

# How can value co-creation create social value as management practice for sustainable water supply projects?

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## Abstract

Relatively little is known about the concept of social value co-creation as a management practice for sustainable construction projects. Although researchers of value co-creation have expounded it in the context of marketing services, little is investigated in construction projects. This study challenges the traditional bureaucratic management of the delivery of water supply projects and provides the process of joint production of sustainable benefits to end-users. Inductive reasoning, including qualitative research design, were applied to a water supply project. The qualitative stage created social value co-creation features using the purposive sampling of 36 semi-structured interviews analysed using NVIVO 11. The qualitative analysis feature social value co-creation which includes a sense of social unity, end-user empowerment, Behavioural transformation, and knowledge transfer. Recommendations are made on contract design and the procurement of community-based Nigerian water service projects to accommodate service system social value co-creation.

Keywords: social value, sustainability, value co-creation, water project management.

## 1. Introduction

The Sustainable Development Goal six envisions that the project should deliver value to a broad range of beneficiaries by ensuring access to water and sanitation (WWAP, 2018; Opoku, 2019; Rahman et al., 2021). However, the availability and productive use of potable water is essential to achieving this proposed SDG (WWAP, 2015; Raiden and King, 2021), which has made water supply a central issue on the international agenda for several decades (Rahman, 2012; Mancosu et al., 2015, Imteaz et al., 2015). This study is timely. It comes at a critical period when freshwater resources face rising pressure to provide for the growing world's population's social, environmental, and economic needs of a growing world population (Mancosu et al., 2015; Imteaz et al., 2012). The most severe form of water scarcity is economic water scarcity because it almost entirely lacks a proper system that allows the condition to persist (Spiliotis et al., 2015), particularly in rural regions. Several studies have documented evidence of water supply failure has been documented by several studies such as Akpabio et al. (2017), Chellaraj et al. (2018), among others.

It is recognised that an integrated approach (in terms of joint activities of the service provider and consumers) to sustainable management of water supply projects offers the best means of reconciling demands with supply and a framework where effective co-creation actions can be taken (Harvey and Reed, 2006, Lockwood and Smith, 2011; Abebe and Girma, 2013; IMF, 2015). An integrative service delivery that will engage the resources of end-users to the provision of the community water projects should improve the sustainability of water supply

projects. This identified critical lack is missing in the water resource literature. There is scarce attention on the way benefits are jointly produced from the water resource projects/systems. Therefore, it becomes essential to consider the design and provision of service systems to manage water projects (Ademiluyi and Odugbesan, 2008; Akpor and Muchie, 2011; Adeleye et al., 2014; Ajibade et al., 2015) and by changing the community's role from a passive user to an active co-creator of value. This paper discourages and rejects the management strategy prevailing in Nigeria; linear, top-down imposed water projects that pay little attention to the integration of end-users whose interests are served by the providers of water projects. Consequently, this study sought to move the academic discussion on the management of water resource supply from finance-driven, engineering/technology-driven to a multi-disciplinary integrated approach of social value co-creation in the service system. This should proffer solutions to community water supply problems in Nigeria.

This work is a contribution to turning global challenges and threats by strategically managing water resource projects to realise benefits for individuals and groups of people. The problem of sustainable management of natural resource projects is considered here through the lens of social value and value co-creation on the premise of service systems. Thus, this work explores the question, **“How can value co-creation create social value as management practice for sustainable water supply projects?”**

The investigative effort of this paper results in a framework that proffered practical solutions to the lack of appropriate sustainable management systems to improve the value chain of the Nigerian water supply systems. The following sections discuss the conceptual framework.

## **2. Conceptual framework**

### **2.1 Service ecosystems (SEs)**

Service abounds everywhere (Vargo et al., 2017), forming an “ecosystem” with actors, energy flow and environmental interactions (Vargo and Lusch, 2015). More specifically, the term “service ecosystem” is used to identify a flow in service provision (Vargo and Lusch, 2015) and the “configuration of people, technology, and other resources that interact with other service systems to create mutual value (Maglio et al., 2009, p.395). Within the field of service-dominant logic, the service ecosystem is viewed as “a relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange”. In this definition, the general role of institution, is emphasised (Vargo et al., 2017), with technology and knowledge of it, seen as an institutional phenomenon (Vargo and Lusch, 2015). Value is co-created by joint efforts among organisations, end-users, and other actors (Vargo and Lusch, 2015). The actors in the SEs are joined mutually by value co-creating efforts, therefore creating a self-organising, self-adjusting SE. Actors compromise, they behave appropriately, and attach meaning by interacting within a shared system.

