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Managing Social Challenges in the Nuclear Decommissioning Industry: a Responsible Approach Towards Better Performance

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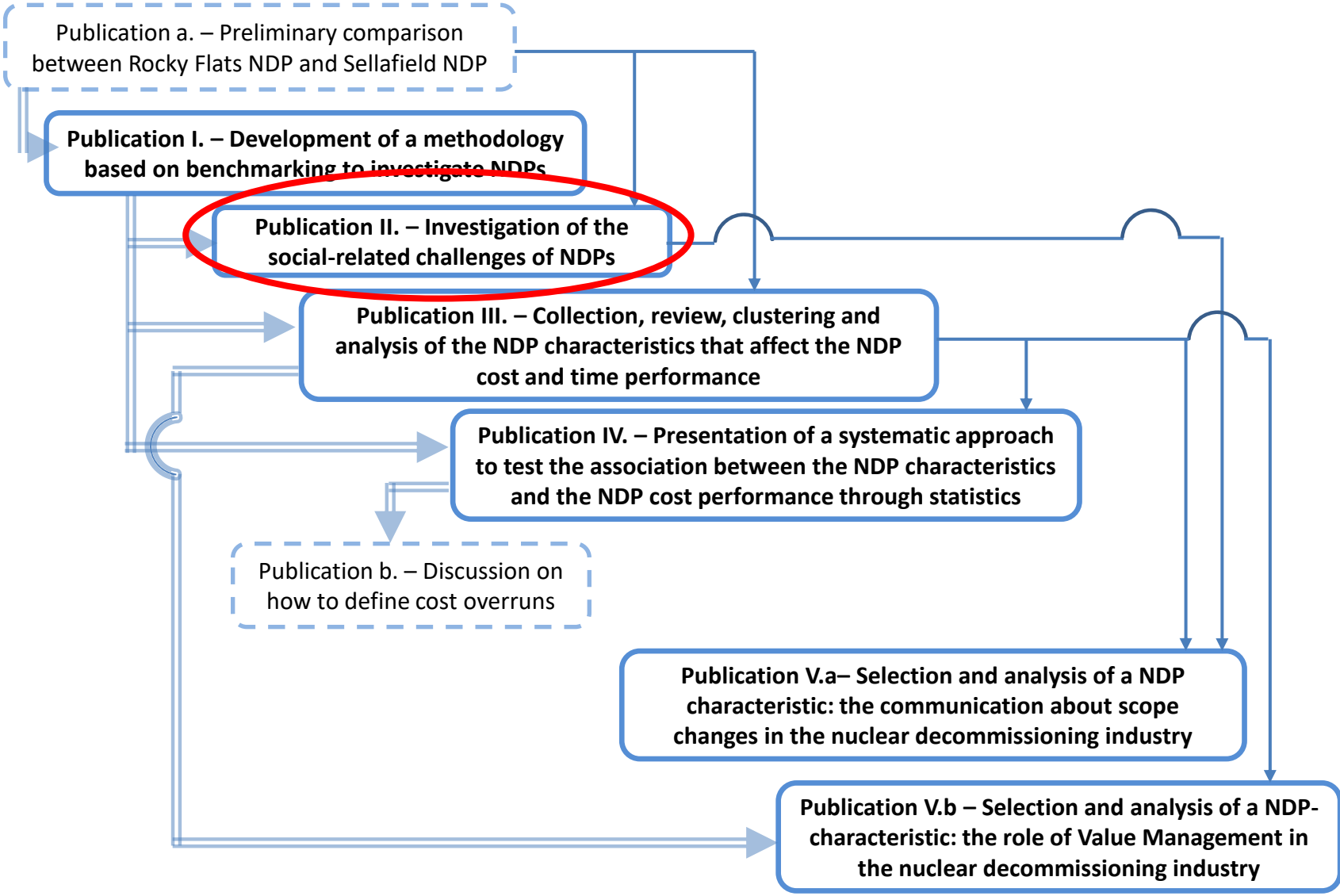
Agenda

- My PhD by Publication:
  - Benchmarking Nuclear Decommissioning Projects & Programmes (NDPs)
- Investigation of the social-related challenges of NDPs
- Other work done and potential future work:
  - Value and Value Management
  - Non-Nuclear Decommissioning projects
  - Remote communities in proximity to a nuclear site undergoing decommissioning
- Q&A

My PhD by Publication



Which case studies? Which NDPs?

