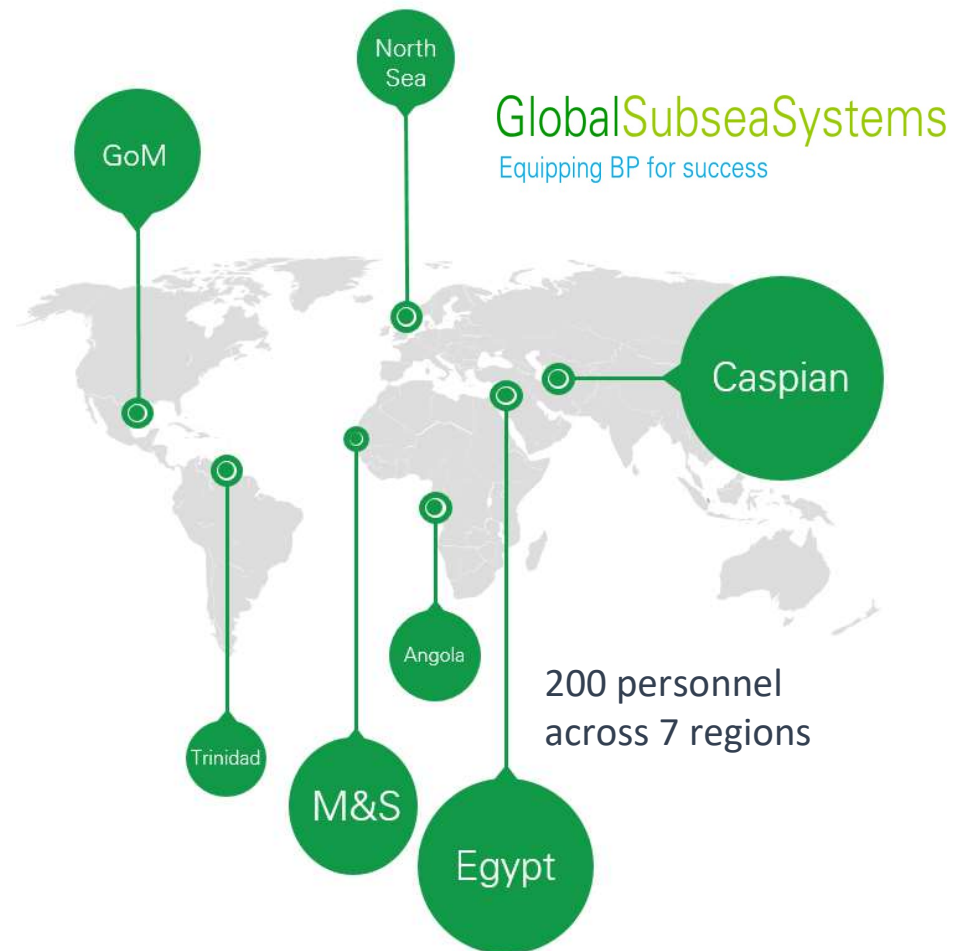


An Operators Perspective : The subsea cost challenge

Steven R Makin – Director Global Subsea Systems
BP



1. Subsea response to industry downturn



GSS manage approx. **\$1bn** capital spend per annum on SPS equipment across BP's portfolio

- 7 Subsea Regions, 10 major projects
- 301 Trees, 5000km of Subsea pipelines
- 171 Umbilicals, 100 Manifolds
- 286 Jumpers

Up to **40%** of BP production comes from subsea assets

BP formed a 'centrally' managed, single global subsea team for SPS within the BP organization.

- Centre of Excellence
- Significant efficiency.
- Single voice to the supplier
- Life of Field Approach
- Continually improving
- Technology focus

