



MINING the
EUROPEAN
ANTHROPOSPHERE



MinFuture



Session 1

Introducing the UNFC

History

Initial Position

Different national classifications (for coal)

The UNFC

Phase 1



Driver: Enabling comparability of national classifications

Developing a Framework Classification

- 1970ies: Development succeeded, implementation failed
- 1990ies: Development & implementation succeeded for coal, oil, gas, uranium and mineral raw materials

Phase 2



Driver: Change in climate policies

- adding renewable energy resources
- adding geological storage for CO2 sequestration

Phase 3

Driver: UN Sustainable Development Goals and increasing barriers for mining

- Can the UNFC contribute to the achievement of the SDGs?
- adding guidance for socio-economic considerations
- adding anthropogenic resources

United Nations Framework Classification for Resources

Goal

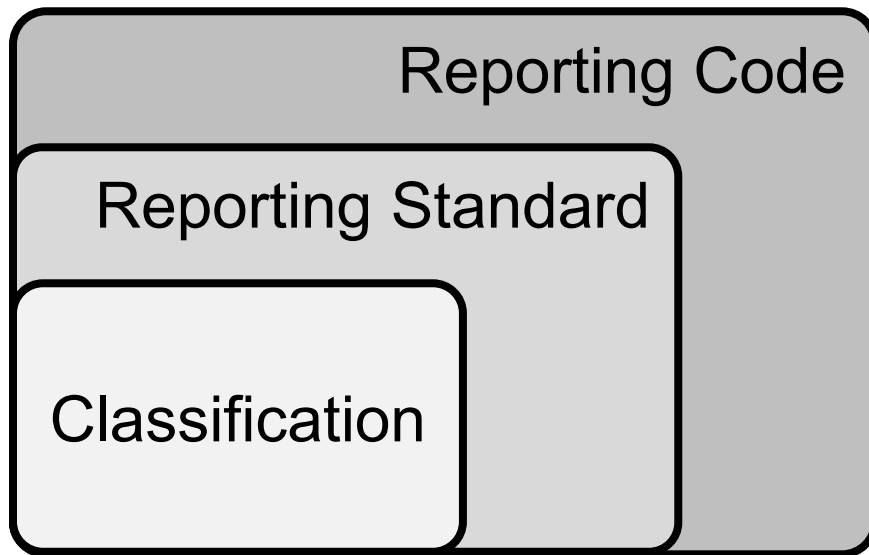
Comparable estimates on resource availability for future production.

Achieving the goal by

- harmonizing national and commodity-specific classifications
- classify resources that are not covered by existing classifications

Role of Classifications

Integration



Henley, S. (2015). Reporting standards, codes, templates, and classifications: conversion, bridging, and mapping. *European Geologist* 39: 40-42.

