

Freshwater - Fresh Thinking

Enhancing impact assessment in water management



Thur 28 & Fri 29 Nov 2013 Caccia-Birch House, Palmerston North

The following material is provided courtesy of the author following presentation at the New Zealand Association for Impact Assessment 2013 Annual Conference.

Reference or reproduction is by written consent from the author only.

Author: Martin Ward
Independent practitioner

martinward@xtra.co.nz

Sustainability Appraisal

Evaluating Proposals for Sustainability Assurance

**Background and Case Study –
Canterbury Water Management Strategy**

Sustainability Appraisal - evaluating for sustainability assurance

- The concept and principles of sustainable development are now firmly established in international law and policy. Briefly this was so also in New Zealand.
- Implementation in practice continues to be a major challenge.
- A critical issue for policy makers is how to evaluate progress toward or away from sustainability, particularly when considering proposed options and actions.
- We outline a framework approach to sustainability appraisal,
- And describe its application in New Zealand policy and planning contexts.

The Sustainability Appraisal Framework Approach

- The SA Framework approach is a 'road map' of steps and measures for undertaking sustainability appraisal.
- Developed by Barry Sadler and adapted for New Zealand application by Sadler and the author.
- In contrast to other impact assessment approaches which are restricted to a single pillar, SA involves baseline tests relating to four pillars.
- A sustainability test can be undertaken against both a *top line* of objectives and targets or norms to aim for, and a *bottom line* of key thresholds (base minima) or warning signs to avoid.

The Sustainability Appraisal Framework Approach - architecture

In broad outline, the architecture of the approach is based on three cornerstones:

1. A **'compass'** of sustainability aims and principles for guiding policy options and choices against which overall progress and the potential effects of proposals can be evaluated
2. A **systematic procedure** for assessing the economic, environmental and social impacts and considerations of proposed actions
3. A **set of 'rules of the game'** for integrating and weighing different objectives in appraisal and decision making in support of sustainable development

1. Guiding Aims and Principles - the 'compass'

- The sustainability compass uses the concept of capital stocks as a proxy representation of the *opportunities* that are available to meet present and future human needs (World Bank 2005).
- Sustainable development must meet the interrelated principles of intra- generational and intergenerational equity.
- In this concept, development at the macro or aggregate level is considered
 - non-sustainable if net capital wealth is being depleted or eroded, but
 - sustainable if they are being maintained or increasing (while also reducing intra-generational inequity).

Guiding Aims and principles - equity considerations

Intergenerational equity

- maintaining future development options and opportunities requires that the next generation receive a stock of assets (resource potentials, created wealth, human capabilities) that is at least equivalent to our own, taking into account population growth.

Intragenerational equity

- improving the well being of all people, particularly the poor and disadvantaged requires that they receive an increasingly larger share of available capital assets.

Capital Theory

- The notion of sustainability as a non-declining stock of capital involves consideration of the mix of different forms of capital or assets to be passed on to the next generation.
- The crux of this issue depends on the extent to which economic, environmental (natural) and social and cultural capital are considered to be substitutes or complements to each other in determining future opportunities.
- This interpretation yields a reference level of sustainability against which development trends or actions will be evaluated.

Following World Bank delimitations of the substitutability of natural capital, three levels of sustainability can be identified for evaluating development trends or actions.

Levels of Sustainability

- **Weak sustainability** involves maintaining total capital without regard to its composition and allows natural capital to be freely converted into economic capital and output (governed by existing policies, regulations and guidelines)
- **Moderate sustainability** requires attention to the mix of capital stocks with natural capital considered substitutable only up to certain critical limits (which are not yet known but can be formulated using the precautionary principle)
- **Strong sustainability** means maintaining natural capital at current levels (no net loss) so that losses and damages from development must be replaced or offset in kind.

The moderate level of sustainability is reflected in the defining principles adopted by Statistics New Zealand in recent work measuring progress using a sustainable development approach.

2. Procedure for Integrated Assessment

Although there is no widely accepted approach to integrated assessment, three entry points are available.

- Use an established process such as EIA or SEA as the assessment mainframe, and integrate specialised tools for economic and social analysis
- Conduct parallel streams of economic, environmental and social assessment bringing together findings at key stages (preliminary integration in scoping, and full integration in final decision-making).
- Rely on an interdisciplinary methodology such as multi-criteria analysis. This has been preferred track in New Zealand to date.

