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## “Sustainability is not a vegan coffee shop.” Eliciting citizen attitudes and perspectives to localize the UN sustainable development goals

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Integrating the United Nations Sustainable Development Goals (SDGs) into national legislation includes a need for their localization. The authors posit that this concept of localizing the SDGs is achieved if the goals are appended to an existing policy process with local implications, termed a “policy vehicle.” For this study, Q-methodology was used to gather local perspectives on the legislative process for coastal planning in Norway (the “policy vehicle”), the “proxy” legislation through which the SDGs are localized for the case study municipality of Andøya, Norway. The overall aim of the study was to understand potential pathways for enabling approaches to societal transformations where focus is placed on fostering human agency and capacities. The authors demonstrate how Q-methodology can be applied for enhanced stakeholder engagement in local decision-making processes as a starting point to enable social transformations for sustainability in a social-ecological system.

**Keywords:** Q-methodology; social-ecological systems; UN sustainable development goals; sustainable coastal development; transformational change; citizen attitudes

### 1. Introduction

Our planet is experiencing relentless pressure on natural resources to provide food, energy, space, and materials for a growing human population. Besides the need for the sustainable use of natural resources, there is an equal need for social justice, equity and representation of individuals and their associated values. All United Nations countries have formally recognized these realities, which provided the impetus for the United Nations 2030 Agenda on Sustainable Development (UNGA (United Nations General Assembly) 2015).

As a signatory to the 2030 Agenda, Norway is committed to achieving all seventeen sustainable development goals (SDGs) by 2030 and aims to “... contribute to getting the world back on track in achieving the SDGs, in a greener, fairer, and more

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resilient manner” (Ministry of Local Government and Modernisation 2021, 119). Norway has also determined that the implementation of the SDGs must include the *localization*<sup>1</sup> of these global Goals in a way that remains loyal to the fundamental values of prosperity and peace for the people and our planet noted in the 2030 Agenda (UNGA 2015; Gassen, Penje, and Slåtmo 2018; Bardal *et al.* 2021; Ministry of Local Government and Modernisation 2021).

### **1.1. Theoretical framing**

The 2030 Agenda explicitly mentions three key components of sustainability: society, economy, and the environment. Chiefly, this trifecta comprises three distinct, but interconnected, “pillars” (Basiago 1998; Pope, Annandale, and Morrison-Saunders 2004; Gibson 2006; Waas *et al.* 2011; Moldan, Janousková, and Hák 2012; Schoolman *et al.* 2012; Boyer *et al.* 2016; Purvis, Mao, and Robinson 2019), “dimensions” (Stirling 1999), or “components” (Du Pisani 2006). These three pillars of sustainability are founded on the idea that humans and nature are intricately connected (UN 1987). Altogether, these dynamic human-nature connections are organized by distinct boundaries and are conceptually known as social-ecological systems (SESs).

SESs are nested, multi-level systems that provide essential services to society such as the supply of food, water, and energy (Folke 2006; Ostrom 2009; Binder *et al.* 2013; Partelow 2018), as well as the non-material benefits people obtain from nature (e.g. cultural services) (Fish, Church, and Winter 2016). The study of these nested, multi-level systems conceptualizes our world as humans interacting with and relying on nature (Ostrom 2009; Partelow 2015). As a framework, SESs can support the development of sustainable policy, environmental management, and climate change adaptation that is relevant to decision-makers at all levels (Armatas, Venn, and Watson 2017; Dankel *et al.* 2022).

The study of SESs from both the social and natural sciences has illuminated the complexities and dynamic relationships of our human-natural world across multiple scales. Increasingly the focus has been on the micro-scale (individuals and small groups): the question of how society *sees itself* as part of nature. In other words, how the inner world (i.e. the emotions, thoughts, identities, and beliefs) of the people who make up social structures (Ives, Freeth, and Fischer 2020) impact and are influenced by social-ecological interdependencies. Understanding how changes in the inner world can affect transformation in the collective values of society is important for achieving sustainability (Westley *et al.* 2011, 2013; Stirling 2014; Pereira *et al.* 2015; 2018; Ives, Freeth, and Fischer 2020; Scoones *et al.* 2020). Social transformation requires fostering human agency at the individual or local level, enabling cross-sectoral cooperation and networking, and empowering individuals to take responsibility for change in their communities (Armatas, Venn, and Watson 2017; Avelino *et al.* 2019). Thus, identifying and extracting collectively-held values in society, and recognizing society *as part of* nature, is a first step to developing and implementing solutions to sustainability problems.

### **1.2. Enabling salient, credible, and legitimate social transformations for sustainable development in Norway**

Knowledge of the individual preferences and perspectives (that could broadly comprise collectively-held values) can increase individual participation in problem-solving and stimulate the “transformational potential” of those individuals (Lang *et al.* 2012;

Ruppert-Winkel *et al.* 2015; Tschakert *et al.* 2016; Farrell, Carr, and Fahy 2017; Horcea-Milcu *et al.* 2019). The transformational potential thereof is strengthened when it fulfills three key attributes: *salience* (the relevance of information for an actor's decision choices), *credibility* (if actors perceive information as meeting the standards of scientific plausibility and technical adequacy), and *legitimacy* (if actors perceive the process in a system meets standards of political and procedural fairness) (Cash *et al.* 2003; Cash and Belloy 2020).

The transformational possibilities emerging from the type of localized knowledge obtained on individual attitudes and perspectives includes political, cultural, and institutional change that could be made in society to achieve a desired outcome. In the sustainability sciences, three transformational approaches have been theorized for sustainable development: *structural*, *systemic*, and *enabling* (Sachs *et al.* 2019). Structural approaches focus on the underlying foundations of politics, economy, and society (e.g. the ideologies of institutions). Systemic approaches focus on features of systems for targeted change (e.g. the elements and drivers of a social-ecological system). These two approaches view society as a unit that comprises the institutional formations and processes that need to be changed. Enabling approaches, on the other hand, target transforming society (and the individuals within) by fostering human agency and capacities to identify shared values to collectively enact pathways to desired futures (Scooness *et al.* 2020).

Norway has an imperative to localize the SDGs and a targeted way to do this is through empowering local individuals and municipalities to determine what sustainability means *for them* (i.e. enabling their agency), thus leading to social transformation. The result would be a localizing process for Norway that is meaningful and contextually relevant (salient), follows political and procedural standards (legitimate), and has generated mutual trust and credence between individuals, institutions, and the science (credibility) that forms the basis for sustainability policy.

### ***1.3. Using existing national policy mechanisms to localize the SDGs for Norway: the Norwegian Planning and Building Act (2008)***

Consensus in Norway is that SDG implementation relies heavily on existing policies and processes (Bardal *et al.* 2021). By localizing the SDGs through an existing policy, or “vehicle”, that is already anchored to and implemented at the local level, the SDGs are forced to be adapted to the local context, which facilitates their integration. Norway has done much to jumpstart the localization process for the SDGs, including allocating monitoring and reporting responsibilities to relevant ministries and departments in the government, and providing some financial resources for regional and municipal collaborations (Bardal *et al.* 2021). However, a “lack of guidelines and support from national authorities are key barriers [to working with the SDGs] at the regional level” (Ministry of Local Government and Modernisation 2021, 96). Without clear guidance from the national government, local and regional authorities struggle to understand how to develop plans, processes, and activities that are relevant to their needs while also contributing to the SDGs. In other words, what is lacking is knowledge on local community grounding (or anchoring) of the SDGs (Rybråten *et al.* 2018). While the three transformational approaches are not mutually exclusive, in this study we consider *enabling approaches* as the focus for achieving salient, credible, and legitimate social transformation *at the local level*.

For this study, we explored how to overcome these barriers to SDG localization in Norway, by adapting a methodology to a local case using the legislative process for

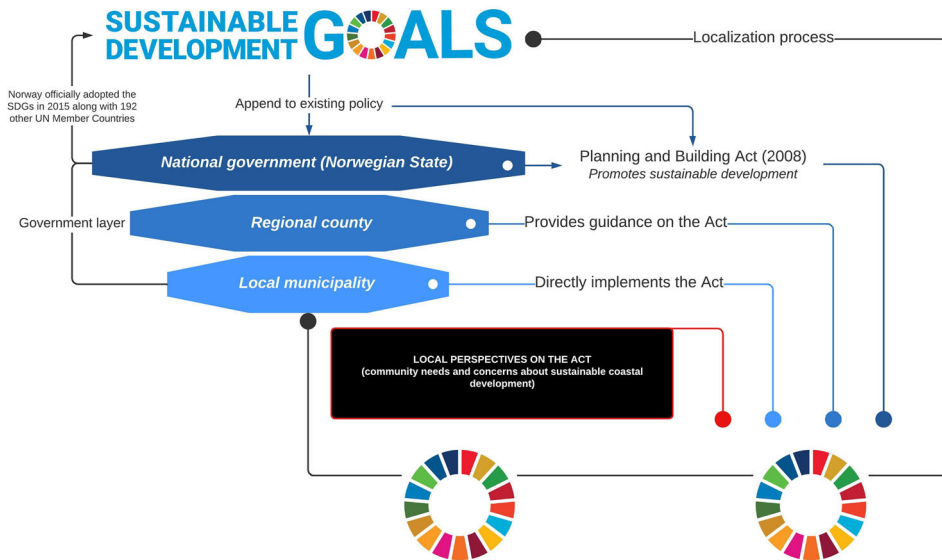


Figure 1. A conceptual illustration of how the Norwegian Planning and Building Act (2008) could be a “policy vehicle” to localize the SDGs. Relevant government levels are distinguished, alongside their specific connection to the Act. The black box indicates the knowledge gap on the local discourse about the topic of sustainable development that this study aims to illuminate using Q-methodology.

