

FAD Trials in East Africa

FMSP R8331

Annex 11

Risk evaluation in FAD programmes

This document is designed to provide an introduction to risk evaluation for a potential FAD programme. The document includes a brief introduction to the concept of risk, uncertainty and risk management and draws from the ADB's Handbook for project risk analysis (ADB, 2002) and from DfID's *Livelihoods Framework* (DfID, 1999). It is worth saying at the outset that working with FADs in a dynamic ocean environment and with disparate fisheries stakeholders is an inherently risky and uncertain activity.

Risk and Uncertainty

Risk and uncertainty describe the potential that there will be unwanted negative consequences from an event. The terms refer to a situation where an individual or an organisation may do something undesirable, when a situation may be undesirable or untenable, or when a natural occurrence causes an undesirable outcome, resulting in a negative impact or consequence. However, risk and uncertainty are not the same thing; risk is a quantity subject to empirical measurement, while uncertainty is largely non-quantifiable. So, if it is possible to indicate the likelihood that the value of a programme variable will fall within stated limits (such as knowing the frequency of cyclones) one is describing a situation where the risk can be quantified. Where the fluctuations of a variable are such that they cannot be described with any confidence (the extent of cooperation by local fishers) then one is describing a situation where it is necessary to evaluate the level of uncertainty. Clearly risk and uncertainty are at opposite ends of a spectrum; where perfect knowledge exists the full risk can be evaluated, where knowledge is non-existent one is dealing only with uncertainty.

Approaches to Risk Evaluation

Contemporary approaches to risk evaluations in relation to development projects tend to include where possible both quantitative and qualitative evaluations, but focus more on the outcomes as they affect poor stakeholders and their livelihoods. As livelihood choices are laden with risk and uncertainty, development interventions, e.g. a FAD programme designed to affect the livelihoods of poor people, have to take more account of risk evaluations, not less (ADB, 2002).

Framing a Risk Evaluation

In evaluating risk it can be easy to overlook some issues and because interpretations can easily become biased by subjectivity (*'perception is reality'*) it is necessary to actively compensate for distorting factors. Evaluation work should therefore be guided by a structured approach. The following table presents an example process for risk evaluation. **Note:** this document discusses only issues related to the first three steps of the risk evaluation because subsequent steps in the process will be largely determined by the specific modalities of the programme under evaluation.

Risk Evaluation Process		Evaluation Step
Risk Communication	↔	Step 1: Identify the risks.
	↔	Step 2: Obtain information about their probability and potential impact.
	↔	Step 3: Quantify risk, taking into account expert advice and degrees of uncertainty.
	↔	Step 4: Identify options to deal with the risks, accounting for any constraints.
	↔	Step 5: Decisions on risk management are made, based on operational criteria.
	↔	Step 6: Implement decisions using a set of principles for each intervention.

In practice one is typically not concerned with making choices between a number of mutually-exclusive, competing FAD projects but is more usually engaged in reviewing the potential for a single project. So one needs only to identify the probable key determinants of the project outcome in a relatively focused area, and then design measures within that project environment and its sector context to mitigate the identified risks (ADB, 2002).

Step 1: Identify Risks - Risks can be seen to exist for economic, social, environmental, technological, and institutional/organisational attributes. The following table presents a summary of the attributes as outlined in DfID's Livelihoods Framework. Clearly an evaluation in the context of an artisanal fisheries development programme has to simultaneously consider many potential risks and uncertainties, both those that occur within the sector itself and the many that occur outside the sector.

Livelihood Attribute			
Assets	Shocks	Seasonality	Transforming Structures & Processes
<ul style="list-style-type: none"> Natural Human Financial Social Physical 	<ul style="list-style-type: none"> Natural Economic Political Conflict 	<ul style="list-style-type: none"> Of Production Of Access 	<ul style="list-style-type: none"> Governance Policies Legal Context Institutional Profile

Assets The following table presents some examples of the types of risks and uncertainties that should be evaluated for a FAD programme in East Africa in the context of livelihood assets. Some of these are clearly straightforward and can be assessed quickly and quantitatively, such as the general bathymetric characteristics of the near-shore (1-12nmi.) area through reference to relevant marine charts. Others require more qualitative assessments, such as whether fishers will work together to share benefits from FAD fishing.

