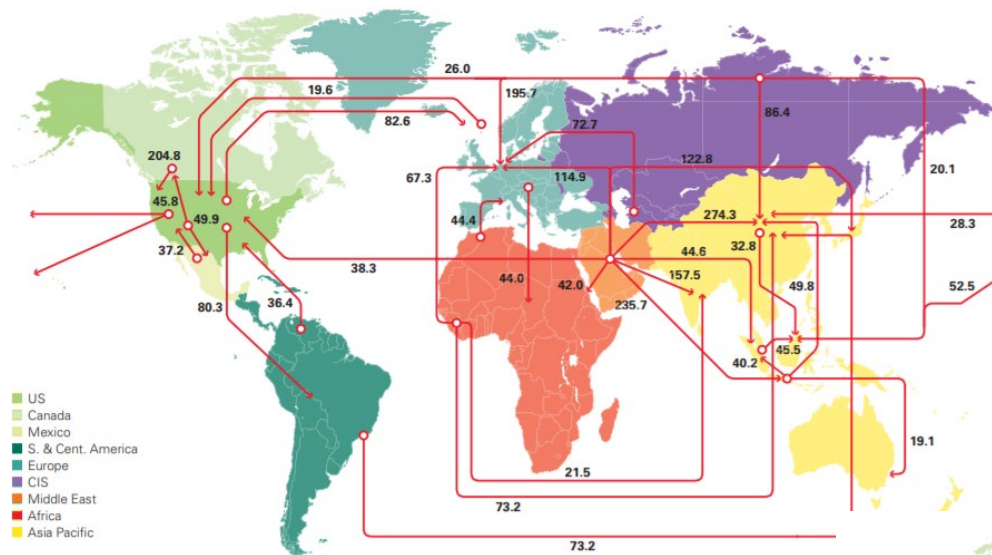


GAS

***Low ratio country's focus is exploration
High ratio country's focus is production
Each likely to have very different fiscal systems***

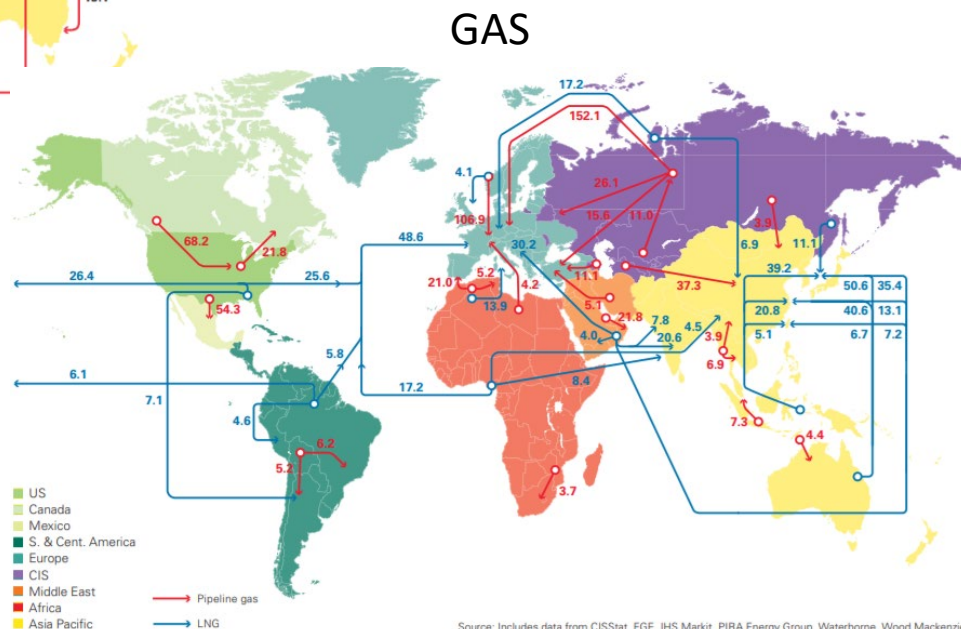
MAJOR HYDROCARBON TRADE MOVEMENTS

ASIA, INDIA, EUROPE MAJOR IMPORTERS



OIL

Window into Geopolitical Risk



Source: Includes data from CISStat, FGE, IHS Markit, PIRA Energy Group, Waterborne, Wood Mackenzie.

CONFRONTING CLIMATE CHANGE

FUTURE MORE UNPREDICTABLE THAN IN THE PAST

- When will we reach peak oil?
 - Projects with long lead times and extended periods of production to reach profitability are at risk
 - Favors the quick cycle of shale developments
- Change corporate direction?
 - Remain steadfast like Kodak and Xerox?
 - Transform like IBM?
- How long to get approvals for critical non-fossil fuel alternatives?
 - e.g. airplanes, electronics, medical devices
- How to safely and environmentally abandon oil and gas operations, especially in sensitive areas like offshore and arctic?

FISCAL SYSTEMS



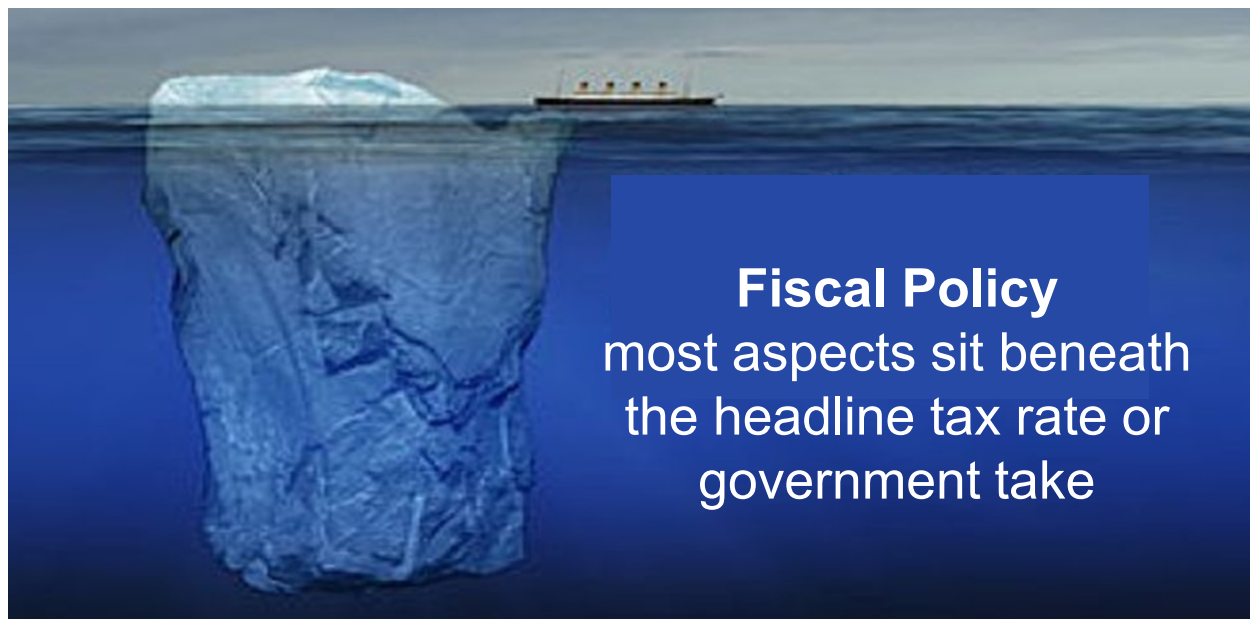
THE ROLE OF A FISCAL SYSTEM

STEWARDSHIP OF MINERAL RESOURCES

- A petroleum fiscal system is a framework of laws, regulations and contracts designed to define a government's economic status in the development of hydrocarbon resources
- The intent is to provide economic and other terms that will attract sufficient capital for the prudent development and production of a country's mineral wealth with the government getting an equitable share
- Governments hope that whatever system they put in place will be robust enough to last many years before needing alteration
- However, as we showed earlier petroleum fiscal systems around the globe are regularly changing
- As such, governments need to frequently evaluate the competitiveness of their fiscal policy against the global market and potential impacts on the status of resource development within their regime

COMPONENTS OF A FISCAL REGIME

MUCH MORE THAN MEETS THE EYE



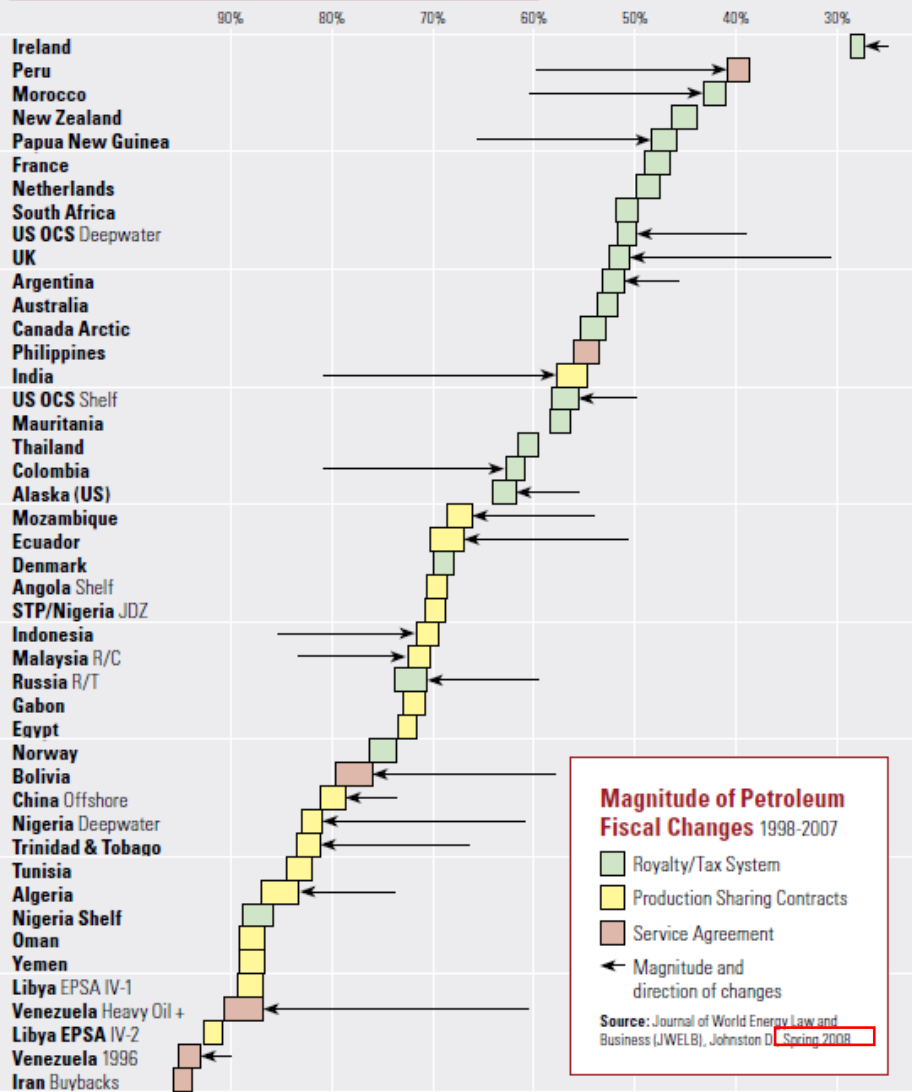
www.accuweather.com

- Oil and Gas taxation, and the competitiveness of one regime versus another, is based on numerous items that are not always well understood, discussed, or even made 'visible' in typical competitive analyses and discussions
- There is much more to petroleum fiscal policy than the headline level of government take or tax rate

SHARING BENEFITS WITH THE PRODUCERS

LEVEL OF GOVERNMENT TAKE

Figure 3: Government Take for Oil



- Determining the right amount of government take is not an easy task
- Chart shows government take (or non-producer share)
 - Lower government take is to the top & to the right of the chart
 - Higher government take is to the bottom & to the left of the chart
- A rational assumption would be that the bulk of the petroleum investment dollars would be spent in countries in the top half of the table
- But actual industry spending is significant in the bottom half of the table
- This tells us there is more to energy investment decision making than government rates of take

CHANGE IS THE ONLY INDUSTRY CONSTANT

FISCAL SYSTEM SHOULD NOT BE BASED SOLELY ON HISTORY

- The Petroleum industry has continually undergone change, thus it's important to balance preparing for a different future while addressing the present in a global market, where no single region, player, or component is isolated from another, and where governments design fiscal policy that is responsive to a complex and sophisticated business environment in a global competition for producer investment dollars
- In other words, when putting together petroleum fiscal policy you must assume an unpredictable future that can range from much better than expected to much worse than feared
- The more durable fiscal systems today are those set up to respond to inevitable change as well as the up and down cycles of the energy industry and geopolitical events

GOOD FISCAL DESIGN ANTICIPATES CHANGE

CAUTION WHEN DESIGNING STRUCTURE

- The fiscal structures most in need of fixing or revamping are usually those that have been designed based on historical data relationships instead of building self correcting systems
- Those 'broken' structures share a common feature - setting legislation and regulation around a specific reference **value** which is relevant today, but may be vastly different or be of less importance in the future
 - Example: setting specific price points for tax rate changes based on an implied level of profit (versus actual profit level) at those price points
 - In the not too distant future, cost structures and production levels will change, sometimes significantly, changing the implied 'profit' at those price points
- **Good petroleum fiscal policy is one that learns from (not replicates or repeats) the past and is designed to succeed in the inevitably changing future**

THERE IS NO SINGLE IDEAL STRUCTURE

EVEN WITH A CENTURY OF EXPERIENCE

- Why are we being so emphatic that you understand the nature of the data being presented more than at a cursory level?
- After over a century of trying, and ever improving fiscal tools and terms, there is still **no single universally ideal or optimum petroleum fiscal structure**
- Why is that?
 - Each reservoir is unique
 - Oil companies commit to developing these resources without absolute certainty of costs or prices
 - Each country's/state's goals and situations are unique
 - Governments work to create fiscal structures that will achieve their specific goals, circumstances, needs and drivers
 - Companies and governments must work in partnership on a workable compromise of sometimes conflicting goals

THERE IS NO SINGLE IDEAL STRUCTURE

FISCAL POLICY DESIGN CHALLENGES

- Producers, in making decisions where and when to invest, will assess the attractiveness and risk of doing business based on the whole package, and not just the individual items or aspects in the fiscal structure, e.g.:
 - All costs not just allowable costs
 - Rate, direction and magnitude of regulatory and law changes
 - Unique local content requirements
- Governments try to use “best practices” and the “best tools” but routinely make modifications to them to meet their particular stewardship obligations. Some typical drivers of government fiscal policy design include:
 - Short term revenue needs vs building multi-generational wealth
 - Short on reserves (need to drill) or long on reserves (need to produce)
 - Providing affordable/discounted domestic energy supply
 - Growing associated industries (e.g. Petrochemical, Power)
 - Creating long term jobs for the country
 - Creating a national oil company

ACHIEVING COMPETITIVE RETURNS

EACH PROJECT, REGION COMPETE GLOBALLY FOR CAPITAL

- IOCs are encouraged to invest in a given country or project through the opportunity to earn competitive returns via the:
 - Method of sharing benefits
 - Degree of sharing benefits
 - Timing of sharing benefits
 - Risk / Benefit balance
- Regimes and fiscal systems that share benefits that align with IOC investment decision-making metrics, timing and processes can be expected to be most robust, and to attract the most investment dollars
- Determining the right amount of government take is not and never has been an easy task; **it is as much science as it is art**
- Systems viewed most favorably have built-in flexibility, or self-correcting terms in order to adjust to the ever-changing conditions of the real world

FISCAL SYSTEM DESIGN CONSIDERATIONS

SYSTEM ADMINISTRATION

- With so many options and so many moving parts, a flexible, self-correcting structure is now the globally preferred way forward as it is a much more stable structure as unexpected change occurs
- Good fiscal design without complementary institutional structures may still not achieve the desired goals
 - Fiscal design needs to be within the administrative and audit capacity of the relevant governing institutions
 - A simpler system, with the benefit of hindsight, generally proves to be more viable than a theoretically ideal but complex system

DEFINING A GOVERNMENT'S FAIR SHARE

STEWARDSHIP ROLE

- The role of the government is to ensure the optimal development of its natural resources for the near-term and long-term benefit of its people
- Governments routinely seek the advice of numerous experts as well as encourage industry participants to provide input into its various petroleum policy deliberations
- They often hear that their overall share of the pie has been “too low”, “about right” or “way too high” – sometimes all at the same time
- Notwithstanding, the advice and recommendations of experts and knowledgeable industry participants is necessary for development and improvement of a fiscal system
- So, how should governments go about achieving their goals?

YOU MUST ASK PROBING QUESTIONS

WHAT ISN'T INCLUDED? WHAT ISN'T BEING SAID?

- **“Torture numbers and they will tell you whatever story you want to hear!”**
- It is not uncommon to see conflicting expert opinions based on various subsets of the available information
- When reading reports or listening to experts you should always be asking yourself, “What is it that they are not saying?”, or “What data or information did they not use or hope you would not find?”; e.g.
 - ***“Alaska is non-competitive as it has a government take greater than [over half the world] or [its world-wide peer group]”***
 - What usually isn't said, but should have been:
“Over half the investment capital is spent in countries with a higher government take than Alaska. Here is why...”

