

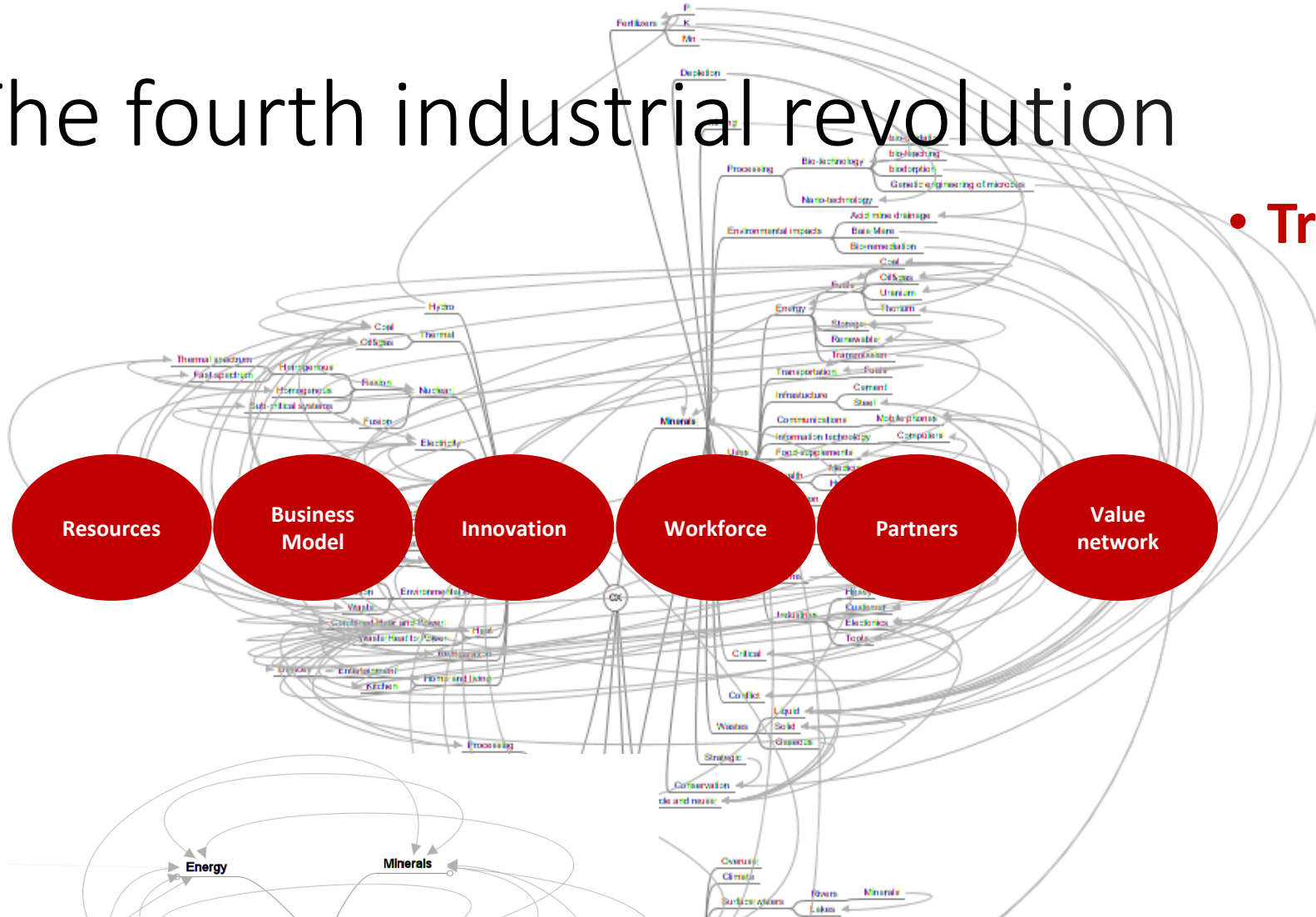


UNFC CMM Resource Classification Guidelines

A Proposal



The fourth industrial revolution



- Transformative
- Win-win
- Equitable
- Productive
- Resilient
- Reliable
- Creative

“The Third Wave entrepreneurs will need to build partnerships across sectors ...”