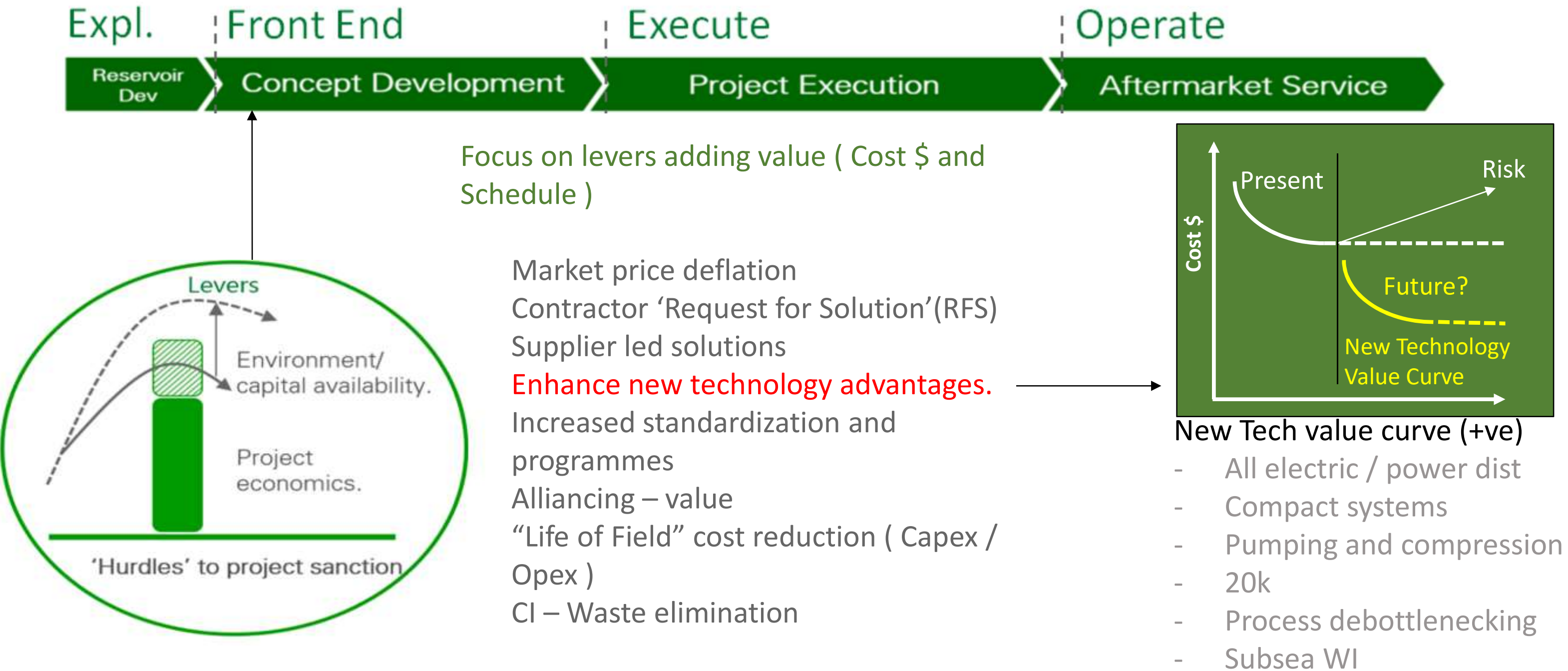
2018 – BP formed a **NEW Global Subsea Execution (GSE) group**

- Increased capital rigour.
 - Cost Conscious workforce
- Keep existing assets full of product
 - Subsea tie-backs
- Modernisation and Transformation
 - Continuous Improvement agenda
- Improved collaboration with industry suppliers
- “Life of Field” value approach
- Improved focus on technology enablers

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2. Value in the Front End (Initiatives)