BASIS OF EXPERTS' PREDICTIONS

SCENARIO PLANNING SHOULD BE USED

- Experts are accurate at understanding the history of a particular topic, but their track record on predicting the future is not that great. For example:
 - During AGIA (circa 2008) multiple industry and independent experts testified to a very limited SE Asia growth market for LNG, thus recommending a gas pipeline from the North Slope to the Lower 48
 - Looking back many years later, the actual SE Asia LNG market growth was 5 to 6 times larger than the 2008 expert consensus
 - You should ask: Why? What happened? What were we not told?
- Governments need to resist designing fiscal policy around one general view of the present or the future
- **Fiscal policy should be developed such that it has some resilience across multiple possible future end state scenarios**

FISCAL DESIGN TAKES WORK

START WITH A SET OF AGREED GOALS

- Policy design should start with a set of agreed goals
 - These tend to be unique for each government
 - When looking at comparisons, understand each government's goals, and not just their tax rate, if they are listed as being in your peer group
- When being developed, policy should be tested against several possible future scenarios. It must be as resilient as possible
- Do not automatically accept advice at face value, always dig deeper until you are comfortable with the foundational aspects of the analysis
- If policy is going to define action based on a fixed term or value, make sure you understand how it was determined. For example:
 - **“The crossover point from net tax to gross tax is \$72/bbl”**
 - This is true only for one specific set of costs, a snapshot in time which may never be repeated

GOVERNMENT FISCAL SYSTEM DESIGN

SUGGESTED APPROACH

- The structures, and tools that can be used under each structure, are very widely known and understood
- Competitive reviews are mainly about the past or present, and rarely address the inevitable changes to come
- Make sure you have established agreed short-term and long-term goals, e.g. :
 - Multi-generational wealth creation
 - Fill TAPS
 - Cheap fuel and power across the state
- Review multiple options modelled against different future end state scenarios to improve chances of realizing goals
- Draw conclusions of competitiveness from a review of all aspects of your system and all multifaceted aspects of competing systems

GOVERNMENT FISCAL SYSTEM DESIGN

GET INPUT FROM EXISTING AND POTENTIAL PRODUCERS

- Ask for and expect to be shown something other than a single comparative table to explain differences between Alaska and other fiscal systems competing for company capital
- The 'obvious' aspects usually don't drive investment decisions
- Understand the true differentiators that drive investment
- Ask companies why they are spending billions on countries with a 'higher government take' or higher tax rate

EQUITABLE SHARE



IDEAL GOVERNMENT SHARE

SHARING THE ECONOMIC RENT

- Determining a government's equitable share of petroleum profits is not, and never has been, an easy task
 - Ideally, governments try to set their petroleum fiscal terms to capture 100% of the rent generated after the producer has made a “reasonable return” on their investment
- However, in the real world, fiscal terms are set before activities take place (*ex ante*), and not retroactively (*ex post*), thus
 - Sometimes they capture <100% and give investors some additional returns (in practice a necessary condition)
 - Sometimes they capture >100%, and stifle activity
- The more stable and deemed fair systems will have flexibility, or self-correcting terms that adjust profit shares in response to ever-changing global conditions

SHARING BENEFITS

TYPICAL METHODS IN USE TODAY

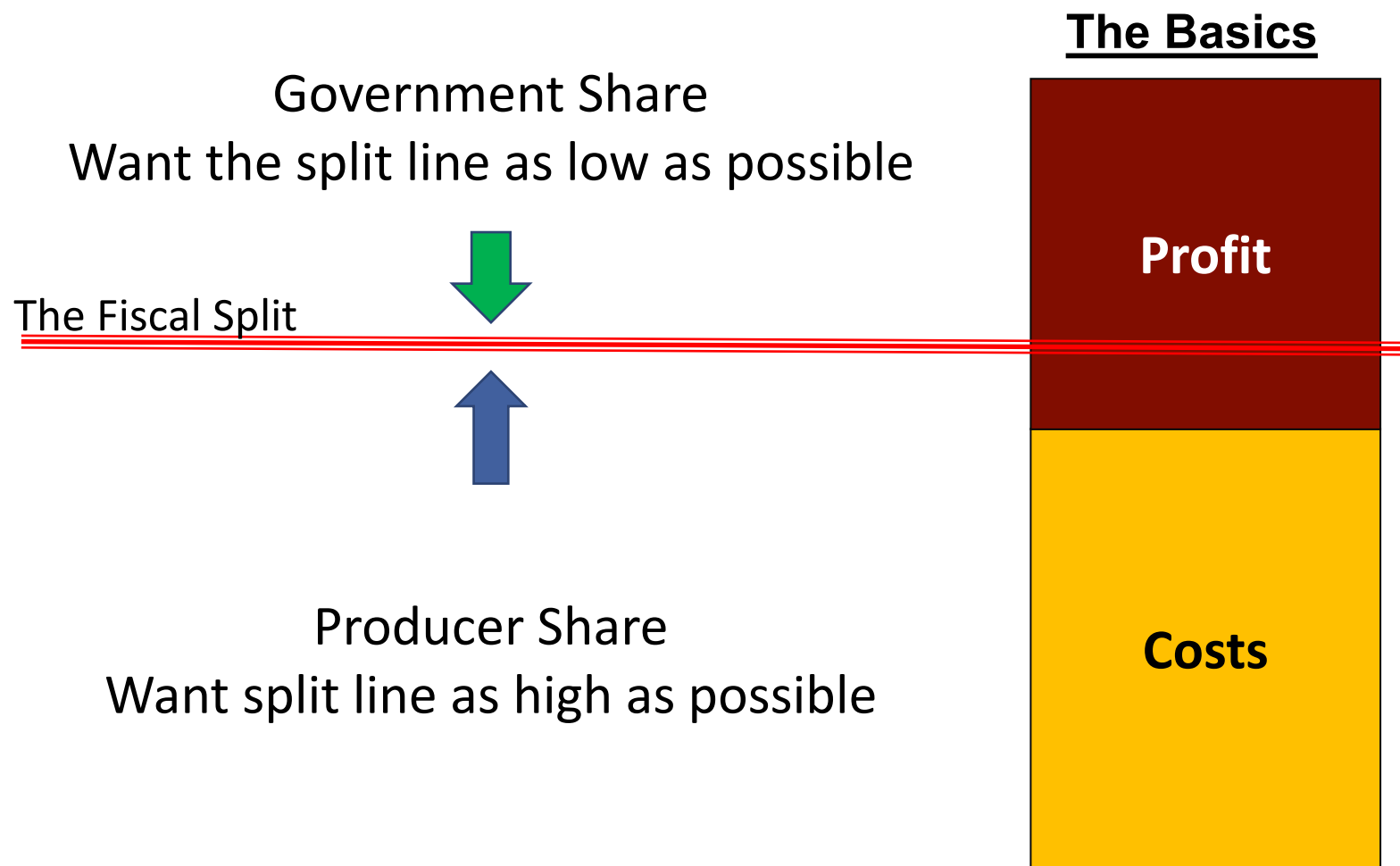
- At a very high level, oil and gas projects follow general project economics

$$\text{Revenue} - \text{Costs} = \text{Profit}$$

- Fiscal policy plays a role in all three parts, but the determination and division of profit are where petroleum fiscal frameworks play a large role
- Division of profit between the government and the companies is where the following terms, among others, are used:
 - Royalty
 - Severance Tax
 - Petroleum Tax
 - Profit Oil/Gas/Petroleum
 - Government Take

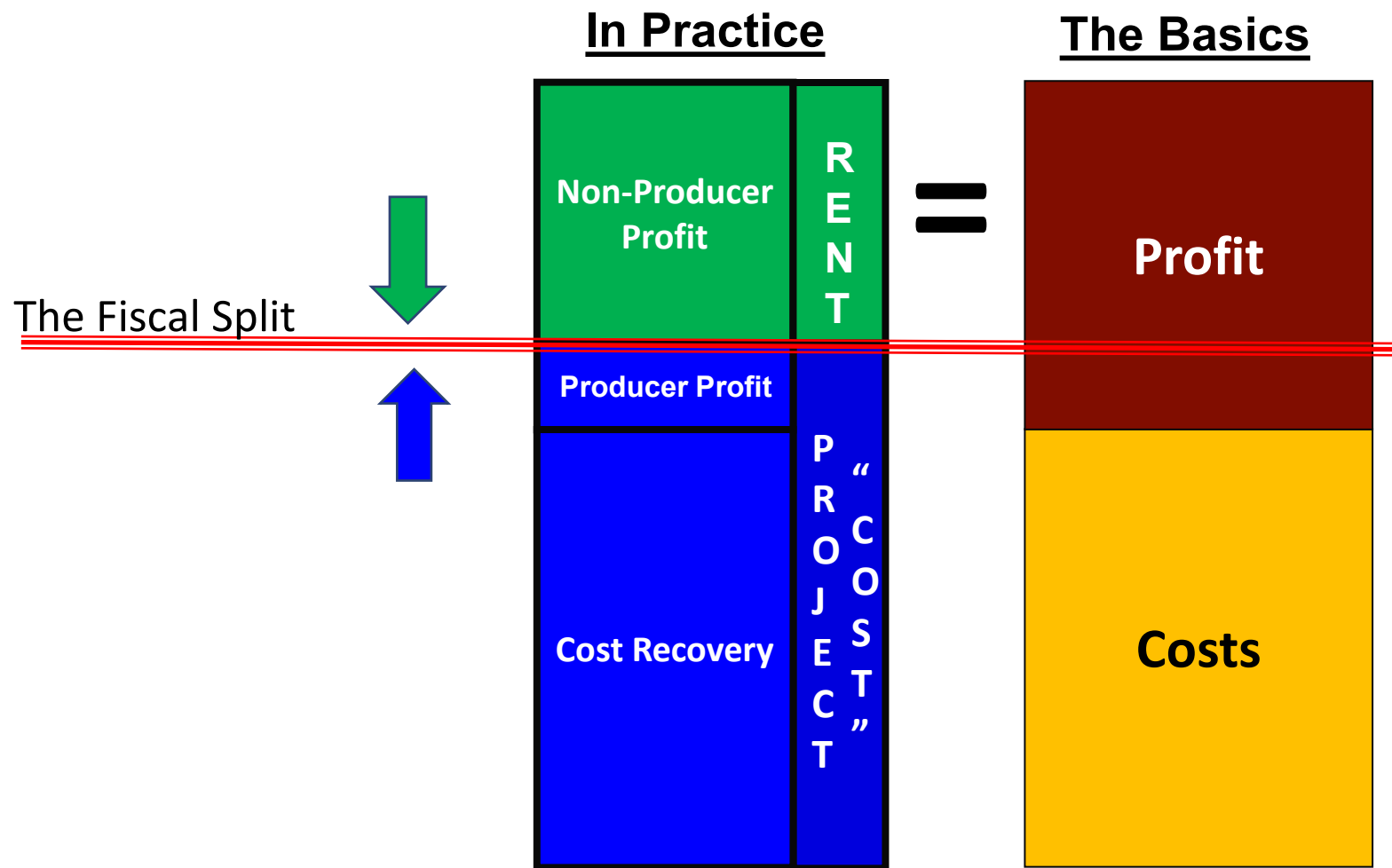
THEORY OF FISCAL SYSTEM DESIGN

TOTAL REVENUES OVER THE LIFE OF THE PROJECT



THEORY OF FISCAL SYSTEM DESIGN

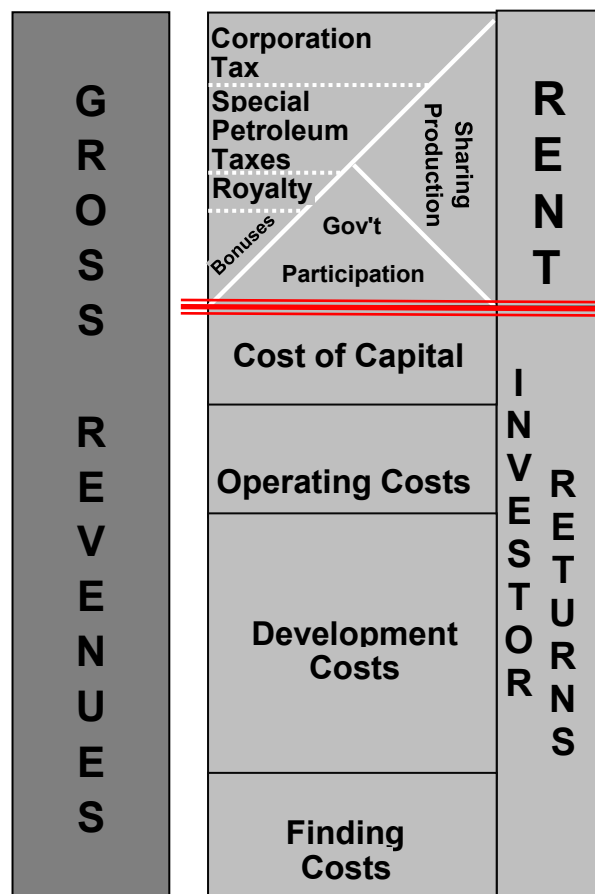
ADDING DETAIL



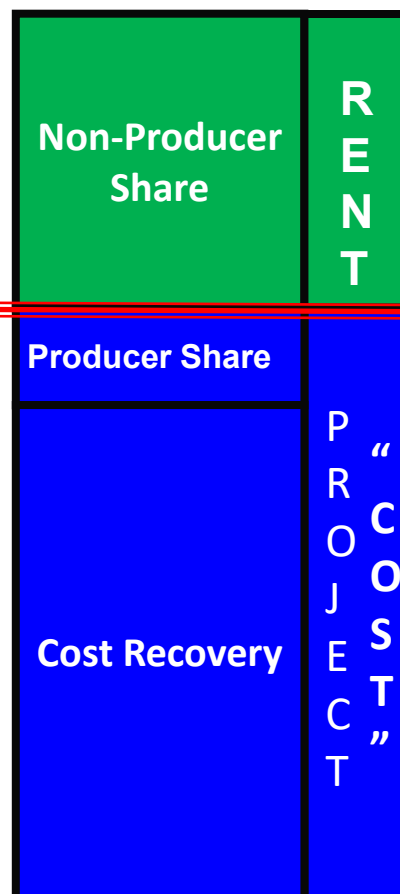
THEORY OF FISCAL SYSTEM DESIGN

ECONOMIC JARGON

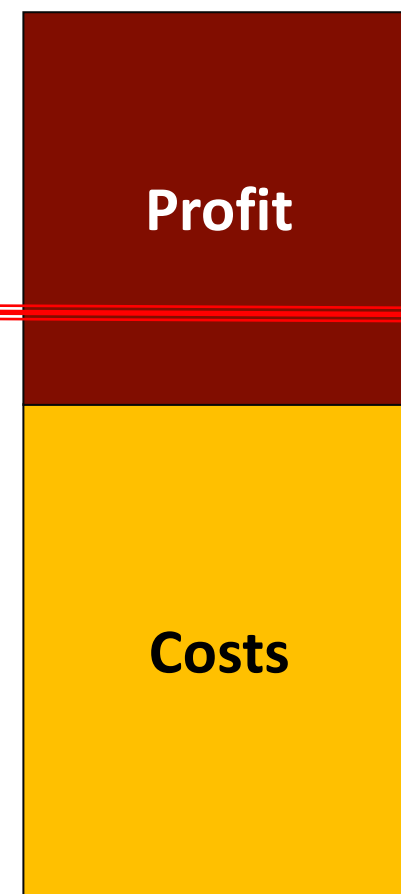
Economic Theory



In Practice



The Basics

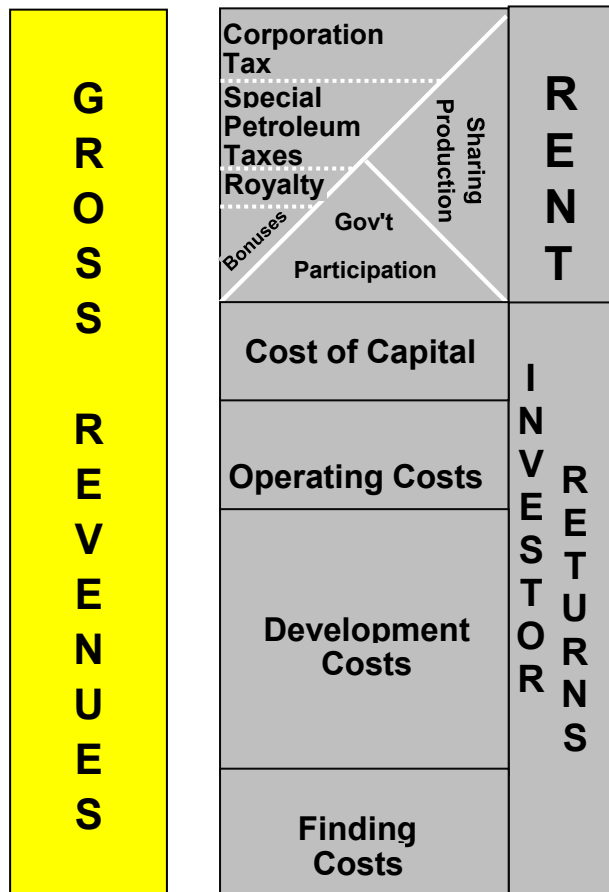


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THEORY OF FISCAL SYSTEM DESIGN

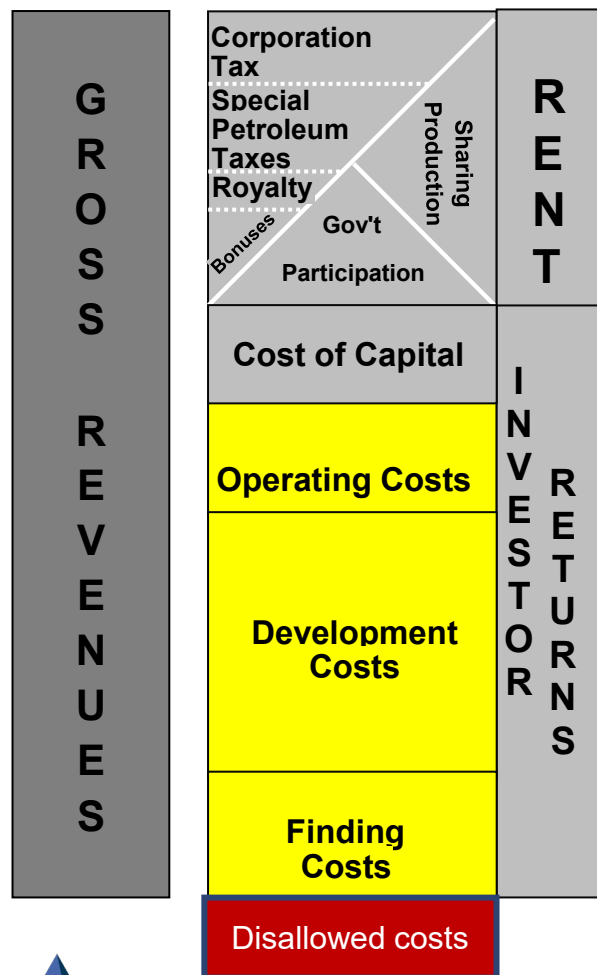
DETERMINING THE VALUE/SOURCE OF THE VARIOUS PIECES



- **Gross Revenues** appears to be very simple calculation, just take production and multiply by the price
But
- Price:
 - Where is the pricing point?
 - How does it relate to published indices?
 - Is the sale third party / arm's length or affiliate sale / non arm's length?
 - What quality adjustments are needed?
- Production:
 - Where is it measured?
 - Who suffers losses?
 - Is lease use (for fuel) free or chargeable
- Net back Costs
 - What are allowable processing costs?
 - What are allowable transportation costs?
 - What are allowable shipping costs?
 - What are allowable marketing costs?