coastal planning as an example of a “policy vehicle.” The coastal planning process is regulated by the Norwegian Planning and Building Act (Ministry of Local Government and Regional Development 2008), which is a concrete example of legislative planning for all governance levels and stakeholders, through which the SDGs could be anchored and localized *by proxy*. This study uses the Planning and Building Act as the “policy vehicle” for localizing the SDGs. The Act is significant for the local (municipal) governance levels in Norway because of its direct implementation *via* those management bodies. The explicit purpose of the Act is to promote sustainable development (Kvalvik and Robertsen 2017; Dankel *et al.* 2022) for the use and conservation of terrestrial and aquatic resources. It contains a clear mandate for municipalities to cooperate on projects that fall within the scope of the Act, such as building developments and physical alterations of the land or area (Ministry of Local Government and Regional Development 2008, Section 1-6). Figure 1 illustrates this policy vehicle concept alongside the Norwegian government layers related to the Planning and Building Act. It shows how on-the-ground knowledge of local needs and concerns can be used to contextualize the Act (and by proxy, the SDGs) for those needs, thus strengthening the attributes of legitimacy, salience, and credibility for that policy vehicle. This is done by applying Q-methodology to elucidate local shared and diverging perspectives on sustainable coastal development.

The research objective for this study is to identify and examine the various discourses on the coastal planning process and what sustainability means to individuals in this case. The study is framed within the social, economic, and environmental pillars of sustainability applied to key economic sectors in the local case study area. The overall aim was to understand how a coastal planning process (i.e. the Act or the “policy vehicle” for the SDGs), could include the varying perspectives held in the community on sustainable coastal development as a proxy topic for the SDGs.

## 2. Methodology

### 2.1. Our case study of Andøya, Norway

Our case study area is *Andøya* (Figure 2), the northernmost island of Vesterålen, situated 300 km inside the Arctic Circle. *Andøya* has a surface of around 500 km<sup>2</sup> and a total of 5,000 residents in 2022. *Andenes* is the largest town with 3,500 residents and is the administrative center of *Andøy Municipality*, which also encompasses a few neighboring areas on the mainland. The largest employment sectors are the fishing industry (fishing activities have been occurring on *Andøya* for centuries), the Norwegian Air Force station established in 1954, and *Andøya Space* (a research and rocket testing center on the island since 1962). See Figure 3 for a development timeline of key economic sectors on the island, important for local employment. Geographically, *Andøya* has mountains rising up to 700 m above sea level, while the innermost part of the island consists of bogs, marshes, and lakes.

From 2016 to 2022, the Norwegian Defense Ministry proposed a series of changes to its military presence on the island. Three major ongoing developments are: i) the addition of a new rocket launch site for the *Andøya Space Center* at Nordmela, ii) the development of a new land-based aquaculture facility on the mid-eastern coastline of the island, and iii) a new museum and cultural center in *Andenes* called “The Whale.” During an in-person conversation with a co-author of this study on 11 June 2020, a member of the *Andøy Municipality* planning group commented that these developments are expected to provide significant positive impacts on employment and population growth for the municipality, as well as increased revenue from tourism.

### 2.2. Q-methodology

To understand the perspectives of local *Andøya* stakeholders on sustainable coastal development we used Q-methodology (Stephenson 1935). This approach can reveal social perspectives and allows for identifying similarities or commonalities among stakeholders. The advantage of using Q-methodology is that the participants’ responses can be compared in a consistent manner because everyone is responding to the same set of Q-statements (Brown 1993; Webler, Danielson, and Tuler 2009, 5; Watts and Stenner 2012). Q-participants were selected to represent the breadth of opinion in a target population (i.e. all sectors impacted by coastal planning), thus it is about qualitative representativeness. Participants sorted Q-statements about sustainable development and planning according to their beliefs and understandings, i.e. whether they Agree or Disagree with those statements.

Q-sort results can reveal patterns by showing inter-subjective orderings of beliefs shared among people (Brown 1993; Webler, Danielson, and Tuler 2009, 7; Watts and Stenner 2012). These subjective patterns indicate the degree of (dis)similarity in individually-held perspectives. In the Q-sort analysis, unique viewpoints are reduced to a few concise and general perspectives, which are complemented and contextualized by qualitative information derived from interviews (Armatas, Venn, and Watson 2017). The analysis reveals patterns within and across individuals, but it does not measure the distribution of beliefs across a population (Webler, Danielson, and Tuler 2009, 7; Armatas, Venn, and Watson 2017) nor does it measure across traits or categories (Martin and Steelman 2004; Ockwell 2008; Curry, Barry, and McClenaghan 2013).

This study followed four main steps for Stephenson’s Q-methodology, as elaborated in work by Brown (1993), and Watts and Stenner (2005, 2012). Figure 4 summarizes the key steps used in this study. Details on the Q-methodology steps are provided in the [supplementary materials](#). Ethics approval for the study was granted by the Norwegian

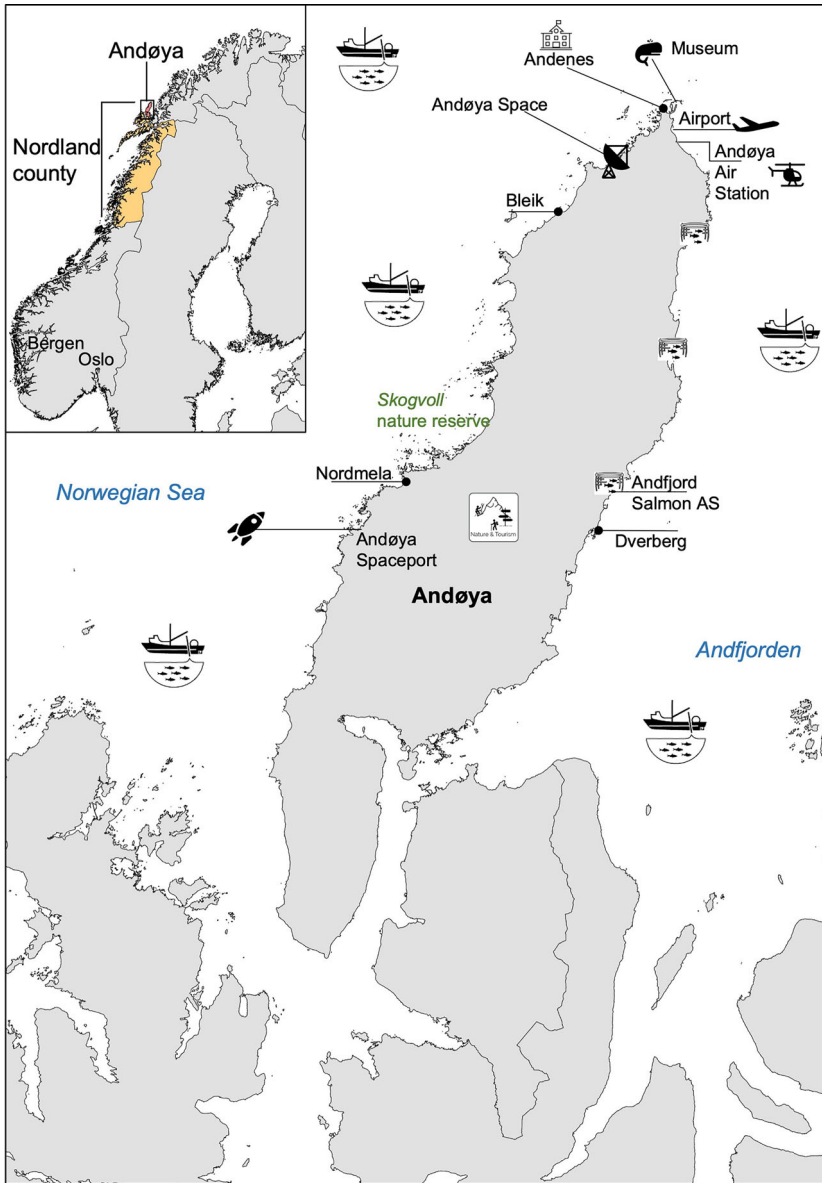


Figure 2. Map of Andøya (basemap produced by Per Arne Horneland, Norwegian Institute of Marine Research, 2022). Nordland County is denoted in orange and Andøya highlighted in red in the inset map. The map shows key townships (Andenes, Bleik, Nordmela, and Dverberg) and economic businesses (The Whale Museum, Andfjord Salmon AS, Andøya Space and Andøya Spaceport, the civilian airport, and the military air station). Key activities include active fisheries for Northeast cod (*skrei*), Norwegian spawning herring (*sild*), lumpsucker (*rognekjeks*), Northeast Atlantic Saithe (*sei*), halibut (*kveite*), Northeast Atlantic haddock (*hyseline*), mackerel, and anglerfish (*flabb*), among other species. These fisheries take place along the coastline and offshore in the Norwegian Sea and the Andfjorden fjord with several vessel sizes and different gear types such as Danish seine (*snurrevad*), jigging or by-hand weighted multi-hook (*juksa*), mixed nets, and longlines. There are active fishing ports in Andenes, Bleik, Nordmela, and Dverberg, and fish processing plants in Nordmela and Andenes. The size of the icons does not represent the size or importance of the enterprise it depicts.