Radioactive Material

Post-Operational Activities	Nuclear Decommissioning Projects and Programmes	Site Restoration Projects	Operations of existing and new facilities
Dealing with **existing legacy:** • Decontamination • De-energizing • Dismantling • Demolition of existing infrastructure	X		
Construction of **new facilities** for the: • Management • Storage • Disposal of radioactive material	X		
Site radiological assessment & environmental remediation		X	
Radioactive material management: e.g. material sorting, fuel management, waste processing, conditioning & passivation; transport, storage and/or disposal; post clean-up surveys			X

Selected NDPs

NDP	Country	Scope	Stakeholders reactions and NDPs progress	Key reference
Kozloduy – 1 & 2	Bulgaria	Decommissioning of unit 1 & 2 of Kozloduy NPP	Disputed BUT progressed	(WNA 2016a), (WNN 2016), (EU 2015), (EU 2013a), (Öko-Institut 2013), (IAEA 2009), (Kozloduy NPP Plc 2008), (IAEA 2008b)
Ignalina – 1 & 2	Lithuania	Decommissioning of unit 1 & 2 Ignalina NPP	Disputed BUT progressed	(WNA 2016b), (EU 2013a), (EU 2013b), (Öko-Institut 2013), (Ministry of Energy 2011), (IAEA 2009)
Superphénix	France	Decommissioning Superphénix NPP	Disputed BUT progressed	(EDF 2014), (Tompkins 2011), (IAEA 2008b)
Greifswald – 8 units	Germany	Decommissioning Greifswald NPP	Disputed BUT progressed	(Backer 2012b), (Bäcker 2012), (Backer 2012a), (IAEA 2011a), (IAEA 2008b), (IAEA 2008a)
Vandellós-I	Spain	Decommissioning Vandellós-I NPP	Accepted AND progressed	(WNA 2016c), (NEA/RWM/WPDD 2007), (ENRESA 2007), (Bond et al. 2004)
Barsebäck – 1 & 2	Sweden	Decommissioning of unit 1 & 2 Barsebäck NPP	Accepted AND progressed	(Lorentz 2014), (Lorentz 2009), (IAEA 2008b)
José Cabrera	Spain	Decommissioning José Cabrera NPP	Accepted AND progressed	(OECD/NEA 2016),(IAEA 2016a), (WNA 2016c), (IAEA 2011a)
Trawsfynydd	UK	Decommissioning Trawsfynydd NPP	Accepted AND progressed	(Hyder Consulting Limited 2010), (NDA 2009), (Bond et al. 2004), (Jones 1993)
Scanzanio Ionico	Italy	Construction of national waste repository	Disputed AND abandoned	(IAEA 2009), (Zinn 2007), (Bentivenga et al. 2004)
Onkalo, Olkiluoto	Finland	Construction of the waste repository	Accepted AND progressed	(WNN 2015b), (WNN 2015a), (WNN 2013), (EU Committee 2006)

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Scanzano Jonico (Italy)

Ager

My Ph

Manage social challenges

Social challenges and their consequences

Major social challenges

1) Personnel transition
2) Public unacceptance

Major consequences

1) Underestimated socio-economic personnel costs
2) Abandonment of the project

Is there anything that these cases have in common?

