Guideline for Standard Developers on incorporating a risk-based approach in National Forest Stewardship Standards

FSC-GUI-60-010 V1-0
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Foreword

FSC is developing and incorporating risk-based and outcome-oriented approaches for National Forest Stewardship Standards (NFSS) as part of the process to ‘Streamline the FSC Normative Framework’, as outlined in the FSC Global Strategic Plan 2015-2020 and the related Implementation Plan. Designing and implementing risk-based approaches within the FSC Normative Framework and NFSS aims to focus the FSC certification system on efficiency.

The conceptual model ‘ADAM’ (Assessment of risk, Designation of risk for indicators, Adapted risk response, and Monitoring and Evaluation) translates risk-based approaches to the NFSS. This document – together with FSC-PRO-60-010 – focuses on risk assessment and risk designation, being the first and second steps of the ‘ADAM’ model.

A Objective

The objective of this Guideline is to provide support to Standard Development Groups (SDG) implementing FSC-PRO-60-010 Incorporating a risk-based approach in National Forest Stewardship Standards (NFSS). Through a step-wise approach, guiding questions, examples of tools and descriptions of case studies the users of the procedure will be able to define a methodology for risk-assessment in their national context, choose sources of information and ensure the quality of the assessment and of the risk designation. The Guideline also gives some ideas on how certification bodies (CBs) could audit national standards with risk designations to streamline the NFSS and their implementation (section 4).

B Scope

This Guideline is for use by registered SDGs when implementing FSC-PRO-60-010 Incorporating a risk-based approach in National Forest Stewardship Standards. The decision to incorporate this risk-based approach is at the discretion of the SDG. SDGs may conduct this process during the development of a new NFSS, during the transfer of an existing NFSS to the P&C V5-2, or retroactively incorporate it into an approved NFSS.

C Effective and validity dates

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<td>05 November 2018</td>
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<td>08 November 2018</td>
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D References

The following referenced documents are relevant for the application of this document. For references without a version number, the latest edition of the referenced document (including any amendments) applies:

FSC-STD-01-001  FSC Principles and Criteria for Forest Stewardship
FSC-STD-01-003  SLIMF Eligibility Criteria
FSC-STD-60-002  Structure and Content of National Forest Stewardship Standards
FSC-STD-60-004  International Generic Indicators
FSC-STD-60-006  Process requirements for the development and maintenance of National Forest Stewardship Standards
FSC-PRO-60-006  Development and Transfer of National Forest Stewardship Standards to the FSC Principles and Criteria Version 5-1
FSC-PRO-60-010  Incorporating a risk-based approach in National Forest Stewardship Standards
FSC-GUI-60-002  Guideline for Standard Developers for addressing risk of unacceptable activities in regard to scale and intensity
1. A risk approach in our NFSS process? Do we need one?

1.1. What does risk mean?

The notion of risk can be framed by the likelihood and potential seriousness of negative impact of a problem or threat.

The likelihood and seriousness of impact are influenced by many factors:

1. The likelihood of negative impact could be influenced by national contexts and organizational characteristics.
   National context could be: adequate and enforced regulation, widely used best practices, etc.
   Organizational characteristics could be: forest size, type of ownership, type of forest operation, etc.

2. The seriousness of negative impact could be influenced by the importance and vulnerability of the value and organizational characteristics

FSC requirements are designed to protect – or at least to prevent and mitigate negative impact to – environmental, social and economic values. Once an indicator has been approved, the risk of unacceptable impact to the value can therefore be considered as a combination of the likelihood of nonconformity with the impact of the nonconformity.

1.2. What is a risk-based approach?

A risk-based approach is a tool for effectiveness and efficiency. A high level of risk can be negative as it implies a significant threat to an FSC value, however it can also be positive in that it identifies an opportunity for FSC to bring added-value to forest management. A low risk level identifies low-added value areas and presents streamlining opportunities.

The perception of risk is by nature subjective and depends on personal experiences, expertise and values. Some stakeholders will have a low tolerance to any risks and may consider that risk levels are high for most indicators. Others may have a tendency to see low risk everywhere. The success of a risk approach resides in our capacity to manage and balance different levels of risk tolerance.

A risk approach can therefore be considered as a way to maintain the balance between affordability (uptake), confidence (market access) and the conformity with FSC’s values and mission. It aims at risk management and not at risk elimination – as affordable. An assurance level of 100% is impossible to achieve.
1.3. How do we decide to implement a risk approach?

Incorporating a risk-based approach in a NFSS process is a voluntary decision, and should be based on need and consensus.

The scope of the risk assessment is also at the discretion of the SDG and can focus on a specific subset of indicators. For example, the SDG can decide to invest time only on specific areas of the NFSS which are known to cause concern among stakeholders, and/or on those considered close to common practice.

The scope of the assessment will be described and justified in the final report (see section 3.2) and indicators that are out of the assessment scope will be identified as “undesignated”. The decision to implement the procedure FSC-PRO-60-010 and the scope of it may be guided by answering positively to one or more of the following questions.

**Guiding questions: Will a risk-based approach help our NFSS process?**

- Are there areas in the IGIs/NFSS that stakeholders complain about because they have no added value compared to common forestry practice in the national context?
- Are there areas in the IGIs/NFSS that represent a significant improvement over common forestry practices?
- Are there areas in the IGIs/NFSS that concentrate concerns and criticisms from key stakeholders?
- Is diverse NFSS interpretation by CBs considered a problem by stakeholders?
- Is a need to help foresters’ comprehension and implementation of the NFSS a key aspect to support FSC development in the country?
2. A risk assessment? How?

This section will provide information on how to conduct a risk assessment and make a risk designation. Three aspects will be covered:

1. Different approaches to decide on the risk designation
2. Possible levels of analysis
3. Sources of information available to justify the risk designation

Keep in mind that the stage of the NFSS process can influence the way a risk-based approach is conducted and incorporated. Remember that it can be done:

- during the development or revision of a new NFSS,
- during the transfer of an existing NFSS to the P&C V5-2, or
- retroactively on an approved NFSS.

2.1. How can we make a risk designation?

Different methodologies can be used to decide which level of risk to assign to the indicators. This section suggests number of options. Remember that whatever the methodology used, the decision of the SDG for a proposed designation has to be made in consensus.