THEORY OF FISCAL SYSTEM DESIGN

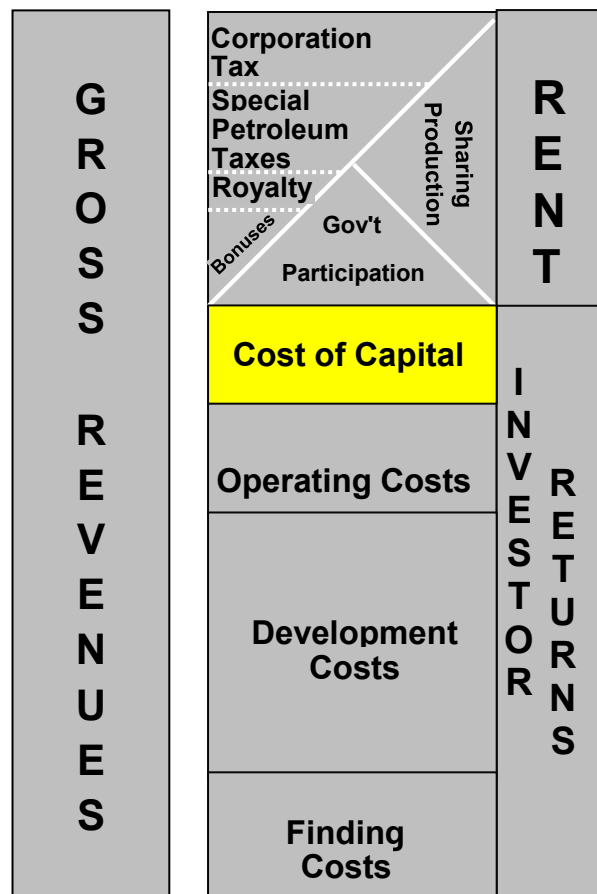
DETERMINING ALLOWABLE COSTS



- Oil company decision making economics and project expected returns will include ALL the associated costs incurred. However....
- Most fiscal systems disallow deduction or recovery of some types of costs for a variety of reasons. Examples include:
 - Bonuses, Annual Rentals
 - Overhead, Outside Country
 - Spill, Abandonment
- Other fiscal systems provide incentives to compensate for extended periods between investment and recovery:
 - Credits
 - Uplift
- These costs can be substantial and not including them in the fiscal system creates an expectation of a higher return for costs that are allowed

THEORY OF FISCAL SYSTEM DESIGN

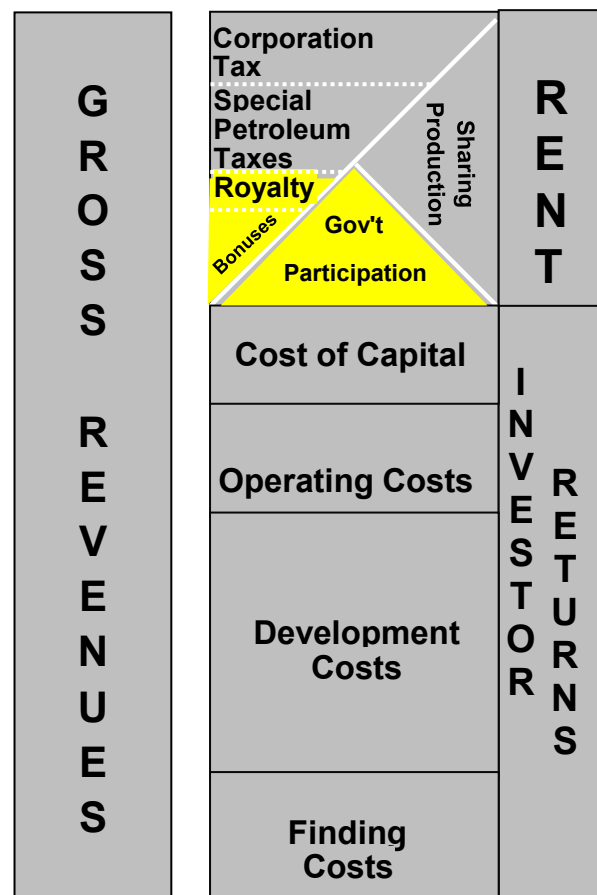
SUFFICIENT INCENTIVE TO CAUSE INVESTMENT



- One of the more contentious items is the “fair” rate of return (cost of capital) to the producer for their invested capital
- Producer overall return expectations can vary significantly depending on their drivers:
 - Actual cost of capital
 - Long run returns
 - Alternatives available at the time
- Producers tend to target achieving ‘a little extra’ on successful projects to pay for expensive unsuccessful exploration costs and disallowed costs

THEORY OF FISCAL SYSTEM DESIGN

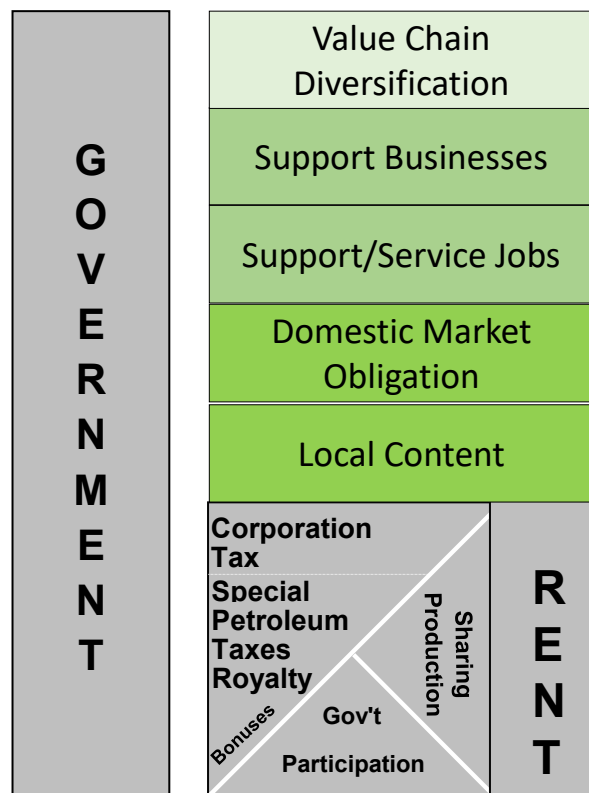
GROSS ASPECTS OF GOVERNMENT TAKE



- Certain aspects of the non producer take, which constitute part of the “rent” are actually collected based on gross revenues, not profit
- These items present themselves as a hurdle that must be overcome before the producer realizes any value or to start recovering costs and earn a profit
- Known as ‘regressive’ elements, (i.e. they get more burdensome as prices fall), they are payable even if the producer is not making a profit. The magnitude of their impact depends on the price and cost structure

THEORY OF FISCAL SYSTEM DESIGN

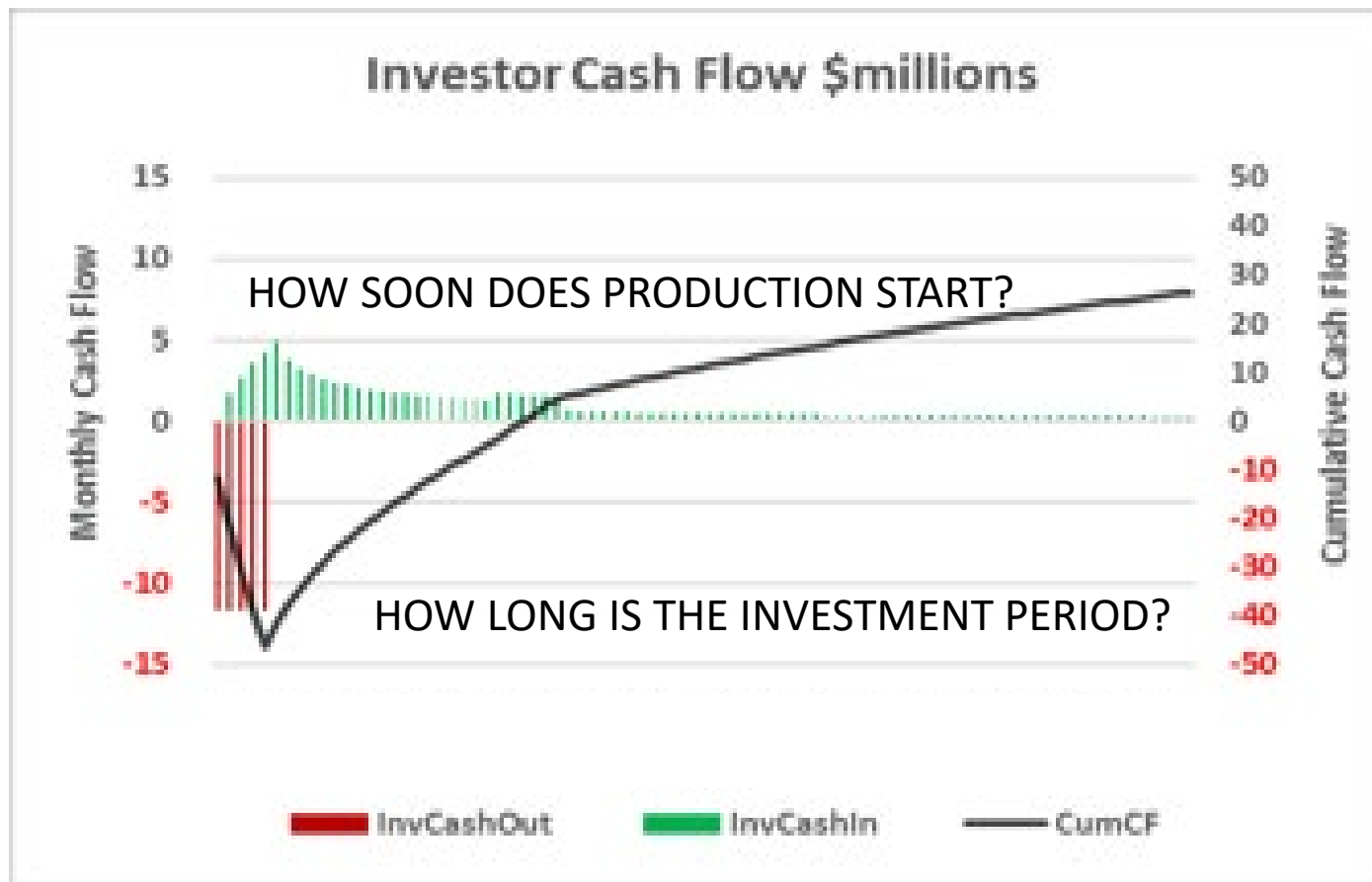
OTHER ASPECTS OF GOVERNMENT “GAIN”



- In addition to sharing in the rent created by a project, governments and the local area have several other added benefits
- Fiscal policies can include obligations on the contractor to source locally and to provide oil and gas at a discount below market price
- Projects bring not only jobs for energy companies but also create support jobs and businesses that employ local citizenry and strengthens the local economy
- With enough experience governments diversify further down the value chain

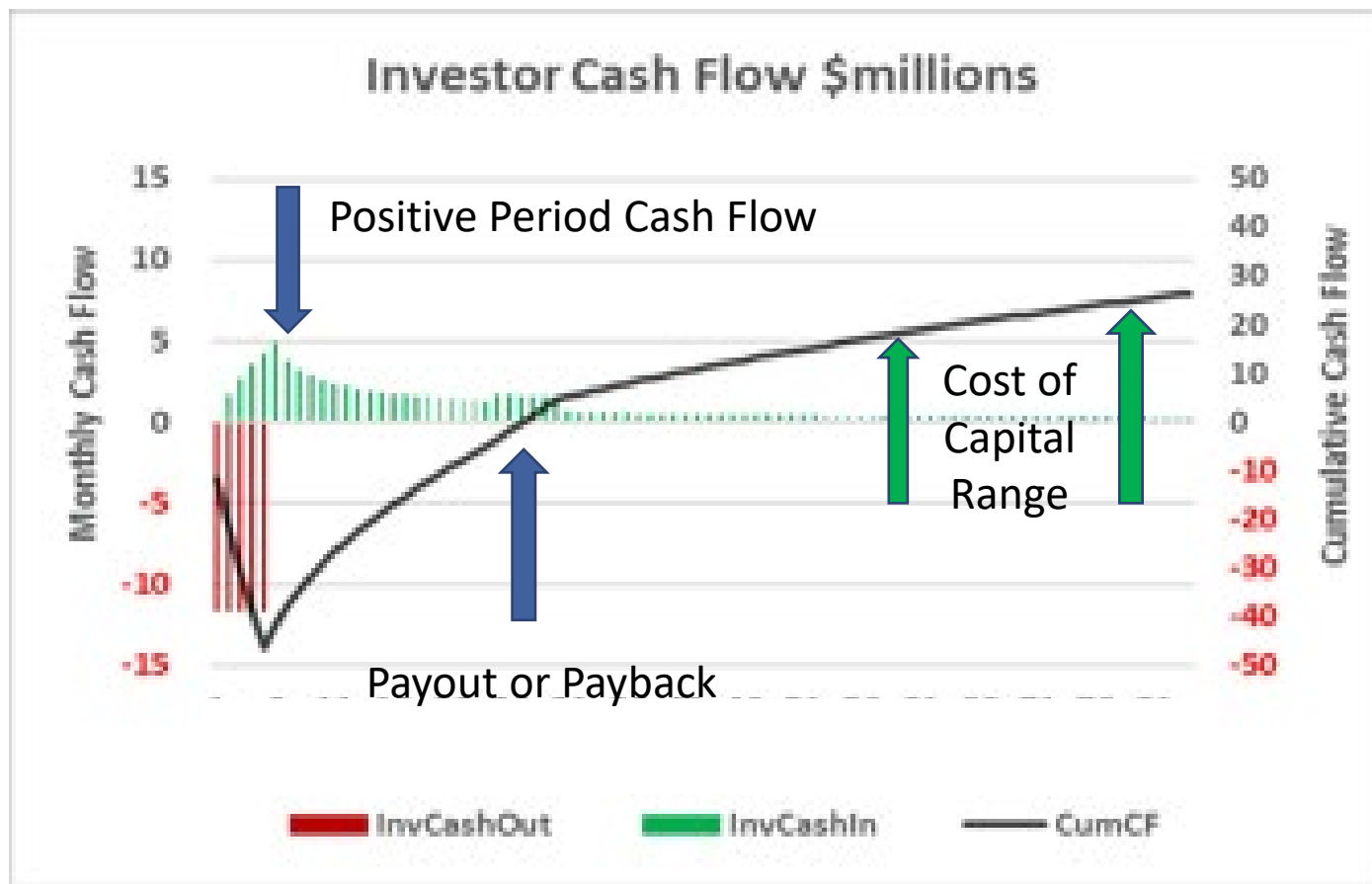
THEORY MEETS REALITY

EXAMPLE PROJECT CASH FLOW- THE "HOCKEY STICK"



