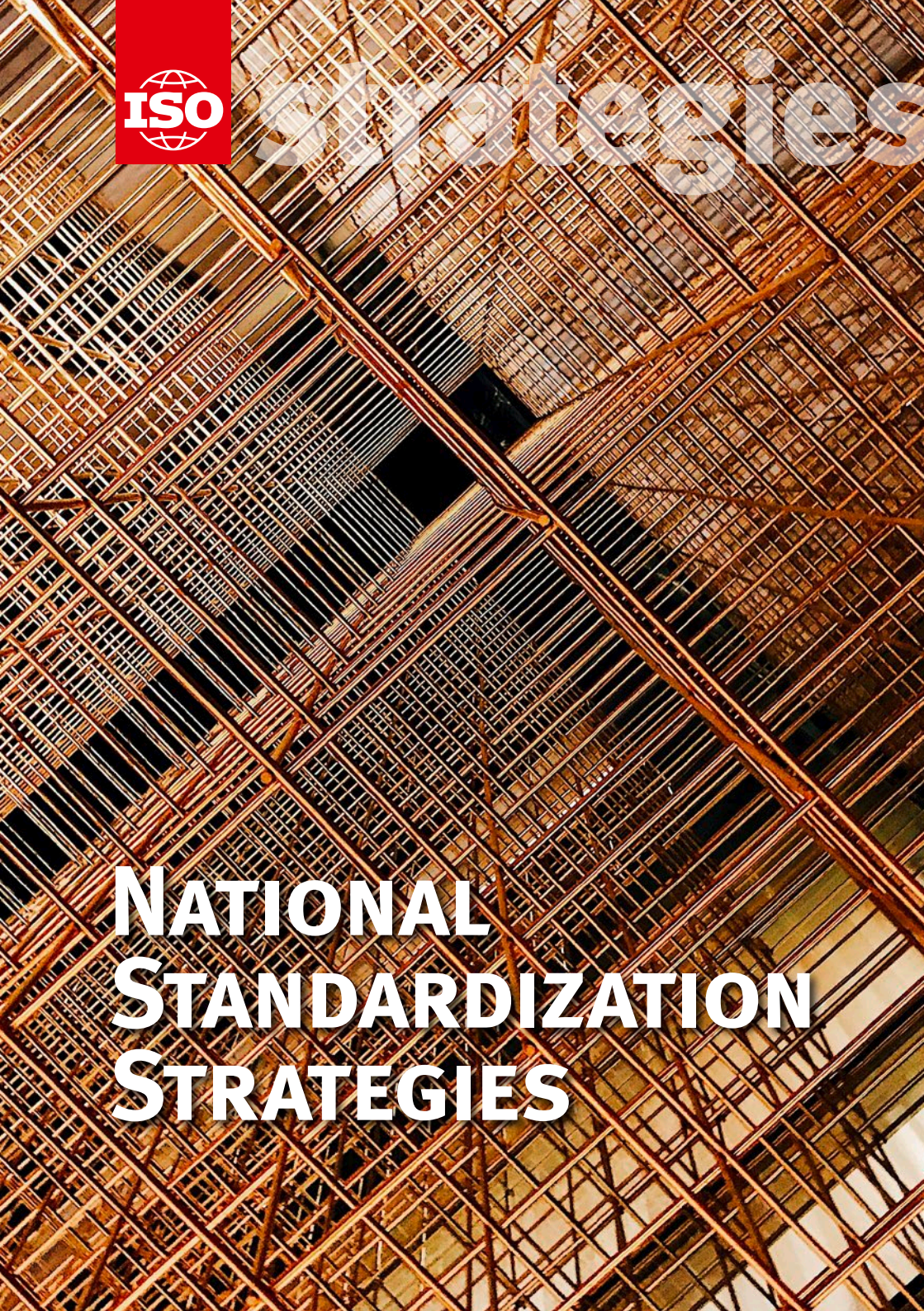

National Standardization Strategies

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Preface

A national standardization strategy (NSS) is a policy roadmap for a country to make certain that its national strategic priorities are supported by relevant national and International Standards. It is coordinated by the national standards body (NSB), which ensures that the most relevant standards under development to the national context can be identified to provide an effective allocation of resources.

One of the most critical aspects of an NSS is its basis on the economic, social and environmental priorities of the country – one which clearly aligns itself to the overall national strategy – and emphasizes the effective use of resources for standards development. It directly addresses both the mid- and long-term vision of NSBs, and can be used as a tool for strengthening the national quality infrastructure.

To this end, ISO has elaborated a methodology for developing an NSS. The methodology provides suggestions and tools to develop an NSS, describing how to best tackle this from the national perspective and from the specific context of the country concerned. There is a need to ascertain methodically the national priorities, considering the economic, trade, social and environmental priorities and needs of the country. In particular, what mix is affordable, or even appropriate, for an individual country, especially for developing countries?

Answering this crucial question lies at the core of the methodology, which takes a forward-looking approach by consolidating a country's priorities together with relevant stakeholders. The methodology focuses on the standards that are most needed and sets the platform which can then contribute to achieving the UN's Sustainable Development Goals.

This document covers the main principles of an NSS and illustrates the elements of a modular, flexible structure. NSBs then choose the appropriate elements in order to manage standards development at a national level. It encapsulates the experience of the ISO Capacity Building Unit in dealing with developing countries and draws upon years of work in helping NSBs, thereby helping them to create an NSS.

Realities and priorities in one country are different from those in another country; a typical structure and mode of operation of a standards body that work well and meet the needs of stakeholders in one country are unlikely to be the perfect answer in another. This is why we hope that this publication, which is based on long-lasting research and experience, will benefit NSBs in their efforts to establish or upgrade their NSS, as part of their quality infrastructure – both as a means of increasing their productive and trade capacity, and as a support for a sustainable world in the years to come.

Sergio Mujica
ISO Secretary-General

Acknowledgments

The content of this publication was developed by Reinhard Weissinger of the ISO Central Secretariat. The ISO Central Secretariat oversaw and coordinated the work of this publication, notably from Patrick Micheli, with an input and support from Sari Rajakoski and Erich Kieck at the Capacity Building Unit.

The publication has greatly benefited from the substantive inputs and comments from the following:

- Daniel Massó Aguado, *Head of Knowledge and Education, Spanish Association for Standardization*
- Nicolas Birouste, *Head of Services, French Standardization Association*

The work was funded by the contribution from the **Swedish International Development Cooperation Agency (Sida)** within the framework of the **ISO Action Plan for Developing Countries 2016-2020** and we wish to greatly acknowledge the continuous and generous support of Sida to ISO's activities in developing countries. Finally, we would like to thank Rick Gould of EUDO and the Marketing and Communication team at the ISO/CS who provided significant support to the editing and finalization of this publication.

Disclaimer

This publication does not imply the expression of any opinion whatsoever on the part of ISO concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries. This document has been developed by the author mentioned above, with editing and publishing by ISO.

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List of abbreviations

AC	Active participation in a standardization project*
AD	Adoption of a standard*
ED	Editor/translator
EV	Evaluation for adoption of a standard*
GDP	Gross domestic product
ICT	Information and communication technology
IEC	International Electrotechnical Committee
ISO	International Organization for Standardization
IT	Information technology
MO	Monitoring of a standardization project*
NA	National development of a standard*
NGO	Non-governmental organization
NSB	National standards body
NSP	National standardization plan
NSS	National standardization strategy
QI	Quality infrastructure
SECR	Secretarial and administrative support staff
SLC	Standardization life cycle
SME	Small and medium-sized enterprise
STF	Strategy Task Force
TBT	Technical barriers to trade
TC	Technical committee
TO	Technical officer
WTO	World Trade Organization

* One development option for national projects

Introduction and document structure

Developing national standardization strategies describes the objectives, processes and best practice for developing national standardization strategies (NSS). This document is based on the results of an ISO project that first ran from 2010 to 2012 and was then completed in 2016. The objective of this project was to support members of ISO in developing their NSS, while the methodology described in this document was taught primarily in regional workshops. The development of the methodology was then supported through remote communications between the ISO members and staff of the ISO Central Secretariat in Geneva. This document is hence based on the many years of experience from this cooperation and has resulted in adaptations and extensions of the original ISO methodology.

Although the methodology focuses on national standards bodies (NSBs) and the development of their strategies, it can also be applied – with modifications – by other types of standards organizations. These include organizations operating at the regional level, standards consortia or standards-setting organizations that focus on a specific industry sector.

Developing national standardization strategies consists of four parts and four annexes, which are:

Part 1	The methodology for developing NSS
Part 2	Specific aspects and extensions of the methodology
Part 3	Examples from NSS documents based on the ISO methodology
Part 4	Supporting materials, forms and tools
Annex 1	Definitions for key terms
Annex 2	Useful information sources
Annex 3	Communicating to stakeholders the benefits of standards
Annex 4	Instructions for a spreadsheet tool for calculating costs

Parts 1 and 2 represent the core of the document and have the following structure:

Part 1 – Development of NSS	
1.1 Objectives	An overview of the main objectives for the development of an NSS and provides an overview of existing standardization strategies developed by standards bodies from different countries.
1.2 Standardization life cycle	The NSS in the wider context of the standardization life cycle. This life cycle starts with the identification of needs that lead to the initiation of a standardization project, the publication of standards and moves then into the dissemination of knowledge about a standard, its use, the understanding of its impacts, and ends with its evaluation which may result in its confirmation, its revision or its withdrawal.
1.3 Development process	The specific steps in the iterative process of developing the NSS. Each step is described by the main activities, as well as the expected results.
1.4 Stakeholder analysis and engagement	The important aspect of stakeholder analysis and stakeholder engagement in the development of the strategy.
1.5 Ranking priorities	Criteria and a ranking scheme to prioritize economic sectors, fields and subjects as well as relevant standards that are identified as contributing to the fulfilment of these priorities.
1.6 Types of standardization projects	The five types of national standardization projects, which range from the direct adoption of an International Standard, to the development of a national standard and its revision or the participation in ongoing standardization projects.

Part 1 – Development of NSS	
1.7 Calculating resource needs	The calculation of human and financial resources. This is important to ensure that the standardization strategy (and a standardization plan with a list of standards that need to be developed) is realistic and takes account of the resources available to an NSB as the main driver in the subsequent implementation of the NSS.
1.8 Planning standards projects	Recommendations for plans for projects included in a standardization plan, so that available resources are used most efficiently.
1.9 Structures of NSS documents	Guidance on structuring NSS documents, plus examples from different standards bodies.

Part 2 – Specific aspects and extensions	
2.1 Mapping national priorities to standards	Guidance on mapping priorities to existing standards, that could be adopted nationally, how the NSB can participate in standardization projects, and the development of a national standard.
2.2 Data consolidation	Guidance on integrating priorities from different sources into an overall framework, so that a final prioritization between subjects can be achieved. Sources include GDP-contributions from economic sectors, trade data, information from national development plans and inputs obtained from stakeholders.
2.3 Missing/incomplete data	Handling incomplete statistical data and a lack of information.
2.4 Defining additional types of NSS	Guidance on defining additional types of standardization projects, which are not part of the set of five types of national project introduced in Chapter 1.7.
2.5 Implementing/updating NSS	The questions related to the initial introduction and application of the NSS, and its subsequent review and revision as required.
2.6 National to regional SS	The different modes of regional cooperation and how NSS can be used for the preparation of regional cooperation and regional strategies.

Part 3 of this document contains:

Examples of some key aspects of existing NSS documents developed using the ISO methodology. These examples address, amongst other aspects, the process of how the strategy was developed, the expectations for the beneficial impacts of standards, and addressing the challenges of development.

Part 4 contains:

An overview of supporting data-collection forms, presentations and calculation tools that can be used to develop an NSS, guidance for training workshops, and communicating with stakeholders.

Part 1: Methodology for the development of national standardization strategies

1.1 Objectives of strategies

1.1.1 General

Over the last two decades, many standards organizations have developed strategies for their activities. These strategies cover different time periods and extend from a few years to more than a decade. Standardization strategies are also written at different levels of detail ; some are quite general, whereas others are very detailed. NSS might have different scopes, with some addressing a whole range of topics, whereas others focus on a limited subject area and a specific economic or societal sector.

There are many definitions of the term **strategy**. The term has been defined as "*...the pattern or plan that integrates an organization's major goals, policies, and action sequences into a cohesive chain. A well-formulated strategy helps to marshal and allocate an organization's resources into a unique and viable posture based on its relative internal competencies and shortcomings, anticipated changes in the environment, and contingent moves by intelligent opponents.*"[1)]

Another more recent definition builds on this, stating that "*The core of strategy work is always the same : discovering the critical factors in a situation and designing a way of coordinating and focusing actions to deal with these factors.*"[2)] "*The kernel of a strategy contains three elements : a diagnosis, a guiding policy, and coherent action.*"[3)]

In this document, we will introduce a **methodology for the development of NSS**, which the International Organization for Standardization (ISO) developed using

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1) James Brian Quinn, Strategies for change, in : Mintzberg, Henry, James Brian Quinn (eds.) (1992), *The strategy process. Concepts and contexts*, p. 5, Prentice-Hall International, Inc., Englewood Cliffs, New Jersey

2) Richard P. Rumelt (2011), *Good strategy, bad strategy*, p. 2, Profile Books & Random House. London, New York

3) Rumelt (2011), p. 7

a sequential process. This process starts with an analysis and the identification of national priorities in terms of the economy, trade, societal issues and longer-term development plans at national or sector-level.

The analytical phase is combined with engaging stakeholders that are already involved in standardization as users of standards or contributors to their development, as well as to potential stakeholders that could or should have an interest in using standards for the benefits of their activities. Combining the results of the analysis with the feedback received from stakeholder engagement will provide the inputs for the first version of an NSS. This first version will be further refined through interactions with these stakeholders, while this will ensure that the main priorities are agreed and that the workload which results from the strategy is within the financial and human resources available to the NSB.

It is most important that a strategy is not developed in isolation by a single person or a group of individuals, e.g. in the standards department of the NSB. The purpose of the NSS is to generate positive results and benefits for society, the economy, and the environment. This purpose can only be achieved if, in addition to engaging key stakeholders, the development of the strategy is supported by the top management of the NSB itself, as well as those organizations to whom the NSB reports (e.g. a line ministry) or which have a key influence on the activities of the NSB. Standardization is a horizontal and wide-ranging activity; therefore it is also important that the NSB works with partner organizations that can contribute to the implementation of the NSS, and benefit from it.

The focus of this document is on the development of national standardization strategies, because the membership of ISO is composed of NSBs. Although the focus is on the development of a strategy at the national level, it can in principle also be applied – with adaptations – to other contexts and standards bodies that do not operate at national levels or where the standards body is interested in developing a strategy for a specific sector.

1.1.2 Benefits of standards

The objective of an NSS is to provide benefits to areas of national priority through the use of standards. Generally, the standards provide the following benefits:

- Optimum solutions to repetitive problems
- Communication, information exchange
- Interchangeability, interoperability
- Variety reduction
- Dissemination of innovative and more sustainable technologies
- Facilitation of market access and trade
- Basis for assurance and the verification of (quality) claims
- Technology transfer and knowledge sharing
- Providing market transparency, e.g. by reducing information asymmetry
- Safety, health, protection of life and the environment
- Supporting network effects and the value of interconnected devices
- Providing a basis for regulations and contracts

Standards can be used by private and public organizations. Governments can use standards to support public policy objectives through regulation or non-regulatory measures (such as health, safety, and the environment). Private organizations can use standards in their activities and reference them in contracts.

In recent years, studies have been undertaken both at the macro-economic level of national economies, and at the micro-economic or company level, in order to determine and quantify the economic benefits from using standards. ISO and its members have conducted over 40 case studies of companies which resulted in a quantification of the economic benefits of from the use of standards.[4)]

4) For an overview of the results from macroeconomic studies see e.g. Cebr (2015), *The Economic Contribution of Standards to the UK Economy*, p. 39. BSI, London; for results of microeconomic, case study-based research, see: ISO (2013), *Economic benefits of Standards. ISO Methodology 2.0*. ISO, Geneva, **www.iso.org/publication/PUB100344.html**

1.1.3 Purpose of NSS

An NSS aims to identify and prioritize the needs of countries that can be addressed through standardization. Such needs can be economic, societal or environmental, and may be related to current conditions, or future opportunities.

Standardization strategies should be related to national development programmes or development objectives for certain economic or technological sectors. Many countries work on building or improving their national quality infrastructure (NQI) and an NSS can be an important component of this objective. An NSS can also address obligations or commitments a government has made under international agreements, such as the Agenda 2030 and the Sustainable Development Goals.

In summary, the main purpose for the development of an NSS is to ensure that

- The development of new or the adoption of existing standards is based on a clear understanding of national priorities in the fields of the economy and trade, society, environment or other areas. This process of development or adoption also considers emerging sectors that are expected to gain in importance in the future.
- Views of various national participants, whether governmental or non-governmental, are considered to ensure that the NSS is, whenever possible, in line with their priorities. This means that the standards can be instrumental in accomplishing their goals.
- The NSS adequately reflects stakeholder interests, which facilitates their involvement in the implementation of the NSS.
- Limited national resources for the development or the adoption of standards are used optimally and efficiently.
- The planning of resources for the implementation of the NSS is realistic and transparent (and neither overly optimistic nor driven by special interest groups).

- Relevant existing international, regional or other standards, or ongoing standardization projects, are identified for possible national adoption or active participation. This in turn saves resources that could otherwise be wasted by developing home-grown solutions when relevant standards already exist.
- Technical barriers to trade are avoided and commitments under international agreements are met by using, whenever feasible and appropriate, relevant International Standards as the basis for technical regulations. This in turn supports public policy objectives and by following good and internationally accepted practices for standards development such as the *WTO Code of Good Practice for the Preparation, Adoption and Application of Standards*[5].

1.1.4 National standardization plans

Priorities in standardization strategies may result in identifying specific standards needed for national development. A list of such standards can then be the target of national adoption, the participation in the development of ongoing standardization projects or, if no other options are available, the development of native national standards. We refer to in this document as a **national standardization plan (NSP)**. Typically national standards have been reviewed and adopted process, are easily available to national users, including – normally – in a national language and can be purchased based on national pricing schemes.

5) **www.wto.org/english/docs_e/legal_e/17-tbt_e.htm#articleIV**

2019									
N°	Sector	Field	Subject	Standard title	Reference	Rank (average)	NTC	Project type	Number of pages (for PP, NA/R)
1	Construction	Specialised construction activities	Determination of thermal resistance of building materials and productrs	Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance	SRPS EN 12667:2008	2.68	KS U163	PP	57
2			Final work in building	Final work in building – Flooring – Technical requirements	SRPS U.F2.016:1990	2.68	KS U059	NA/R	6
3	Human health and social work activities	Human health activities	Safety of toys	Safety of toys – Part 6: Certain phtalate esters in toys and children's products	ISO 8124-6:2014	1.67	KS Z052	PP	27
4	Information and communication	Information service activities	Financial services	Financial serivices – Legal Entity Identifier (LEI)	ISO 17442:2012	2.55	KS I224	PP	6
5			Information technology – Security techniques	Information technology – Security techniques – Guidelines for cybersecurity	SRPS ISO/IEC 27032:2015	2.55	KS I224	PP	60
6				Information technology – Security techniques – Network security reference networing scenarios – Threats, design techniques and control issues	SRPS ISO/IEC 27033-3:2013	2.55	KS I224	PP	38
7		Computer programming, consultancy and related activities	Automatic identification and data capture (AIDC) techniques	Information technology – Automatic identification and data capture (AIDC) techniques – Harmonized vocabulary	ISO/TEC 19762:2016	2.81	KS I1/31	PP	453

Table 1: *Example for a NSP (part only – extracted from the NSS of IIS – Serbia)*

An NSS can, but does not have to, comprise a NSP.

1.1.5 The ISO approach and other methodologies

In this chapter, we review different approaches for the development of standardization strategies, which result in different formats of the standardization strategy document.

1.1.5.1. *The ISO approach*

Figure 1 shows the approach taken by ISO in its NSS methodology: The identification of priorities in the NSS results in the development of an NSP, which is a list of specific standards or ongoing standardization projects that are the target of adoption or participation in their development.

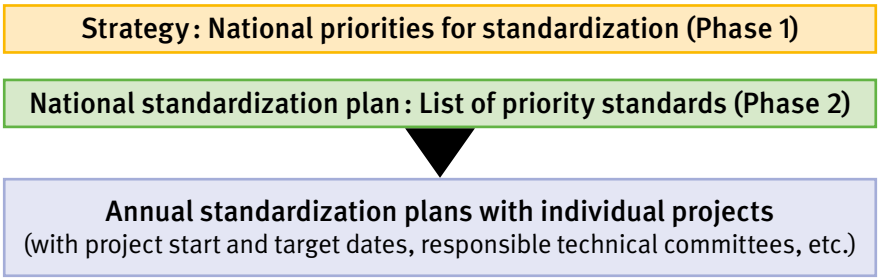


***Figure 1**: The two main phases in the development of an NSS*

This plan may be accommodated by a detailed, annual project-management plan e.g. with details of project management information (such as time frames, responsible technical committees (TC), project start and target dates, and project leaders).

This approach is applied by many developing countries where the market demand for standards is often insufficient and where the support for standardization is most often provided by governmental agencies.

The format of such a standardization strategy is typically as shown **in Figure 2**. The strategy, together with an identification of priorities for national standardization provides an overall framework and the standardization plan. These contain a list of standards that support the strategy document, which is typically within an annex.

***Figure 2** : The structure of an NSS document following the ISO Methodology*

The NSS comprises an NSP, which contains a list of the standardization projects that are planned to be developed typically over a period of three years.

If we look at the overall development process, we can distinguish two main phases: **Phase 1** that focuses on the identification of national priorities for standardization and **Phase 2** during which these priorities are mapped to existing standards that could e.g. be adopted and converted into national standards.

It is appropriate to describe the ISO Methodology for the development of NSS as primarily: oriented towards supporting standardization initiatives in developing countries, and; to contribute to ensuring that standards are developed based on clearly identified needs of the countries and a sound planning of time frames and resources. This is to ensure that standards are developed based on clearly identified needs that reflect economic, social and environmental realities, as well as the requirements of stakeholders.

The approach starts from a prioritization of economic and societal sectors, followed by identifying specific subjects that can be mapped to standards. Stakeholder input typically takes place at the level of subjects or subsectors in which the stakeholders are engaged.

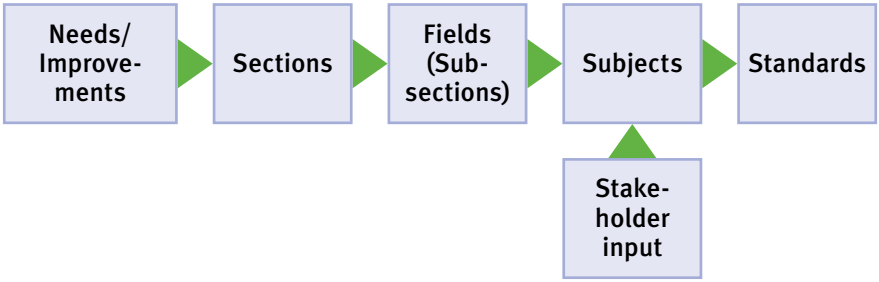


Figure 3: *Developing an NSS – The basic process and the inputs from stakeholders*

1.1.5.2. *The approach applied in many developed countries*

In some cases, standardization strategies cover only the top layer shown **in Figure 1**, the national priorities for standardization (the outcome of Phase 1) without the details of specific standards which are included in an NSP (the outcome of Phase 2).

This is often the case in the strategies of NSBs from developed countries, where standardization is primarily market-driven and where the function of an NSS is mainly to provide overall orientation for standardization, especially for new economic and societal sectors, or areas of new technological development.

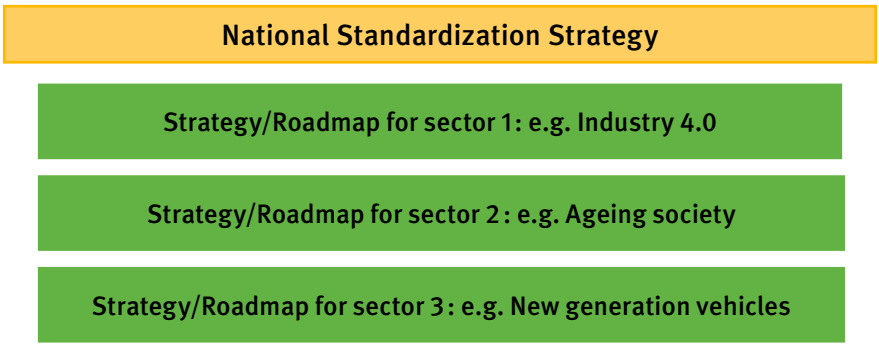


Figure 4: *The typical structure of an NSS in developed countries*

As shown **in Figure 4**, strategies or roadmaps can exist in addition to, but separately from the NSS for different economic, societal or technological sectors.

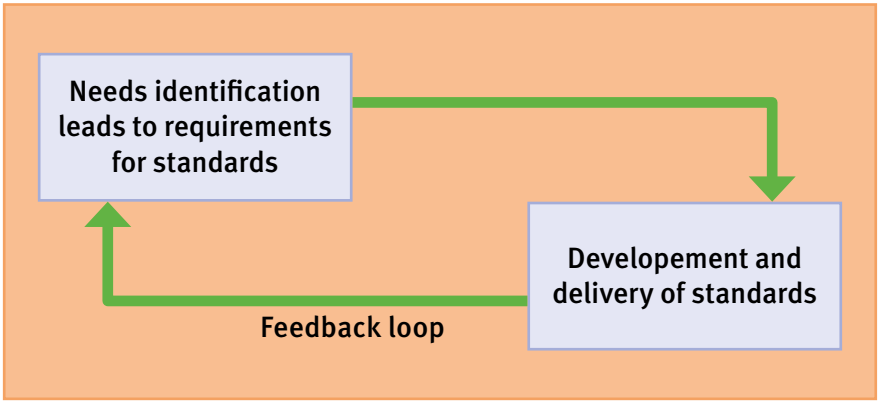


Figure 5 : *Process for the development of standards*

Whatever the mechanisms and drivers for the development of standards and their delivery to users, there should be cyclic processes in place that connect the identification of needs and requirements for standards, with their development and delivery to end users in the economy or society. The drivers to ensure this process works can either be mainly market forces or governmental measures, possibly supported by market forces. These are different models which are dominant in different countries with the same objective, i.e. standards that meet the demand of end users.

