

Potential application of the UNFC-2009 in StatoilHydro's business process management – A case study

Karin Ask

Leader

Corporate E&P Forecasting

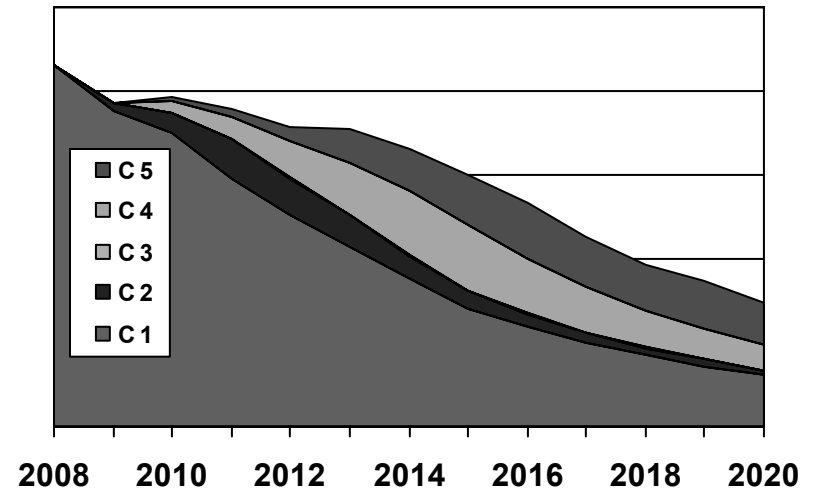
UNECE Ad Hoc Group of Experts on Harmonization of Fossil Energy and Mineral Resources Terminology - Sixth Session, 25-27 March 2009

StatoilHydro's Resource Classification system

- Project Based resource evaluations

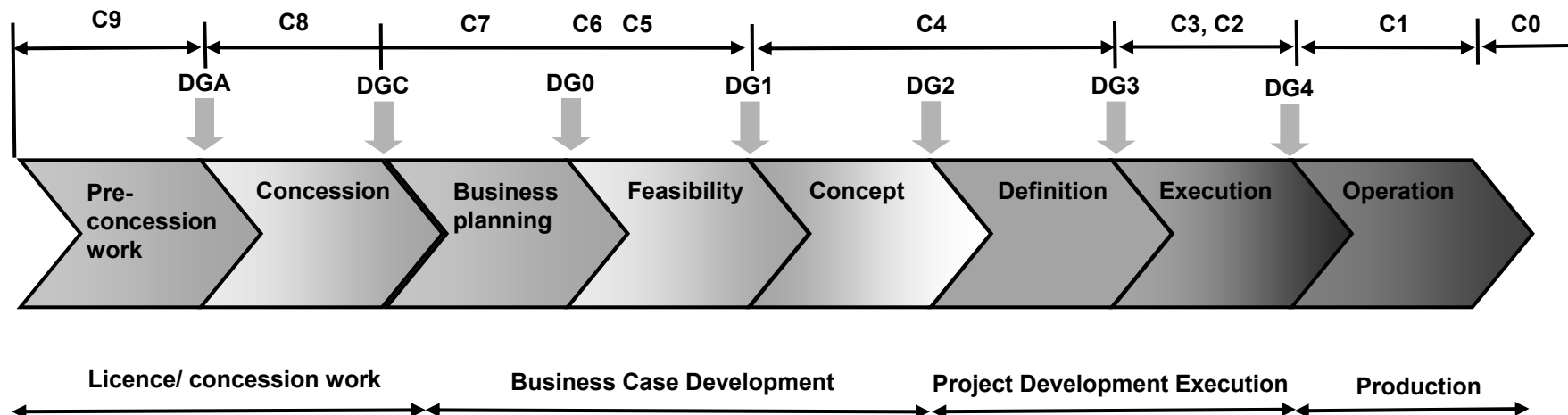
		RESOURCE CLASS	PROJECT STATUS CATEGORY		
		Sold and delivered petroleum	C0	Sold and delivered	LOWER RISK ↑ PROJECT MATURITY ↑ HIGHER RISK
TOTAL PETROLEUM-INITIALLY-IN-PLACE	DISCOVERED PETROLEUM-INITIALLY-IN-PLACE COMMERCIAL	RESERVES	C1	In Production	
			C2F/A	Approved Development Plan	
			C3F/A	Decided recovery	
	DISCOVERED PETROLEUM-INITIALLY-IN-PLACE SUB-COMMERCIAL	CONTINGENT RESOURCES	C4F/A	In planning	
			C5F/A	Unclearified	
			C6	Not very likely	
			C7F/A	Not evaluated	
			UNRECOVERABLE		
	UNDISCOVERED PETROLEUM-INITIALLY-IN-PLACE	PROSPECTIVE RESOURCES	C8	Prospect	
C9				Lead	
			UNRECOVERABLE		
		← RANGE OF UNCERTAINTY →			

- Reserves, contingent resources and undiscovered resources are broken down into project status categories, clearly linking resources to projects.

