NORWEGIAN PETROLEUM DIRECTORATE

The latest Norwegian Petroleum Resource Accounts presented according to UNFC-2009

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- What was done in the Pilot study 2012
- Mapping Norwegian Resource Account 2014 to UNFC
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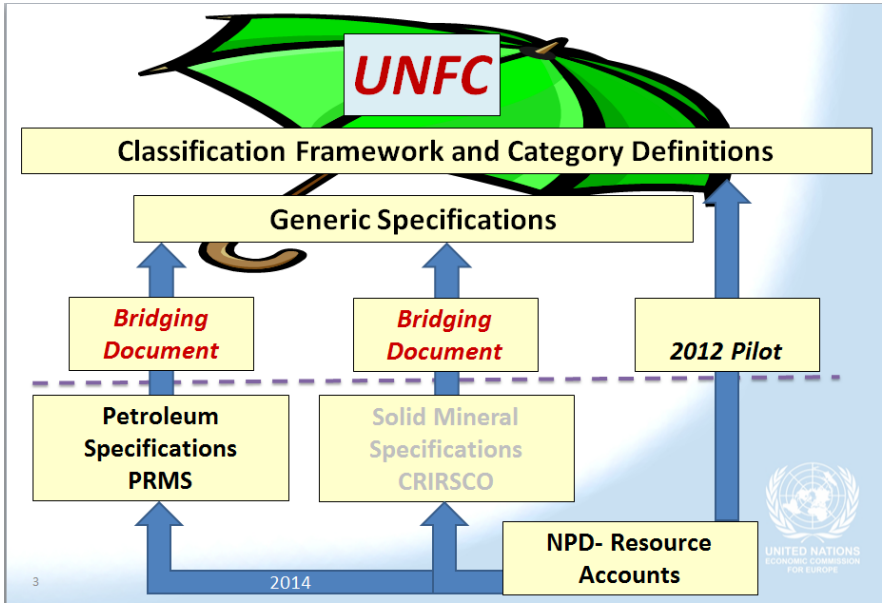
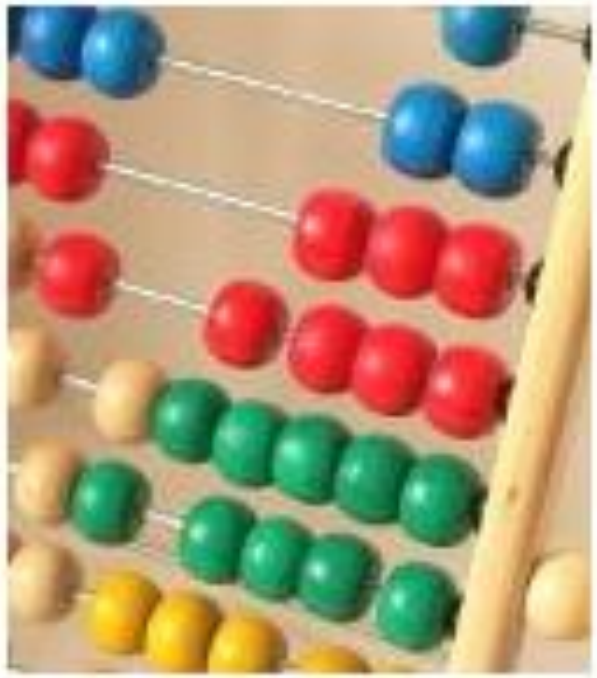