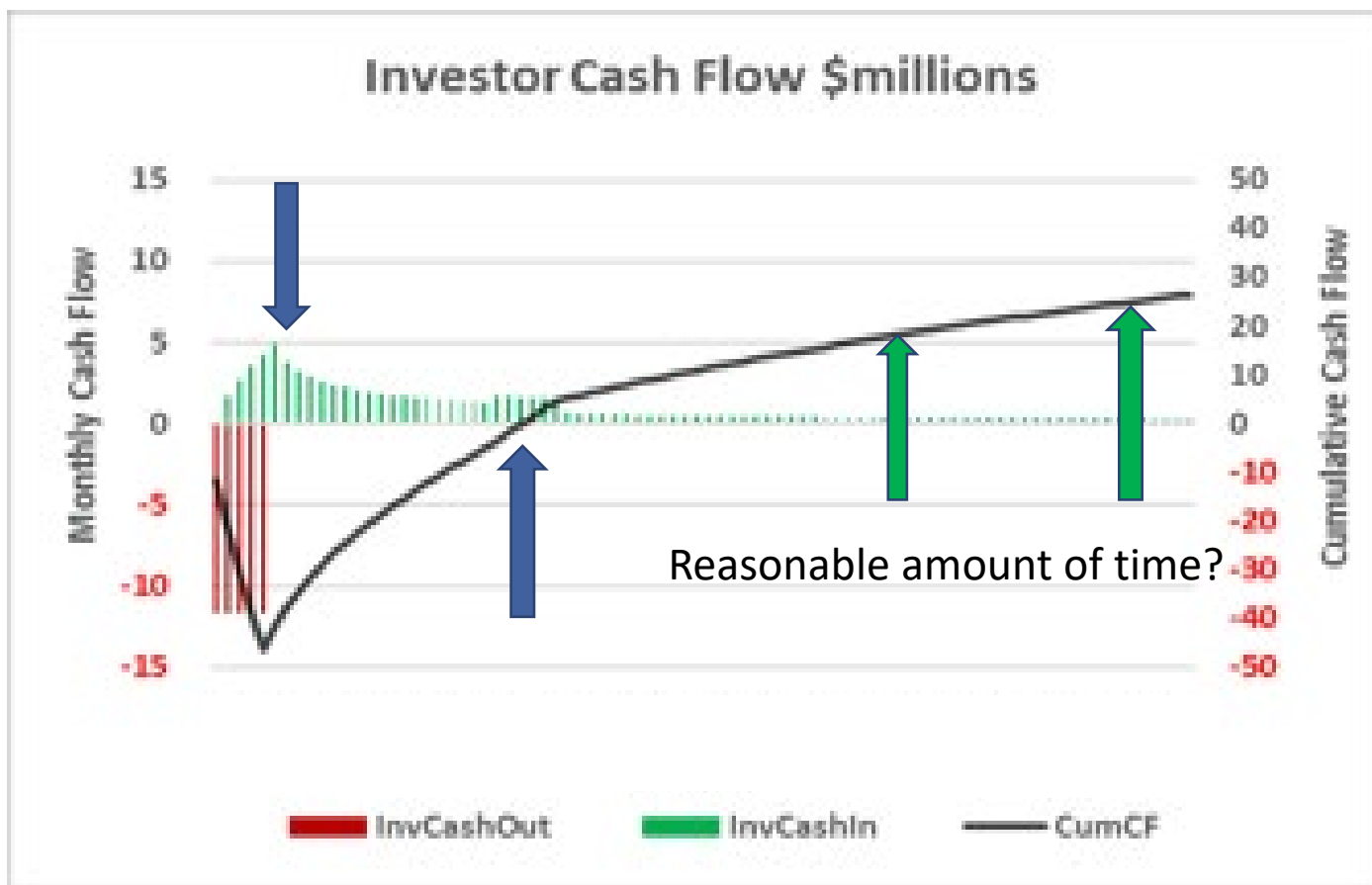
THEORY OF FISCAL SYSTEM DESIGN

POSITIVE CASH FLOW DOES NOT EQUAL PROFIT



THEORY OF FISCAL SYSTEM DESIGN

HOW LONG DOES IT TAKE TO EARN A FAIR RETURN?



| | |
|--|--------------------------|
| <p>Corporation Tax</p> <p>Special Petroleum Taxes</p> <p>Royalty</p> <p>Bonuses</p> <p>Gov't Participation</p> <p>Sharing Production</p> | R E N T |
| Cost of Capital | I N V E S T O R S |
| Operating Costs | |
| Development Costs | |
| Finding Costs | |

UNDERSTANDING COMPANY DRIVERS

COMPARE TO GOVERNMENT DRIVERS

- The stewardship role of governments is to retain as much value from the production of its hydrocarbons while continuing to attract new investment dollars
- In evaluating what its level of take should be, governments usually look at how a project compares in its regime versus other competing regimes
- Sometimes, but not often enough, governments look at their fiscal system through the eyes of the producer
- While governments tend to be more transparent about their drivers, companies are a bit more opaque when it comes to discussing how they make investment decisions

HOW OIL COMPANIES EVALUATE PROJECTS

INVESTMENT

- Generic company processes include:
 - Alignment with corporate strategy
 - Preliminary high level risk assessment
 - Identification of specific opportunities
 - Economic analysis, detailed risk assessment
 - Corporate portfolio management
 - Strategic decision
- Risk assessment can cover:
 - Cost, schedule, safety, legal, geology, product price, political, royalty, tax, supplier, equipment/material, technology, weather, environmental, personnel, infrastructure, markets
- Company economic models are designed and run according to company specific procedures
- They have specific comparative metrics such as max cash out, time to payback, IRR, NPV, ROI, etc.

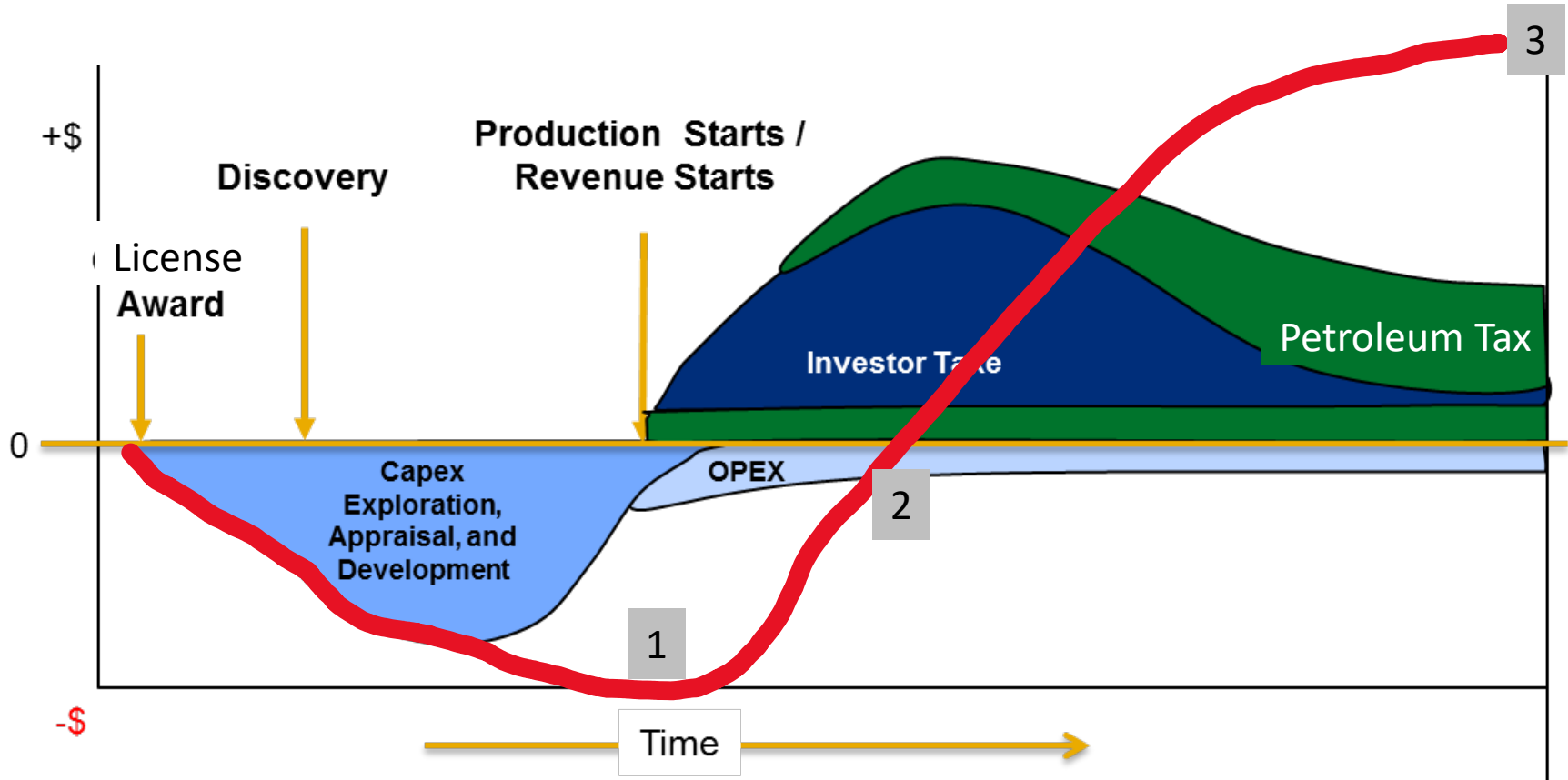
UNDERSTANDING COMPANY DRIVERS

KEY SKILL OF PRODUCERS IS LARGE PROJECT MANAGEMENT

- Many companies deploy a stage gate process similar to:
 - Appraise – desktop study of do I want to be in XYZ country/state
 - Select – Of all the possible opportunities, choose 1
 - Design – Prepare design options, costs and expected revenues
 - Build – Receive FID and begin building
 - Operate – commence production
- In order to proceed to the next stage a potential project will need to meet the milestones set for the previous stage and receive budget approval to move forward into the next
- The goal is at each stage gate review is to reduce uncertainty, manage risks and identify opportunities for added value
- Risk mitigation sometimes carries as much importance as economic evaluation

GENERIC LARGE PROJECT “HOCKEY STICK”

CUMULATIVE CASH FLOW- HOW MUCH IS PROFIT



1. How Deep? Maximum cash out
2. How Wide? Time to pay out or recovery of costs
3. How High? Enough profit to be worth the risk

HOW LONG DOES IT TAKE TO EARN A FAIR RETURN

ALASKA VERSUS THE LOWER 48

- From the 1st investment dollar spent to 1st revenue dollar earned, producers in the Lower 48 can begin to recover their capital materially sooner than producers in Alaska

L48 As short as 90 to 180 days

ALASKA

>5 years

- What creates the years of difference?
 - Exploration activities in Alaska are on large scale areas, more often without current activity and data
 - Seasonal activity limitations, timing of permitting and licensing
 - L48 can be well by well developments, where as Alaska is full field
- What does the difference mean for investment?
 - The longer development time the greater the risk
 - L48, early well revenue can pay for future wells, whereas Alaska requires almost all capital upfront
 - Flipside, Alaska fields can lead to decades of revenue

TIME TO COST RECOVERY

WHAT'S ALLOWED AND TIMING OF RECOVERY

- The concept of cost recovery is a globally accepted standard, applied various ways throughout fiscal systems. The most important parameters are:
 - Which costs can be deducted and/or recovered?
 - When can the deductions/recovery take place?
 - Before or after tax is due?
- Non-deductibility or exclusion of costs (such as disallowance of some or all NOLs) significantly hurts economics and increases risk, thus creating a deterrence for producers to invest
- Global standard is to deduct and recover costs, such as exploration, development, production, administration and services
- Usual minor exclusions are financing interest, excess corporate overhead, penalties, entertainment, and donations

IMPACT OF TIME ON PRODUCER ECONOMICS

EARNING A COMPETITIVE RETURN ON INVESTMENT

- Previously we talked about the relatively large amount of capital that is spent in countries that have a 'higher government take' than Alaska
- Time plays a very important role in project economics as company metrics favor higher early cash flows
- Look at a very simplistic model with \$1000 in cost and a total of \$2000 back to the producer.
 - Varying the timing of the expenditures
 - Varying the timing of the cash back to the producer
- Simplified explanation of terms:
 - IRR – interest earned on their investment
 - NPV – Value added above corporate cost of capital
 - ROI – ratio of cash in divided by cash out

THE IMPACTS OF TIMING

VARIOUS TIMES FOR DEVELOPMENT

- All three cash flows have same cost and income
- Only the period of investment is varied
- Think of the 1st line as a lower 48 project where a lease can be obtained, permits received and drilling completed all in under a year
- The 3rd line is more typical of Alaska where it takes several years to get to first oil
- The “Alaska” project is 6% worse on IRR and barely adds value above the cost of capital (NPV)

| 10% | | | | | | | | | | | | | | | | | | | |
|-----|-------|-----|-----|-----|-----|------|------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | \$268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 14% | \$153 | 2.0 | | | | | -200 | -500 | -300 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | \$41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |

THE IMPACTS OF TIMING

PROJECT ECONOMICS

- Case 2: Reduce development time in Alaska
- In the 4th line, the development period has been shortened and government take is later in the project
- This improves the IRR 3% and the NPV triples and increases by almost \$100
- To better compete, governments help reduce investment timing and take their share of the profits later in the project

| 10% | | | | | | | | | | | | | | | | | | | |
|-----|-------|-----|-----|-----|-----|------|------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | \$268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 14% | \$153 | 2.0 | | | | | -200 | -500 | -300 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | \$41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 14% | \$140 | 2.0 | | | -50 | -200 | -350 | -300 | -100 | 275 | 400 | 400 | 300 | 200 | 140 | 80 | 75 | 70 | 60 |

THE IMPACTS OF INCENTIVES

PROJECT ECONOMICS

- Case 3: Application of investment credits and uplift
- High government take regimes usually offer other investment incentives to compete for producer capital, e.g.
 - 40% investment credit
 - 10% uplift on unrecovered capital
- 3rd line, our “Alaska” with an investment credit applied, improves the IRR 5% and the NPV by almost \$170
- 4th line, applying investment credits with uplift on capital improves the IRR by 8% and value added by \$300

| 10% | | | | | | | | | | | | | | | | | | | |
|-----|-------|-----|-----|-----|-----|------|------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | \$268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | \$41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 16% | \$219 | 2.4 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 375 | 450 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 19% | \$340 | 2.7 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 475 | 530 | 360 | 330 | 250 | 175 | 160 | 150 | 140 | 120 |

THE IMPACTS OF TIMING

APPRECIATING THE TIME VALUE OF MONEY

- Assume a company has an expectation of earning a 15% return on its investment spending
- The greater the time between investment and revenue, the greater the revenue and profit required to meet 15%
- A 10-year wait requires 4 times the revenue and profit

| IRR | ROI | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-----|-----|-------|------|------|------|------|------|------|------|------|------|------|
| 15% | 1.2 | -1000 | 1150 | | | | | | | | | |
| 15% | 1.3 | -1000 | 0 | 1320 | | | | | | | | |
| 15% | 1.5 | -1000 | 0 | 0 | 1520 | | | | | | | |
| 15% | 1.8 | -1000 | 0 | 0 | 0 | 1775 | | | | | | |
| 15% | 2.0 | -1000 | 0 | 0 | 0 | 0 | 2000 | | | | | |
| 15% | 2.3 | -1000 | 0 | 0 | 0 | 0 | 0 | 2300 | | | | |
| 15% | 2.7 | -1000 | 0 | 0 | 0 | 0 | 0 | 0 | 2700 | | | |
| 15% | 3.1 | -1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3100 | | |
| 15% | 3.5 | -1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3500 | |
| 15% | 4.2 | -1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4200 |

THE IMPACTS OF TIMING

COMPARING DIFFERENT REGIME PROJECT ECONOMICS

- Where governments take their share early, e.g. royalty, bonuses, etc., then the producer has to receive a significantly larger share of the profits later in the project to meet economic targets
- Use large share in year 10 to simulate a greater producer share later in the life of the project
- Basically to get the same IRR as the “Lower 48” project, the “Alaska” project requires just about twice the cashflow (3.9 ROI vs. 2.0 ROI)

