



Slide 1 (0m:57s)

- My name is Janko Reinders and I am a senior subsurface and wells consultant with dss+.
- Our group’s purpose is to: *save lives and create a more sustainable future.*
- We do this by partnering with our clients to *:protect their people, assets, and licence to operate, transform their businesses holistically and strive towards sustainability.*
- Today I am honoured to share with you the presentation to our paper submission:
Decommissioning & Restoration: “Early

planning is critical to an efficient and risk-minimised process”.

I like to acknowledge Quinton Crew, Robbert de Weijer and Kylie Seccombe. Authors and instrumental to creation and completion of our paper as well as Scott Hastie for supporting our submission



Asset decommissioning and restoration

Impacted organizations and governments will require a significant mind-set shift:

 Volume	In 7 years 380 fields to be decommissioned in Asia alone
 Integration	Reputation affected by isolated D&R teams
 Project Management	Unconventional timing of planning & cost

© DSS 2

Slide 2(4m8s)

- There is a lot of energy around asset Decommissioning and Restoration (I shall call it D&R from here on out).
- Especially as we embark into transitioning to new energies we require significant and continued focus on this final stage of the oil&gas asset's life.
- Impacted organisations and Governments have to deal with associated challenges. In essence, any company that owns field and governments with oil&gas assets in their territory, bear responsibility.
- The requirement to act effectively is a mindset

shift that has sunk in over the past decade and we are acutely aware of this today.

- (Note that historically the decommissioning vision was secondary to the development and a necessary evil. And there is still tension in this space).
- The scope we are considering includes not only legacy brown fields but also new assets that come online today and the future prospects in the decades to come.
- Until we have fully transitioned to the new energy mix. A lot of the decisions made today will indirectly and directly affect D&R.
- In order to make our current and future developments sustainable we need to ensure D&R can be done effectively and that NO legacy problems (such as for example spewing zombie wells at sea) will resurface for our children.

About Volume:

- In Asia alone we have a mammoth task that requires unilateral international coordination by companies and governments to act in a timely and safe manner.

About Integration:

- We see that D&R is generally deemed very important, however still not fully integrated and

accepted and consequently in the fibre of many companies.

- Funding is released to mature D&R, but the multiple challenges and hence associated RISK exposure may not be adequately understood and monitored until late by leadership teams or even only if prompted by regulatory bodies.

About Timing and Cost:

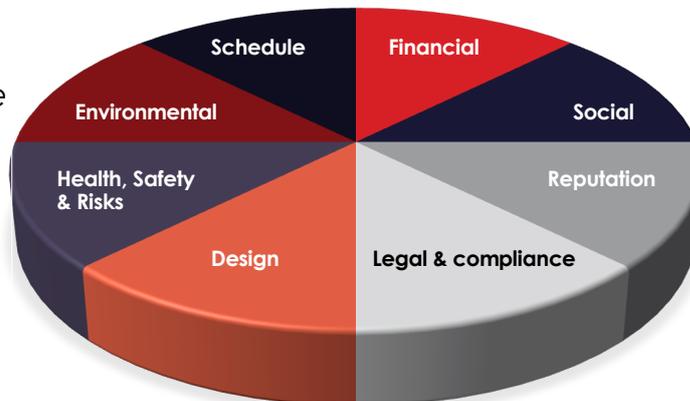
- We acknowledge that there is a delicate balance, especially as fields getting older, and hence less profitable recoverable volumes.
- And more often we see that fewer new volumes are available due to the difficulty in obtaining new exploration blocks and licenses by governments. This includes social licences to operate.
- When to call it a day, either with individual wells (and some volumes left) or with the asset as a whole to restore it to its pre-development conditions.
- Inevitably there will be more tension between what is still safe to produce and un-economic to stop.
- New prospect need to be lucrative, attractive and profitable. We do not want to have the (Dutch) cheese eaten off your bread by extensive Decommissioning planning and overly expensive designs before Final Investment Decision is even taken of the new development.
- Have you thought about the impact of the

common scenario that ownership of an asset has changed (and often multiple times) and there is no idea what has happened in the interim of 20 years?

- Either for incumbent/current owner, or if the original owner has been held liable to D&R this can be a major issue and exposure.