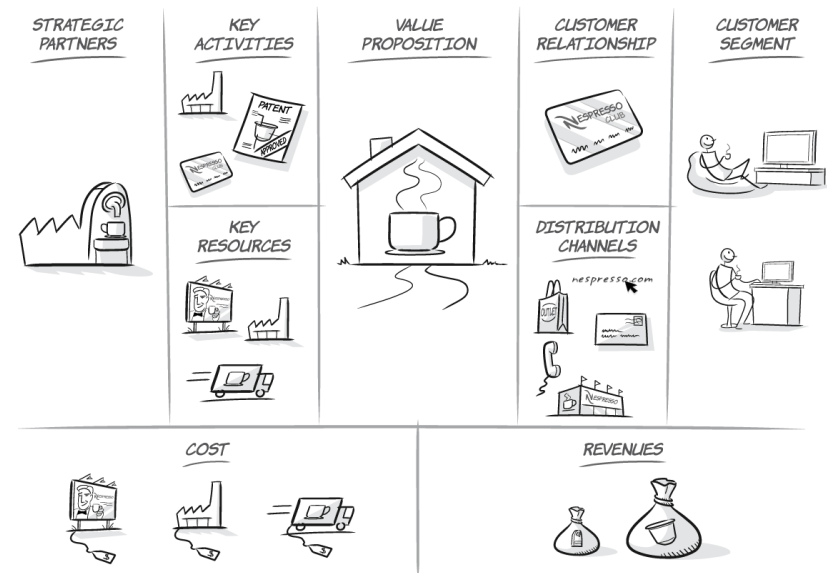
Steve Case, Co-founder, AOL in *The Third Wave* (2016)

Co-located resources – commodity to service

Energy - No more a commodity!

- Commodity: A useful or valuable thing
- Product - Differentiated and value added
- Service - A system supplying a public need

New Business Models Needed



Innovate at all costs



STRUCTURE AND CONTENT

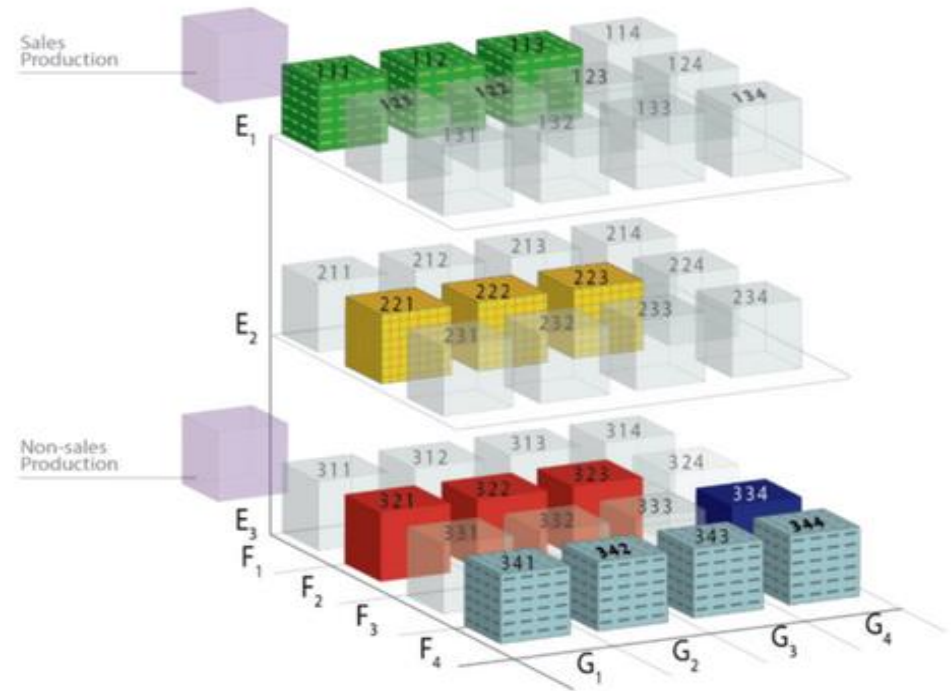
**Stable overall structure and
constant change of substance**








UNFC represents the stable container to assimilate the socio-economic, feasibility (technologies) and geological knowledge aspects the resources.

