



Benefits and Challenges for Governments applying UNFC to Renewable Energy Projects and Resources

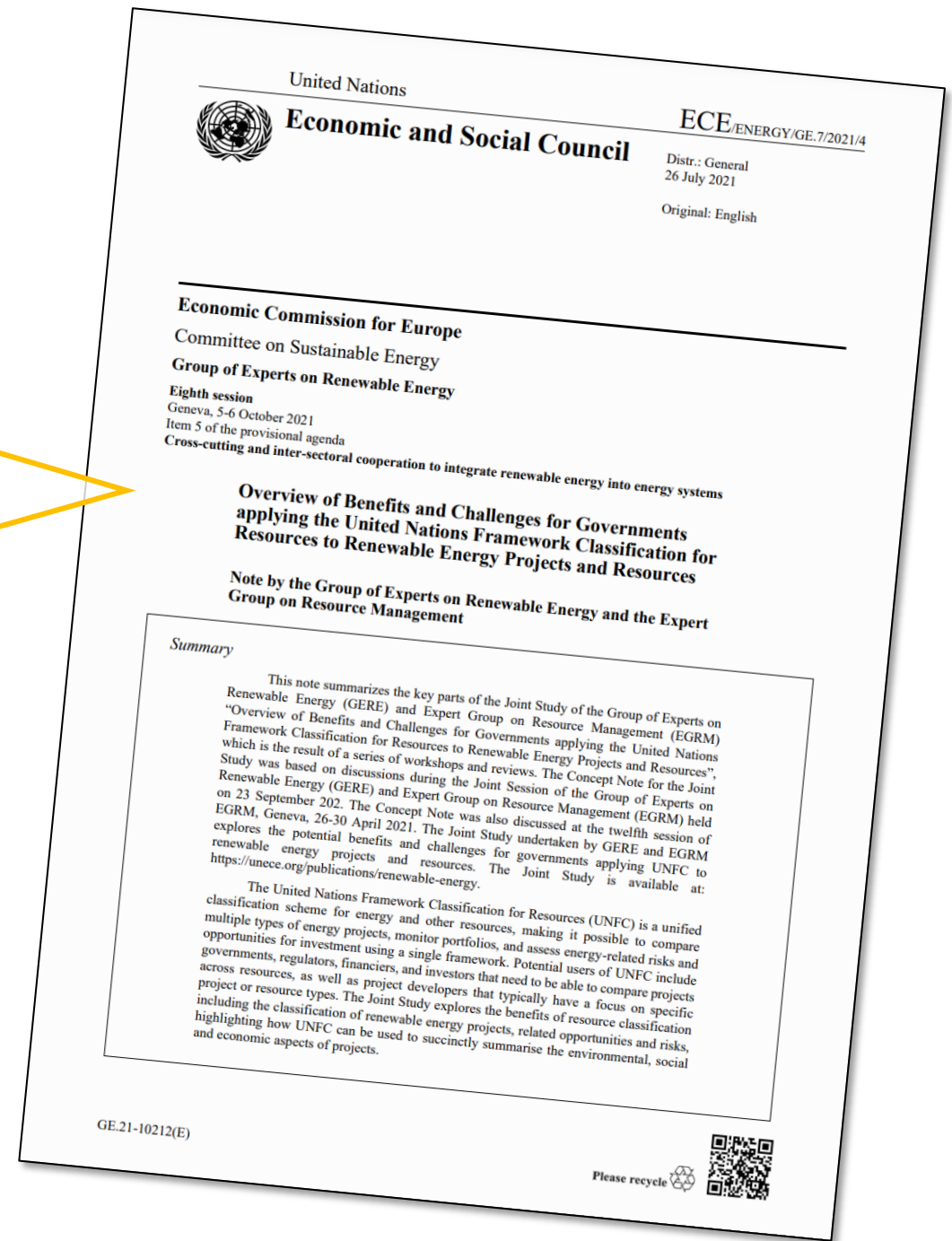
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Expert Group on Resource Management

The GERE and EGRM recently published this document

It addresses the question of why governments, or anyone else, might want to use the UNFC






Imagine you're a
policy maker

And you want to know which
resources have the most potential




We could use traditional renewable energy resource classification schemes



Traditional renewable energy resource assessments start with the theoretical resource potential

Resource potential

But not all of this energy can be used



The technical potential accounts for system,
topographic and land use constraints