Illustrative Steps In Sustainability Assessment –What, Why, How To Evaluate

Assessment step	Procedural focus	Indicative questions
Screening	<ul style="list-style-type: none"> • Establish/confirm need for and level of assessment; • Preliminary scan of orientation to and implications for sustainability 	<ul style="list-style-type: none"> • What is the prima facie relationship to ESE goal maxima or safe minima? • Does the proposal include opportunities for contributing to sustainability goals or threats to bottom lines?
Scoping	<ul style="list-style-type: none"> • Scope of issues and alternatives to be considered; • Identification of effects on and distance to/from sustainability targets 	<ul style="list-style-type: none"> • How does the proposal measure up against key objectives and bottom lines? • What major effects and ESE linkages require further analysis?
Impact analysis	<ul style="list-style-type: none"> • Significance of impact; • Statement of findings on whether or not the proposal passes the sustainability test and subject to what trade-offs 	<ul style="list-style-type: none"> • What are the likely positive and adverse residual impacts of each alternative? • How significant are these when measured against sustainability criteria? • What trade-offs are still to be resolved?
Decision-making	<ul style="list-style-type: none"> • Approval of proposal and terms and conditions; • Undertaking ESE trade-offs and weighing gains and losses 	<ul style="list-style-type: none"> • What is the configuration and net balance of gains and losses? • How acceptable are any losses that exceed bottom lines?
Monitoring and evaluation	<ul style="list-style-type: none"> • Monitoring impacts of concern; • Evaluating outcomes against sustainability balance sheet 	<ul style="list-style-type: none"> • Are positive and adverse impacts as expected? • Have there been significant unanticipated effects or outcomes?

Objectives-led and Effects-Based Sustainability Criteria

Objectives-led and effects-based sustainability criteria assist us determine significance as the basis for sustainability assurance.

- In any operational form, applying the sustainability test of a proposal is a subjective and often much qualified exercise.
- It will depend partly on the level of sustainability selected as a reference standard (i.e. weak, moderate or strong).
- The safe minima that identify the bottom lines and the objective targets that identify the top lines may be found in national and regional strategies and regional and local plans.
- For strong sustainability, a stringent version of the precautionary approach should be applied to assess major proposals with potentially significant impacts.

Rules for trade-off & decision making for sustainability assurance

A number of basic criteria and rules should be followed:

1. At all stages of decision-making, ***priority should be given to options and actions that do the most good***, then to those that do no harm, and finally to those that have some adverse effects (still within acceptable levels).
2. In principle, ***all other configurations of choice would be unacceptable*** within a sustainability framework. In reality, adhering to this principle is not possible. A 'best practicable sustainability option' is necessary.
3. On some level, ***hard choices and trade-offs are an inevitable part of decision-making***. This task must be confronted rather than assumed away. A key to do so is to place the burden of proof on the proponent for all trade-offs that assume potentially major or significant adverse effects can be mitigated.

Operationalising this approach in a New Zealand setting

To operationalise in New Zealand we have:

- Adopted a 'cultural', pillar which includes all elements of our cultural wellbeing (and aligns the set with the four Wellbeings).
- Build capital stock inventories in four pillar sets for the policy or activity subject to the sustainability assessment.
- Identified issues with intergenerational and intra-generational equity dimensions.
- Selected sustainability criteria from those lists and assigning top and bottom lines.

The assets identified through this process may include a mix of process and outcome descriptors as well as assets.

Pilot Application in New Zealand issues

During 2008 and 2009 the SA Framework approach was road tested in relation to New Zealand policy and planning issues.

- An initial test with policy makers and planners drawn largely from central government (Wellington) and planners and stakeholders at local government level (Nelson). (2008)
- It was a 'retrospective' sustainability appraisal of transport corridor route alternatives, which validated the approach's utility and workability.
- Modified, it was applied to the Canterbury Water Management Strategy as a real time exercise for the Canterbury Mayoral Forum to assist in the choice of a preferred option from a selection of four strategies. (2009)

Road Test Conclusions

The Wellington (central government) and Nelson (regional) tests confirmed the workability of the Sustainability Appraisal Framework approach. Four critical aspects of the approach were confirmed

1. The importance of identifying the regional asset base for the proposed development as an anchor point for the process and participants.
2. The need for participants to understand capital theory and relate it to levels of sustainability
3. The ready availability of principles for sustainability direction (top and bottom lines) in policies and plans across all pillars, and
4. The critical importance of strong participation and information from sectors representing all pillars of sustainability

The Canterbury Application

Commissioned by Bryan Jenkins to assist the regional water strategy development Steering Group and officials to:

- compare the sustainability implications/dimensions of four water management strategies, and
- to identify the option/combination that was the best fit with a sustainable development objective.