RESOURCES REDEFINED

UNFC uses a unique project maturity based model for classifying and managing resources.

UNFC is the only system that is capable of integrating all aspects of geological domain knowledge, technological maturity as well as economic, social and environmental considerations in resources management.



- | | | | |
|---|---------------------------------|---|--------------------------------|
|  | Commercial projects |  | Additional quantities in place |
|  | Potentially commercial projects |  | Other combinations |
|  | Non-commercial projects |  | Extracted quantities |
|  | Exploration projects | | |
| | | 1 2 3 | Codification (E1;F2;G3) |

Why UNFC is best suited for classification of co-located resources?

Applicable to solids and fluids

Uniquely structured in 3 tiered documentation

Differentiates “in place” and “recoverable” quantities

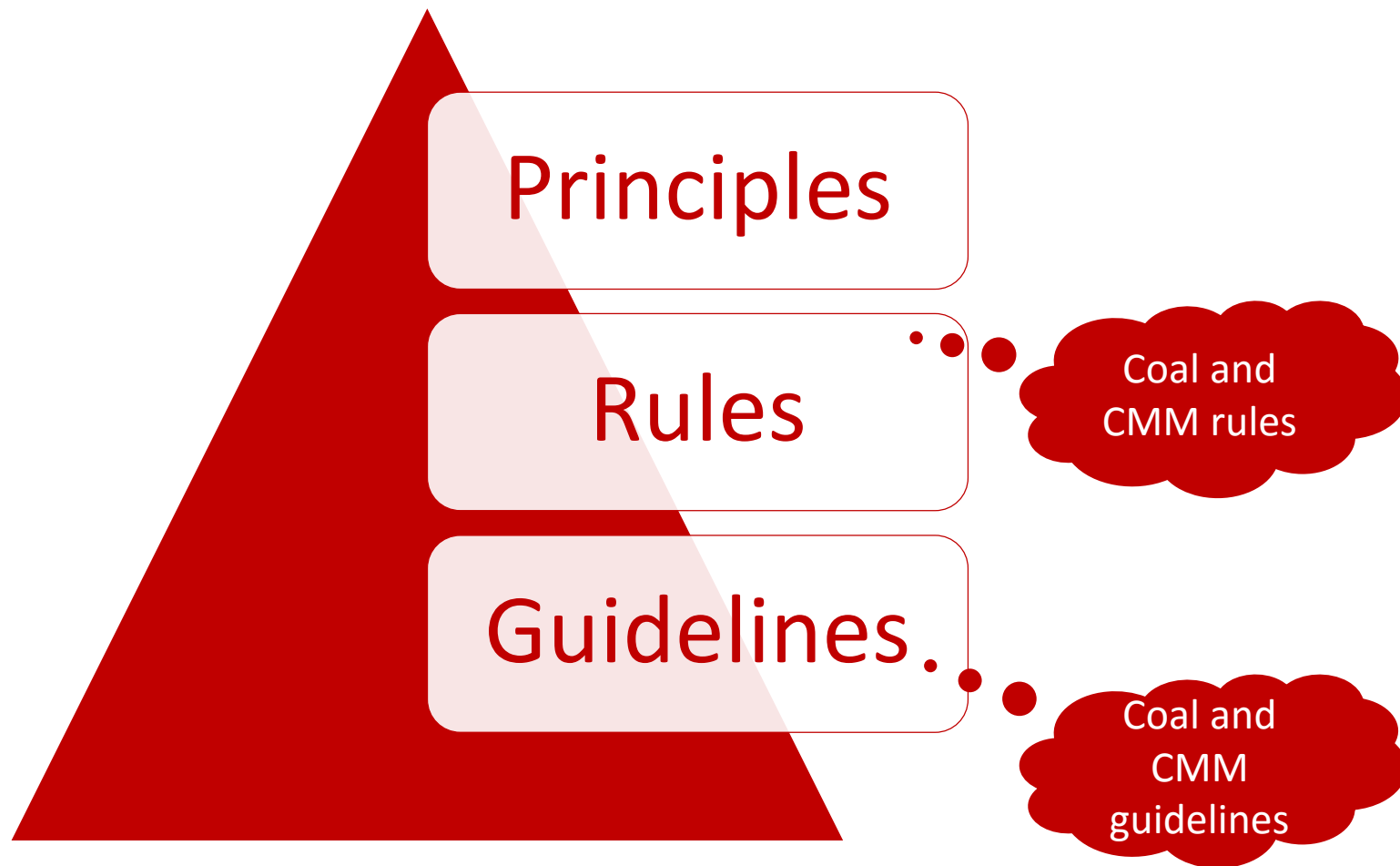
Project maturity based classification

High levels of granularity

Embeds project risks

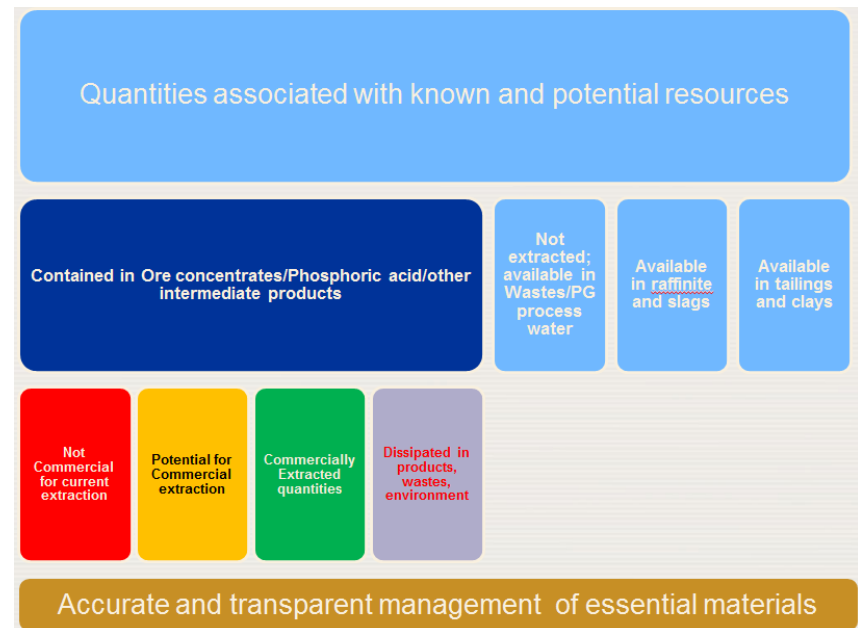
Helps investment decision making

UNFC structure