**Resource
potential**

**Technical
potential**



The economic potential considers technology costs and revenues

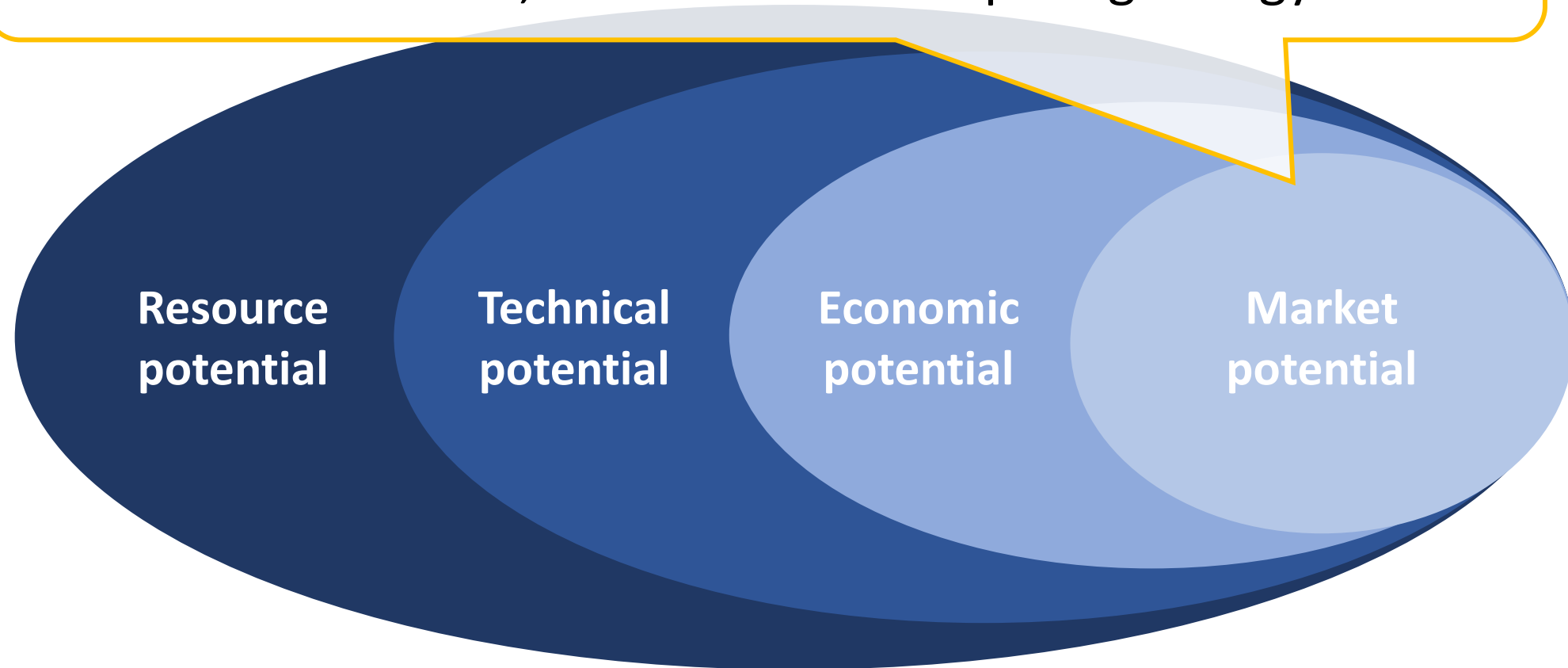
**Resource
potential**

**Technical
potential**

**Economic
potential**

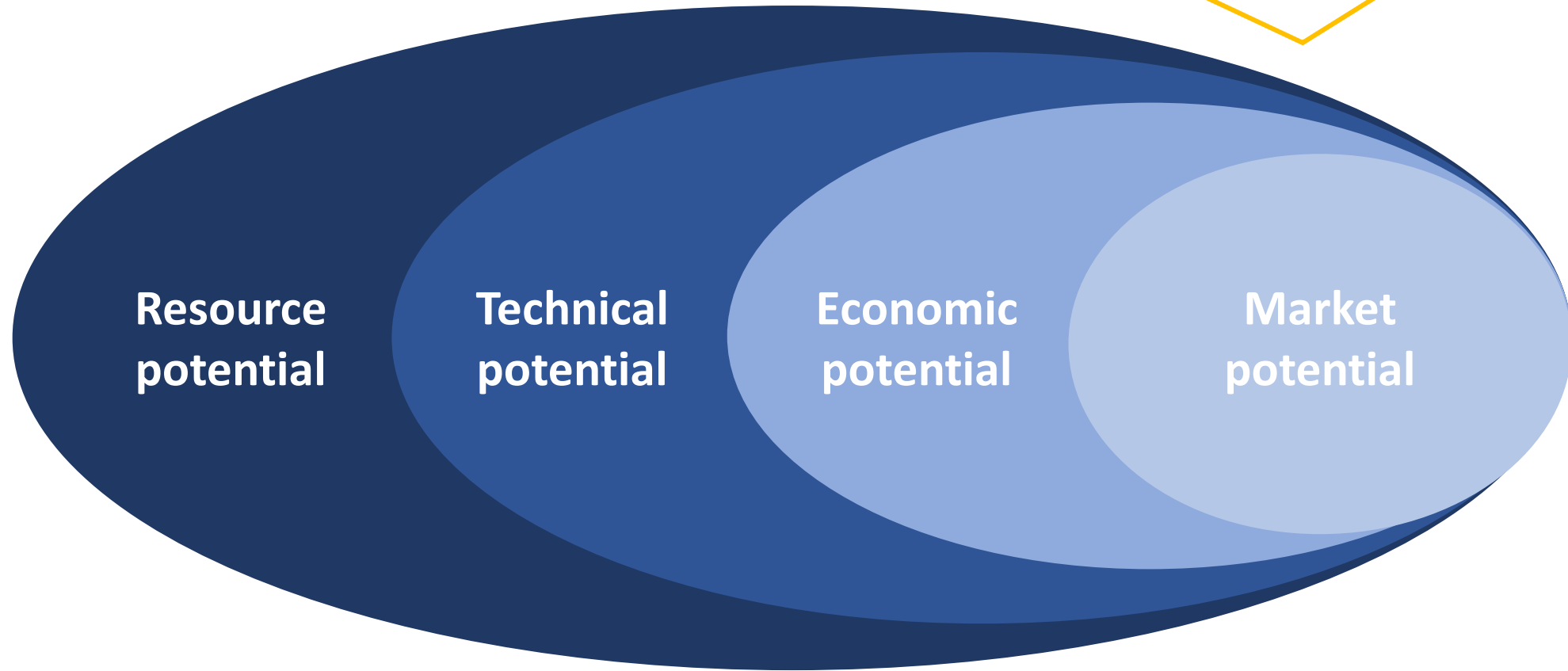


The market potential considers policies and regulations, as well as market conditions, investors and competing energy sources



