

## **Minimizing Social Externalities of Major Resource Projects: a Way Forward through Shared Value**

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### **Abstract**

Improving environmental and social performance of major resource projects is a formative and complex goal. In the resource sector, corporate-sponsored community development has emerged in response to increasing public expectations of social performance. Substantial limitations, however, have been identified with this approach. This paper is based on a recent study that evaluated social externalities and examined how quality of life has been influenced by coal seam gas (CSG) projects in Southeast Queensland, Australia. We discuss the findings from the study and look at the alignment of business decisions with the sustainability priorities of the community. This paper argues that to minimize negative externalities of major resource projects, operating companies need to move beyond managing social impacts and maintaining the social license to operate to a more strategic approach based on the principles of shared value.

## 1. Introduction

Public expectations regarding social performance of major resource projects have increased and strengthened. Project impacts and benefits are no longer conceptualized in solely economic terms. For example, quality of life is now a prominent feature of the development debate in the mining sector (ICMM 2013; Martinez & Franks 2014). Scrutiny from the wider community is broadening the focus from obtaining a social license to operate (SLO) to recognizing and addressing community needs. Within the resource sector SLO refers to the level of approval by local communities and a presence or absence of implied public acceptance of resource companies and their operations (Pike, 2012; Franks & Cohen, 2012, Owen & Kemp, 2013). Recent studies have demonstrated that operating companies are sustaining considerable financial impacts as the result of poor or failed community engagement and subsequent social conflicts (Franks et al. 2014, Moffat et al. 2013). For example, community conflicts can cost the operating companies an average of US\$20 million a week in delays on projects valued between \$3 and \$5 billion dollars (Franks et al. 2014).

Growing demand by the wider community for increased transparency in the assessment of social impacts by project proponents is also strengthening the need to better understand the process of identifying, evaluating and internalizing social externalities (Rolfe, Miles, Lockie, & Ivanova, 2007). Social externalities refer to the positive or negative consequences of an economic activity on social capital and on the quality of life of another (Robert Costanza et al., 2007). The relationship between the needs of the community and the multiple interacting drivers associated with a major project that affect quality of life is especially relevant for large economic projects with massive footprints, also known as megaprojects (Fischer & Amekudzi, 2011;

Franks et al., 2014). These projects attract high levels of public attention and political interest because of substantial direct and indirect impacts on the environment, community, and the economy (Flyvbjerg, 2009).

As resource megaprojects backed by petroleum, gas, chemical, mineral, power and other related industries have been increasing in size and complexity so have their externalities and secondary effects (Morrow, 2011; Othman & Ahmed, 2013). The pressure to deliver on budget and schedule and reliance on standard institutional frameworks and regulatory practices has yielded significant shortcomings in addressing environmental and social impacts and internalizing externalities (Cheshire, Everingham, & Pattenden, 2011; Flyvbjerg, 2009).

Corporate-sponsored community development has emerged in response to increasing public expectations of social performance and is often practiced in the form of social investments, programs and projects (Evans & Kemp 2011, McNab et al. 2012, Martinez & Franks, 2014). Community development (CD) refers to the process of improving people's quality of life through enabling people to participate in decision-making to achieve greater long-term control over their lives (Martinez & Franks, 2014, Kemp, 2009). Substantial limitations have been identified in corporate-sponsored CD approaches (Banks et al. 2013, Robinson & Greene, 2011). In the resource sector, for example, *risk mitigation*, *public relations*, and *needs-based CD* approaches overlook providing long-term societal value to communities (Owen & Kemp, 2012, Zandvliet & Anderson 2009, Martinez & Franks, 2014).

This paper is based on a recent study that examined social externalities of rapid economic development associated with coal seam gas (CSG) projects in the Surat Basin in Queensland, Australia. We present the findings from this study and look at the alignment of business decisions with the sustainability priorities of the

community, and the broader drivers and disconnects. We also present criteria for assessing social externalities of major resource projects, which offers a framework for identifying inclusive community development opportunities. This paper concludes with a look at the future of socially sustainable corporate-sponsored development and ways forward towards minimizing social externalities of major projects through the shared value approach.

## 2. Case of CSG Projects in Surat Basin, Australia

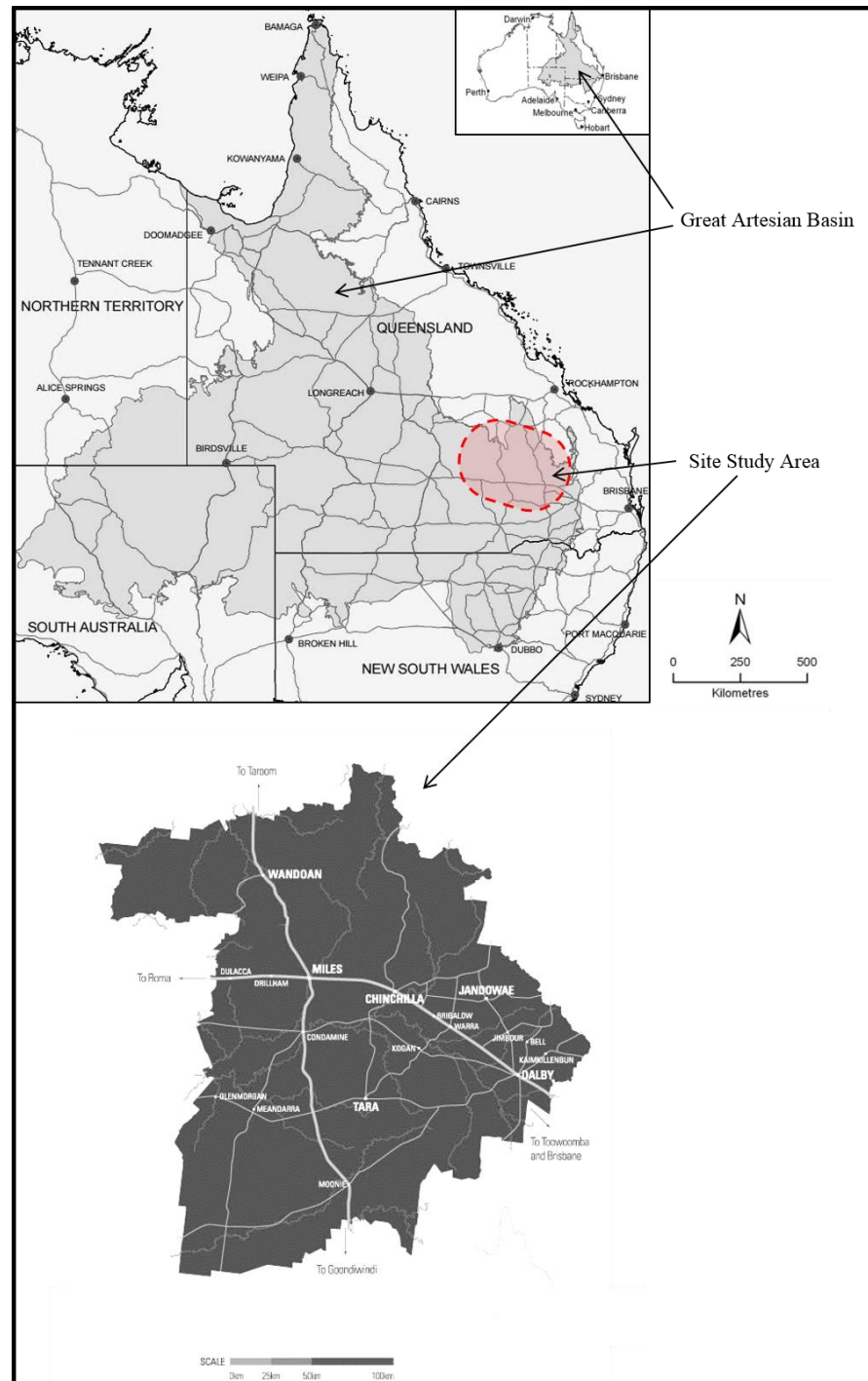
The predominately agricultural region of the Surat Basin in South-East Queensland, Australia has experienced a surge of industrial activity, itinerant workforce and rapid economic development as the result of four major coal seam gas/liquefied natural gas (CSG/LNG) projects starting in late 2006 and peaking between 2011 and 2014 (Queensland Government, 2014). The projects are listed below in Table 1.

