



# Global Storage Resource Analysis for Policymakers

Neil Wildgust

Project Manager – Geological Storage

IEA CCS Costs Workshop

Paris, 22<sup>nd</sup> – 23<sup>rd</sup> March 2011

# Introduction

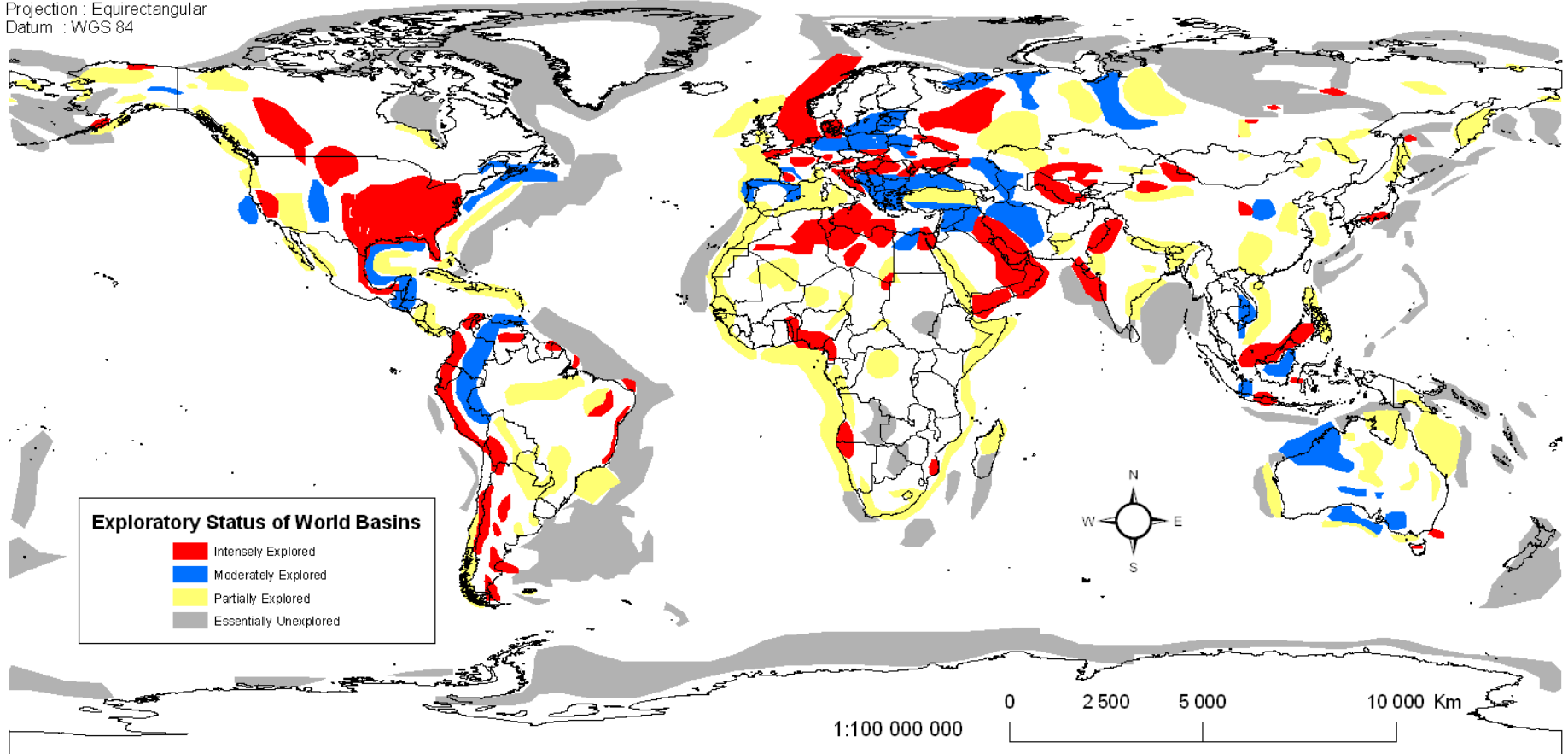


- Study being undertaken by Geogreen, and funded by GCCSI, commenced 2010, in progress
- Primary objective - Alert policymakers to the scale, cost and timing of the storage resource assessment, required to enable deployment of commercial-scale CCS projects by 2020: 20 projects envisaged by G8 Leaders, and 100 projects in IEA CCS Roadmap.