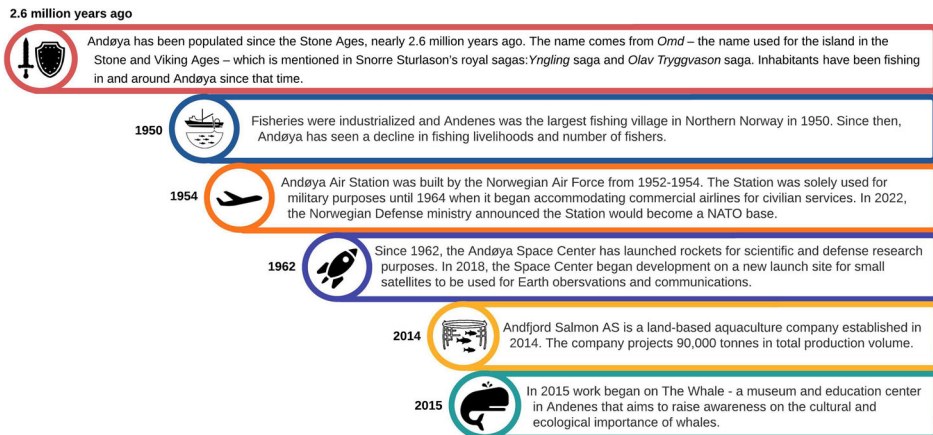


Figure 3. A generalized and stylized timeline illustrating key economic developments on Andøya. The subset shown here is a small selection relevant for this case and does not include all economic developments that mark the rich history and social, economic, and environmental diversity of Andøya. Icons created by Linley Kristofferson, with Microsoft Icons.

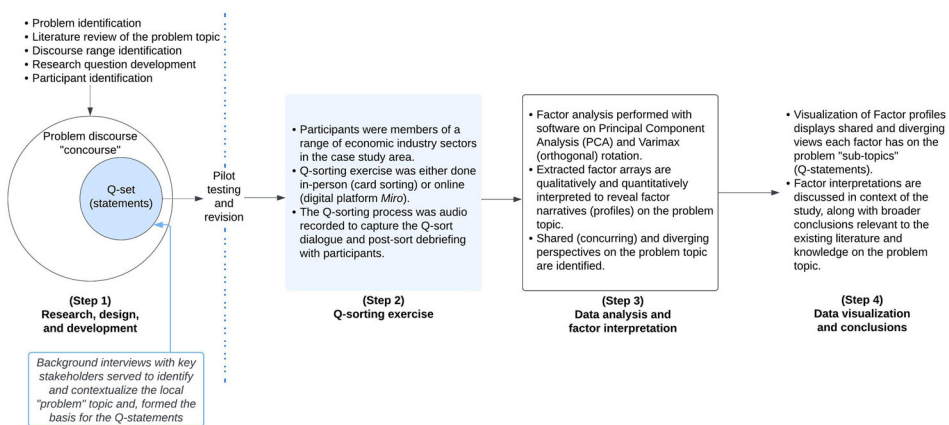


Figure 4. A summary of the Q-methodology steps utilized in this paper. Image adapted from Hai-Jew (2019).

Centre for Research Data (reference number 929315). All participants in the study were provided with an information note and consent form to sign prior to their participation, which included their right to withdraw from the study at any time and for any reason.

### 2.3. Step 1: Developing the concourse and identifying participants

The Q-set, or concourse, is a series of statements drawn from semi-structured scoping interviews held with key stakeholders from November to December 2020 (see [supplementary materials](#) for a list of interview questions). Twenty-five statements were developed from the interviews, of which 16 were direct quotes, and *post-hoc* categorized into the three sustainability pillars, with an additional "institution" category (Figure 5). A stakeholder analysis was done to establish a cross-section of local businesses located on the main island of Andøya with a direct impact on the coastal and/or marine space. Out



| Numbered statement   | Coded segment               | SDG Link  | Numbered statement   | Coded segment               | SDG Link  |
|--|-----------------------------|---|--|-----------------------------|---|
| 1. When it comes to coastal development in Andøya, the majority of Andøyværinger* are not listened to.                                   | 1 Unheard voices            | 5 GENDER EQUALITY, 16 PEACE AND JUSTICE   | 15. Real change in Andøya comes with integrating the SDGs into business plans and policies.  | 15 SDG integration          | 8 DECENT WORK AND ECONOMIC GROWTH, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE  |
| 2. "Money talks" in Andøya (larger, wealthier businesses/investors influence coastal plans).   | 2 Money Talks               | 8 DECENT WORK AND ECONOMIC GROWTH, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE  | 16. The sustainability bar is set very low for Andøya businesses.  | 16 Low sustainability bar   | 8 DECENT WORK AND ECONOMIC GROWTH, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE  |
| 3. At this moment, the commercial fishing sector in Andøya is losing to other sectors.   | 3 Fishing loss              | 8 DECENT WORK AND ECONOMIC GROWTH, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE  | 17. You can do good things for society with bad results for the environment, but if you are doing good things for the environment then it is really hard to screw up society.        | 17 Society vs environment   | 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE, 14 CLIMATE ACTION, 15 LIFE ON LAND   |
| 4. The Andøy Municipality and local policymakers have time, knowledge, and money to sustainably plan the Andøya coastline.               | 4 Municipal capacity        | 8 DECENT WORK AND ECONOMIC GROWTH, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 16 PEACE AND JUSTICE                    | 18. In order to be sustainable, the Andøy Municipality needs to say "No" to development a lot more.  | 18 No to development        | 8 DECENT WORK AND ECONOMIC GROWTH, 11 AFFORDABLE AND CLEAN ENERGY, 16 PEACE AND JUSTICE                               |
| 5. New buildings and infrastructure development are destroying the Andøya coastline.   | 5 Coastline destruction     | 8 DECENT WORK AND ECONOMIC GROWTH, 11 AFFORDABLE AND CLEAN ENERGY, 14 CLIMATE ACTION, 15 LIFE ON LAND                 | 19. The fishing industry in Andøya has always been thinking about sustainability, because if they harvest all the fish this year there won't be any for next year.                   | 19 Sustainable fishing      | 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 14 CLIMATE ACTION, 15 LIFE ON LAND, 16 PEACE AND JUSTICE                   |
| 6. People in Andøya have different definitions of sustainability, and this is what hampers sustainable coastal development.              | 6 Sustainability confusion  | 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE                                    | 20. I live in nature, not outside of it (e.g., I don't separate myself from nature).   | 20 Live in nature           | 11 AFFORDABLE AND CLEAN ENERGY, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 15 LIFE ON LAND                            |
| 7. Climate change is the most important reason to do sustainable coastal planning in Andøya.   | 7 Climate change            | 11 AFFORDABLE AND CLEAN ENERGY, 13 CLIMATE ACTION, 14 CLIMATE ACTION, 15 LIFE ON LAND                                 | 21. It's a brute fact that Andøy Municipality needs money (e.g., from business growth and development in Andøya) to do its work, even if that means making hard (unpopular) choices. | 21 Municipality needs money | 8 DECENT WORK AND ECONOMIC GROWTH, 9 AFFORDABLE AND CLEAN ENERGY, 16 PEACE AND JUSTICE                                |
| 8. Andøya is a "Mecca" for wildlife and nature.  | 8 Andøya Mecca              | 8 DECENT WORK AND ECONOMIC GROWTH, 11 AFFORDABLE AND CLEAN ENERGY, 14 CLIMATE ACTION, 15 LIFE ON LAND                 | 22. The government gives the minimum requirements for sustainability and then it's up to Andøya businesses and individuals to take it further.                                       | 22 Minimum requirements     | 8 DECENT WORK AND ECONOMIC GROWTH, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE |
| 9. The government is responsible for implementing sustainability in Andøya.  | 9 Government responsibility | 8 DECENT WORK AND ECONOMIC GROWTH, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE | 23. Many Andøya businesses struggle to understand how to incorporate sustainability into their business.   | 23 Sustainable businesses   | 8 DECENT WORK AND ECONOMIC GROWTH, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE  |
| 10. Businesses in Andøya need to decide if sustainable practices first make "business-sense", additional benefits are just side effects. | 10 Business-sense           | 8 DECENT WORK AND ECONOMIC GROWTH, 16 PEACE AND JUSTICE   | 24. Planning for a small community like Andøya needs to involve everyone.  | 24 Planning involvement     | 5 GENDER EQUALITY, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE  |
| 11. Monetary incentives are the only way to get Andøya businesses to integrate the SDGs/sustainability into their business plans.        | 11 Monetary incentives      | 8 DECENT WORK AND ECONOMIC GROWTH, 16 PEACE AND JUSTICE   | 25. Andøy Municipality does not prioritize the environment enough.   | 25 Environment priority     | 11 AFFORDABLE AND CLEAN ENERGY, 13 CLIMATE ACTION, 15 LIFE ON LAND  |
| 12. Andøya doesn't need to be developed more, it just needs to be better organized.  | 12 Organize better          | 8 DECENT WORK AND ECONOMIC GROWTH, 9 AFFORDABLE AND CLEAN ENERGY, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE             |  |                             |   |
| 13. If coastal development in Andøya is done sustainably, it is always acceptable.   | 13 Always acceptable        | 8 DECENT WORK AND ECONOMIC GROWTH, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE  |  |                             |   |
| 14. Andøyværinger* need to see how global goals (e.g., the SDGs) are locally relevant if they are to accept the goals.                   | 14 Locally relevant SDGs    | 8 DECENT WORK AND ECONOMIC GROWTH, 14 CLIMATE ACTION, 16 PEACE AND JUSTICE  |  |                             |   |

Figure 5. Q-concourse of 25 statements, color-coded by sustainability pillar with which each statement is most strongly associated: economy (blue), society (orange), environment (green), and institutional (yellow). Each statement is linked to a relevant SDG. Colour online.