**Table 1.** Integrated Coal Seam Gas (CSG)/ Liquefied Natural Gas (LNG) Projects

Project Name, LNG Location, (Operating Company)	Project Acronym	Estimated construction value
Australia Pacific LNG, Curtis Island, (Origin/Conoco Phillips/Sinopec)	APLNG	\$30B
Gladstone LNG, Curtis Island, (Santos/Petronas/ Total/KOGAS/)	GLNG	\$30B
Queensland Curtis LNG, Curtis Island, (QGC/ BG Group Purchased by Royal Dutch Shell in 2015)	QCLNG	\$30B
Arrow LNG, Curtis Island, (Arrow CSG Pty Ltd (Arrow Energy) -Royal Dutch Shell & Petrochina Company Ltd)	ALNG	\$20B

The Surat Basin is a geological basin that extends across an area of 270,000 square kilometers. Two thirds of the basin occupies a large part of Southeast Queensland, and the remainder is in northern New South Wales. The communities in this region are situated above the Great Artesian Basin, the largest and deepest artesian basin in the world. The Great Artesian Basin provides the only reliable source of fresh water through much of inland Australia (Habermehl, 2006). The communities

affected by CSG operations included in this study are: Dalby, Cecil Plains, Chinchilla, Miles, Tara, Condamine, Wandoan, Taroom, Roma, Injune and their surrounding districts. The study area is shown in Figure 1.



**Fig 1.** Map of study area

## **2.1. Methods**

This study used a concurrent mixed methods approach, with both quantitative and qualitative strands collected at the same time. The two strands were collected to empirically evaluate social externalities of major resource projects and to examine how quality of life is being influenced by rapid economic development associated with major CSG projects in regional communities of the Surat Basin.

The quantitative data was collected using a structured questionnaire in a cross sectional survey from 428 participants. The core survey items formed 5-point Likert type scales (1 = Strongly Disagree, 5= Strongly Agree), plus a standard 4-point type scale (Yes, No, Neutral, Not sure) related to attitudinal, demographic and behavioral information. The survey items and scales were developed based on the analysis of similar studies examining community sustainability, including the community wellbeing survey based on the Genuine Progress Indicator for regional communities, Nova Scotia, Canada , GPI Atlantic (Kulig, Kolfoort, & Hoekstra, 2010) and World Values Survey (Inglehart, Puranen, Pettersson, Nicolas, & Esmer, 2005); as well as the exploratory site visit to the study area. The attitudinal survey items were guided by the initial themes of the conceptual framework. The conceptual framework was developed to guide the data collection and analysis processes, and to operationalize externalities influencing subjective wellbeing (Phelan, Dawes, Costanza & Kubiszewski, 2015).

The qualitative data collected included five open-ended questionnaire items completed by the same participants, twenty four semi-structured interviews which included 41 participants, and direct observations. The majority of the data collection was conducted over a period of four months between February and May 2014, with six visits to the region overall including an exploratory visit in November, 2013, and a

pilot survey in December 2013. Survey selection criteria included: permanent community residence, 18 years and older, and who have lived in the region for at least two years. The invitation to participate in the survey was also distributed by email to contacts previously made in the region and in person at community group meeting and community events. In addition, survey participants were also recruited through notices in community group newsletters, local papers, and public service announcements by the local radio station. The majority of the questionnaire responses (80%) were submitted on-line via a secure server connection, with a fifth of the questionnaires submitted via a paper copy. All responses were completely anonymous and confidential.

The seven groups of attitudinal variables (access to healthy environment, access to infrastructure and economic opportunities, equity, governance, social cohesion, community actualization, and social license to operate) were subjected to a multivariate inferential analysis using both SPSS (Version 21) and STATA (Version 13) . A multi-step approach was used. It involved: a test of internal consistency (Cronbach's alpha) to show an acceptable level of reliability of scores, exploratory factor analysis (using orthogonal varimax rotation), confirmatory factor analysis to provide evidence of factorial validity for each set of variables, and Structural Equation Modelling (SEM) to establish construct validity of the factors. The rationale for using structural equation modeling is that SEM is suited for both theory testing and theory development, and is an excellent statistical analysis tool to use when some variables of interest to a researcher are unobservable or latent (Washington, Karlaftis, & Mannering, 2010).