1.1.5.3. *Comparison between the two approaches*

When we compare these two approaches, we can see that the approach described **in 1.1.5.2** for developed countries is very similar to the outcome of Phase 1 of the ISO approach. Standards bodies can decide for different reasons to limit their strategy development to Phase 1, which allows them to reach an overall prioritization of national needs which can be addressed through standardization without going into the details of mapping these priorities to specific standards.

It is therefore valid to claim that the ISO methodology is flexible as it can be applied to both approaches. It is finally for the standards body to decide whether it wishes to limit the development of the NSS to Phase 1 or whether it wishes to proceed to Phase 2, i.e. the operational level of an NSP.

1.1.6 Communication plans

In addition to the NSS itself, it is important to develop a communication plan, which is typically a short document or brochure. This plan contains the key points, main findings and most important actions identified in the NSS, communicating in simple language to the public and all interested parties and stakeholders in business, government, academia, NGOs and society.

1.1.7 Key information sources for the development of an NSS

Regarding key sources of information, there are two main sources that should be used in the development of an NSS:

Source 1: Statistical data from national or international agencies and development plans

In order to identify priorities for standardization work, the following areas should be analysed:

- The structures of economic sectors and their contribution to the GDP of the country. Generally, the larger the contribution, the more important the sector
- The composition of the trade of the country and the contribution of sectors, product groups or services to specific products to import and export trade
- Societal issues, which may range from diseases, drug consumption to traffic safety and education of different groups of society
- National development plans of the government or governmental agencies for specific sectors of the economy. While the first three points above provide information about the recent past and present, development plans provide information about likely future trends and developments
- Technology roadmaps and forecasts for specific areas of technology with a specific relevance for a country

In addition to using national sources of information, consider developments in countries which are important trading partners or countries with similar economic, societal and other conditions.

A list of useful information sources is contained **in Annex A.2** of this document. **Chapter 2.3** contains recommendations on how to deal with situations when data are missing or incomplete.

Source 2: Inputs from various stakeholders in the country

Stakeholders from business, industry, society, trade, academia, government and other groups are highly important sources of information. Careful stakeholder analysis and stakeholder needs-assessment should be performed as a key input to the NSS.

Finally, the results of stakeholder inputs and socio-economic analyses need to be consolidated into a single framework that contains a prioritization of the national needs and expectations, so that standardization makes a positive contribution.

1.2 The standardization life cycle

In this chapter, we locate the development of an NSS within the overall framework, which we refer to as the standardization life cycle (SLC).

The SLC describes different phases in the development of standards, their use, the evaluation of their economic, social or other impacts and follow-up decisions. These in turn may result in their confirmation, revision or withdrawal or other actions such as further capacity-building or dissemination of knowledge and training to facilitate their use.

The SLC consists of six main phases, which are:

Phase 1	The identification of societal, economic, technological or other needs that can be addressed by standards.
Phase 2	The decision to develop standards, whether these are new or adopted standards, which leads to with the publication of the standards and their public availability.
Phase 3	Building capacity in the use of the new standards through dissemination of knowledge about them and training in their application.
Phase 4	Use and implementation of the standards by standards users and stakeholders.
Phase 5	Monitoring the effectiveness and the impacts generated by the standards, i.e. collecting data that provide evidence whether the standards achieve the objectives for which they had been developed in Phases 1 and 2.
Phase 6	The review and revision of standards to decide whether standards should be confirmed without change, whether they need to be revised to increase their effectiveness or whether they should be withdrawn. It may also become clear that, although the standards themselves may be useful and fit for purpose, further efforts need to be made with dissemination of knowledge about them, capacity building and training to gain the expected benefits from the standards

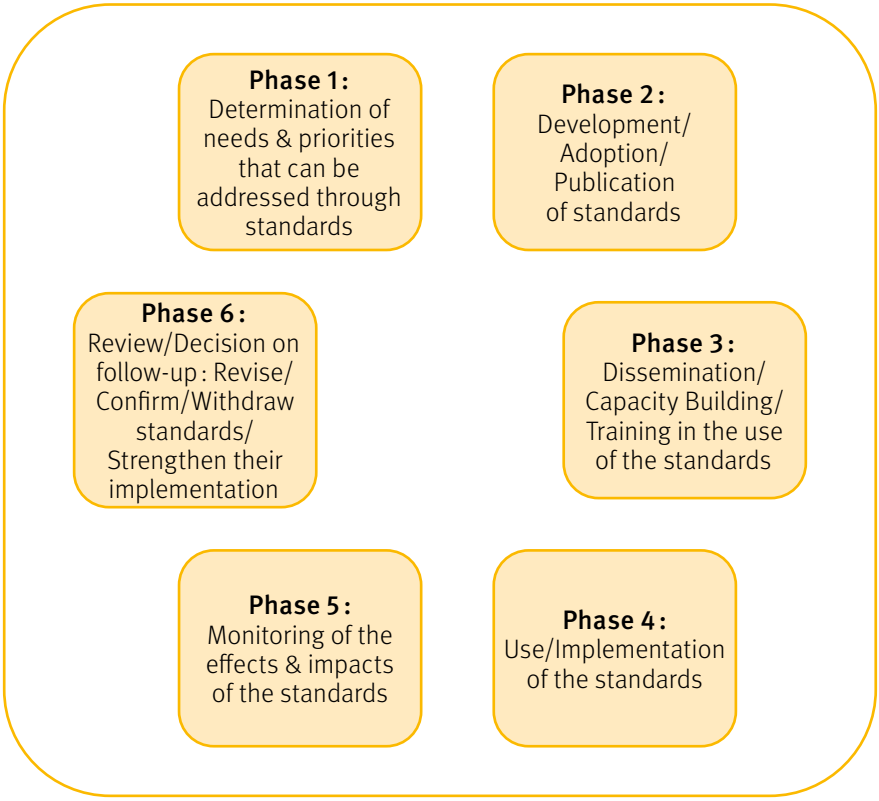


Figure 6: *The standardization life cycle*

The development of an NSS in the context of the SLC takes place in Phases 1 and 2, by identifying which standards are required to address societal, economic and other needs. To ensure that the strategy remains up-to-date and remains relevant, it needs to be reviewed periodically and adapted, as appropriate, during later phases of the SLC.

1.3 Development process

1.3.1 General principles

This chapter describes the development process of an NSS and starts with an overview of the process before addressing the process in more detail by describing individual steps (**see 1.3.3**). As described in this chapter, the objective of an NSS is often to develop an NSP with a list of standards that have been identified as corresponding to the needs of the country. These standards can then be adopted as national standards and made available for use by national stakeholders.

As discussed **in Chapter 1.1.5.2**, experience has shown that NSBs apply different approaches to the development of their strategy. While some follow the full process as described in this chapter, others prefer to focus on the identification of priority areas and topics without developing a standardization plan in which the identified priorities are mapped to existing standards that could be adopted as national standards. Applying the distinction **in Chapter 1.1.5.1** between the two phases of strategy development, NSBs complete the process after Phase 1 and do not engage in Phase 2. This is typically the case for developed countries that rely mainly on active engagement of market players for the generation of proposals and the development of new standards.

Developing countries, however, may benefit from applying the full process of first determining needs and priorities for standardization work and, in a second step, trying to map to the priorities existing standards and ongoing standardization projects.

1.3.2 Overview of the development process

The development of an NSS consists of two main phases. Phase 1 consists of the identification of needs that could be addressed using standards and, on this basis, the determination of priorities for standardization work. The process of prioritization relies on two main sources:

- The analysis of the economic and societal conditions of a country, import and export trade, as well as of development plans of governmental agencies, international trends that affect the country and other key factors that are likely to have a significant impact on the present and future.
- The engagement of stakeholders from business, academia, consumers, government agencies with a view to obtaining their views and priorities for standardization work.

As shown **in Figure 7**, this is an iterative process during which the results from the socio-economic analysis, of the analysis of national development plans of various agencies and the inputs from stakeholders are matched against each other with the intention to arrive at decisions about which areas and topics should be addressed as priorities in standardization work in the future.

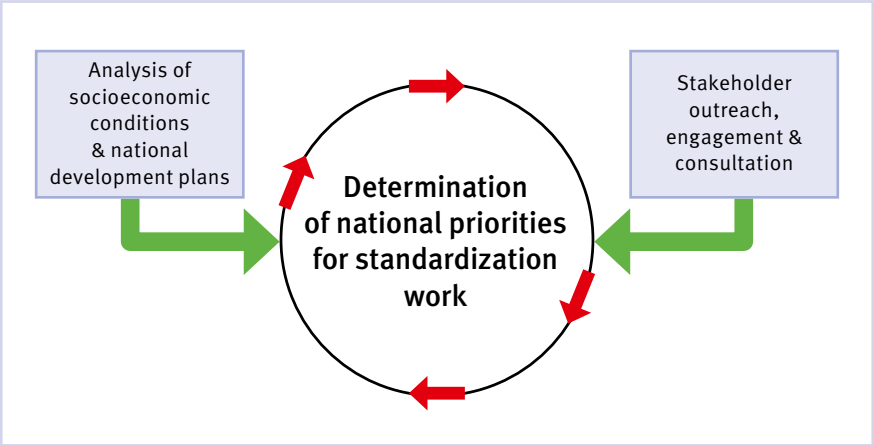


Figure 7: **Development of an NSS – Phase 1:** *Determining priorities for standardization work*

In Phase 2 the priorities for standardization work identified in Phase 1 are used as the input to determine whether there are existing standards or ongoing standardization projects that correspond to these priorities. If this is not the case, one needs to consider whether entirely new standards should be developed to address these needs. These standards can be national, regional or International Standards.

As shown **in Figure 8**, Phase 2 of the development of an NSS applies the following process and results in a standardization plan with project management information that is ready for implementation.

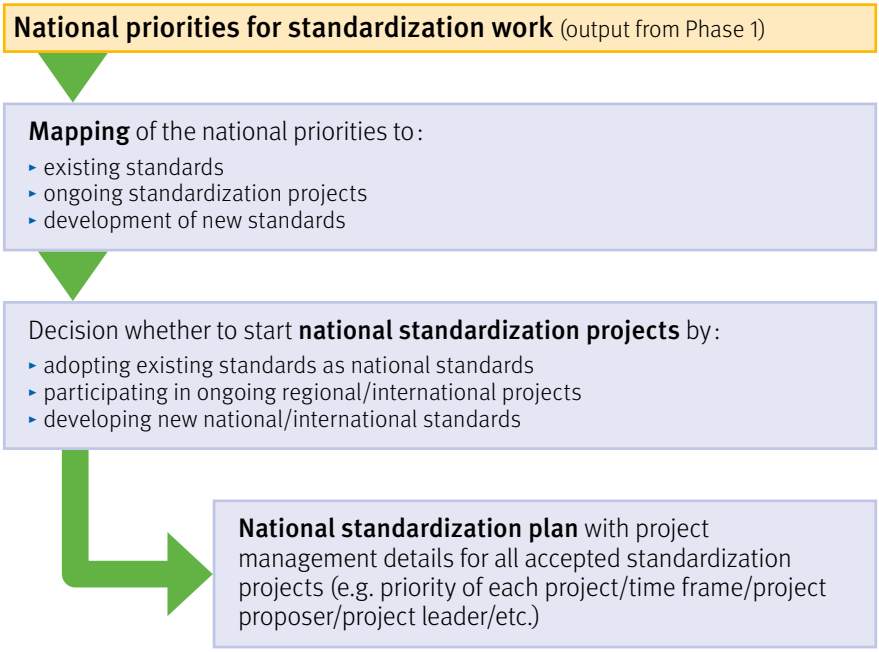


***Figure 8*: Development of an NSS – Phase 2:** *developing a standardization plan by mapping standardization priorities to standards and projects*

The standardization plan consists of:

- An accepted list of standards that will be adopted
- Projects in which the NSB will participate

- Standards that will be newly developed
- Project management information that provides details about each project, such as its priority, planned project start and end date, project proposer and possibly other information

Typically, the duration of such a plan is three years, but this period can vary.

1.3.3 The development of an NSS in detail: individual process steps

This chapter gives a more detailed description of the development process and distinguishes 13 steps: Steps 1 to 7 are in Phase 1, while Steps 8 to 13 are within Phase 2.

However, dividing these two phases into steps does not mean that the whole process is sequential and linear. On the contrary, the development is largely incremental and different steps can occur in parallel, such as the socio-economic analysis and stakeholder engagement.

Many of the steps are supported by means such as forms, calculation tools, guides and presentation materials. Supporting materials for a specific step are listed under the respective step where appropriate. Regarding the ranking of priorities, **see Chapter 1.5**.

Note that it may be necessary to refine the results of certain steps incrementally by repeating them. The sequence of the steps as outlined below can also be modified, e.g. Step 6 "Obtain stakeholder input" could be undertaken before or in parallel with Steps 2 to 4. What is important, however, is that both a socio-economic analysis (Steps 2, 3 and 4) is undertaken and stakeholder engagement (Step 6) take place so that information and priorities from both approaches can be combined into determining the national priorities for standardization.

Process step 1: Establish a Strategy Task Force for the development of an NSS

The Strategy Task Force (STF) for the development of the NSS is the main driver of the development of the strategy. It should be set up within the NSB and should report directly to top management. It is advisable that at least one member of top management is personally involved in the STF to ensure important decisions can be taken and information is shared between the STF and top management. Additionally, it is recommended that the STF comprises participants from the technical or standards departments, representative directors of departments in the NSB, and experienced and knowledgeable staff of NSB. The STF can also include specialists from communications, marketing and sales departments, and even participants from outside the NSB. This should be considered on a case-by-case basis and can include a trade economist and stakeholder representatives.

Result 1: *an STF for the development of the NSS has been set up which reports directly to top management in the NSB and has full support from top management.*

Process step 2: Conduct an analysis of priority sectors of the national economy

Perform desk-top research on the national economy, trade flows (exports and imports) and determine the importance of different economic sectors based on their contribution to GDP and trade. Inputs for this analysis are: national statistics; trade data; information which can be obtained from ministries, such as a ministry of planning, the economy, health, and education. When national data are missing, information and data from international sources such as The World Bank, the World Trade Organization the *UN Comtrade Database* may help. The latter contains official international trade statistics and relevant analytical tables, providing free access to detailed data on global trade (**see Annex 2**). Wherever possible, data should be specific to certain topics (e.g. in agriculture down to the level of certain types of crops or in industry down to the level of certain products).

Result 2: *a priority ranking for the economic sectors of the national economy due to the contribution of the sectors to GDP, to trade or employment has been established by assigning each sector a numerical value representing its priority. If possible, specific crops, products or types of services should be identified as having a special priority.*

Process step 3: Conduct an analysis of social or non-economic priority areas in the country

Carry out desk-top research of social or non-economic areas that are of key social, environmental or other priority in the country. Inputs for this analysis are national statistics, information from ministries, such as the ministries of health and education; or articles in the press that reflect public opinion and public concerns. Wherever possible, provide quantitative data about specific areas (e.g. health areas such as wide-spread diseases) or subject fields. For additional sources of information, **see Annex 2**.

Result 3: *a priority ranking for non-economic topics of the country has been established by assigning each identified topic a numerical value representing its priority.*

Process step 4: Review national development plans to identify new emerging sectors which are expected to have significant importance in the future

Carry out desk-top research of new emerging sectors that will, with all likelihood, become increasingly important for your country. Inputs for this analysis are governmental development plans, industry white papers or similar sources. Where possible, provide quantitative data about specific product types (e.g. crops), services or priority fields.

Result 4: *a priority ranking for emerging sectors expressed through a rank number has been established.*

Process step 5: Combine economic, non-economic and priorities of newly emerging sectors into a single rank

Combine the ranking obtained from the three assessment approaches (economic, non-economic and of new emerging sectors) in Steps 2, 3 and 4 into a single rank by adding up the individual ranks and dividing them equally by three. Combining different information from different sources can pose a challenge regarding the consolidation of the information into a single framework to compare the priorities between them. Often different classification systems are applied, and the provided information may represent quite different levels of detail or aggregation. As this is a crucial step, guidance on how to consolidate different forms of information is described **in Chapter 2.2**.

Important note: certain issues may have an overriding importance and require urgent attention. In such cases, these issues should be identified as of overriding importance. Examples may be severe safety or health issues with a potentially wide-scale and devastating impact on society.

Result 5: *a socio-economic priority ranking for sectors/topics expressed through a single ranking number.*

Process step 6: Obtain inputs and feedback from stakeholders

Stakeholder input is obtained by consulting key stakeholders in the country, aiming to obtain their views and engaging them on the elaboration of the NSS. Stakeholder inputs and requests will typically be specific regarding certain products, services or facilities and expressed as requests for topics of specific standards.

Result 6: *the sectors and topics that have been identified through the communication with the stakeholders have been ranked by their priority by assigning them a numerical rank number.*

Process step 7: Compare the input received from the stakeholders with the results of Step 5 (the analysis of priority areas and topics) and combine them into a single overall rank

Calculate a final rank number by adding the result of Steps 5 and step 6 and divide the result by two in order to arrive at a final ranking that represents the overall priority of the topic. This overall priority reflects the results from the analysis through desk research of economic priorities, non-economic priorities and development plans (Steps 2 to 5) and the priorities obtained from stakeholders (Step 6). This result in turn assigns an overall priority to any of the identified sectors, subjects or topics. If there are issues of overriding importance, ensure they are assigned the highest priority.

Result 7: *a final priority ranking has been established for the subject or topic for standardization based on the results of the desk research (Steps 2, 3, 4 and 5) and the requests obtained from stakeholders (Step 6).*

Process step 8: Develop a list of topics for the required new national standards that correspond to the identified priority sectors, areas or fields identified in Step 7

In some cases, the identified level of detail of priority areas, fields or subjects is already specific enough to serve as the topics for required national standards. In other cases, it is necessary to specify the priorities further in order to arrive at a level of detail so that these priorities can be mapped to specific topics of required new standards. In order to reach the required level of detail, it may be necessary to engage in a further consultation with stakeholders, experts in relevant national TCs, a review with governmental agencies or through analysis and consultation within the standards body.

Result 8: *a list of standardization topics with their identified priorities, including the economic sectors to which they belong.*

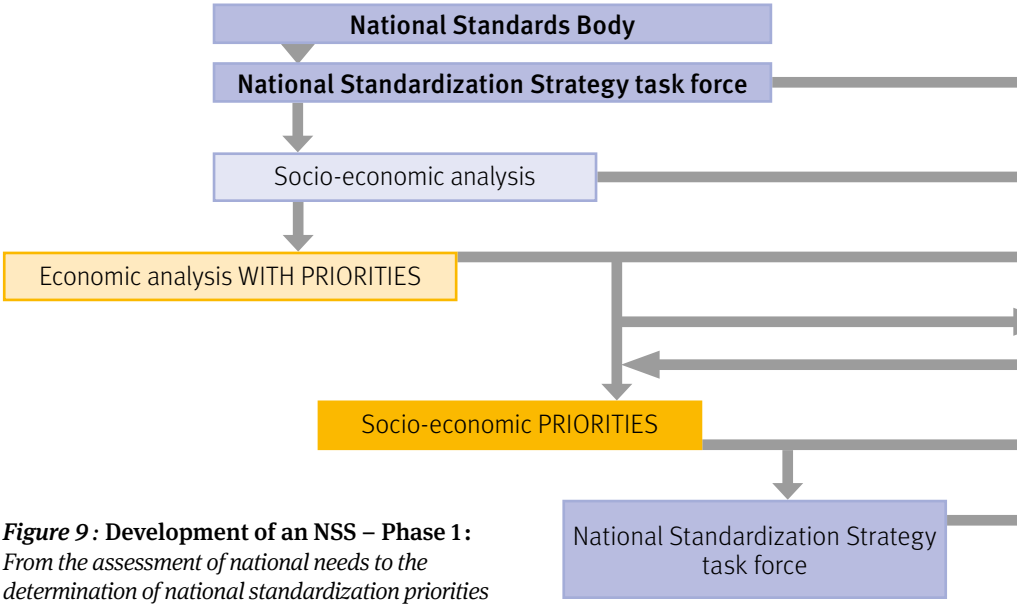
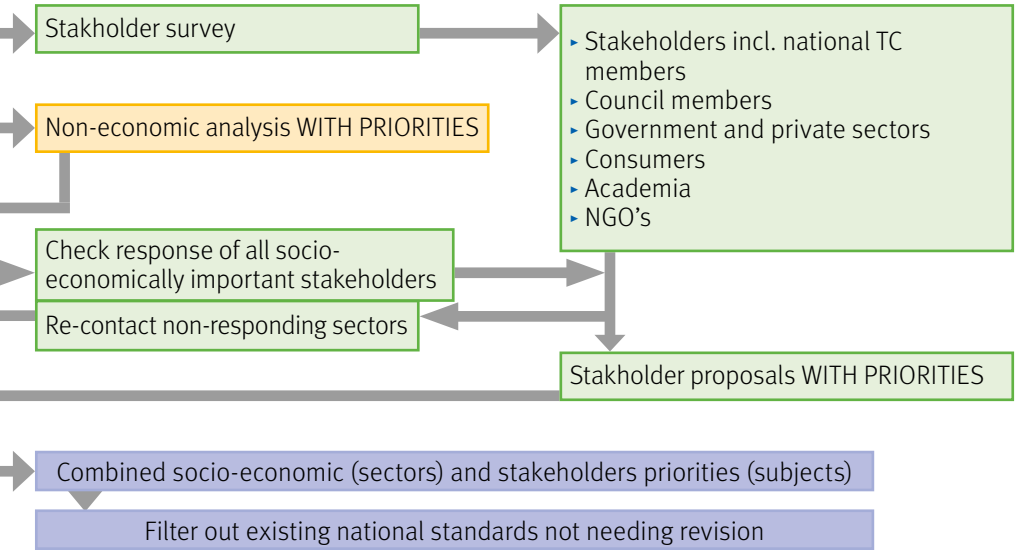


Figure 9 : **Development of an NSS – Phase 1 :** *From the assessment of national needs to the determination of national standardization priorities*

PROCESS STEP 9 : COMPARE THE IDENTIFIED TOPICS WITH THE CATALOGUE OF EXISTING NATIONAL STANDARDS AND THE WORK PROGRAMME OF NATIONAL STANDARDS CURRENTLY UNDER DEVELOPMENT

In some cases, the identified topics for required new standards are already covered by existing national standards or addressed in projects that are under development. If standards already exist, identify them and remove these topics from the list of required new standards, unless you determine that the existing standards are no longer in line with current requirements and need to be revised. In case of ongoing projects, take note of them for the planning of resources.

Result 9 : *final list of topics for required new standards with their identified priority.*



Process step 10: Determine whether relevant international, regional or other standards exist that can cover these topics satisfactorily or whether there are ongoing international, regional or national standardization projects

Determine which international, regional or other standards body may have developed such standards. If such standards exist, evaluate them and determine whether they can be adopted nationally. If there is an ongoing standardization project with high relevance to an identified topic, consider sending (an) expert(s) to take part in it. If no standards exist for a topic of high priority, consider developing a national or, if appropriate, a regional standard on this topic.

Complete the mapping of the topics in the priority list of required new standards to existing standards that could be adopted, of ongoing standardization projects or topics that should be addressed through the development of national (or regional) standards.

Result 10 : *a listing of standards or projects has been established with suggested actions in terms of a) adoption, b) evaluation for adoption, c) active participation in a project, d) monitoring and observation of a project without active participation or e) development of a national (or regional) standard.*

Process step 11 : Calculate the required human and financial resources to implement the plan

Plan the required human resources for the identified priority projects in the plan for a period of three years. This may result in a further revision of the priorities in order to match priority areas with available (limited) resources. It is important that resources are planned in a realistic way. Otherwise plans may have to be discarded quickly during their implementation.

Also calculate the financial resources that may be required to implement the proposed NSP.

Map the projects and the required resources for their implementation over the duration of the standardization plan (which is, by default, a three-year period).

Please refer **to chapter 1.7** which contains detailed explanations on how to undertake the human and financial resource planning and calculations and how to use **Calculation tool 3** which was developed for this purpose.

Result 11 : *an NSP has been established which includes a chapter which provides information about the amount of resources required for the required new standards and the timing when these resources are needed in the time frame for the implementation of the plan. Note that the chapter on human and financial resources may be kept confidential and does not have to be made available to the general public.*

Process step 12: Match the required human and financial resources to the available resources, adjust the plan where appropriate and/or try to obtain additional resources

If the required human or financial resources to develop the required new standards in the plan exceed the available resources, consider the following options: either reduce the number of priority projects; stretch them over a longer period of time or, alternatively; try to obtain more resources to implement the plan (e.g. through additional funding from industry or governmental sources).

By demonstrating that the required new standards are aligned with national priority areas, as well as demonstrating that these standards have been identified based on a comprehensive analysis and stakeholder engagement, it may be possible to obtain more resources. The resource planning can lead to identifying needs for more resources and may result in requests for additional staff and funding.

Result 12: *finalize the plan according to the available resources by reducing the number of priority projects or stick to the plan if you were able to obtain additional resources.*

Process step 13: Final consultation of the plan, approval and official publication

Prepare the standardization plan in the appropriate format and publish it as part of an NSS. It is important that the plan is easy to understand and can be used effectively in communication with decision makers and key stakeholders. Make the draft NSS available to key stakeholders for a final round of commenting. After considering and accommodating their comments, submit the draft NSS to the governing bodies of the NSB for official approval. Publish the approved NSS after approval has been obtained. Consider developing additional promotional materials.

Some of the above activities may have to be repeated and the assessments will need to be refined considering additional inputs from various stakeholders.