Using a Matrix

Risk designations can be determined through a risk matrix, rating both the likelihood and the seriousness of negative impact.

The likelihood of nonconformity with an indicator has to be evaluated over a period of time consistent within the risk assessment. Likelihood within the next month or the next ten years will give different answers. So the same time scale should be used for all indicators. A period of five years - tied into the certification cycle – is recommended to maximise equivalence between countries and enable calibration.

The evaluation of the seriousness of negative impact is specific to each value. Examples of scales of impacts for different values are presented in Annex C (Case study South Africa).

Table 1: Example of a simple risk matrix

<table>
<thead>
<tr>
<th>LIKELIHOOD</th>
<th>IMPACT</th>
<th>Very low</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Low</td>
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<tr>
<td>Moderate</td>
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<td></td>
<td></td>
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<tr>
<td>High</td>
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</tbody>
</table>
**Numerical approach**

A numerical approach assigns a score to each level of likelihood (L) and impact (I). The risk designation then becomes a simple mathematical result (LxI), although assigning the likelihood and impact scores remains a subjective decision. Table 2 below presents an example where likelihood has been scored from 1 to 3 and impact from 1 to 5 – other scales may be chosen. The risk designation (colors) can then be linked to the result, in this case:
- Very low = 1
- Low = 2 to 4
- Moderate = 5 to 8
- High = 9 to 15

*Table 2: Example of a risk matrix using a numerical approach*

<table>
<thead>
<tr>
<th>LIKELIHOOD</th>
<th>IMPACT</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
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<tr>
<td>1</td>
<td>1</td>
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<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

A case study from South Africa gives more information on this approach in Annex A.

**Qualitative approach through risk characteristics**

This option considers the reasons behind risk ratings, which are described as risk characteristics in FSC-PRO-60-010. Risk characteristics can refer to likelihood (e.g. ‘addressed and enforced well by regulatory instruments’), and/or to seriousness of impacts (e.g. ‘value declining in abundance’ or ‘negative affects carry little repercussion’), or to a combination of both (e.g. ‘history of poor management’).

An easy starting point to identify low and high risk indicators is to remember that they are linked to the degree of added-value to the performance of forest management in the country. Low risk indicators may be characterized as areas where FSC requirements are considered common practice, while high risk indicators characterize areas of opportunity for FSC to make a significant difference, for example where some values and/or requirements cause a high level of concern among stakeholders or have a specific importance in the national or regional context. Other examples might relate to management activities with low social acceptance, or to requirements that are new and difficult to implement by forest managers.

Note that several risk characteristics belonging to different categories can be related to a single value or indicator. The overall designation (low, moderate or high) will depend on consensus among SDG members regarding how those different risk characteristics interrelate and balance each other.
Table 3 shows examples of risk characteristics. **Other characteristics can be defined by the SDG (except for the ‘very low risk’ category which is pre-defined by the FSC Board).**

*Table 3: Examples of risk characteristics as in FSC-PRO-60-010 Incorporating a risk-based approach in National Forest Stewardship Standards*

<table>
<thead>
<tr>
<th>Very Low Risk</th>
<th>Low Risk</th>
<th>Moderate Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low likelihood of occurrence; <strong>and</strong></td>
<td>Low likelihood of occurrence</td>
<td>Important social value</td>
<td>Value is affected by FM</td>
</tr>
<tr>
<td>Well evaluated and controlled by regulatory authorities; <strong>and</strong></td>
<td>Addressed well by regulatory instruments</td>
<td>Important ecological value</td>
<td>Considerable cultural or social significance</td>
</tr>
<tr>
<td>No incidents of negative impact within the last 5 years; <strong>and</strong></td>
<td>Common value not affected by FM</td>
<td>Important economic value</td>
<td>High level of concern from stakeholders</td>
</tr>
<tr>
<td>Key stakeholder support across all chambers</td>
<td>Negative affects carry little repercussion</td>
<td></td>
<td>Value is subject of legal proceedings</td>
</tr>
<tr>
<td></td>
<td>Low concern</td>
<td></td>
<td>Value declining in abundance or prevalence</td>
</tr>
<tr>
<td></td>
<td>Common practice for foresters</td>
<td></td>
<td>Little is known about the value</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>History of poor management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>History of contention</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Challenge for forest management in the national context</td>
</tr>
</tbody>
</table>
2.2. The particular case of “very low risk” designation

Risk characteristics relating to the designation ‘very low risk’ are not examples but a mandatory combination (FSC-PRO-60-010 Incorporating a risk-based approach in National Forest Stewardship Standards). In other words, the only way to reach a ‘very low risk’ designation for an indicator is if it meets all four risk characteristics as follows:

a) Very low likelihood of occurrence; and

b) The value is sufficiently evaluated and controlled by regulatory authorities; and

c) No incidents of negative impact on the value by forest management have been reported in the country within the last 5 years (either through a corrective action request (CAR) issued by a certification body in an FSC audit, or through an upheld formal complaint by a stakeholder); and

d) There is demonstrated key stakeholder support for a very-low risk designation across all chambers.

Note: this category has been pre-defined by the FSC Board

2.3. Where do we start?

FSC-PRO-60-010 states that the result of an assessment has to be a risk designation at the indicator level. However, this does not prevent Standard developers starting analysis at another level. The choice for the starting level of assessment may depend on several factors, including the stage of the NFSS development process.

The different levels can also be tackled in a sequential manner, from a broader scope (national context, P&C) to a more detailed one (indicators, values). The analysis at a broader level could be a means to prioritize action and determine when a finer level of analysis is necessary.

Guiding questions: Where are the risks?

- What are the challenges for FM in my country?
- What are the biggest opportunities for FSC to make a difference?
- Where are the gaps between common forestry practice and FSC requirements?
- Which areas of our NFSS cause more concerns among stakeholders?
- Where may unnecessary effort be reduced?
A description of the national (and international) debate around forestry activities in the country is in any case a recommended first step. It can help to identify the challenges posed and faced by forestry activities and enables to quickly prioritize important issues for national stakeholders. It can also help to identify what systems are already in place to meet or support conformance with FSC requirements. See Box 1 for more details.