The SEM specifications were obtained using confirmatory factor analysis with maximum likelihood estimation of the covariances. The model was developed as the result of multiple iteration using STATA analysis program. This software compares the covariance matrices representing the relationships between variables and the estimated covariance matrices of the best fitting model. The final SEM reflects eighteen simultaneous regression equations. SEM provides statistical significance of the latent variables (unobserved constructs) and their measures. It also provides insights into the relationships between these constructs.

The qualitative findings provide a deeper story; enhancing the findings from the quantitative stage. The qualitative data collected from the open-ended survey questions was subjected to thematic analysis using constant comparison process (Glaser, Strauss, & Strutzel, 1968). Data coding and analysis was carried out using NVivo (Version 10). The qualitative results from the open-ended questions were aggregated using data transformation into the following themes derived from SEM analysis: (1) Environmental and Social Concerns, (2) Economic Participation, (3) Governance, (4) Impacts on the Standard of Living and, (5) Community Actualization. Content of the interview transcripts were categorized using thematic analysis and basic guidelines for coding qualitative data. The categorization reflected similarity and frequency of responses. The field notes and recordings were revisited to verify frequently occurring expressions and any unexpected material that provided atypical evidence. Seventeen categories emerged from careful review of the transcript recordings and field notes. Using the dichotomous variables of zero and one, the frequency of each sub-theme were analyzed.

The last stage of analysis included the integration of inferences and meta-inferences from the quantitative and qualitative findings by comparing the merged-



data results. The strength of the merged-data analysis provided both statistical and narrative data and ensured validity and reliability of results. The mixed-methods analysis yielded cross-sectoral findings with strong meta-inferences.

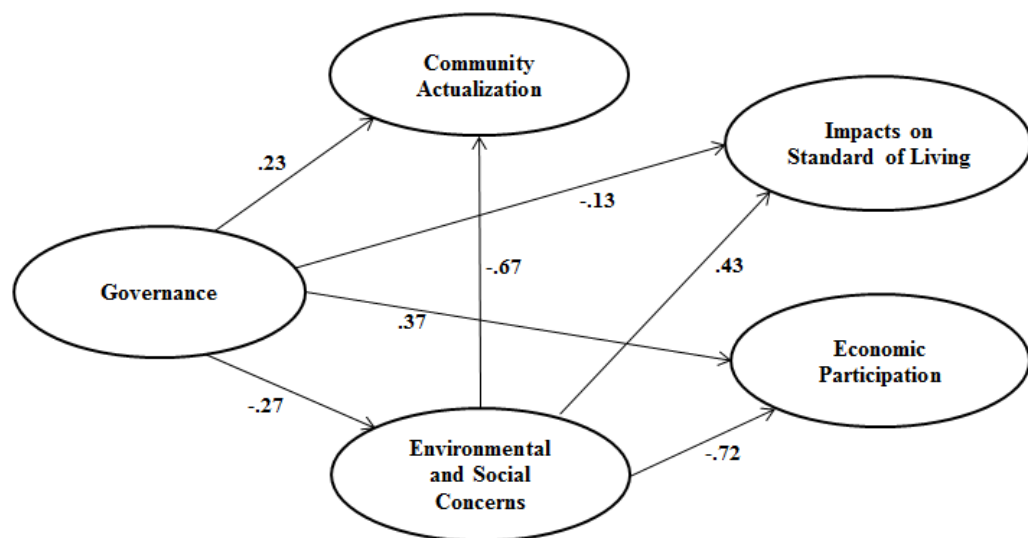
## 2.2. Results

The study findings revealed that the communities affected by CSG projects in the Surat Basin are experiencing rising economic inequality, sense of uncertainty about the future, and impacts on social capital. The analysis showed that perceptions of fairness and inequity weigh heavily on land owners and disrupt meaningful participation leading to negative psychological and social effects. Correlations using SEM demonstrated relationships between factors that underpin social externalities. Many of the issues in quality of life research and sustainability decision making are unobservable, or latent. SEM analysis was used in this study as a statistically defensible means of quantifying these variables through surrogate or measured variables. Quantification of these latent variables provided a better understanding of the complex nature of *social externalities of major resource projects*, which was the over-arching goal of this study and itself not directly observable.

The five resulting factors of this construct revealed through SEM analysis were: (1) *Environmental and Social Concerns*, (2) *Economic Participation*, (3) *Governance*, (4) *Impacts on the Standard of Living* and, (5) *Community Actualization*. The first factor, *Environmental and Social Concerns*, includes perceptions (levels of concern) of community residents in regard to environmental health, environmental damage, water and air quality, and how the community dynamics and community values are being affected. The second factor, *Economic Participation*, captures the changes in the job market brought by employment opportunities as the result of major projects,

as well as opportunities for community residents to benefit financially from the development. The third factor, *Governance*, includes the perceptions of residents about the local council (the ability of the council to address the needs of the community and manage community concerns). The fourth factor, *Impacts on Standard of Living* captured issues related to the standard of living, including living costs and availability of affordable housing. And the fifth factor, *Community Actualization*, relates to life satisfaction and sense of fulfilment in personal, professional and community life.

The relationships between the five factors are shown in Figure 2. The direction of influence is shown by the straight arrows and the degree of influence is represented by the standardized correlation coefficients as the result of maximum likelihood estimation.



**Fig 2.** SEM model with correlations among factors shown

SEM model shows that governance and perceived power (or lack of power) of the local government plays an important role in: life-satisfaction, economic

polarization (economic participation or exclusion), concerns of residents about environmental and social impacts, and inequity (affordability). The SEM model showed that perceived poor governance correlates to lower levels of participation by community residents in economic opportunities associated with the projects. The model also showed that concerns of residents about environmental and social impacts (such as impacts on groundwater, lifestyle, and community values) have high negative influences on economic participation and on community actualization (individual sense of fulfilment in personal, professional, and community life). In other words; unresolved concerns of community residents about environmental and social impacts may lead to lower life satisfaction (quality of life) and a weaker local economy. All correlations revealed by the SEM model were statistically significant.

The relationships revealed by SEM were instrumental in helping to understand the extent to which the development associated with CSG projects is influencing quality of life in the affected communities. The SEM model combined with merged-data analysis resulted in cross-sectoral finding and strong meta-inferences. The results of the merged-data analysis are summarized in Table 2.