Result 13 : *an official NSS is available and can be used to guide the standardization activities for a three year period. The NSS should be reviewed annually and, if needed, updated to accommodate changes in the economic, political or other environment.*

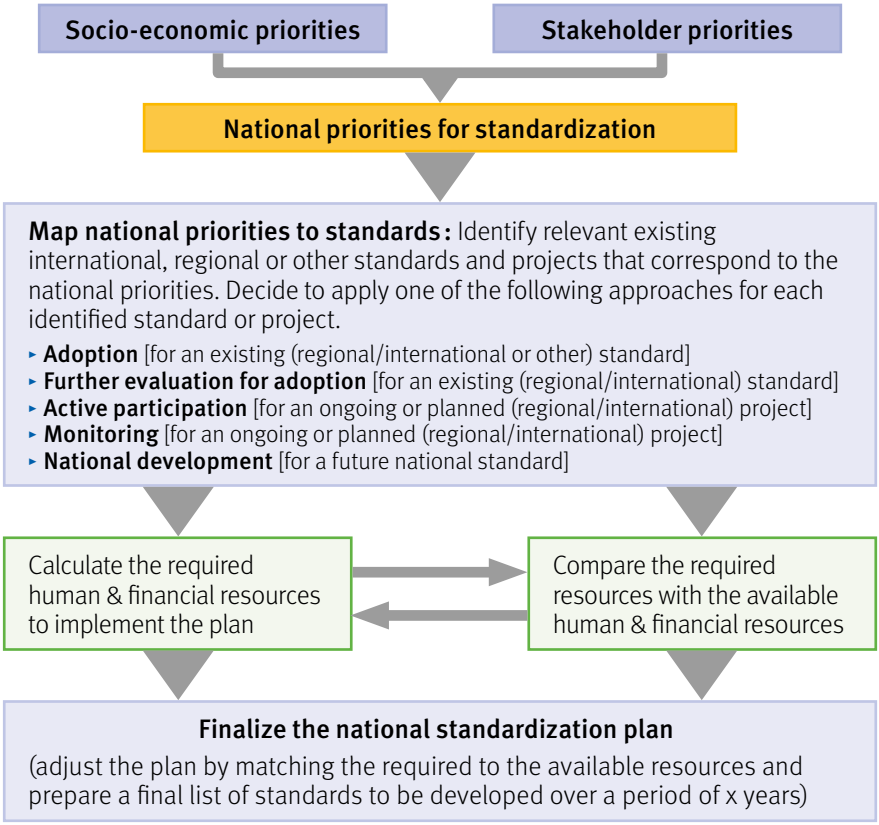


Figure 10 : **Development of an NSS – Phase 2 :** *From national standardization priorities to an NSP*

1.4 Stakeholder analysis and stakeholder engagement[6)]

1.4.1 General principles

In the first sections of this chapter, we introduce general principles and methods of stakeholder analysis and engagement. In the latter part, we apply these principles to the development of an NSS.

Stakeholders are people affected by the impact of a project, a measure or a decision and/or people who can influence a project or initiative. Stakeholders can be individuals, groups, a community or an institution. A stakeholder may not directly be involved or included in the decision-making process on the respective project or initiative. According to ISO 26000, the International Standard that provides guidance on social responsibility, a stakeholder is defined as an individual or group that has an interest in any decision or activity of an organization". Stakeholders may be:

- Customers
- Suppliers
- Public authorities and governmental agencies
- Funding agencies (e.g. banks, donors)
- International donors
- Civil society groups
- Businesses
- Trade associations
- Labour unions
- Employees
- Shareholders

6) This chapter applies some of the concepts from Rachel Blackman (2003), *Project cycle management*, chapter 2 on project design and stakeholder analysis. ROOTS series #5, available at **https://learn.tearfund.org**

For any project or initiative there are **primary (or key) stakeholders** who are directly affected, positively or negatively, by the project or initiative. There are also **secondary stakeholders**, which is a category that refers to all other people and institutions that may be affected or perceive that that they are affected. To distinguish between the two types of stakeholder, one can apply the following rule of thumb: a stakeholder is a primary or key stakeholder if the support or lack of it by this stakeholder might significantly influence the success of a project or an initiative.

If the views of stakeholders and especially of primary stakeholders are not considered, then they may not be willing to support a project. Furthermore, the project may fail to meet its objectives because important stakeholder interests have not been considered. Stakeholders can also contribute their knowledge to the project. This makes it more valuable and may lead to stronger support by stakeholders.

Stakeholder engagement is an activity undertaken to create opportunities for dialogue between an organization and one or more of its stakeholders with the aim of providing an informed basis for the organization's decisions (**see ISO 26000**).

1.4.2 When to undertake a stakeholder analysis?

Do a stakeholder analysis before you implement a comprehensive stakeholder engagement programme. Set up a **special group** of people with various backgrounds to perform the analysis. Think openly and creatively within the group: start with a wide range of stakeholders and reduce this list to the most relevant later. Consult with experts to validate your findings about key stakeholders. Define strategies of how to engage with them and then refine your analysis of stakeholders, based on your interactions with them.

1.4.3 Steps in stakeholder analysis and mapping

An initial requirement for any stakeholder analysis is that the objectives of a project or initiative are clearly defined. There are different stages of stakeholder analysis and mapping, which are:

- **Stage 1:** identify relevant groups, organizations and people (= stakeholders)
- **Stage 2:** analyse and understand their perspectives and interests
- **Stage 3:** visualize their relationship with the project objectives and other stakeholders
- **Stage 4:** prioritize the relevance of the different stakeholders and distinguish between primary and secondary stakeholders

Stakeholders	Interests	Likely impact of the project	Priority as a project stakeholder	Primary/ secondary stakeholder
‹Stakeholder 1›				
‹Stakeholder 2›				

Table 2: *Table to visualize and classify stakeholders and their interests*

Stakeholders can have different forms of impacts on projects, which can range from highly positive (highly supportive) to neutral or even to very strong opposition. In some cases, it may be premature to assign a certain impact to a stakeholder as there is still not enough knowledge about the stakeholder and its view of a project or initiative available.

+ = potential positive impact	++ = potential very strong positive impact
– = potential negative impact	–– = potential very strong negative impact
0 = no interest or neutral	? = uncertain

Table 3 : *Classification scheme to express likely stakeholder attitudes*

Rules in stakeholder identification

When identifying stakeholders, be specific ! Break down the analysis to specific groups. Example : do not just identify «government» as a stakeholder, but distinguish between, e.g.

- Ministry of Economy
- Ministry of Health
- Ministry of Social Affairs

The views and interests of these different governmental agencies might not be the same, so it is important to understand their individual perspectives and views of a project.

1.4.4 Prioritization of stakeholders and mapping tools to visualize their priority

Mapping tools such as the one below can be used to visualize the priority of stakeholders both during the process of their analysis as well as a final result, once the decisions on priorities have been taken.

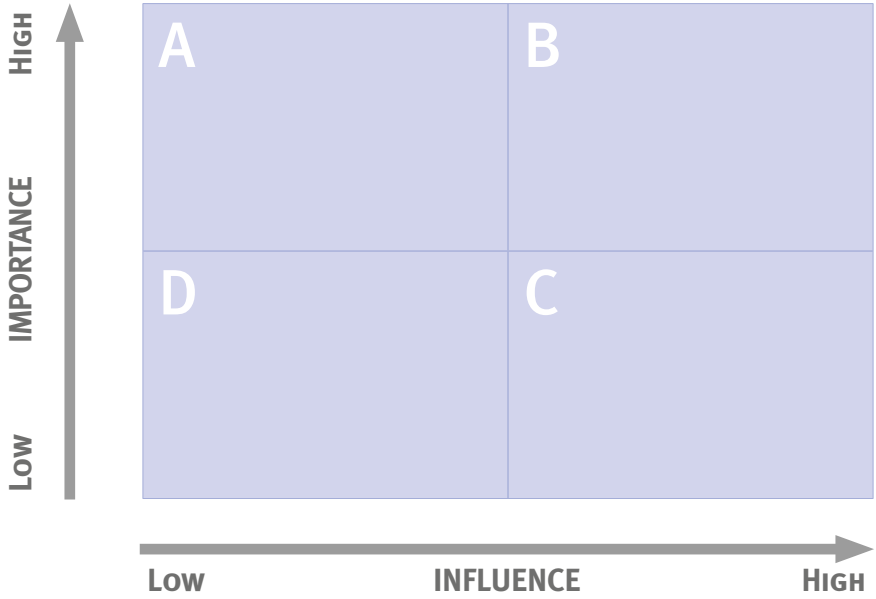


Figure 11 : *Matrix to visualize stakeholder importance and influence*

Importance measures the degree of influence of a particular stakeholder or stakeholder group on a project or an initiative.

Influence measures the degree of support or opposition of a stakeholder or stakeholder group to a project's goals and objectives.

Importance and influence of different stakeholders can then be expressed in the matrix as shown in the example below from a community health care project.

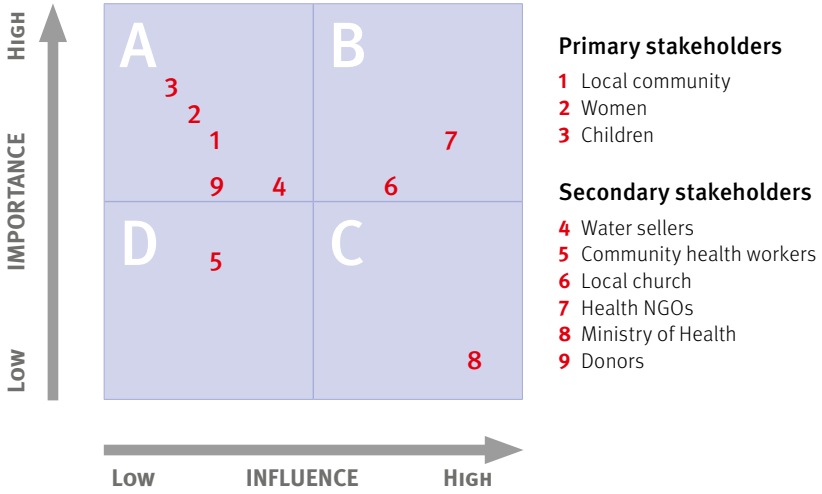


Figure 12 : *Stakeholder importance and influence (example)*

The matrix can also be used to express other aspects of stakeholders, such as their importance and the familiarity of the NSB with these stakeholders. This in turn can be an important aspect for engaging with new stakeholders and potential new fields of standardization.

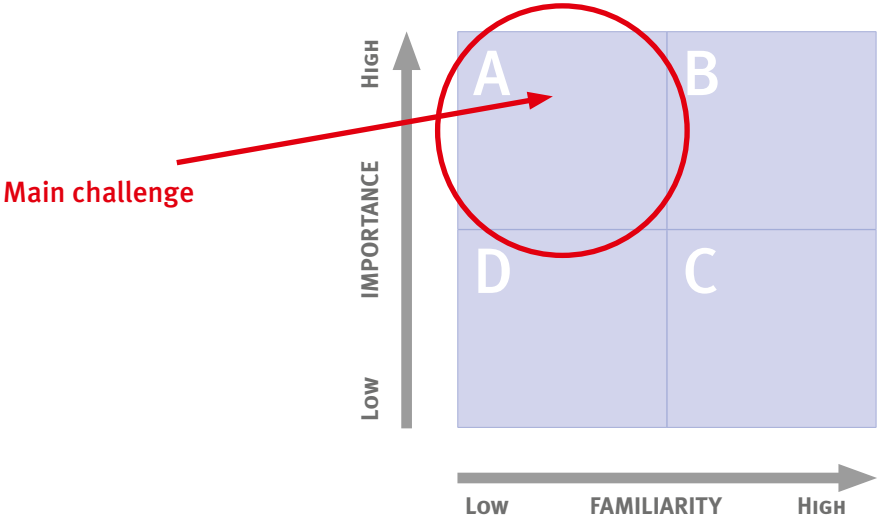


Figure 13: *Matrix to visualize stakeholder importance and familiarity (perceived from the NSB)*

Based on their importance and influence on a project or an initiative, different strategies or tactics can be applied in the engagement with different stakeholders, such as:

- Actively engage with high priority stakeholders, e.g. through personal visits, workshops
- Communicate with medium priority stakeholders
- Keep lower priority stakeholders informed

Stakeholders	Interests	Likely impact of the project	Priority as a project stakeholder	Primary/ Secondary stakeholder
Local community	Better health	+	1	P
Women	Better health Walk less far to collect water Opportunity to socialize Safety while collecting water	+ + – +	1	P
Children	Better health Walk less far to collect water Time to play	+ + +	1	P
Water sellers	Income	–	2	S
Community health workers	Reduced workload Income	+ –	2	S
Local church	Involvement of church workers in project	+	2	S
Health NGOs	Better health	+	2	S
Ministry of health	Achievement of targets	++	2	S
Donors	Effective spending of funds Achievement of health objectives	++ +	2	S

Table 4 : *Example of information on stakeholders*

1.4.5 Stakeholder analysis and engagement for the development of an NSS

Stakeholder engagement in standardization is highly important, as it is the primary purpose of standards organizations to develop standards that meet the expectations of their stakeholders. To assure balance of interests in the development of standards, ISO has introduced a set of seven stakeholder categories that are used to categorize experts when they are registered to ISO committees, WGs and specific projects. The categories applied are as follows:

Types of stakeholders	Typically includes:
Industry and commerce – Large industry	Manufacturers; producers; designers; service industries; distribution, warehousing and transport undertakings; retailers; insurers; banks and financial institutions; business and trade associations.
Industry and commerce – Small and medium-sized enterprises	As above, but different sizes of the enterprises.
Government	International and regional treaty organizations and agencies; national government and local government departments and agencies, and all bodies that have a legally recognized regulatory function.
Consumers	National, regional and international consumer representation bodies, independent of any organization that would fall into the "industry and commerce" category, or individual experts engaged from a consumer perspective.
Labour	International, regional, national and local trade unions and federations of trade unions, together with similar bodies, the main purpose of which is to promote or safeguard the collective interests of employees in respect of their relationship with their employers. This does not include professional associations.

Types of stakeholders	Typically includes :
Academic and research bodies	Universities and other higher educational bodies or professional educators associated with them ; professional associations ; research institutions
Standards application businesses	Testing, certification and accreditation bodies ; organizations primarily devoted to promoting or assessing the use of standards.
Non-governmental organization (NGO)	Organizations that usually operate on a charitable, not-for-profit or non-profit distributing basis and that have a public interest objective related to social or environmental concerns.
Other	Not covered by any of the above categories.

Table 5 : *Categories of different stakeholders*

It is evident that not all the above stakeholder categories are relevant for all types of subject fields and for all types of projects.

Based on the analysis of priority sectors in the economy, trade and society, individual stakeholders or groups of stakeholders should be identified applying the methods introduced above, aiming to obtain inputs from them for the standardization strategy.

There are different means of engaging stakeholders ; for example, a starting point are those stakeholders that already participate in standardization. However, the stakeholder analysis should identify sectors and important players in these sectors that do not or much less participated in standardization.

Communicating with stakeholders can be through the Website of the NSB or social media sites. These Internet tools can be used to disseminate survey questionnaires or provide online means for stakeholders to provide feedback. Additionally, there are traditional means of contact, such as telephone calls, which may be appropriate in particular when key individuals in organizations are contacted. In such cases, telephone calls should be made by a high level and eloquent person with good knowledge of the situation. Telephone calls can be supplemented by documents sent by e-mails, fax or paper.

For key sectors, the STF may consider organizing workshops with a wider group of invited stakeholders from the most important sectors to obtain inputs and discuss preliminary findings in a draft strategy document. The result of such a workshop should be:

- Confirmation (or rejection) of subjects identified in the draft plan through the stakeholders
- Identification by the stakeholders of additional important subjects that have so far not been identified
- Expectations of which standards should contribute to their sector and business

1.5 Ranking of national priorities and their mapping to standards

In order to assign priorities to sectors, fields, subjects or topics for the development of national standards, we use the ranking scheme shown **in Table 6**. It is applied to rank socio-economic priorities, new emerging fields/subjects, as well as priority subjects of stakeholders.

Rank	Economic priorities	Non-economic priorities (social, environmental or other)	Priorities derived from national or sectoral development plans
#1	Very important & urgent	Very serious & urgent problems, public outcry	Great importance in the near future
#2	Highly important	Serious problems, common occurrence, media attention	Great importance, if conditions apply
#3	Moderately important	Serious problems, some media reports	Importance in the medium term
#4	Of secondary importance	Problems are localized, no media reaction	Important in the long term
#5	Not important	Other issues	Unimportant

Table 6 : *Priority ranking applicable for qualitative information*

In case there is an **overriding priority** for a topic which requires urgent action and therefore overrides other priorities, this **is expressed by adding an asterisk behind the priority rank 1, e.g. "1*"**. Such an overriding priority can be assigned to express a major societal or economic priority, e.g. a health or safety issue, but also economic issues, that require immediate action.

For some of the criteria it is possible to base ranks on quantitative data, such as data for trade, GDP-contribution of an economic sector etc. A rank may be determined, for example, based on the following ranges:

Rank	Proposed ranges (of contribution to GDP/export/import)
#1	≥ 10 %
#2	5 – 9.9 %
#3	1 – 4.9 %
#4	0.2 – 0.9 %
#5	< 0.2 %

Table 7: *Priority ranking applicable for quantitative data*

Tables 8, 9 and 10 represent examples of applying the ranking system for quantitative data (GDP-contribution of a sector).

Table 11 shows an example where the ranking system is applied to qualitative information about the seriousness of certain societal issues.

N°	Economic sector	Percentage contribution to GDP	Source and date of info	Rank
1.	Wholesale and retail trade, repair	13.4 %	***Armenian National Statistical Service :*** www.arms tat.am/en/?nid=263 www.arms tat.am/file/article/hah_12_4.pdf ***Index Mundi :*** www.indexmundi.com/trade/exports/?country=am	1
2.	Construction	12.8 %		1
3.	Plant growing (fruits, grain & vegetables)	12.3 %		1
4.	Animal husbandry	8.7 %		2
5.	Transport and communications	6.3 %		2
6.	Financial intermediation	4.0 %		3
7.	Health and social services	3.8 %		3
8.	Public administration	3.7 %		3
9.	Education	3.4 %		3
10.	Mining and quarrying	2.9 %		3
11.	Diamond processing	2.6 %		3
12.	Machine tools, forging-pressing machines	1.2 %		3
13.	Electric motors	1.1 %		3
14.	Tyres	0.9 %		4
15.	Knitted wear, hosiery, shoes, silk fabric	0.9 %		4
16.	Chemicals, trucks, instruments	0.8 %		4
17.	Jewelry	0.8 %		4
18.	Micro-electronics, software development	0.7 %		4
19.	Food processing	0.7 %		4
20.	Hotels and restaurants	0.7 %		4
21.	Brandy	0.6 %		4

Table 8 : *Example of the contribution of economic sectors and products to GDP (example taken from the NSS of SARM – Armenia)*

Nº Economic sector	Economic sub-sector	Percentage contribution to GDP	Source and date of info	Rank
1. AGRICULTURE		22	GBoS (2013 Estimates)	1*
	Crops	12.1	GBoS (2013 Estimates)	1
	Livestock	7.8	GBoS (2013 Estimates)	2
	Forestry	0.4	GBoS (2013 Estimates)	4
	Fishing	1.8	GBoS (2013 Estimates)	3
2. INDUSTRY		15	GBoS (2013 Estimates)	1
	Mining and quarrying	3.2	GBoS (2013 Estimates)	3
	Manufacturing	5.4	GBoS (2013 Estimates)	2
	Electricity, gas and water supply	1.4	GBoS (2013 Estimates)	3
	Construction	4.9	GBoS (2013 Estimates)	3
3. SERVICES		57	GBoS (2013 Estimates)	1*
	Wholesale and retail trade	22.8	GBoS (2013 Estimates)	1*
	Hotels and restaurants	2.8	GBoS (2013 Estimates)	3
	Transport, storage, communication	14.2	GBoS (2013 Estimates)	1
	Communication	9.6	GBoS (2013 Estimates)	2
	Financial intermediation	10.1	GBoS (2013 Estimates)	1
	Real estate, renting and business activities	2.9	GBoS (2013 Estimates)	3
	Public administration	2.0	GBoS (2013 Estimates)	3
	Education	1.0	GBoS (2013 Estimates)	3
	Health and social work	1.0	GBoS (2013 Estimates)	3
	Other community, social and personal services	0.4	GBoS (2013 Estimates)	4

Table 9 *: Example of the contribution of economic sectors and products to GDP (example taken from the NSS of TGBS – The Gambia, GBoS = Gambia Bureau of Statistics)*

N°	Economic sector	Percentage contribution to export	Source and date of information	Rank
1	Edible oil	12.3967 %	Ministry of Trade 2014/2015	1
2	Meat	0.12899 %	Ministry of Trade 2014/2015	5
3	Fish and fishery products	20.19 %	Ministry of Trade 2014/2015	1*
4	Vegetables	0.008 %	Ministry of Trade 2014/2015	5
5	Cashew nuts	41.54 %	Ministry of Trade 2014/2015	1*
6	Product of milling industry	0.0676 %	Ministry of Trade 2014/2015	5
7	Groundnut cake	24.279 %	Ministry of Trade 2014/2015	1*
8	Soft drinks	1.288 %	Ministry of Trade 2014/2015	4
9	Inorganic chemicals	0.0159 %	Ministry of Trade 2014/2015	5
10	Forest product	15.93 %	Ministry of Trade 2014/2015	1
11	Fruits	0.085 %	Gambia Bureau of Statistics 2012/2015	5
12	Groundnuts HPS	13.02 %	Gambia Bureau of Statistics 2012/2015	1
13	Sesame seed and oil	0.11 %	Gambia Bureau of Statistics 2012/2015	5

Table 10 : *Example of the contribution of economic sectors and products to exports (example taken from the NSS of TGBS – The Gambia)*

N°	Non-economic priority	Situation surrounding the problem	Rank
1	Waste management	Very serious and urgent problem, public outcry	1*
2	Flooding	Very serious and urgent problem, public outcry	1
3	Second hand goods	Serious problem, common occurrence, media attention	2
4	Quality of medical drugs	Serious problem, common occurrence, media attention	2
5	Illegal logging	Serious problem, common occurrence, media attention	2
6	Littering	Serious problem, common occurrence, media attention	2
7	Illegal migration	Very serious and urgent problem, public outcry	1
8	Child marriage	Serious problem, some media reports	3
9	Fire incidence	Serious problem, some media reports	3
10	Open defecation	Serious problem, some media reports	3
11	Sexual harassment	Problem localized, no media reaction	4
12	Child trafficking	Serious problem, some media reports	3
13	Climate change	Very serious and urgent problem, public outcry	1*
14	Mining and quarrying	Serious problem, common occurrence, media attention	2
15	Wholesale and retail trade	Very serious and urgent problem, public outcry	1
16	Organic chemicals	Serious problem, some media reports	3
17	Measurement in trade, industry, health and environment	Very serious and urgent problem, public outcry	1
18	Delivery of public service	Very serious and urgent problem, public outcry	1
19	Tourism and related businesses	Serious problem, common occurrence, media attention	2

Table 11 : *Example of the non-economic priorities (example taken from the NSS of TGBS – The Gambia*

The ranking aims to reflect national conditions and priorities as well as policy choices. The ranking of similar issues between different countries could therefore differ. This is also shown in the ranking of priorities derived from national development plans, as shown **in Table 12**.

Nº	Sector/issue	Importance and chances of occurrence	Rank
1	Road and drainage infrastructure	Expected to gain great importance in the near future	1
2	Tourism and culture	Expected to gain great importance in the near future	1
3	Energy – Renewable (solar, wind)	Expected to gain great importance in the near future	1
4	Youth employment	Expected to gain great importance in the near future	1
6	Debt burden	Expected to gain some importance in the long term	4
7	Poverty reduction	Expected to gain great importance in the near future	1
8	Civil service reform	Expected to gain great importance in the near future	1
9	Justice, human rights, anti-corruption & legal framework reforms	Expected to gain some importance in the medium term	3

Table 12 : *Examples of priorities from the national development plan (example taken from the NSS of TGBS – The Gambia)*

Finally, the socio-economic and stakeholder priorities are combined within a common ranking framework which represents the outcome of Phase 1 of the development, which is the identification of national priorities for standardization.

Examples of what such priority frameworks can look like are shown **in Table 13**:

Sector	Fields	Average priority rank	Initiator and responsibility
Agriculture and food processing	In general	2.0	Ministry of Agriculture
	Milk and dairy products	5.0	SARM TC 4
	Fruits and vegetables	2.3	SARM TC 3
	Alcohol, brandy	2.3	SARM TC 10
	Meat and meat products	4.5	SARM TC 2
	Soft drinks	3.7	Ministry of Agriculture, SARM TC 3
	Fish, crustaceans and molluscs	4.5	Ministry of Agriculture, SARM TC 2/SC 1
	Coffee and tea	4.3	Ministry of Agriculture, new NTC needs to be established
	Natural mineral water	3.7	SARM TC 8
	Tobacco and cigarettes	4.5	SARM TC 11
Mining and quarrying	In general	2.0	Ministry of Energy and Natural Resources
	Copper	2.0	New NTC needs to be established with appropriate SCs
	Iron and steel (Ferro-alloys)	2.0	
	Aluminium	2.5	
	Molybdenum	3.0	
	Zinc	3.0	
	Gold, unwrought	3.5	

Sector	Fields	Average priority rank	Initiator and responsibility
Buildings and construction	In general	2.5	Ministry of Urban Development
	Seismic safety of buildings	2.5	Ministry on Emergency Situations, SARM TC 7
	Worked monumental/building stone & art, mosaic cube, granules	4.5	SARM TC 16, a SC needs to be established
	Cements, Portland, aluminous, slag, supersulfate & similar hydraulic cements	4.5	SARM TC 16
	Energy-efficient design of buildings	3.0	SARM TC 16, a SC needs to be established
Energy	In general	3.7	Ministry of Energy and Natural Resources
	Renewable energy (hydro, wind and solar)	3.7	SARM TC 1, a SC needs to be established
	Nuclear energy	3.7	SARM TC 1, a SC needs to be established
Gas supply	In general	3.5	Ministry of Energy and Natural Resources
	Containers for compressed or liquefied gas, of iron or steel	3.3	SARM TC 5

Table 13 : *Example of the consolidated priorities for standardization work (the example is taken from the NSS of SARM – Armenia – and represents only a subset of the identified priorities)*

1.6 Different types of standardization projects

1.6.1 General principles

In this chapter we introduce five different types of standardization projects that are intended to cover most types of activities. We then move on **in Chapter 1.7** to apply these project types to average resource needs that apply for each specific project type. This approach will give us the basis to calculate the resource needs for the whole standardization plan.

1.6.2 Types of national standardization projects

We distinguish between several different national projects. The term "national project" refers to the fact that our focus here is on the national activities and the use of national resources to transpose e.g. an International Standard through an adoption process into a national standard or to participate in an international standardization project, if such a project corresponds to national priorities.

In each of these cases, a project requires national efforts and the use of national resources provided by the NSB, as well as resources provided by experts from industry and other stakeholders.

All project types will be associated with needs for human and financial resources. These resource needs must be determined – as an average – based on the conditions in each country and NSBs. They could vary significantly between countries and NSBs, due to differences in procedural rules for standards development or the degree of engagement of stakeholders. It is evident that average resource needs for each project type will not reflect the precise resources required for each individual project. However, applying realistically defined average resource estimations

will be enough to make an evidence-based judgement whether a standardization plan that may contain several hundreds of planned projects can be implemented within a certain time frame and with certain human and financial resources or not.