Key value drivers affect project health significantly differently than in a conventional project

“Extensive corrosion of the installation has resulted in unforeseen and significant cost blowouts plus delays”



“Well abandonment and site restoration, closely followed by media and community. It affects future opportunity maturation”

“Safe decommissioning would have been infinitely easier if abandonment had been considered during the design”

Slide3 (1m5s)

- Although the subject of D&R is large, multi-faceted and carries unique challenges, It is not all bad.
- D&R can be approached as a project.
- Important difference between conventional and D&R projects are the value drivers which will ultimately help determine the timing of when things will need to be tackled and what the associated risks are.
- We identified 8 different key value drivers to be considered.
- It is ultimately the lack of recognising the D&R value drivers that could result in for example:
 - (click 1) Risks leading to ABEX cost blow outs and delays
 - (click 2) Highly complex D&R as this was not considered during field development design.
 - And
 - (click 3) Scrutiny by the local community, affecting your reputation
- Consolidated into a practical, operations-centric framework these will support the business scorecard, as the value drivers will provide clarity.

How to confirm D&R project health?



Key Success Factors

Ensure a Credible Approach

Planning for D&R

▶ Make the end game the starting point

Front-end loading

▶ Mindset: D&R is value-adding

Proactive Health Safety & Risk

▶ Be generative for D&R and sustain

Leveraging the broader organization

▶ Power of the united

Consider the impact on reputation

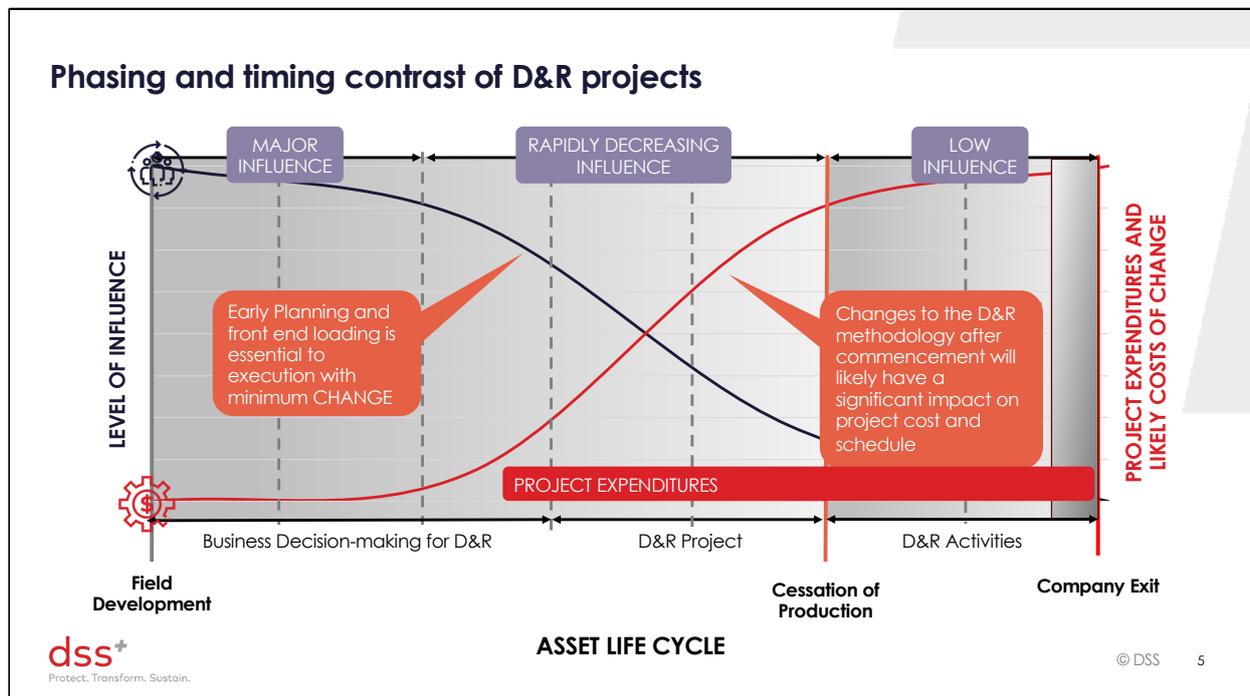
▶ Extensive scenario planning

Contracting Strategy selection

▶ The right model for the organization & situation

Slide 4 (0m50)

- Furthermore, there are multiple high-level Success Factors that need to be credible for keeping the D&R project healthy. Obviously to be credible, this implies that it can somehow be measured against.
- Timing of the following are great indicators of sensing project health. Examples being (*Click*):
 - Planning (has D&R been considered in your organisation?)
 - Front end loading (how early was planning it started and what is current maturity of D&R)and
 - Proactive health and Safety & Risk (how much has D&R been integrated into the corporate risk registers)
- There are more success factors to consider that will not be detailed now, but we would be very happy to discuss if you are interested at stand 89 today.