Norwegian Petroleum Directorate

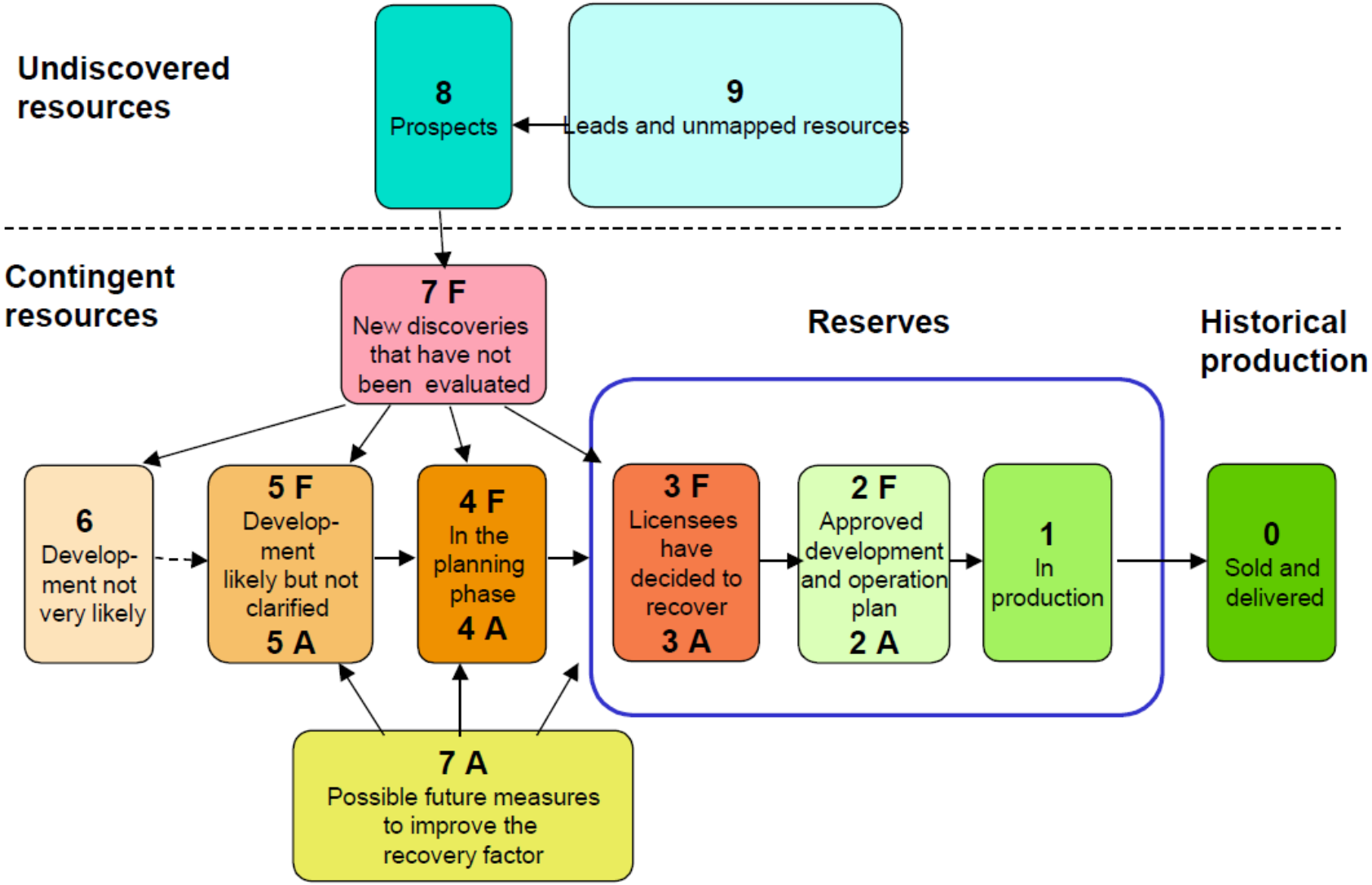
- Subordinate to the Ministry of Petroleum and Energy (MPE)
  - Advisory body to the MPE
  - Exercise management authority
- Established 1972 in Stavanger
- Approximate 220 employees