\* *Andøyværinger* and *Andøyværinger*: Norwegian word for “people from Andøya.”

of the 35 businesses contacted and/or found by snowball sampling, fifteen individuals responded to requests for interviews and completed Q-sorts between April and July 2021. Each business was then categorized into a sector type: government (2 participants), tourism (4 participants), fisheries (6 participants), and research and technology (3 participants). Two major business sectors were excluded from the Q-sort: agriculture (less relevant for coastal planning), and the military (the authors were unable to interview people from the military based in Andøya and/or had local knowledge of the case study area).

2.4. Step 2: Q-sorting exercise

The Q-sort was implemented using a standard distribution grid (Table 1) either in-person (using a poster and sticking cards) or online (using Miro and Zoom). During the Q-sort, participants were asked to “think aloud”, so their reasoning behind the decisions could be recorded (sometimes after probing by the researcher). Participants could move the statements until they were satisfied, and the final Q-sort was saved.

2.5. Step 3: Q-analysis and factor extraction

The 15 completed Q-sorts were analyzed using Principal Component Analysis (PCA) and Varimax (orthogonal) rotation with PQMethod software (Schmolck 2014).

Table 1. Forced-choice quasi-normal distribution grid for the Q-sort, with a corresponding a Likert scale of -4 (Most Disagree) to 4 (Most Agree).

| Most Disagree |    |    |    | Neutral | Most Agree |   |   |   |
|---------------|----|----|----|---------|------------|---|---|---|
| -4            | -3 | -2 | -1 | 0       | 1          | 2 | 3 | 4 |
|               |    |    |    |         |            |   |   |   |
|               |    |    |    |         |            |   |   |   |
|               |    |    |    |         |            |   |   |   |
|               |    |    |    |         |            |   |   |   |
|               |    |    |    |         |            |   |   |   |
|               |    |    |    |         |            |   |   |   |
|               |    |    |    |         |            |   |   |   |
|               |    |    |    |         |            |   |   |   |

Following a classic determination, the factors with eigenvalues greater than 1.00 were considered (Brown 1993; Watts and Stenner 2012; Rahma, Mardiatno, and Hizbaron 2020), and subsequently reduced using a series of tests (explained cumulative variance, Humphrey’s Rule, Scree test, and a by-hand comparison of results for factors extracted) (Watts and Stenner 2012).

**2.6. Step 4: Factor interpretation**

The resulting factor arrays were qualitatively interpreted following the “crib sheet” method (Watts and Stenner 2012). The interpretative phase of the analysis was initially performed separately by four of the co-authors. The individual results were then discussed, and a collective interpretation was developed. These interpretations were based on the results from the statistical analysis, along with perspectives and field observations by the first author who conducted the fieldwork. The factor descriptions were drawn primarily using the distinguishing statements identified for each factor (statement for which one Factor had a significantly different viewpoint from the other Factors). Then a holistic interpretation for all three factors was accomplished using the diverging statements (statements upon which all Factors differed) and consensus statements (statements upon which all Factors concurred).

**3. Results**

A 3-factor solution explained 57% of the study variance, which is considered sound (Kline 1994; Peterson 2000); and did not yield any non-significant Q-sorts. The three factors were distinguished using statements unique to them (see step 4 above), concurring stances (or shared viewpoints, Table 2), and diverging viewpoints (Table 3). Complete results are summarized in Figure 6. See supplementary materials for the full factor arrays. The three perspectives were classified as “Fisheries are important” (Factor 1), “Development must be green” (Factor 2), and “Sustainability guidelines are crucial” (Factor 3). Six of the 15 Q-sort participants loaded onto Factors 1 and 3 each, and two respondents loaded on Factor 2. One remaining respondent loaded onto both Factor 2 and Factor 3. In the following results tables, high or very low (negative)

Table 2. Consensus statements for which all three factors concur (shared viewpoints).

| Statement number and text  | Result interpretation    | Factor 1 |         | Factor 2 |         | Factor 3 |         |
|--|--------------------------|----------|---------|----------|---------|----------|---------|
|  |                          | Q-value  | Z-score | Q-value  | Z-score | Q-value  | Z-score |
| <b>8</b> Andøya is a “Mecca” for wildlife and nature.  | All factors Agree        | 3        | 1.42    | 3        | 1.63    | 2        | 1.04    |
| <b>11</b> Monetary incentives are the only way to get Andøya businesses to integrate the SDGs/sustainability into their business plans.              | All factors are Disagree | -1       | -0.33   | -1       | -0.55   | -1       | -0.34   |
| <b>22</b> The government gives the minimum requirements for sustainability and then it’s up to Andøya businesses and individuals to take it further. | All factors are Neutral  | -1       | -0.45   | 0        | 0.08    | 1        | 0.24    |
| <b>24</b> Planning for a small community like Andøya needs to involve everyone.  | All factors are Neutral  | 0        | -0.07   | 0        | -0.05   | -2       | -0.53   |
| <b>25</b> Andøy Municipality does not prioritize the environment enough.   | All factors Agree        | 2        | 1.14    | 1        | 0.65    | 1        | 0.72    |

Note: These are statements that do not distinguish between any pair of factors because there is no significant difference in how each factor ranked with that statement.

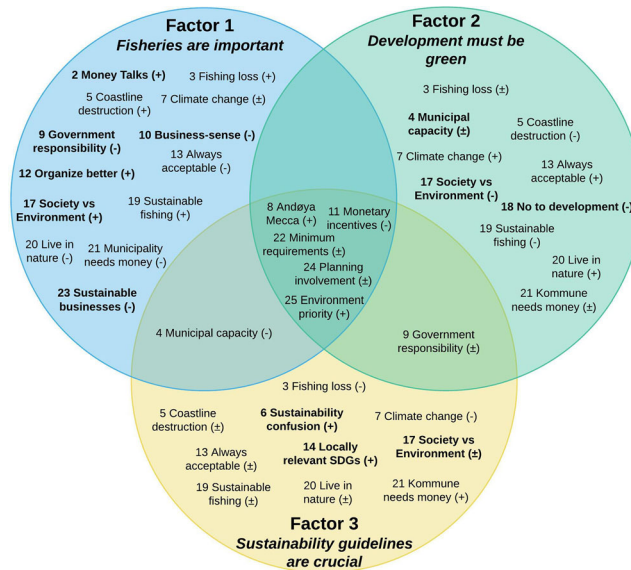


Figure 6. Venn diagram of each of the three factors extracted by Principal Component Analysis and rotated by Varimax with the PQMethod Software (see [supplementary materials](#) for complete results tables and factor arrays). Statements are indicated by coded segments (see [Figure 5](#) for the key). The use of a symbol indicates whether that Factor “Agrees” (+), “Disagrees” (-), or is “Neutral” (±) to that statement. Statements placed in each circle denote those for which that Factor holds either a distinguishing/unique view (marked in **bold**) or diverging (different) view, compared to the other two factors. Statements placed in overlapping areas between two factors indicate the statement(s) for which those two factors *share a viewpoint* (two factors concur) in a way that is different from the third factor. The central overlapping area indicates viewpoints on statements that are “shared” between all factors (the consensus statements in [Table 2](#)). The extracted factors were not determined to have any viewpoints or stance on statements 1 (Unheard voices), 15 (SDG integration), and 16 (Low sustainability bar) so they are not included in this figure.

Z-scores are associated with small P-values in normally distributed distributions, upon which significant differences between variables can be determined.

The result interpretation column in [Table 3](#) is based on the Q-value for each Factor *in relation* to the other two factors: so, there is one factor that Agrees most (+), one factor that Disagrees most (-), and a third that is Neutral (±). For example, Statement 13 shows a clear Disagreement for Factor 1 and a clear Agreement for Factor 2, while Factor 3 is more Neutral: i.e. more positive and more negative than Factors 1 and 2, respectively. For Statement 20, all three factors show a degree of agreement with the statement when viewed individually. When viewed in relation to each other, Factor 1 Agrees *less* with the statement than either Factor 2 or Factor 3.