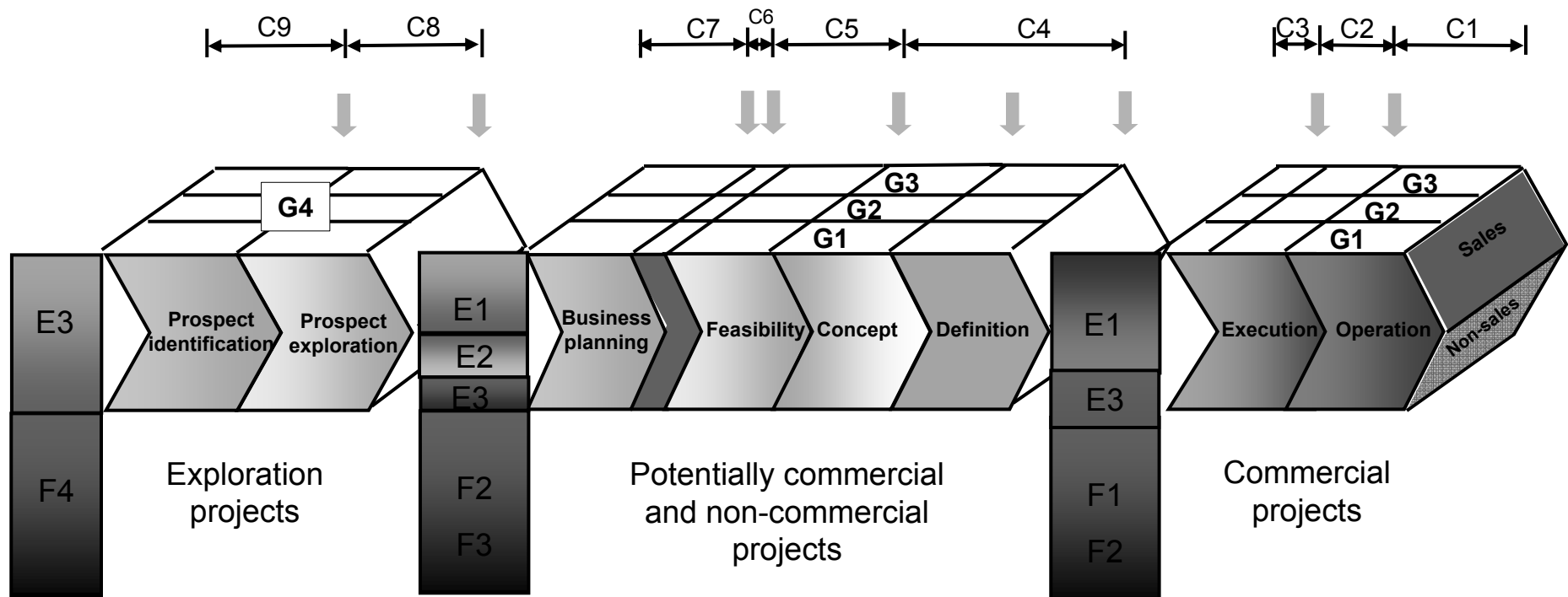


Resource classification and Business processes

- Connection to The Capital Value Process and Decision Gates
 - Decision Gate (DG);
A pre-defined point in the project model where we have to make an appropriate decision whether to move into the next project phase or to make a temporary hold or terminate the project