Type 1 : ***adoption of an international (or regional) standard*** [abbreviated as : **Ad**]

This type applies if an international (or regional) standard exists and has been identified as being appropriate to address national needs. If appropriate, preference should be given to adopting such a standard identically and without deviations to either content or structure.

Type 2 : ***evaluation of an International (or regional) Standard with the intention of its adoption*** [abbreviated as : **Ev**]

This type applies if an International (or regional) Standard has been identified as being most relevant with a high likelihood, but final clarification still needs to be obtained.

Note : The difference between Type 1 and 2 is that Type 1 covers cases of straightforward and identical adoptions of an international, regional or other standard (cases of " simple " adoption). Type 2 represents the more complex case of an adoption which may require modifications or adaptations of the adopted standard to make it fit national or regional conditions (cases of " complex " adoption). The evaluation could also result in a judgement that the standard should not be adopted.

Type 3 : ***active participation in a new or an ongoing development project of an International (or regional) Standard*** [abbreviated as : **Ac**]

This type applies if an International (or regional) Standard is under development and a high priority exists for its use as a national standard once it is published. It is recommended that the NSB participates actively in the development of such a standard.

Type 4 : ***monitoring (or observing) an ongoing development project of an International (or regional) Standard*** [abbreviated as : **Mo**]

This type applies if an International (or regional) Standard is under development which is of a certain (but not a very high) national priority. In such a case, active participation by the NSB in the project is not required.

Note: the difference between Types 3 and 4 is that Type 3 represents cases where the NSB will participate fully in the development by participating at committee meetings, submitting comments, and undertaking research with the intention to make the future standard fit its national needs and conditions. Type 4 represents the case that the NSB simply follows the development of a standard as an observer, without contributing to its development.

Type 5: ***development of a national standard*** [abbreviated as: **Na**]

This type applies if an International (or regional) Standard does not exist, but there is a significant national priority for such a standard. Alternatively, instead of developing such a standard, the NSB should consider proposing a new project (a new work item) to an appropriate TC at international or regional level.

1.6.3 Additional project types

Not all these types of national projects may exist in all countries and in all NSBs so that only a subset of these project types are used. On the other hand, there may be cases of other standards development processes, not covered by the five project types, that occur with a certain degree of frequency. For this latter case, please **consult chapter 2.4** of this document.

1.6.4 Overall time frames for the different project types

Types of national projects	Average duration
Adoption (“Ad”) – Simple adoption	9 months
Evaluation for adoption (“Ev”) – Complex adoption	12 months
Active participation (“Ac”)	36 months
Monitoring (“Mo”)	36 months
National development (“Na”) [“home-grown” development]	24–36 months

Table 14 : *Overall average project duration for the five national standardization project types*

The average timeframes above only represent proposals for reference. They need to be adapted to the specific conditions in different countries and NSBs and will not apply to all conditions and all countries.

These timeframes cover the whole process from the beginning to the end of a standards development project which includes fixed periods of voting during which the standard is not being developed. They do not represent the workload for different individuals involved in the projects. The process of determining the average workload for different standardization projects for individuals in the main project roles and the calculation of the overall workload for (draft versions of) a standardization plan, will be introduced **in Chapter 1.7**.

1.7 Calculation of required human and financial resources

1.7.1 Principles for the resource calculation

In this chapter, we will introduce a method to calculate or estimate the human and financial resources needed for the implementation of an NSP. This calculation is based on assumptions about average resource needs for the five different types of national standardization projects which we defined **in Chapter 1.6**.

In principle there are two different resources required: Those for NSB-staff to administer and manage national standardization projects and those for contributors to projects from outside the NSB (often referred to as "experts").

In the centre of our calculations are the resources required by staff members of the NSB or of other organizations that carry out standards development work on behalf of the NSB.

The knowledge that goes into the development of standards comes from subject matter experts. However, the provision of their time and the financing of their participation differs significantly between countries and ranges from self-financing (by the individuals themselves), financing by the organizations they are affiliated with (their companies or institutions) to subsidies paid by government agencies or through funds provided by the government to the NSB.

Due to these differences, our approach to resource calculation is limited to calculating the human and financial resources needed by the NSB for its staff to manage the standardization projects. It is evident that, in addition to the resources needed for standards development, the NSB also needs resources for other activities as well, which are not considered here.

1.7.2 Human resource calculation

This sub-section describes the calculation of project roles for NSB employees in national standardization projects. In order to determine the resource needs, we distinguish between the following three project roles assumed by NSB employees. In case standardization work is undertaken by other organizations than the NSB, but on its behalf, we simply consider the respective staff as "NSB employees" since the same principles for the resource calculation apply.

Each of them has a different qualification and performs a different role in projects:

- **Technical officer (TO):** This role is typically assumed by an NSB employee with a technical or other competence in the subject field. The TO also often performs the role of secretary of a national committee.
- **Editor/translator (ED/TR or ED):** This role requires that the NSB employee has competence in standards writing or editing and possibly language skills needed to translate an adopted standard.
- **Secretarial staff (SEC):** This role is performed mainly by administrative support staff engaged in logistical and administrative support services.

The project roles may not always be performed by different people. Often the TO is responsible for all activities in a project, from the technical work, organizing meetings, as well as all other logistical tasks.

For each of the types of national projects, we have defined default activities, a default duration (in working days) for each of the activities, together with a frequency of how often these activities typically occur over the lifetime of a project. If these default times and/or their frequency do not apply in a specific country or NSB, they should be adapted to reflect – to the extent possible – realistically the conditions in a country or NSB.

Before engaging in any form of calculation, it is strongly recommended to analyse several different national standardization projects to determine in a realistic manner the activities that occur during a project, the average times required for each of them and the frequency with which these activities occur. It is not necessary and

not recommended to try to account for every activity, but it is necessary to focus on key activities that occur in all or most of the projects, their average duration and the average frequency with which they occur.

Key activities typically comprise:

- Analysis and preparation of documents
- Circulating documents to the members of a committee or WG
- Organizing meetings
- Conducting meetings
- Preparing meeting reports
- Organizing voting processes
- Project management

1.7.3 Resource calculation

The principle of the resource calculation is based on types of project activities. We start with identifying the main project activities, identify the individuals (the "project roles") who perform these activities, analyse the workload in terms of the number of working days required to undertake these activities and the frequency with which these activities are performed over the course of an average project.

It is important to realize that the workload for the various project types is not the same and that the workload, measured in working days, per project type and project role varies between the different project types. Since the qualification of the TO and of the ED/TR are higher than those of administrative staff, it is likely that resource bottlenecks are caused mainly due to the limited availability of the staff with higher qualifications.

1.7.4 Default activities and default workloads per national project type

The graphs in this chapter give an overview of default activities and their time frame. It is important that all listed activities ("Standards Development Tasks") and the average time assumed for their completion ("Work Time", in number of working days) are critically reviewed and, if appropriate, modified so that they reflect the situation in a country and/or an NSB.

Project type 1 – Adoption "Ad"								
Standards Development Task	Work time			Repe-ti-tions per life-cycle	Total Work time (WT)			Total time for all tasks
	TO	ED/TR	SECR		TO	ED/TR	SECR	
Preliminary analysis								
Preparation & management of TC meetings								
Preparation of TC meeting report								
Verification & circulation of drafts								
Communication with stakeholders								
Project management								
Commenting on ISO projects (WD)*								
Commenting on ISO projects (CD)*								
Balloting on ISO DIS with comments*								
Balloting on ISO FDIS*								
Editing/finalization of adopted ISO standard								
				Totals				
* Not applicable for "Adoption"								
					Total time for 1 Ad:			

***Figure 14** : Case of the national project type : Adoption (or : simple adoption)*

Project type 2 – Adoption "Ev"								
Standards Development Task	Work time			Repe-ti-tions per life-cycle	Total Work time (WT)			Total time for all tasks
	TO	ED/TR	SECR		TO	ED/TR	SECR	
Preliminary analysis								
Preparation & management of TC meetings								
Preparation of TC meeting report								
Verification & circulation of drafts								
Communication with stakeholders								
Project management								
Commenting on ISO projects (WD)*								
Commenting on ISO projects (CD)*								
Balloting on ISO DIS with comments*								
Balloting on ISO FDIS*								
Editing/finalization of adopted ISO standard								
				Totals				
* Not applicable for "Evaluation for Adoption"								
					Total time for 1 Ev:			

Figure 15 : Case of the national project type : Evaluation for adoption (or complex adoption)

Project type 3 – Active involvement "Ac"								
Standards Development Task	Work time			Repe-ti-tions per life-cycle	Total Work time (WT)			Total time for all tasks
	TO	ED/TR	SECR		TO	ED/TR	SECR	
Preliminary analysis								
Preparation & management of TC meetings								
Preparation of TC meeting report								
Verification & circulation of drafts								
Communication with stakeholders								
Project management								
Commenting on ISO projects (WD)								
Commenting on ISO projects (CD)								
Balloting on ISO DIS with comments								
Balloting on ISO FDIS								
Editing/finalization of adopted ISO standard								
				Totals				
					Total time for 1 Ac :			

Figure 16 : *Case of the national project type : Active participation*

Project type 4 – Monitoring "Mo"								
Standards Development Task	Work time			Repe-ti-tions per life-cycle	Total Work time (WT)			Total time for all tasks
	TO	ED/TR	SECR		TO	ED/TR	SECR	
Preliminary analysis								
Preparation & management of TC meetings								
Preparation of TC meeting report								
Verification & circulation of drafts								
Communication with stakeholders								
Project management								
Commenting on ISO projects (WD)								
Commenting on ISO projects (CD)								
Balloting on ISO DIS with comments								
Balloting on ISO FDIS								
Editing/finalization of adopted ISO standard								
				Totals				
					Total time for 1 Mo :			

Figure 17 : *Case of the national project type : Monitoring*

Project type 5– National development “ Na ”								
Standards Development Task	Work time			Repe-ti-tions per life-cycle	Total Work time (WT)			Total time for all tasks
	TO	ED/TR	SECR		TO	ED/TR	SECR	
Preliminary analysis								
Preparation & management of TC meetings								
Preparation of TC meeting report								
Verification & circulation of drafts								
Communication with stakeholders								
Project management								
Organization of balloting on national project								
Collation, analysis and circulation of comments								
Balloting on ISO DIS with comments								
Resolution of comments/ Update of draft standard								
Editing/finalization of adopted ISO standard								
				Totals				
					Total time for 1 Na :			

Figure 18 : *Case of the national project type : National development*

1.7.5 Introducing the spreadsheet tool "Calc_03_Calculation of required resources"

We have developed a tool named "**Calc_03_Calculation of required resources**", to calculate the required resources. This tool, which uses Microsoft Excel, consists of 11 different worksheets, which are used to calculate different aspects of the requirements for both human and financial resources. **Annex 4** contains detailed instructions for this spreadsheet tool.

It should be noted, however, that using this tool is optional as the method applied to calculate resources for the standardization plan as described in this chapter does not rely on the tool.

1.8 Planning standardization projects – general principles

It is important to be aware of the workload resulting from the standardization plan, and to plan the projects in a way that ensures the available resources are optimally used over the duration of the plan. This typically lasts three years.

Figure 19 shows the result of starting all projects in the standardization plan at the same time: The outcome is a heavy workload at the beginning of the implementation of the plan and, assuming the work could be completed according to plan, a surplus of unused resources towards the later part of the plan.

However, it is likely that the implementation of the plan will run into difficulties as too many resources are bound in too many projects.

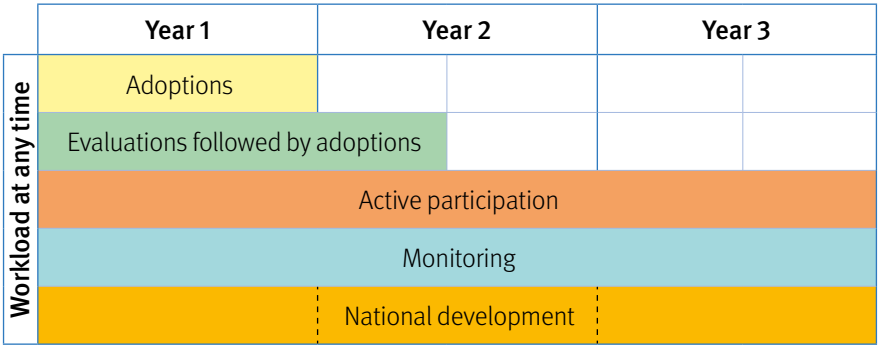


***Figure 19** : Simultaneous start of all projects in the standardization plan*

For this reason, it is recommended to try to distribute projects evenly over the span of the duration of the plan, so that resources that have been used in certain projects become available again once these projects have been completed. This staged approach to project planning is shown **in Figure 20**.

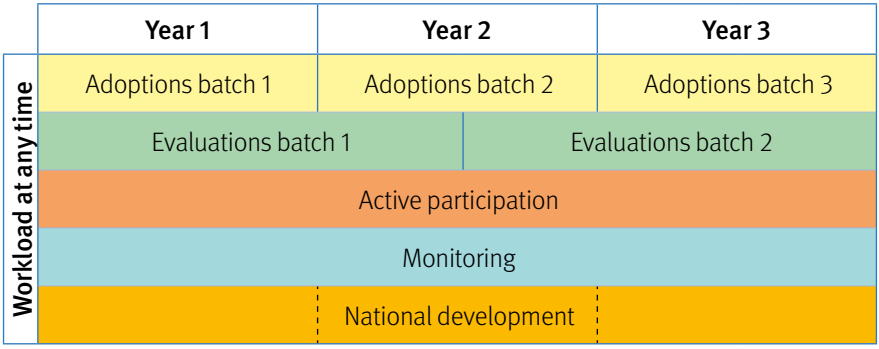


***Figure 20** : Staggered start of the projects in the standardization plan*

Deciding when projects should start should depend mainly on two factors:

- The importance of a project, with the more important projects included in an earlier project batch
- The availability of key resources: if key experts are not available at a preferred starting date for a project but could become available later, it may be preferable to allocate the project to batch 2 or perhaps even batch 3

Sector	Year 1		Year 2		Year 3	
	Number of standards	Standard officers (men)	Number of standards	Standard officers (men)	Number of standards	Standard officers (men)
Agriculture and food processing	25	1	0	0	48	2
Mining and quarrying	66	2	22	1	0	0
Buildings and construction	7	1.5	6	0.5	47	3
Energy	0	0	0	0	17	3
Gas supply	0	0	18	2	0	0
Information technology and telecommunications	0	0	7	0.5	0	0
Chemical/ Pharmaceutical	0	0	0	0	21	1
Tourism and services	8	0.5	0	0	0	0
Electrotechnical	0	0	14	10	21	3
Health and safety	8	1	3	0.5	0	0
Transport	19	5	0	0	0	0
Environment	10	1	0	0	0	0
Conformity assessment	19	1	0	0	0	0
Financial services	0	0	10	1.5	0	0
Other	0	0	0	0	19	1
TOTAL	162	13	80	16	173	13

Table 15 : *Allocation of national projects over the three-year period of the standardization plan (from the NSS of SARM – Armenia)*

1.9 Structures of strategy documents

1.9.1 General principles

There is more than one acceptable format to present a standardization strategy and the NSB may decide which format to use. A strategy can also exist in different versions, such as a full document mainly for internal use with a significant degree of detail, as well as a simplified version, which mainly serves communication purposes and awareness raising.

Typically, a strategy document will introduce the NSB and describe the objectives of standardization in general. It would then explain the process through which the strategy has been developed and arrive at a listing of national priority areas and topics. It would then explain the contributions expected from standardization to help address these priorities.

As explained **in Chapter 1.1**, the standardization strategy can contain a standardization plan which represents a list with individual national projects that have been identified and agreed to implement the strategy, including information about the time frame and the resources needed for the implementation of the plan.

A standardization strategy can contain significant detail. For this reason, the development of a shorter "**communication plan**", as stated **in Section 1.1**, is useful to explain the objectives of the strategy and key programmes that are planned towards the implementation of the strategy.

1.9.2 Model for the structure of a national standardization strategy

The following is a model of a possible structure of an NSS document:

- Introduction
- Role of the NSB in the country and main benefits expected from standardization
- Rationale and development process of the standardization strategy, time validity of the strategy, and approach to keeping it up-to-date
- National priority areas and priority topics identified
- Description of how standardization can benefit these priorities
- NSP with a list of national projects, the types of the project, timeframes, and responsible body for the development
- The resources needed by the NSB to implement the NSP

Sections 1 to 5 above represent the core of the strategy (the result of Phase 1, **see Section 1.1.5**), whereas Sections 6 and 7 represent the result of Phase 2.

However, there are other possibilities to structure such a document and the model above represents just one option.

Part 2: Specific aspects and extensions

2.1 Mapping national priorities to standards

As explained in the introduction, the development of an NSS often results in a standardization plan. This plan contains a list of existing standards and ongoing standardization projects that will be adopted or in which the NSB plans to participate because of their relevance for the country. The analysis of economic sectors, non-economic areas and national development-plans can be understood as a process from the general (sectors and fields or subsectors) to the specific (fields, topics or subjects). The intention is that at the end of this process, it is possible to map the needs of the economy and society to standards.

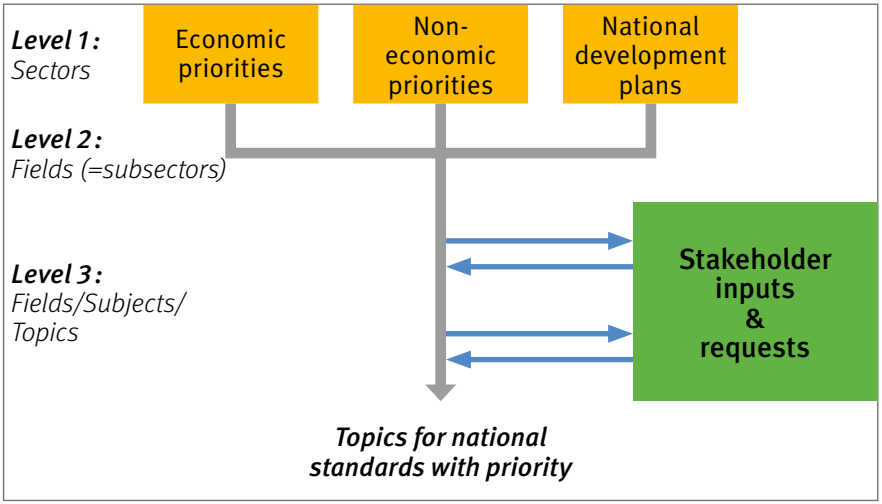


Figure 21: *From priority needs to the identification of standards*

The development process towards a standardization plan can be visualized as shown in Figure 21 or, in an even simpler form, in Figure 22.

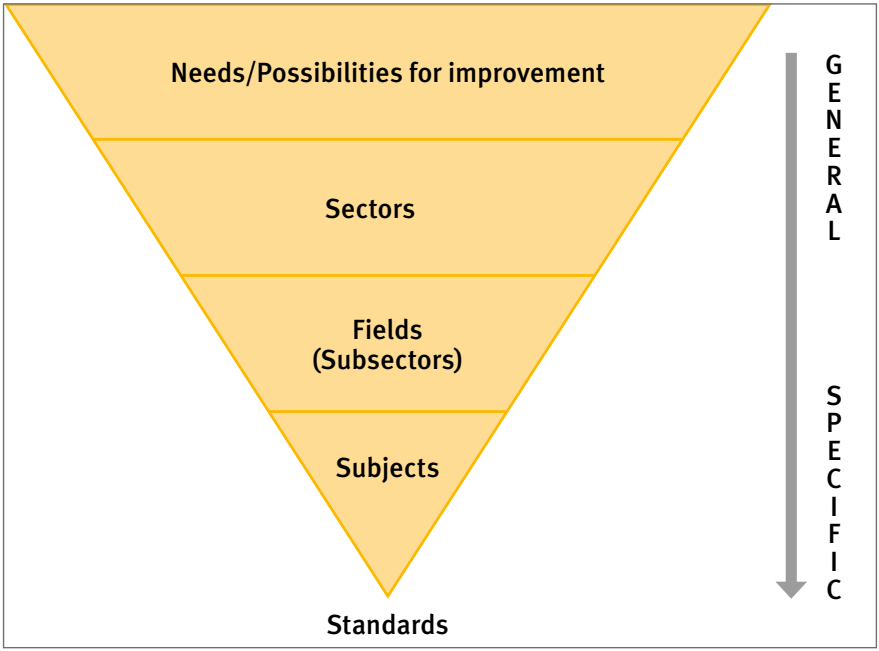


Figure 22 : *From priority needs to the identification of standards – A simplified view of developing an NSS*

Essentially, national and stakeholder priorities are converted into the needs for specific standards, which are then included into an NSP. In some cases, there may be a direct mapping between needs and relevant standards. This may be the case, for example, when agricultural products decay during transport, because of inadequate packaging, which could be addressed through appropriate standards.

However, in many cases, the linkage between national priorities and standards is not so direct and a one-to-one mapping is not possible. Accident prevention and road safety, which is a complex topic, is a key example. This requires a thorough and deep analysis of the conditions that result in accidents, and using standards could just be one measure that need to be combined with others (e.g. training of the drivers, their attitude to risk, the road conditions or the maintenance status of many cars in the country or other factors, such as weather, drinking habits etc.).

It is recommended, before finalizing a standardization plan, to analyse in all cases whether the standards that have been identified as being relevant and suitable for addressing the needs that triggered the process. As shown in Figure 23, it is recommended to trace back from the expected functions of the standards the sequence of impacts and verify the appropriateness of the standards for the purposes for which they have been selected.

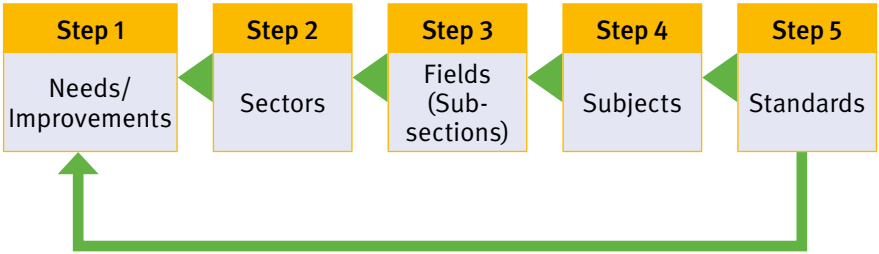


Figure 23 : *Back-tracking that the selected standards are suited to address the priority needs*

The question to be addressed is : Is there evidence to support that the identified standards (for adoption or development) can really have the intended impacts and contribute to addressing the priority needs or the important possibilities for improvement from where the whole NSS-development started ?

2.2 Consolidation of information from different data sources

Information about the national economy, trade, national development priorities or non-economic societal priorities is collected from different sources. This information is often classified in different forms using various classification systems. Some of the information may be very general and aggregated at a high level (e.g. "manufacturing"), whereas other information may be very specific (e.g. export data for a specific agricultural crop such as maize).

Similarly, when priority fields from the socio-economic analysis are compared with priorities expressed by stakeholders, who often propose very specific topics, a similar challenge arises to make information from different sources and different levels of aggregation comparable in order to prioritize between the different subjects.

In this chapter we give some guidance on how to consolidate information which is classified differently, and which exists with different levels of aggregation into a single framework.

The examples in Table 16 are taken from a real situation and show the challenges faced when trying to consolidate and make different types of information comparable:

Key economic sectors based on contribution to GDP

Nº	Economic sector	Percentage contribution to GDP	Rank
1.	Manufacturing	38 %	1
2.	Wholesale & Retail	24 %	1
3.	Banking & Intermediation	9 %	2
4.	Agriculture, Forestry & Fishing	8 %	2
5.	Information & Communication	6 %	2
6.	Insurance & Pension	4 %	3
7.	Transport	2 %	3
8.	Electricity & Water	2 %	3
9.	Construction	2 %	3
10.	Mining & Quarrying	2 %	3
11.	Real estates & Other business	1 %	4
12.	Hotels & Restaurants	1 %	4
13.	Education & Health	1 %	4

Contribution to national export earnings

Nº	Economic sector	Export contribution	Rank
1.	Fresh food	72.2 %	1
2.	Processed food	9.6 %	2
3.	Minerals	8.8 %	2
4.	Miscellaneous manufacturing	2.3 %	3
5.	Wood products	1.4 %	3
6.	Clothing	1.3 %	3
7.	Non-electronic machinery	1.0 %	4
8.	Chemicals	1.0 %	4
9.	Transport equipment	0.9 %	4
10.	Basic manufactures	0.4 %	4
11.	Textiles	0.2 %	4
12.	IT & Consumable electronics	0.1 %	5
13.	Electronic components	0.1 %	5
14.	Unclassified products	0.0 %	5
15.	Leather products	0.0 %	5

***Table 16**: Priority sectors based on contributions to GDP and exports*

In Table 16, there is information about the contribution to GDP and to exports of different sectors and/or products classified in a very different form and at very different levels of aggregation. While the entries in the table on GDP-contribution represent a high level of aggregation, the entries in the exports-table are much more specific and contain mainly types of products.

Most important non-economic priorities in your country

N°	Non-economic priority	Situation surrounding the problem and time	Rank
1.	Fire caused by faulty installations and illegal connection of electricity in public markets	Very serious and urgent problem, public outcry	1
2.	Health problems caused by consumption of alcohol	Very serious and urgent problem, public outcry	1
3.	Environmental degradation due to abuse (misuse) of plastic packaging materials	Common problem, common occurence, media attention	2
4.	Waste management (solid waste)	Common problem, common occurence, media attention	2
5.	Pollution from industrial activities	Common problem, common occurence, media attention	2

National development plans and policies

N°	Sector/issue from national development plan or policy	Importance and chances of concurrence	Rank
1.	Natural resources and environmental management	May gain importance shortly, provided certain conditions are fulfilled	2
2.	Green belt irrigation and water development	May gain importance shortly, provided certain conditions are fulfilled	2
3.	Child development, youth development and empowerment	Expected to gain some importance in the medium term	3
4.	Climate change, natural resources and environmental management	May gain importance shortly, provided certain conditions are fulfilled	2
5.	Energy, industrial development, mining and tourism	May gain importance shortly, provided certain conditions are fulfilled	2

N°	Sector/issue from national development plan or policy	Importance and chances of concurrence	Rank
6.	Agriculture and food security	May gain importance shortly, provided certain conditions are fulfilled	2
7.	Transport infrastructure	Expected to gain great importance in the near future	1

***Table 17** : Information from different sources based on different classifications*

When considering the examples in Table 17, it is apparent that the columns "Non-economic priority" and "Sector/Issue from national development plan or policy" contain entries of very different types which are not directly comparable.