NDP	Country	Stakeholder reaction	Early and timely engagement with the local community	Start the NDP planning as soon as possible, even better, when the facility is still operating	Privilege the siting of a waste storage/repository where a nuclear licence has been already provided
Kozloduy – 1 & 2	Bulgaria	Negative			X
Ignalina – 1 & 2	Lithuania	Negative			X
Superphénix	France	Negative			X
Greifswald – 8 units	Germany	Negative			X
Vandellós-I	Spain	Positive	X		X
Barsebäck – 1 & 2	Sweden	Positive	X	X	X
José Cabrera	Spain	Positive	X	X	X
Trawsfynydd	UK	Positive	X	X	X
Scanzanio Ionico	Italy	Negative			
Onkalo, Olkiluoto	Finland	Positive	X	X	X

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Vandellós-I	Spain	Positive	X		X
Barsebäck – 1 & 2	Sweden	Positive	X	X	X
José Cabrera	Spain	Positive	X	X	X
Trawsfynydd	UK	Positive	X	X	X
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Vandellós-I	Spain	Positive	X		X
Barsebäck – 1 & 2	Sweden	Positive	X	X	X
José Cabrera	Spain	Positive	X	X	X
Trawsfynydd	UK	Positive	X	X	X
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Vandellós-I	Spain	Positive	X		X
Barsebäck – 1 & 2	Sweden	Positive	X	X	X
José Cabrera	Spain	Positive	X	X	X
Trawsfynydd	UK	Positive	X	X	X
Scanzanio Ionico	Italy	Negative			
Onkalo, Olkiluoto	Finland	Positive	X	X	X

Guidelines to address the social challenges of NDPs

- **Early and timely engagement with the local community**

- **Start the NDP planning as soon as possible**, even better, when the facility is still operating

- **Privilege the siting** of a waste storage/repository where a nuclear licence has been already provided

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Managing social challenges in the nuclear decommissioning industry: A responsible approach towards better performance

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Received 30 March 2016; received in revised form 25 July 2016; accepted 7 December 2016
Available online 13 January 2017

Abstract

At the end of their lifecycle, several large infrastructure will have to be dismantled, presenting unfamiliar challenges. Therefore, project management will need to focus extensively on the delivery of successful decommissioning projects to meet stakeholders' expectations and funding constraints. While there is an extensive literature that investigates the techno-economic aspects of decommissioning, social aspects remain remarkably under-investigated. Even if stakeholder communication, involvement and engagement are widely believed to be key enablers for the success of a project, often the needs and preferences of local communities are neglected and a participatory-based form of dialogue averted. Consequently, decommissioning projects fail to meet their intended objectives. Focusing on the nuclear decommissioning industry, this paper addresses the literature gap concerning social responsibility. A deductive method to formulate and validate theories regarding the social challenges for decommissioning is developed through a review and analysis of salient case studies.

Other work done and potential future work

- Investigating the Value and Value Management of NDPs
- Investigating Policy and Project Management related challenges of non-nuclear decommissioning projects
- Investigating remote communities living in proximity to a nuclear site undergoing decommissioning

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Applying value management when it seems that there is no value to be managed: the case of nuclear decommissioning

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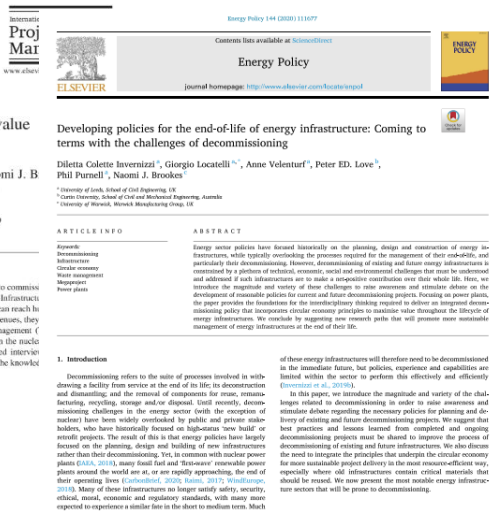
School of Civil Engineering, University of Leeds, Woodhouse Lane, Leeds LS2 9JT, UK

Received 20 April 2018; received in revised form 7 January 2019; accepted 7 January 2019
Available online 28 January 2019