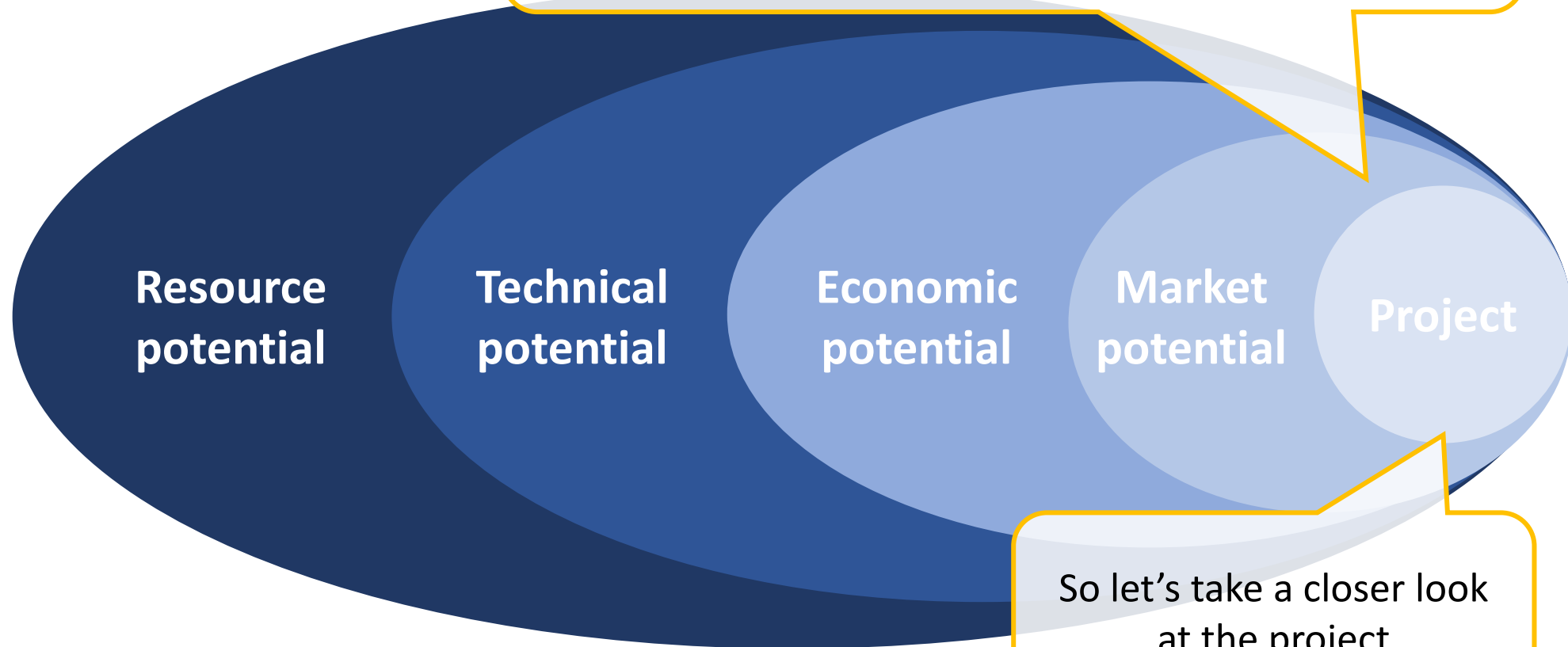


The UNFC is very similar to this classification scheme





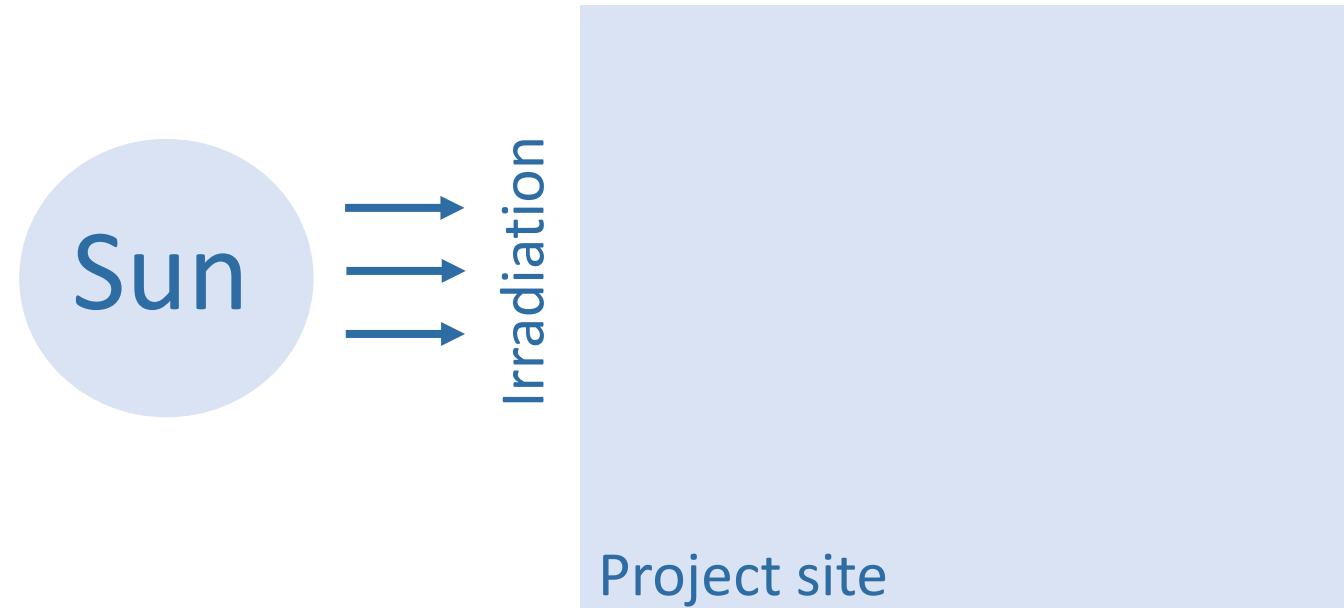
But instead of working from the top down, the UNFC starts with the project