Participation by an established and well socialized group

It was led by the Mayor of Ashburton, included councillors and senior technical staff from district and regional councils, and representatives from Ngai Tahu, the District Health Board, the farming community and recreation and conservation NGOs.

Basic Approach

Provisional work by small teams to:

- identify assets in four classes (pillars).
- prepare multi criteria elements
- selected scale criteria.

Intensive workshopping to complete work.

- understand capital theory and levels of sustainability
- amend and agree work of small teams

Workshop Stages for CWMS Sustainability Appraisal

1. selecting a level of sustainability to reference trade-off decisions between stocks of capital assets
2. compiling, annotating and prioritising the capital assets involved in the management of water resources in Canterbury
3. preparing time-space analyses to record sub-regional and short- and long-term (intergenerational) impacts
4. reviewing evaluation criteria in four sustainability pillar groupings
5. agreeing and recording safe minima and desirable objectives - top and bottom lines
6. scoring each option using evaluation criteria
7. considering options on a sub-regional basis

Provisional 'asset' list for water management in Canterbury

Social (human and social)	Economic (produced and financial)
<p>trust in institutions / processes sense of community / place whanaungatanga informal communication networks local knowledge physical health of people mental health of people skills in communities manaakitanga (sharing and caring for each other) arable farming knowledge / skill dry stock farming knowledge / skill dairy farming knowledge / skill communal decision-making</p>	<p>schools, community halls, etc roads, bridges dams and impoundments electricity generation plant & lines irrigation infrastructure water treatment & distribution infrastructure farms (+ stock & machinery) irrigated irrigatable public finance private finance Ngai Tahu finance river based tourism business</p>
Environmental (natural)	Cultural
<p>Air ground water free from contaminants surface water (at ecosystem sustaining flows) Mauri (natural state of being) reserve land (DoC estate) native bush in sustainable state native birds in sustainable populations native bird habitat native fish in sustainable habitat introduced fish coastal sediment budget whenua soils</p>	<p>regional identity tastes (music, art, food, dress) whakapapa sense of belonging attitudes and dispositions customary rights sense of time culture and traditions ahi kaa language and linguistics/te reo tikanga and kawa mana and rangatiratanga monuments and significant historic sites</p>

List of Criteria

Culture	1	Opportunities for kaitiakitanga*
	2	Opportunities for rangatiratanga
	3	Sense of experience*
Economic	4	Employment impacts
	5	Household income
	6	Balance of total financial benefits to financial costs
	7	Regional value added
Environmental	8	Aquatic and riparian biodiversity
	9	Aquatic and riparian ecosystems
	10	Terrestrial biodiversity
	11	Water quality for ecosystem health
	12	Water quality for human health
	13	Water quality for recreation
Processes	14	Equity of water allocation – access
	15	Equity of water allocation – costs
	16	Feasibility – alignment with policies and plans
	17	Feasibility – public funds
	18	Resilience – adaptability to long-term change
	19	Resilience – flexibility of regulation and control
Social	20	Community cohesion
	21	Urban–rural cohesion
	22	Landscapes
	23	Recreation
	24	Trust and legitimacy – institutions*
	25	Trust and legitimacy – processes*
	26	Knowledge*