It is important to consolidate the information from different resources into a single classification framework and place different information at the appropriate levels of detail to avoid comparing very generic topics like a whole sector (e.g. "agriculture") with very specific sectors (e.g. "dress shirts"). The comparison is the basis for their ranking as higher- or lower level priorities for the standards.

In the examples **in Figures 24 and 25**, it is evident that a new subject ("Security of financial transactions") that could have been raised by stakeholders can be integrated into a prioritization framework. To place the new subject at an appropriate location, we insert the new sector "Services" and the field "Financial services" under this new sector. "Security" can now be positioned at an appropriate position related to "Financial services".

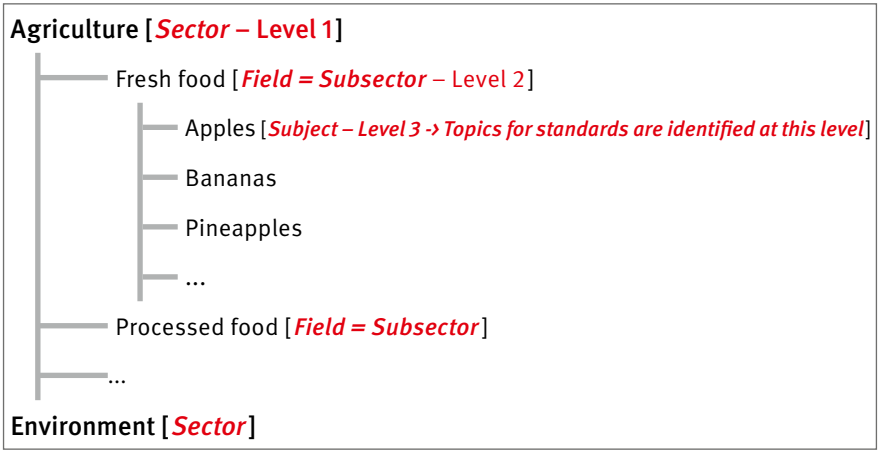


Figure 24 : *Structure of priority topics for national standards*

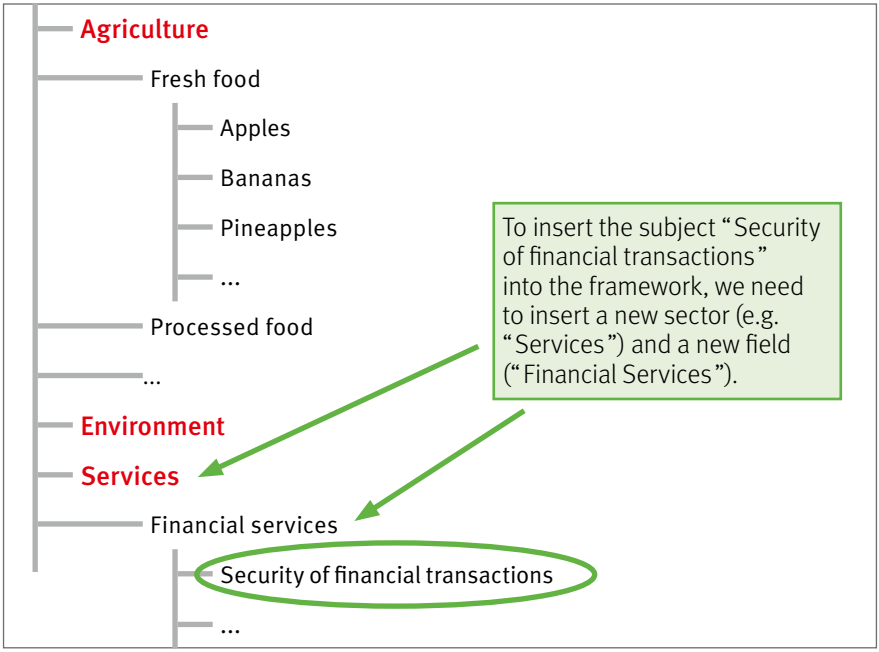


Figure 25 : *Integration of a new subject into an existing structure of priority topics for national standards*

2.3 Dealing with missing or incomplete data

As explained **in Chapter 1.3** about the development process of an NSS, an important aspect in the development is the collection and analysis of data from statistical sources, e.g. the contribution of economic sectors and fields (subsectors) to GDP, import and export trade. In order to identify relevant standards that may prove beneficial for the country and which could be adopted, it is typically necessary to go into detail in the analysis that specifies certain product groups, such as agricultural crops or specific industrial products.

Experience has shown, however, that such detailed statistical data is not available in all countries. Under such conditions, it can be impossible from the analysis of data to determine which standards could be useful to the economy, trade or society. If sufficiently detailed statistical data are not available, it is recommended to obtain information about key product types and needs for standards through consultations with ministries, trade agencies and key companies in the respective economic sectors. Information from these sources can then be used to substitute for missing or incomplete statistical data and will allow you to proceed to determine relevant standards that correspond to national priorities.

2.4 Definition of additional types of standardization projects

In Chapter 1.6 we introduced five different types of standardization projects; the simple adoption of an existing standard; the more complex case of adoption requiring more in-depth evaluation; active participation in standards development; monitoring ongoing standardization projects, and; the development of a national standard. In addition to these types, experience has shown that there

may be a need to define additional project types. This especially applies under the following conditions:

- This form of standards development occurs frequently
- There are very different resource requirements for these types than for those defined in the five resource calculation templates

In this chapter we discuss several possible additional types and how to go about introducing them.

Additional project types

Examples of additional project types that have been identified in different NSBs are:

- *Revision of a national standard*. Although this may not be true for all cases, a revision can often be a simpler and shorter process than the development of an entirely new national standard
- *Adoption of regional standards, when NSBs have the formal obligation as a member of a regional group of standards bodies, to adopt those standards*. In such cases, some NSBs only apply a formal process of transposing these standards into national standards without organizing a public or committee-internal review of the content of the standards, and without translation. In such cases, the NSB may simply publish an endorsement notice
- Some NSBs distinguish between adoption projects *with or without a national translation*. A translation can be a time- and resource-consuming process and it could be reasonable for an NSB to distinguish between adoptions with and without translation

Before introducing a new project type, the main question is whether such cases occur frequently. If this is not the case, it may be better to deal with them as exceptions. If they occur frequently, one may define an additional project type (or re-define one of the less used or unused project types among the five project types).

Adaptation of the resource calculation tool to the conditions of your NSB/country

If there are additional activities that occur regularly in your NSB that are relevant in terms of the time they need, then add them to the list. In case the roles involved in your NSB are not the same as in the table, change the label of the column or set the working times of a role to zero, e.g. if there is a TO and TA, but no SECR and ED/TR available; in such cases, change the label "ED/TR" to "TA". but ***do not delete any of the columns in the table***. Instead, set the values for role that is not used in your NSB to zero. As an example, if there are no SECR staff, set the working hours for SECR to zero and do the same for the number of repetitions for all the activities.

You can also change the naming of any of the activities in Column 1.

Adapt Sheets #1 to #5 to your national conditions in line with the above guidance. You can overwrite the tasks in the left column, set some of the resource needs in the column ("**Work time**") to zero and adjust the numbers for the working days needed or the numbers of repetitions for the different project roles.

As an example, a resource calculation template is shown below for the newly defined project type "**Revision of a national standard (NaR)**", which – in this example – results in an overall average resource use of 34 working days for such a project of which the TO has to cover more than two-thirds of the time (23.5 days). New project types like this one, and the required resources for an average project, depend very much on the specific assignment of tasks in NSBs between different project roles and which ways NSBs organize projects.

Project type : Revision of a national standard (NaR) – Human resources needs								
Standards Development Task	Working days			# of repeti-tions in project	Total working days			Total work days by tasks
	TO	ED	SECR		TO	ED	SECR	
Preliminary analysis	4.5	0	0	1	4.5	0	0	4.5
Preparation & management of TC meetings	5.00		2.5	3	15	0	7.5	22.5
Preparation of TC meeting report	1		0	3	3	0	0	3
Verification & circulation of drafts	0.5		0.5	2	1	0	1	2
Communication with stakeholders	0		0	1	0	0	0	0
Project management	0		0	1	0	0	0	0
Editing/finalization of the final draft standard	0	2	0	1	0	2	0	2
				Totals	23.5	2	8.5	
					Total work days :			34

Figure 26 : *Definition of a new project type* ***NaR*** *with associated resource requirements*

2.5 Introducing the NSP and updating standardization strategies

2.5.1 Introducing the NSP

When a NSP – as part of an NSS – has been developed, the NSB has typically a number of ongoing projects registered in its work programme that existed prior to the standardization plan. **In Figure 27**, these projects are represented by the combined sections in yellow and orange, whereas the projects identified through the standardization plan are shown in green.

This means the standardization plan needs to be integrated within the existing work programme. This will ensure that those projects which have already been developed to an advanced stage and for whose further development support exists, will be completed and not be given up in favour of projects that are part of the newly developed standardization plan (the orange section **in Figure 27**). On the other hand, there may be projects that have been approved in the past which did not show significant progress, and which could perhaps be cancelled. This in turn will permit resources to be re-allocated to projects that have undergone the much more extensive process of analysis and consultation, which is part of the development of the NSS (the yellow section).

It is therefore recommended to review the existing work programme and decide on a process to phase in the NSP by reducing the work programme and retaining only those projects for which sufficient support from stakeholders can be demonstrated. This review process may have to be aligned with the procedural rules for the acceptance of new work item proposals.

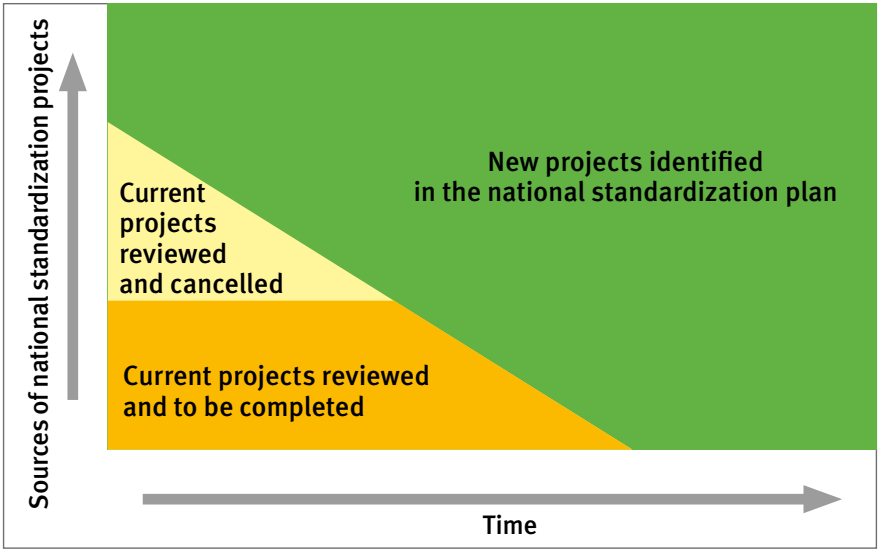


Figure 27 : *Introducing the NSP, including decisions related to existing projects*

2.5.2 Updating the NSS

Although the standardization strategy and the standardization plan have been developed for a certain period (typically three years), there is always the possibility that some unforeseen priorities emerge which require an adjustment of the plan. To ensure the plan is kept up-to-date, it is recommended to review it at least annually and evaluate whether the identified national priorities are still valid and whether the standardization plan with the individual projects are still relevant and in line with the national priorities.

For this purpose, it is recommended to engage the interested public and invite it to submit comments. These comments can then be analysed by the STF with a view to decide on a need to amend or revise the plan. However, the standardization strategy and the plan, even if there is a need for a revision, should not be discarded but should still function as the reference for standards development in the country.

2.5.3 Relationship between the NSS and new work item proposals (NWIPs)

The processes of data analysis and the evaluation criteria used in the development of an NSS (e.g. evaluating the economic and societal relevance of a subject, its importance in trade and in terms of national or sector development plans) can also be integrated into the regular procedure for the evaluation of NWIPs, independent of the development of a national standardization strategy.

By applying the same or similar criteria, it could be assured that the justification for initiating new standardization activities would follow the same rigour and ensure the same degree of national prioritization as projects that have been agreed as part of the development of the national standardization strategy.

2.6 From national to regional standardization strategies

2.6.1 General principles

There are examples how regional strategies have been developed using the different national strategies of the countries in the region as an input.

Generally, an NSS represents the priorities that have been identified for a specific country under leadership of its NSB. By comparing the national priorities that were identified in the national standardization strategies of different countries in a region, common elements can be identified that could be subject to the joint development of standards, with the intention that these standards could then be used by all the respective countries.

2.6.2 Three basic models of regional cooperation

In terms of the functions of an NSS, three models can be distinguished:

Model 1: *The NSS is only a national initiative. There is no engagement or only marginal engagement with other NSBs in the region, even though there may be common interests and there could be synergies between activities and programmes of different countries.*

Model 2: *Using an NSS as a starting point and a basis, the NSBs of different countries in a region determine common needs which results in certain initiatives of regional cooperation and the joint development of standards for which a common need has been identified.*

Model 3: *There is full-scale regional or international engagement with a priority given to the development of standards through regional or international standards organizations. Then the exclusive development of national standards becomes an exception.*

Graphically these three models can be represented as follows:

Model 1: Common areas (shown in red) between countries without cooperation

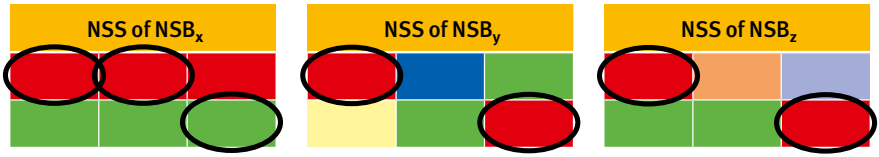


Figure 28: *Comparison of the NSS from different countries (with same topics in red)*

In this model, shown **in Figure 28**, there is no or only very limited cooperation between countries even if common areas of interest (the circled areas in red) have been identified. Parallel, but uncoordinated activities may result in incompatible solutions that hamper cooperation.

Model 2 : Common areas addressed through joint regional standards development

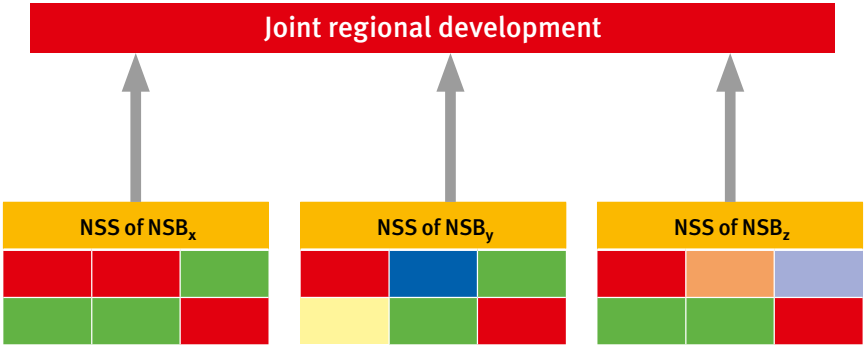


Figure 29 *: Joint regional development for topics with common interests (in red)*

In order to engage in joint regional development of standards (**Figure 29**), national standardization strategies can have the following functions and can be used following the four steps outlined below :

Step 1 : *Determine national needs and prioritize standards for development at the national level (the basis is provided by the NSSs of the different countries in the region).*

Step 2 : *Analyse and compare the different NSS, determine common needs and topics for standards relevant for the whole region.*

Step 3 : *Incorporate these topics into a regional standards development plan for joint regional development.*

Step 4 : *Organize regional projects, determine project participants, set time frames, and assign resources.*

In principle, joint regional development can be implemented through different forms of cooperation, which could consist of:

- The development of regional standards and their national adoption
- The coordinated adoption of a set of international standards agreed by all the NSBs in the region
- A mixed model that combines elements of the above two points

Whichever form is chosen, the intended result is the harmonization of at least a subset of national standards used in the countries of the region.

To implement this model requires that there is at least some form of regional cooperation agreement, or a regional institution that can be used to help identify common needs and that can assist in organizing regional standards development. As a step towards regional cooperation, this model could be used to support the cooperation between a subset of countries in the region (below the full level of the region) with a view to extend the cooperation in the future to a full regional model.

Model 3 : Joint regional or International Standards development as the preferred approach

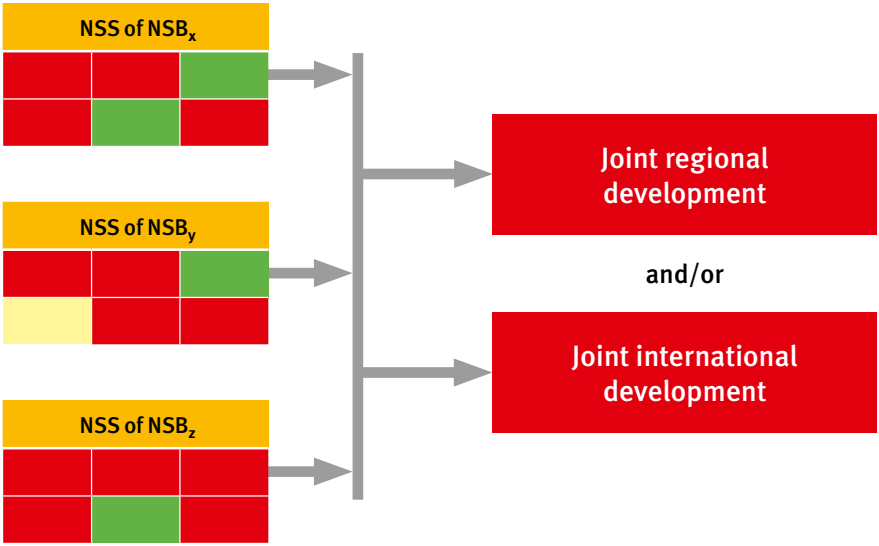


***Figure 30** : Joint regional or international development of standards with common interest as the default*

In this model shown **in Figure 30**, the regional or international cooperation in standards development is the rule and is the approach applied to the development of most standards of the countries in the region. Only a minority of standards are still developed as solely national standards. The preconditions for the application of this model is the existence of a recognized regional standards development institution ; this body would have a functioning governance mechanism and procedural rules that are used and accepted by the NSBs, as well as other relevant parties in the region, and hence provides the basis for regional standards development.

Part 3: Examples from different national standardization strategies

In this part we give some examples from completed or draft national standardization strategies. We will focus on a few areas that are especially important, which are as follows:

- Rationale for the development of an NSS
- Key activities in the development of the standardization strategy, including stakeholder engagement
- Data analysis and the combination of information from different sources
- Expectations regarding the impacts of standards on the economy and society
- Criteria for the selection of standards based on national priorities

As examples, we have selected the national standardization strategies of:

- The Barbados National Standards Institution (BNSI)
- The National Institute for Standards of Armenia (SARM)
- The Gambia Standards Bureau (TGSB)

It should be noted that the examples below are meant for information that demonstrate possible approaches for developing an NSS but do necessarily represent models that should be emulated or even copied.

3.1 Rationale for the development of an NSS

TGSB (The Gambia):

"Standards are a critical tool for the development of all sectors of a country. It drives efficiency and ensures quality in sectoral infrastructural development but also in the delivery of various services and products by all sectors of society. Therefore, standards are needed by all spheres of the economic, social, political and cultural facets of the country. The benefits of standards include but are not limited to the following:

- A basis for regulations and contracts: Standards can be used by private and public actors. Governments can use standards to support regulation in order to address issues of public policy (health, safety, the environment, etc.). Private actors can use standards as a basis for their technical cooperation and to provide a reference for legal agreements in the form of contracts
- Protection of safety, health, property and the environment
- Facilitation of market access and trade
- A basis for assurance and the verification of (quality) claims
- Interchangeability, interoperability
- Variety reduction
- Dissemination of innovative and more sustainable technologies
- Technology transfer and knowledge sharing
- Providing market transparency, e.g. by reducing information asymmetry
- Supporting network effects and the value of interconnected devices
- Optimum solutions to repetitive problems

The development of standards requires use of resources, such as experts in the various fields and adequate staff for the management of the standards development process. It also requires time and financial resources. Additionally, the process requires strong collaboration and communication with stakeholders throughout. In developing countries such as The Gambia, these resources are scarce. Therefore, in order to ensure that standards are available for all sectors and at the right time, standards setting bodies such as TGSB need to put in place a standardization strategy to assure the judicious use of resources and put in place the right mechanisms to develop the standards required by society at each point in time. Although the benefits of standardization exceed the resources expended, priorities should be well defined to ensure that scarce resources are used effectively to satisfy real needs of the country."

3.2 Key activities in the development of the standardization strategy (incl. stakeholder engagement)

TGSB (The Gambia):

"The Standardization Strategy for The Gambia was developed through a sequence of process steps as outlined below. These steps are underpinned by the ISO-recommended methodology for the development of an NSS.

Step 1: ***Determine national priorities for standardization: Socio-economic analysis and stakeholder outreach***

A taskforce was established at the Bureau to lead the process of the development of the NSS. The taskforce collected socio-economic data from relevant institutions and authorities; for example, data on sectoral contributions to the GDP were obtained from Gambia Bureau of Statistics (GBoS), data on sectoral contributions to import and export were obtained from Ministry of Trade, Industry & Employment (MOTIE) and GBoS. Information on national and social priorities were obtained from national documents such as the National Development Plan (NDP); additionally, public opinion was obtained frequently on radio, newspapers and television respectively. In addition to the socio- economic analysis, a stakeholder survey was conducted. Through this activity, all relevant stakeholders were engaged to complete a response form. The responses from stakeholders were then compiled and validated in an input-validation workshop.

Step 2: ***Validation of information obtained from socio-economic analysis and stakeholder inputs.***

A workshop was organized to validate the information gathered from the stakeholders input survey. During the workshop, responses from each stakeholder were presented and confirmed. Stakeholders also considered and validated the results of the socio-economic survey.

Step 3 : ***Identify priority topics for standardization***

Based on the results gathered from the activities of Steps one and two, a list of priority topics for standardization was compiled. This list was consolidated to cover all the responses from the stakeholder and socio-economic surveys.

Step 4 : ***Prioritize and finalize the list of priority topics and map them to already existing relevant international, regional or other standards***

The list of priority topics was mapped to existing international, regional and other standards. This resulted in a complete list of standards to be developed in all the areas identified in the analysis.

Step 5 : ***Identify the final list of standards to be developed in the three-year period***

The final list of standards to be developed in the three-year plan was consolidated and finalized.

Step 6 : ***Calculate the required human resources for the implementation of the plan over a three-year period***

Using the final list of standards as basis, the required human resources for the development of all the standards in the list was calculated.

Step 7 : ***Publish the NSS after validation by stakeholders and official approval by TGSB board***

The Draft NSS was developed and presented to a national validation workshop for approval by stakeholders. The approved strategy was presented to the TGSB Board of Directors for approval and launching."