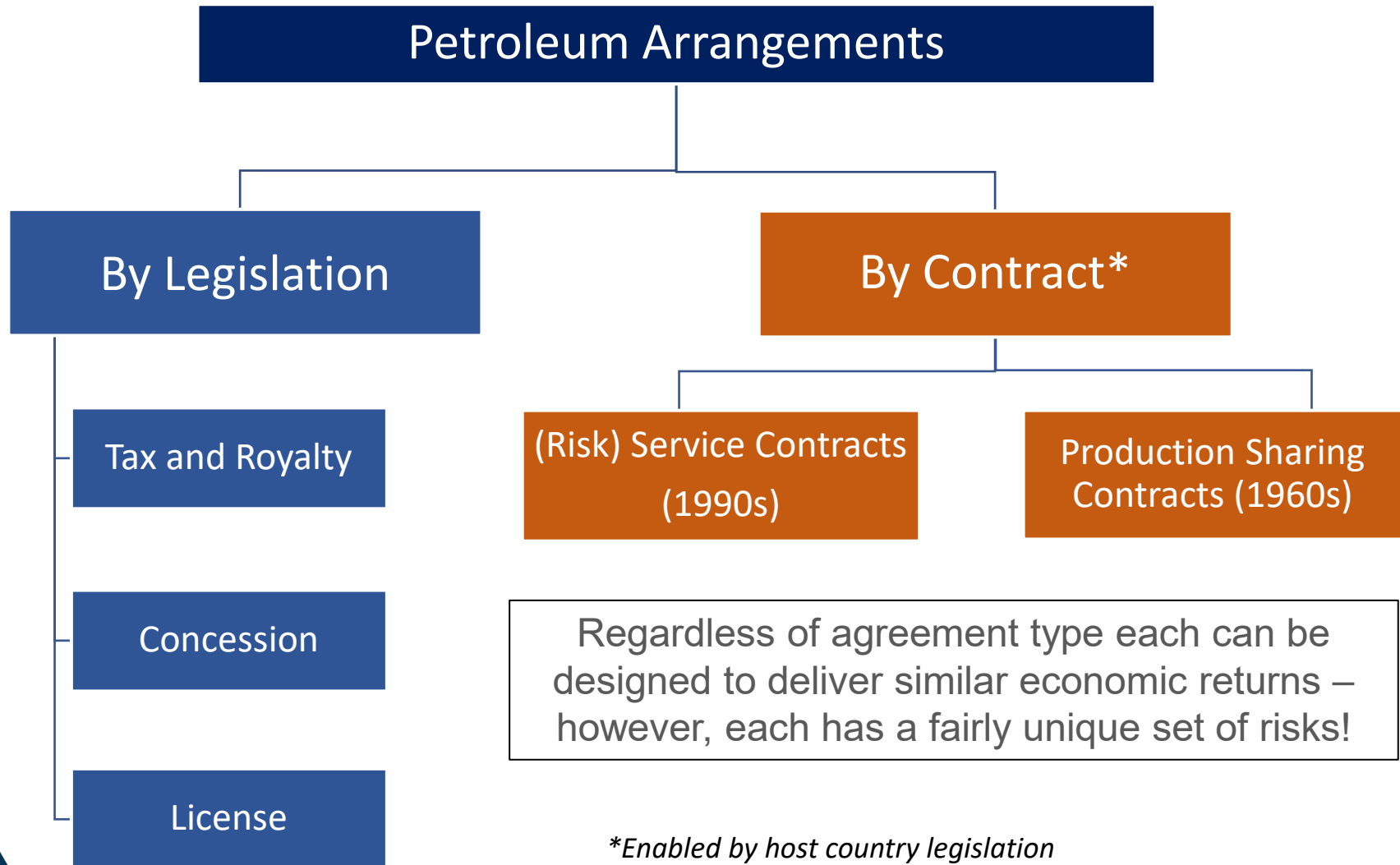
| 10% | | | | | | | | | | | | | | | | | | | |
|-----|-------|-----|-----|-----|-----|------|------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| IRR | NPV | ROI | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 17% | \$268 | 2.0 | | | | | | | -1000 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 14% | \$153 | 2.0 | | | | | -200 | -500 | -300 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 11% | \$41 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 120 |
| 12% | \$72 | 2.0 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 225 | 300 | 350 | 300 | 230 | 175 | 160 | 100 | 90 | 70 |
| 14% | \$215 | 2.9 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 1000 |
| 17% | \$413 | 3.9 | -50 | -10 | -10 | -200 | -330 | -300 | -100 | 175 | 250 | 300 | 300 | 230 | 175 | 160 | 150 | 140 | 2000 |

FISCAL TOOLBOX



GROUPING OF PETROLEUM STRUCTURES

BOTH TYPES BEGIN WITH ENABLING LEGISLATION



**Enabled by host country legislation*

APPLICABILITY OF EACH CONTRACT TYPE

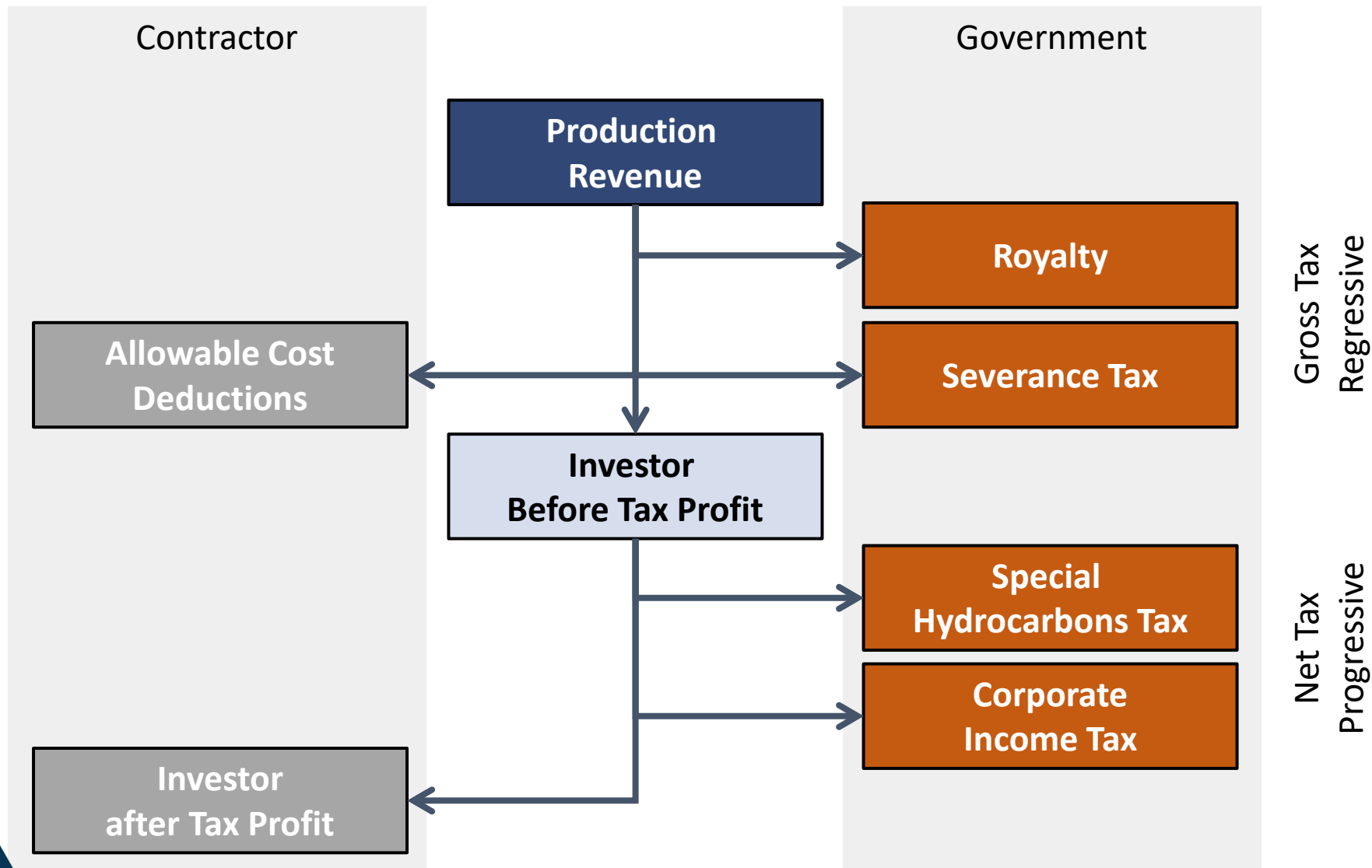
WORLD SPLIT BETWEEN CONTRACT AND CONCESSION

| Contract Type | Applicability |
|---|--|
| Concession Royalty / Tax | Maximum company flexibility and control 'Own' the hydrocarbons, can book as reserves |
| PSC | Mechanisms for host government control 'Tax' payments in cash or in kind Companies only book their share as reserves |
| Technical Service Contract | Provides highest degree of government or NOC operational control Limited contractor downside or upside |
| Risk/Reward/Incentive Service Contract | Provides a hybrid between the PSC and Service Contract where the contractor is rewarded based on performance metrics |

Regardless of fiscal system type, the overarching goal is for the government to maximize its capture of the available "economic rent"

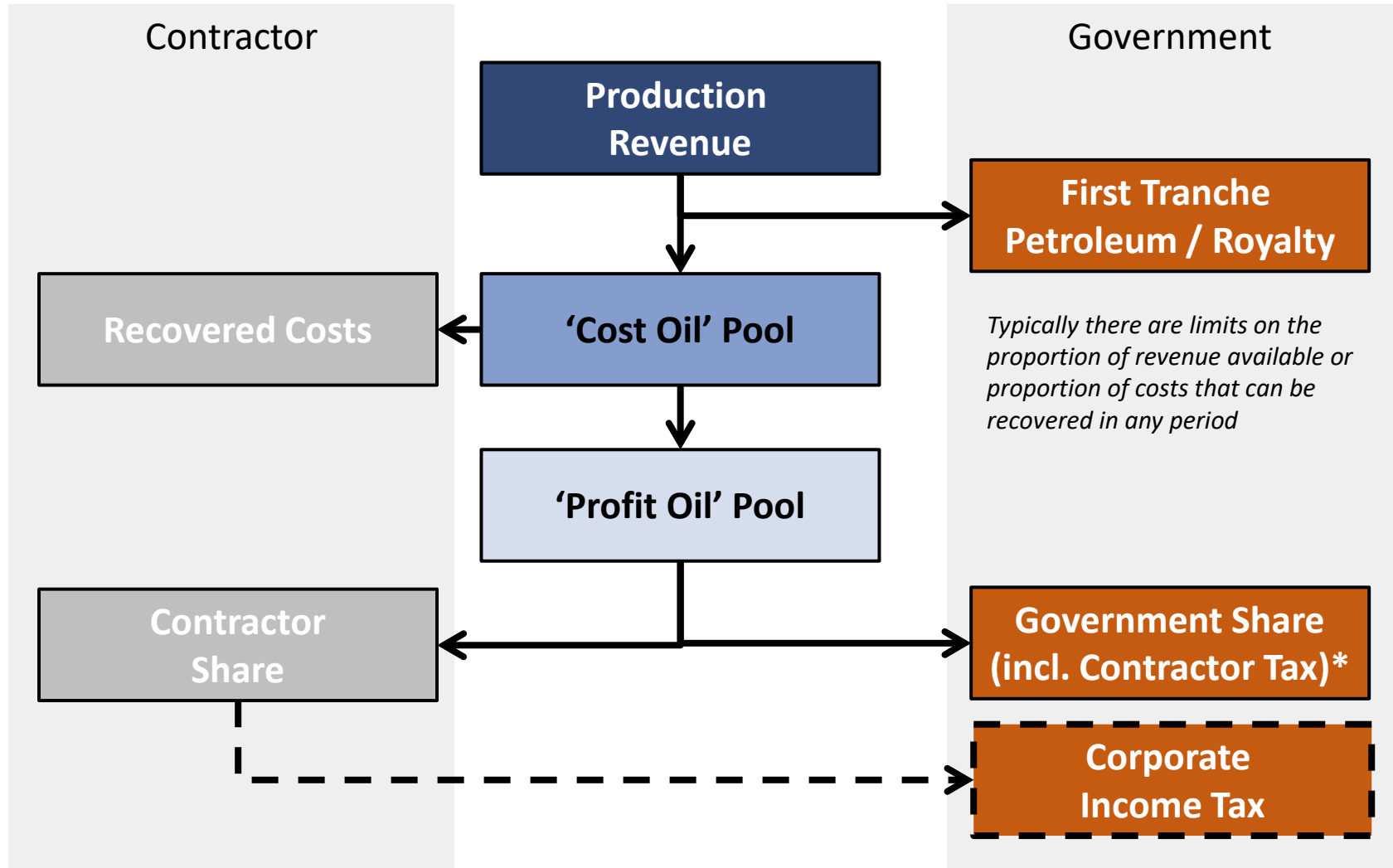
COMPARING CASH FLOW STRUCTURES

CONCESSION AGREEMENT



COMPARING CASH FLOW STRUCTURES

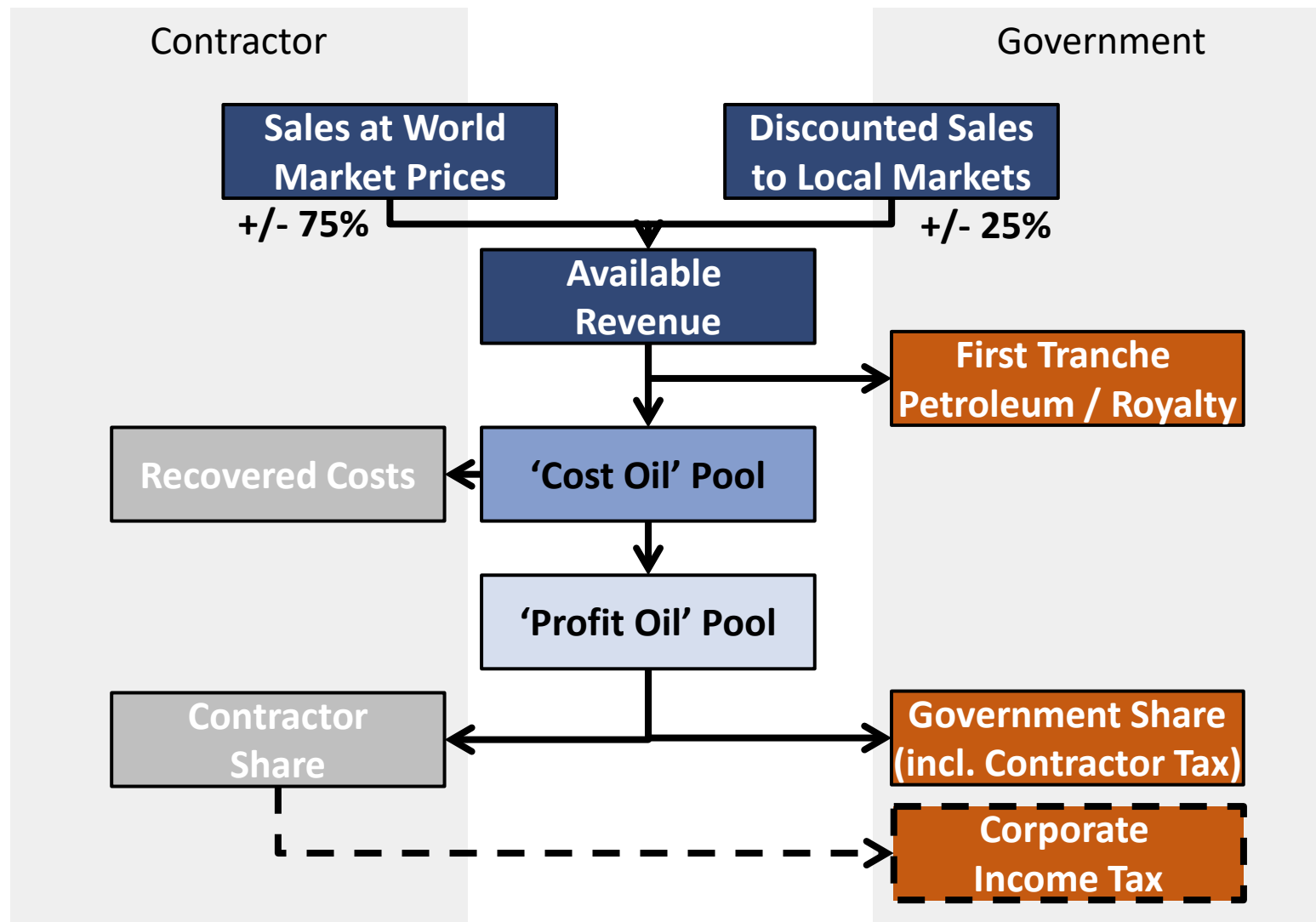
PRODUCTION SHARING AGREEMENT



**Note: Corporate Income Tax can be deemed paid from the Government's share on behalf of the Contractor or the Contractor can pay CIT on its share of the profit pool.*

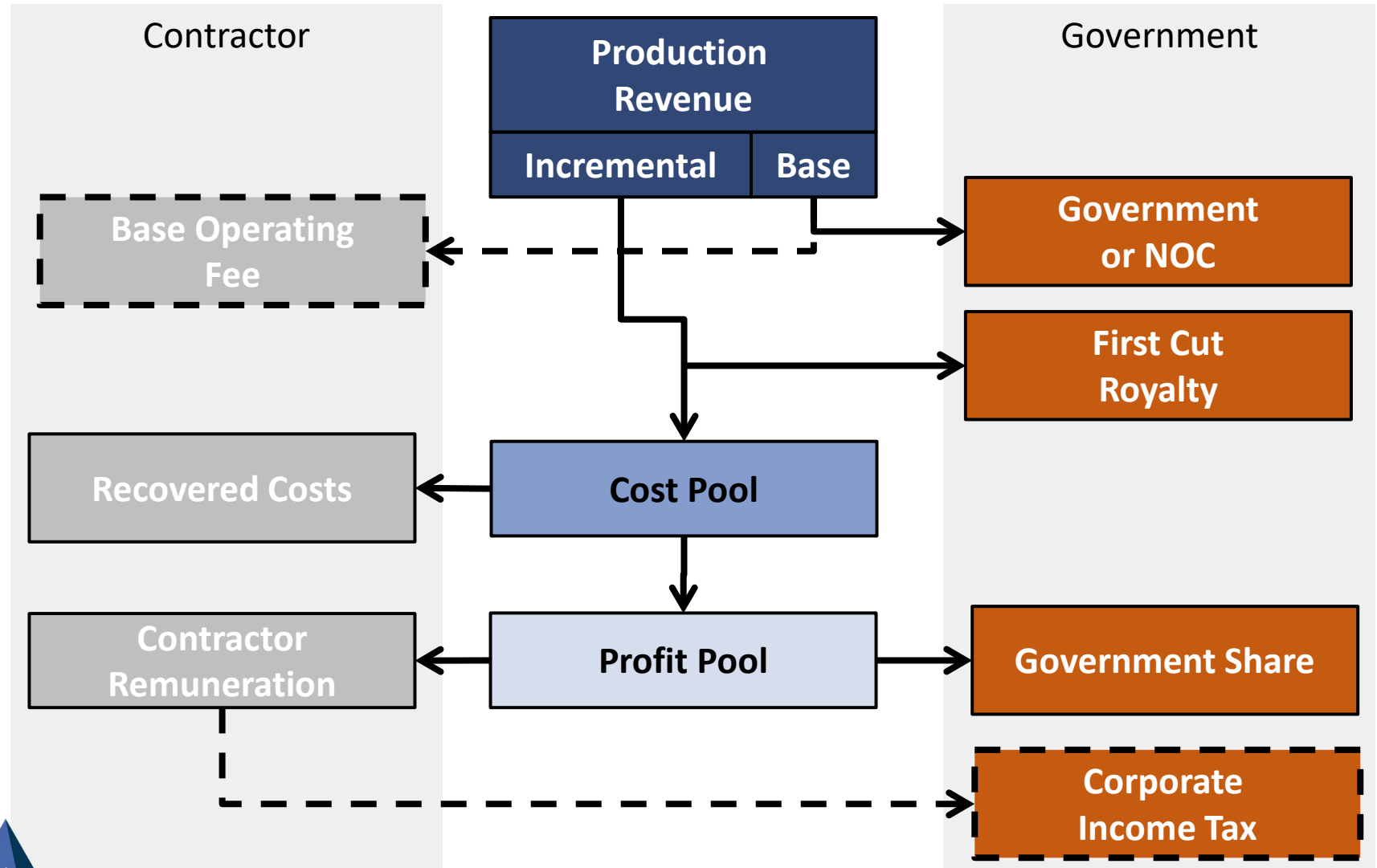
COMPARING CASH FLOW STRUCTURES

PSC WITH DOMESTIC MARKET OBLIGATION (DMO)