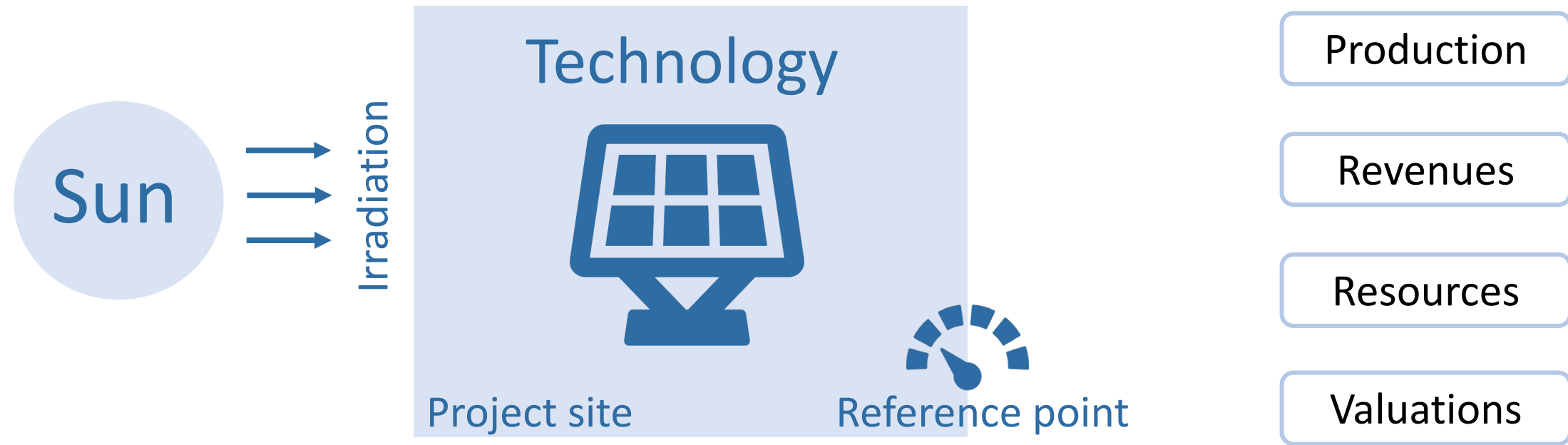


So let's take a closer look at the project

Starting with a solar energy example

Irradiation is the energy from the sun that reaches earth's surface





The reference point is the place where quantities and values are measured

For each of these estimates, there is a “degree of confidence”