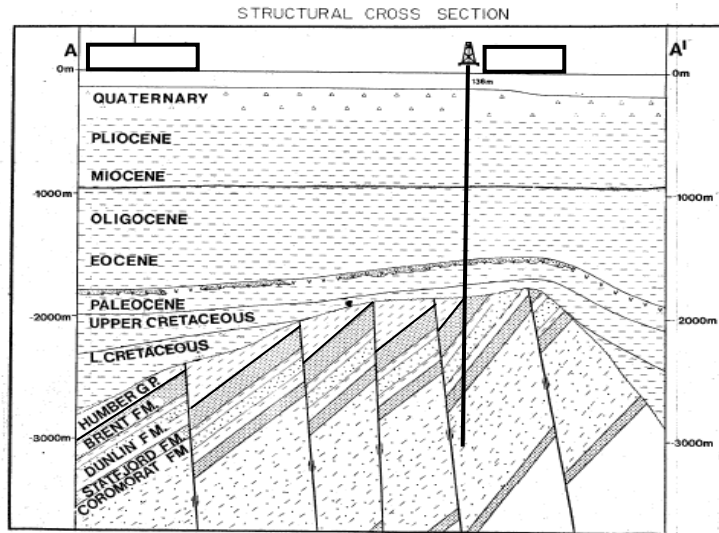
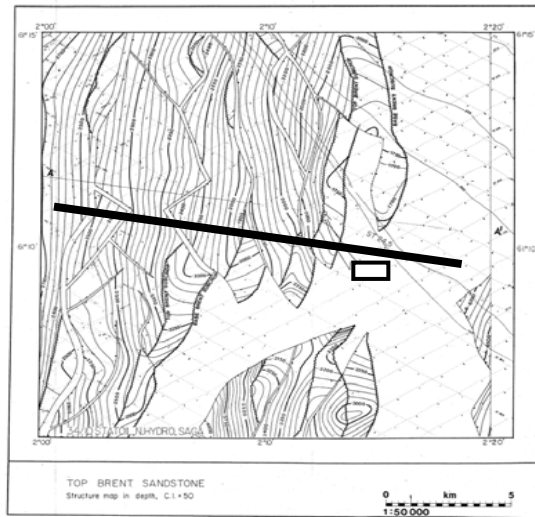


Our Capital Value Process and the UNFC system



How does this compare in real life projects?

- An example – *Exploration phase*

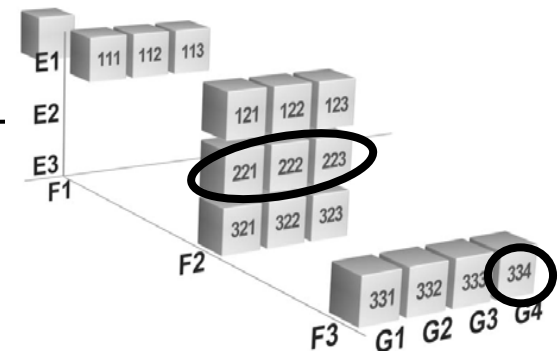
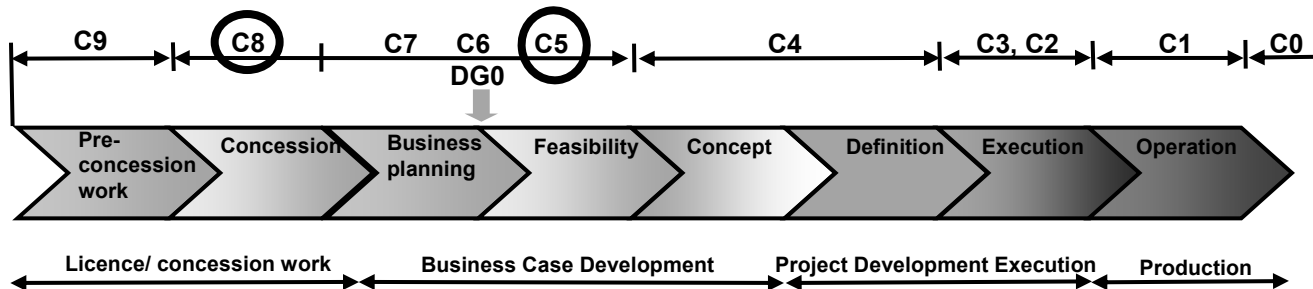


- Exploration well drilled on a prospect in the North Sea results in an oil discovery.

- Resource class changes from C8 (*Prospect*) to C7 (*Not evaluated*) at discovery.