Purpose

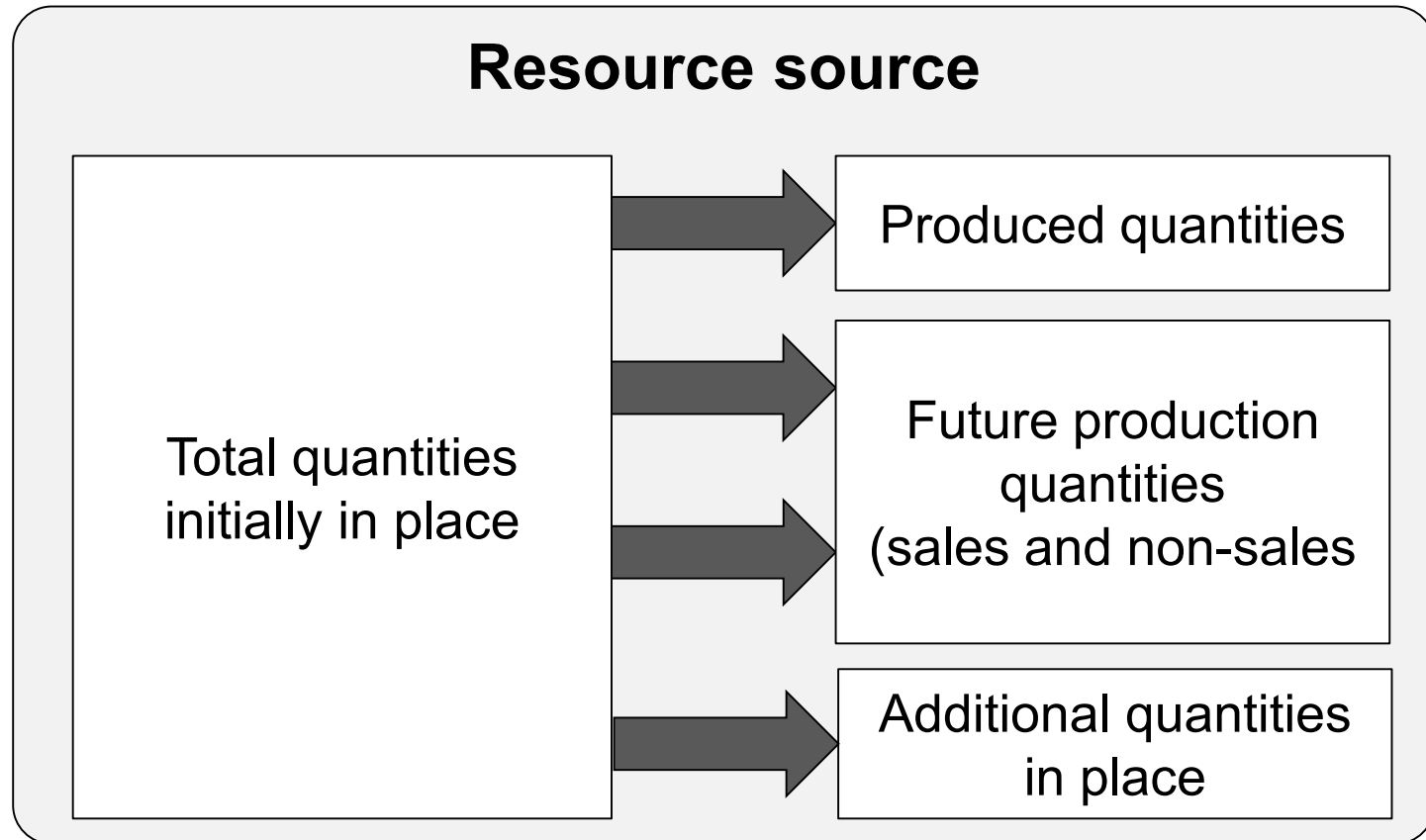
- Developing recovery projects
- National and global resource policy setting

Åm, K. and Heiberg, S. (2018). The four principal applications of the UNFC. Workshop "Training on Application of UNFC" during the UNECE Resource Management Week 2018, 23-27 April 2018, Geneva.

What is the UNFC?