3.3 Data analysis section and the combination of information from different sources

SARM (Armenia):

Sector	Fields	Average priority rank	Initiator and responsibility
Agriculture and food processing	In general	2.0	Ministry of Agriculture
	Milk and dairy products	5.0	SARM TC 4
	Fruits and vegetables	2.3	SARM TC 3
	Alcohol, brandy	2.3	SARM TC 10
	Meat and meat products	4.5	SARM TC 2
	Soft drinks	3.7	Ministry of Agriculture, SARM TC 3
	Fish, crustaceans and molluscs	4.5	Ministry of Agriculture, SARM TC 2/SC 1
	Coffee and tea	4.3	Ministry of Agriculture, new NTC needs to be established
	Natural mineral water	3.7	SARM TC 8
	Tobacco and cigarettes	4.5	SARM TC 11

Sector	Fields	Average priority rank	Initiator and responsibility
Mining and quarrying	In general	2.0	Ministry of Energy and Natural Resources
	Copper	2.0	New NTC needs to be established with appropriate SCs
	Iron and steel (Ferroalloys)	2.0	
	Aluminium	2.5	
	Molybdenum	3.0	
	Zinc	3.0	
	Gold unwrought	3.5	
Buildings and construction	In general	2.5	Ministry of Urban Development
	Seismic safety of buildings	2.5	Ministry on Emergency Situations, SARM TC 7
	Worked monumental/ building stone&art, mosaic cube, granules	4.5	SARM TC 16, a SC needs to be established
	Cements: Portland, aluminous, slag, supersulfate & similar hydraulic cements	4.5	SARM TC 16
	Energy-efficient design of buildings	3.0	SARM TC 16, a SC needs to be established
Energy	**In general**	3.7	Ministry of Energy and Natural Resources
	Renewable energy (hydro, wind and solar)	3.7	SARM TC 1, a SC needs to be established
	Nuclear energy	3.7	SARM TC 1, a SC needs to be established

Sector	Fields	Average priority rank	Initiator and responsibility
Gas supply	In general	3.5	Ministry of Energy and Natural Resources
	Containers for compressed or liquefied gas, of iron or steel	3.3	SARM TC 5
	Gas supply-quality, measurement, sampling and testing	3.0	SARM TC 5
Information technology and telecommuni-cations	In general	3.0	Ministry of Transport and Communication
	Cards and personal identification	3.0	SARM TC 6
	Telecommunications and information exchange between systems	3.0	SARM TC 13
Chemical/ Pharmaceutical	In general	3.7	Ministry of Economy
	Paints and varnishes	5.0	SARM TC 9
	Chemistry	4.0	SARM TC 9
	Medical and pharmaceutical production	3.7	New NTC needs to be established

Sector	Fields	Average priority rank	Initiator and responsibility
Tourism and services	In general	2.5	Ministry of Economy
	Services for consumers	2.7	New NTC on consumer issues needs to be established
	Recreational areas, parks and green areas	2.0	New NTC on tourism issues needs to be established
	Hotels and restaurants	3.5	
	Tourism and related services	3.0	
Electrotechnical	Electricity in general	3.3	Ministry of Energy and Natural Resources, national electrotechnical board needs to be established
	Electromagnetic compatibility	4.3	SARM TC 19
	Electrical equipment designed for use within certain voltage limits	4.3	SARM TC 20
Health and safety	In general	2.0	Ministry of Healthcare
	Medical laboratories	2.0	New NTC on healthcare issues needs to be established
	Quality of health services	1.0	
	Human disabilities – ensuring accessibility	3.0	Ministry of Labor and Social Affairs, new NTC needs to be established

Sector	Fields	Average priority rank	Initiator and responsibility
Transport	In general	2.0	Ministry of Transport and Communication
	Road traffic safety	1.7	SARM TC 12
	Public transport	1.0	SARM TC 12
Environment	In general	1.0	Ministry of Nature Protection
	Environmental management	2.0	SARM TC 14
	Water quality	2.0	SARM TC 8
	Environmental impacts identification	2.0	SARM TC 14
	Waste treatment	2.0	SARM TC 14
Conformity assessment	In general	2.5	Ministry of Economy, SARM TC 21
Financial services	In general	3.0	Central Bank of Armenia, new NTC needs to be established
Other	Horology	3.7	New NTC
	Plastics	3.3	SARM TC 9
	Jewelery	3.0	New TC
	Textile	3.3	New TC

TGSB (The Gambia):

Sector	Sub-sector	Field	Economic importance			Non-economic importance		Rank
			GDP	Export	Import	Social imp.	Future plan	
AGRI-CULTURE	Food	Crops	1*	1*	4		1	1
		Livestock and Meat products	2	5	3		1	2.8
		Fish and Fishery products	3	4	5		1	3.3
		Processed Food	1	3	4	1	1	2
	Forestry	General	4	3	3	2	1	2.6
INDUS-TRY	Mining and Quarrying	General	3	5	1*	2	1	1
	Manufacturing	General	2	5	3	2	2	2.8
	Petroleum	General			1*		1	1
	Electricity and Gas	General	3	5	3		1	3
	Construction	General	3	5	3	2	1	3
SER-VICES	Wholesale and retail trade	General	1*	1	1	1*	3	1
	Hotels and restaurants	General	3			3	1	2.3
	Transport, storage, communication	General	1			1	1	1

Sector	Sub-sector	Field	Economic importance			Non-economic importance		Rank
			GDP	Export	Import	Social imp.	Future plan	
SER-VICES	Financial intermediation	General	2			2	1	1.7
	Real estate, renting and business activities	General	1			2	2	1.7
	Public administration	General	3			3	1	2.3
	Education	General	3			1	1	1.7
	Health and social work	General	3			1	2	2
	Other com-munity, social and personal services	General	3			2	3	2.7
	Metrology	General					1	1
ENVI-RON-MENT	Waste Management	General				1*	1	1
	Flooding	General				1	1	1
	Littering	General				2	1	1.5
	Climate Change	General				1*	1	1
	Open Defecation	General				3	3	3
	Organic Chemicals	General				3	3	3

Sector	Sub-sector	Field	Economic importance			Non-economic importance		Rank
			GDP	Export	Import	Social imp.	Future plan	
SOCIAL	Sexual Harassment	General				4	2	3
	Child Trafficking	General				3	2	2.5
	Illegal Migration	General				1	4	2.5
	Child Marriage	General				3	2	2.5
HEALTH	Medical Drugs	General				2	2	2
	Traditional Medicine	General					2	2
	Veterinary Drugs	General					2	2
	Public Health	General					3	3

3.4 Expectations regarding the impacts of standards on the economy and society

BNSI (Barbados):

Sector	Field	Expected benefits
Tourism	Health & wellness	• Improved quality of service • Improved competency of service providers • Increased competitiveness of tourism product • Enhanced operational efficiencies • Increased market opportunities • Increased user confidence in the protection of people
Services	Customer satisfaction	• Improved visitors' satisfaction • Improved quality of services • Improved competitiveness of service providers • Increase competitiveness of tourism product
Financial services	Banking & insurance	• Improved operational efficiencies • Enhanced consumer confidence in the banking sector • Improved harmonization with the international banking systems • Reduce fraud and crime in the marketplace

Sector	Field	Expected benefits
Construction	Building components, quarry materials, steel products, engineering	• Improved quality of construction materials • Increased consumer confidence in the construction industry • Improved safety of buildings • Reduced cost of construction
	Safety	• Improved quality of construction materials • Increased consumer confidence in the construction industry • Improved safety of buildings • Reduce occupational safety and health issues
Renewable energy	Solar energy	• Improved quality of heating collectors • Improved market access for solar heaters • Improved economic performance of the manufacturing sector
	Photovoltaic systems, wind power, biofuels	• Provide support to the uptake of PV systems, wind turbines and biofuel by the public • Provide knowledge to consumers on renewable energy systems • Protect consumers • Realize energy benefits from renewable energy systems
Environmental health	Indoor air quality	• Reduce absenteeism due to building air quality • Harmonizes sampling, testing and reporting of indoor air quality
Energy management	Electrical products	• Introduce energy saving products to the public • Protect consumers from sub-standard electrical products • Promote energy management systems
Consumer products	Consumer safety	• Protect consumers from sub-standard products

Sector	Field	Expected benefits
Manufac-turing	Garments	• Introduce new technologies to the industry • Provide quality requirements to meet export markets
	Furniture	• Improve quality of products to access export markets • Address safety of consumers
	Tobacco	• Provide quality characteristics for products
Electrical & electronics	Electrical components	• Maintain the quality of exported electrical materials • Assure the safety of consumer electronics
Jewellery	Articles & parts	• Provide quality characteristics for exported articles • Provide protection for consumers
Oil & gas	Machinery	• Address the safety of personnel using equipment • Address performance requirements for equipment • Harmonizes sampling and testing regimes for petroleum
	Environmental management	• Promote the use of environmental management • Protect the marine environment from pollution
Food/agro-processing	Food & beverage	• Increase market access • improve safety and quality of products • increase consumer confidence in exported products • increase national export and contribution to GDP • increase employment in the sector

SARM (Armenia):

Based on detailed assessment of priority sectors of the Armenian economy, non-economic factors and stakeholders' interests and needs in standardization, SARM carried out a comparative analysis of priorities and formed the following list of standardization sectors for the next three years. All the above-mentioned sectors have specific interests to apply modern technologies, ensure safety and quality of goods and services, become internationally competitive and attractive for new investments. We address in our standardization plan those interests and will promote the application of appropriate standards. Further, the **Annex** presents the detailed table of standards proposed for development in the appropriate sectors.

Agriculture and Food processing

Agriculture is a major sector for the Armenian economy, accounting for 18 % of the country's GDP for the years 2006-2010. Armenia has a fast-growing food processing sector with excellent export potential based on ecologically friendly " green " agro-products. As one of the country's most developed sectors, and the second in terms of export volumes (14 % of the total), food processing plays an important role in the economy. The most important products are canned food production, and alcoholic beverage production, especially wine and brandy made from locally grown grapes.

Armenia's principal food processing exports are alcoholic beverages, fish, cheese, canned fruits, jams, coffee, and mineral water. Some exporters also ship frozen fruits and vegetables. Armenia's soil and climate conditions, high altitude, and limited use of chemical fertilizers account for flavoursome produce. This produce can be successfully introduced to international markets, when using modern processing and packaging technologies that are currently used to export such Armenian products as soft drinks, mineral water, cigarettes, alcohol, canned fruits and vegetables, milk and dairy products, meat and meat products, and mixed feed.

The standardization plans of the previous years have been mostly focused on this sector. Within the standardization plan, we will continue to explore the opportunities for development of standards with modern technologies and best management practice in agricultural production and processes.

The main benefit from standardization work is its contribution to cementing the confidence among the different stakeholders operating in the feed and food sectors. This requirement is becoming more and more important, especially from consumers, considering the problems encountered recently in the feed and food sectors. In practice all food standards are relevant. For example:

- Management systems standards ensure that food is safe at the time of consumption
- Terminology ensures that the different partners communicate without risk of misunderstanding
- Methods of testing and analysis ensure that the test results provided are reliable and comparable
- Product specifications ensure that the minimum requirements are the same all over the world and facilitate fair practices in international trade of commodities

In addition to the benefits mentioned above, harmonization of test methods combined with the development of product specifications reduces the number of analyses to be performed in order to export to several different countries, therefore opening new markets and reducing costs. Furthermore, if the methods of testing are up-to-date and answer the needs of regulations as well as consumers' expectations and are publicly available, then this reduces the cost of the development of products, and hence contributes to cost savings. The development of internationally accepted standard methods for the detection and determination of genetically modified organisms in food and feed products can be effective tools to remove technical barriers to their trade.

Finally, the development of standards for safety management systems ensures that the foods are safe at the time of consumption. With the same reference document all around the world, this avoids, for example, multiple certifications.

For new technologies in the food sector, standardization work can provide assurance for the products, which in turn builds consumer and user confidence. In that field, SARM has published, for example, several harmonized national standards for the identification and the determination of genetically modified organisms, therefore contributing to the enforcement of such regulations.

Mining and quarrying

The subsurface of Armenia is rich in certain mineral resources. More than 480 deposits of a range of mineral resources have been discovered here. Mining is a key contributor to the Armenian economy and is one of the fastest growing exporting sectors in recent years, with ores and metals accounting for over half of the country's exports. Armenia has rich deposits of iron, copper, molybdenum, lead, zinc, gold, silver, aluminum, and nepheline syenite.

Currently there are seven copper-molybdenum mines, three copper mines, thirteen gold and gold-polymetallic mines, two polymetallic mines and two iron-ore mines operating in Armenia. Environmental protection is amongst the key challenges for the sector. In view of this, the standardization plan will give preference to the standards with the most up-to-date and safest technologies for the mine development programmes. In particular, sulfide concentrates are produced at various particle sizes, having different base metal and moisture contents and other chemical and physical characteristics that are used to evaluate and define the particular properties of the concentrate.

Concentrate price is commonly settled by the base metal content. To evaluate a concentrate consignment, the base metal and moisture contents, as well as the total mass, must be determined.

Therefore, it is imperative to have practical sampling and sample preparation methods based on scientific principles to collect and prepare representative samples from a batch. Such samples can then be tested using reliable standard methods for measuring base metal and determination of moisture content.

International Standards prepared by ISO for sampling and chemical analysis ensure fair trade and a competitive supply of sulfide concentrates. The ISO standards also take into consideration the environmental impacts and the safety and health of workers in the industry.

Benefits expected from the national standardization activities include the following:

- Development of acceptable and validated standard methods in the most economical, scientific and practical way
- Eliminating, or at least mitigating, those barriers to sulfide concentrate trade caused by differences in standards, while assisting in furthering the aims of the *World Trade Organization (WTO) Technical Barriers to Trade (TBT) Agreement*
- An ability to respond quickly to the need for new or revised standards resulting from the development of new and improved metal production technologies and instrumentation to measure quality characteristics

Buildings and Construction

Construction is another large sector of the economy, making an average contribution to GDP of 17 % during the last five years. It also ensures a significant employment rate in the economy and attracts large investments. The efficiency of construction activities, the application of modern technologies for producing construction materials, as well as operational safety of employees engaged in various construction activities, are among the most important issues that are ideal for standardization.

The construction industry is well known as the largest industrial employer, and one of its particular characteristics is its function as a generator of employment

for suppliers. The so-called "multiplier effect" is such that one person working in the construction industry gives rise to two further jobs in other sectors. In Europe, for instance, this means almost two million firms directly employing a work force of 11 million. In other continents with less automation, the construction industry employs even more people and is usually a local activity.

The industry is known for having a low-technology level and low profitability. The construction industry has a great potential for change, higher effectiveness, better profitability and increased international trade. A paradigm shift is currently taking place in the sector as far as the use of building information models and supporting software is concerned. It is estimated that about 30 % of the building project costs can be eliminated by improving the data handling and information flow between actors and within the process of planning, designing and building.

Established standards for construction have little direct impact upon production, but greater impact on the overall conditions for the industry. These facts have traditionally made the development of the building industry more dependent on the initiatives of governments, industry organizations, and research establishments, for example, than standardization in other fields, where the industry has more direct benefit from standardization.

The review and implementation of standards will be of great importance in the construction sector, with regard to:

- Terminology
- Dimensional coordination
- Performance criteria
- Digital framework and a classification system of building construction information for the open market
- Lifecycle cost analysis
- Accessible and usable building design for all
- Sustainable building construction
- Processes, procedures and methods for construction procurement systems

The continuing focus on sustainable development issues has particularly highlighted topics concerning:

- Environmental declarations of building products
- Design life of buildings
- Durability
- General principles and responsibilities independent of private and public authorities
- Guidelines in designing accessibility for all

By the extensive adoption and use of standards in the built environment, considerable savings in time, materials and moneys can be achieved. In addition, application of indoor environmental standards will help to assure the health, productivity and wellbeing of building occupants. Healthy, sustainable buildings are those that create high quality indoor environments while minimizing their impacts on the outdoor environment. Emissions of carbon dioxide to the atmosphere could be reduced significantly through the application of International Standards relating to the energy-efficient design of buildings and building mechanical equipment.

SARM will emphasize the measured performance of healthy and sustainable buildings and practical methods for their design, construction, operation and maintenance.

Energy

Energy is one of Armenia's most fully operational and cost-effective sectors, and the country is nearly self-sufficient in energy. Lacking industrial fuel resources, Armenia places a high emphasis on development of its own renewable energy sources, such as hydro, wind and solar energy. Among the renewable energy sources, the most wide-spread and efficient structures are hydro power plants. However, as stakeholders report, application of modern technologies (standards) for improving operational efficiency thereof is an urgent and required issue. Disposal and safeguarding of the current Nuclear Power Plant and construction of

new one is on the agenda of Government, which creates new needs for appropriate safety and efficiency standards.

Developing carbon neutral technologies and making a better and more rational use of energy and other natural resources have become essential for sustainable development of our society. In addition, Armenia is going through a process of opening of utilities markets including those for electricity and gas.

Standardization can play a role in meeting these challenges by promoting best practices, helping the development of renewable energy (RE), improving energy efficiency and providing tools to optimize installations and systems. In a context characterized by liberalization and the creation of an Armenian market for electricity and other utilities, standardization can also play a role in achieving cost effectiveness, efficiency and quality as well as interoperability and equal access of suppliers to the infrastructure.

Standardization can contribute to this objective by promoting best practices and providing authorities and private organizations with the tools to design sound policies, optimize installations and systems and improve energy efficiency. Standards can also support existing Armenian legislation and policy objectives in the area of energy.

Special attention will be given to the renewable energy sector (water, solar, wind). Large scale use of RE is important for the future for several reasons : to eliminate dependence on fossil fuels, to combat global warming, and to raise the living standard of people in Armenia. Much of RE is an emerging field of research, technology and manufacturing and a new industry is emerging.

Standardization helps these technologies to become marketable by providing a foundation for certification systems, promoting international trade for uniform high quality products and supporting transfer of expertise from traditional energy systems. The very nature of the RE technologies means that standardization requires a dedicated effort to keep pace with developments in the various fields.

It is against this backdrop that SARM is working to set the standards that can serve the country in this market sector. Our mission is to provide technical performance and safety standards in the field of RE as well as certification schemes when needed, thereby providing an essential tool for establishing a quality level to protect customers everywhere.

Gas supply

The Armenian economy is heavily reliant on gas supplies from Russia and newly constructed alternative sources from Iran. Huge investments have been made by government to construct gas-storage facilities and to enlarge the gas-supply network for households. Standardization in this field will be directed towards the implementation of safety and efficiency standards in gas supplies. These standards include terminology, quality specifications, methods of measurement, sampling, analysis and calculation and testing.

These standards include the supporting tools for delivery contracts between companies that operate in exploration, transportation, trading, distribution, as well as industrial and individual end users. Instead of negotiating natural-gas quality and measurement methods for each contract, referring to International Standards provides a straightforward framework. Furthermore, International Standards serve as supporting tools for regulations in the field of natural gas.

The importance of standards for the natural-gas industry is growing with the increasing availability and consumption of natural gas and the increasing international trade in this resource. International Standards are being used to support the liberalization of the gas markets, energy efficiency, environment protection and safety.

Information technology/telecommunications

The information technology (IT) and telecommunications sector is one of the most productive in Armenia. The Government has declared IT a priority and is supporting it through various institutions, such as the IT Development and Support Council, chaired by the Prime Minister, and the Enterprise Incubator Foundation.

Armenia's IT and telecommunications industry has already attracted global brands such as Synopsis – which has located a considerable part of its operations in Armenia as well as Microsoft, National Instruments, Mentor Graphics, Ericson, and Orange. Currently, there are more than three hundred IT and telecommunications companies in Armenia.

The world economy is moving from a predominantly industrial society to a new digital economy and is becoming ever more information based. It is, therefore, crucial for competitiveness and success in business to improve the systems used to access and distribute information and the technologies that drive them.

Information and Communication Technologies (ICT) applications, such as electronic invoicing, car navigation or flight booking systems are also radically changing the way companies and governments work or individuals enjoy their leisure time. The promise of the new technologies is real. However, ICT applications will not reach their full potential unless they and their supporting infrastructures are fully interoperable. This is the role of standards.

SARM proposes the production of ICT standards that support the development of open and competitive markets for the benefit of both consumers and industry. During the last three years, standardization in this sector was very active and a large number of widely-used International Standards have been adopted.

Chemical/Pharmaceutical

Thanks to its tradition of producing high quality chemical products, over the last decade Armenia's pharmaceuticals industry has grown into one of the most dynamic sectors of the economy. Exports account for 57 % of output, and average annual export growth has been 24 % from 2003. Such growth is based on a skilled and highly educated workforce, enthusiastic and effective entrepreneurs, and significant domestic and foreign direct investment.

However, further increase of the sector's exporting potential should be supported by implementation of ISO and European (CEN) standards, directed to promoting marketing and the quality of produced goods.

In addition, safe access to healthcare for patients is now a basic human-right. Through its TCs dedicated to healthcare, and notably to medical devices, SARM develops Armenian Standards setting safety, quality and performance requirements for medical devices that are placed on the Armenian market. Many of them also enable manufacturers to make their medical products compliant with the European legislation in the medical sector, for the ultimate benefit of all citizens.

The specific benefits of standardization can be described as follows:

- **Safety for the patient**: a level of performance for quality and consistency over a long period contributes to the quality of medicinal products, diagnostics and administration devices, thus ensuring the patient's overall safety.
- **The economy**: standardization of components facilitates the availability of those parts worldwide and improves the mechanization (filling and assembly lines).
- **Market access**: harmonized International Standards will enable manufacturers in Armenia to export into highly industrialized countries.
- **Audit**: harmonized International Standards will provide a common platform for the evaluation of products, set up internationally accepted quality

levels, and create a basis for auditing activities, e.g. by notified bodies or test houses.

- **Complementary support**: standards which are updated promptly reflect the state-of-the-art and they complement national regulations. For example, the provision of complementary tests for packaging components that are typically not included in a Pharmacopoeia, e.g. fragmentation tests for rubber closures, and penetration force-tests of infusion sets.

Tourism and services

Tourism is one of the most dynamic sectors of the economy. With its rich historical, cultural and natural resources, Armenia has the potential to offer attractive and competitive tourism products and high quality services. The number of tourist visits to the country has grown annually by 25 % in recent years. In 2011, the number of tourist visits was around 800,000.

Armenia's tourism policy objectives are established by the law of the Republic of Armenia "On Tourism and Touristic Activities" and the *Tourism Development Plan*. However, the most important driver of tourism is the quality of services provided.

Service standards can be used to promote best practices and to spread knowledge throughout the market. Standards can also set benchmarks against which businesses can measure the quality and performance of their own services or the services they are purchasing, thus improving competitiveness and increasing efficiency.

Electrotechnical sector

Developing the electrotechnical sector – and especially products which meet the requirements of EU legislation in this area – is a Government priority. This in turn means a role for electromagnetic compatibility (EMC) standardization in the electrotechnical sector. The external business environment in EMC standardization is strongly influenced by new technologies and industrial trends that create a challenging electromagnetic environment:

- Power and microelectronics with increasing operating frequencies
- Increasing density of electrical, electronic and radio communication equipment operating close to each other

This situation creates strong need for definition and description of the electromagnetic environment and for methods of testing and mitigation. It is the main objective of SARM to create EMC standards which reflect the needs of modern state-of-the-art electrical and electronic products. These standards and other EMC deliverables shall consider the continuous changes in the electromagnetic environment, as well as the challenges resulting from the introduction of new technologies. In this respect, the set of basic immunity standards will be expanded to cover all electromagnetic phenomena relevant to electrical and electronic products and systems. This objective includes providing user-friendly standards to measure electromagnetic emissions and to test the immunity of products with both aspects, taking into account the requirements that aim to ensure the electromagnetic compatibility of products, systems and installations.

The technologies for data processing, telecommunications, and use and control of electrical energy, amongst other technologies, are merging. Therefore, the market requires specifications for compatible insulation, which can then be applied to all parts of equipment. Modern insulating materials and recent technologies in electrical engineering (e.g. electronic circuitry) call for insulation coordination based on all external conditions, electrical and otherwise.

The advanced functionality becomes possible by using the latest developments in electronic information and communication technologies. These new technologies may affect the way requirements and testing methods are specified. The most important trends are the following:

- The extended use of electronic technologies, like digital signal processing, mixed signal circuits and firmware, which may have to be updated during the life of the equipment
- Changes in network conditions and EMC environments due to the growing use of non-linear loads, power lines and radio communications. On the one hand, this requires advanced measurement algorithms to measure power and power quality parameters. Furthermore, better protection is needed against undue influences
- An increased use of interoperable communication and IT technologies, including an increased interaction and integration of systems formerly separated, will be common to most of the smart-measuring technologies

Also, it becomes increasingly necessary to measure different electrical parameters, in order to monitor the required performance in power distribution systems due to:

- Installation-standards evolution, for example, for current detection, is now a new requirement for neutral conductors, due to harmonic content
- Technological evolution (electronic loads, electronic measuring methods, etc.)
- End-user needs (cost saving, compliance with aspects of building regulations, etc.)
- Safety and continuity of operation of power distribution systems
- In the field of sub-metering, sustainable development requirements where energy measurement is recognized as an essential element of energy management. This in turn is part of the overall drive to reduce carbon emissions, and to improve the commercial efficiency of manufacturing, commercial organizations and public services

The standards produced by SARM must be sufficiently flexible to adapt to improvements in manufacturing processes, architectures, materials, and innovations, in order to comply with the user requirements.

Occupational health and safety

Occupational health and safety (OH&S) plays an important role in Armenian legislation and is closely linked with standardization.

Standardization contributes to the improvement of working conditions for health and safety, which is a cross-sectoral issue. This especially concerns the ISO and CEN TCs which develop product standards with OH&S aspects, especially those in support of EU directives for products like machinery, pressure equipment and personal protective equipment. OH&S also concerns ISO and CEN TCs which prepare standards for hazard-oriented generic functions, e.g. in the field of noise, vibration, ergonomics and hazardous substances. Standards are an important tool for integrating OH&S aspects into the workplace.

Transport: Public transport, road traffic safety

The quality of public, passenger transport services results in many complaints from people. This infrastructure still requires further government regulation to guarantee safe, efficient and high-quality passenger transport services through regulated competition. This also guarantees transparency and the performance of public passenger transport services, having regard to social, environmental and regional development factors, or to offer specific tariff conditions to certain categories of traveller, such as pensioners. This approach also helps to eliminate the disparities between transport companies from different communities of Armenia, which may give rise to substantial distortions of competition.

The standards for the public passenger transport sector will provide the following benefits for the operating companies:

- A significant shift towards a quality approach in operations across the business
- A new set of quality criteria introduced for every transport mode and area of service
- New tools available for monitoring and assessing service quality

- Constant feedback and identification of problems, allowing immediate corrective action
- A growing focus on customer satisfaction and a quality-oriented culture amongst staff
- Improved punctuality, better information and better service across the network
- Increased revenue through public subsidies as a result of surpassing quality targets

Environmental management

The management of environmental aspects and impacts has established itself as a cornerstone of effective organizational practice, alongside the management of quality, security, and health and safety issues. Ongoing concerns about environmental issues and sustainable development has significantly affected global practices in recent years, as organizations strive to be responsive to government regulations, shareholder concerns and interested parties' expectations all at the same time.

SARM recognizes the importance of environmental protection and sustainable development for current and future generations, and therefore believes that all standards must take the environment into consideration.

Standards, whether they are product standards, service standards or process standards, all have an impact on the environment. The environmental impact of a product standard, for example, will vary according to the different stages of the product lifecycle that can be distinguished (production, distribution, use and end-of-life). Standardization can play a major role in reducing environmental impacts, by influencing the choices that are made in connection with the design of products and processes.

SARM faces environmental challenges posed by the operational activities of Armenian sectors as well as by developments within the Armenian economy.

The adoption of ISO 14001 in 1995 as an International Standard served to end the proliferation of national, regional and private versions of environmental management systems. The entire ISO 14000 family of International Standards provides management tools for organizations to better manage and communicate about their environmental aspects and to work towards improving their environmental performance and contributing to sustainable development. When used properly, these tools can provide significant advantages and benefits to users in both the private and public sectors, including:

- Improved risk/environmental impacts identification
- Enhanced clarity in understanding requirements and setting objectives and targets
- Greater assurance in meeting regulatory and other requirements
- More specificity in identifying responsibilities and accountabilities
- Increased potential to streamline operations, reduce energy and raw material use and minimize waste generation
- Establishing an environmental strategy that improves environmental performance
- Measuring and communicating improvement in environmental performance
- Promoting an organizational culture that promotes employee involvement
- More consistent and scientifically defensible approach to analysing product attributes
- Providing consumers with greater assurance of the validity of environmental communications

These advantages and benefits contribute directly and indirectly to the organization's commitments to environmental performance and sustainable development.

Conformity assessment

Conformity assessment is the process used to show that a product, service or system meets specified requirements. These requirements are likely to be contained in a standard.

Showing that a product, service or system meets certain requirements has several benefits for trade relations:

- It provides consumers with added confidence
- It gives the company a competitive edge
- It helps regulators ensure that health, safety or environmental conditions are met. The main forms of conformity assessment are certification, inspection and testing

The conformity assessment system in Armenia has undergone major changes during the last two years in the framework of QI reforms. The Government has shifted from mandatory to voluntary certification schemes, and harmonization of all conformity assessment structures to EU practices has been initiated. Most ISO/CASCO standards are currently in revision too. Thus, it is a challenge for standardization to keep the appropriate standards updated and to adopt new standards in the field to assist government reforms and decision making with good knowledge basis and best management practices.

The NSP considers the complete review of existing conformity assessment field standards and adoption of new modern standards in this field.