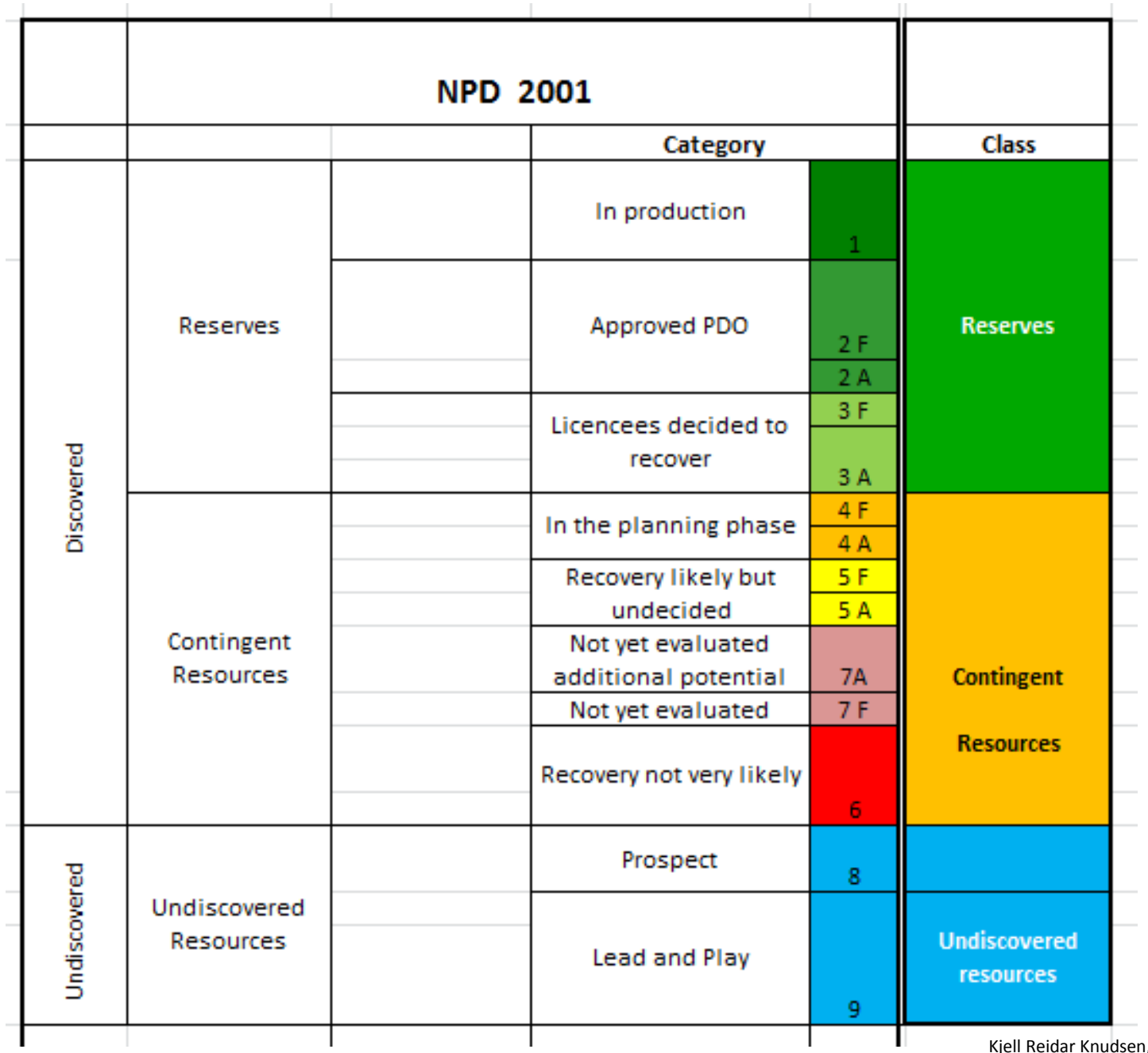
Norwegian Petroleum Directorate

- One of the Norwegian Petroleum Directorate's (NPD's) most important tasks is to maintain an overview of all of the petroleum resources on the Norwegian continental shelf.
- The objective is to ensure that the resources are managed in the best interests of the Norwegian society.



Resource classification system as per July 2001




NPD 2001
Category
Class
Discovered
Reserves
In production
1
Approved PDO
2 F
2 A
Licencees decided to recover
3 F
3 A
Reserves
Contingent Resources
In the planning phase
4 F
4 A
Recovery likely but undecided
5 F
5 A
Not yet evaluated additional potential
7A
Not yet evaluated
7 F
Recovery not very likely
6
Contingent Resources
Undiscovered
Undiscovered Resources
Prospect
8
Lead and Play
9
Undiscovered resources

G-axis

UNFC	NPD
G 1	Low estimate
G1+G 2 (Best estimate)	Base estimate
G1+G2+G 3	High estimate
G 4	Base estimate

2012 Pilot

NPD Classes	NPD Category	UNFC classes
Reserves	1	E1.1F1.1
	2 F	E1.1F1.2
	2 A	E1.1F1.2
	3 F	E1.1F1.3
	3 A	E1.1F1.3
Contingent Resources	4 F	E1.1F2.1
		E2F2.1
		E1.1F2.2
	4 A	E1.1F2.1
		E1.1F2.2
		E2F2.1
		E2F2.2
	5 F	E1.1F2.1
		E2F2.1
		E1.1F2.2
		E2F2.2
		E3.2F2.2
	5 A	E1.1F2.1
		E2F2.1
		E1.1F2.2
		E2F2.2
	6	E3.3F2.3
	7F	E2F2.1
		E2F2.3
		E3.2F2.1
		E3.2F2.2
		E3.2F3
	7 A	E2;F2.1
		E2,F2.2
		E3.2F2.2
		E3.2F3
Undiscovered Resources	8	E3F3G4
	9	E3.2F3