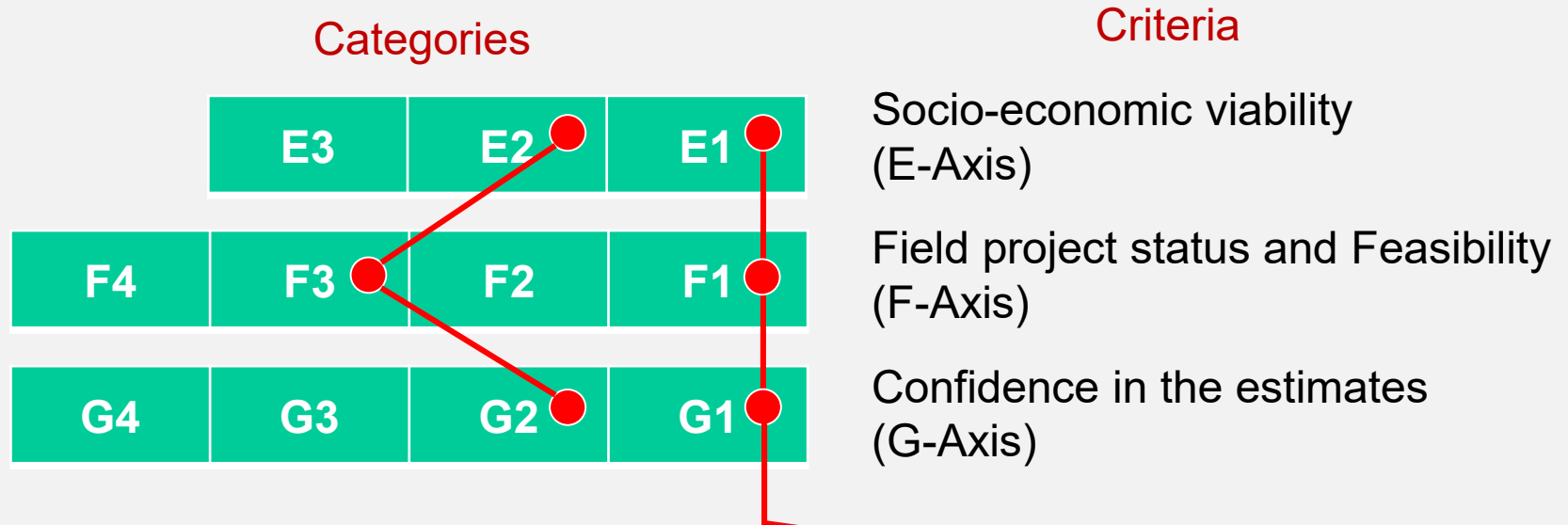
UNFC is a generic principle-based system in which quantities associated with a resource source are classified.

Classification in a nutshell



How does the UNFC work?