Degree of confidence

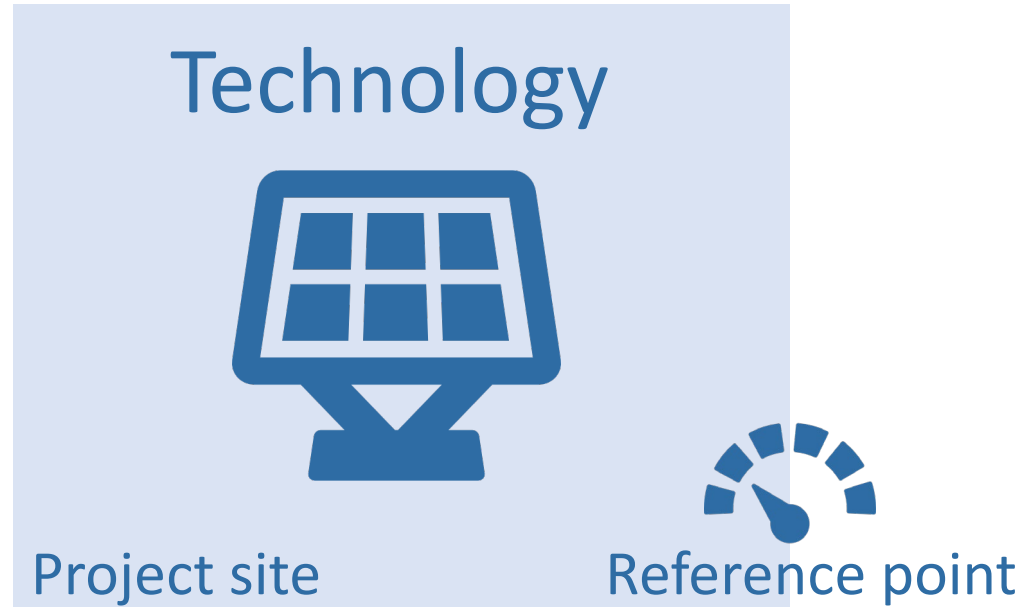
High | Med | Low

Production

Revenues

Resources

Valuations



Sun

Irradiation

Technology

Project site

Reference point

Another important factor is the technical feasibility of a project

Technical feasibility

Can not be evaluated | Subject to evaluation | Feasibility confirmed

Degree of confidence

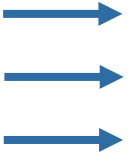
High | Med | Low

Production

Revenues

Resources

Valuations



Irradiation

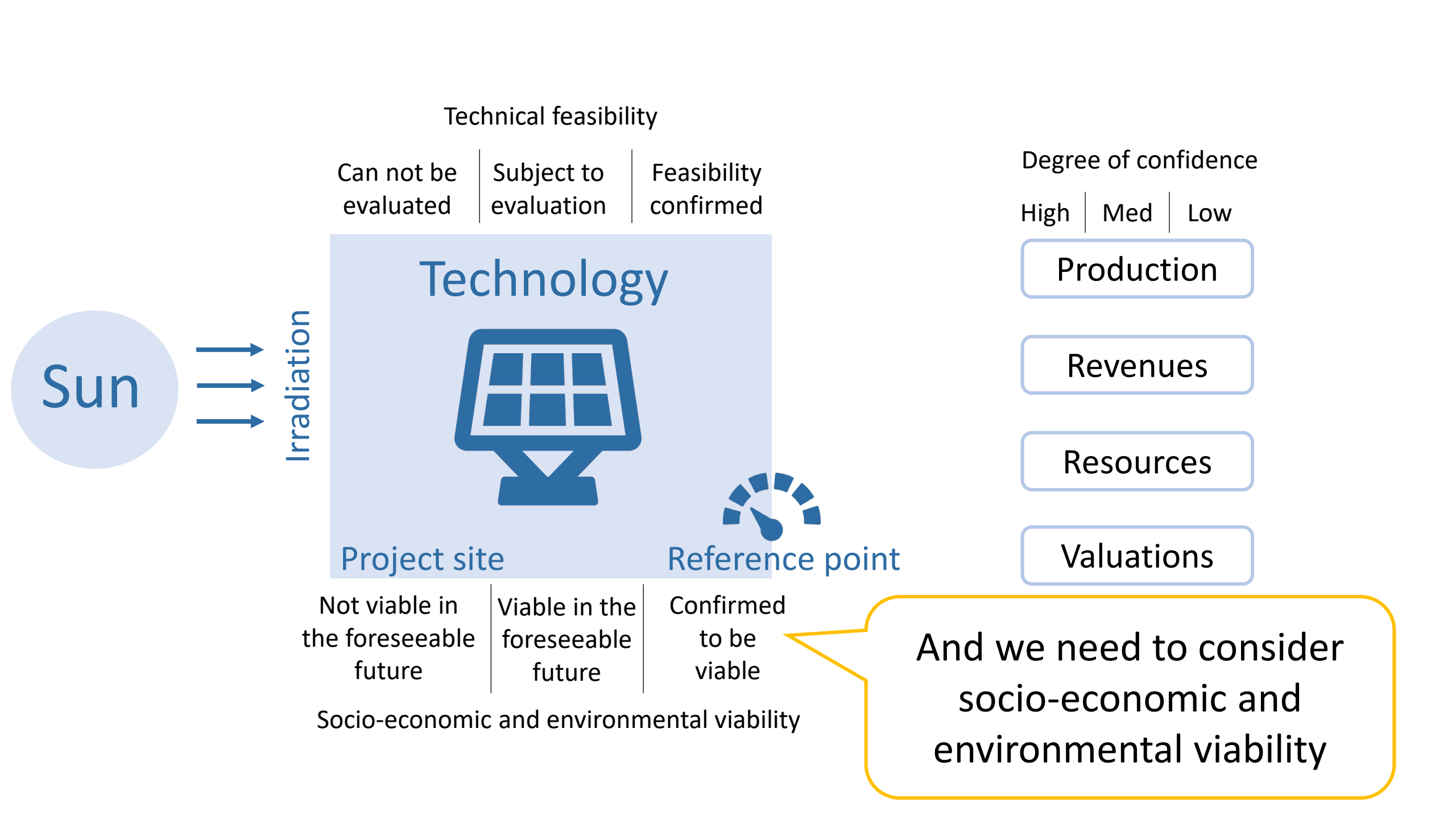
Technology

A blue icon of a solar panel mounted on a stand.

Project site



Reference point

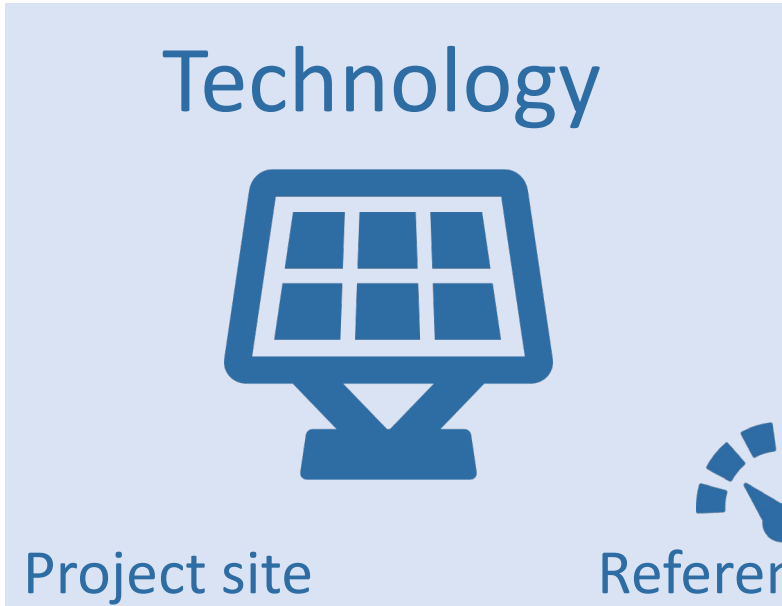


We can assess these things for solar projects

Technical feasibility

Can not be evaluated	Subject to evaluation	Feasibility confirmed
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Degree of confidence
High | Med | Low



Production

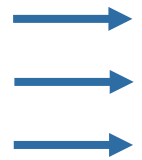
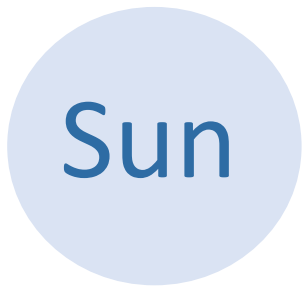
Revenues

Resources

Valuations

Not viable in the foreseeable future	Viable in the foreseeable future	Confirmed to be viable
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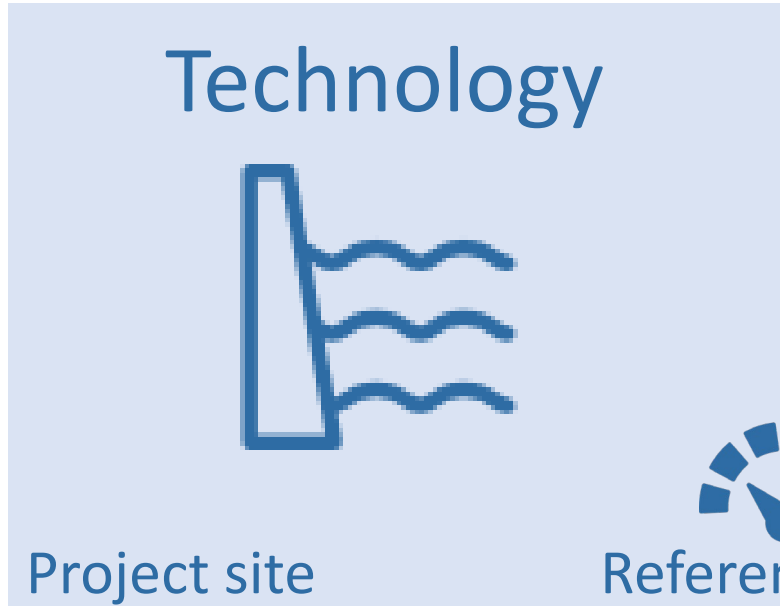
Socio-economic and environmental viability



Irradiation



Hydrology



Can not be evaluated	Subject to evaluation	Feasibility confirmed
Not viable in the foreseeable future	Viable in the foreseeable future	Confirmed to be viable