COMPARING CASH FLOW STRUCTURES

RISK SERVICE AGREEMENT



STRUCTURE DRIVERS

FISCAL REGIME TOOLKIT

- So how does the simple math of Revenue – Costs = Taxable Profit become complex?
- As noted earlier, projects and governments have many unique features and drivers
- Fiscal systems are tweaked and modified using one of many different “tools” to achieve a subset of goals and to prevent another subset of unwanted outcomes
- Each of these tools can be deployed in a variety of ways
- While high-level fiscal structures have not changed much, variations on how to handle constituent parts continue to be developed

FISCAL REGIME DESIGN TOOL KIT ITEMS

TYPICAL GOVERNMENT TAKE METHODS IN USE TODAY

- Bonuses
- Bid Fees
- Annual Fees
- Income Tax
- Capital Gains Tax
- Petroleum Tax
- Property Tax
- Excise Duties
- Import Duties
- Ringfencing
- Royalty
- Cost Oil & Caps
- Profit Oil & Split
 - Rate
 - Reserves
 - R Factor
 - IRR
 - Combination
 - Delta Oil/Gas
- Work Program
- Abandonment Bank
- Data Transfer
- Facility Transfer
- Local Market
- Local Content
- Training

FISCAL REGIME DESIGN TOOL KIT ITEMS

SIGNIFICANT OIL COMPANY ECONOMIC IMPACTS

- Capital Expense
 - Uplift
 - NOLs
 - Inv Credits
 - Depreciation Schedule
 - Recovery
 - Period Recovery Caps
 - Allowed / Disallowed
- Operating Expense
 - Sole Source vs Bidding
 - Affiliates
 - Allowed / Disallowed
 - Overhead
 - Abandonment
- Other
 - Liability
 - Environmental
 - Insurance
 - Employee costs
- Marketing
 - Ultimate sale point
 - Unit valuation point
 - Allowed expenses
 - Affiliated sales

FISCAL REGIME DESIGN TOOL KIT ITEMS

OTHER SIGNIFICANT RISK/ECONOMIC IMPACTS

- Fiscal Stability Clauses
- Liability and Indemnifications
 - Who – government or producer
 - \$\$ monetary caps
- Environmental
 - Clean up to what level?
- Insurance
 - Coverage amount and use of proceeds
 - Can company self insure?
- Employee costs
 - E.g. expats, transfers, benefits, bonuses

FISCAL REGIME DESIGN TOOL KIT ITEMS

MANY VARIATIONS OF EACH ITEM IN USE TODAY

- As spreadsheet programs like Excel have become common, more sophisticated tools have been developed to define petroleum taxes or profit splits:
 - R factor
 - S Curve
 - IRR
 - ROI
 - DCF
 - Fairness Index
- A list of all the tools and the different ways in which they are deployed would amount to hundreds of variations
- **That is why Alaska can't be compared to other regimes by just looking at headline tax rates or levels of government take**

OVER GENERALIZING FISCAL REGIMES

MANY VARIATIONS OF EACH ITEM IN USE TODAY

- For example: “Royalty is X% of gross revenue”
- But in practice Royalty is calculated in numerous ways:
 - Fixed – i.e. same percentage throughout life of lease/contract
 - Variable – royalty changes based on defined parameters such as:
 - Daily production
 - Annual production
 - Cumulative reserves
 - Remaining reserves
 - Some measure of profitability, (R factor, IRR, ROI, DCF)
 - Variable changes can be via sliding scale or step changes
 - Shared with the producer – First Tranche Petroleum
 - Royalty holidays or exemptions granted under defined circumstances

OVER GENERALIZING FISCAL TERMS

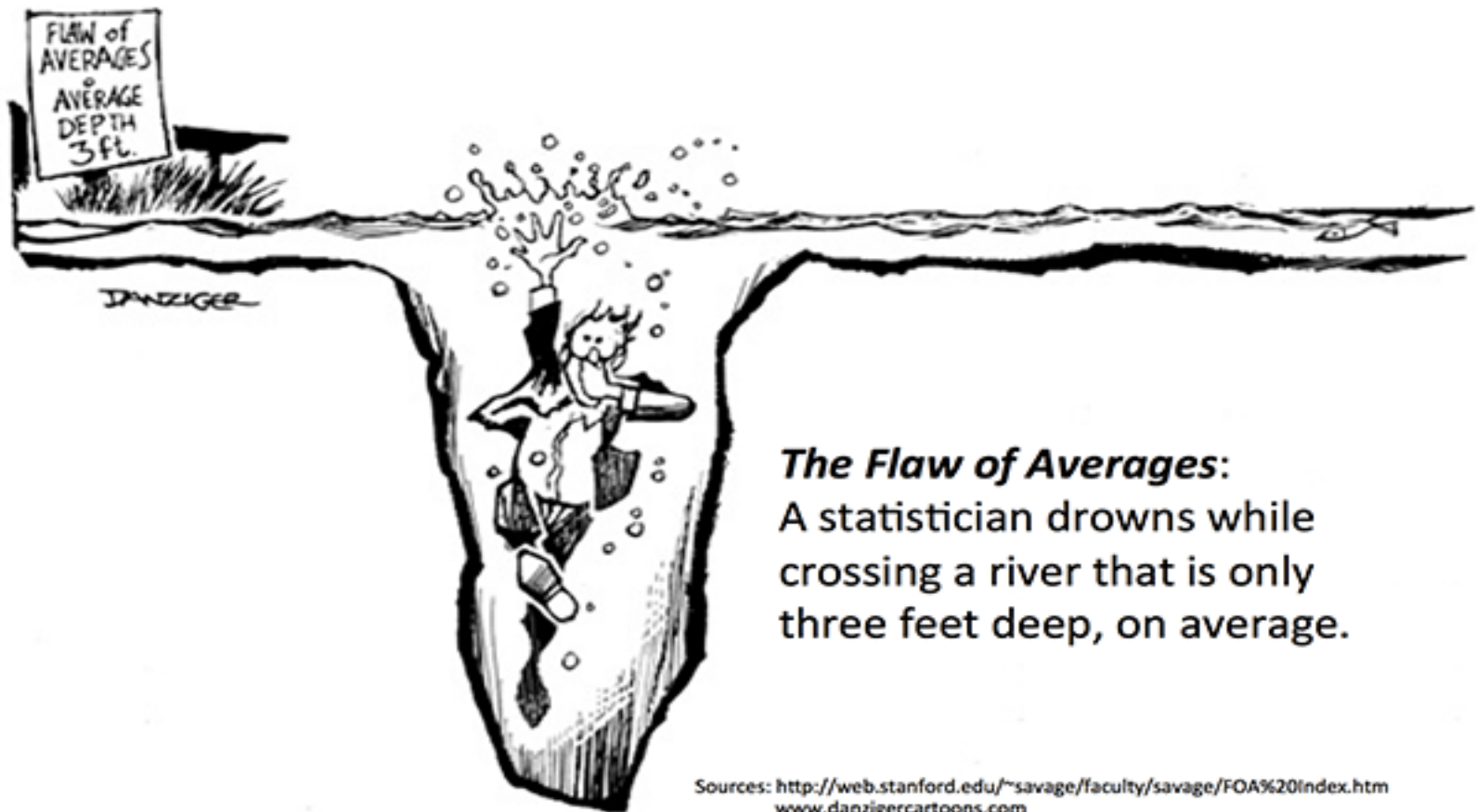
MANY VARIATIONS OF EACH ITEM IN USE TODAY

- Various means of Capital Recovery
 - Depreciation
 - Varying duration - From 1 year to 10+ years
 - Varying methods - Straight line, double declining balance, MACRS, etc.
 - Net Operating Losses
 - Carry forward losses
 - Limit on years
 - Carry back as well
 - Uplift
 - Rate
 - Number of Years
 - Cost Oil
 - Annual caps on recovery (similar to depreciation)
 - Order of recovery, i.e. current operating costs before past capital

ANOTHER PITFALL: USE OF AVERAGES

OPERATIONS IN EVERY COUNTRY ARE HIGHLY VARIABLE

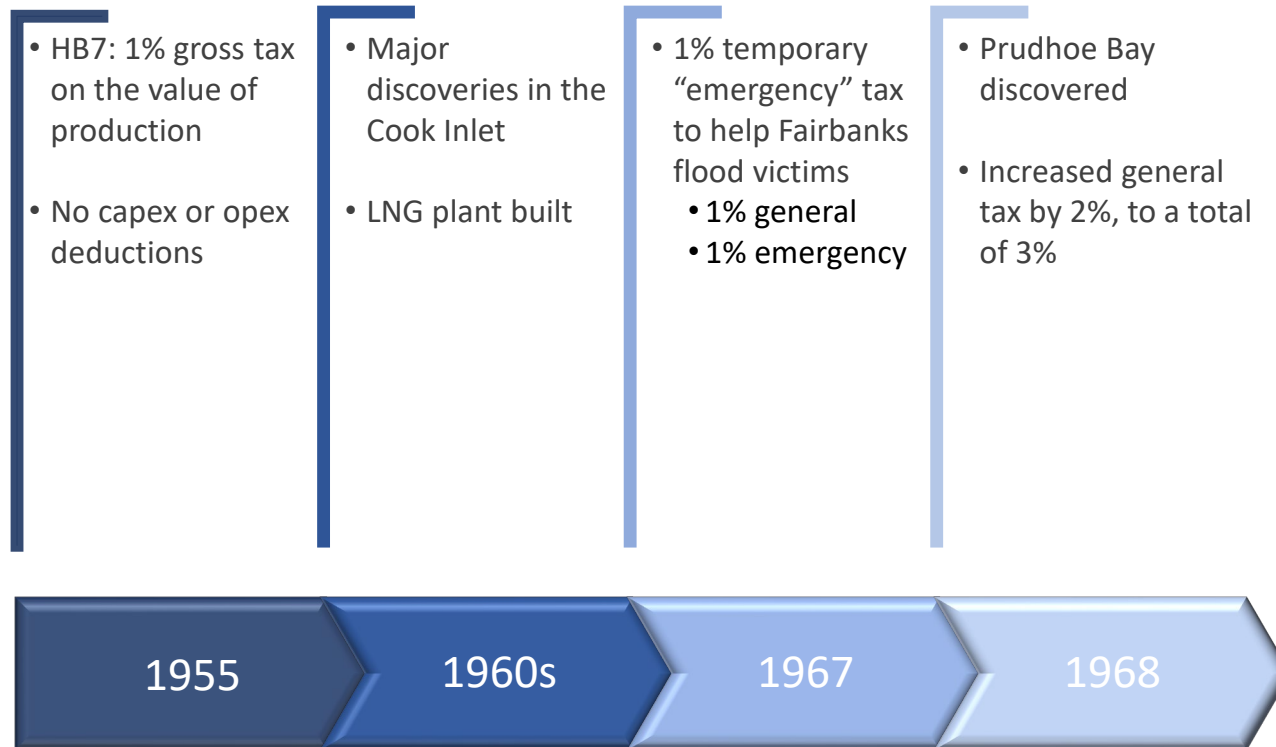
- All too often regimes are described or, even worse, modelled and compared using average values