**Table 2**  
Merged-data analysis results

QUAN results					QUAL results		
n = 428					n = 428	n = 41	
Conceptual Framework Themes	Structured Survey Questions <sup>a</sup>				Open-Ended Survey Questions <sup>b</sup>	Semi-structured Interviews <sup>c</sup>	Direct Observations <sup>d</sup>
		Not concerned	Neutral	Concerned			
I. <i>Environmental and Social Concerns</i>	Environmental health in the area	9.3%	14.3%	75.9%	Environmental Concerns (50 references)	<b>Environmental Concerns:</b> Noise, dust, traffic, living in industrial zone, groundwater impact, health impacts	-Heavy traffic and road works in some areas
	Water quality	9.6%	11.4%	77.4%	Concerns about Agricultural Viability (45)		- Road noise; oversized vehicles
	Air quality	20.0%	23.1%	55.1%	Loss of community spirit, less community involvement (288)		- Industrial operations on some properties
	Environmental damage	9.3%	17.5%	71.8%	Need for better environ. protection (104)	<b>Social Concerns:</b> negative impacts on the social fabric, division in the community, less involvement by some community members, privacy loss on some properties	- Visible flares in some areas
	Personal land/property being affected	15.9%	19.2%	63.1%	Division in the community, signs of greed (46)		- Minimal social interaction between itinerant workers and locals
	Changes in community values	6.5%	19.2%	72.9%	Presence of itinerant workers - FIFO (169)		- Some neighbours are no longer on speaking terms
	How community as a whole is being affected	4.9%	15.9%	77.3%	Presence of CSG industry (175)		
		Agree	Neutral	Disagree			
II. <i>Economic participation</i>	New employment opportunities in the area	40.6%	23.8%	34.1%	Economic loss as the result of development (68)	<b>Economic opportunities:</b> business opportunities seem to be centred around the hospitality and real estate sector; other report minimal work opportunities for locals	- Real estate/developers in all towns
	Personally more financially secure as the result of projects	17.8%	19.4%	62.4%	Economic gain as the result of development (32)		- Some local business closed, many empty shop fronts
					New employment opportunities (15)		- Former dress shops selling high-vis gear
					Limited employment opportunities for locals (66)	<b>Falling property values</b> for those close to CSG operations	- No vacancies in many motels, pubs and hotels busy (FIFO)
		Content	Neutral	Not content			
III. <i>Governance</i>	Local government - overall performance	9.1%	18.0%	72.0%	Insufficient gov. support, lack of respect (123)	<b>Governance:</b> Perceived lack of representation, loss of rights, loss of autonomy due to amalgamation; lack of respect, sense of not being valued <b>Services:</b> need for better hospitals, education facilities to meet population growth; overburdened infrastructure roads and	
	Ability of local council to: Address the needs of community	14.8%	16.1%	68.0%	Community needs not being addressed, issues since amalgamation (58)		- Internet unavailable in some areas after 5:00pm due to FIFO workers coming off shift
	Represent the values of the community	14.0%	21.0%	63.8%	Roads safety, road damage, road traffic (227)		- Heavy traffic and road works on parts of Warrego Highway
	Provide information in a timely manner	18.4%	33.9%	46.5%	Overburdened services, higher rates (84)		
	Sufficient Infrastructure and services	10.1%	17.8%	69.7%	Overburdened infrastructure (121)		
		Not concerned	Neutral	Concerned			
IV. <i>Standard of Living (Affordability)</i>	Cost of living	3.1%	12.1%	83.4%	Increase in the cost of living (229)	<b>Impacts on the Standard of Living:</b> higher cost of living, lack of affordable housing, less and less free time (working more), time consuming negotiations with CSG companies, boom and bust dynamics, two-wage economy, new amenities/cafes in town	-New franchises, cafes, restaurants
	Availability of affordable housing	5.1%	14.3%	78.7%	Concerns about high rent and housing costs (159)		-High prices for petrol, food, coffee
					Two-tier, two-wage economy, inequity (185)		-Accommodations expensive/unavailable
		Agree	Neutral	Disagree			
V. <i>Community Actualization</i>	Please rate how your quality of life has been affected by the development; overall would you say that you (are):				Sense of uncertainty about the future (172)	<b>Apathy:</b> exhausted by the uncertainty, sense of powerlessness, loss of autonomy, no choice, 'nothing we can do' <b>Psychosocial Effects:</b> stress, anxiety, sense of not being valued or respected, sense of not belonging	-Some residents are reluctant/uncomfortable to discuss CSG issue in public
	More fulfilled in your community life	11.5%	29.4%	58.2%	'We need to protect our lifestyle' (83)		-Amplified distrust of 'strangers'
	More fulfilled in your professional life	18.9%	38.6%	40.2%	Goal: 'To survive' (63)		-Consultation and survey fatigue in some areas
	More fulfilled in your personal life	9.8%	38.1%	51.4%	Need to stick together' (36)		-Noticeable industry presence, sponsorships
	Will this development benefit future generations in your community	14.5%	15.4%	56.8%	Provide for the best interest of family and children (23)		
		Agree	Neutral	Disagree			

Notes:

<sup>a</sup> Selected evaluation measures based on results of exploratory factor analysis using principal factors algorithm<sup>b</sup> Frequency of references shown in parantheses<sup>c</sup> Emerged themes and sub-themes of thematic analysis<sup>d</sup> From field notes

### 2.2.1. Social Externalities

Externalities are typically not reflected in economic transactions, they do however, have a direct impact on people's welfare and community sustainability, and thus on economic value. The findings of this study revealed the following social externalities associated with the rapid economic development of CSG projects in the Surat Basin:

#### *Changes to quality of life and life-satisfaction*

The majority of the respondents (63%) rated the overall quality of life in their community as worse '*now compared to what it was five years ago*'. With respect to life-satisfaction; the majority of the respondents disagreed with being *more fulfilled* in their *community*, *professional*, and *personal* lives since the projects began in the region. Of the three aspects of quality of life, the majority of the respondents were the least fulfilled in their *community life*.

SEM analysis demonstrates a direct correlation between life-satisfaction (captured by the theme of *Community Actualization*) and perceived ability of the local government to represent and address the needs of the community. This relationship is also captured by the qualitative data from open-ended questions, and from semi-structured interviews; reflected in the overarching sub-themes of *disempowerment* and *loss of autonomy*. The contributing factors to a *sense of powerlessness* include: perceived lack of local representation post the amalgamation process of the local councils; sense of not being respected or valued by the government; sense of being powerless and small compared to the CSG industry; the division in the community as the result of the projects, and in some cases the inability of the community to come together to make decisions.