Livelihood Asset	Description of Risk or Uncertainty for a FAD programme
Natural	<ul style="list-style-type: none"> Are tuna resources available? Is the bathymetry suitable for the deployment of FADs? Are oceanographic conditions suitable to access FADs?
Human	<ul style="list-style-type: none"> Do fishers have the necessary experience to utilise FADs? Can the necessary skills be transferred easily? Do national organisations have the skills and motivation to be effective partners?
Financial	<ul style="list-style-type: none"> Do fishers have access to financial resources that could allow them to purchase fishing gears/technology to exploit FADs? Are cooperatives or other sources of credit present?
Social	<ul style="list-style-type: none"> Can fishers work together to share benefits from FADs? Are there behaviours related to religious observance that will constrain activities during some period (e.g. during Rhamadhan)?
Physical	<ul style="list-style-type: none"> Is the necessary fishing technology, deployment equipment and infrastructure for the transport of FAD-caught fish present?

Shocks **Economic:** A key economic shock to face Tanzania during the period of R8331 has been the dramatic rise in fuel-prices. Although not a particularly sudden event it has of course led to a significant rise in the price of fuel, which is important in evaluating the economic performance of FAD-fishing vessels that in part at least will rely on outboard engines. Oil price also affects the costs of synthetic ropes and floats, as well as the cost of shipment from the country of manufacture. For programme management changes in the currency exchange-rate can also be important, especially when funds are disbursed quarterly or even less frequently over the duration of what might be at least a two-three year programme. A 10% change in the relative value of the local currency may deplete the programme's future financial resources, although perhaps a contingency budget line could be targeted for such an eventuality.

Political: Political shocks could lead to the termination of the programme; for example the aftermath of elections in 1995 on Zanzibar led to the withdrawal of the majority of donor agencies and halted the progress of a FAD programme that had been developed at that time. Normal political activity, particularly elections, can also affect programme operations and key activities or events should not be scheduled during the run-up to an election.

Conflict: Apart from conflict related to any larger political shock, the key issue of conflict is between stakeholder groups at local level. It has been observed in numerous FAD programmes that this can affect relationships and activities, at least in the short-term. In this programme the evaluation of the potential for conflict between Zanzibari fishers was low given what was already known about the target stakeholders (R8249 FTR Section 4.5.4). In the case of Mafia Island Marine Park (MIMP), on the other hand, the potential deployment sites (and focus fisher communities) were restricted by the tensions between the Park authorities and the fishers of one of the islands within the Park. These tensions result from attempts by the park authorities to reduce destructive fishing in the Park, and so had nothing to do with the FAD programme itself but nevertheless affected choice of site and fisher participation.

Seasonality: Seasonality to some extent is already covered by the resource presence evaluation, which would normally include some analysis of their temporal availability. But there may be additional risks posed by strong seasonality in terms of programme activities (such as trial fishing for example) and a break in the chain of these activities can be important leading to a loss of project momentum and stakeholder interest. Seasonality in commerce can also constrain progress; for example international shipping traffic is particularly high leading up to the Christmas period and importing FAD equipment from overseas can be especially time-consuming at that time.

Risks associated with Transforming Structures & Processes

Governance and Policies: Although contemporary governance is increasingly inclusive, a situation partly dictated by economic restructuring, cross-sectoral planning is difficult and one ministry can thwart the

objectives of another. In the case of R8331 the response of key stakeholders to a chain of unpredictable events highlights the difficulties of evaluating uncertainty in developing-country fisheries. Shortly before a key planning meeting between programme staff, government partners and local fishers, the Zanzibari Government finalised the gazetting of a marine protected area that incorporated fishing-grounds important to the target stakeholder group.

The protected area addressed sensible conservation objectives of the Government and also met objectives to foster high-end tourism locally. This resulted in some tension between fishers and government fisheries staff during the subsequent first planning meeting, and by extension the FAD-programme staff. The problem was further exacerbated by the fact that one of the private-sector sponsors of the programme is owner of a nearby resort hotel that was one of the beneficiaries of the MPA (protecting to key SCUBA/snorkelling sites). Fishers interpreted the collaboration between the FADs programme and the hotel as potentially leading to further restrictions on their fishing, especially given that floats used for the FADs were apparently similar to those used to demarcate the closed area.