Green represent the “General Rule” categorisation (“Top down”)

In the “Project Specific approach” the “Project Stopper”- attribute was used to Classify some projects into “white boxes”

2012 Pilot:
Detailed Mapping results

Norwegian Resource Accounts per 31.12.2011 according to UNFC (2012)

G1+G2
Mill Sm3
o.e

UNFC Sub class	Top-down testing	Project specific
E1.1F1.1	2347	2347
E1.1F1.2	433	433
E1.1F1.3	384	384
E1.1F2.1	593	432
E1.1F2.2	0	139
E2F2.1	798	728
E2F2.2	190	284
E3.2F2.1	182	181
E3.2F3G4	2455	2455
E3.3F2.3	0	0
Total	7382	7382

UNFC class	Top-down testing	Project specific
E1F1	3164	3164
E1F2	593	571
E1F3	0	0
E2F1	0	0
E2F2	988	1012
E2F3	0	0
E3F1	0	0
E3F2	182	181
E3F3	0	0
E3F3G4	2455	2455
Total	7382	7382

2013

2013

United Nations Framework Classification (ECE ENERGY SERIES No. 42) (December 2013)

United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 incorporating Specifications for its Application (ECE ENERGY SERIES No. 42)(as approved by the ECE Committee on Sustainable ...

2010

United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (ECE Energy Series 39 (UNFC-2009) (January 2010)

United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009)(as approved by the ECE Committee on Sustainable Energy at its Eighteenth Session, November 2009) The UNFC is ...

2009

Mapping of the United Nations Framework Classification for Fossil Energy and Mineral Resources (October 2009)

This publication represents the final report of the UNFC Mapping Task Force, however it should be seen as an interim step in an on-going process. The Mapping Task Force reached ...

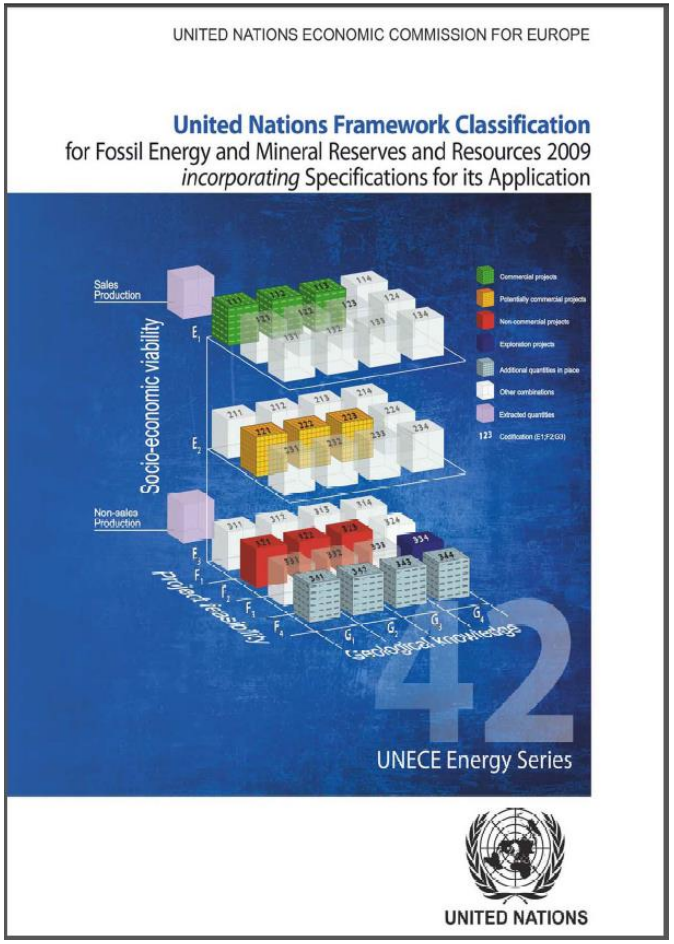
2004

The United Nations Framework Classification (UNFC) for Energy and Mineral Resources (January 2004)

The United Nations Framework Classification (UNFC) for Energy ...