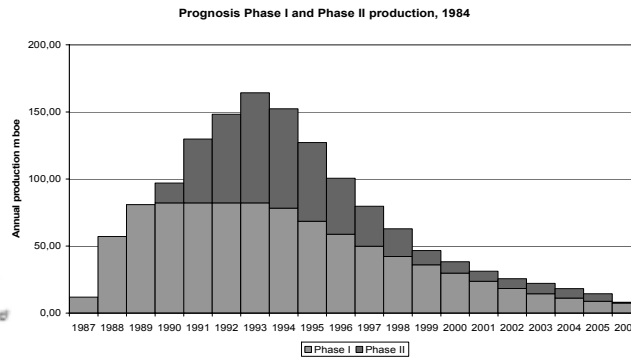
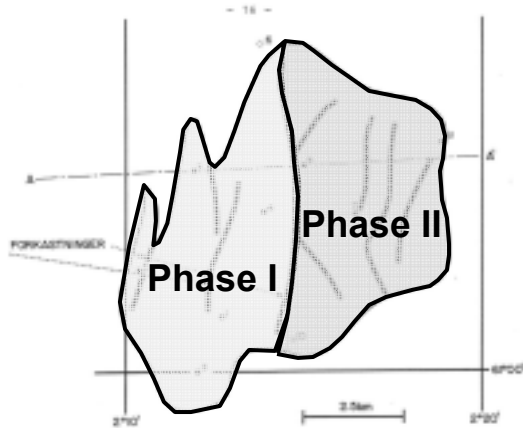
- Discovery is evaluated and matured. *Decision to invest in further drilling activity and feasibility studies for field development (DG0)* moves discovery to C5 (*Not clarified*)

- UNFC: From 334 to 221/222/223

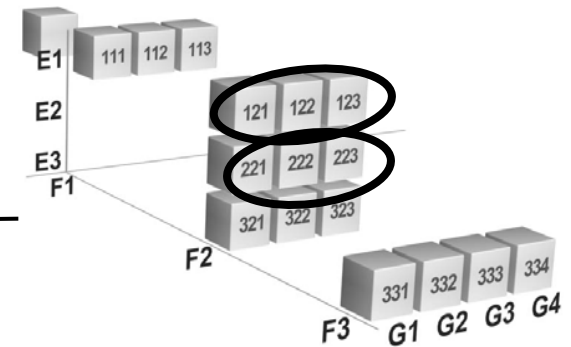
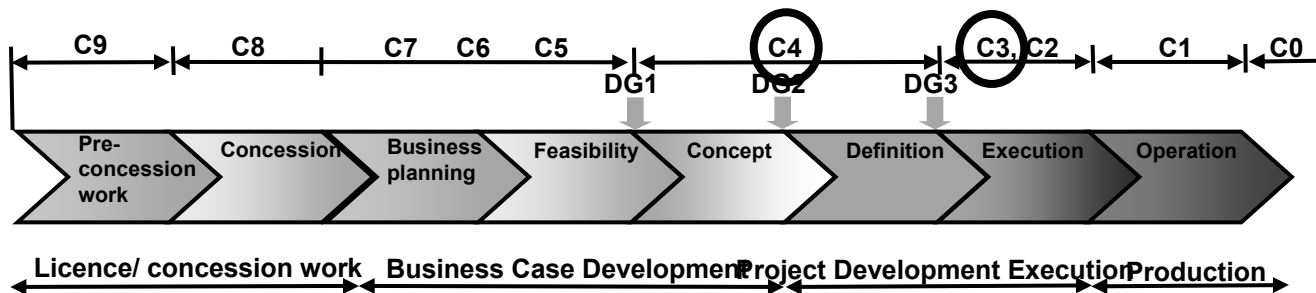


How does this compare in real life projects?