The issue of noise associated with gas well installations, flares, industrial activity and heavy road traffic is a significant area of concern for some community residents; specifically landholders whose residences are in close proximity to gas field operations. Some property owners reported feeling vibrations inside their homes from the pumps and CSG installations on their property. According to Kahneman (Kahneman, 2011) constant exposure to noise, along with chronic pain and severe depression, are three conditions that humans are not designed to biologically adapt to. As there is no adaptation to the condition of living with constant noise, it can therefore be inferred that involuntary exposure to chronic noise has a detrimental effect on quality of life and human wellbeing.

The thematic analysis of the semi-structured interviews provided evidence of increasing apathy in the community. In addition to a sense of powerlessness, some respondents reported being '*exhausted*' and '*numb*' to the issues and challenges associated with the development of the CSG industry. Apathy is reflected by indifference and is considered to be a natural response to prolonged disappointment; it can also be a dangerous barrier to communication and meaningful participation. Similarly to depression and a sense that '*nothing matters*', apathy may lead to mental health issues (Csikszentmihalyi & Wong, 2014).

### ***Impacts on social capital***

Findings from this study indicate that social capital is being affected and in some cases eroded in communities directly affected by the CSG projects. One of the major contributing factors is the division/polarization of the community. The majority of the respondents (58.6%) felt that the sense of community has decreased in the last five years. When asked '*how does your community feel about the rapid economic development occurring in the area*' the majority (68.7%) said that their

community was '*divided*' on the issue. The majority of the respondents (77.3%) also reported being concerned about how their community was being affected. Similarly, the majority of the respondents (72.9%) were concerned about the change in community values since the projects began.

Responses from the open-ended questions support the results from the quantitative data; thematic analysis identified social cohesion concerns in regard to the declining community spirit and a decline in community involvement. Direct observations also made evident that some residents are uncomfortable to discuss CSG issues within earshot of anyone in their community. Interview data demonstrated that some residents are reluctant to voice their opinion for fear of being judged by other community members as '*being against progress*'.

Other key factors affecting social and cultural capital in the region include: loss of some of the foundational members due to voluntary displacement associated with the projects, impacts on lifestyle, and a sense of trust within the community. For example, loss of trust among neighbours has been particularly amplified in some communities by confidentiality agreements imposed by project proponents. Many respondents reported being deeply connected to the land (physically, financially, culturally and emotionally). This was a common theme, and links directly to a sense of place and cultural identity. Other contributing factors to the erosion of social capital included: perceived loss of privacy; transient nature of the itinerant population in the region; perceptions of increasing '*greed*' among community members; and unequal distribution of benefits.

### ***Impacts on the standard of living, economic inequality***

The broader concept of the standard of living is understood to be closely related to quality of life. It takes into account not only the material factors, but also more intangible aspects that make up human life such as: family time, sense of security and stability, cultural resources and social life (UN Human Development Report, 2013). Responses to the open-ended questions confirm not only concerns about the rising cost of living in the region, but also higher stress and less free time to spend with friends and family as the result of economic pressures brought by the development. The majority of the respondents (59.6%) to the structured survey questions felt that in the last five years the standard of living in their community has become worse. A large majority (83.4%) also reported having concerns about the rising cost of living. The majority of the respondents (62.4%) also disagreed that they were more financially secure as the result of the development in the region.

Responses to open-ended questions reveal high levels of economic inequality in the region and the presence of a ‘two-tier’ or ‘two-wage’ economy. Positive economic benefits and opportunities seem to be concentrated among a small number of local residents. These include: some landholders, those employed in the CSG sector, and selected local businesses, for example: pubs, restaurants, motels, real-estate and property developers. Less than one quarter of the respondents (17.8%) agreed that ‘*they are now more financially secure as the result of the CSG projects in the region*’.

Qualitative data from interviews provided further evidence of economic inequality. Some respondents felt that although the local communities were bearing most of the costs and long-term consequences of the rapid economic development associated with the CSG projects, the benefits were flowing predominately to the



major urban centres. Previous research in this field has shown that economic inequality can lead to collective feelings of: superiority and inferiority, being valued and not valued, respected and not respected, as well as higher consumerism, social status insecurity, more social evaluation anxiety and fear of negative judgments (Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012; Wilkinson & Pickett, 2009). This is significant because as previous studies have shown (Abbott, 2007; Wilkinson & Pickett, 2006, 2009) the resulting psychosocial effects can influence mental health and community wellbeing, and can also contribute to negative externalities of weakened community resilience and a weakened local economy.

Stresses associated with economic inequality, and the threat of loss to homes and productive resources have been shown to have severe effects on mental health and community wellbeing. Studies, such as the one by Hales (2007) on the social impacts associated with the proposed development of the Traveston dam on the Mary River in Queensland, and parallel work in social psychology measuring stress hormone related to threats to self-esteem as the result of income inequality (Calvert & Fahey, 2013), have confirmed that those kinds of stresses have a particular effect on negative wellbeing.

Positive externalities associated with the CSG development were captured by the thematic analysis of open-ended questions and interview data. These included new amenities, facilities, cafes and restaurants in the region, as well as, corporate sponsorships for local clubs and events. Some respondents also referred to an increase in multiculturalism in the region.

### *Sense of uncertainty about the future*

The findings from qualitative data revealed a heightened sense of uncertainty about the future. Specifically, sense of uncertainty was particularly related to worries and concerns about impacts on groundwater, especially by those residents in the agricultural sector, and long term health impacts, especially by those residents living in close proximity to gas wells and gas field operations. Other concerns expressed by the respondents included the threat of the CSG industry on viable agricultural production and land-use effects, including access to productive resources and impacts on lifestyle and livelihoods. Several respondents also expressed concerns about the threat to property values, and the inability to sell their property due to the proximity to industrial CSG operations.

Other issues contributing to the sense of uncertainty included: concerns about how the community and the community values are being affected, long-term employment opportunities for locals, and perceived lack of stability, *'loss of control'* and inability to plan for the future. Dissatisfaction with local governance was also a contributing factor to a sense of uncertainty. The majority of the respondents (72.6%) were not content with the local governance in the region, and 68.8% disagreed with the statement that *'local council has done a good job addressing the needs and concerns raised by members of your community'*.