Slide 5(3m36s)

(Context on timing and impact)

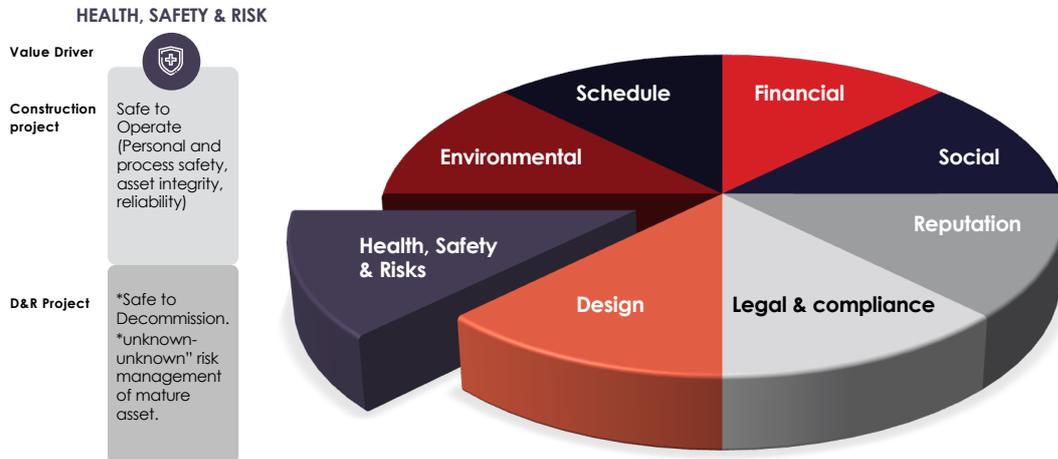
- I like to provide a bit more detailed context on how the D&R project phasing and timing is different than that of a conventional project.
- In our industry we are typically super versed at project management. We excel at this.

The graph

- We do like to highlight that the approach of managing such project should be different than that of a generic project. It is much, much longer.
 - (Click): A field development project starts with a design and building of subsurface and surface infrastructure. Wells and surface installation will be completed and production commences (in simple terms - project over).
 - Individual projects such as for example installing compression or water flood are conducted, most of these projects will last several years. But are still individual projects.
 - (Click)The fieldlife is coming to an end as economic volumes deplete and production cessation will follow.

- (click)And finally the company will exit
- This is a typical sequence of events
- When the generic project is completed, the D&R project only begins.
 - (click) D&R business decisions should be made earlier during field life
 - (click) this is followed by maturing the D&R project, and finally
 - (click) executing the D&R activities
- (click)And following this model, D&R project expenditure starts a considerable time before production is shut in.
 - And this planning to spend, takes focus and determination.
- Prioritise in gaining an early understanding of the impacts the D&R will have and associated considerations, is key.
- (click) The level of influence to steering the D&R project will significantly reduce over time
- Ensuring in building the right capability and capacity to incorporating the high- risk, high-impact measures&solutions with a strong focus on the future, is key in this.
- (click) D&R should be considered throughout the field development design phase as well as operational phases to kerb cost escalation. Monitoring of deteriorating installation and optimum timing of the decommissioning herein is vital. Note that D&R cost will be highly impacted by late life decisions made in the operate phase.
- Examples are :
 - Removal of a deteriorated or abandoned jacket post production cessation can be more costly, and frankly risky than de-complexing the jacket over time to reduce OPEX and it may reduce final abandonment cost.
 - Highly corroded wells, wells with unresolved integrity issues, or extensively retrofitted with so-called “one-way” equipment, will result in cost escalation. Recognising this early and acting appropriately is vital.
- To recap:
 - Early planning and front end loading for optimal influence and
 - Avoid having to make late changes to kerb the cost and schedule blow outs

Key differentiating project levers between conventional and D&R projects



Slide 6(1m10s)

(example of value driver difference)

- To provide more context on the value drivers I highlighted before, one example I like to highlight to you is the difference in Health, Safety and Risk between conventional and D&R projects.
 - (click) As for a regular project, one has to look at installation and operation of a shiny, new unit only. The functionality is well known. Strengths and limits are well understood as everything has been freshly calculated, designed and built.
 - (click) While for a D&R project, much more extrapolation, assumptions and estimations would be required as to the behaviour of equipment and overall state of the project, far in future.
- Deterioration of a the underwater jacket for example or extensive degradation of the wells. 15 years from now. And your company has just become the new owners of this existing asset.
- This requires looking through a different lens and be more predictive (yet realistic, and unbiased) about what you have to deal with.