### **2.2 Value co-creation**

The term “value co-creation” was coined to emphasise the role of consumers in business strategy and marketing (Agrawal et al., 2015). However, in the early 2000s, management scholars Prahalad and Ramaswamy (2000) popularised the term when they began to write a series of essays suggesting that the organisation's research and development is being shifted from the focus on economic value creation to the interaction between the firm and the consumer. About a decade later, those write-ups produced an area of research now known as value co-creation (Cova et al., 2011). Value co-creation denotes the production of value that occurs through interaction between an organisation and consumer. It stresses that the provider and consume hold similar roles to generate value, integrates resources and applies competencies to collaborate based on trust, continuous interactions, engagement, and effective knowledge exchange to enhance and maximise benefits for project participants (Rojas et al., 2017). Furthermore, value co-creation emphasises service providers, customers, and possibly other actors in production (Cova et al., 2011, Grönroos and Voima, 2013).

## 2.3 Social value

It is worthwhile to evaluate social value as one of the viewpoints of this paper; nonetheless, its description is viewed in the dimension of sustainable management of water supply projects. Social value is from the user's perspective. The justification for this thinking of adopting social value is its appropriateness in studying the management of natural resources such as water supply systems, which was the case study for this work. Although the literature on social value suggested that there is no single definition of social value, Opoku and Guthrie (2018) argued that defining social value is as tricky as delivering and measuring it. However, social value involves recognising the importance of social, environmental, and economic impacts on the community and the people living in these communities. Opoku and Guthrie (2018) defined *social value* as the additional environmental, social and economic benefits to the communities of operation above and beyond the direct service delivery. Meanwhile, Raiden et al. (2019) defined *social value* as being created when the resources, inputs, processes or policies are combined to generate improvements in the lives of individuals or society as a whole. The authors further expounded social value as a concept that seeks to maximise the additional benefits created by procuring or commissioning projects and services, above and beyond the benefit of merely the products and services themselves.

Social value, service ecosystems (SEs) and value co-creation can be solidified into a single framework (Figure 1) that shows the conceptual features of social value co-creation. Vargo and Lusch view the service ecosystem, value co-creation, and actors embedded within a social context. They propose that “all social and economic actors are resource integrators” (Vargo and Lusch, 2015), shaped by social forces, and reproduced in social structures. This effort supports scholars in sustainable resource management to refocus attention on societal systems and management concepts and practices that can advance the policies, institutions, and technology towards more sustainable development of natural resource projects. The conceptual presentation displayed in Figure 1 below represents the co-creation of social value among multiple ranges of actors in a service system combining resources, skills, and competencies for the sustainable management of natural resource projects.

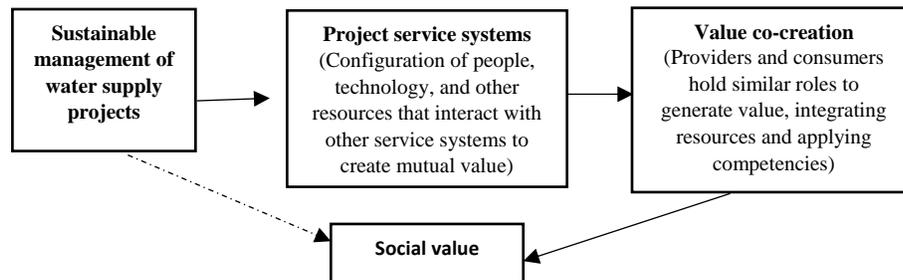


Figure 1: Conceptual Framework

The conceptual framework above provides a coherent argument why the variables in this work matter and the justification of the appropriateness of the adopted methodology.