The SEM model showed that dwindling confidence in local governments' ability to address environmental and social concerns is related to lower levels of economic participation. The SEM model also showed that unresolved environmental and social concerns (such as impacts on groundwater, impacts on lifestyle and community values) negatively influence life-satisfaction and community's ability to plan for the future.

### **3. Discussion: Drivers and Disconnects**

The findings from the Surat Basin CSG study have demonstrated that there are disconnects between project decision making and the delivery and operation of major resource projects that meet and maintain the sustainability priorities of the community. Two key factors contributing to this divide are identified below.

The first factor is the polarised ideologies and frames of reference that inform project decisions. On one end of the spectrum is the viewpoint that considers social impacts to be inevitable and unintended outcomes of the development. This group includes scholars and professionals that focus on designing and developing (more) effective safety nets to cushion adverse consequences within the appropriate legal, managerial and policy frameworks (Dwivedi, 2002; Flyvbjerg, 2009). This group argues that big projects contribute to the public good, are worth undertaking and suggest that their negative impacts can be minimised by adequate attention to remediation (Cernea, 2000). This perception can be encapsulated by the prevailing understanding that although these projects may cause significant localized effects, the net economic benefits, creation of local jobs, investment into regional areas, and the building of new infrastructure outweighs any local loss of land or impacts to the community. Gellert & Lynch (2004) maintain that the shifting combinations of actors who undertake and shape megaprojects share the above ideology. These include: project managers, engineering consultants, the construction industry, multilateral, state and private lending institutions, state bureaucracies and development agencies. They also point out that members of this group tend to assume that once conceived, a megaproject is inevitable, that is, *'if we didn't do it, someone else would'*, and see themselves as being in a better position than others to minimise risks.

In contrast, the second group views social impacts as a manifestation of a crisis in development - instead of improving people's wellbeing, the impacts of megaproject development disrupt their existing ways of life (Rolfe et al., 2007; Sharma, 2003). The main focus of this group is the structure of displacement, rather than its outcomes. 'The argument here is that legislative definitions, executive practices and judicial interpretations on displacement deny people the right to protect their lands, livelihoods, and social ecology' (Dwivedi, 2002). This group questions how the social fabric of the community will be affected by the project, what might be the impacts of introducing social change or new forms of wealth into the social groups; and/or what kind of job opportunities do local people actually want (Downing, 2002; Wilkinson & Pickett, 2009). The ideological orientation of this group recognises that sustainable society nurtures and constructs its cultural identities, supports traditional authorities, and requires that the means for survival be passed, unimpaired, to future generations, and that the total stock of capital (*natural, built, social and human*) be increased, not diminished (Bradbury & Clair, 1999; Robert Costanza et al., 2007)

The second factor that contributes to the disconnect between the concerns of the community and the project decision making processes is the lack of consensus on what is to be sustained as part of the project. Until recently, sustainable development was perceived as essentially an environmental issue, relating to the integration of environmental concerns into economic decision-making. As a result, environmental considerations have been the primary focus of sustainability decision making during the economic development process for major projects, and the assessment and preservation of social and cultural systems has been arguably too limited.

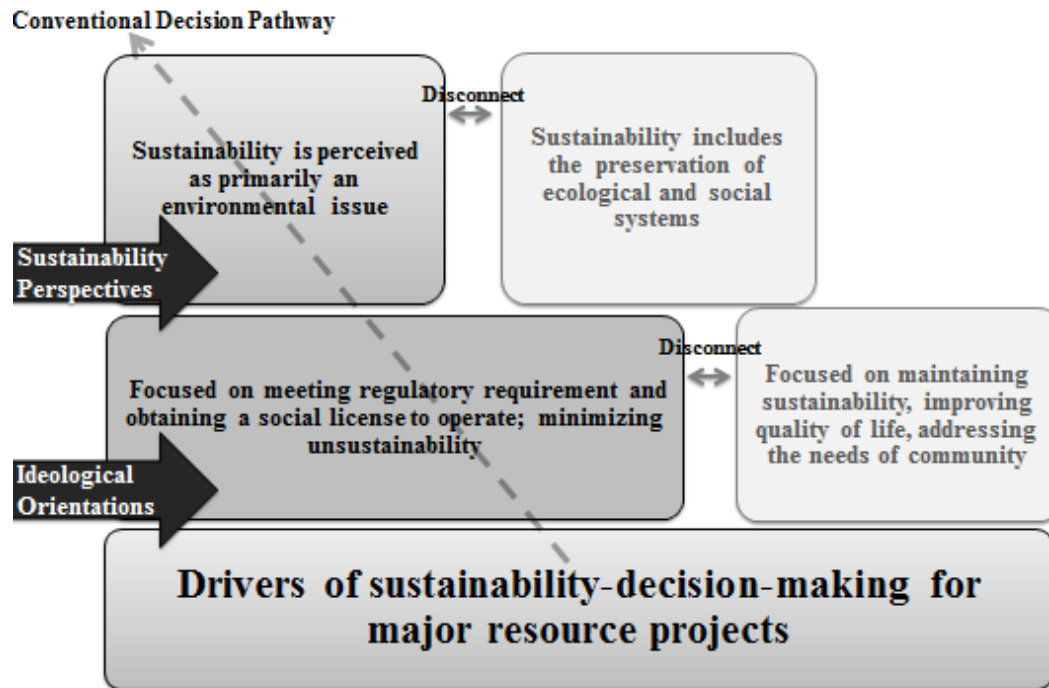
It is largely understood that if the sources of life support on earth are not sustained, the life of many species including humans will be threatened. Sustaining

sources of life support includes preservation of the environment, biodiversity, ecosystems, natural resources, and ecosystem services (Bolund & Hunhammar, 1999; Boumans et al., 2002; R. Costanza et al., 1998; Daly & Farley, 2010). Ecosystem services refer to *benefits or goods and services that humans recognize as obtained from ecosystems that support, directly or indirectly, their survival and quality of life* (R. Costanza et al., 1998).