NPD Resource Account Mapping March 2014

- Used the NPD resource accounts
  - Effective date of 31.12.2013
  - More than 800 projects included
  - Norwegian Resource classification on each project discussed with operating companies
  - Additional project info available to NPD
- Used the UNFC Definitions (Part I)
- Used the UNFC Specifications (Part II)
  - IV. National Resource Reporting
  - VI. Generic Specifications
    - B. Requirement of a Bridging document
  - Annex IV Bridging Document from PRMS



NPD Resource Account Mapping March 2014

Step 1: Bridge from NPD to PRMS

	NPD Category				PRMS		PRMS bridging Code
	Class	Sub-class	Main	Sub			
Project A	Reserve	In production	1	F+A	Reserve	On Production	1
Project B	Reserve	Approved for development	2	F	Reserve		
Project C	Reserve	Approved for development	2	A	Reserve	Approved for development	2
Project D	Reserve	Decided for development	3	F	Reserve		
Project E	Reserve	Decided for development	3	A	Reserve	Justified for development	3
Project F	Contingent Resource	In planning phase	4	F	Contingent Resource		
Project G	Contingent Resource	In planning phase	4	A		Development pending	4
Project H	Contingent Resource	Recovery Likely, but undecided	5	F	Contingent Resource		
Project I	Contingent Resource	Recovery Likely, but undecided	5	A		Development on hold	5
Project J	Contingent Resource	Not evaluated/Improved rec po	7	F	Contingent Resource		
Project k	Contingent Resource	Not evaluated/Improved rec po	7	A		Development unclarified	6
Project l	Contingent Resource	Recovery not very likely	6	F+A	Development not viable	Development not viable	7
Project M	Undiscovered	Prospect	8		Prospective Resources	Prospect	8
Project N					Prospective Resources	Lead	9
Project O	Undiscovered	Lead and play	9		Prospective Resources	Play	10
Project P					Specified but not classified		12

NPD Resource Account Mapping March 2014

Step 2: Bridge from PRMS to UNFC

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
E2			4	4	5					
E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

Discovered	Reserves	On Production		1
		Approved for Development		2
		Justified for Development		3
	Contingent Resources	Development Pending		4
		Development Unclarified or On Hold	On Hold	5
			Unclarified	6
		Development Not Viable		7
	Unrecoverable			11
Undiscovered	Prospective Resources	Prospect		8
		Lead		9
		Play		10
	Unrecoverable			11
Special Cases		Defined but not classified in PRMS		12
		Less Common Mappings		

PRMS Bridging Document Fig.IV.3

NPD Resource Account Mapping March 2014

Step 3: Result: Mapping between NPD and UNFC

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	RK1	RK2	RK3	RK4						
E1.2	RK1	RK2	RK3							
E2			RK4	RK4	RK5					
E3.1										
E3.2			RK7	RK7	RK7		RK8	RK8	RK9	
E3.3			RK6	RK6	RK6	RK6				

Some are not possible

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	RK1	RK2	RK3	RK4						
E1.2										
E2				RK4	RK5					
E3.1										
E3.2					RK7		RK8	RK8	RK9	
E3.3			RK6	RK6	RK6	RK6				

NPD Resource Account Mapping March 2014

- But, there are still several alternatives

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	RK1	RK2	RK3	RK4						
E1.2										
E2				RK4	RK5					
E3.1										
E3.2					RK7		RK8	RK8	RK9	
E3.3			RK6	RK6	RK6	RK6				

- Solution
  - RK4 projects are reported in either E1.1F2.1 or E2F2.1. **More info needed**
  - RK8 + RK9 are reported together in E3.2F3
  - All RK6 projects are reported in E3.3F2.3

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	RK1	RK2	RK3	RK4						
E1.2										
E2				RK4	RK5					
E3.1										
E3.2					RK7		RK8 + RK9			
E3.3						RK6				

The info on “project stoppers” was used

For contingent resources in “planning phase” (RK4) (SPE: “Development Pending) a few projects are shifted **from E1.1 to E2**

- **Technology is lacking**
  - RK4A (2 projects from E1.1F2.1 to E2F2.1)
- **Lack of infrastructure in the area**
  - RK4F (2 projects from E1.1F2.1 to E2F2.1)
  - RK4A (2 projects from E1.1F2.1 to E2F2.1)
- **No gas solution**
  - RK4F (1 project from E1.1F2.1 to E2F2.1)
- **No commercial agreement**
  - RK4F (8 projects from E1.1F2.1 to E2F2.1)
  - RK4A (from E1.1F2.1 to E2F2.1)

Norwegian Resource figures of 31.12.2013 according to the UNFC Numerical Codes

UNFC Sub-classes.