### 3.1. Distinct perspectives on sustainable coastal development identified for Andøya

The three extracted factors comprise three distinct viewpoints about sustainable coastal development in Andøya (*Fisheries are important*, *Development must be green*, and

Table 3. Statements for which all three factors diverged strongly.

| Statement number and text  | Result interpretation | Factor 1 |         | Factor 2 |         | Factor 3 |         |
|--|-----------------------|----------|---------|----------|---------|----------|---------|
|  |                       | Q-value  | Z-score | Q-value  | Z-score | Q-value  | Z-score |
| <b>5</b> New buildings and infrastructure development are destroying the Andøya coastline.   | Factor 1 (+)          | 1        | 0.62    | -2       | -0.64   | 0        | 0.05    |
|  | Factor 2 (-)          |          |         |          |         |          |         |
|  | Factor 3 (±)          |          |         |          |         |          |         |
| <b>7</b> Climate change is the most important reason to do sustainable coastal planning in Andøya.   | Factor 1 (±)          | 0        | 0.09    | 3        | 1.50    | -3       | -1.61   |
|  | Factor 2 (+)          |          |         |          |         |          |         |
|  | Factor 3 (-)          |          |         |          |         |          |         |
| <b>13</b> If coastal development in Andøya is done sustainably, it is always acceptable.   | Factor 1 (-)          | -3       | -1.20   | 2        | 1.00    | -1       | -0.30   |
|  | Factor 2 (+)          |          |         |          |         |          |         |
|  | Factor 3 (±)          |          |         |          |         |          |         |
| <b>19</b> The fishing industry in Andøya has always been thinking about sustainability, because if they harvest all the fish this year there won't be any for next year.             | Factor 1 (+)          | 2        | 1.24    | -4       | -1.96   | -1       | -0.32   |
|  | Factor 2 (-)          |          |         |          |         |          |         |
|  | Factor 3 (±)          |          |         |          |         |          |         |
| <b>20</b> I live in nature, not outside of it (e.g. I don't separate myself from nature).  | Factor 1 (-)          | 1        | 0.28    | 4        | 1.96    | 3        | 1.07    |
|  | Factor 2 (+)          |          |         |          |         |          |         |
|  | Factor 3 (±)          |          |         |          |         |          |         |
| <b>21</b> It's a brute fact that Andøy Kommune needs money (e.g. from business growth and development in Andøya) to do its work, even if that means making hard (unpopular) choices. | Factor 1 (-)          | -1       | -0.30   | 2        | 0.82    | 4        | 1.76    |
|  | Factor 2 (±)          |          |         |          |         |          |         |
|  | Factor 3 (+)          |          |         |          |         |          |         |

Note: Determined by the calculated significant difference (at the  $p < 0.05$  or  $p < 0.01$  levels) of the associated z-scores. The use of a symbol indicates if that Factor "Agrees" (+), "Disagrees" (-), or is "Neutral" (±) to that statement. The result interpretation column is based on the Q-value for each Factor *in relation* to the other two factors (not in isolation).

*Sustainability guidelines are crucial*). The labels for the three factors are descriptive and intended to reflect the predominant focus. The unique perspectives derived from the distinguishing statements are summarized in Boxes 1-3.

BOX 1: Fisheries are important

*Factor 1* orients towards a pro-fishing perspective that believes the fishing business should be the primary consideration for coastal planning and emphasis is on the perspective that the fishing industry is losing out to other sectors on the island. This is connected to the perception that the smaller fishing businesses are being outcompeted and outvoiced by larger and wealthier industries aiming to use the same coastal and marine space. While this pro-fishing perspective is not necessarily anti-development or anti-growth for Andøya, it exhibits more skepticism towards the other sectoral developments for the area. This is connected to a general feeling of distrust towards the motivations behind these proposed developments, as they believe the competing industries are primarily motivated by profit and growth rather than for the benefit of the Andøya society and environment. Individuals loading on this factor perceive the national government as having much influence or power over what happens with Andøya businesses, and they are skeptical about the approach to coastal planning and development by the Andøy Municipality and whether the process is truly democratic or influenced by "Big Money." Given this attitude towards government institutions, this perspective places much responsibility and expectations on businesses themselves to do the right thing, rather than trust the government to mandate for the right action. Therefore, this attitude comes across as slightly contradictory because individuals see the necessity for coastal development in their area, but also mistrust the process behind it. These individuals believe that most businesses in Andøya can have a more altruistic motivation for society and the environment that it is not always about profit and growth. However, the perspective also places little trust in those same businesses to follow through with that altruism.

BOX 2: Development must be green

*Factor 2* orients towards the viewpoint that protecting the environment and promoting development are not mutually exclusive. From this perspective, the idea of promoting environmentally friendly and sustainable businesses is dominant, and there is a strong sense of the environment being the foundation for a healthy society and robust economy, which connects with a holistic view of the human-nature relationship on Andøya. This view is not singularly pro-environment at the expense of society or the economy, but rather seeks to find the balance between environmental conservation and socioeconomic growth – which fits closely with the general approach of both pragmatism and realism in sustainable development. This perspective is also of the view that more environmentally focused social and economic development is needed for Andøya to be sustainable, and that even though Andøya businesses should have a self-imposed duty to be sustainable, the Andøy Municipality is the entity with the responsibility to pursue and advocate for sustainable development. This supports the viewpoint in this factor that despite being small and rural, the Andøy Municipality has sufficient time, knowledge, and money to undertake this.

BOX 3: Sustainability guidelines are crucial

*Factor 3* orients towards the viewpoint that the social attitudes towards sustainability are the biggest challenge to address for coastal development in Andøya. A dominating view is that there is no clear or single definition or guideline on what sustainable coastal development is, either from research or from the national government, and this is what creates confusion and subsequent ambivalence towards the concept and prevents it from being fully implemented in Andøya. This perspective also sees how the localization aspect of sustainable coastal development is key for its success: unless the local relevance and consequences are made explicit to people living in Andøya, the implementation of sustainable coastal development will not be supported. This reveals a pragmatic point of view for this perspective, where an emphasis is placed on the task of operationalizing the sustainability concept, rather than thinking about it in abstract terms.

### 3.2. *Shared and diverging perspectives on sustainable coastal development in Andøya*

A closer examination of the contextual information (the dialogues recording during each Q-sort) alongside the Q-scores revealed several viewpoints where factors appear to concur or diverge according to the quantitative analysis but do the opposite when the qualitative substance is examined. The quotes shared below are from the transcribed Q-sorts and reference the relevant statement and the Factor on which the individual loads.

#### 3.2.1. *“To develop or not to develop” perspective*

On inspection of the placement of the development-related statements (12, 13, and 18) in the factor distribution for the full array, it appears that individuals loading on Factors 1 and 2 disagreed with each other on this topic, while individuals associated with Factor 3 remained “neutral”. However, a closer look at the qualitative information suggests that people within Factor 1 and Factor 2 might not have such different views. Principally, it appears that both factors value and support development “... in a healthy and sustainable way...” (Q-sort 5, statement 12, Factor 1), albeit with certain sustainability-oriented conditions. That is, new development should only be done *if* it is done responsibly and sustainably “... within a set of frameworks where we actually define ourselves closer to nature...” (Q-sort 1, statement 18, Factor 2).

Nevertheless, a sustainable approach will not automatically guarantee acceptance for that development. Factor 1 individuals showed reluctance towards new development because of their skepticism on whether current knowledge of sustainability is effective enough. Factor 2 individuals showed a general acceptance for development, but the contextual information reveals a similar skepticism on the current level of knowledge of sustainability and if it is fit-for-purpose: “... the measurements we now use for sustainability are not good enough... we don’t [consider] everything when we measure [sustainability]...” (Q-sort 9, statement 13, Factor 2). Ultimately, it seems that sustainable development is acceptable for Andøya as long as current sustainability knowledge and monitoring is legitimate, salient, and credible.

#### 3.2.1.1. *“The “why” for sustainable coastal development in Andøya” perspective.*

A second viewpoint that emerges from the Q-study for all three factors comes from the motivations behind sustainable coastal development in Andøya. While the statements suggest two types of motivations: profit-focused incentives (e.g. statements 2, 11, and 21) or environment/society-focused altruism (e.g. statements 10 and 14) – individuals loading on different Factors communicate a combination of these motivations. The individuals acknowledge the realities of needing money to conduct business and manage a Municipality (e.g. statements 2 and 3): “... it helps to have a lot of money, because if you have a project and the Andøy [Municipality] is interested... it helps to be a big company and have big plans...” (Q-sort 6, statement 2, Factor 3).

Yet, the emerging perspectives from each Factor also include a sense of optimism that money is not always the sole motivator for integrating sustainability into business plans (e.g. statement 11): “... I do think we are planning ahead and thinking about the future and sustainability...” (Q-sort 5, statement 11, Factor 1). While they acknowledge that money is an important factor, a moral obligation also emerges – a sense of altruism: “... I don’t think [money] is the only way... you can do something out of goodwill...” (Q-sort 14, statement 11, Factor 3).

However, a sense of realism still emerges as a strong perspective in each Factor: people may have altruistic motivations but ultimately profit generation is important for businesses and business and political leaders must make decisions accordingly: "... I think you cannot drive a business from altruism. You have to seek power and money if your business is actually going to survive... even charities and non-governmental organizations; they all have their business part of it because they have to make money somehow, even if they do have this altruistic objective..." (Q-sort 2, statement 10, Factor 3). Despite this realism, or perhaps because of it, some individuals distrust the way the authorities make decisions and believe the municipality is not so interested in what the community thinks: "... in this community there is a lot of corruption..." (Q-sort 11, statement 21, Factor 1).

Therefore, while the viewpoint has the opinion that profit is necessary in this world and money is needed for the continuation of social services to the Andøya community, the Andøya individuals loading onto this statement retain hope for a greener future. Both viewpoints are not harmonized (as they rarely are) but co-exist. This co-existence of hope for sectoral development and a greener future can be used to frame discussions on contextually relevant sustainable coastal development whereby global goals like the SDGs can be integrated. Even so, the study reveals the complexity of the sustainability debate and that motivations for sustainability are incredibly nuanced: "... it's so abstract. In Andøya there are poor people, but we don't have people on the streets. Even if people are poor, they still have a roof over their heads and a full belly and have money to go shop... we need to have a local [context] to accept them..." (Q-sort 2, statement 14, Factor 3).