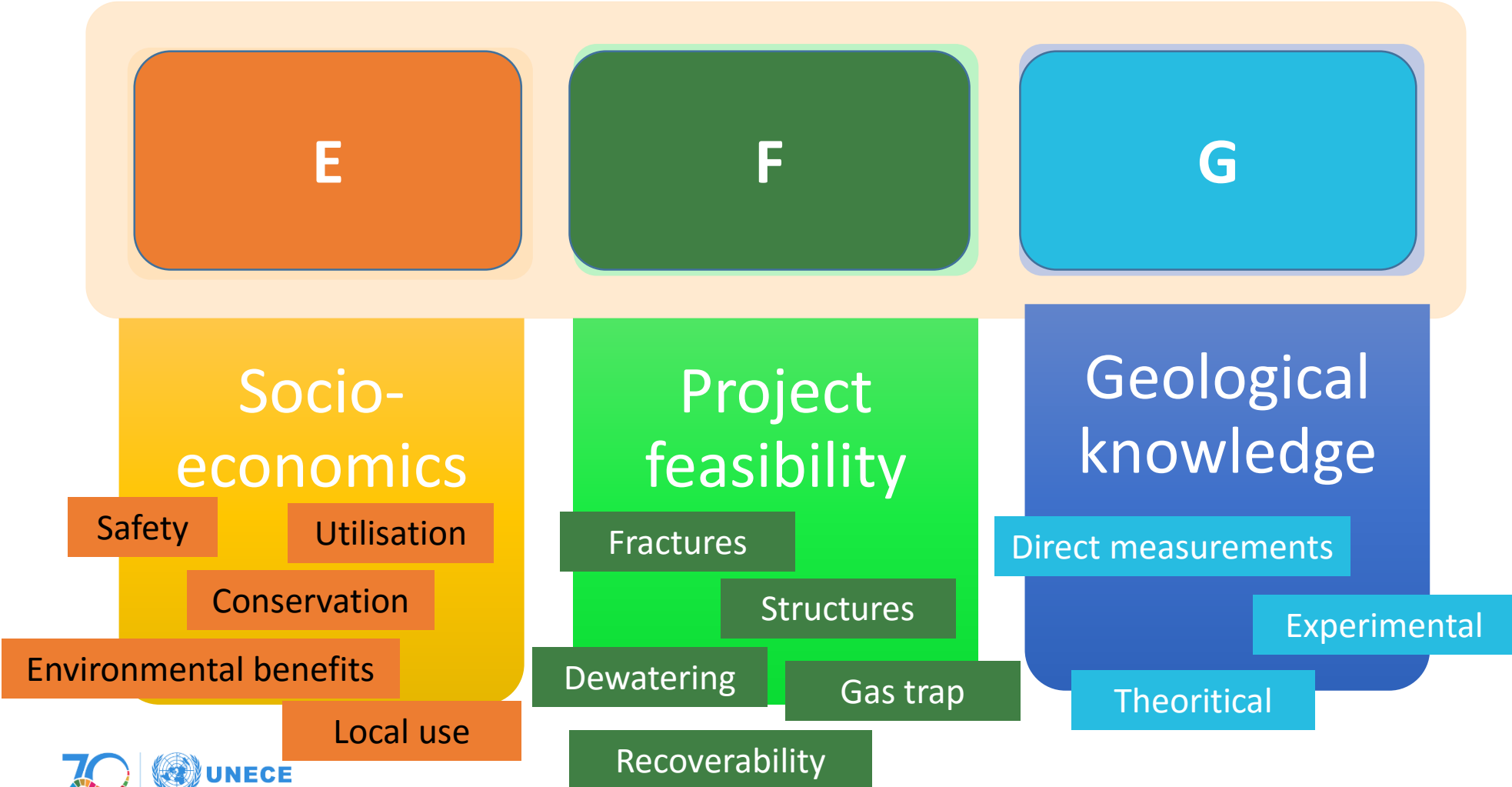


Assessing quantities – a “step down” process

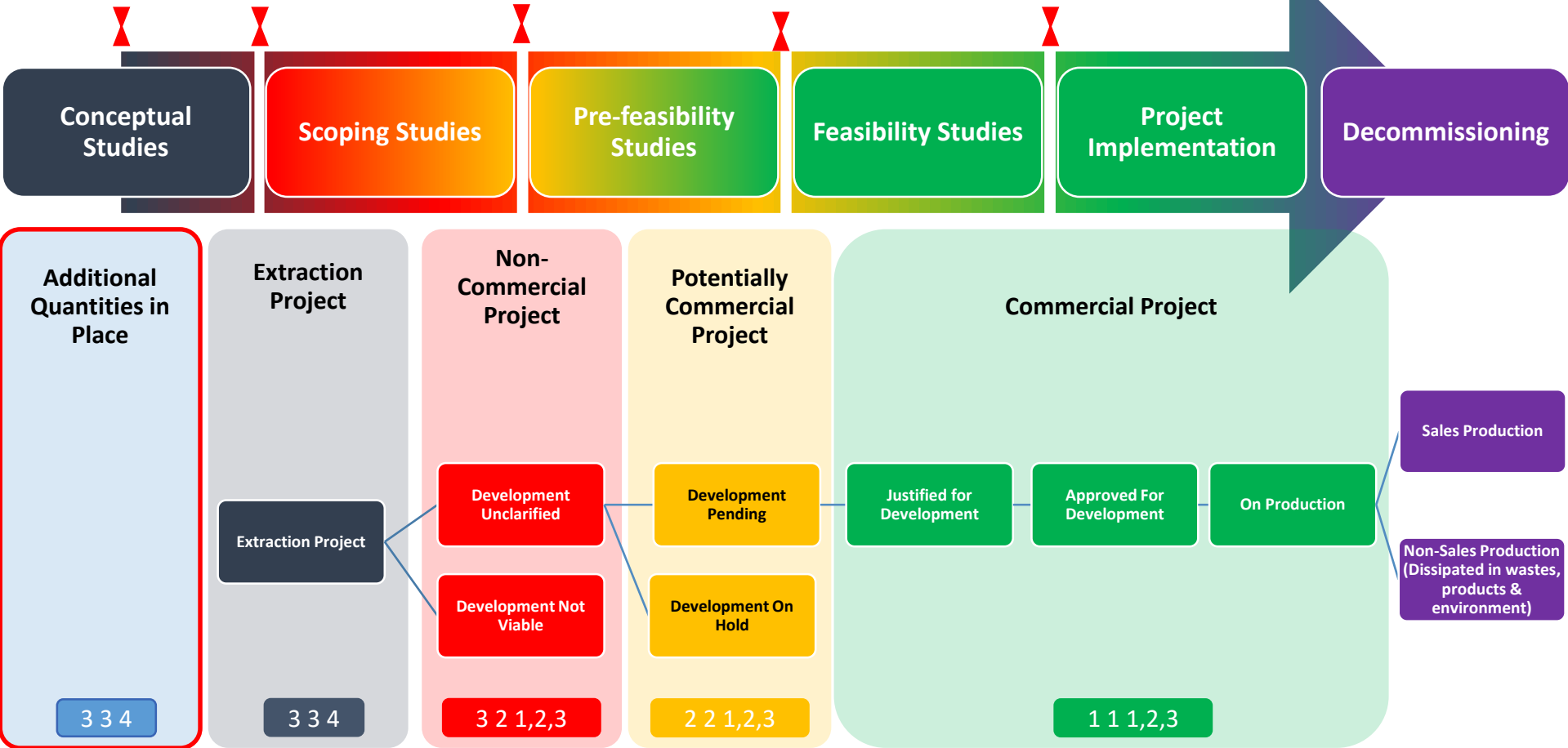
- Unconventional resources are 6-7x more than the primary) resources - proper assessment, classification and management required
- UNFC includes currently commercial, potentially commercial and non-commercial quantities



Classification of CMM resources



Comprehensive extraction lifecycle



Accurate and transparent management of energy & materials throughout the lifecycle

UNFC CMM GUIDELINES

To ensure that CMM resources at national and regional levels and individual projects are assessed in a consistent and globally accepted framework.

SOCIO-ECONOMICS

- Appropriation
- Valuation
- Accounting
- Disclosure
- Safety
- Environmental considerations
- Alternate business models

FEASIBILITY

- Co-production of coal and CMM
- Innovation (increasing productivity, minimize wastes)

GEOLOGICAL KNOWLEDGE

- Status of CMM resource
- Estimation issues
- Levels of uncertainty



Thank you!

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UNECE

Date 13 | 06 | 2017, Astana