## 3. Research design - Qualitative data collection

The primary qualitative data was based on semi-structured interviews. The sampling technique was purposive sampling. The justification for adopting the technique was based on data collection from thirty-six respondents

in the case region that were exceptionally knowledgeable and had experience in this work's variables. In addition, the selection of thirty-six participants in the water service system ensured a thorough description of value co-creation in service systems to justify this work's conceptual framework described in section 2. The case region is called "Bolorunduro" and had a functioning water service system called WASHCOM. WASHCOM is a platform that consisted of stakeholders such as providers, end-users and actors of the community water supply projects. Specifically, the respondents included the provider, end-users and the actors in the community service system (Maintenance officer, Coordinator, Assistant coordinator, Secretary, Assistant Secretary, Treasurer, Financial secretary, Electrician, Technician, Operator). The duties of the respondents ensured engagement with one another for the sustainable management of the region's water supply projects after commissioning and hand-over.

#### 4. Data analysis and Discussions

Thematic analysis was used to analyse data as it is one of the most important techniques used in qualitative research (Guest, 2012). NVIVO-11 software was applied to analyse the qualitative data. Once the interviews were transcribed, they were imported into the NVIVO-11 software to start the analysis process. This work's analysis uncovered seven features of social value co-creation compiled from an analysis of the case region. For instance, the researcher categorised the positive responses into social value co-creation nodes. The positive responses were generated during the analysis of the interviews, with the perspectives of social value and value co-creation concepts. See Table 1 for set of data in terms of themes categorisation on social value co-creation features.

Table 2: Data set/Themes categorisation

S/N	Themes	Description
1	<b>Features of social value co-creation</b>	
1.1	End-user empowerment	<i>WASHCOM is a government initiative support after the provision of the water supply project. We were trained and given and tools to enable us work effectively. Although, in case of major damage and repairs, I, as the coordinator will write RUWASAN who will now send the maintenance officer to carry out the major repairs.</i>
1.2	Resource integrating networks	<i>Money is important, repair skill, maintenance and organisation skills are all necessary for the functionality of the water project. That was why the members of WASHCOM were selected based on individual capabilities. Nevertheless, the interactions toward the goal of the system were highly essential. I paid my bills, which was my contribution towards water supply, since I was not a technical person. When all these resources were combined for a common goal, it ensured that we get water supply uninterrupted.</i>  <i>Although WASHCOM and RUWASAN put together are indeed important for proper administration. The water supply facility would not have served the community if there were no community meetings which ensures the assembly of all stakeholders of the water projects, to combine our incomes including skills together to ensure functioning water supply system.</i>
1.3	Behavioural transformation	<i>Water supply now gets more attention than before; we have meetings upon meetings, and all is about water supply. The rules that WASHCOM brought changed many things. For example, WASHCOM has changed my attitude towards water, in the sense that I frown at anyone not handling the facilities well because we will pay for the repairs if any damage occurs. Yes, it has</i>

		<p><i>changed me a lot. In the overall, there has been an improvement in our wellbeing in the community ever since we have been having access to water supply.</i></p> <p><i>Yes, very well. It has helped me to be more patient with people because people can really upset you on very small issue. But now, I just listen to their talks which don't make meaning to me most of the time.</i></p>
1.4	Defined value-in-context	<p><i>I cherish water more than before even though it now comes with a cost. But since it will be supplied, therefore, one is happy to make such payments because of its impact on my children's health and cleanliness in the entire house.</i></p>
1.5	Consumer's ownership perception	<p><i>My expectation is for the community people to take the water project as their own and not government project because it is when they do that that it will work well with others.</i></p> <p><i>Community people understand that it is not WASHCOM water, or water leader water but it is our water so they must cooperate.</i></p>
1.6	Knowledge transfer	<p><i>I told the coordinator to make the meeting attractive for people to attend, when I noticed drastic reduction in attendance of people in the meetings.</i></p> <p><i>I brought the idea of payments in instalments to WASHCOM. It got to a time when some consumers were giving excuses about their water bills and not making payments as at when sue. This actually caused some conflicts between them and consumers that made their payments before due dates. My recommendations provided some solutions to this hitch and enhanced the smooth operations in WASHCOM. I have also brought the idea of getting people to do business with selling of spare parts in the community.</i></p>
1.7	Sense of social unity	<p><i>There were times I received bills with due dates for payments, I could go as far as taking a loan having seen the commitments of the members of WASHCOM more importantly, did not want to suffer getting water from far distance.</i></p> <p><i>Despite the financial challenges the consumers face at times, the efforts of the members of WASHCOM and their devotion to ensure uninterrupted water supply service to the consumers were extremely satisfactory.</i></p>