*3.2.1.2. The "nature connectedness of living in Andøya" perspective.* The third and final viewpoint that emerges from the Q-study also reveals a strong appreciation for the Andøya nature, which at the same time is diluted by the economic and social realisms of the area (e.g. statements 7, 8, 20, and 25). Foremost, this viewpoint includes a strong awareness of the Andøya nature: "Whether I am onshore or offshore, I am in nature..." (Q-sort 10, statement 20, Factor 1), and that it serves as a primary motivation to live there: "... that's why I am living here and not Oslo" (Q-sort 4, statement 20, confounded on Factor 2 and 3). This viewpoint shows a responsibility to protect the preciousness of the Andøya nature: "... I'm trying to keep it sustainable and a bit secret... I want that Mecca to be protected" (Q-sort 5, statement 8, Factor 1). But at the same time, it also possesses a more realistic perspective: "We're not as close to nature... we can't say that we live in nature, because that would also mean that we know how to sustain ourselves..." (Q-sort 2, statement 20, Factor 3).

And there remains some skepticism about how much people in Andøya would be willing to sacrifice to address larger issues, such as climate change. It appears that climate change would only become a problem to the community "... when they feel it in the economy" (Q-sort 8, statement 7, Factor 3) because "... I don't think anyone in Andøya would be crying about the 2-degree Celsius increase – we're freezing..." (Q-sort 2, statement 7, Factor 3).

It's clear that the environment is an important consideration for these individuals in Andøya, but they struggle with its prioritization when faced with the economic and social realities of the Municipality. For example, how much confidence they have in the municipality with regards to the environment, from not prioritizing it at all to: "... they could do more" (Q-sort 9, statement 25, Factor 2).



#### 4. Discussion

By appending the SDGs to an existing policy process, such as coastal planning (see Figure 1) the SDGs can be *localized*. Key to this is to ensure the SDGs are credible and relevant for the actors at the local level. By using Q-methodology, the variable perspectives and attitudes of local stakeholders to the coastal planning process were examined and the local discourses within and across all relevant economic sectors were identified. By framing these various perspectives within the social, economic, and environmental dimensions of sustainability, it becomes clear where the contention or synchronized discourses are, allowing for targeted interventions (for instance, by the local municipality). As such, the concept of sustainability is given a local and contextually relevant setting for the term.

This approach is also useful to guide the social transformation needed for sustainability as they rely on (a) the proposed change being anchored into practice, and (b) examining individual perspectives on the social, cultural, political, and ecological components of the proposed change (Westley *et al.* 2011, 2013; Pereira *et al.* 2015; Boström *et al.* 2018; Pereira *et al.* 2018; Zabala, Sandbrook, and Mukherjee 2018; Bardal *et al.* 2021; Orozco *et al.* 2021)). In this context, credibility is ensured if multiple perspectives have been heard and that it is a mutual learning process that involves the exchange of and respect for the knowledge and experiences of those involved (Staples *et al.* 2021).

##### 4.1. Q-results for coastal planning in Andøya

The study revealed several viewpoints on sustainable coastal development in Andøya. The dominating perspective is that fisheries are economically and culturally important, which is typical for coastal areas of northern Norway (Engen *et al.* 2021). The local perspectives also reveal two distinct, but not mutually exclusive, motivations for coastal development: profit and sustainability. The third motivation underpinning coastal development is not as clearly defined, but generally encompasses the notion that there is a need to bring the community together on the topic of sustainability by using better information and knowledge.

There is a shared sense of skepticism about whether the government knows enough about sustainability. This skepticism about the adequacy of information can affect the credibility of sustainability efforts of the Andøy Municipality. This is further complicated by the seemingly different opinions among the stakeholders themselves of what sustainability is. This highlights the pluralistic view of the term: what is considered sustainable to one individual or group might be unsustainable to another (Engen *et al.* 2021). Therefore, the Andøy Municipality faces the challenge of having to clearly define *sustainability of what* and *for whom* to gain local support and acceptance for proposed coastal development. The varied viewpoints on what sustainable coastal planning is in Andøya can be used by Andøya Municipality in a positive way by building the definition of sustainability from the ground up.

The study revealed three shared perspectives (Factors) among the individual stakeholders: (1) an acceptance of coastal development on the condition it is sustainable (which requires defining it), (2) motivations for coastal development in Andøya balance hopes for a green future with expectations of economic and social development, and (3) nature prevails but is bound by local socioeconomic priorities and realities. Integrating and localizing the SDGs into local coastal policy plans (“policy vehicles”) will subsequently strengthen the credibility and legitimacy of the SDG localization process.

If sustainability – and how it is being defined and considered at the local level – is part of the coastal development process, it could strengthen public support for the policy decisions, and enhance local trust in governing institutions.

#### **4.2. Practical applications for the Q-study to local decision-makers**

It does not serve to make assumptions about particular groups or their motivations for sustainability. In Andøya there seems to be a clear understanding that sustainability is important, as long as it can be specifically adapted to the local viewpoints and experiences. For instance, there is general agreement that coastal development is acceptable if it is sustainable for Andøya, implicitly showing support for the SDGs.

Q-methodology can be applied to sustainability questions in four broad ways: ascertaining management options, critical reflection, policy appraisal and acceptability, and addressing conflict (Zabala, Sandbrook, and Mukherjee 2018). It has been used to identify potential barriers to policy (Frantzi, Carter, and Lovett 2009; Kindermann and Gormally 2013; Curry, Barry, and McClenaghan 2013) by understanding how individuals perceive environmental issues (Barry and Proops 1999); improve public participation (Cuppen *et al.* 2010); offer a way to understand and resolve contentious issues (Durning 2005; Zabala, Sandbrook, and Mukherjee 2018); or understand the failure of solutions and point effort and resources in another direction for resolution (Bjørkan and Veland 2019). The integration of non-scientific information and social perspectives, or experiential knowledge, has a strong role to play in generating evidence-informed policy (Steins *et al.* 2022).

These shared perspectives that are unique for Andøya have direct implications for the localization of the SDGs through the policy vehicle of coastal planning. Identifying the shared perspectives among individuals in the local community (e.g. on concepts such as inclusivity, democracy, nature, and posterity) can assist the Andøy Municipality to frame discussions grounded in these shared values.

#### **4.3. Study limitations**

There are two limitations to the method used in this study. First, this study offers a snapshot in time of the various perspectives on sustainable coastal development for Andøya. Second, the study does not show the extent to which these discourses hold (Webler, Danielson, and Tuler 2009, 11) among the inhabitants on the island.

### **5. Conclusion**

Discerning perspectives on sustainable coastal planning in Andøya suggest that any existing commonality among participants in this study comes from shared environmental and social values. The attitude of the local stakeholders included hopeful aspirations for their community, coupled with adherence to realism and the need for a practical application of the sustainability concept. This is illustrated by the sardonic observation of a local stakeholder interviewed for the study:

“...you can’t just do anything and if it’s sustainable it’s ok...because that’s the way people are greenwashing things. They are just putting up **vegan coffee shops** 5 meters from the ocean and calling it sustainable. It’s really not.” – Q5 (statement 13, Factor 1).

The above “vegan coffee shop” quip is an example of a citizen attitude that is focused on a common understanding of sustainability, instead of a “green-washing” or copying urban à la mode businesses. The Q-method helps to identify these citizen insights to form and fuel salient, credible, and legitimate substance for policy such as local coastal management and planning. This can inform enabling approaches, such as participatory planning processes, and may offer more accessible pathways to social transformation for local communities. Anchoring citizen insights in local planning processes can be low cost and build on the capacities and capabilities already present by stimulating extended peer communities in the social-ecological system. Credible SDG localization, therefore, depends on enabling and empowering local communities to develop their agency and human capacity for change. Regional and local authorities can tap into existing potential (i.e. knowledge, skills, energy, motivations) and use that potential to guide solution-oriented discussions and craft ways forward for implementing the SDGs at the local level. The citizen attitudes on local sustainability topics should be considered and integrated in the important SDG localization work, to promote shared sustainability ideals that go deeper than a spontaneous “vegan coffee shop.”

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### **Disclosure statement**

No potential conflict of interest was reported by the authors.

### **Supplemental data**

Supplemental data for this article can be accessed [here](#).

### **Note**

1. There is no single definition for ‘localization’. In the context of this paper, localization refers to the integration and implementation of the SDGs into policy at the regional and municipal government levels that is accomplished alongside local community engagement and stakeholder inclusion (Orozco *et al.* 2021)).