Financial services

Financial services include : depository institutions, which traditionally are recognized as financial institutions ; non-depository institutions or finance companies ; consumer and commercial lenders that raise funds in the capital markets ; the buying and selling side of the securities markets ; private equity firms ; mutual fund complexes ; central banks ; electronic-clearing networks and other financial intermediaries, and ; mortgage and insurance companies. Financial intermediations are one of the most important priority sectors of the Armenian economy and represent 4 % contribution to the GDP. Thus, the application of international practices and knowledge in the field is considered important in terms of standardization.

Standardization in the field of core banking covers banking functions, customer to bank interfaces, deposit taking, lending, account maintenance and payments.

Standards relative to payment instruments address operations from payment initiation through clearing of payment instructions and reporting. These include the financial operations via card and other digital media used for electronic financial services.

Lending includes the specialist lending associated with trade finance and treasury operations, through to consumer lending in all its forms or lending associated with credit cards.

Rapid advances in computer systems and networking allow financial institutions to record, store, and retrieve vast amounts of customer data with more speed and efficiency than ever before. These advances enable financial services companies and their business partners to use both existing and new technologies in new ways to acquire and process consumer data. New channels such as the Internet and mobile phones introduce new actors in the processing chain.

With these new capabilities, information can be processed in ways that unintentionally impinges on the privacy rights of their customers and partners. These capabilities raise concerns about the privacy of individuals and companies throughout

the financial services processing environments, from the point of sale environments to large networked data processing-centre environments.

Furthermore, regulated industries such as financial services have legal and regulatory requirements that now place additional conditions on technical-decision approaches to how personal information is collected, stored, shared, and used. In particular, the location of data in safe harbours is required and the access to the information by its owner must be granted.

The financial services community recognizes how important it is to protect and not abuse their customers' privacy ; not just because it is required by law, but also because as systems are developed or updated, there is an opportunity to enhance business processes and to provide improved services to customers. For the financial-services community, standardized technologies and processes serve as tools to proactively address privacy principles and practices that facilitate compliance, mitigate risk and become sound business practice."

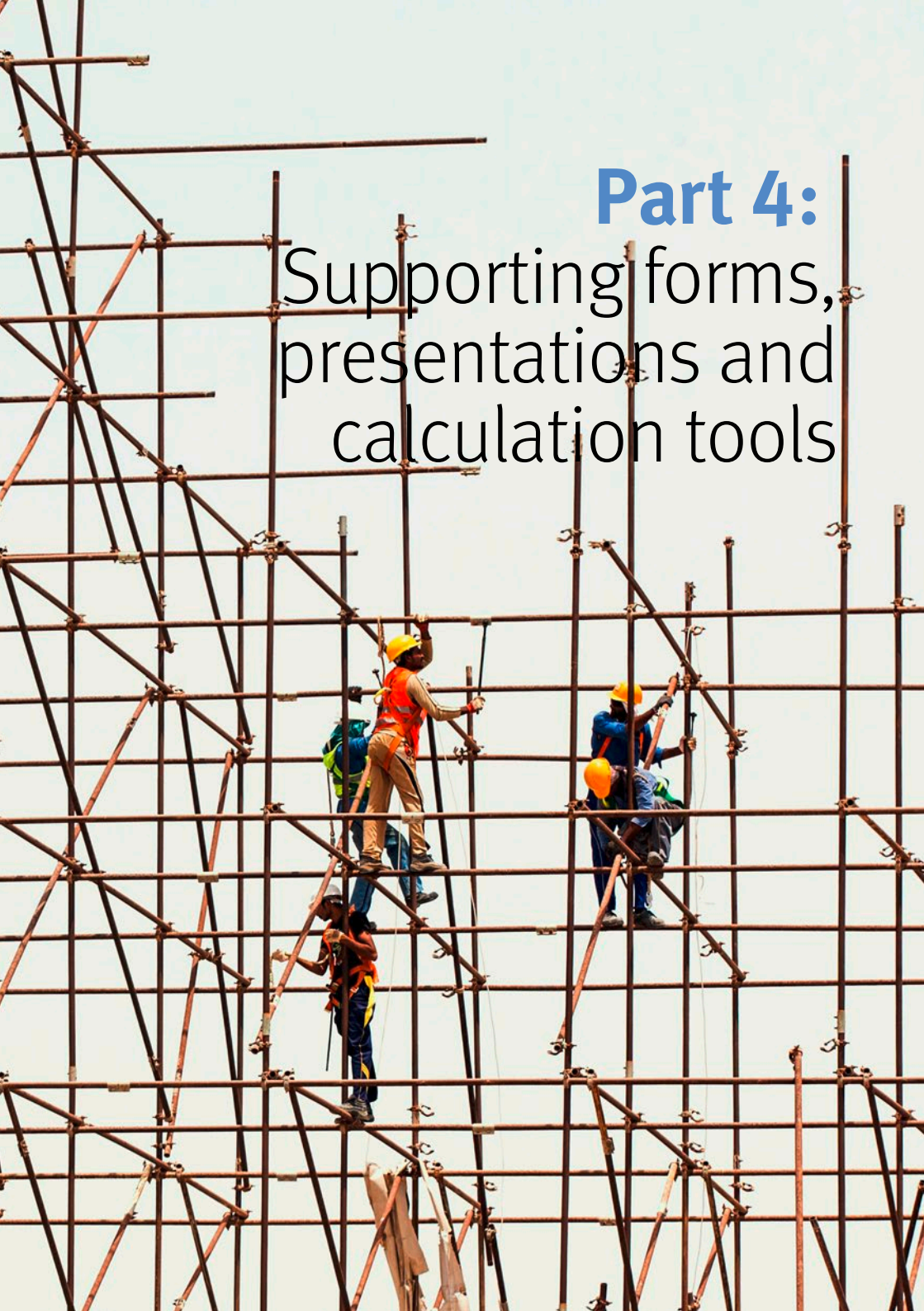
3.5 Mapping of national priorities to standards

TGSB (The Gambia):

"To include a standard in the work programme, consideration will be given to the following factors:

- Government requirements (public procurement, legislation, export promotion facilitation, etc.)
- Potential for removing non-tariff barriers at the regional or international level
- Economic development for the country
- Contribution to national competitiveness
- Impact on environment
- Social impact
- Resources available (human, information and financial)

TGSB may find it useful to apply a list of such factors with their appropriate weighting, as some factors may be more important than others, in order to establish its priority list of standards to be developed."



Part 4: Supporting forms, presentations and calculation tools

Set of supporting forms (see in the next pages)

Form 1 : *key economic sectors in the country by contribution to GDP*

Form 2 : *key economic sectors in the country by exports*

Form 3 : *key economic sectors of the country by imports*

Form 4 : *most important non-economic priorities in the country*

Form 5 : *priorities from national or sector development plans and policies*

Form 6 : *requests received from stakeholders for the development of new national standards, organized by sector*

Form 7 : *final count of requested standards development projects by project type*

Set of supporting presentations

Pres 1 : *purpose and overview of the DNSS-workshop*

Pres 2 : *economic benefits of standards*

Pres 3 : *approach to determining national priorities for standardization*

Pres 4-1 : *stakeholder analysis and stakeholder engagement (general)*

Pres 4-2 : *stakeholder engagement for the development the NSS*

Pres 5 : *consolidating information from different sources into a single classification framework*

Pres 6 : *supporting tool : International Classification for Standards*

Pres 7 : *key sources for the identification of relevant standards and projects*

Pres 8 : *determination of the relevance of existing standards and projects*

Pres 9 : *International Standards and projects – different options for national projects*

Pres 10-1 : *estimating human resource needs for standardization*

Pres 10-2 : *estimating human resource needs for standardization – calculation examples*

Pres 11 : *estimating financial resource needs for standardization*

Pres 12 : *options for the implementation of the national standards development plan*

Pres 13 : *structure of an NSP*

Pres 14 : *analysing and responding to stakeholder feedback*

Pres 15 : *actions in later stages of the SLC*

Pres 16 : *first steps after the workshop – principles*

Pres 17 : *first steps after the workshop – specifics*

Set of supporting calculation tools

Calc 1 : *ranking the priority of a sector, field and subject*

Calc 2 : *international and other standards corresponding to national priority needs*

Calc 3 : *calculation of required resources*

FORM 1: KEY ECONOMIC SECTORS IN THE COUNTRY BY CONTRIBUTION TO GDP

Use of this form: process step 2

N°	Economic sector	Percentage contribution to GDP	Source and date of information
	(For example: Fresh agricultural produce, food processing, textiles, mechanical manufacturing, electrical and electronic manufacturing, plastics, chemical products, etc.)		

GUIDANCE FOR COLLECTING AND FILLING IN THE INFORMATION REQUIRED FOR THIS TEMPLATE:

- In this context, "economic sector" means sectors such as: food processing, textiles, plastics, automotive parts, electrical and electronic engineering, petrochemicals, banking, education, tourism, phosphate mining. Sectors could be in the agricultural, mining, manufacturing or services areas
- Try to use the most recent statistics and those based on current prices, mention the source and date of the statistics you used in the fourth column
- If no percentage values are given by the source of statistics for the contribution of a sector to the GDP, please make a calculation by dividing the value of the output of the sector by the total GDP

Form 2 : Key economic sectors in the country by exports

Use of this form : process step 2

N°	Economic sector	Percentage contribution to Export	Source and date of information

Guidance for collecting and filling in the information required for this template :

- In this context "economic sector" means sectors such as : food processing, textiles and apparel, plastics, automotive parts, electrical and electronic engineering, petrochemicals, banking, education, tourism, phosphate mining. Sectors could be in the agricultural, mining, manufacturing or services areas
- Try to use the most recent statistics based on current prices. Mention the source and date of the statistics you used in the fourth column
- If no percentage values are given by the source of statistics of the contribution of a sector to national export earnings, please calculate this percentage by dividing the value of the exports of the sector by the total exports of the country

Form 3: Key economic sectors of the country by imports

Use of this form: process step 2

N°	Imported commodity, product or group of products	Percentage of National Imports	Source and date of information

Guidance for collecting and filling in the information required for this template:

- In this context "commodity, product or group of products" means products such as: staples, food items, medicines or other vital products being imported into the country that represent a vital resource for sustaining the health and safety of the population
- Try to use the most recent statistics based on current prices. Mention the source and date of the statistics you used in the fourth column. Include only vital commodities/products
- If no percentage values are given by the source of statistics of the contribution of a sector to national export earnings, please calculate this percentage by dividing the value of the imports of the commodity/product by the total imports of the country

Form 4: Most important non-economic priorities in the country

Use of this form: process step 3

N°	Non-economic priority	Situation surrounding the problem and time

Guidance for collecting and filling in the information required for this template:

- In this template, please list the major non-economic problems that can be addressed with the help of standards. These could be health, safety or environmental issues. Other problems such as unemployment due to lack of standards, may be causing serious social impacts
- Examples of such non-economic problems are: explosions and fires caused by faulty gas cylinders or gas appliances, electric shocks and fires caused by faulty electric components and installations, health problems caused by sub-standard food and medical equipment (such as hypodermic needles, syringes, condoms, pace makers etc.), illegal logging, and waste-treatment, pollution from different sources
- Information about such problems can typically be obtained from the media. Please record the problem and apply one of the following categories:
  - Very serious and urgent problem, public outcry
  - Serious problem, common occurrence, media attention
  - Serious problem, some media reports
  - Problem localized, no media reaction
- Other issues
- Optionally give also the time of the occurrence of the problem/incidents

Form 5 : Priorities from national or sector development plans and policies

Use of this form : process step 4

N°	Sector or issue to be developed under National development plan or policy	Importance and Chances of occurrence

Guidance for collecting and filling in the information required for this template :

- The purpose of this template is to identify economic sectors or issues that are expected to grow in importance due to substantial investments by the Government or the private sector, that are expected to be made during the time of implementation of the Plan for Standards Development
- The sources of information for these sectors are the national plans for economic and social development, where they exist, or reliable prognosis based on factual evidence
- Relevant information may be found on the Website or publications of respective ministries, industry associations or the Central Bank

When completing the form, please apply for each of the items the following categories :

- Expected to gain great importance in the near future
- May gain importance shortly, provided certain conditions are fulfilled
- Expected to gain some importance in the medium term
- Expected to gain some importance in the long term
- Other sectors or issues

FORM 6 : REQUESTS RECEIVED FROM STAKEHOLDERS FOR THE DEVELOPMENT OF NEW NATIONAL STANDARDS, ORGANIZED BY SECTOR

Use of this form : process step 6

Sector	Field	Subject	Proposer	Priority

GUIDANCE FOR COLLECTING AND FILLING IN THE INFORMATION REQUIRED FOR THIS TEMPLATE :

- In this context **Sector** refers to economic sectors such as : food processing, textiles and apparel, plastics, automotive parts, electrical and electronic engineering, petrochemicals, banking, education, tourism, phosphate mining, etc.
- **Fields** are sub-sets of sectors such as : dairy products, men's clothes, primary plastics, electric installation in buildings, hotels, etc.
- **Subjects** are subjects for an individual standard such as cottage cheese, plugs and sockets, polyethylene sheets, centrifugal pumps for petrochemical industry, Personal Identification Number (PIN) management and security

- Please indicate the formal requests received from stakeholders and not just opinions expressed orally. Proposals from TCs should also be recorded. If no requests were received, then leave this template empty
- Fill-in the priority column, if stakeholders were asked to assign priorities to their requests for new national standards. A simple priority ranking could be from one to five, with one being the highest priority and five the lowest. The priority indicated should be the average calculated for all stakeholders that proposed the same subject. If another priority ranking system was used, please indicate it

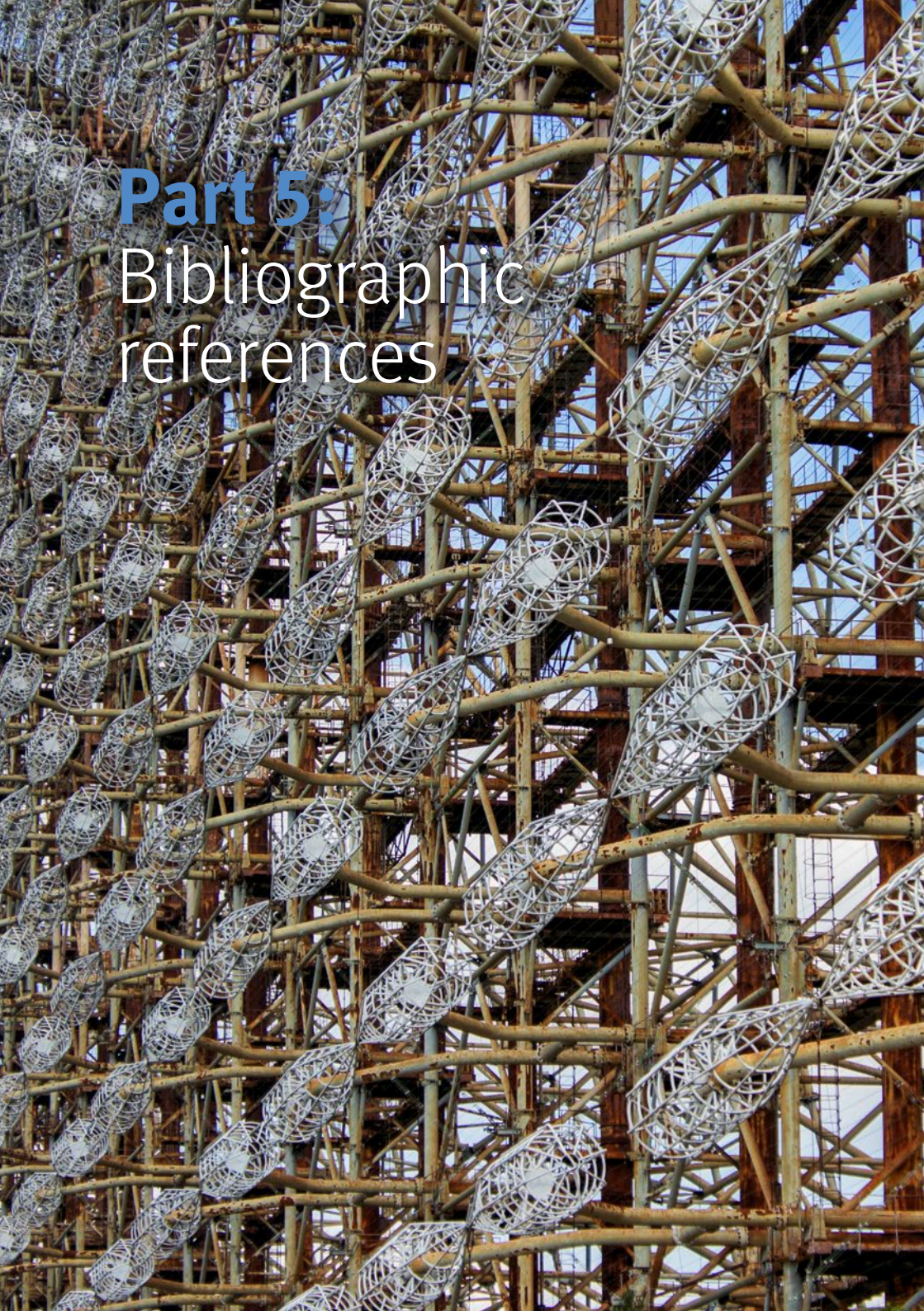
FORM 7: FINAL COUNT OF REQUESTED STANDARDS DEVELOPMENT PROJECTS

Use of this form: process steps 7 and 10

Sectors (data below is given as examples only)	Total number of national projects	
	Type of project	Number
Food and agriculture (including crops, fresh produce, meat, dairy & poultry, processed foods & beverages, forestry and fisheries)	Ad	
	Ev	
	Ac	
	Mo	
	Na	
Textiles, garments and footwear (including fibre and yarns, fabrics, garments and articles of apparel, footwear)	Ad	
	Ev	
	Ac	
	Mo	
	Na	
Chemical & petro-chemical industries (including plastics, rubber, soap & detergents, paper, leather, paints and varnishes, glass and ceramics, petroleum products)	Ad	
	Ev	
	Ac	
	Mo	
	Na	
Engineering industries (including mechanical & automotive industries, electrical & electronic industries)	Ad	
	Ev	
	Ac	
	Mo	
	Na	

Sectors (data below is given as examples only)	Total number of national projects	
	Type of project	Number
Building construction, materials and components (including building design, cement, gypsum, concrete, doors and windows, wood-based panels, fibre boards)	Ad	
	Ev	
	Ac	
	Mo	
	Na	
Services (financial services, hospitality and tourism services, healthcare and medical devices)	Ad	
	Ev	
	Ac	
	Mo	
	Na	
Environment and energy conservation (including environmental management, natural-disaster preparedness, solar energy and other renewable energies, energy conservation measures and devices)	Ad	
	Ev	
	Ac	
	Mo	
	Na	
Total # of projects		
# of adoption projects (**Ad**)		
# of evaluation for adoption projects (**Ev**)		
# of active participation projects (**Ac**)		
# of monitoring projects (**Mo**)		
# of national development projects (**Na**)		

Ad = Adoption **Ev** = Evaluation for adoption **Ac** = Active participation
Mo = Monitoring **Na** = National development



Part 5: Bibliographic references

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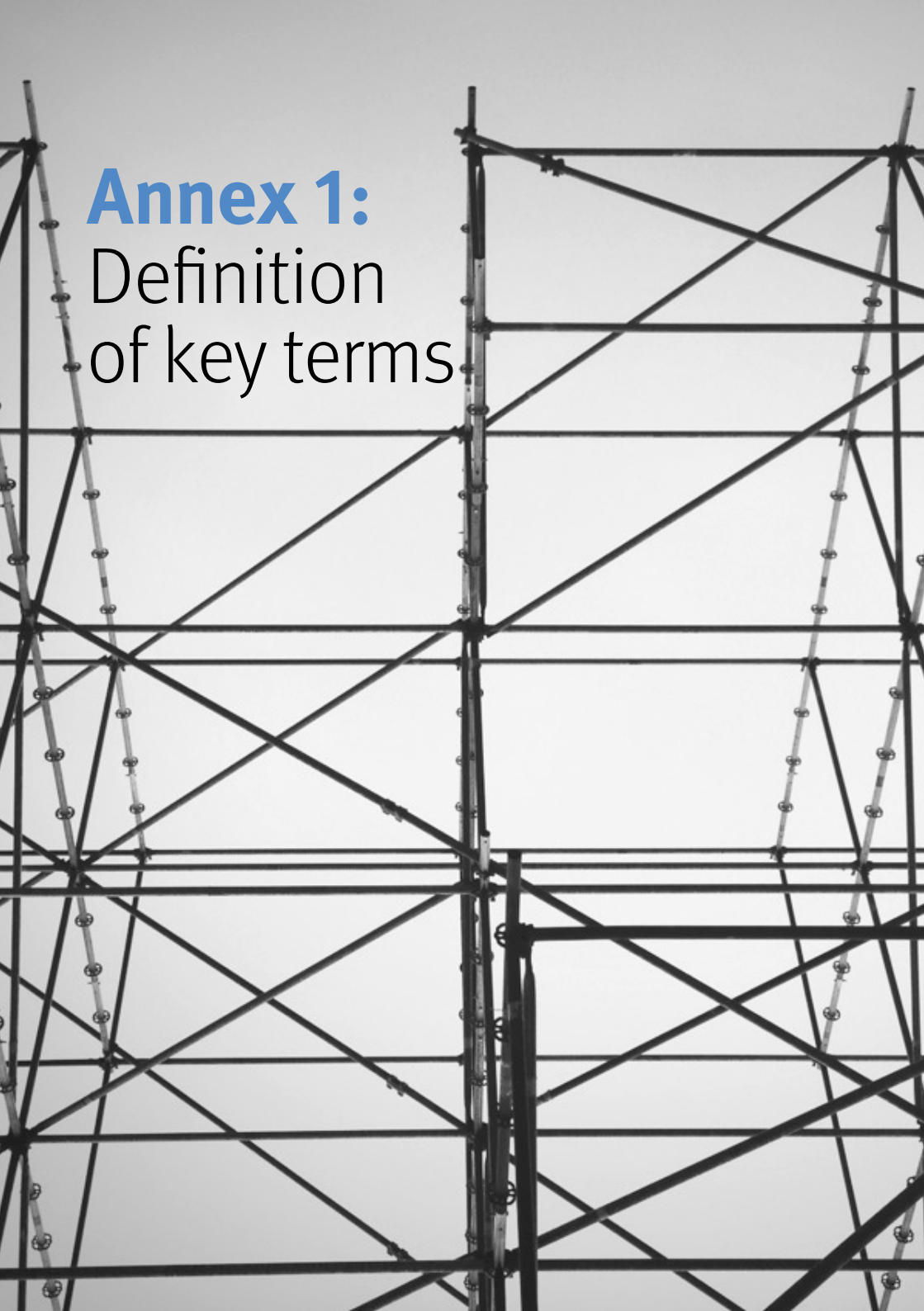
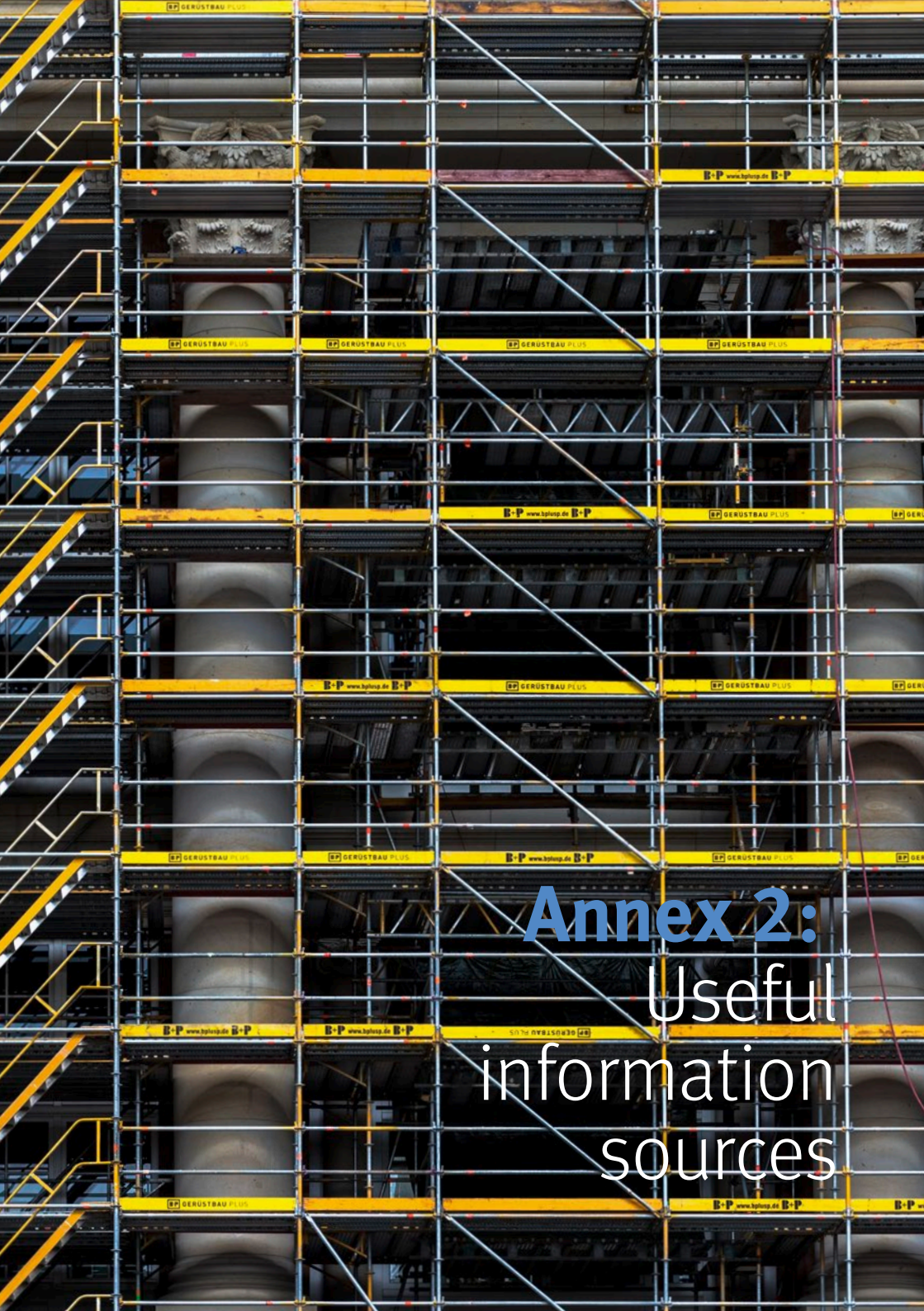
Annex 1: Definition of key terms



A.1 Definition of key terms

Term	Abbr.	Definition
Gross Domestic Product	**GDP**	Monetary value of all the finished goods and services produced within a country's borders in a specific time period. GDP is usually calculated yearly but can also be calculated quarterly.
International Classification for Standards	**ICS**	Classification system for standards developed by ISO, intended to serve as an organizational structure for catalogues of international, regional and national standards, as well as other normative documents. The ISC is also a basis for standing-order systems for such standards. It may also be used for classifying standards and normative documents in databases, libraries, etc.
National Standards Body	**NSB**	Standards body recognized at the national level, that is eligible to be the national member of the corresponding international and regional standards organizations.
National Standardiza-tion Strategy	**NSS**	Strategy developed under responsibility of the NSB and formally approved by its governing body. The NSS identifies priorities for the development of national standards based on an identification of national needs and priorities, to whose attainment standards may contribute key services. A core element of an NSS can be an NSP.
National strategic plan (of an NSB)	**–**	Overall plan for the activities of an NSB for a defined number of years. The strategic plan may include the NSS, if the NSB is also involved in other initiatives such as product testing, certification etc.
Sector	**–**	Large sector of economic activity, such as agriculture, automotive industry, transport industry, tourism, health care services etc. A sector (level 1) is often subdivided into several fields or subsectors (level 2) and further into subjects (level 3).