1. Categorizing the quantities initially in place



2. Classifying the recovery project

Sub-Classes



Classes



Criteria and categories

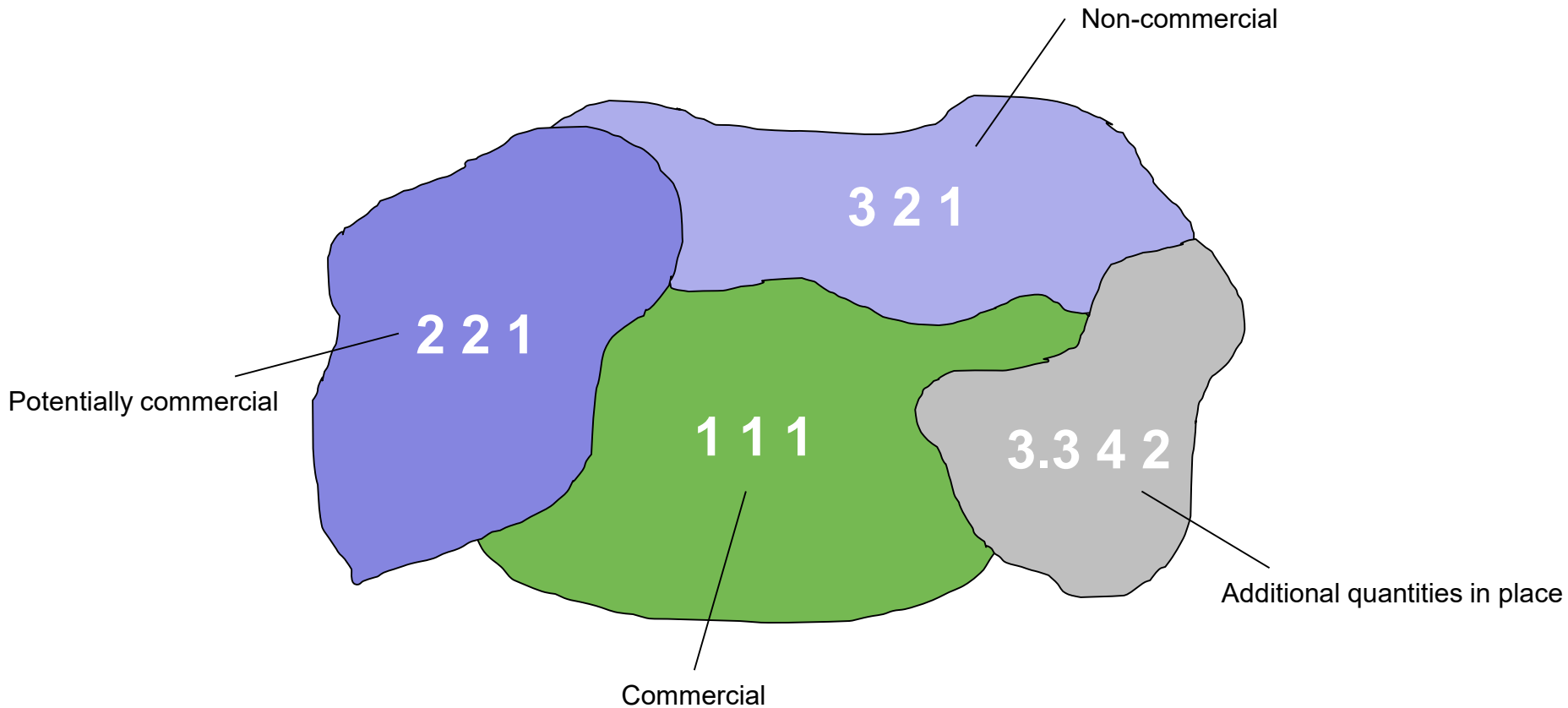
Socio-economic viability	
Field project status and Feasibility	
Confidence in the estimates	
Category	Definition
G1	Quantities associated with, or can be produced from, a <u>known resource</u> source that can be estimated with a <u>high level of confidence</u> .
G2	Quantities associated with, or can be produced from, a <u>known resource source</u> that can be estimated with a <u>moderate level of confidence</u> .
G3	Quantities associated with, or can be produced from, a <u>known resource source</u> that can be estimated with a <u>low level of confidence</u> .
G4	Estimated quantities associated with, or recoverable from, a potential resource source, based <u>primarily on indirect evidence</u> .