Institutional Profile: A key aspect of programme risk evaluation is *internal and external institutional sustainability*. *Internal sustainability* refers to the whether the institution has sufficient resources to complete its tasks or whether there is enough technical assistance provided for by the programme. But any programme seeking to work with a local fisheries department needs to ensure that there is also *external sustainability*; that is to say that where policy adjustments are necessary for longer-term programme success these are likely to be realised. At the outset of R8331 there was one major policy change required for mainland Tanzania to promote the full potential of FADs, namely that export of marine finfish (or at least export of tuna species) would be permitted. Prior research suggested that this policy change would be forthcoming and if necessary a policy brief would have been prepared to further encourage this change. The uncertainty was therefore evaluated as being low. In fact, during 2004 the Government introduced a trial export license and so this element of sustainability was addressed.

Where key policy changes are not initially forthcoming there is a structured approach called The Delphic approach to assess the uncertainty of policy reform.

'In essence it involves asking a group of experts to assign probabilities to particular outcomes. Its advantage is that it provides direct assessment of risks from a collection of subjective but knowledgeable individuals and does not depend upon use of proxy measures - it could also be repeatedly performed throughout project implementation to monitor change. What, ideally, should emerge from a Delphic-based analysis of institutional performance is therefore the best-possible guess from knowledgeable locals about the institutional environment and the probabilities of particular outcomes expressed in a quantitative form.' (ADB, 2002)

In the case of FADs the *experts'* would include key staff in the fisheries department, major NGOs as well as donor agencies involved in fisheries/economic reforms.

Steps 2 and 3: Obtain Information & Quantify Risk - It is not the real-world itself but the information *about* the future real-world situation that is risky and uncertain! In all probability most FAD programme risk evaluations in developing countries will be made with a far from complete knowledge-base on risk probability or details of the potential impacts of the risks. Review of research outputs from local universities, NGOs, and regional organisations along with workshop proceedings and programme development documentation are valuable sources of information. And the almost limitless searching power of the Internet allows a rapid and cheap collection of many of these documents. But progress in information management and dissemination techniques notwithstanding, the quality of data and information, particularly derived from government sources that operate in budget-limited circumstances, is highly variable and obviously requires a degree of triangulation. Direct communications with individuals from these organisations can augment the information profile and to help triangulate the various sources of information.

In terms of quantifying risks, the literature has concentrated on the extent to which:

- the consequences of particular risks are catastrophic or not,
- the risks are controllable at the micro level or not;
- the consequences are reversible or not; and
- if the risks are insurable or not.

DfID have further developed a structure for such analyses and include it in their programme documentation as a *risk annex*, although not all risk variables lend themselves to this sort of analysis. The risk matrix is a table of *Impact* against *Probability* with three qualitative scores for each of High, Medium and Low. For example, the probability of a cyclone destroying a FAD is low in Tanzania, but the impact on the programme would be high. The risk of inadequate collaboration between the fisheries department and the FAD programme should be low, but the impact of a poor relationship on the programme would be high. The accuracy of the risk assessment could be improved based on participatory techniques (interviews, group and village discussions, etc.), but its scope and intensity could be increased to include gaining an understanding of target groups' attitude to risk, so that appropriate levels of risk can be incorporated in project and program design.

Quantifying risk is particularly difficult in relation to *shocks*. These issues are harder to evaluate because by definition they are chaotic and unpredictable, although for natural shocks there are often data available on the average *frequency* of such events (the 50-year storm etc). Data on natural shocks for example can generally be obtained from disaster management units and meteorological departments (e.g. www.meteo.go.tz; www.meteo.go.ke). In Tanzania, weather-related natural shocks/disasters account for about 30% of all records of 'disaster' events. In terms of FADs the most obvious natural shock to consider is cyclonic activity but this is rare in Tanzania (accounting for just 3.4% of *all* shock events).

Communicating a Risk Evaluation

Implicit in risk evaluation in general and in DfID's risk annex documentation in particular is the need for effective communication of the outcome of the risk evaluation.

The DfID risk annex (and the associated *risk matrix*) can be effectively employed to promote dialogue between stakeholders and to allow for early action to ensure that mitigating measures are put in place. Critically also the constraints and limits to what the programme may be able to achieve needs to be reinforced to stakeholders whose expectations might easily become unrealistic.

The emphasis and presentation of any form of risk evaluation should therefore demonstrate that risks to individual project success have already been identified and mitigated as far as possible within the proposed project design, and that the extent of any remaining risk is both quantified (i.e. known) and its existence is regarded as 'acceptable' given the nature of the particular intervention proposed. Communicating a risk profile to different stakeholders can also ensure that those partners most able to manage a particular risk are in a position to do so.