- An example – Field development phase

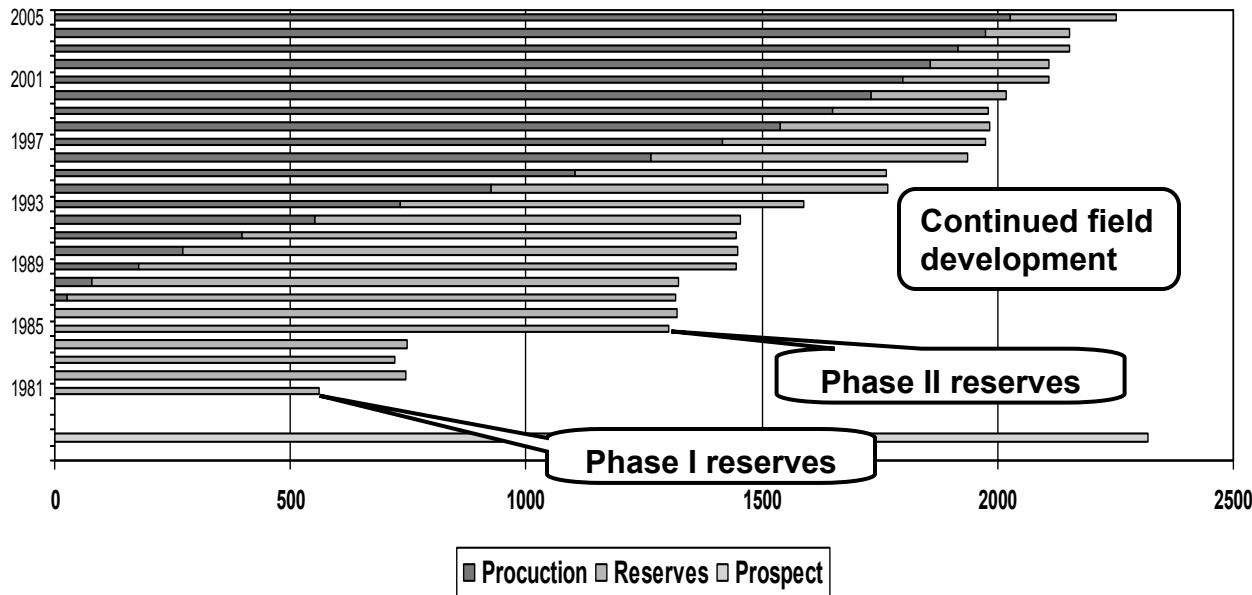


- Discovery declared commercial at DG1. Resources are moved to C4 (*In planning*)
- Concept evaluation phase starts and several alternatives considered for development. Development in two Phases is decided at DG2.
- Plan for development of Phase I is submitted at DG3 and approved, resources move to C3 (*Decided*) and become reserves
- Phase II stays in C4 for now
- UNFC - Phase I: 121-123
UNFC - Phase II: 221-223

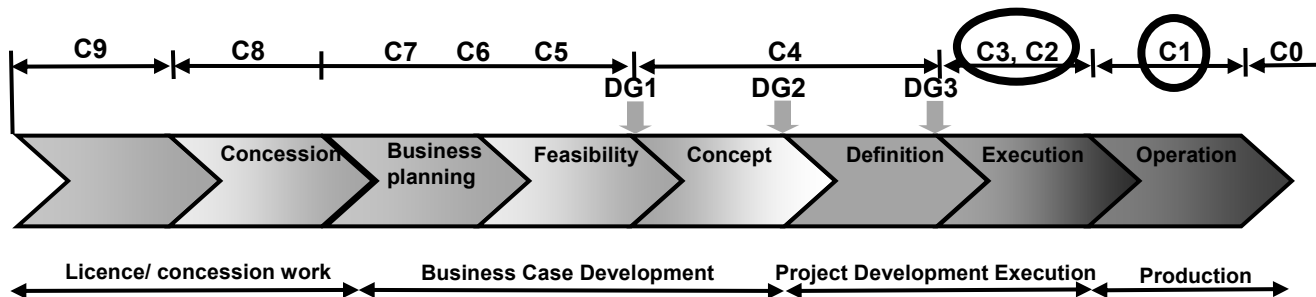


How does this compare in real life projects?

- An example – Production and further field development



- Phase I reserves move to C2 (*Approved*)
- Phase II moves to C3 (*Decided*) and become reserves at DG3 and to C2 (*Approved*) when plan is approved.
- Field is put on production and reserves in C2 move to C1 (*In production*)
- UNFC: Phase I moves to 111-113 at production start, Phase II moves to 121-123 and later to 111-113.
- Appraisal well drilling continues and more and more reserves are matured through the same process





Gullfaks 20 20 50 50

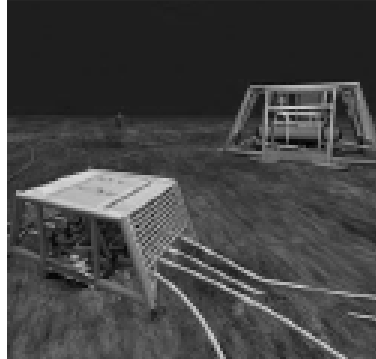
Producing while hunting for new resources

20 years of
production



- NOK 500 billion
- Recovery factor at 55%

20 years still
to come



- Gimle, Tordis IOR, Skinfaks/ Rimfaks
- Upgrading infrastructure
- Area between Gullfaks and Visund

50 exploration
wells



- 49th exploration well, discoveries; Epidot and Alun
- Exploration well no. 50, drilling ongoing

50
leads



- Reserve replacement rate at 1.
- Four exploration wells in 2007
- Recovery factor at 69%.