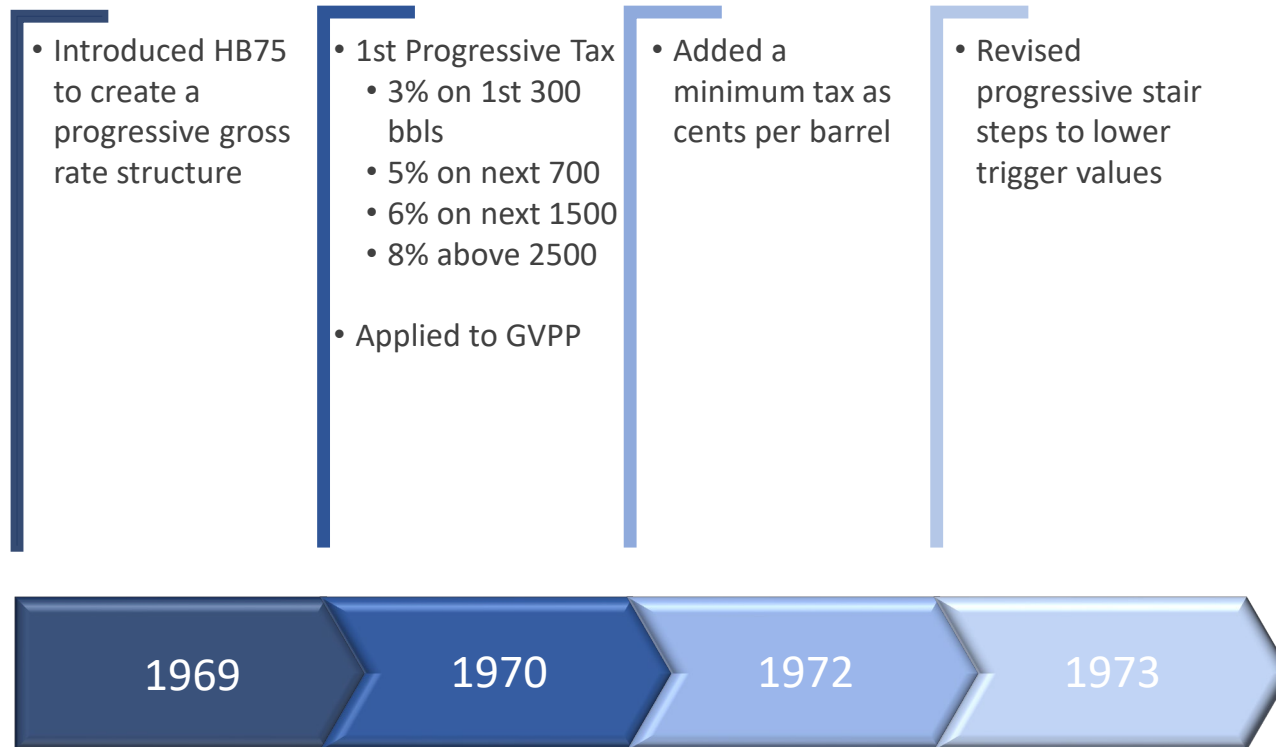
ALASKA PETROLEUM TAX



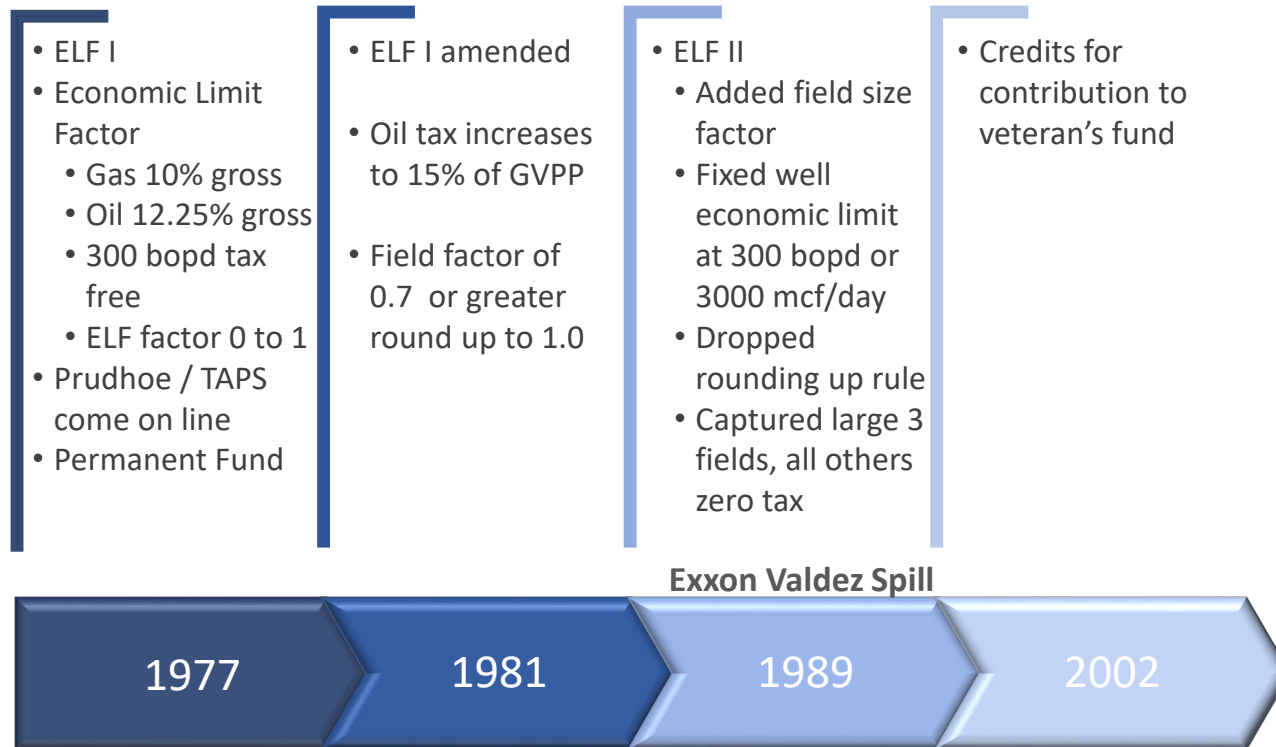
HISTORY OF ALASKA OIL AND GAS TAXES



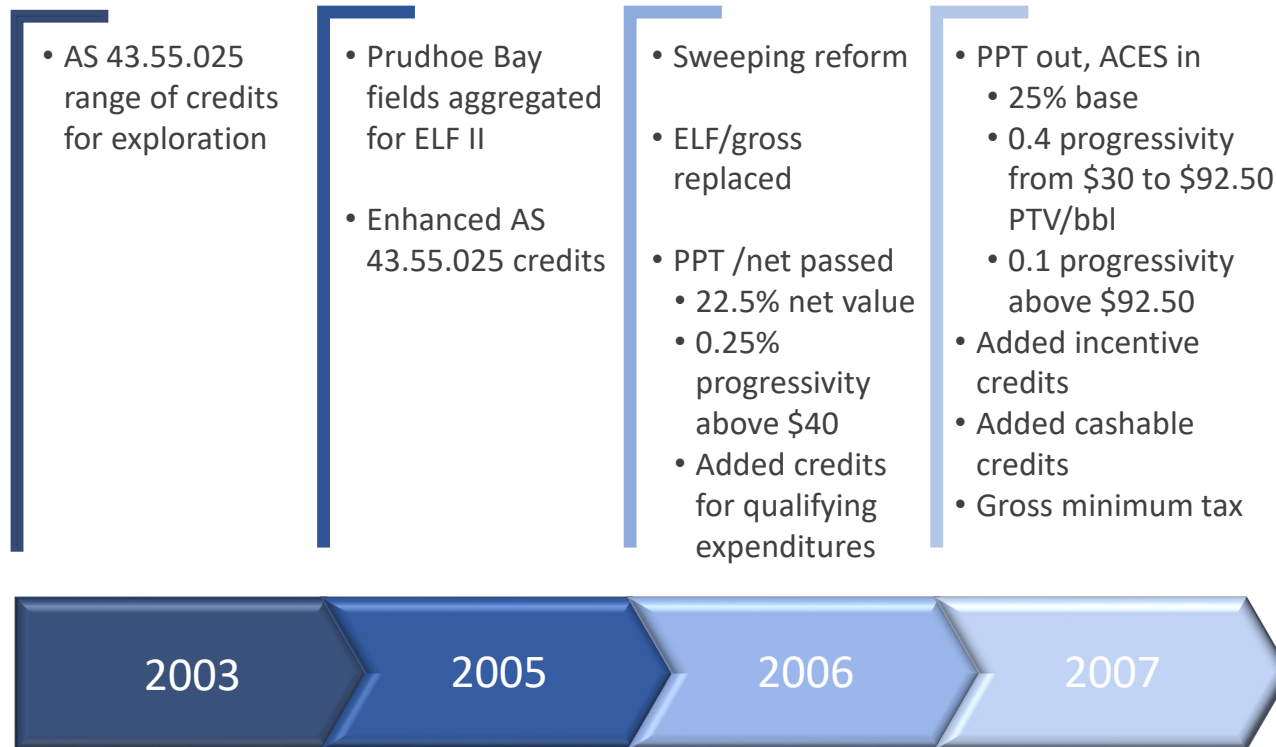
HISTORY OF ALASKA OIL AND GAS TAXES



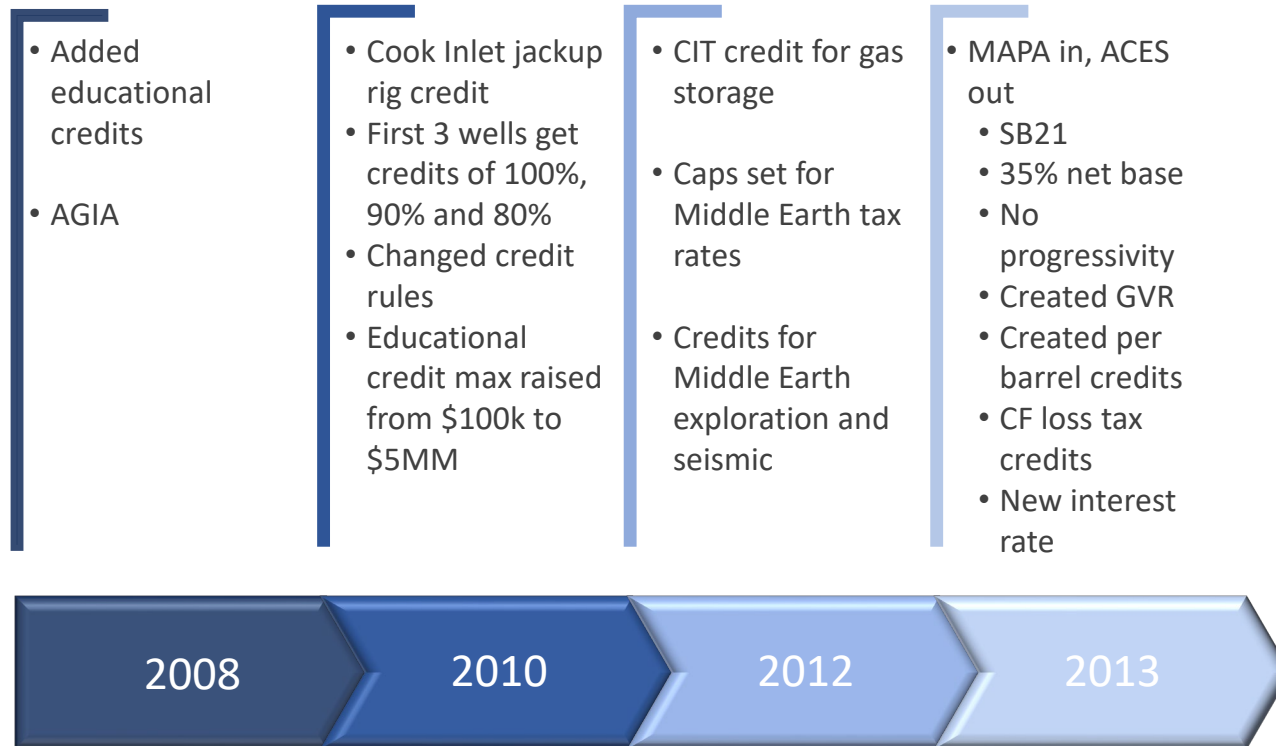
HISTORY OF ALASKA OIL AND GAS TAXES



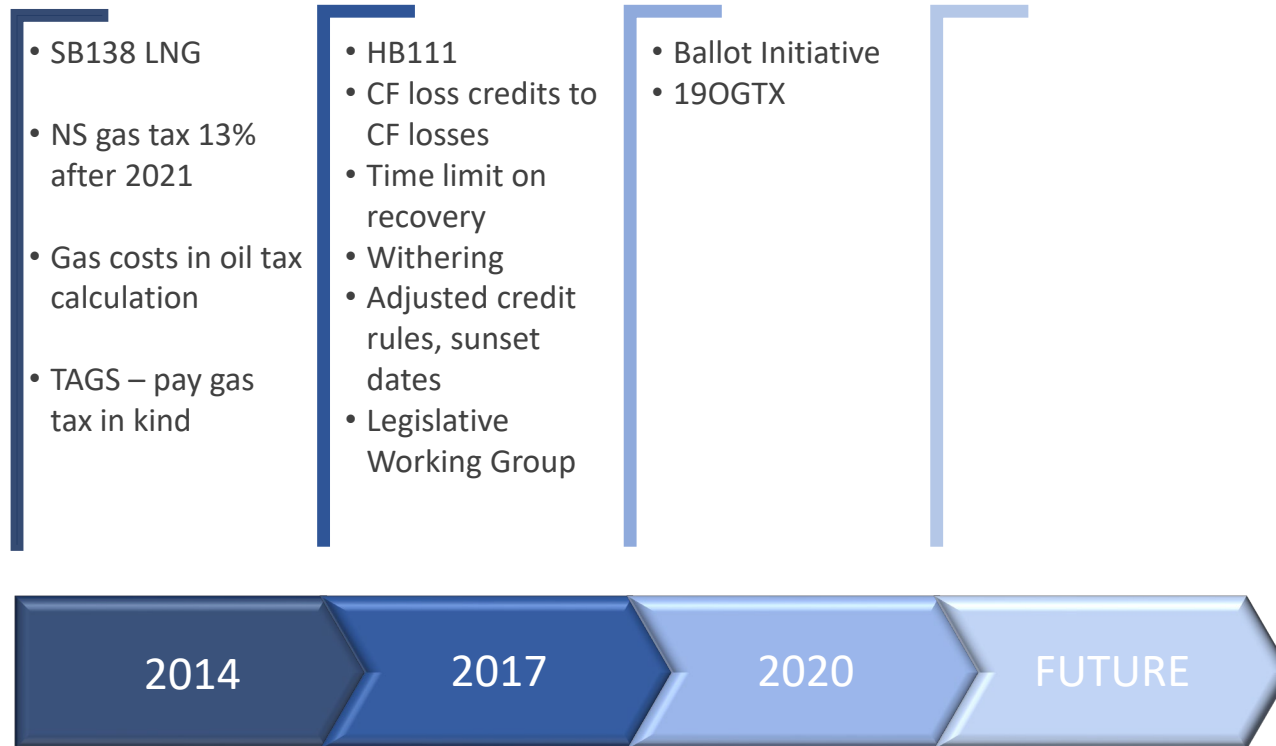
HISTORY OF ALASKA OIL AND GAS TAXES



HISTORY OF ALASKA OIL AND GAS TAXES

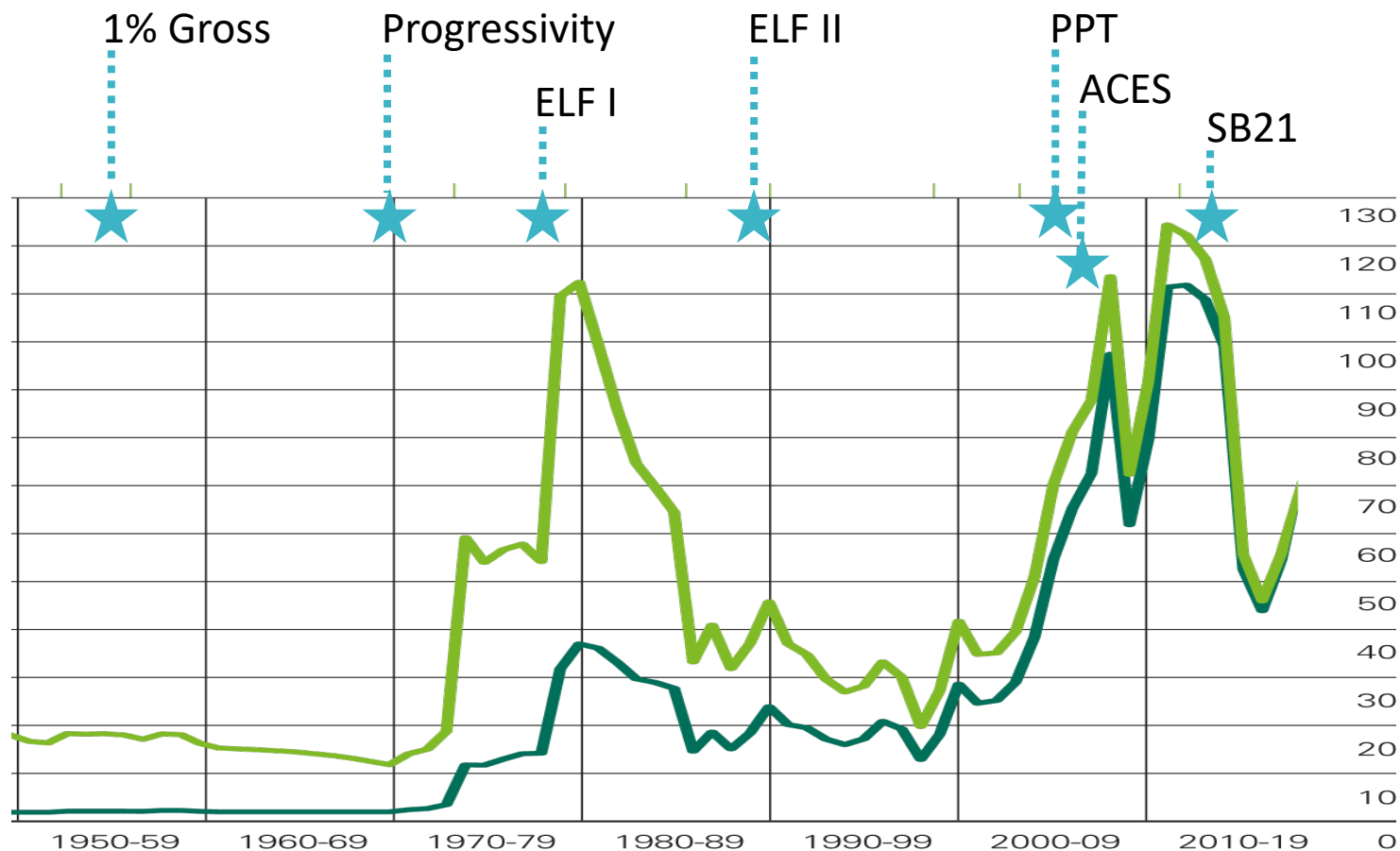


HISTORY OF ALASKA OIL AND GAS TAXES



TAX CHANGES VERSUS OIL PRICE

RESPONDING TO CHANGE



1861-1944 US average.
1945-1983 Arabian Light posted at Ras Tanura.
1984-2018 Brent dated.

BP Statistical Review of World Energy 2019

INSIGHT. INQUIRY. INGENUITY.

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ALASKA'S OIL TAX HISTORY

DRIVERS

- Each time taxes were changed there were identified reasons for doing so:
 - Some were philosophical drivers, such as increase production on the slope responsibly
 - Others were specific such as bringing a jackup rig to the Cook Inlet
- There are differing opinions whether incentives should have ever been offered but the tax credits for exploration drilling were successful in bringing new players to the slope and in identifying new pools of hydrocarbons
- Alaska has been guided/reminded of Gov. Hammond's original 1/3, 1/3, 1/3 split of the oil wealth
 - One third each to the State, US Federal, and Producer
 - Wealth is synonymous with Income or project profit
 - ***Sales revenue is not wealth***
 - ***THIS HAS BEEN MISQUOTED AND MISUSED***

ALASKA'S CHANGING IMPORTANCE

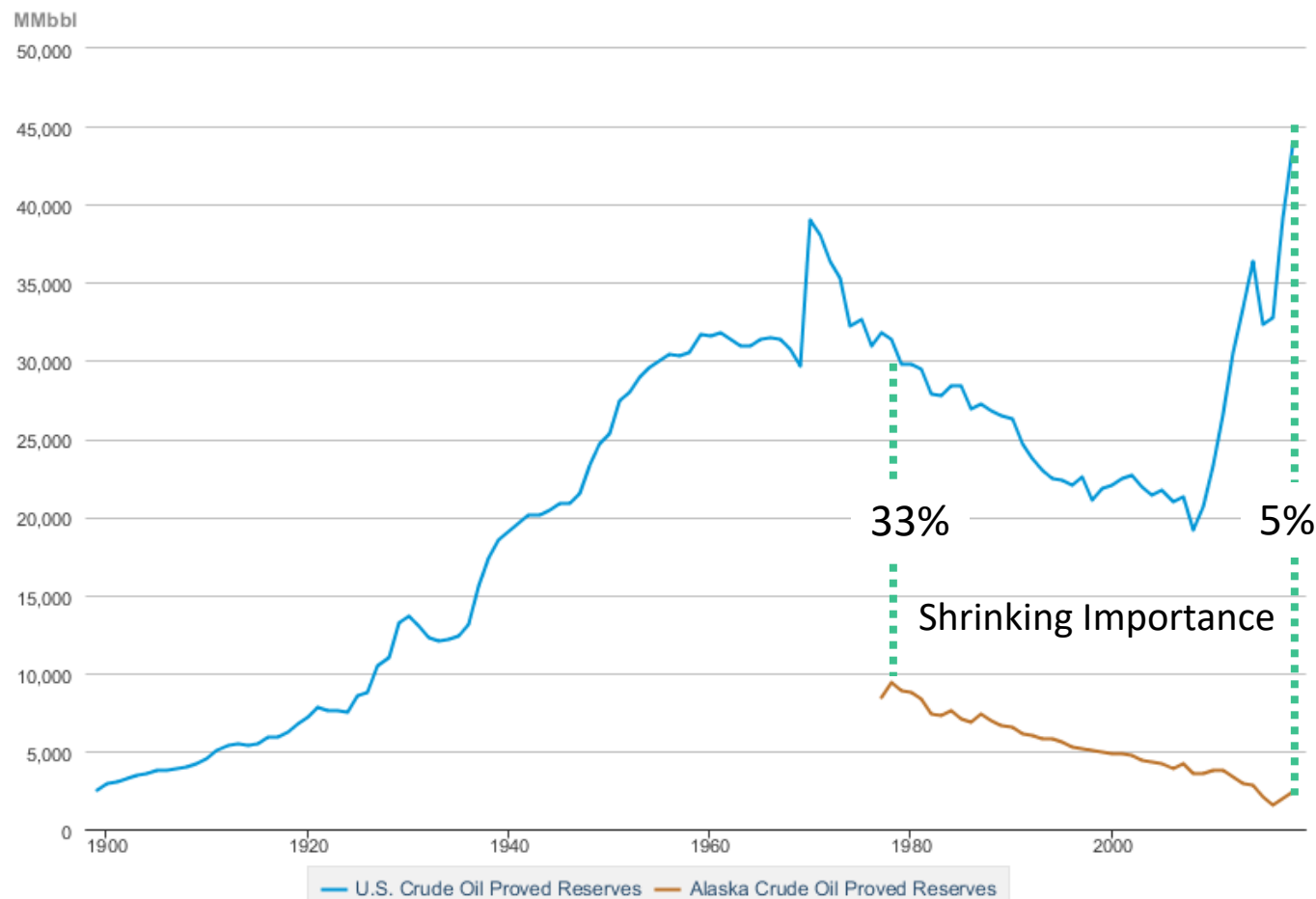
MANY ATTRACTIVE AREAS WITH SIGNIFICANT RESOURCES