Socio-economic and environmental viability

Technical feasibility

Can not be evaluated

Subject to evaluation

Feasibility confirmed

Technology

Project site

Reference point



Hydro projects

Degree of confidence

High | Med | Low

Production

Revenues

Resources

Valuations

Wind, geothermal, bioenergy and other energy projects

Technical feasibility

Can not be evaluated

Subject to evaluation

Feasibility confirmed

Degree of confidence

High | Med | Low

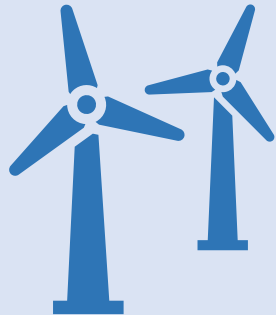
Production

Revenues

Resources

Valuations

Technology



Wind

Project site

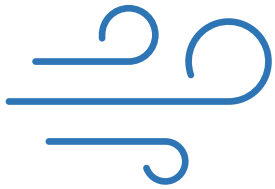
Reference point

Not viable in the foreseeable future

Viable in the foreseeable future

Confirmed to be viable

Socio-economic and environmental viability



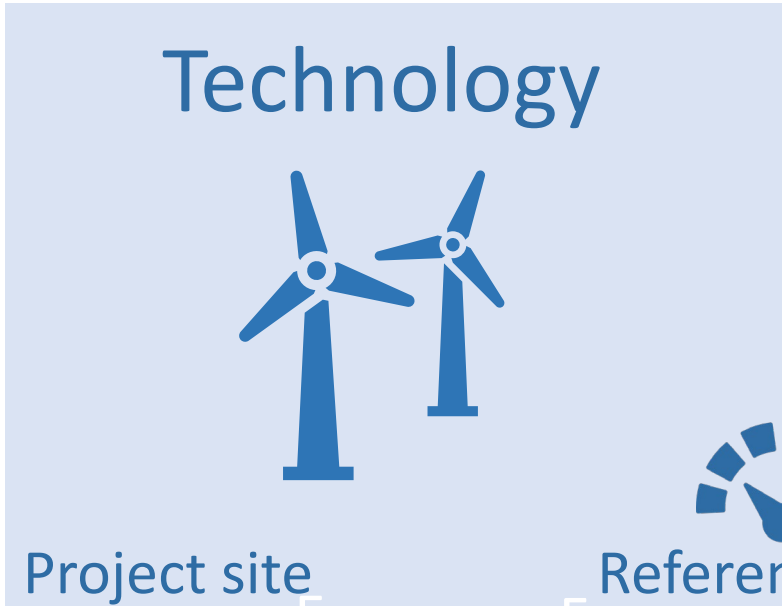
Most renewable energy projects already have these data

Technical feasibility

Can not be evaluated | Subject to evaluation | Feasibility confirmed

Degree of confidence

High | Med | Low



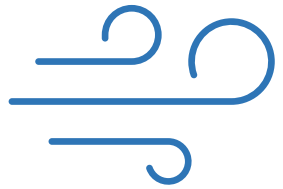
Production

Revenues

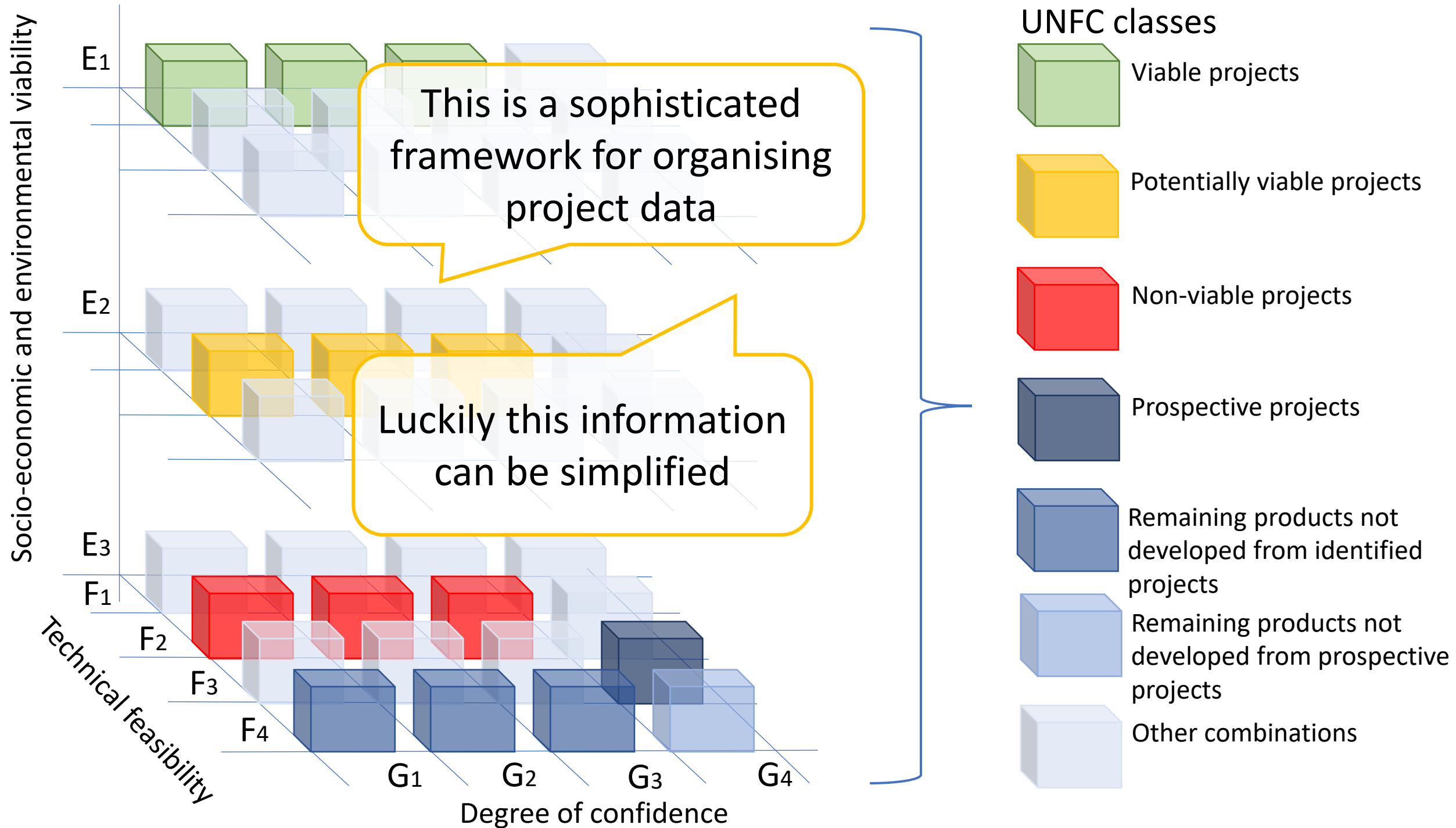
Resources

Valuations

The UNFC provides a framework for organising these data



Wind

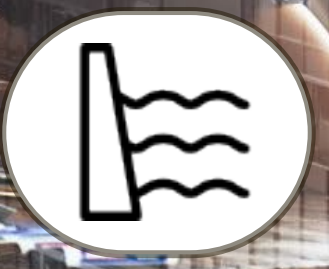
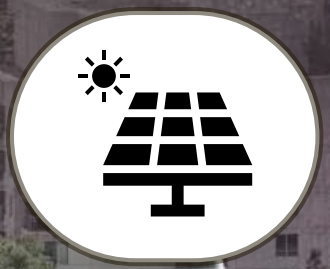


Total products	Produced	Sold or used production		
		Production which is unused or consumed in operations		
		Classes	Sub-classes	
	Known sources	Viable projects	On production	
			Approved for development	
			Justified for development	
		Potentially viable projects	Development pending	
			Development on hold	
		Non-viable projects	Development unclarified	
	Development not viable			
	Remaining products not developed from identified projects			
Potential sources	Prospective projects			
	Remaining products not developed from prospective projects			

The UNFC provides a set of project milestones

These milestones help us understand the maturity of renewable energy projects

So, who needs information classified using the UNFC?