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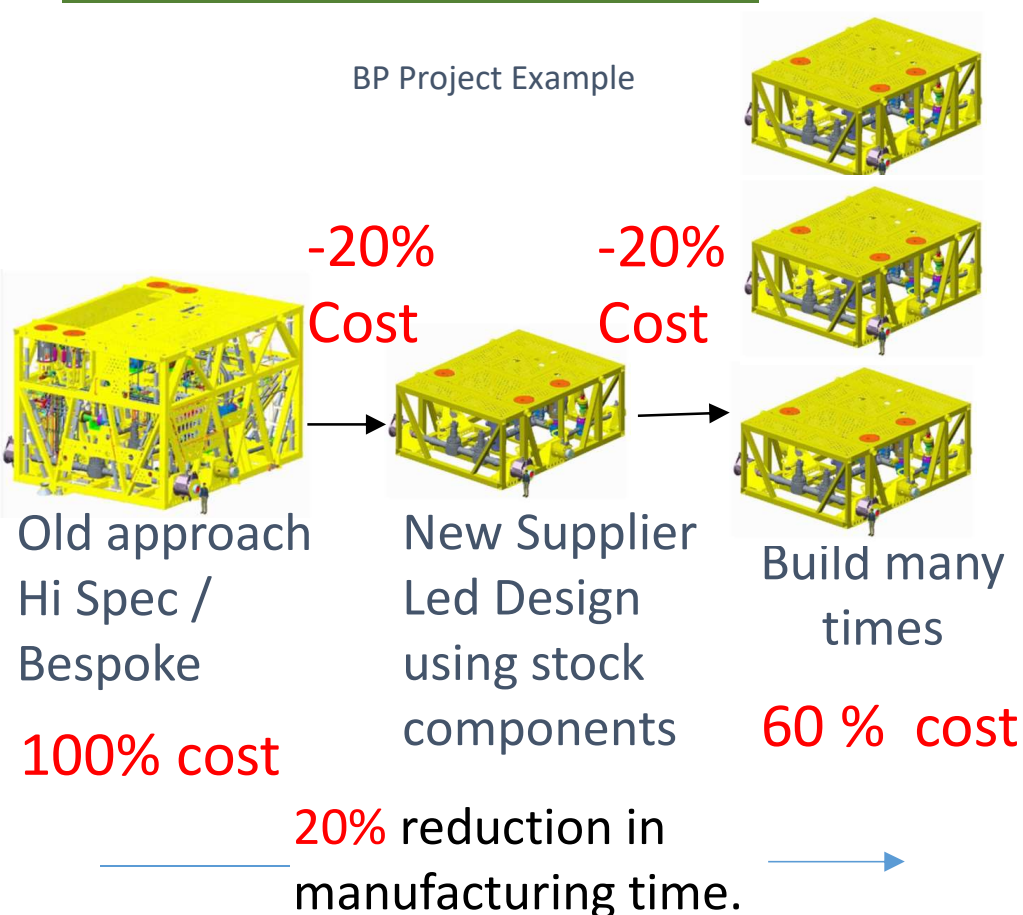


3. Value Improvements – Efficiency Areas (Initiatives)

Capital efficiency is improving through early subsea contractor collaboration at concept development stage and throughout execution.

Improved Collaboration

BP Project Example



Significant cost savings

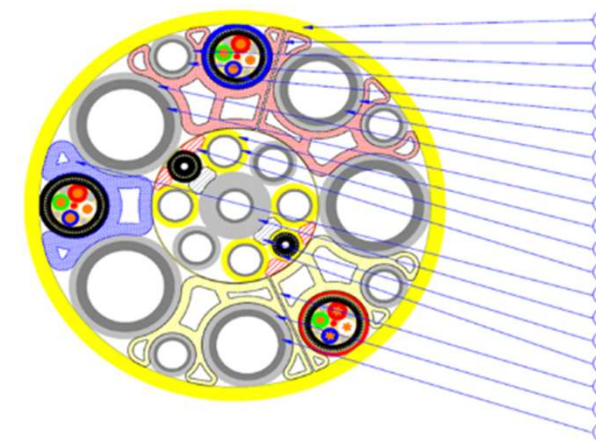


Reducing Waste

Enhanced planning:
Re-use of Project 1 subsea production system (SPS) equipment on a subsequent Project 2 in a programme .

Simplification

Project A: BP optimised functional requirements reducing the production umbilical scope and simplified the design.
>\$100MM cost saving (42% against the budget).



Recent projects performance

- GP3 value increase
- Taurus Libre 4-6 months early
- MD2 40% reduced SPS cost

Digital

DATA – Operational feedback for equipment enhancement.
CM – Condition monitoring to drive up reliability / predictive failures to avoid Production outages.

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4. Value Improvements – Quality (Initiatives)