# Basin Exploration level



Projection : Equirectangular  
Datum : WGS 84



# Estimated project time line



Deep Saline Formation	IEA GHG Timing min	IEA GHG Timing max
Phase 1 Desk Based assessment	0.5	1
Licensing Exploration Permit	1	2
Phase 2 Site confirmation & characterization	1	4
Phase 2 Injection Test	1	4
<b>Bankable</b>		
Licensing Demo	1	2
Phase 3: Construction and Start up	1	3
Injection & Storage Demo	1	5
<b>Bankable</b>		
Detail design Commercial	1	2
Licensing Commercial	1	3
Phase 4: Construction and Start up	1	3
Injection & Storage Commercial	5	50
<b>Closure</b>		

Depleted Oil and Gas Field	IEA GHG Timing min	IEA GHG Timing max
Phase 1 Desk Based assessment	0.5	1
Licensing Injection Test	0.5	2
Phase 2 Site confirmation & characterization	0.5	1
Phase 2 Injection Test	0	0.5
<b>Bankable</b>		
Detail design Commercial	1	2
Licensing Commercial	1	3
Phase 4: Construction & Well integrity check	1	3
Injection & Storage Commercial	5	50
<b>Closure</b>		

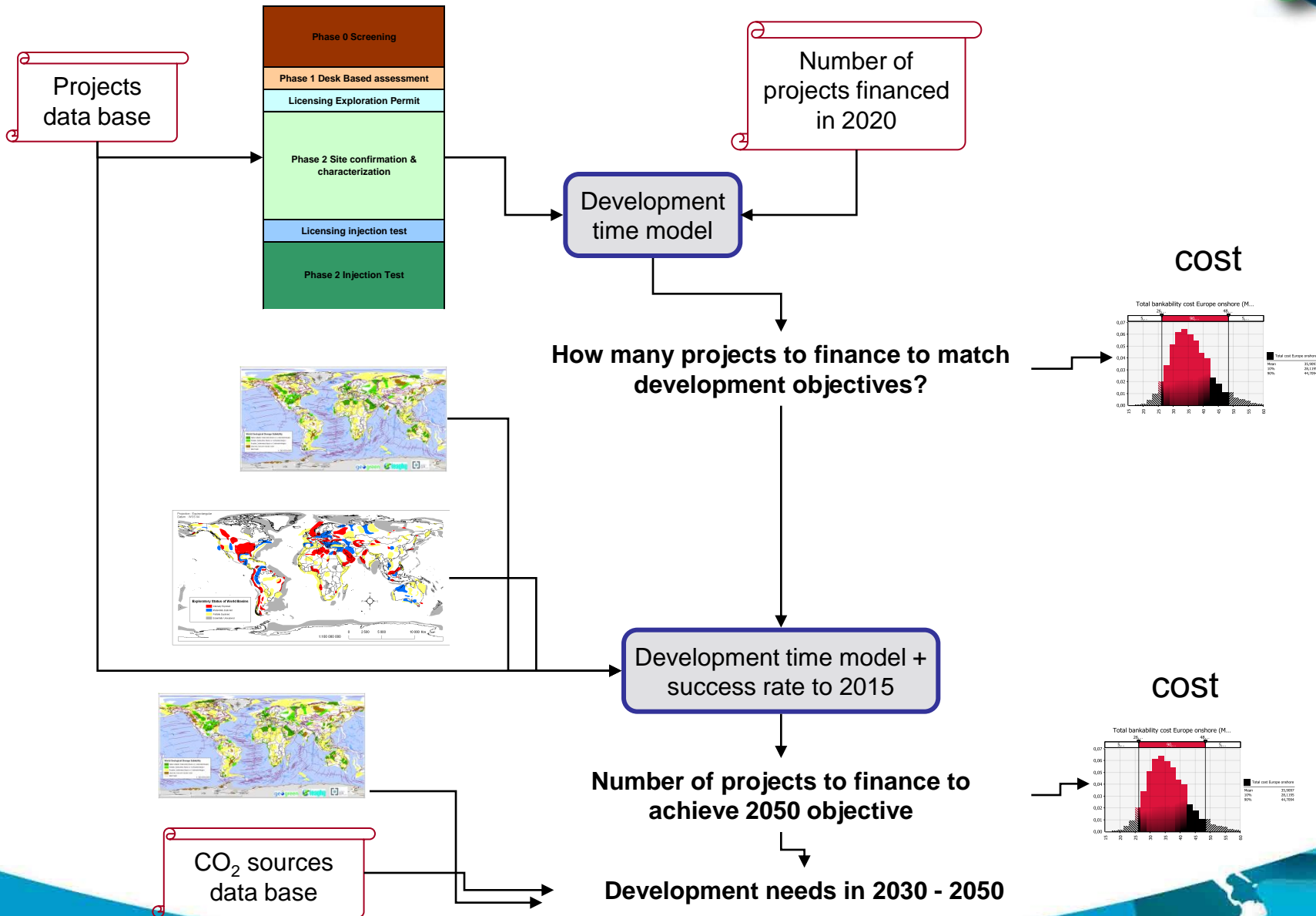
CO2 - EOR	IEA GHG Timing min	IEA GHG Timing max
Phase 1 Desk Based assessment	0.5	1
Licensing EOR Test	0.1	0.5
Phase 2 Construction and Well assessment	0.5	1
Phase 2 Injection Test	0	0.5
<b>Bankable</b>		
Detail design Commercial	1	2
Licensing Commercial	0.5	1
Phase 4: Construction & Well integrity check	1	3
Injection & Storage	5	10
<b>Closure</b>		