Abstract

The vast majority of project management literature relating to infrastructure focuses on the project lifecycle up to commiss
Conversely, little attention has been paid to the end-of-life of infrastructure, i.e. when decommissioning begins. Infrastructu
projects are long and complex projects, involving an extensive network of stakeholders. Moreover, their budgets can reach h
Euros and, for many of these projects, keep increasing. Since decommissioning projects do not generate direct revenues, they
an expensive nuisance with limited value linked to their delivery. This paper explores the use of Value Management (
constraints of decommissioning projects and the requirements for successful implementation of VM, focusing on the nucle
techno-socio-economic relevance. Findings derived from the application of content analysis on semi-structured intervie
decommissioning practitioners include suggestions on how to implement VM, ultimately contributing to increase the knowled
decommissioning projects with better performance.



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Developing policies for the end-of-life of energy infrastructure: Coming to terms with the challenges of decommissioning

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[b] Curtin University, School of Civil and Mechanical Engineering, Australia
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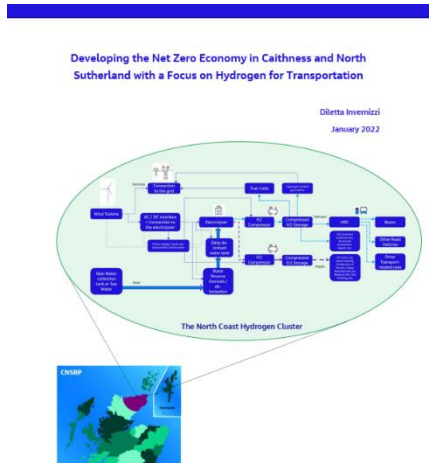
ABSTRACT

Energy sector policies have focused historically on the planning, design and construction of energy infrastructures, while typically overlooking the processes required for the management of their end-of-life, and particularly their decommissioning. However, decommissioning of existing and future energy infrastructures is constrained by a plethora of technical, economic, social and environmental challenges that must be understood and addressed if such infrastructures are to make a net-positive contribution over their whole life. Here, we introduce the magnitude and variety of these challenges to raise awareness and stimulate debate on the development of reasonable policies for current and future decommissioning projects. Focusing on power plants, the paper provides the foundations for the interdisciplinary thinking required to deliver an integrated decommissioning policy that incorporates circular economy principles to maximise value throughout the lifecycle of energy infrastructures. We conclude by suggesting new research paths that will promote more sustainable management of energy infrastructures at the end of their life.

1. Introduction

Decommissioning refers to the suite of processes involved in withdrawing a facility from service at the end of its life; its deconstruction and dismantling; and the removal of components for reuse, remanufacturing, recycling, storage and/or disposal. Until recently, decommissioning challenges in the energy sector (with the exception of nuclear) have been widely overlooked by public and private stakeholders, who have historically focused on high-status 'new build' or retrofit projects. The result of this is that energy policies have largely focused on the planning, design and building of new infrastructures rather than their decommissioning. Yet, in common with nuclear power plants (IAEA, 2018), many fossil fuel and 'first-wave' renewable power plants around the world are at, or are rapidly approaching, the end of their operating lives (CarbonBrief, 2020; Raimi, 2017; WindEurope, 2019). Many of these infrastructures no longer satisfy safety, security, ethical, moral, economic and regulatory standards, with many more expected to experience a similar fate in the short to medium term. Much of these energy infrastructures will therefore need to be decommissioned in the immediate future, but policies, experience and capabilities are limited within the sector to perform this effectively and efficiently (Invernizzi et al., 2019b).

In this paper, we introduce the magnitude and variety of the challenges related to decommissioning in order to raise awareness and stimulate debate regarding the necessary policies for planning and delivery of existing and future decommissioning projects. We suggest that best practices and lessons learned from completed and ongoing decommissioning projects must be shared to improve the process of decommissioning of existing and future infrastructures. We also discuss the need to integrate the principles that underpin the circular economy for more sustainable project delivery in the most resource-efficient way, especially where old infrastructures contain critical materials that should be reused. We now present the most notable energy infrastructure sectors that will be prone to decommissioning.



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Thank you

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