We all need information on the project

Policy makers

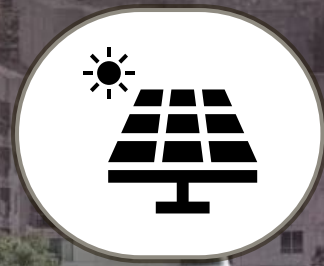
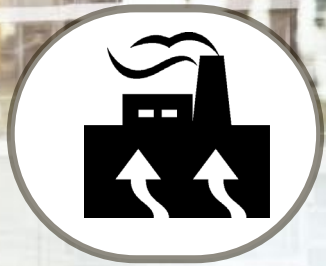
Portfolio manager

Lender

Regulator

Project developer

Equity investor



Socio-economic and environmental viability

Technical feasibility

Needs to monitor progress

e.g. permits, market conditions, and impacts assessments

Project developer

e.g. the reliability of technologies being used



Project “milestones”

Needs to monitor progress

Project
developer

On production

Approved for development

Justified for development

Development pending

Development on hold

Project maturity



Project
developer

Annual production estimates

Resource = Total production over lifespan of project

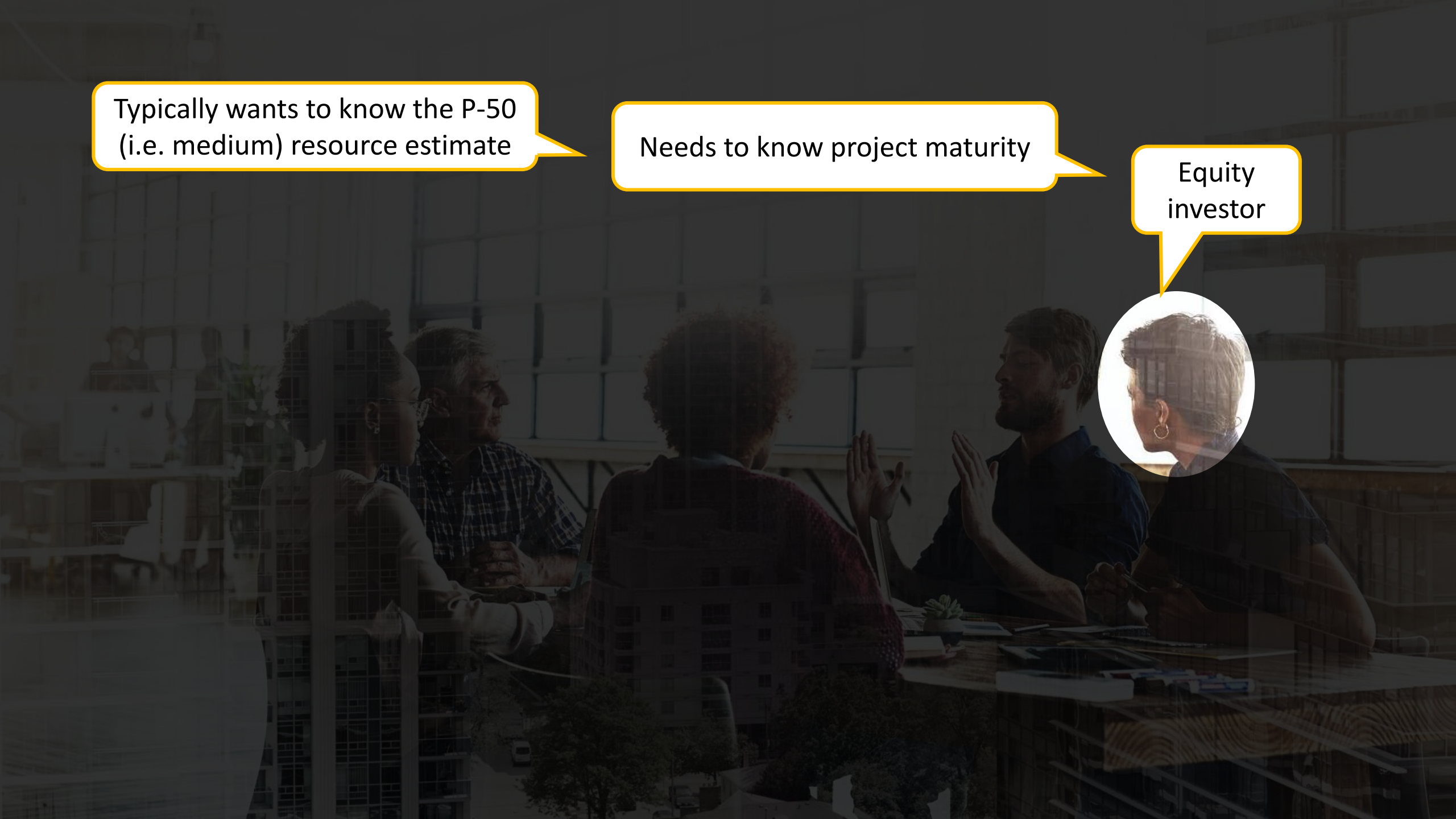
e.g. probability of exceedances P90%, P50% or P10%

Degree of confidence
(high, medium or low)

Typically wants to know the P-50
(i.e. medium) resource estimate

Needs to know project maturity

Equity
investor



Portfolio manager



Needs to know project maturity

And how this project fits in their portfolio of projects

It's important to have new projects coming through the "pipeline"