Box 1: Profiling the national context

Describing or profiling of the national characteristics should consider the ecological, socio-economic context, the social acceptance of forest activities as well as FSC culture among stakeholders, as it might influence their level of expectation and risk tolerance. Finally, it should identify the organisational characteristics of the intended users of the NFSS (ownership, sizes, etc.). There is no need to prepare a whole book on forestry within a country but interested readers need to be able to quickly understand the key characteristics that guided the risk assessment and NFSS development.

Here are some important factors that might need attention and description. This list is not exhaustive.

Forest and forestry conditions
- Forest history
- Forestry tradition(s)
- Plantations vs natural forests
- Forest types
- Land owner typology (large vs small, private vs state owned)
- Rare and threatened species and other environmental values and their conservation status

Socio economic context
- Legislation & law enforcement
- Local communities in/by the forests or remote
- Local communities use of forests for livelihood (bushmeat, clean water, fuelwood, jobs, etc.)
- Social acceptability of forestry practices and criticism – national/ international
- Indigenous community rights
- Export or import country

FSC culture
- % of forests certified
- History of FSC certification – expectations from FSC members
- Attitude of stakeholders towards FSC
- Which forests are certified (public, smallholder, large companies)

Standard development process
- Composition of the SDG
- First standard or revision
- Main intended users (public forests, smallholder, large companies)
- Influence of stakeholders’ participation in the process
- National decision-making process (SDG, board, members)
Additionally, a national profile gives an important background to understand the SDG decisions for risk designation and indicator adaptation. This will support and facilitate the approval process, as well as enable calibration of risk designations between countries within a region.

Possible starting levels for the assessment include:

- **FSC Principles and Criteria level:** Starting the analysis at a higher level than the indicators can enable a more strategic assessment of where risks and opportunities lie for the national process. A gap analysis between the FSC P&C and the national profile could be developed and even consulted with the Consultative Forum or during a public consultation. This could help to clarify priorities.

- **Indicator level:** In cases where the NFSS is already approved, it might be convenient to directly start the assessment at the criteria or indicator level. However, as several indicators are linked across criteria, it may be convenient to support an assessment at this level with a national context profiling that can help stakeholders understand better the risk designations.

- **Values and management activities level:** Depending on the national context, it could be convenient to break down normal management activities to analyse the specific risks they pose to environmental, social and economic values. This could for example be an option in contexts where the management activities are quite homogenous across both the country and forest managers (see section Annex A Case study 1 South Africa).

Whatever the level of analysis chosen, the risk designation refers to one or more values associated with FSC’s Principles and Criteria; a combination of the likelihood of nonconformity with a defined indicator with the potential negative impact of nonconformity on the value.

**Guiding questions: Where do we start?**

- Where are we in the process? At the beginning, in the middle or with an already approved NFSS?
- What seems logical to SDG members? Which level are they more comfortable with?
- What approach will make sense to stakeholders? How will this be easier for them to see the benefits of the approach?
- Can we foresee a sequence where several layers of analysis will potentially be combined?
- What support do we need?
2.4. What information can we use?

This section lists some sources of information that can be used to assess risk levels and reach a designation.

**Stakeholder engagement:** FSC requirements already provide a range of possible ways to engage with key stakeholders during the NFSS development process, (e.g. the Consultative Forum and public consultations). Collecting views among experts and key stakeholders is particularly important when undertaking a risk assessment as incorporating different opinions should help reduce the subjectivity of the risk assessment. First steps of risk assessment can also help identify specific stakeholder groups linked to high risk issues, and resources can be devoted at different stages of the process to target stakeholder engagement.

**Internationally recognized indices:** Several international indices exist that can give general information on the national context of an issue of concern. Most of these indices likely do not have the level of detail that is required for NFSS development. However, they can be helpful to understand the national context, and to position it in relation to neighbouring countries and at regional level. Controlled Wood National Risk Assessments (NRAs), even though developed for other purposes, could inform this process.

**Controlled Wood National Risk Assessment:** Controlled Wood Risk Assessment, either National or Centralized (NRAs and CNRAs) provide a good source of information, detailed especially on legal aspects. They may also be useful to understand the sequential logic that needs to guide a risk assessment. It has to be remembered however that 1) a NRA/CNRA will have a much broader scope (national, sometimes sub-national) than a NFSS (MUs) and that Controlled Wood is not equivalent to responsible forest management and risk tolerance levels are therefore not the same. These differences in scale and tolerance levels may lead to differences in risk designation.

**Corrective Action Requests (CARs) analysis:** A number of FSC National Offices and other stakeholders have already conducted CARs analysis (e.g. Russia, Germany, UK, USA, Canada, CIRAD in Brazil, ASI, etc.) as a means to evaluate NFSS effectiveness and conformity levels. This type of analysis will become more centralized and easily accessible in coming years with development of an online report format to be used by auditors and CBs. At present it still requires digging into each certification report and/or approaching each CB operating in the country to identify for which requirements CARs are issued, and why. Box 2 proposes several elements to take into account when developing such an analysis.
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Legislation gap analysis: The content of national legislation – and therefore its overlap with FSC P&Cs – and levels of law enforcement vary between countries. An analysis can identify potential redundancies as well as added value brought by FSC certification. This could inform risk levels of nonconformity to FSC P&Cs. The SDG expertise can help focus the efforts of conducting a gap analysis (see UK example in the Box 3). To assess the levels of law enforcement, several indices can be consulted like the World Bank’s Worldwide Governance Indicators, the World Justice Project’s Rule of Law Index, or the Transparency International’s Corruption Perception Index.

Box 2: CARs analysis

CARs analysis can be used to provide some information about conformity levels and effectiveness of the NFSS requirements. The purpose of the analysis is to suggest indicators or criteria with high risk of nonconformity. Regarding the identification of very low and low risk indicators or criteria, the absence of CARs has to be considered as one risk characteristic among others. To interpret CAR-data is not as straightforward as it may look. Here follows a list of components that needs to be considered in a CARs analysis:

**Number of CARs:** If the analysis is based on criteria, the number of indicators per criteria needs to be considered, since more indicators increase the likelihood of CARs.

**Indicators difficult to audit:** Some indicators are harder to audit, thus possibly leading to fewer CARs being issued or recurrent gaps between CHs’ and auditors’ interpretation. For example, the indicators may be poorly written and unclear, or more complex requirements may lead to a wide range of interpretation.