# DSF Bankability workflow



Type of study	Phase	Major costs items
National based <i>Non exclusive surveys</i>	Phase 0 Screening	First desktop studies
	Phase 1 Desk Based assessment	Desktop studies, where possible seismic reprocessing and existing logs analysis (including communication on project)
Project based <i>Exclusive surveys</i>	Licensing Exploration Permit	Administrative engineering and follow-up
	Phase 2 Site confirmation & characterization	Studies and engineering for this phase (including monitoring action equipments and monitoring (soil, gravimetric, Insar)) Seismic acquisitions 2D Seismic acquisitions 3D (on CO <sub>2</sub> future plume only)
	Licensing Injection test	Civil Engineering Injection test permitting
	Phase 2 Injection Test	Drilling CO <sub>2</sub> well with rotary rig (including 20% contingency including Mob/demob) Studies and monitoring Injection test duration CO <sub>2</sub> injection cost
<b>Bankable</b>		

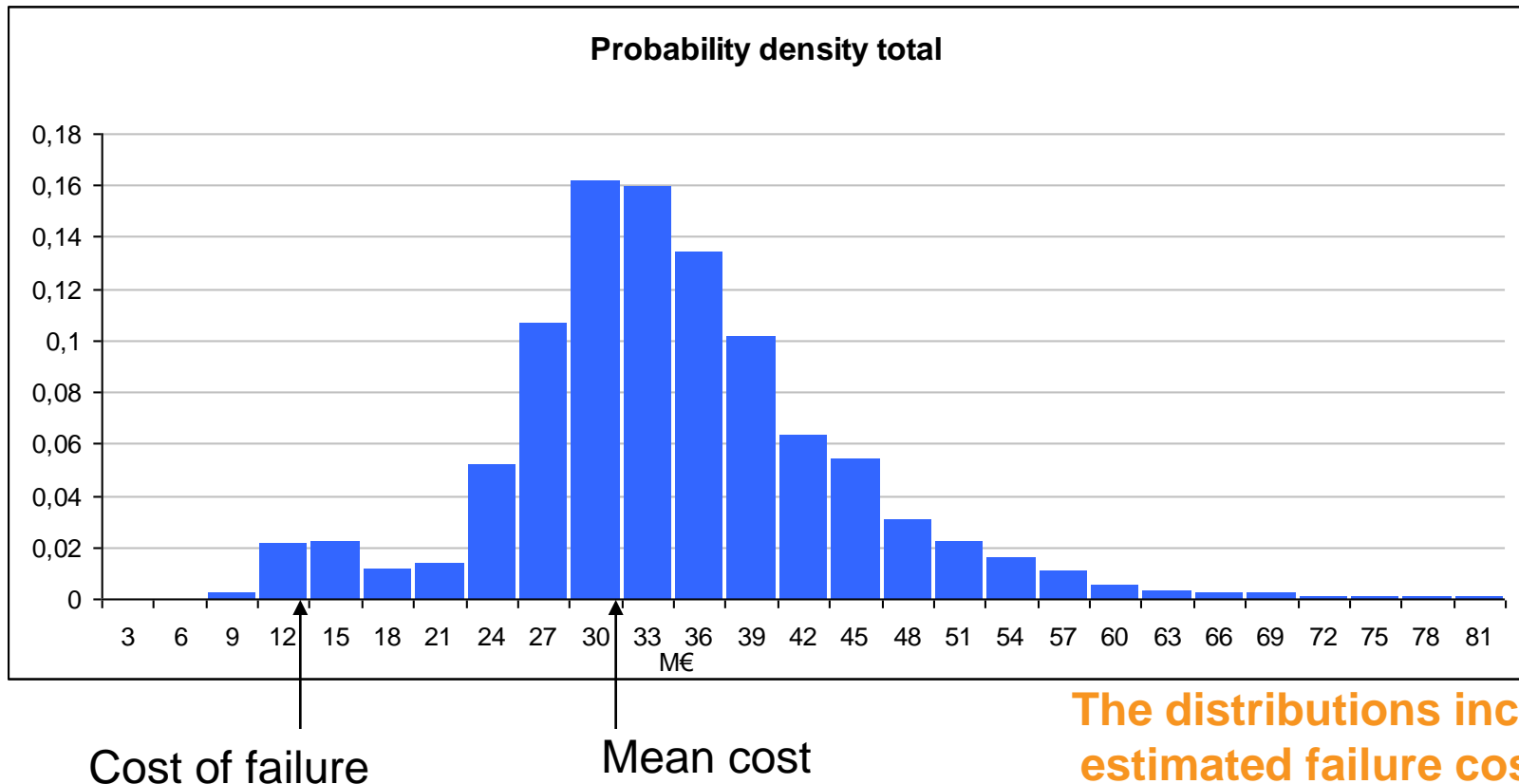
# How many project will be bankable in 2015? in 2050?



# DFS European project cost



Total cost distribution for onshore bankability for an intensely explored area



The distributions includes estimated failure costs of data acquisition, wells...

# Costs – key points



- Cost models are considered for onshore and offshore storage options both in Deep Saline Formations and Depleted Oil and Gas Fields
- Take account of failed storage sites
- Numerous possibilities for each site to reach a successful path
- Cost models include an assessment of the economic uncertainties of project bankability
- Draft Report delivered March 2011





**Thank you**