Project pipeline

On production

Approved for development

Justified for development

Development pending

Development on hold



Lender

Needs to know project maturity

Typically wants to know the P-90 (i.e. high confidence) resource estimate



Regulator

Monitors investments

Creates rules

Including rules on reporting

e.g. reporting to shareholders and stock exchanges

e.g. climate related financial disclosures

Need to understand resource potentials

This informs policy decisions

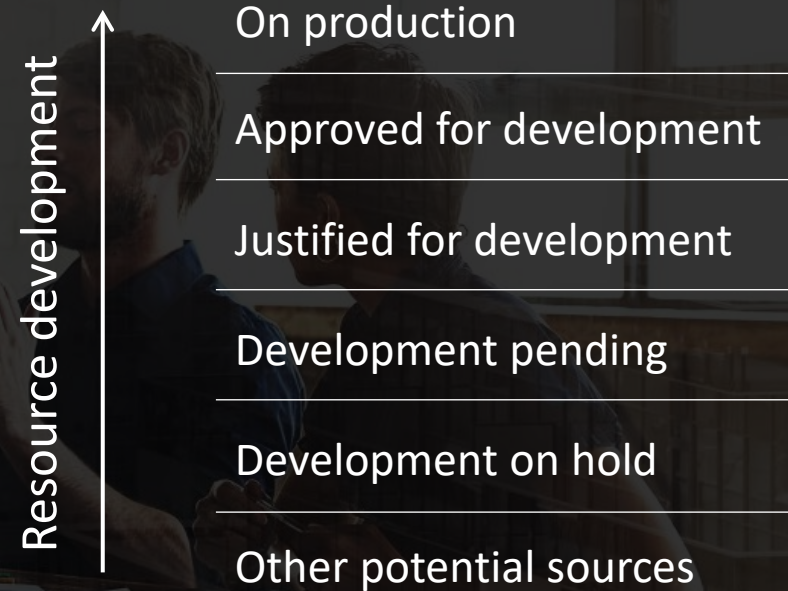
e.g. Which resources and developments to prioritise

Policy makers



Short term considerations

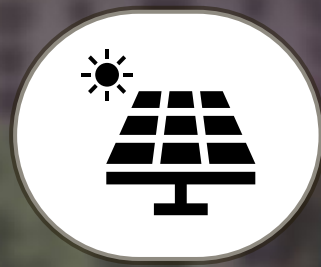
Long term considerations



The United Nations Framework Classification for Resources

Provides a common framework

Across users and energy types



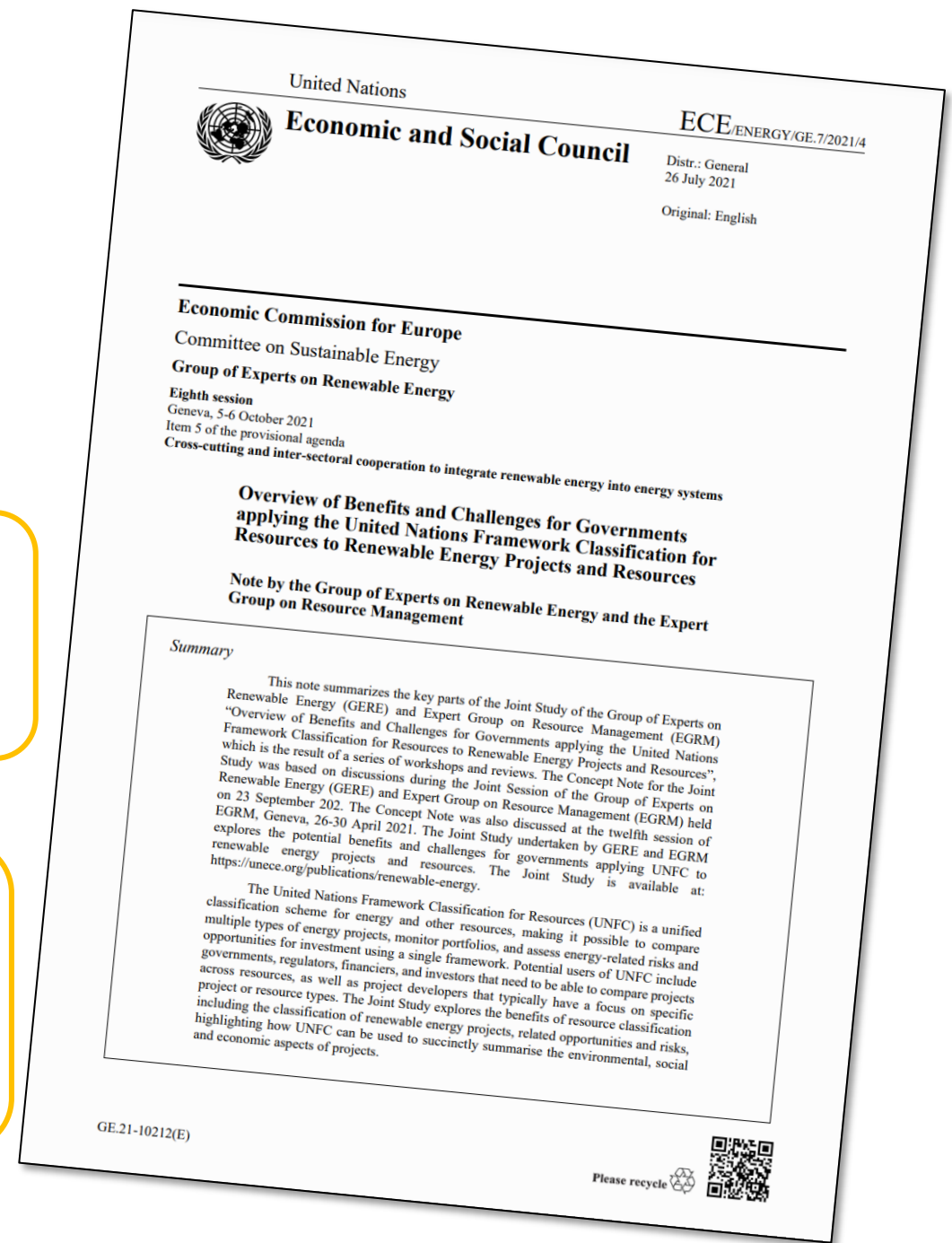
Benefits for governments include...

Informing long term planning

Understanding the project pipeline

Including energy transitions

Being able to compare all types of renewable and non renewable energy projects



Thank you



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