Example of Quadruple Bottom & Top Lines

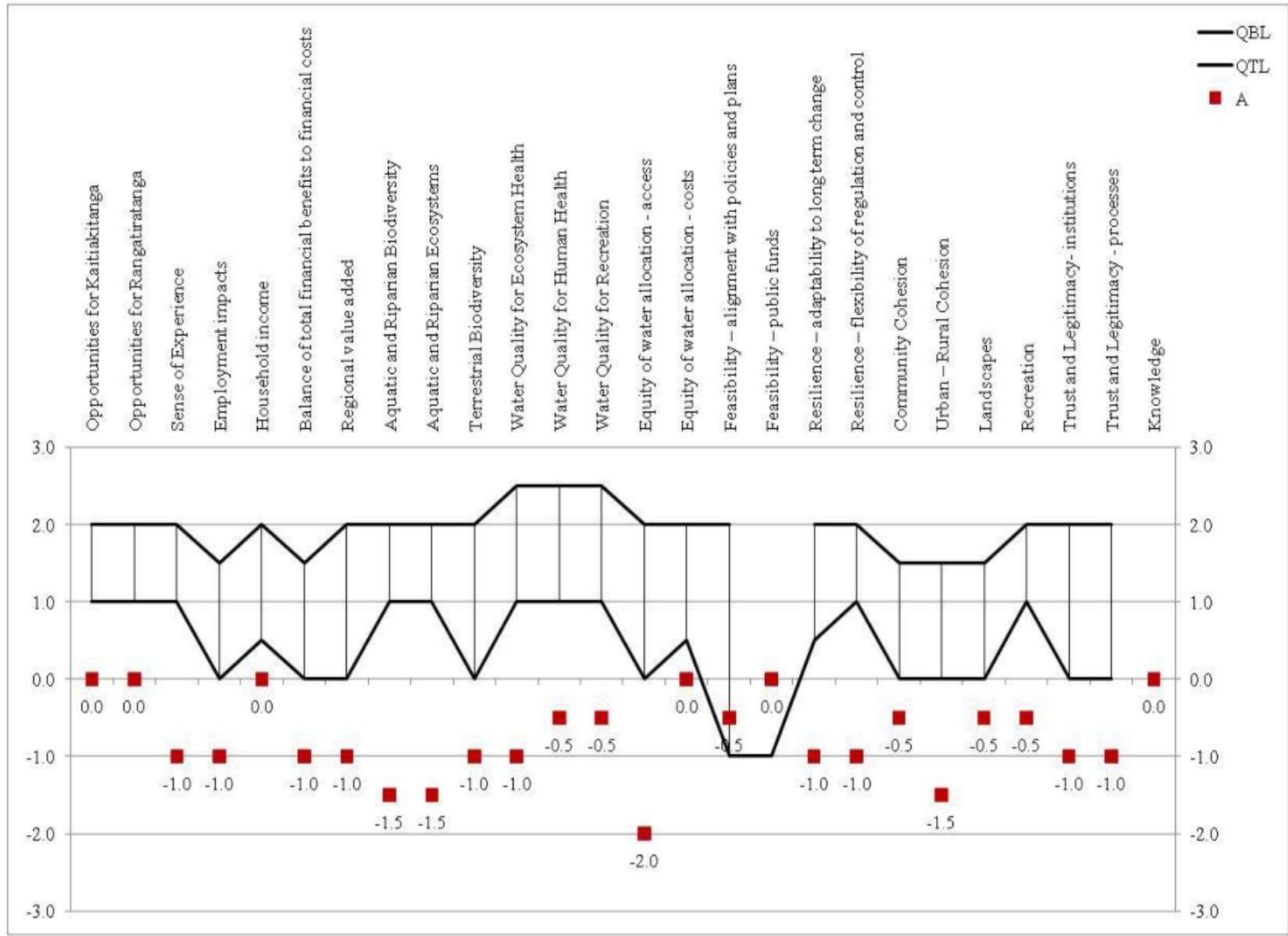
Criteria	Brief description	Scale Descriptors for Impacts (vis-à-vis current state)				
		Strong Negative Impact	Moderate Negative Impact	Neutral Impact	Moderate Positive Impact	Strong Positive Impact
		-2	-1	0	1	2
Aquatic and Riparian Biodiversity	Aquatic and riparian indigenous biodiversity, including key species	Rapid or extensive reduction of biodiversity including loss of key species	Reduction of biodiversity in some areas and/or loss of key species	Biodiversity and key species maintained at current levels	Recovery of biodiversity in key areas and for key species	Extensive and sustained recovery of biodiversity and survival of all key species ensured