**Different audit intensity and frequency:** A CB usually assesses the risk of nonconformity of the requirements – even informally - and then varies the audit intensity and frequency accordingly. Higher intensity or frequency increases the chance of detecting a CAR.

**Stakeholder complaints:** A CB may use a sampling method to select MUs from which they extrapolate conclusions. The investigation of complaints is not part of this sampling process. Hence, these topics can get over-represented in an audit. Indicators with high stakeholder interest can influence the auditor to put more focus on these topics.

**Different interpretations between CBs and auditors:** If CBs and auditors are not well calibrated this will influence the CARs issued. CAR analysis can be a tool for detecting differences between CBs on interpretations of the standard requirements. Different auditors have different personal motivation or skills making them focus on different topics. Therefore, new non-conformities are normally detected following changes of CBs or even auditors.

**New standard or new CH:** When a standard is new, or a CH is new to the FSC system the rate of nonconformities will often rise for the first 2 years and then stabilize.

**Annual variation:** Since all indicators shall be audited within five years some auditors may focus on certain principles or criteria one year, and others on another year. This may skew the results between years.

**Limitations of CAR analysis:** FSC has still no method in place to evaluate the total number of nonconformities (NCs) present. There is therefore unclear whether CARs are comprehensive or representative of all NCs. Methods are being proposed to investigate this issue, with the aim of increasing the efficiency of audits and consequently of CAR analysis.
Smallholders, communities and other specific land tenure: For a specific issue, the level of risk can also vary with the MU size and/or land tenure. Factors may include:

- specific management techniques applied;
- different sizes lead to different harvest and intervention patterns;
- different types of owners might have distinct behaviour patterns recorded through scientific studies;
- different levels of forest owner control over management activity;
- different access to resources, technology and information.

It has to be noted that the connection between small size and low risk is not as immediate as might be thought. For example, harvests in small MUs are often happening only every 10 to 20 years but tend to be more intensive (clear-cuts). It may also involve people and technology which are less experienced / safe than in a larger commercial operation.

**Complaints:** Complaints may be important to understanding where there is stakeholder dissatisfaction with the effectiveness of the FSC system, including both certificate holders (CHs) and CBs. Analysis of complaints may be valuable for risk assessment and complementary to other risk assessment tools.

**Regional assessment:** The sensitivity of some issues may vary from one country to another in a defined region. However, market competitiveness as well as public credibility lead to a degree of inter-connection of sensitive issues at regional level. The regional context tends then to influence the risk level of specific national issues. Therefore, risk assessment developed for neighbouring countries should be considered as a source of information. Regional offices and/or FSC International will have a strong role to play in calibration of national risk designations to ensure the overall credibility of the system.

2.5. What happens if consensus is not reached?

Consensus between SDG members might not always be reached for each and every indicator within the scope of the assessment. This might be because:

- **the perceptions of risk are too different and cannot be reconciled.** All diverging perceptions need to be acknowledged as legitimate.

- **it appears through the assessment that a designation cannot be made at a national level** because the likelihood and/or impact are too dependent on factors related to local context and/or CH structure.

The indicators are then identified as “**undesignated**”. The reasons why consensus was not reached are recorded in the same way as the justifications for designated indicators.

3. **How to get it right?**

This section will provide information on the ways to evaluate the quality of an assessment, its submission to the Performance and Standards Unit (PSU) and approval process by the Policy and Standard Committee (PSC), as well as the review process of risk designation.

3.1 **Subjectivity of risk perception and quality of the assessment**

The perception of risk is by nature **highly subjective and depends on personal experiences, expertise and values**. Therefore, different stakeholders will have
different levels of tolerance to risk. There are several key actions that can reduce the subjectivity in risk determination and balance different tolerance levels:

1. Use professional expertise, scientific evidence and other credible sources of information;

2. Acknowledge controversies and do not hesitate to consult several experts on the same topic;

3. Increase the number of points of view collected (e.g. during stakeholders’ consultation or targeted engagement);

4. Be rigorous and consistent regarding the methodology used for the assessment;

5. Be rigorous and consistent regarding the logic of the justification of the risk designation.

These actions will be the bridge between members of the SDG enabling them to reach consensus, between the SDG and the stakeholders during public consultations, as well as between the SDG and the reviewers during the approval process. Make sure the bridge is solid.

**Box 4: Evaluating the quality of the sources of information**

The quality of the sources of information used to support the risk designation will be evaluated by PSU reviewers during the approval process. Experience gathered by the Controlled Wood team of reviewers during the approval process of NRAs and CNRAs shows that there are four main factors characterizing the quality of a source of information:

1. Is the source international, national or local? Information coming from international agencies or organizations are considered more reliable. Local information might however be more relevant for specific issues;

2. Is the source a scientific publication, a report based on investigation or literature review, an opinion based on personal expertise? Scientific publications are better rated;

3. Is the source publicly available or confidential? Public availability enable verification.

4. Is the source less than five years old? We must strive to use up-to-date information.

Furthermore, a simple numerical scale rating those factors would enable stakeholders and reviewers to quickly grasp the quality of the information used.

Note that information from lower quality sources can still be used but need to be considered accordingly.

For more information about the quality of sources of information, check section 2.2.2 of FSC-PRO-60-002A V1-0 FSC NATIONAL RISK ASSESSMENT FRAMEWORK.
3.2 How do we submit the risk assessment and designation?

The clarity of information presented will allow stakeholders and evaluators to understand the logical process followed by the SDG to make a risk designation. Therefore, as per the procedure FSC-PRO-60-010, the report shall include:

a) a description of the scope of the risk assessment (e.g. full assessment or partial assessment of NFSS indicators) and the selected risk categories;

b) a brief description of the risk assessment process, including the methodology chosen and the consultation process and feedback provided by stakeholders.

Additionally, the Transfer Matrix used for the transfer to and development of NFSS under the V5-2 of the Principles and Criteria can easily be modified to incorporate the risk designations and corresponding justifications, including the risk characteristics, through added columns. When further information is needed, a reference to specific sections of the report may be added.

3.3 How will our work be evaluated and approved?

The evaluation process is the same as for the transfer and development of NFSS. PSU (incl. regional staff) will first perform a technical evaluation and communicate with the SDG regarding clarifications or improvements.