### **References**

- Armatas, Christopher, Tyron Venn, and Alan Watson. 2017. “Understanding Social–Ecological Vulnerability with Q-Methodology: A Case Study of Water-Based Ecosystem Services in Wyoming, USA.” *Sustainability Science* 12 (1): 105–121. doi:10.1007/s11625-016-0369-1.
- Avelino, Flor, Julia M. Wittmayer, Bonno Pel, Paul Weaver, Adina Dumitru, Alex Haxeltine, René Kemp, et al. 2019. “Transformative Social Innovation and (Dis)Empowerment.” *Technological Forecasting and Social Change* 145: 195–206. doi:10.1016/j.techfore.2017.05.002.
- Bardal, Kjersti Granås, Mathias Brynildsen Reinart, Aase Kristine Lundberg, and Maiken Bjørkan. 2021. “Factors Facilitating the Implementation of the Sustainable Development

- Goals in Regional and Local Planning: Experiences from Norway.” *Sustainability* 13 (8): 4282. doi:10.3390/su13084282.
- Barry, John, and John Proops. 1999. “Seeking Sustainability Discourses with Q Methodology.” *Ecological Economics* 28 (3): 337–345. doi:10.1016/S0921-8009(98)00053-6.
- Basiago, A. D. 1998. “Economic, Social, and Environmental Sustainability in Development Theory and Urban Planning Practice.” *The Environmentalist* 19 (2): 145–161. [ Mismatch] doi:10.1023/A:1006697118620.
- Binder, Claudia R., Jochen Hinkel, Pieter W. G. Bots, and Claudia Pahl-Wostl. 2013. “Comparison of Frameworks for Analyzing Social-Ecological Systems.” *Ecology and Society* 18 (4): 26. doi:10.5751/ES-05551-180426.
- Bjørkan, Maiken, and Siri Veland. 2019. “Beyond Consensus: Perceptions of Risk from Petroleum Developments in Lofoten, Vesterålen, and Senja, Norway.” *ICES Journal of Marine Science* 76 (6): 1393–1403. doi:10.1093/icesjms/fsz056.
- Boström, Magnus, Erik Andersson, Monika Berg, Karin Gustafsson, Eva Gustavsson, Erik Hysing, Rolf Lidskog, et al. 2018. “Conditions for Transformative Learning for Sustainable Development: A Theoretical Review and Approach.” *Sustainability* 10 (12): 4479. doi:10.3390/su10124479.
- Boyer, Robert H. W., Nicole D. Peterson, Poonam Arora, and Kevin Caldwell. 2016. “Five Approaches to Social Sustainability and an Integrated Way Forward.” *Sustainability* 8 (9): 878. doi:10.3390/su8090878.
- Brown, Steven R. 1993. “A Primer on Q-Methodology.” *Operant Subjectivity* 16 (3/4): 91–138. doi:10.22488/okstate.93.100504.
- Cash, David, William C. Clark, Frank Alcock, Nancy M. Dickson, Noelle Eckley, and Jill Jäger. 2003. “Saliency, Credibility, Legitimacy and Boundaries: Linking Research, Assessment and Decision-Making.” KSG Working Papers Series, Cambridge, MA: Harvard University Press. doi:10.1016/j.ecolecon.2009.09.005.
- Cash, David W., and Patricio G. Belloy. 2020. “Saliency, Credibility and Legitimacy in a Rapidly Shifting World of Knowledge and Action.” *Sustainability* 12 (18): 7376. doi:10.3390/su12187376.
- Cuppen, Eefje, Sylvia Breukers, Matthijs Hisschemöller, and Emmy Bergsma. 2010. “Q Methodology to Select Participants for a Stakeholder Dialogue on Energy Options from Biomass in The Netherlands.” *Ecological Economics* 69 (3): 579–591. doi:10.1016/j.ecolecon.2009.09.005.
- Curry, Robin, John Barry, and Andrew McClenaghan. 2013. “Northern Visions? Applying Q Methodology to Understand Stakeholder Views on the Environmental and Resource Dimensions of Sustainability.” *Journal of Environmental Planning and Management* 56 (5): 624–649. doi:10.1080/09640568.2012.693453.
- Dankel, Dorothy J., Wiebren J. Boonstra, Maiken Bjørkan, Jessica L. Fuller, Lisbeth Iversen, Sigrid Eskeland Schütz, Brita Staal, Gro I. van der Meeren, and Ingrid van Putten. 2022. “Localizing the Sustainable Development Goals for Marine and Coastal Management in Norway: A Venture Overdue.” Chap 27 in *Human-Nature Interactions: Exploring Nature’s Values across Landscapes*, edited by Ieva Misiune, Daniel Depellegrin, and Lukas Egarter Vigl, 343–359. Cham: Springer. doi:10.1007/978-3-031-01980-7.
- Du Pisani, J. A. 2006. “Sustainable Development: Historical Roots of the Concept.” *Environmental Sciences* 3 (2): 83–96. doi:10.1080/15693430600688831.
- Durning, Dan. 2005. “Using Q-Methodology to Resolve Conflicts and Find Solutions to Contentious Policy Issues.” *The Role of Public Administration in Building a Harmonious Society*. Selected Proceedings from the Annual Conference of the Network of Asia-Pacific Schools and Institutes of Public Administration and Governance (NAPSIPAG), 5–7 December 2005 in Beijing, People’s Republic of China: China National School of Administration. 601–620.
- Engen, Sigrid, Vera Helene Hausner, Georgina G. Gurney, Else Grete Broderstad, Rose Keller, Aase Kristine Lundberg, Francisco Javier Ancin Murguzur, et al. 2021. “Blue Justice: A Survey for Eliciting Perceptions of Environmental Justice among Coastal Planners’ and Small-Scale Fishers in Northern-Norway.” *PloS One* 16 (5): E 0251467. doi:10.1371/journal.pone.0251467.

- Farrell, Desiree, Liam Carr, and Frances Fahy. 2017. "On the Subject of Typology: How Irish Coastal Communities' Subjectivities Reveal Intrinsic Values towards Coastal Environments." *Ocean & Coastal Management* 146: 135–143. doi:10.1016/j.ocecoaman.2017.06.017.
- Fish, Robert, Andrew Church, and Michael Winter. 2016. "Conceptualising Cultural Ecosystem Services: A Novel Framework for Research and Critical Engagement." *Ecosystem Services* 21: 208–217. doi:10.1016/j.ecoser.2016.09.002.
- Folke, Carl. 2006. "Resilience: The Emergence of a Perspective for Social–Ecological Systems Analyses." *Global Environmental Change* 16 (3): 253–267. doi:10.1016/j.gloenvcha.2006.04.002.
- Frantzi, Sofia, Neil T. Carter, and Jon C. Lovett. 2009. "Exploring Discourses on International Environmental Regime Effectiveness with Q Methodology: A Case Study of the Mediterranean Action Plan." *Journal of Environmental Management* 90 (1): 177–186. doi:10.1016/j.jenvman.2007.08.013.
- Gassen, Nora Sánchez, Oskar Penje, and Elin Slåtmo. 2018. *Global Goals for Local Priorities: The 2030 Agenda at Local Level*. Nordregio Report, Oslo: Nordregio. URL: <https://nordregio.org/publications/global-goals-for-local-priorities-the-2030-agenda-at-local-level/>.
- Gibson, Robert B. 2006. "Beyond the Pillars: Sustainability Assessment as a Framework for Effective Integration of Social, Economic and Ecological Considerations in Significant Decision-Making." *Journal of Environmental Assessment Policy and Management* 08 (03): 259–280. doi:10.1142/S1464333206002517.
- Hai-Jew, Shalin. 2019. "Running a Q-Methodology on an Online Survey Platform." *C2C Digital Magazine (Spring/Summer 2019)*. Accessed June 5, 2023. <https://scalar.usc.edu/works/c2c-digital-magazine-spring-summer-2019/running-a-q-methodology-on-an-online-survey-platform>.
- Horcea-Milcu, Andra-Ioana, David J. Abson, Cristina I. Apetrei, Ioana Alexandra Duse, Rebecca Freeth, Maraja Riechers, David P. M. Lam, Christian Dorninger, and Daniel J. Lang. 2019. "Values in Transformational Sustainability Science: Four Perspectives for Change." *Sustainability Science* 14 (5): 1425–1437. doi:10.1007/s11625-019-00656-1.
- Ives, Christopher D., Rebecca Freeth, and Joern Fischer. 2020. "Inside-Out Sustainability: The Neglect of Inner Worlds." *Ambio* 49 (1): 208–217. doi:10.1007/s13280-019-01187-w.
- Kindermann, Gesche, and Michael J. Gormally. 2013. "Stakeholder Perceptions of Recreational and Management Impacts on Protected Coastal Dune Systems: A Comparison of Three European Countries." *Land Use Policy* 31: 472–485. doi:10.1016/j.landusepol.2012.08.011.
- Kline, Paul. 1994. *An Easy Guide to Factor Analysis* (1st ed.). London: Routledge.
- Kvalvik, Ingrid, and Roy Robertsen. 2017. "Inter-Municipal Coastal Zone Planning and Designation of Areas for Aquaculture in Norway: A Tool for Better and More Coordinated Planning?" *Ocean & Coastal Management* 142: 61–70. doi:10.1016/j.ocecoaman.2017.03.020.
- Lang, Daniel J., Arnim Wiek, Matthias Bergmann, Michael Stauffacher, Pim Martens, Peter Moll, Mark Swilling, and Christopher J. Thomas. 2012. "Transdisciplinary Research in Sustainability Science: Practice, Principles, and Challenges." *Sustainability Science* 7 (S1): 25–43. doi:10.1007/s11625-011-0149-x.
- Martin, Ingrid M., and Toddi A. Steelman. 2004. "Using Multiple Methods to Understand Agency Values and Objectives: Lessons for Public Lands Management." *Policy Sciences* 37 (1): 37–69. doi:10.1023/B:OLIC.0000035463.79209.52.
- Ministry of Local Government and Modernisation. Ministry of. 2021. *Voluntary National Review 2021: Report on the Implementation of the 2030 Agenda for Sustainable Development*. Oslo: Norwegian Foreign Affairs. <https://www.regjeringen.no/en/dokumenter/voluntary-national-review-2021-norway/id2863155/?ch=4>.
- Ministry of Local Government and Regional Development. 2008. "Act of 27 June 2008 No. 71 Relating to Planning and the Processing of Building Applications (the Planning and Building Act) (the Planning Part)." *Planning and Building Act (2008)*. June 27. Accessed June 05, 2023. URL: <https://www.regjeringen.no/en/dokumenter/planning-building-act/id570450/>.
- Moldan, Bedrich, Svatava Janousková, and Tomáš Hák. 2012. "How to Understand and Measure Environmental Sustainability: Indicators and Targets." *Ecological Indicators* 17: 4–13. doi:10.1016/j.ecolind.2011.04.033.
- Ockwell, David G. 2008. "'Opening Up' Policy to Reflexive Appraisal: A Role for Q Methodology? A Case Study of Fire Management in Cape York, Australia." *Policy Sciences* 41 (4): 263–292. doi:10.1007/s11077-008-9066-y.
- Orozco, Efraim Hernández, Mario Cárdenas, Ivonne Lobos Alva, Angélica Guerra, Åsa Gerger Swartling, Juan Betancur, Somya Joshi, et al. 2021. *SDG Localization Baseline: How Local-*