Example for E-Axis categorization

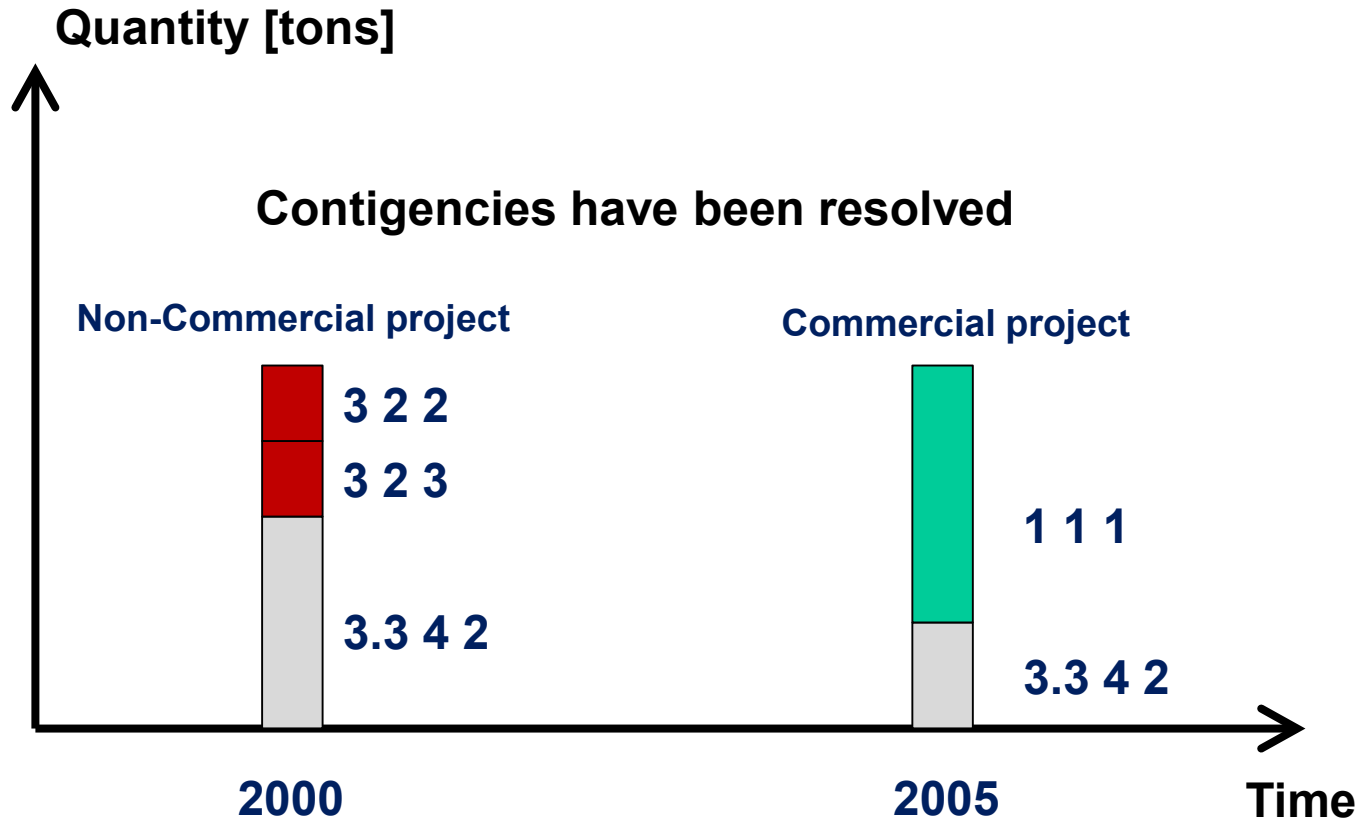
<i>Issue / potential contingency</i>	<i>Level of engagement</i>	<i>Probability of approval</i>	<i>Potential E Category</i>
Legal	Relevant licences	done	E1
Regulatory	Relevant permissions	granted	E1
Market access	Local use	99%	E1
Social	No objections expected	90%	E1
Economic	Project screened economic	95%	E1
Political	No worries expected	99%	E1
Internal & external approvals/commitments	Commitments made	100%	E1
Environmental license	Licence approval in process. Issue with the black-rimmed beetle frog habitat	50%	E2
Environmental impact	THG Emission 3-fold higher than comparable primary production system	10%	E3
Timing (<5 years or >5 years)	<5 years	Uncertain (see environmental)	E2
Total = lowest ranking issue			E3