Calibration of reviewers and of risk designations at regional level will improve the quality of the process.

The report and the adapted Transfer Matrix will then be passed to the Policy and Standard Committee (PSC) for evaluation and approval. The PSC will evaluate the risk assessment and risk designation separately from the transfer and development of indicators. In that way even if further conditions are placed on a risk assessment and designation, the approval process of a NFSS can still proceed.

3.4 How long do the risk assessment and designations remain valid?

The risks (nature and levels) are likely to change as the national context evolves (change in legislation, techniques, social acceptability, etc.) or as new information becomes available (research, complaints, CAR analysis, CBs and stakeholders’ feedback, etc.).

Risk assessment and designations have to be reviewed, and if needed revised, at least every five years, following the review cycle of the NFSS. However, SDGs – or in their absence NOs and ROs – need to monitor changes that could trigger an extraordinary review. A revision can be performed any time based on the evidence gathered, and may focus on specific sections (criteria, indicators) of the NFSS risk assessment and designations as needed.
4. Done!... Now what?

This section presents ideas currently investigated by the RBA project team regarding subsequent steps of the ADAM conceptual model (3rd and 4th step: Adapted risk response, and Monitoring and Evaluation) with the aim to propose recommendations before mid-2019.

4.1 What could be done based on those risk designations?

The RBA team is working on a discussion paper that investigates and develops ideas on how CBs will audit (and more general speaking provide assurance) against national standards with risk designations. A public consultation on a discussion paper on risk adapted assurance is foreseen for the second quarter of 2019. One of the ideas FSC is working on is to provide centralized minimum requirements for how CBs will verify conformity of certificate holders against national standards with risk designations. In addition to having a national standard with risk designations a key question is how performance of individual CHs will be reflected in audits and what the role of CBs and CHs will be.

Ideas on risk-adapted auditing are: (among others):

- Not auditing Very Low Risk indicators unless the auditors have evidence of potential nonconformity (already pre-defined by the FSC Board);

Guiding questions: What are the check points to evaluate the quality of the risk assessment process?

- Is the nature of the risks well identified, i.e. the likelihood and potential impact?
- How were decisions reached? Were all decisions taken following the same clear logic? Does the same combination of risk characteristics lead to the same risk designation for different indicators?
- Were experts consulted? Have these experts been selected to complement or cover gaps in SDG members’ expertise? Have several experts been consulted on the same issue? Does the assessment reference credible sources of information?
- What has been done to ensure engagement with stakeholders? Have the key stakeholders been identified, with targeted engagement? Were the means of engagement effective and did all key stakeholders respond?
- Is the quality of the sources of information high enough to support the designations?
- Can the logic of risk designations and justifications be understood easily by someone external to the national context?
- Lowering audit frequency for Low risk indicators – for example main evaluation audit only;
- Maintaining audit frequency and intensity for Moderate Risk indicators;
- Regarding High Risk indicators, increasing audit frequency and/or intensity may in some cases be needed (see Annex C Russian Case study).

Another idea under investigation is that in addition to responding to risk designations with adapting the audit/assurance it may in some circumstances be more suitable to manage risks differently to maintain the balance between affordability (uptake), confidence (market access) and the conformity with FSC’s values and mission (see Graphic 1 p.8). Specifically, in the context of high risk indicators it could be better to e.g. improve the clarity of indicators or interpretations or increase coordination and calibration between National/Regional FSC Offices, PSU, CBs and ASI, rather than responding with increasing e.g. the audit intensity and frequency. Here SDGs could have an additional role to play in making recommendations to CBs. This idea will be carefully analysed and consulted with stakeholders.

**FSC certified foresters know that effective monitoring is a basis for adaptive management.** Developing a monitoring and evaluation system – the 4th step of ADAM – to learn and improve our system (NFSS, assurance responses and strategic actions) is key to the implementation of a risk-based approach. The RBA team is working on a proposition to define monitoring targets and distribute roles and responsibilities among NOs, ROs, FSC IC, CBs and ASI.

### 4.2 How to identify the root cause of a risk?

**A problem well stated is a problem half-solved.** Following Russian Case Study example (see Annex C), SDG could produce, for each high-risk indicator identified during the assessment, a description which identifies the causes of the problem. The potential solutions and therefore the way to develop requirements and audit them can be very different depending on whether the problem is related to information availability or gathering, implementation, capacity or technical issue or socio-cultural representation and behavior.

A Root Cause Analysis (RCA) is a method of problem analysis, based on the idea that it is at least as important to address the causes of a problem as its immediate effects. The primary aim of RCA is to identify the critical underlying factor (or factors) that resulted in past events - or what lies behind perceived threats. Focusing on addressing root causes can then have the goal of managing risk at optimum levels.

Additionally, it can help identify not only the root cause of one problem but also the few underlying causes of many problems. It can then as well support the design of efficient monitoring systems. Guidance on RCA, compiling information from different sources, is included in Annex D.
Annexes: Note on the case studies

The three case studies presented in annexes are very different one from another. They range from a methodology develop by an expert working group (Case study South Africa), to a technical and partial methodological exercise performed for the sake of this guidance (Case study Canada), to the summary of methodology and findings from a project implemented already for several years (Case study Russia).

South African and Russian case studies are not the results of the implementation of FSC-PRO-60-010 and this guideline but on the contrary have provided extremely valuable input for its development. The Russian case study even provides input regarding risk responses and monitoring, the next steps of ADAM. These three case studies are included here as concrete examples supporting the implementation of the procedure by providing points of attention, and illustrating opportunities and benefits of risk-based approaches.
Annex A: Case study South Africa:

Key characteristics of the case study:
- This case study is the result of a project conducted by a South African working group with representation from the local SDG and CBs in 2017. The first results were presented at the General Assembly 2017;
- Large country with small to medium Management Units dedicated to plantation management of exotic species;
- Mixed land tenure – state, private and communal;
- Risk assessment focused on the relationship between plantation management activities and a defined set of values;
- The way different MU sizes or tenures impact the risk assessment was not analysed at the national level, but could be evaluated by CBs at the CH level;
- Risk assessment was conducted prior to IGI adaptation process which provided guidance to the SDG in the NFSS process;
- The methodology developed by the working group is described in the graphic 2 below.