Space and Time Matrix

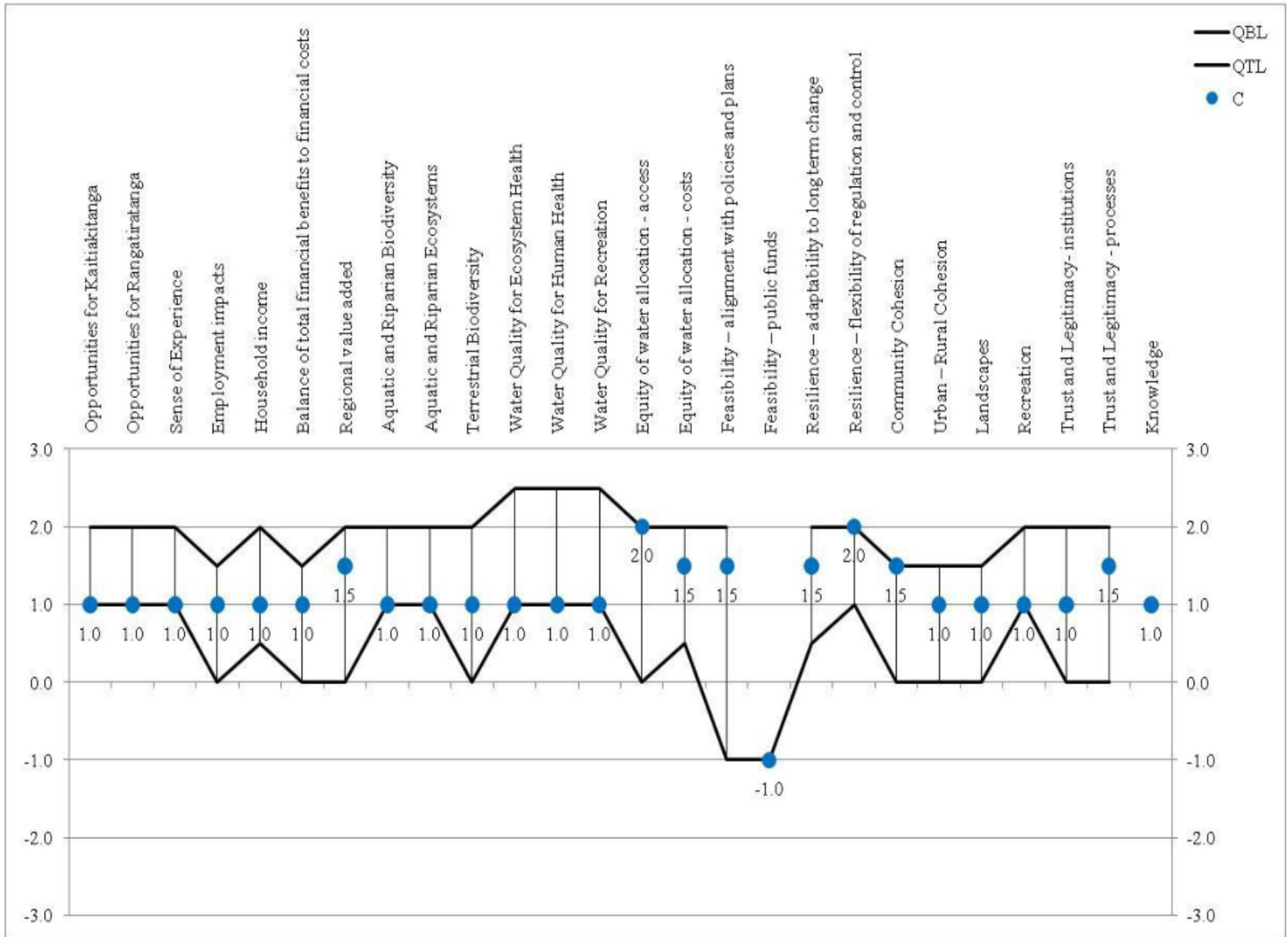
SCENARIO	Economic	Environmental	Social	Cultural
Sub-regionally & short-term				
Regionally & long-term				
Later, to safeguard future generations				

Source: Netherlands Sustainable Development Strategy

Sustainability profile of Option A - the status quo



Sustainability profile of Option C - reconfigure consents & infrastructure



Key Features

- test against top as well as bottom lines.
- looks like but not multi criteria analysis.
- introduces social and cultural considerations into traditionally environment vs. economic debates.
- relies on participants mutual respect and acknowledgment of expert knowledge