#### **4.1 The features of social value co-creation in Bolorunduro**

##### **4.1.1 Resource integration is a significant factor for sustainable management of water project**

In Bolorunduro, the core shared value of the actors in the sustainability of the community water supply project. Resource integrators (Actors in the service system) jointly contributed their resources to produce benefits in the water service systems. Different resource integrators within the water service system play specific and crucial roles in ensuring the sustainable management of the water project. In providing continuous water supply to the community by WASHCOM, both tangible and intangible resources were combined. The tangible resources were the water supply facility and underground water. However, the analysis of the interviews revealed that intangible resources in the form of knowledge, money, time, leadership and communication skill provided by the provider,

actors, and end-users of the service systems for the water resource projects. This, as a matter of evidence most important in value co-creating activities in the service system.

**“Because if the water project breaks down, we need money to make it work again. It is when we put all our resources together in the community whether money, technical or to manage it, that will make the water project continue to work for us all” (Secretary)**

The paper’s finding is distinctive, as resource integration in water service systems has not been determined empirically in social value co-creation and in managing natural resources literature. Although Jaakkola and Hakanen (2013) qualitatively explored how actors integrate resources in interaction to develop integrated solutions and identified the related benefits and sacrifices perceived by actors in different solution networks.

#### **4.1.2 Consumer ownership is an essential value co-creation feature in the sustainable management of water resources**

The sense of ownership was revealed from the analysis of the interviews. After the construction, the community’s perception of taking ownership of the water project after construction was recognised as the “*at the heart of everything*” in the analysis. The water service systems (WASHCOM) members were able to commit their resources to the maintenance and functionality of the service system because of the perception of being the owners of the water projects. First, the end-users understood from the analysis that the water projects were constructed in their communities which brought about the formation of the service systems consisting of the community people. Second, actors perceived their efforts in terms of contributing their resources worthwhile because they viewed their services as though towards their personal businesses. Establishing service systems that promote and allow end-users to perceive ownership is an essential feature of value co-creation.

**“My expectation is for the community people to take the water project as their own and not government project because it is when they do that that it will work well with others” (Water point representative 12).**

Yik (2011) attributed perceived control to the value co-creation process. The author stated that a human driving force enabled people to motivate their competencies and superiority over their environment. This result is relatively similar to this paper’s finding. However, the perceived ownership as a feature of value co-creation, particularly in the project-based delivery system, is more critical than control. It has not been expressed in the literature to date.

#### **4.1.3 End-user empowerment must be a feature of value co-creation for sustainable management of water resources**

Another important feature that was unfolded during the analysis was the enabling environment of the service ecosystems that enhanced co-creating activities to secure sustainable water supply. In the case region – Bolorunduro water service ecosystems, the establishment of service systems involved the development of apprenticeships in the value chain and provision of work experience opportunities to sustain the delivery of the water project. The training-related issues impacted the commitment of the actors in the service system. It promoted the actors’ interests and willingness to provide their resources, for instance, their time, skill and money, to the service system. From the analysis, the members of WASHCOM seemed to recognise the importance of their empowerment and that it impacted individual actors in acquiring additional specific skills outside the benefits of water provision. The apprenticeship was seen as a form of employment creation in the community. Empowerments reinforce the provider’s commitment to the community service system. Therefore, this paper’s finding buttresses Grönroos (2013). The author stated that a service that is provided without the enablement process triggers a self-service usage process in the end-user’s sphere and may not support value co-creation.

**“WASHCOM is a government initiative support after the provision of the water supply project. We were trained and given and tools to enable us work effectively. Although, in case of major damage and repairs, I, as the coordinator will write RUWASAN who will now send the maintenance officer to carry out the major repairs” (Coordinator).**

Meanwhile, the end-user empowerment unearthed in this paper as a feature of value co-creation is dissimilar to the empowerment revealed in Yik (2011). Yik interpreted empowerment as pro-activeness in the engagement and willingness to change other actors for active co-creation. On the contrary, the end-user empowerment feature of social value co-creation, as revealed in this paper, is the practice of providers putting in place support systems and resources for the end-users to enhance joint production of benefits in the service system.