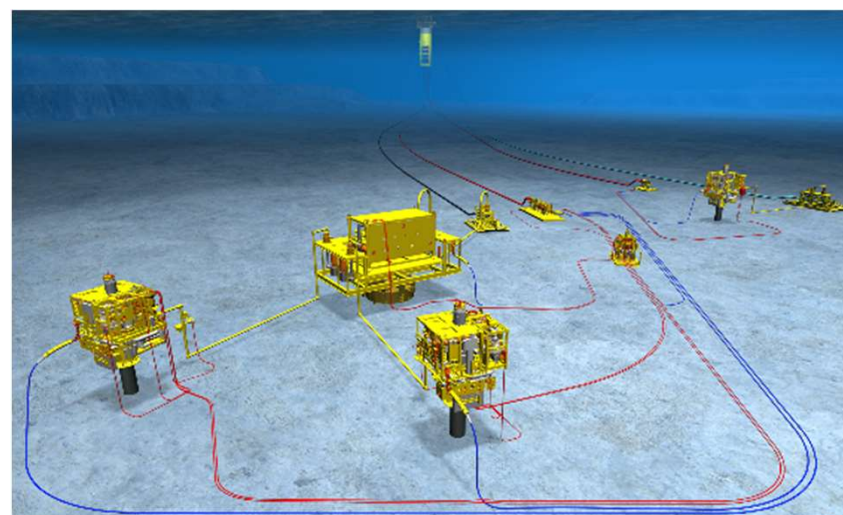
Inspection Strategy

Move to risk based verification vs excessive blanket inspection. 60% reduction in inspections costs. Schedule improvements due to ITP simplification / hold elimination

New Technology

Eg. Compact Manifold / Trees

- Repeatable machining / manufacturing vs Fabrication – Reduces quality issues.
- Single block - reduced components / simplification.



Remote Inspection / Digital

Use of technology to progress remote inspection. Allowing a reduced resource to cover a global broader foot print faster and more cost effectively.

Data book digitization improving speed

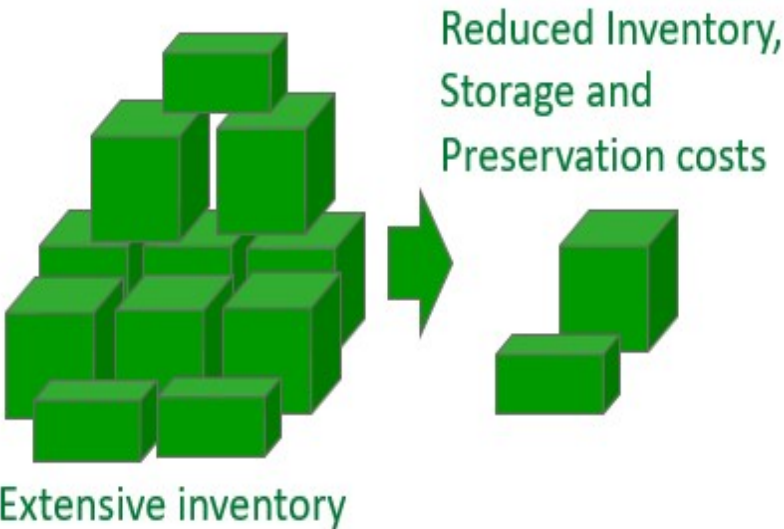
Driving down NPT / NCRs / Timelines



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5. Inventory Mgmt / Optimization (Initiatives)

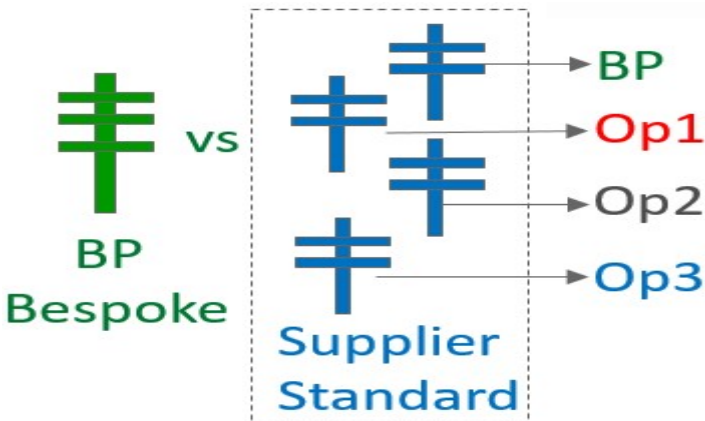


Inventory Reduction

Focused and simplified inventory mgt, tracking and disposition.
Gross regional subsea Inventory reduction. Plus site consolidation / centralization.

Supplier Standard Equip.

Increased use of supplier/ industry standard equipment – Reduced part numbers / sparing. Rely on suppliers to hold sparing at component or assembly level.
Standards trees - Off tree bespoke items.



Rental vs Purchase

Increased use of rental vs purchase equipment/tooling to reduce storage, preservation maintenance costs.
Elimination of tooling through technology.