Graphic 2: Methodological steps including logical decision-making process summarized from the case study submitted by the South African working group

Step 1
- **Identify values**
- Identify the environmental (crossing FSC definitions for Environmental values, HCV and Ecosystem services), social and economic values which relate to sustainable plantation management in the South African context (see table 4).

Step 2
- **Identify threats**
- A comprehensive list of potential management activities, and associated potential hazards, was developed by systematically analysing the local context of sustainable plantation management.

Step 3
- **Define scales for probability and seriousness of impact**
- A scale of 1 to 3 was defined for Probability and from 1 to 5 for the Level of Impact. Each level of the scale was described (see table 5).

Step 4
- **Rate risks**
- Risk to each value from the relevant management activities was rated at a national level and the corresponding scores supported the risk designation (high, medium, low, not applicable).

Step 5
- **Link back to indicators**
- The risk designation assigned to management activities was then linked back to specific indicators and supported the transfer of IGIs (adapt, adopt and add).
Table 4: List of values developed by South African SDG as first step of the risk assessment

<table>
<thead>
<tr>
<th>Environmental values</th>
<th>Social values (community and workplace)</th>
<th>Economic values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodiversity, (HCV1)</td>
<td>Indigenous people rights</td>
<td>Reputation of the organisation</td>
</tr>
<tr>
<td></td>
<td>Opportunities for employment</td>
<td></td>
</tr>
<tr>
<td>Landscape level ecosystems, (HCV2)</td>
<td>Indigenous knowledge</td>
<td>Productivity of the plantation, especially for the long term</td>
</tr>
<tr>
<td>Ecological integrity (conservation zones), (HCV3)</td>
<td>Opportunities for employment</td>
<td></td>
</tr>
<tr>
<td>Recreational and aesthetic values, (HCV 4)</td>
<td>Economic development</td>
<td></td>
</tr>
<tr>
<td>Water quality, (HCV 4)</td>
<td>Community harmony</td>
<td></td>
</tr>
<tr>
<td>Water supply or quantity, (HCV 4)</td>
<td>Fundamental rights at work</td>
<td></td>
</tr>
<tr>
<td>Soil retention, (HCV 4)</td>
<td>Health and safety</td>
<td></td>
</tr>
<tr>
<td>Local climate and air quality, (HCV 4)</td>
<td>Wages</td>
<td></td>
</tr>
<tr>
<td>Carbon storage and the carbon cycle (HCV 4)</td>
<td>Work performance</td>
<td></td>
</tr>
<tr>
<td>Water use locally, (HCV 5)</td>
<td>Workers accommodation</td>
<td></td>
</tr>
<tr>
<td>Grazing (HCV 5)</td>
<td>Working conditions</td>
<td></td>
</tr>
<tr>
<td>Spiritual and religious sites, (HCV 6) and</td>
<td>Workplace harmony</td>
<td></td>
</tr>
<tr>
<td>Archaeological and historical sites (HCV 6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Description for each score of the seriousness of impact to the four categories of values (social values as divided into community and workplace).

| Environmental                           | Community                                      | Workplace                                      | Economic                                                        | Score |
|-----------------------------------------|-----------------------------------------------|-----------------------------------------------|                                                                |-------|
| Impact Irreversible or over a large scale (MU and beyond) | Destruction of entire community               | Inability of individual or workforce to work | Bankruptcy or inability to continue with land-use activity      | 5     |
| long term impact (5yrs or more) over large scale (MU and beyond) | Severe impact on livelihoods of many in community | long term impact on worker(s) (< 1 year)       | Major loss and disruption of business processes – requires reorganisation of business plans or a major change in land-use activities | 4     |
| Medium term impact (1-5yrs) over area of occurrence or adjacent areas within the MU | Moderate impact on livelihoods of the people affected | Moderate impact on workers for medium term (1-12 months) | Loss impacts profitability and may require adjustment of plans but without disruption to | 3     |
### Conclusions from the Case Study:

- The detailed methodology and logical decision-making process enabled a smooth consensus on all indicators;

- The risk designation supported the IGI transfer process. Noting that the risk assessment was not used as sole justification for the dropping of IGIs;

- The methodology worked well in a national context with only one forest type requiring analysis. However, it has not yet been tested in more diverse national contexts;

- Further benefit in streamlining the NFSS and focusing effort on high risk indicators could be gained from CBs refining the national risk assessment at CH level through taking elements into consideration that are difficult to analyse at national level like MU sizes and tenures for example;

- A [full report](#) on this project can be downloaded on FSC Africa website.

<table>
<thead>
<tr>
<th></th>
<th>Normal Processes</th>
<th>Short Term Impact on Affected Workers (&gt;1 Month)</th>
<th>Loss Inconvenient but Absorbable – No Re-planning Required</th>
<th>Impact on Normal Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Term Impact (&gt;1 Year) at Site of Occurrence</td>
<td>Inconvenience but Easily Rectified</td>
<td>Inconvenience on Affected Workers (&gt;1 Month)</td>
<td>Loss Inconvenient but Absorbable – No Re-planning Required</td>
<td>Impact on Normal Processes</td>
</tr>
<tr>
<td>Easily Reversible Impact Over Limited Area</td>
<td>Acceptable Inconvenience</td>
<td>Acceptable Inconvenience</td>
<td>Small Loss which is Considered Business as Usual</td>
<td>1</td>
</tr>
</tbody>
</table>
Annex B: Case study Canada

Key characteristics of the case study:
- This case study is a desk test developed for the sake of this guideline. This is a hypothetical exercise and was not discussed at length with the SDG. Going forward more comprehensive work and discussions would be needed;
- Very large country with mainly very large management units (MU) ("concessions") of boreal forest, but also smaller private and community forests;
- Risk was assessed against draft indicators in Principle 1 and 6 only, with a focus on very large MU;
- The desk test methodology was developed including identifying risk characteristics (see graphic 3 below).

Graphic 3: Methodological steps including decision-making summarized from the Canadian technical test

Step 1
- National Assessment
  - Assess national context including identifying the types of risk present, what regulatory & best practices are already in place to meet or support compliance, and what priorities and/or concerns have been identified by stakeholders and Indigenous Peoples.