In an effort to preserve ecological systems, numerous approaches for valuing ecosystem services have evolved. The ecosystem services approach (EsA) (R. Costanza et al., 1998) has been developed as a strategic and tactical framework for taking account of ecosystem services within decision-making (Fish, 2011). The basis of the framework is the natural environment's contribution to human wellbeing, and variations of this concept have emerged in theory and in practice. No similar framework exists for social systems. The absence of available demonstrable techniques for evaluating social externalities in a megaproject context precludes the move towards internalizing externalities as part of policy and project decision making.

Better understanding of the relationships of the underlying factors influencing quality of life in affected communities is an important element of the evaluation process. Communities are a complex web of relationships between a set of individuals who share norms, values, history, and identity, and to the extent these are threatened, the community is threatened (Folke et al., 2002). In order to improve accountability and transparency of project outcomes externalities that flow from project development, and externalities that flow from goods and services provided by the social and cultural systems of the community need to be incorporated into decision making (Downing, 2002; Missimer, Robèrt, Broman, & Sverdrup, 2010).

Avoiding the basic destruction of ecological systems is currently an acceptable starting premise for sustainability assessment. The same fundamental premise, however, is not always applied for social systems. The perceptions and the divide they perpetuate are summarized in Figure 3.



**Fig 3.** Factors Perpetuating the Divide in Sustainability Decision Making

The purpose of mapping the cross-roads in decision making as depicted in Figure 3 is to recognize the different frames of reference and highlight key factors contributing to the disconnect in sustainability decision making of major resource projects. The conventional decision pathway is shown by the dashed arrow. The significance of synthesizing the different viewpoints is that it interlinks the problem areas in a cascading manner, and emphasizes a need for a more comprehensive approach for addressing social impacts and externalities of major resource projects.

## **4. Shared Value Approach**

The shared value approach is based on the principle that companies will succeed when they find ways to create social value at the same time they create economic value for themselves and their shareholders (Porter & Kramer, 2011). This approach presents a whole set of operating practices and opportunities for doing business that enhances the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates (Porter & Kramer, 2011).

Shared value mindset looks beyond moral obligation, sustainability reporting, license to operate and reputation. Examples of innovative, practical and inclusive shared value business models include: developing and investing in local enterprise initiatives; providing products and services that may assist a part of the community that may not have yet been considered; sourcing from local, sustainable sources; and creating strong economic clusters in the region of operation through strategic investments. Shared value approach offers a whole set of opportunities for new products, new markets, and new ways of doing business that enable companies to strengthen the communities in which they operate and as the result become stronger companies themselves.

For extractive companies the social license to operate and the relationship with the community close to operations is tremendously important (Lacey & Lamont, 2014). Companies spend a significant amount of money on social initiatives as part of their corporate social responsibility agenda. Much of this, however, is quite random and is not specifically targeted to contribute to the welfare of the community (Franks et al., 2014; Moffat & Zhang, 2014). The shared value approach offers a more effective and beneficial way of investing in communities.

Findings from the Surat Basin CSG study showed that, for most residents, dignity and choice are more important than temporary financial gain. Respect and fairness were central desired outcomes expressed by the majority of the respondents in the study. The findings validated that for a corporate social initiative to be truly sustainable, it must put the people, their dignity, and the needs of the community in the center. For example, investing in local entrepreneurs who are committed to the long-term goals of their community adds more to social value than donations. Similarly, understanding community goals and improving the local business environment can do more for the community than risk mitigation or needs-based corporate sponsored CD approaches.

Increasing scrutiny from the global community is contributing to a shift from a compliance-based decision making to the type of decision making that enhances value creation in society and the affected communities. Corporate Social Responsibility (CSR) is the business response to sustainable development, and typically refers to actions that appear to further societal good, beyond that which is required by law, and the interests of the corporate stakeholders (McWilliams, Siegel, & Wright, 2006).

Today, corporate social responsibility has to go beyond good corporate governance and the adherence to relevant codes and standards. The role of business in society is slowly shifting. The expectation from the wider community is that companies have to play an active role in environmental stewardship, community development and financial inclusion (Porter & Kramer, 2011). The alignment of business decisions with the sustainability priorities of the community will soon become the new *business-as-usual*.

This paper argues that to minimize negative externalities of major resource projects, operating companies need to move beyond managing social impacts and



maintaining the social license to operate. Shared value provides a more strategic approach, that includes listening closely to community members, understanding community goals and the factors that can contribute to improving the quality of people's lives, identifying opportunities for advancing the economic and social conditions in the community, and harnessing the intelligence and the passion of local entrepreneurs. Shared value is about creating social value and economic value simultaneously. This approach also provides excellent opportunities for Government and NGO sectors to benefit by partnering and enabling shared value on the part of the private sector to help scale up social enterprise and other community initiatives.

The conventional wisdom that there is a trade-off between social performance and economic performance is also shifting (Porter, Hills, & Pfitzer, 2011). The environmental movement has helped demonstrate that reducing pollution, energy usage, and emissions results in improved profit margins and a safer working environment. Similarly, by addressing societal need, companies can expect to improve business performance. The new thinking on the interface between business and society is actually showing that there is a fundamental deep synergy, particularly over a longer temporal horizon (Porter & Kramer, 2011). Moreover, shared value is a competitive strategy, and those companies who ignore negative social impacts and externalities will lose a competitive advantage to their more impact conscientious competitors and miss out on the benefits that come with creating a more resilient, inclusive society.

According to Porter and Kramer (2011), creating a shared value project is about considering the following interrelated components:

- Identifying social needs in the communities where the business has interests or which form part of its value chain;

- Examining the assets and the expertise that the company can bring to help address social needs through new or expanded markets and value chains; and,
- Identifying the opportunities for the business to engage with profitable business opportunities that will address social needs.

It is the combination of these three elements that provides for a potentially successful shared value initiative. Innovative solutions can emerge when expertise, assets, economic opportunities and community needs are brought together.

#### **4.1. Development of Criteria for Assessing and Minimizing Negative Social Externalities of Major Resource Projects**

The outcomes of the Surat Basin CSG study, derived from SEM and merged-data analyses, indicate that in order to assess social externalities of major projects at a community level, it is important to capture the determinants of quality of life (socio-economic, socio-cultural, socio-environmental, and socio-institutional) and the relationship between the factors underpinning social externalities. Using the example case study, we developed a criteria for assessing social externalities of major resource projects.