#### **4.1.4 Sense of social unity forms a critical role in value co-creation of water resource management**

In co-creating social value for sustainable water resource management, it is apparent that both end-user and providers have the shared value to provide appropriate resources in terms of expertise and judgement. End-users empowered with training pieces as competent resources to collaborate with other actors would be committed to serving effectively, as discovered in this paper’s analysis. The goal-oriented nature of togetherness in the design of a service system could assist in overcoming co-creating challenges. It would give rise to a sense of social flow among actors participating in the service system. The analysis revealed that the stronger the sense of unity among actors, the more beneficial activities towards sustainable management of community-based projects.

**There were times I received bills with due dates for payments, I could go as far as taking a loan having seen the commitments of the members of WASHCOM more importantly, did not want to suffer getting water from far distance (Water representative 8).**

A sense of unity can be motivated in an environment of collective interest and goal. This paper’s finding of “a sense of social unity”, particularly in Bolorunduro case, seems to resonate with the description and outcome of “collective impact” as a principle of the community project’s delivery. Raiden et al. (2019) ’s finding of “sense of social unity” is network-based co-creation of social value. The authors suggest that additional benefits the end-users get from the community-based service system could be associated with increased community integration, support for local businesses, improved wealth and improved community engagement.

#### **4.1.5 Defined value-in-context provides a critical characteristic of sustainable management of water supply.**

The investigation of value co-creation in a social context such as water service enhances the end-users definitive value-in-context. In the qualitative analysis, end-users clearly stated the value-in-context of the community water supply project in terms of improved physical health and hygiene and training experience. These gave rise to the interpretation of the type of value co-created, which was social value in this case. The philosophy of the water resource project in Bolorunduro was the sustainability of the project constructed in the case region. The sustainability was further interpreted to continuously improved well-being and access to potable water. The qualitative analysis unearthed that the investigation of value co-creation in a social context such as a water supply system enhanced the definitive value-in-context by the end-users. End-users affirming value-in-context in co-creation exercise is an end-user’s definition. The analysis demonstrated that actual benefits derived and defined by the end-users using a particular project(s) are, in fact, a striking feature of social value co-creation attribute, which contributes to the sustainability of such projects.

**“I cherish water more than before even though it now comes with a cost. But since it will be supplied, therefore, one is happy to make such payments because of its impact on my children’s health and cleanliness in the entire house” (Water point representative 16).**

Sanders and George (2009) highlighted that “Social value can provide use/experience value”. That is like a flipside of this paper’s finding – “Defined value-in-context is a feature of social value creation”, which sort of

provides a sensible logic. Moving co-creation from the provider solely to the people it serves, such as front-end efforts, are more likely to produce the most significant benefits in terms of social value (Sanders and George, 2009). The authors added that the value of co-creation is influenced by the provider’s desire to convert the end-users into co-actors so that the products or services they design, produce and sell will better meet people’s wants and needs.

#### 4.1.6 Behavioural transformation influences sustainability of water resource projects

The willingness on the part of end-users to change others for productive joint activity suggests a form of behavioural modification for value co-creation. There are remarks from the paper’s qualitative analysis that emphasised that the community people – end-users involved in the water service system had a change of attitude (favourable) towards activities in sustainable management of the community projects.

**“Yes, very well. It has helped me to be more patient with people because people can really upset you on very small issue. But now, I just listen to their talks which don’t make meaning to me most of the time” (Electrician).**

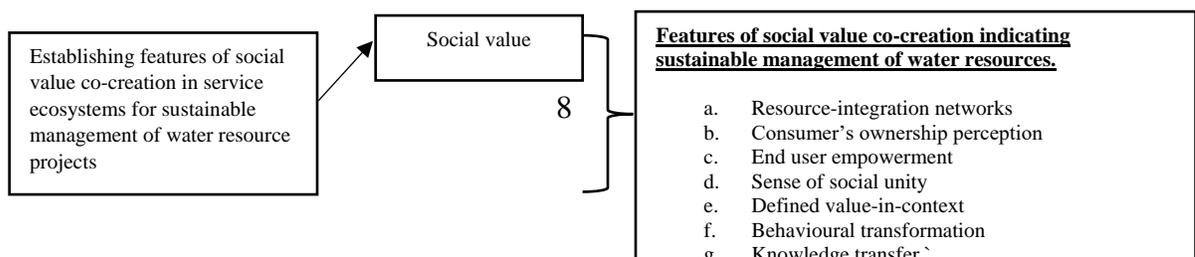
Suppose a provider is prepared to enable the end-user with opportunities; it is possible that the end-users could change negative attitudes to respond to this action positively, which is sustainable management of projects. That is, the involvement of end-users as “active partners” (co-creator) could define their responses to the creation of social value and build trust over time. Alexander and Jaakkola (2012) supported the notion that the benefits of value co-creation, as perceived by the end-user, are more sharply defined under behavioural transformation conditions of building trust. This showed that the emergence of aligned behaviour to support the sustainable management of water supply projects is a feature of social value co-creation.