UNFC Sub-class	oil mill Sm^3	NGL mill ton	condensate mill Sm3	gas bill SM^3	o.e mill SM^3
1.1;1.1;1+2	599	104	30	1437	2263
1.1;1.2;1+2	224	15	6	217	474
1.1;1.3;1+2	12	10	4	395	430
1.1;2.1;1+2	606	15	2	112	747
2;2.1;1+2	40	3	2	43	92
2;2.2;1+2	247	17	7	263	550
3.2;2.2;1+2	278	1	12	186	478
3.3;2;1+2	0	0	0	0	0
3.2;3;4	1330	0	120	1490	2940

UNFC Classes.

UNFC Class	oil mill Sm^3	NGL mill ton	condensate mill Sm3	gas bill SM^3	o.e mill SM^3
1;1;1+2	835	129	40	2049	3167
1;2;1+2	606	15	2	112	747
2;2;1+2	287	20	9	306	642
3;2;1+2	278	1	12	186	478
3;3:4	1330	0	120	1490	2940

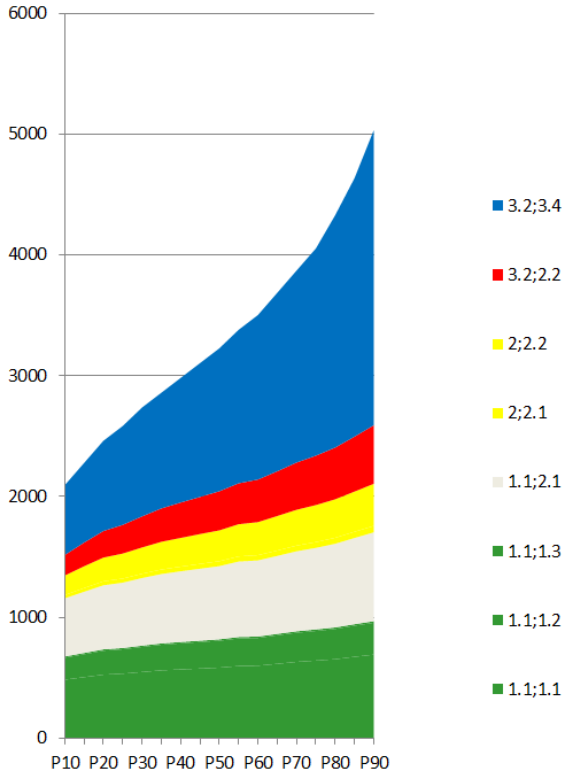
The numbers reflect the G1+G2 values

* 1 mill ton NGL = 1.9 mill Sm^3 o.e

Norwegian Resource figures of 31.12.2013 for oil

- Distribution along the G-axis

UNFC Class	oil mill Sm^3	oil mill Sm^3	oil mill Sm^3	UNFC-2009 Examples of classes with "labels"
	G1	G1+G2	G1+G2+G3	
E1.1;F1.1	485	585	693	Commercial Projects
E1.1;F1.2	182	223	264	
E1.1;F1.3	10	11	13	
E1.1; F 2.1	482	606	735	
E2;F2.1	28	40	54	Potential commercial Projects
E2;F2.2	161	247	348	
E3.2;F2.2	170	278	485	Non-commecial Projects
E3.3;F2	0	0	0	
	G4.1	G4.1+G4.2	G4.1+G4.2+G4.3	
E3.2;F3	588	1330	2442	Exploration Projects



CONCLUSION

- It is possible to present the NPD Resource Accounts (a total of 800 projects) by UNFC
- UNFC's ability to use full "granularity" than the example classes are useful
- The differences between F and A disappear
- We can use the «at-least» principle when detailed information does not separate
- Since more information than the Norwegian RC is required for some projects, we cannot convert old historic resource accounts without study each individual project

End