We took into consideration that CSG projects, also known as unconventional gas, pose spatially extensive impacts on rural communities and tend to overlap other land uses (predominately agriculture) more than other forms of resource extraction projects (Measham & Fleming, 2014). We reflect that these type of projects present a particularly complex and difficult scenario for creating shared value compared to other major resource projects.

The proposed criteria was developed with the understanding of, and to reflect the theoretical proposition of Costanza et al., (2008) which states that capacity to improve quality of life is dependent on all four capitals (Natural, Built, Human, and Social) and their systemic interaction; and that each capital is of inherent value and investment in one will not compensate or substitute for lack of investment or loss in another. This proposition is built on the construct of strong sustainability which assumes that the economic, human, social and natural capitals are complimentary, but not interchangeable (Ekins, Simon, Deutsch, Folke, & De Groot, 2003).

This paper sought to demonstrate that to minimize negative externalities of major resource projects, operating companies need to incorporate the shared value principles into sustainability decision making. The proposed criteria is intended to assist project proponents and decision makers from industry and government to assess social externalities of major projects, address sustainability concerns at a community level, and find opportunities for creating shared value. The proposed criteria is designed with the understanding that the assessment process should consider externalities that are positive and negative, primary and secondary, and are either a direct or indirect result of the project. The criteria presented in Table 3 are guided by the following questions:

- To what extent will the development (associated with the major resource project) influence quality of life in the affected communities?
- What are the long-term societal implications?
- What are the opportunities for creating social value while simultaneously creating economic value?

**Table 3.**

Criteria for Assessing Externalities and Identifying Opportunities for Creating Shared Value

Determinants of quality of life	To what extent will the development influence:	What are the opportunities for creating or adding value to:
<b>Socio-Environmental Factors</b>	Environmental health in the area Water quality Air quality Soil quality Ecosystem Services Noise Direct and self-sustained access to productive, recreational and culturally significant natural resources Land use effects, specific to the characteristics and circumstances of the people in the community	Environmental health in the area Water quality Air quality Soil quality Ecosystem Services Noise abatement Providing access to productive, recreational and culturally significant natural resources Land use effects, specific to the characteristics and circumstances of the people in the community
<b>Socio-Cultural Factors</b>	Community life and dynamics Social norms Social inclusion Lifestyle, privacy Anti-social behaviour (violence, substance abuse, prostitution, etc.) Sense of community Trust, social networks Division/ polarization Community involvement, participation Loss of community members due to voluntary displacement /resettlement Loss of community members due to involuntary resettlement Ability to express cultural identity Vulnerable groups	Community life and dynamics Social cohesion Sense of community Community involvement, participation Ability to express cultural identity Vulnerable groups
<b>Socio-Institutional Factors</b>	Ability of local government to address the needs of the community Ability of local government to address the concerns of the community Ability of local government to provide information in a timely manner Ability of local government to provide safety and maintain social order Human rights Economic corruption Appropriate infrastructure and services for local residents	Ability of local government to address the needs of the community Ability of local government to address the concerns of the community Ability of local government to provide information in a timely manner Ability of local government to provide safety and maintain social order Human rights issues Minimizing corruption Appropriate infrastructure and services
<b>Socio-Economic Factors</b>	Cost of living Availability and affordability of housing Existing livelihoods Skill shortages and staff retention Availability of labour and materials New economic opportunities Employment opportunities for locals Equitable and transparent compensation Equitable distribution of benefits	Economic equity Availability and affordability of housing Supporting existing livelihoods Supporting local businesses Supporting local entrepreneurs New economic opportunities Employment opportunities for locals Equitable and transparent compensation Equitable distribution of benefits
<b>Community Actualization</b>	Life satisfaction Sense of fulfilment, happiness, sense of wellbeing Ability of plan for the future/ sense of uncertainty Quality of education Family and leisure time Sense of place/ sense of belonging Sustainability goals of the community Ability of the community to sustain itself into the future Intergenerational equity/ benefits for future generation	Subjective wellbeing Life satisfaction Sense of stability Quality of education Sufficient family and leisure time Sense of place/ sense of belonging Sustainability goals of the community Ability of the community to sustain itself into the future Intergenerational equity/ benefits for future generation

These evaluation criteria are intended to assist project proponents and decision makers from industry and government to improve accountability and transparency of project outcomes and to address sustainability concerns at a community level.

## **5. Conclusion**

Evaluating and internalizing social externalities is an important step towards enhancing the outcomes to communities affected by major resource projects. There is a growing consensus in the wider community that it is no longer enough for operating companies to simply meet regulatory obligations and myopically focus on obtaining the social license to operate. This paper expands on the findings of a recent study that examined how quality of life has been influenced in communities affected by CSG megaprojects in Southeast Queensland, Australia. Social externalities were evaluated using a concurrent mixed methods approach. This approach was significant as it extended the understanding beyond attitudes and perceptions of the development to the longer-term societal implications.

Correlations using SEM demonstrated relationships between factors influencing quality of life and provided better understanding of the complex nature of social externalities of major resource projects. These correlations revealed that dissatisfaction with governance leads to lower levels of economic participation and sustained environmental and social concerns. The analysis further showed that unresolved concerns of community residents about environmental and social impacts contribute to lower life-satisfaction, inhibit the community to plan for the future, and lead to a weaker local economy.

The findings demonstrated that in order to support social sustainability in regional communities and demonstrate best practice, the decision making process for major resource projects needs to incorporate early evaluation of social externalities, namely: equitable distribution of benefits, consideration of an even balance of power between landholders and operating companies, and the alignment of project activities with regional and community planning objectives.

The alignment of business decisions with the sustainability priorities of the community were discussed, highlighting the broader drivers and disconnects. The discussion also emphasized that: in practice integrated sustainability decision making is the exception not the rule. This paper argues that to minimize negative externalities of major resource projects, operating companies need to move beyond managing social impacts and maintaining the social license to operate towards a more comprehensive shared value approach. Based on our research, we present a criteria for assessing social externalities of major resource projects which offers a strategic framework for identifying inclusive community development opportunities and steps toward minimizing negative social externalities.

Evaluation of externalities is an important step towards understanding and responding to the changes induced by major resource projects and enhancing the outcomes for society. Applying the conceptual framework and proposed evaluation criteria in other major resource project contexts would provide further knowledge of evaluation methods of social externalities. Future research will be useful to consider the transferability of the proposed evaluation criteria to projects outside of the resource sector.

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