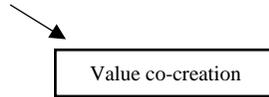
#### 4.1.7 Social value co-creation requires Knowledge transfer for sustainable management of water resource project

During interactive relationships of actors in Bolorunduro service system to manage the water resource projects, qualitative analysis revealed what transpired among the actors, including the transfer of accumulated experiences, competencies and skills by actors. Actors’ ideas and competencies that stimulate value co-create are interpreted as tacit knowledge. The interpretation was based on ideas shared by actors at an unconscious level.

**“I brought the idea of payments instalments to WASHCOM. It got to a time when some consumers were giving excuses about their water bills and not making payments as at when due. This caused some conflicts between them and consumers that made their payments before due dates. My recommendations proffered some solutions to this hitch and enhanced the smooth operations in WASHCOM” (Financial secretary in case I).**

This work discovered that tacit knowledge gained from experiences and derived from learning when integrated should produce benefits for the users of the service system. In addition, the transfer of tacit knowledge could be beneficial with the mindset of jointly achieving the goal of the service system (sustainable management of water resource project). Raiden et al. (2019) investigated the empowering design practices at The Glass-House Community Led Design; the authors emphasised how the engagement of local people in the design process unlocked valuable assets in which user experience and knowledge were fundamental to the process. The knowledge transfer finding of this research further expounded Raiden et al. (2019) by providing empirical evidence on how specifically identified knowledge areas and their transfer based on end-user experience impacted the functionality of the community-based water service system.





*Figure 2: Towards a framework for sustainable management practices of community-based water supply (social value co-creation for water supply management)*

## **5. Conclusion and further developments**

The paper aimed to investigate how social value is co-created among multi-actors in water supply projects (systems) and solutions to the lack of appropriate sustainable management practices. The adoption of social value and value co-creation concepts was an attempt to introduce multi-disciplinary and systems views to sustainable management of water resource projects. Therefore, a significant contribution of this paper is, therefore, to rethink the strategic delivery of sustainable management of water resource projects from the combination of social value and value co-creation practices. This contribution seems to ensure social value co-creation of sustainable community-based water projects. Projects are not delivered in a vacuum environment, but several internal and external stakeholders link them to the project context. At the same time, the study of the project context alone is not entirely appropriate since different project characteristics may favour or disfavour the environment in which it was built. This work unearthed seven features of value co-creation and three value co-destruction in water service systems. The value co-creation features include Resource integration, consumer's ownership perception, end-user empowerment, sense of social unity, Defined value-in-context, Behavioural transformation, and Knowledge transfer. The emergence of these features in a service system is vital because their combinations provide evidence to processes, activities and outcomes involved in the active and goal-oriented service ecosystem of water resource projects.

The main conclusion of this work is that the study of multi-actors in service systems that manage natural resource projects is significant to reinforce and establish features of social value co-creation and sustainability of such projects. The examination of value co-creation is made more compelling in project service systems; however, elements of value destruction could also emerge, which means that activities of multi-actors in service systems are not a guarantee for value co-creation and sustainability of water supply projects. It is subject to the design and institutions of the service ecosystems managing the projects. The study is the first to explore apparent features of social value co-creation in the water service ecosystem as sustainable project management practices.

By way of further developments, the social value co-destruction concept is entirely different from that of social value co-creation; thus, it is recommended as an area for further study. Additionally, this paper proposes the potential area for practitioners to improve the community water service system: The National/Local governments should re-design contracts and procurement of community-based water supply projects to accommodate the service system. This should maximise social benefits, improve the sustainability of water service systems, hence, reduce abandoned community water supply projects.

The Three Musketeers of sustainability of construction projects seem to be social value, service system and value co-creation; let us talk about it!

### **Acknowledgement**

We acknowledge the financial sponsorship of this research by the Schlumberger Foundation Faculty for the Future, and we are indeed grateful.

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