Step 2
- Risk Designation Structure
  - The designation structure is a simple format for categorizing risk based on likelihood and consequence. It is anticipated that already developed indicators (and possibly Criteria) can be allocated to the cells in the structure (see table 6).

Step 3
- Defining Risk characteristics
  - Risk characteristics were developed to facilitate appropriate placement of indicators (or Criteria) in the Designation Structure. So far approximately 25 risk characteristics were considered as part of the test.

Step 4
- Applying Risk characteristics
  - The risk characteristics are identified for each indicator to determine the risk designation. Sometimes risk characteristics fall into more than one risk categories (see table 6).

Step 5
- Risk designation by SDG
  - As a hypothetical exercise, risk categories and characteristics were not validated and discussed by the SDG or consulted on. The SDG would have needed to discuss and agree on the assessment, especially when divergent risk characteristics are identified.
Table 6: Designation structure supporting the identification of risk characteristics for 3 indicators of the Canadian draft NFSS

<table>
<thead>
<tr>
<th>INDICATOR ASSESSED &amp; CONTEXT</th>
<th>RISK CATEGORY &amp; CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>1.1.1 Legal registration document</td>
<td>• The value or required process is addressed well by regulatory frameworks and enforcement regimes</td>
</tr>
<tr>
<td></td>
<td>• There is low social concern</td>
</tr>
<tr>
<td></td>
<td>• Negative affects carry little repercussion</td>
</tr>
<tr>
<td></td>
<td>• There is a history of good conformance with related indicators in predecessor regional standards</td>
</tr>
<tr>
<td>6.3.1 Ground Rules for Physical Damage</td>
<td>• Normal forest management practices should address the requirement</td>
</tr>
<tr>
<td></td>
<td>• There is a history of occasional non-conformance with related indicators in predecessor regional standards</td>
</tr>
<tr>
<td>6.4.3 - woodland caribou Understanding context: May be infeasible within the current conformity schedule Complex regulatory environment Science is evolving making it necessary to carefully track conformity, performance and outcomes.</td>
<td>• High economic repercussions</td>
</tr>
<tr>
<td></td>
<td>• Species at risk, known to be sensitive to FM</td>
</tr>
<tr>
<td></td>
<td>• Subject of legal proceedings</td>
</tr>
</tbody>
</table>

Conclusions from the case study:
- The Canadian Forest Management Standard already incorporates risk assessment and mitigation techniques. Early in the transfer process the SDG, stakeholders and Indigenous Peoples were asked about the national context, including what were their concerns and where the perceived challenges and opportunities were to better address values. These early discussions helped to prioritize values, targeting work, research and discussions around perceived important, high risk or less understood values (e.g. Aboriginal rights, species at risk, landscape management);

- Assessing risk, importance and opportunity of values led to the development of better indicators including the adaption and adding of requirements for important and high risk values. For example, while the IGIs have 5 indicators, FSC Canada has 11 requirements for protected areas (6.5);

- There are different types of indicators (procedural or administrative, performance etc.) and the appropriateness or benefit of assessing risk against these, varies considerably. For some requirements, like indicators related to planning or administrative tasks, other responses may be more beneficial for streamlining and making more outcome oriented, such as user-friendly digital reporting platforms;

- Applying FSC-PRO-60-010 would mean additional work regarding development of risk designations and stakeholder consultations. Furthermore, monitoring the accuracy of risk characteristics and risk designations would be needed. The business model including costs for developing and maintaining risk identification and designation would need to be investigated;

- More formalized risk identification and designation has the potential to better legitimize and match effort to important and high risk requirements while providing relief in effort for low risk values. It is also anticipated that greater coordination and calibration with CBs and ASI regarding audit treatment might also result.
Annex C: Case study Russia

**Key characteristics of the case study:**

- Since 2015 FSC Russia is running a credibility project, which incorporates principles of a risk-based approach to FM certification;
- Huge country with diverse conditions and very large concessions;
- Presence of qualified stakeholders, which are making regular monitoring of the quality of certification (Russian Forest Agency, NGO’s (WWF, Greenpeace, SPOK, Silver Taiga, Transparent World, etc.);
- Risk assessment focused mainly on the credibility issues in the assurance process due to stakeholders’ complaints and to a less extent on some indicators regarding different impact factors;
- Different sets of responses were designed depending on the risk identified;
- Due to a big number of stakeholders’ complaints (60 from 100 FM CH’s in Russia were questioned in 2012) the emphasis was given to a higher level of coordination with ASI rather than to the dispute resolution process;
- The methodology developed by the FSC Russia national office is described in the graphic 4 below.
Graphic 4: Methodological steps including logical decision-making process summarized from the Credibility project performed by the FSC Russia National office

**Step 1**

- **Identify key indicators**
  - The identification and selection of key indicators was based on the potential impact a nonconformity would have on the forest management system, both from an environmental and social perspective. The selection was done by the credibility project team experts and later presented to SDG (see table 7).

**Step 2**

- **Identify critical indicators**
  - The identification and selection of critical indicators was based on the recurrence of complaints by key stakeholders. The selection was done by the stakeholders themselves (see table 7).

**Step 3**

- **Identify the root causes of the risks**
  - Root causes were found to lie sometimes in unclear NFSS requirements, sometimes in the lack of local stakeholders involvement but also in the different interpretations of some NFSS indicators both by CBs and ASI in their respective tasks. These interpretations were not agreed with SDG and needed calibration.

**Step 4**

- **Develop specific sets of responses to address the risk root causes**
  - Some responses led to clarify the NFSS content, while others dealt with improvements in the assurance system (risk groups of CH, key and critical indicators as priority, frequency of audit), audit tools (desk audits, remote sensing). All included a higher degree of calibration and coordination between NPs, SDG, CBs and ASI.

**Step 5**

- **Develop and maintain a monitoring system**
  - Regular communication, coordination and calibration between NPs, SDG, CBs and ASI is at the heart of the monitoring system. Additionally, a national incident database, jointly managed by FSC Russia and ASI was developed. The way incidents are dealt with is evaluated and serve as feedback into the system.