Key takeaways

Decom projects are complex and multifaceted

Little upside but significant associated risk

Good understanding on what the differences are between a normal project and D&R is key to reduce risk) and help foster exceeding all stakeholders expectations

Protect what you care for
Transform your organisation
Sustain your improvement

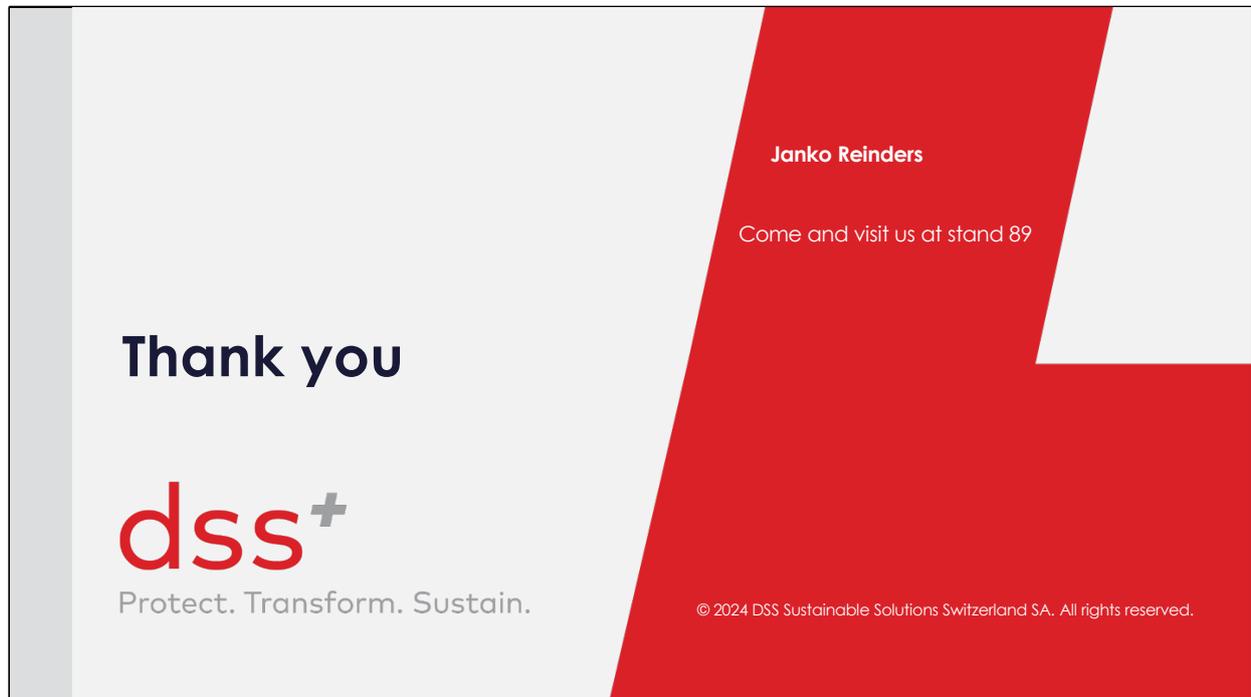
**Create Safer and more sustainable
industrial operations in critical industries**

Slide 7(1 minute 25seconds):

- My key takeaways
 - D&R projects are complex and multifaceted. - Early Timing, focus on company alignment and stakeholder management (amongst other things) can positively impact the outcome
 - There is Little upside but significant associated risk. ABEX inefficiencies are often not hedged and will greatly impact a company's (or even country's) health.
 - Starting with improving our understanding of differences between a conventional project and D&R is key to reduce risk (HSE and cost, timing reputation).
 - This will ultimately foster exceeding all stakeholders expectations and the company's reputation.
- Ultimately we feel that through the experience of the dds+ Group to be well positioned becoming part of your ecosystem of trusted partners when it comes to:
 - Protecting what you care for
 - Transform your organisation

- And Sustain your improvement
...on the subject of D&R.

Doing it right will help **Creating Safer and more sustainable industrial operations in critical industries**



Slide 8 (30 seconds)

- Thank you for giving me the opportunity to discuss **Decommissioning & Restoration: Early planning is critical to an efficient and risk-minimised process** '. It's been a privilege to prepare the paper and present it to you today.
- If this has sparked your interest please come and visit the dss+ team at stand 89. We look forward to furthering the conversation. Thank you.