- Level Actors are Driving Change and Advancing the Achievement of the 2030 Agenda*. Stockholm: Stockholm Environment Institute (SEI). URL: <https://www.sei.org/publications/sdg-localization-baseline-2030/>.
- Ostrom, Elinor. 2009. "A General Framework for Analyzing Sustainability of Social-Ecological Systems." *Science (New York, N.Y.)* 325 (5939): 419–422. doi:10.1126/science.1172133.
- Partelow, Stefan. 2015. "Key Steps for Operationalizing Social-Ecological System Framework Research in Small-Scale Fisheries: A Heuristic Conceptual Approach." *Marine Policy* 51: 507–511. doi:10.1016/j.marpol.2014.09.005.
- Partelow, Stefan. 2018. "A Review of the Social-Ecological Systems Framework: Applications, Methods, Modifications, and Challenges." *Ecology and Society* 23 (4): 36. doi:10.5751/ES-10594-230436.
- Pereira, Laura M., Timothy Karpouzoglou, Niki Frantzeskaki, and Per Olsson. 2018. "Designing Transformative Spaces for Sustainability in Social-Ecological Systems." *Ecology and Society* 23 (4): 32. doi:10.5751/ES-10607-230432.
- Pereira, Laura, Timothy Karpouzoglou, Samir Doshi, and Niki Frantzeskaki. 2015. "Organising a Safe Space for Navigating Social-Ecological Transformations to Sustainability." *International Journal of Environmental Research and Public Health* 12 (6): 6027–6044. doi:10.3390/ijerph120606027.
- Peterson, Robert A. 2000. "A Meta-Analysis of Variance Accounted for and Factor Loadings in Exploratory Factor Analysis." *Marketing Letters* 11 (3): 261–275. doi:10.1023/A:1008191211004.
- Pope, Jenny, David Annandale, and Angus Morrison-Saunders. 2004. "Conceptualising Sustainability Assessment." *Environmental Impact Assessment Review* 24 (6): 595–616. doi:10.1016/j.eiar.2004.03.001.
- Purvis, Ben., Yong Mao, and Darren Robinson. 2019. "Three Pillars of Sustainability: In Search of Conceptual Origins." *Sustainability Science* 14 (3): 681–695. doi:10.1007/s11625-018-0627-5.
- Rahma, Aldila, Djati Mardiatno, and Dyah Rahmawati Hizbaron. 2020. "Q Methodology to Determine Distinguishing and Consensus Factors (a Case Study of University Students' Ecoliteracy on Disaster Risk Reduction)." In *ES3 Web of Conferences, the 1st Geosciences and Environmental Sciences Symposium*, edited by E. Haryono, F. Lavigne, R. Che Omar, B. White, A. Cardenas Tristan, D. Rahmawati Hizbaron, and R. Fitria Putri, 01003. doi:10.1051/e3sconf/202020001003.
- Ruppert-Winkel, Chantal, Robert Arlinghaus, Sonja Deppisch, Klaus Eisenack, Daniela Gottschlich, Bernd Hirschl, Bettina Matzdorf, et al. 2015. "Characteristics, Emerging Needs, and Challenges of Transdisciplinary Sustainability Science: Experiences from the German Social-Ecological Research Program." *Ecology and Society* 20 (3): 13. doi:10.5751/ES-07739-200313.
- Rybråten, Stine, Maiken Bjørkan, Grete K. Hovelsrud, and Bjørn P. Kaltenborn. 2018. "Sustainable Coasts? Perceptions of Change and Livelihood Vulnerability in Nordland, Norway." *Local Environment* 23 (12): 1156–1171. doi:10.1080/13549839.2018.1533931.
- Sachs, Jeffrey D., Guido Schmidt-Traub, Mariana Mazzucato, Dirk Messner, Nebojsa Nakicenovic, and Johan Rockström. 2019. "Six Transformations to Achieve the Sustainable Development Goals." *Nature Sustainability* 2 (9): 805–814. doi:10.1038/s41893-019-0352-9.
- Schmolck, Peter. 2014. "PQMethod Software." *PQMethod Download Page for Windows Users*. V. 2.35. <http://schmolck.org/qmethod/#PQMethod>.
- Schoolman, Ethan D., Jeremy S. Guest, Kathleen F. Bush, and Andrew R. Bell. 2012. "How Interdisciplinary is Sustainability Research? Analyzing the Structure of an Emerging Scientific Field." *Sustainability Science* 7 (1): 67–80. doi:10.1007/s11625-011-0139-z.
- Scoones, Ian., Andrew Stirling, Dinesh Abrol, Joanes Atela, Lakshmi Charli-Joseph, Hallie Eakin, Adrian Ely, et al. 2020. "Transformations to Sustainability: Combining Structural, Systemic and Enabling Approaches." *Current Opinion in Environmental Sustainability* 42: 65–75. doi:10.1016/j.cosust.2019.12.004.
- Staples, Kiri, Jennifer Fresque-Baxter, Evan Andrews, Erin Kelly, Slave River and Delta Partnership, and Toddi Steelman. 2021. "Mobilizing Transdisciplinary Sustainability Science in Place-Based Communities: Evaluating Saliency, Legitimacy, and Credibility in Northern Canada." *Environmental Challenges* 5: 100314. doi:10.1016/j.envc.2021.100314.
- Steins, Nathalie A., Steven Mackinson, Stephen C. Mangi, Martin A. Pastoors, Robert L. Stephenson, Marta Ballesteros, Kate Brooks, et al. 2022. "A Will-O'-the Wisp? On the

- Utility of Voluntary Contributions of Data and Knowledge from the Fishing Industry to Marine Science.” *Frontiers in Marine Science* 9: 954959. doi:10.3389/fmars.2022.954959.
- Stephenson, W. 1935. “Technique of Factor Analysis.” *Nature* 136 (3434): 297–297. doi:10.1038/136297b0.
- Stirling, Andrew. 1999. “The Appraisal of Sustainability: Some Problems and Possible Responses.” *Local Environment* 4 (2): 111–135. doi:10.1080/13549839908725588.
- Stirling, Andy. 2014. “Transforming Power: Social Science and the Politics of Energy Choices.” *Energy Research & Social Science* 1: 83–95. doi:10.1016/j.erss.2014.02.001.
- Tschakert, Petra, Nancy Tuana, Hege Westskog, Bettina Koelle, and Alida Afrika. 2016. “T<sup>Change</sup>: The Role of Values and Visioning in Transformation Science.” *Current Opinion in Environmental Sustainability* 20: 21–25. doi:10.1016/j.cosust.2016.04.003.
- UN (United Nations). 1987. *Our Common Future*. “Report of the World Commission on Environment and Development.” New York: United Nations.
- UNGA (United Nations General Assembly). 2015. *Transforming Our World: The 2030 Agenda for Sustainable Development*. Resolution adopted by the General Assembly on 25 September 2015, New York: United Nations.
- Waas, Tom, Jean Hugé, Aviel Verbruggen, and Tara Wright. 2011. “Sustainable Development: A Bird’s Eye View.” *Sustainability* 3 (10): 1637–1661. doi:10.3390/su3101637.
- Watts, Simon, and Paul Stenner. 2005. “Doing Q Methodology: Theory, Method and Interpretation.” *Qualitative Research in Psychology* 2 (1): 67–91. doi:10.1191/1478088705qp022oa.
- Watts, Simon, and Paul Stenner. 2012. *Doing Q Methodological Research*. London: SAGE Publications.
- Webler, Thomas, Stentor Danielson, and Seth Tuler. 2009. *Using Q Method to Reveal Social Perspectives in Environmental Research*. Primer, Greenfield: Social and Environmental Research Institute.
- Westley, Frances R., Ola Tjornbo, Lisen Schultz, Per Olsson, Carl Folke, Beatrice Crona, and Örjan Bodin. 2013. “A Theory of Transformative Agency in Linked Social-Ecological Systems.” *Ecology and Society* 18 (3): 27. doi:10.5751/ES-05072-180327.
- Westley, Frances, Per Olsson, Carl Folke, Thomas Homer-Dixon, Harrie Vredenburg, Derk Loorbach, John Thompson, et al. 2011. “Tipping toward Sustainability: Emerging Pathways of Transformation.” *Ambio* 40 (7): 762–780. doi:10.1007/s13280-011-0186-9.
- Zabala, Aiora, Chris Sandbrook, and Nibedita Mukherjee. 2018. “When and How to Use Q Methodology to Understand Perspectives in Conservation Research.” *Conservation Biology: The Journal of the Society for Conservation Biology* 32 (5): 1185–1194. doi:10.1111/cobi.13123.