### Table 7: Examples of key and critical indicators defined by experts of the Russia Integrity Project and ASI.

<table>
<thead>
<tr>
<th># indicator</th>
<th>Category of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Critical indicator: implementation quality is criticized by stakeholders; this is necessary to check (full)</td>
</tr>
<tr>
<td>1.2.2.</td>
<td>+</td>
</tr>
<tr>
<td>1.5.1.</td>
<td>+</td>
</tr>
<tr>
<td>2.3.4.</td>
<td>+</td>
</tr>
<tr>
<td>3.1.9.</td>
<td>+</td>
</tr>
<tr>
<td>4.3.3.</td>
<td>+</td>
</tr>
<tr>
<td>4.5.5.</td>
<td>+</td>
</tr>
</tbody>
</table>
In addition to the identified set of key and critical indicators ASI proposed a list of indicators, where formal national interpretation or clarification of intent of indicators is needed. The SDG works on clarification of intent of indicators prior to the annual calibration meeting with ASI and CB’s in the country.

The key elements of success of the credibility project in Russia were:

- Selection of key and critical indicators of national standard for further monitoring, interpretation, clarification of intent and calibration between SDG, ASI and CBs;
- the enhanced model of operation by ASI, which is largely based on risk factors and new assurance approaches and modern technologies (GIS, Remote Sensing);
- Active work with stakeholders and getting their support to improve the quality of certification.

FSC Russia is constantly receiving feedback from members about the credibility process. In 2016 62% of participants in the FSC Russia General Assembly recognized the improvement of quality of certification in Russia and the WWF representative stated that the credibility project was a huge success of the FSC NO.

Conclusions from the case study:
- Communication with involved stakeholders is the key to understand risks to the system;
- Responses to the risks are diverse and can focus on different parts of FSC system (NFSS, assurance, audit tools, accreditation);
- Innovative tools, like GIS and Remote Sensing, national incidents data bases, risk designation for certificate holders and regions are important for the success;
- Clarification of intent of national indicators, cooperation and regular calibration meetings between FSC staffs, SDG, CB’s and ASI are essential to enhance the quality and credibility of FSC certification;
- Risk management is a continuous process and requires maintaining efficient monitoring systems;
- A single platform to discuss issues related to international certification requirements, where all requests and responses will be posted (for example, a response to a request for clarification on the NFSS sent by a certification body will be available to other certification bodies) are important for the success.
Annex D: Guidance on Root Cause Analysis

Root Cause Analysis (RCA) can be applied to averting threats and resolving problems related to FSC’s Normative Framework, just as with any other threat to reaching FSC’s objectives.

*What is a Root Cause Analysis?*

Root Cause Analysis (RCA) is based on the idea that it is at least as important to address the causes of a problem as its immediate effects. Just as with a medical diagnosis, it is often not enough to stop at the symptoms. You have to dig deeper to find the underlying issues that cause the problem in the first place. In a forestry context, perhaps soil erosion may be a problem, attributed to poor practice. Treating the immediate cause might lead to training on soil management, but if local economics prevent behaviour change then training may be a waste of resources. RCA might reveal that high-level advocacy for financial support to smallholders is a more effective way to prevent the problem re-occurring.

The primary aim of RCA is to identify the critical underlying factor (or factors) that resulted in past events, or what lies behind perceived threats.

If the root cause can be identified and addressed, then the associated problem will not happen. However, if the root cause cannot be identified and resolved then the problem will still be there even after any symptoms have apparently been addressed.

*Why is it so valuable?*

- RCA does not have to be used as a reactive method of identifying causes *after* an event has occurred. RCA can also be used to analyse identified threats, and significantly improve the efficiency of risk management. Indeed, RCA is especially powerful when combined with a Risk Management Plan.

- RCA can be expected to show that a number of threats share a single root cause. The treatment of that single root cause can thus have multiple benefits for FSC. A risk register - the first part of a risk management plan - might typically list 100 threats to meeting an organisation’s objectives. An RCA might then be expected to identify 6-8 underlying problems that if resolved will adequately and efficiently deal with at least 90% of those 100 threats. Good RCA can thus contribute enormously to good risk management, focusing resources on areas critical to success, and avoiding the need for crisis management.

- By revealing the origin of a problem, RCA also facilitates treating the cause. It can help to identify what behaviours, actions, inactions, or conditions need to be changed to prevent recurrence or occurrence of harmful outcomes, and to identify lessons that may promote the achievement of better consequences.

- Root cause analysis can help transform a reactive culture into a forward-looking culture.
A good RCA will also:

- Result in a root cause associated with a process (rather than a person).
- Facilitate good monitoring and evaluation, especially identifying critical indicators.
- Facilitate impact management, identifying assumptions and bottlenecks in a Theory of Change.
- Help to identify solutions and mitigations. This may mean modification of a procedure, process, or responsibility, implementation of further training, stronger partnership, or better allocation of resources.

How to do it well – the ‘five whys’

There is no single right way to carry out RCA. But generally, RCA requires a re-iterative inquiry procedure. The following tips and techniques are worth considering.

- One popular technique is called the ‘five whys’. When performed systematically this drills deeper into the problem, past intermediate causal factors until the root cause is reached. Faced with a problem or threat, ask the question: ‘Why did (or why might) this happen?’ Take the answer and ask ‘Why did/might that happen?’ and continue until completing five whys. In theory the fifth answer is the root cause, although five is an arbitrary number, sometimes more or occasionally fewer will be necessary.

- The process will ideally lead to something within the organisation’s control, i.e. a process that is not working well or does not exist. If answers seem to point towards not enough time, or resources, these answers may be true but they may not readily lead to a solution. In this case try asking the question ‘what process is missing or has failed?’ A key phrase to keep in mind in any ‘five whys’ exercise is ‘people do not fail, processes do’.

- Ideally RCA should be performed systematically, with conclusions and root causes backed up wherever possible by documented evidence.

- There may be more than one root cause for an event or a problem, and a team effort is often required for the tool to work well. To uncover multiple root causes, RCA may be repeated asking a different sequence of questions.

- Clear articulation of a problem or a threat is helpful and usually required for a successful use of RCA. A question carefully phrased is often a question half-answered.

- Once the ‘five whys’ have identified root causes, using the same logic, ‘five hows’ can be asked until the best solution for a problem is found.

More advanced RCA techniques, beyond the scope of this guidance note, are available for difficult or deeply systemic problems. A number of books have been published on the subject and several websites, e.g. ASQ, offer further ideas.