- 2022 does not look like 1980
- Alaska was roughly 1/3 of US reserves for the better part of 3 decades, until the emergence of shale development
- As of the end of 2018, Alaska was only 5% of US reserves and 1% of North American reserves
- Geopolitical issues and events are forcing changes
 - Banks refusing to fund arctic development
 - Oil companies marching towards 0 emissions
 - Global Movement away from fossil fuels
- More important now to look at events outside of Alaska or to look to possible future scenarios to decide how workable and robust your fiscal system for petroleum is

ALASKA NEEDS TO COMPETE FOR CAPITAL

SHRINKING US AND GLOBAL IMPORTANCE

Crude Oil Proved Reserves, Reserves Changes, and Production



Source: U.S. Energy Information Administration

ALASKA: TAX & ROYALTY



THE ALASKA PETROLEUM FISCAL SYSTEM

BACKGROUND

- Alaska has a royalty (gross tax) and net tax combined structure
 - Royalty rates based on who owns the onshore or offshore minerals, the type of lease and the lease vintage
 - Most leases pay between 1/8th and 1/6th royalty
 - Current production tax rate of 35% was set in 2013 by SB21
 - After deductions and credits, at prices over the past 8 years the average effective tax rate actually paid has been lower
- Compared to other fiscal systems, Alaska's fiscal system is complex, making it hard for companies to work within its parameters and for the State to administer, e.g.:
 - Multiple tax credits
 - 7 geographic tax ring fences, taxes by company
 - Allowed and disallowed costs
 - Carry forward NOLs

SOURCE OF ALASKA'S COMPLEXITY

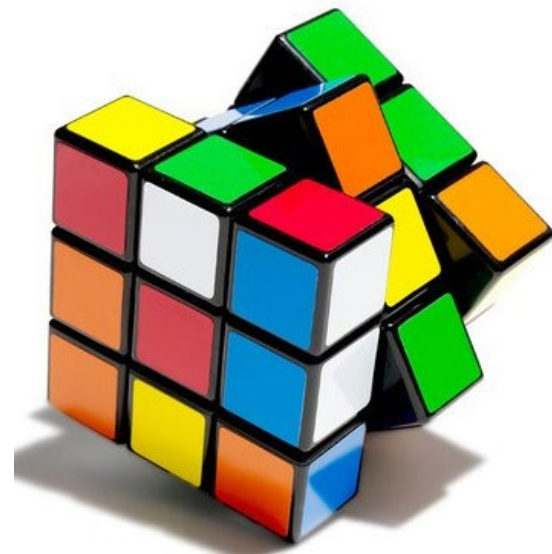
THE CONCESSION – ALASKA TODAY

- Driver: At roughly 500,000 barrels of oil per day, every \$1 per barrel change represents \$182,000,000 per year
- In attempting to capture its equitable share through the years, with numerous modifications to various aspects of the petroleum business, the simple tax/royalty concessionary design has become quite complex in Alaska
- As fiscal system complexity increases it can lead to:
 - Greater number of regulations
 - Greater costs to administer
 - Greater need for regular auditing
 - Greater likelihood to end up in some form of dispute; and
 - Unintended consequences

DEALING WITH UNINTENDED CONSEQUENCES

THE RISKS OF COMPLEX FISCAL SYSTEMS

- By creating, revising, or eliminating one aspect of a complicated tax system, there is a very likely risk that other areas of the tax system will be affected to the detriment of one or more parties
- These **unintended consequences** can undermine the intent of original efforts and are often difficult to see or anticipate
- Before making changes, a thorough analysis should be performed to make sure the level and degree of interdependency of certain taxation terms is understood and addressed



FISCAL REGIME DESIGN TOOL KIT

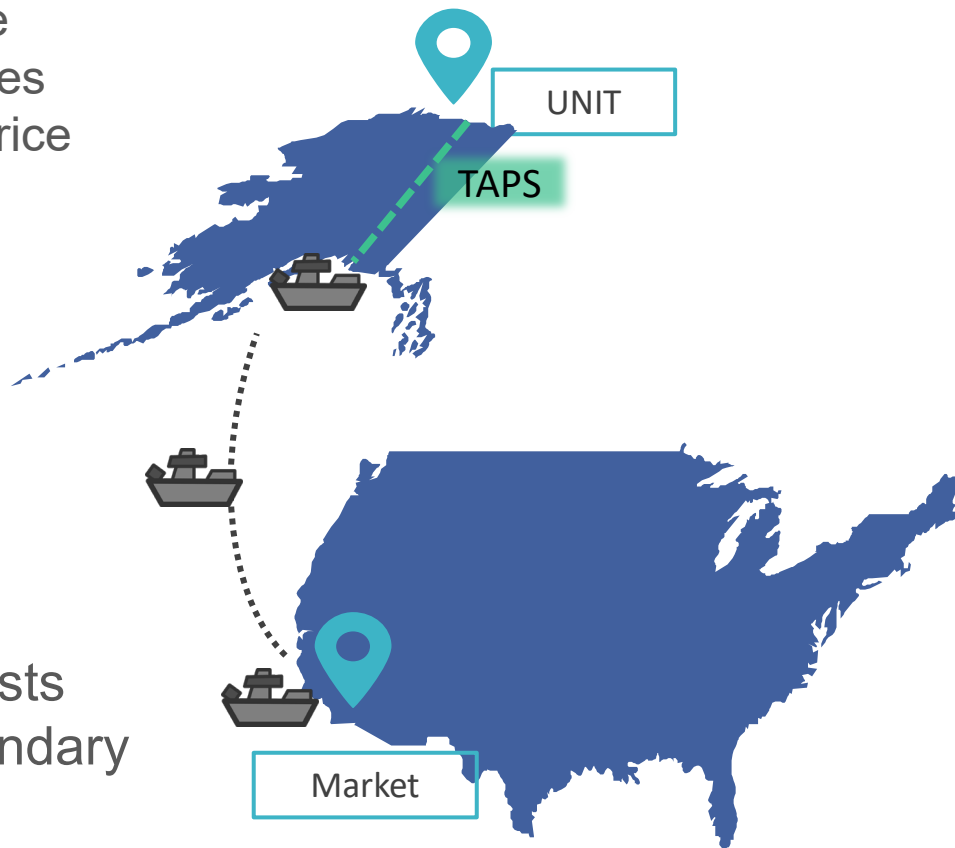
THE CONCESSION AGREEMENT

- At face value concessionary systems are viewed as having the potential for the least complexity
 - However, all systems are open to interpretation, loopholes and sometimes abuse
 - It is in the tightening up of the very basic terms where the system can become quite complex
- Market sale revenue
 - Less Costs to market
 - Value at license border
 - Less royalty
 - Less costs of operations
 - Taxable value
 - Less tax
 - Producer profit

UNDERSTANDING ALASKA'S TAX CODE

WHAT ARE THE VARIOUS PIECES TO DETERMINE VALUE

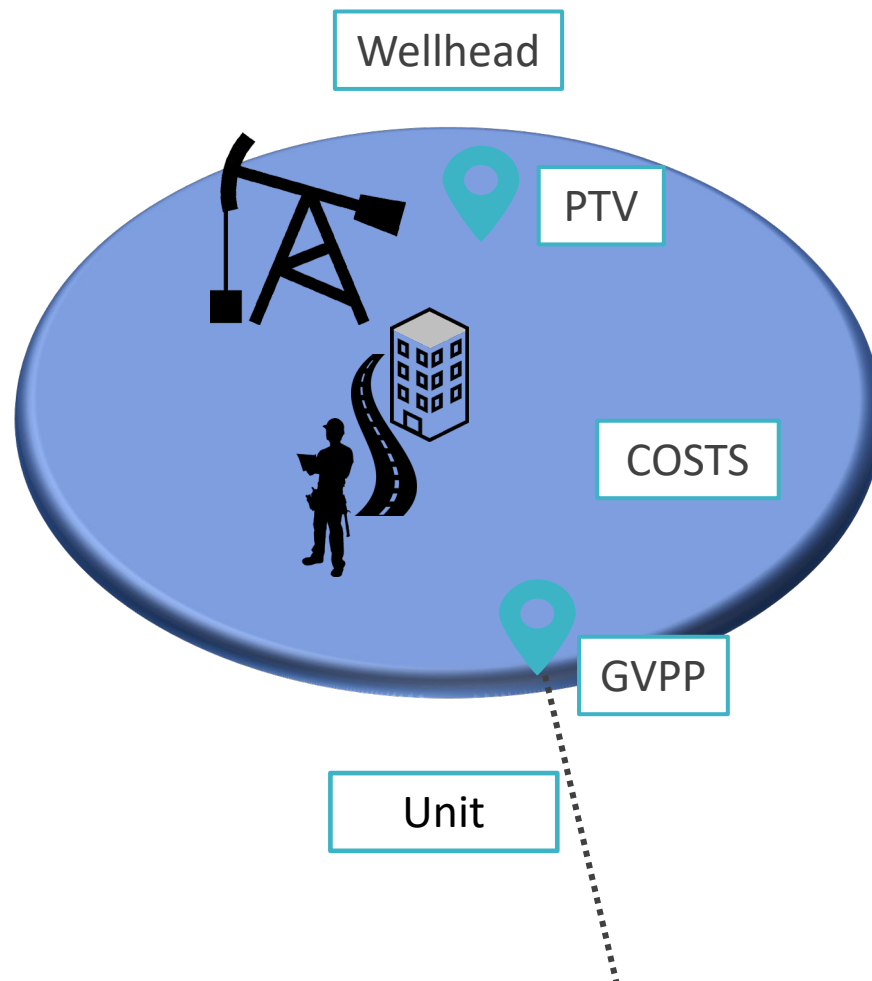
- ANS West Coast
 - Marker price for valuing crude shipped to west coast refineries
 - Gross Revenue = volume x price
- Costs getting from Alaska North Slope to the market.
 - Inter-field pipeline
 - Field processing facilities
 - TAPS
 - Shipping
- Sales revenue less allowed costs gives the value at the Unit boundary



UNDERSTANDING ALASKA'S TAX CODE

WHAT ARE THE VARIOUS PIECES

- Unit boundary value
 - Gross value at the point of production
 - “GVPP”
- “Wellhead” value
 - Production Tax Value
 - “PTV”
 - GVPP less Operating Costs



FISCAL REGIME DESIGN TOOL KIT

HIGH LEVEL REVIEW OF ALASKA'S PETROLEUM FISCAL SYSTEM

- Most regimes share petroleum or levy tax at the “lease”. How then does Alaska ensure the right value ends up back at the lease?
- Determining market sales revenue
 - Actual price paid and revenues received if arms-length sale
 - If non arms-length sale to an affiliate, the basis for price and revenues are to be agreed between the company and the government
 - Large integrated oil companies tend to keep things in house
- Less costs to get the petroleum to the market
 - Shipping – from Valdez to the refinery
 - TAPS – from the North Slope to Valdez
 - Same issues on affiliated transactions versus third party transactions
 - Additional issues with the perceived fairness of transportation rates set by non-AK regulatory bodies

FISCAL REGIME DESIGN TOOL KIT

HIGH LEVEL REVIEW OF ALASKA'S PETROLEUM FISCAL SYSTEM

- Value at the “lease”
 - GVPP or Gross Value at the Point of Production
 - [Possible 20% GVR deduction if certain conditions are met]

- **Less Royalty**

- State share varies



| | UGF | Restricted | Total |
|--------------------|--------|------------|--------|
| State Land** | \$4.84 | \$3.16 | \$8.00 |
| NPRA | \$1.75 | \$3.13 | \$4.88 |
| ANWR | \$3.30 | \$1.58 | \$4.88 |
| Other Federal Land | \$4.53 | \$2.85 | \$7.38 |
| 3-6 Miles Offshore | \$0.84 | \$0.85 | \$1.69 |
| >6 Miles Offshore | \$0.00 | \$0.00 | \$0.00 |
| Native Corp Land | \$2.06 | \$0.00 | \$2.06 |

Source: Ed King

- **Less Costs of Operations**

- Only deductible costs as not all costs are deductible
 - Definition of ‘direct’ costs versus overhead (subject to limits on the deductibility)
 - Deductions not allowed on equipment until present in the field in Alaska
 - Carry forward net operating losses or NOLs
 - Costs to get to TAPS

FISCAL REGIME DESIGN TOOL KIT

HIGH LEVEL REVIEW OF ALASKA'S PETROLEUM FISCAL SYSTEM

- Taxable Value
 - PTV or Production Tax Value
- Less Tax –
 - The state has established 7 “ringfences” for calculating tax
 - (a) Oil and gas north of 68
(other than gas used in state prior to 2022)
 - (b) Oil and gas not Cook Inlet and not north of 68 (‘N68’)
 - (c) Cook Inlet oil before 2022
 - (d) Cook Inlet gas prior to 2022
 - (e) Gas not Cook Inlet prior to 2022
 - (f) First 7 years for oil and gas not Cook Inlet and not N68
between 2012 & 2027
 - Oil and gas not covered in (a-f) above

FISCAL REGIME DESIGN TOOL KIT

HIGH LEVEL REVIEW OF ALASKA'S PETROLEUM FISCAL SYSTEM

- Taxable Value
 - PTV or Production Tax Value
- Less Tax –
 - The state has established 7 “ringfences” for calculating tax
 - For North Slope production the tax payable is the greater of:
 - A gross tax on the GVPP
 - Rate ranges from 0% to 4% based on oil price
 - A net tax on the PTV less applicable credits
 - \$0 to \$8 per barrel based on oil price
 - \$5 per barrel for GVR eligible fields
 - Exploration and other activity incentivizing credits
 - Small producer credit

FISCAL REGIME DESIGN TOOL KIT

HIGH LEVEL REVIEW OF ALASKA'S PETROLEUM FISCAL SYSTEM

- Taxable Value
 - PTV or Production Tax Value
- Less Tax –
 - The state has established 7 “ringfences” for calculating tax
 - For North Slope production the tax payable is the greater of
 - Finally, the tax is paid by company and not by field
 - Every company is different
 - Those with large production revenues can immediately deduct expenses from new fields
 - Those with no or limited production revenues must wait for production on a new field to commence to deduct costs

FISCAL REGIME DESIGN TOOL KIT

HIGH LEVEL REVIEW OF ALASKA'S PETROLEUM FISCAL SYSTEM

- Taxable Value
 - PTV or Production Tax Value
- Less Tax –
 - The state has established 7 “ringfences” for calculating tax
 - For North Slope production the tax payable is the greater of
 - Finally, the tax is paid by company and not by field
- Oil Company “Profit”
 - Less Alaska corporate income tax
 - Less US federal income tax
- Finally, money into the oil company bank account

SUMMARY

KEY TAKEAWAYS

- Oil and gas terms and jargon are extensive but important to building an understanding of the industry
- Hydrocarbons are a non-renewable resource
- Oil companies and governments work together in countries across the globe to produce and market hydrocarbons
- The industry is constantly changing
- Draw conclusions of competitiveness from a review of all aspects of your multifaceted system
- Review multiple options modelled against different future scenarios to improve chances of realizing goals
- After 100 years, there is no 'ideal' structure for sharing the benefits of oil and gas development so understand your drivers
- Alaska has a complex gross and net tax system



THANK YOU QUESTIONS?

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GLOSSARY

ALASKA FISCAL REGIME

| | | | |
|---------------|---------------------------------|-------------|------------------------------|
| ACES | Alaska Clear Equitable Share | KRU | Kuparuk River Unit |
| AGIA | Alaska Gasline Inducement Act | ME | Middle Earth |
| ANS | Alaska North Slope | NPRA | National Petroleum Reserve |
| ANS WC | ANS West Coast | NS | North Slope |
| AS | Alaska Statute | PBU | Prudhoe Bay Unit |
| BTU | British Thermal Unit | PF | Permanent Fund |
| CI | Cook Inlet | PPT | Petroleum Profits Tax |
| DNR | Department of Natural resources | PTV | Production Tax Value |
| DOG | Division of Oil & Gas | RIK | Royalty in Kind |
| DOR | Department of Revenue | RIV | Royalty in Value |
| ELF | Economic Limit Factor | TAPS | Trans Alaska Pipeline System |
| GF | General Fund | | |
| GVPP | Gross Value Point of Production | | |