Obsolescence Mgt

Obsolescence mgt – reducing the cost of failure.
Updating technology to displace previous designs / obsolescence and backward compatibility

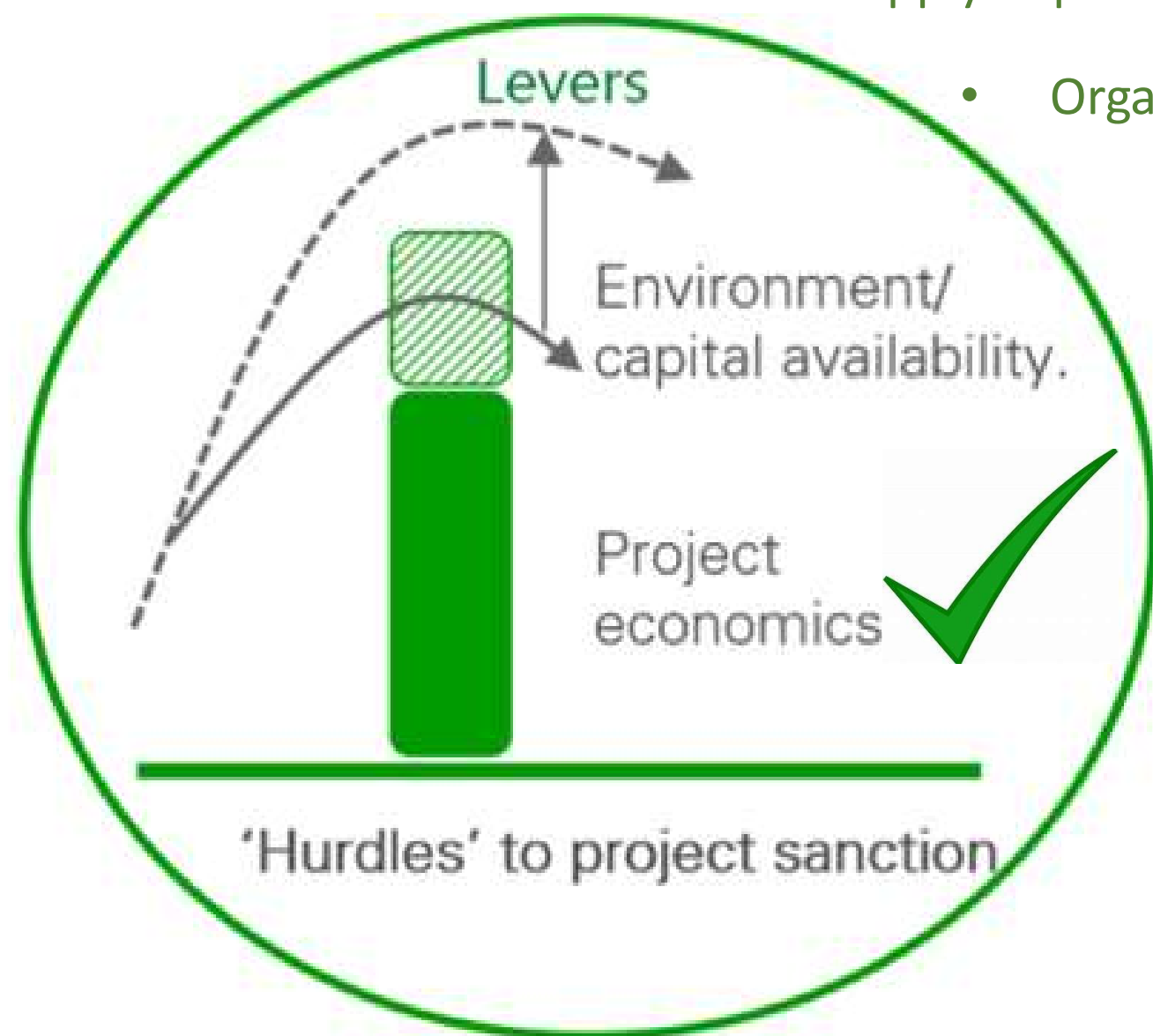


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In Summary – Sustaining the new approach

- Apply Capital Rigour – Keep existing assets full approach
- Organize for the journey ahead
- Improved collaboration with industry suppliers in the value adding frontend.
 - M+T – Drive a mindset of continuous improvement
 - Initiatives : Understand levers to jump the higher project hurdles



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