Mapping the quantities

Example for a coal basin

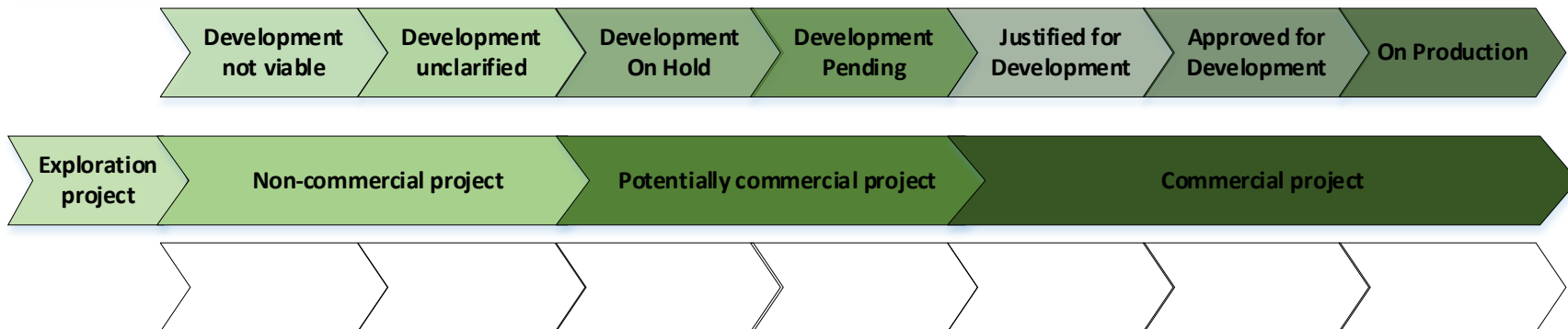
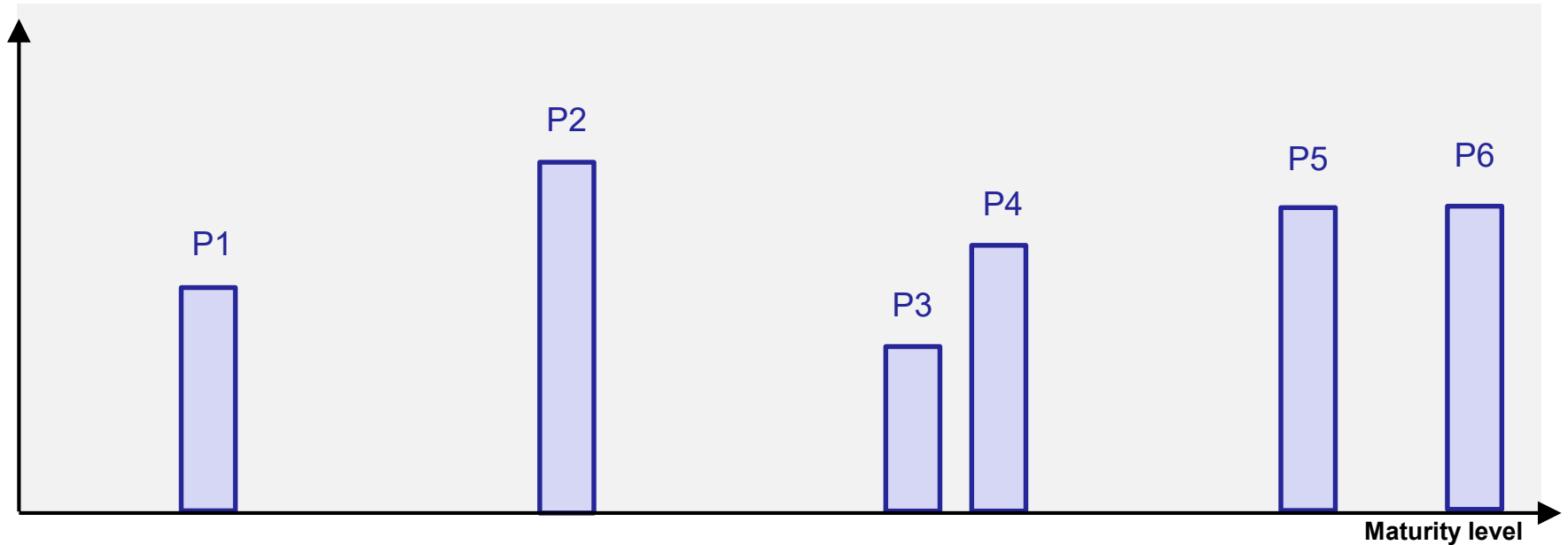


Developing a single recovery project



Comparing recovery projects

Quantity [kt material/yr]



Summary

- UNFC is a generic, principle based system
- Based on three criteria
- Each criterion is sub-divided into 3-4 categories
- Classes are defined by a combination of a single category for each criterion