SMEs	**–**	Small and medium-sized enterprises.
Standardization Life Cycle	**SLC**	Full process from need identification for standards through their development (supported by an NSS), capacity-building and promotion, their use and implementation, to the monitoring of their impacts and their revision or further promotion.
National Standardization Plan	**NSP**	Plan that contains a list of priority standards for development (through adoption, national development or participation in regional or international standardization projects), together with a project plan and deadlines for the implementation, as well as a resource plan. A standardization plan can be a core element of an NSS and typically lasts for three years.
Subject	**–**	Area within a field (or subsector) that can be covered by one or more standards. A subject may have a similar scope as a topic (of a standard) so that a subject can be mapped to the topic of a standard. However, in many cases, a direct mapping is not possible, and a subject may have to be translated into a set of relevant topics of standards.
Subsector	**–**	Subdivision of a sector can also be referred to as a subsector. Example: dental services are a field (subsector) within the health care services; the tyre industry can be considered as a field (or subsector) within the automotive industry.
Topic	**–**	Core content of a standard which is often expressed in its title. A topic may directly correspond to a subject or not (e.g. for use in the search for relevant standards that match a priority subject or priority field).



Annex 2: Useful information sources

A.2 Useful information sources

Sources of national economic, social and trade data

- National statistical offices
- National ministries of industry, the economy, agriculture, education, planning

International sources of data on GDP, trade, non-tariff measures etc.

- International Trade Centre (ITC) **www.intracen.org**
- Trade information by products, country and region **www.trademap.org**
- Market Access Map – Information about regulations **www.macmap.org**
- Standards Map – Sustainability-related Standards **www.standardsmap.org**
- Same as Standards Map **www.sustainabilitymap.org**

World Bank

- Homepage of the World Bank **www.worldbank.org**
- Country information **www.worldbank.org/en/country**
- Statistical information **http://data.worldbank.org/**
- Trade information, regulations **http://wits.worldbank.org**

World Trade Organization (WTO)

- Homepage of the WTO **www.wto.org**
- SPS and TBT notifications and Specific Trade Concerns **http://i-tip.wto.org/goods**
- Information about commitments under the GATS Agreement on services **http://i-tip.wto.org/services**
- Notifications under the SPS Agreement **http://spsims.wto.org**
- Notifications under the TBT Agreement **http://tbtims.wto.org**
- WTO statistics on trade and tariffs **www.wto.org/english/res_e/statis_e/statis_e.htm**

United Nations Conference on Trade and Development (UNCTAD)

- Homepage of UNCTAD **www.unctad.org**
- Information on non-tariff measures and technical regulations (NTMs) **http://trains.unctad.org/**
- UN Comtrade Database **https://comtrade.un.org/**

Organization for Economic Co-operation and Development (OECD)

- OECD **www.oecd.org**

International Standards Bodies

- IEC (International Electrotechnical Commission) **www.iec.ch**
- CEN (Committee for European Normalization) **www.cen.eu**
- ILO(International Labour Organization) **www.ilo.org**
- IPPC (International Plant Protection Convention) **www.ippc.int**
- ISO (International Organization for Standardization) **www.iso.org**
- ITU (International Telecommunication Union) **www.itu.int**
- OIE (The World Organization for Animal Health) **www.oie.int**
- FAO/WHO/Codex
  (Food and Agricultural Organization/
  World Health Organization/
  Codex Alimentarius Commission)
  www.fao.org/fao-who-codexalimentarius
- UNECE
  (United Nations Economic Commission for Europe) **www.unece.org**

International Classification for Standards (ICS)

- ICS **www.iso.org/iso/international_classification_for_standards.pdf**

Annex 3: Communicating to stakeholders the benefits of standardization

A.3 Communicating to stakeholders the benefits of standardization

This annex summarizes some of the key messages about the benefits of standards and standardization, when communicating with stakeholders. Such messages can then be used with the aim of encouraging stakeholders to participate in standardization work and the development of the NSS. Although more categories can be distinguished (**see Chapter 1.4.4, Table 4**), we focus here on key messages to the following five groups of stakeholders:

- The private sector
- Professional services and academia
- Consumers
- Governmental agencies and public authorities
- Non-governmental organizations (NGOs), business support organizations (BSOs); and financial institutions

A.3.1 Key messages to companies and the private sector

- Knowing and understanding standards is important for the strategic planning of a company
- Knowing which standards are under development allows companies to adapt products early, have a business advantage and to save money
- There is the possibility to influence the content of standards
- Regulators use standards often as a basis for (mandatory) regulations. Compliance with standards may be one means to meet the requirements of regulations
- Reducing the variety of materials and products used, by applying standard, leads to efficiencies and hence savings

- Easier and more reliable ordering and purchasing processes by referencing standards
- Faster delivery of inputs and supplies
- Simpler contracting with suppliers, customers and other business partners
- Support for production in multiple sites
- Easier cooperation with other companies, facilitation of the entry into national and transnational value chains
- Optimization by using state-of-the-art know-how
- Easier access to export markets
- International alignment by using International Standards as the basis of national standards
- International acceptance of test results

A.3.2 Key messages to professionals and academia

- Standards are an important source of know-how and represent proven results of research and development and recognized best practice in a subject field
- Participation in standardization provides access to knowledge of new trends and best practice, both nationally and internationally
- The possibility of scientific credit given, with the possibility to use concepts from standards in scientific publications

A.3.3 Key messages to consumers

- Products conforming to standards are safe, have good quality and provide key product information for consumers
- Compatibility with other products, easier availability of spare parts
- Consumer protection
- Basis for regulation

- Compliance of products with standards can be verified through testing or certification programmes, which provide assurance of product reliability, safety and quality
- Standards in the area of metrology are a basic means to protect consumers against market fraud

A.3.4 Key messages to governmental agencies and public authorities

- Standards can support governments in achieving public policy objectives, such as assuring health, hygiene, safety, protection of property, environmental protection, market transparency and in general contribute to public order and welfare
- Voluntary standards can be used to support (mandatory) regulation through reference
- By supporting a functional national quality infrastructure (NQI) – which is composed of metrology, standardization, testing and certification functions – governments can assist the private sector and SMEs, which creates jobs and generates wealth for society
- The use of International Standards, wherever appropriate (including as a basis for national regulation), facilitates international trade and meets obligations of governments under the *WTO TBT Agreement*
- Through public procurement programmes, government agencies are a key agent in markets. Basing public procurement on national or International Standards can contribute to making the procurement process more transparent. It also allows governments to promote public policy objectives, e.g. through purchasing environmentally friendlier products or considering other aspects, such as accessibility in their purchasing decisions
- Standards can be a powerful tool towards migrating to sustainable development

A.3.5 Key messages to non-governmental organizations (NGOs), business support organizations (BSO) and financial institutions

- Compliance with standards can be a major factor of business success in terms of meeting customer quality expectations, but also by meeting societal expectations (e.g. in terms of environmental performance, health and safety)
- Standards can make a significant contribution to reducing risks and the likelihood of the occurrence of economic, social or environmental calamities (e.g. if organizations use risk and business continuity management frameworks)
- Companies that demonstrate that those meeting such standards may obtain preferential conditions by banks and insurance companies and can easier meet expectations of NGOs, the general public and other organizations

Annex 4: The spreadsheet tool for calculating human and financial resources required

A.4.1 Human resources

A.4.1.1 Overview

Step 1: *Define the time needed to complete the different types of national projects, i.e.* ***Adoption*** *(Ad),* ***Evaluation for adoption*** *(Ev),* ***Active participation*** *(Ac),* ***Monitoring*** *(Mo) and* ***National development*** *(Na). Use the project definition* **sheets #1 to #5 in the spreadsheet** *to do this -there is one sheet for each of the five types of national standardization projects. The resource data in the project definition sheets should represent the resources needed for an average project. This means the data should be representative for the resources needed in an NSB and a country ; therefore, these need to be adapted to the conditions in a country. These average numbers are then used to calculate the overall human resources needed to implement the standardization plan.*

As an example: if it takes overall 17 working days for a TO to work on one adoption project, it will take 340 working days for the TO to work on 20 adoption projects (17 working days x 20 projects).

> Please note that the definition sheets #1 to #5 contain default project roles, default activities, default time frames and their frequencies to undertake these activities, as a suggested reference for any of the five national projects. However, these defaults will not apply in all countries and all NSBs. Please modify these numbers (and perhaps the roles) accordingly. If a project role does not exist at all, e.g. there is no secretarial support staff, because this work is performed by the TO, then set the duration of the activities assigned to the role of support staff to zero (0). Additionally, if appropriate, increase the number of working days for the TO.
>
> You can also modify the tasks, either by overwriting existing tasks or adding additional tasks. Please note that the application of averages is to evaluate whether the implementation of the plan is feasible, but not to calculate the exact amount of work load to complete the identified projects.

By default, we assume that there are three roles involved for an NSB in each of the projects: The **Technical Officer** (the key person who often is also the project

manager on behalf of the NSB), the **Editor/Translator** and **Secretarial Support Staff** (to organize meetings, to disseminate documents, to set up meeting rooms etc.). If any of these roles has a different designation in your country, you can re-name them. However, if one of the roles does not exist at all, please set the number of working days for this role to zero, but do not remove it from the sheet.

Step 2 : *Use Table 1 in Sheet #6 to indicate the number of working days per year in your country for each of the roles involved in the national projects. By default, we assume that there are 210 working days per year. If this result does not match the conditions in your country, please change the number in Table 1 of Sheet #6.*

Step 3 : *As explained* ***in Chapter 1.6****, classify each of the national standardization projects to one the five project types (Ad, Ev, Ac, Mo or Na).*

Step 4 : *Enter the number of TOs (Table 2 of Sheet #6), EDs/TRs (Table 3 of Sheet #6) and SECs (Table 4 of Sheet #6) in your NSB. If there are groups or departments into which they are organized, you may assign TOs, Eds/TRs and SECs to individual groups. For a simple calculation, you can ignore this departmental division and calculate the whole workload resulting from the identified number of project types. The calculation will show you (as an example) whether the total number of TOs available to you matches the resources needed to implement the identified national projects.*

Sheet 6 (titled "**6 – HRCalculationSheet**") allows you to calculate human resource needs for different numbers of projects and different numbers of technical officers or other staff in the various groups by applying the values (the number of annual working days, of resources needed for each project type) for the different types of projects and the roles involved as explained in Steps 1 to 4 above.

It is possible to vary the duration of the overall standardization plan. By default, the duration of the plan is set to 3 years. However, you can also reduce it to 2 or 2.5 years or extend it to 4 or 5 (as appropriate) in Table 1 of Sheet #6.

Sheet 7 ("**7 – HRCalcbyYear**") allows you to distribute the projects over the years of the plan and to calculate the workload per year.

A.4.1.2 Details

This section contains a detailed description of how the human and financial resources can be calculated that are needed to implement the standardization plan. The calculation of required resources is also a way to ensure a standardization plan remains realistic and does not include resource assumptions which cannot be achieved.

Please proceed in accordance with the following steps and use the Excel calculation tool #3 "Calculation of required resources".

Step 1: ***Determine the average human resources needed to undertake any of the five national types of projects: Adoption (Ad), Evaluation for adoption (Ev), Active participation (Ac), Monitoring (Mo) and National development (Na) and adapt the values in the sheets #1 to #5 of the calculation tool to the situation in your NSB and your country***

To do this, undertake an analysis of several national projects and determine the following:

- What are the main activities that are typically performed for each project?
- How long, in working days, do these activities typically last?
- How often do they occur over the lifetime of a project (what is the number of repetitions)?
- Which roles from the NSB-staff are typically involved in project?

Review **Sheets #1 to #5** of the Excel calculation **Tool #3**. There you find default values for all of the above.

Standards Development Task	Work time (in days)			# of repetitions per project	Total work time in project
	TO	ED/TR	SECR		
Preliminary analysis					
Preparation & management of TC meetings					
Preparation of TC meeting report					
Verification & circulation of drafts					
Communication with stakeholders					
Project management					
Commenting on ISO projects (WD)*					
Commenting on ISO projects (CD)*					
Balloting on ISO DIS with comments*					
Balloting on ISO FDIS*					
Editing/finalization of adopted ISO standard					

TO = Technical Officer (TPM) // **ED/TR** = Editor/Translator // **SECR** = Secretarial and logistics support

Figure A4.1: *Human resource calculation template for standardization projects*

The left column with the header "Standards Development Tasks" contains the main activities typically needed for this type of project. The columns under "Work time (in days)" contains the roles we distinguish, which are the TO, the ED/TR and the SECR.

Enter for each of the activities in the left column the number of days required for each of the three roles. If a role is not involved in any of the listed activities, set

the work time to zero. Add the typical number of repetitions for an activity over a project life cycle. As an example, if it is typical to hold five meetings during the development of a project, then set this value to five for those roles which are involved in organizing, hosting and managing the meeting. The last column is calculated based on the number of working days for each role and each activity and the number of repetitions of the activity over a project lifetime.

Adapting to the conditions of your NSB/country : If there are additional activities that occur regularly in your NSB that are relevant in terms of the time they need, then add them to the list. In case the roles involved in your NSB are not the same as in the table, change the label of the column or set the working times of a role to zero ; for example, if there is a TO (the person who is the main technical and managerial contributor to a standardization project from the side of the NSB) and a technical assistant (" TA "), but not secretarial support staff and no editor/translator, you can change the designation (the label) " ED/TR " to " TA ", but ***do not delete any of the columns in the table***. Instead, set the values for role that is not used in your NSB to zero. As an example, if there is no secretarial support staff, set the working hours for SECR to zero and do the same for the number of repetitions for all the activities.

You can also change the naming of any of the activities in column 1.

Note that some activities only apply to the participation in international (or regional) projects (those in brown colour in the table above) and not to other project types.

Please adapt Sheets #1 to #5 to your national conditions in line with the guidance given in this chapter.

Step 2: ***Determine the number of working days per year in your country for each of the roles contained in tables 1 to 5 and update data in table 6.1***

Open **Sheet #6** named "**6 – HRCalculationSheet**" and review the content of Table 1, which looks like this:

Table 1 – Reference time frames for the different national projects and roles							
IMPORTANT – If the default values in this table do not fit the conditions in your country, please do the following: Any values in Table 1 related to one of the 5 project types (Ad, Ev, Ac, Mo, Na) must be changed in the sheets #2 to #5. Values related to the annual working days or the overall duration of the plan, must be modified in Table 1. The following project types are distinguished: Adoption (**Ad**), Evaluation for adoption (**Ev**), Active participation (**Ac**), Monitoring (**Mo**) and National development (**Na**).							
Required working days per project type and role							
Roles	**Ad**	**Ev**	**Ac**	**Mo**	**Na**	**Annual working days per role**	**Overall duration of the plan (in years)**
TO	17	24.25	49.5	17.5	45	210	3
ED/TR	10	10	10	0	10	210	
Sec	6.25	8.25	14.25	1	13.75	210	
Total (per project type):	**33.25**	**42.5**	**73.75**	**18.5**	**68.75**		

Figure A4.2: *Overview of resource needs for different project types (ISO defaults)*

The numbers under the five different types of national projects are those that you have calculated for the different roles in **Sheets #1 to #5.** If the numbers in Table 1 do not appear to be correct, then please go back to the respective **Sheets #1 to #5** and recalculate the amount of resources needed. Whatever change you make in **Sheets #1 to #5** is automatically reflected in Table 1 above.

In the second to last column of Table 1, the number of annual working days per year is given for each of the three roles (as a default we have set these to 210 days). In case the number of working days in your NSB/country is different, then change this number in Table 1; for example, if the number of working days per year is 180, change 210 to 180. If it is 210 for a TO, but 150 for a SECR, because persons in the role of SECRs are only employed part-time, then change the number for SECR to 150, but leave the number for TOs unchanged. There can be different numbers for the different roles.

By default, the duration of the plan is three years. You can change this by modifying the number in the last column to e.g. 2, 3.5, 4 or another number. However, if there are no strong reasons to deviate from the default duration, we recommend using a value of three years.

Step 3: ***Use Table 2 of Sheet #6 (the left part) to assign the national projects to different sectors, groups or departments inside your NSB and enter the number of projects you have identified based on the earlier stages of this methodology for each of the five projects types***

Note: *The numbers in the tables shown after are only given as examples! They need to be overwritten with the numbers that apply to your NSB.*

In the column "Sector or Group", you can overwrite the generic naming "Sector or Group 1", "Sector or Group 2" with the specific designation used in your NSB such as "Agriculture", "Civil engineering", "Chemical engineering" or any other designation of the group in your NSB (or the standards department) that will deal with the identified projects, e.g. "Group 1", "Group 2". What is important is that you match the number of the five national project types to the group in your NSB that would be dealing with these projects. The table contains 20 such groups, so you can add additional groups.

If there is no assignment of staff (such as TOs) to groups or sectors in your NSB, then enter the total number of technical officers into any of the sectors or groups

and set the values for other sectors or groups to zero. This will give you the total number of resources of the TOs which is then compared with the resources needed based on the number of identified national projects.

Table 2 – Technical Officers: Available versus needed human resources					
Note: The numbers in the columns below are given as examples only and need to be replaced with the real numbers for an NSB.					
Number of national projects for a three-year planning period					
	Types of national projects				
Sectors or Groups of TOs in the NSB	**# of Ad**	**# of Ev**	**# of Ac**	**# of Mo**	**# of Na**
Sector or Group 1	9	77	5	0	0
Sector or Group 2	15	95	19	0	0
Sector or Group 3	89	159	0	0	0
Sector or Group 4	30	54	0	0	0
Sector or Group 5	37	107	0	0	0
Sector or Group 6	24	52	0	0	0
Sector or Group 7	25	9	3	0	0
Sector or Group 8	60	276	2	0	0
Sector or Group 9	44	114	5	0	0
Sector or Group 10	40	163	3	0	0
Sector or Group 11	8	3	18	0	0
Sector or Group 12	19	37	0	0	0
Sector or Group 13	3	1	0	0	0
Sector or Group 14					
Sector or Group 15					
Sector or Group 16					
Sector or Group 17					
Sector or Group 18					
Sector or Group 19					
Sector or Group 20					
Total:	**403**	**1147**	**55**	**0**	**0**

Figure A4.3: *Assignment of national project types to groups of technical officers in an NSB*

Step 4 : ***Use Tables 2, 3 and 4 of Sheet #6 to enter the number of TOs (Table 2 – the right part), EDs/TRs (Table 3) and SECRs (Table 4) working in the groups listed in the left column***

Number of national projects for a three-year planning period						
	Types of national projects					Available h
Sectors or Groups of TOs in the NSB	# of Ad	# of Ev	# of Ac	# of Mo	# of Na	# of TOs
Sector or Group 1	9	77	5	0	0	3
Sector or Group 2	15	95	19	0	0	4
Sector or Group 3	89	159	0	0	0	6
Sector or Group 4	30	54	0	0	0	7
Sector or Group 5	37	107	0	0	0	5
Sector or Group 6	24	52	0	0	0	6
Sector or Group 7	25	9	3	0	0	3
Sector or Group 8	60	276	2	0	0	4
Sector or Group 9	44	114	5	0	0	3
Sector or Group 10	40	163	3	0	0	3
Sector or Group 11	8	3	18	0	0	3
Sector or Group 12	19	37	0	0	0	3
Sector or Group 13	3	1	0	0	0	3
Sector or Group 14						0
Sector or Group 15						0
Sector or Group 16						0
Sector or Group 17						0
Sector or Group 18						0
Sector or Group 19						0
Sector or Group 20						0
Total:	403	1147	55	0	0	53
Difference over whole plan:						
Difference per year:						

Figure A4.4 : *Comparison between available and required human resources in an NSB*

Enter in the column "# of TOs" the number of technical officers that work in each of the sectors or groups (or whichever designation applies for this group in your NSB). Perform this for all the groups in the standards department of your NSB who would be dealing with the five identified types of national projects. If a person

Technical Officers (TOs) – Resource planning							
uman resources	Needed human resources (TO) in workdays						
WorkDays	TO/Ad	TO/Ev	TO/Ac	TO/Mo	TO/Na	TOTAL	Difference
1890	153	1867.25	247.5	0	0	2267.75	-377.75
2520	255	2303.75	940.5	0	0	3499.25	-979.25
3780	1513	3855.75	0	0	0	5368.75	-1588.75
4410	510	1309.5	0	0	0	1819.5	2590.5
3150	629	2594.75	0	0	0	3223.75	-73.75
3780	408	1261	0	0	0	1669	2111
1890	425	218.25	148.5	0	0	791.75	1098.25
2520	1020	6693	99	0	0	7812	-5292
1890	748	2764.5	247.5	0	0	3760	-1870
1890	680	3952.75	148.5	0	0	4781.25	-2891.25
1890	136	72.75	891	0	0	1099.75	790.25
1890	323	897.25	0	0	0	1220.25	669.75
1890	51	24.25	0	0	0	75.25	1814.75
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
33390	6851	27814.75	2722.5	0	0		-3998.25
							-19.04
							-6.35

works in two different groups, then express this by using decimals, e.g. 0.5 and 0.5 (if the person works equally in two groups) or 0.75 and 0.25 (if the person works to 75 % in one group and to 25 % in another).

If there is no assignment of staff (such as a TO or other roles) to groups or sectors in your NSB, then enter the total number, e.g. of TOs into any of the sectors or groups and set the values for the other sectors or groups to zero. This will give you the total number of resources of TOs and compare it with the resources needed based on the identified national projects.

Do the same for the other roles ED/TR (Table 3) and SECR (Table 4).

The tool calculates the **number of working days over the duration of the standardization plan (by default three years, but the duration can be adjusted)** for the number of projects identified (column: "**TOTAL**") and compares the currently available with the available human resources that would be required to handle the identified number of projects. Note again that the calculation is based on a three-year period and the default times defined in Sheets 1 to 5. The result of this comparison is shown in the column "**Difference**" to the right of the table. If the difference is positive, it means there are more resources available than required. If the difference is negative, there are fewer resources available than required. The table on top provides this comparison for technical officers, the table in the middle for ED/TRs and the table at the bottom for secretarial support staff.

At the bottom of the tables you see the missing or excess resources in total number of working days (first line), in number of persons in total (second line) and number of persons if they would be hired at the beginning of the planning period and assuming they would stay on for the whole planning period.

If you have changed the designation for a role in your NSB in the Sheets #2 to #5, then change the designation also in the respective tables in Sheet #6. If a role does not exist in your NSB, then just set the number of persons performing this role in Sheets #2 to #5 to zero.

Step 5: ***Use Sheet #7 ("7 – HRCalcbyYear") and distribute the number of selected projects in your plan over its full duration to plan the annual workload and compare it with available or expected resources***

Project type	Year1	Year2	Year3	Year4	Year5	TO	ED/TR	Sec	TO	ED/TR	Sec
	# of projects (by year)					Resource needs by role (in # of workdays)			Assumed resource limits (in # of workdays)		
Ad	34	10				748	440	275	3500		
Ev						0	0	0			
Ac		23	34			2821.5	570	356.25			
Mo						0	0	0			
Na						0	0	0			
Total:	**34**	**33**	**34**	**0**	**0**	**3569.5**	**1010**	**631.25**			

Figure A4.5: *Allocation of projects over the three-year period of the standardization plan*

The number of workdays in the orange columns are calculated based on the workload defined in **Sheets #1 to #5** multiplied with the number of different projects entered in the green columns. In the white columns, enter either the currently available or expected human resources (if you expect that they can be increased by a certain margin).

Note that the data in the table above are just test data and need to be replaced with real data.

A.4.2 Financial resources calculation

A.4.2.1 Overview

Step 1: *Determine the average financial resources needed to participate in international meetings and to organize national meetings for your NSB and in your country. Use Sheets #9 (for the attendance of international meetings) and #10 (the organization of national meetings) to calculate the costs in the calculation tool #3 for this purpose.*

These results are then used as a basis to calculate the overall costs for all projects in your plan.

Step 2: *Sheet #11 will contain already the number of projects that you entered in Sheet #6 (see line: "***Number of projects in plan***"). Some of these projects may be funded externally, e.g. by industry and there is no need for funding by the NSB. The number of projects of each type with external funding can be entered in the line: "***Number of projects with full external funding***". The number of these projects is deducted from the total number of projects, because only the remaining projects need to be funded through NSB-resources. For each of the projects, an average cost has been calculated, which is multiplied with the total number of these types of projects.*

The result is a calculation of the total costs for all five types of projects and the total costs to implement your standardization plan.

Please note that it may not be possible for experts in all those projects to participate in working groups (WGs), due to resource constraints. These are still identified as "**Ac**" (projects with active participation), although in some of these projects, your NSB may be only able to participate by providing written comments, i.e. the experts are corresponding members of the WG for a standards project. For this purpose, it is possible in Sheet #11 to indicate the maximum number of projects in which your NSB can participate.

A.4.2.2 Details

Proceed in accordance with the following steps and use the Excel calculation **Tool #3, "Calculation of resources" using Sheets #9 to #11.**

Step 1: *Determine the average financial resources needed to participate in international meetings and to organize national meetings for your NSB and in your country*

Sheet 9: Financial resources required by the NSB to implement the standardization plan						
Calculation for the active participation in international projects – Costs for one international project. Note: The cost figures in the columns below are given as examples only and need to be replaced with real figures.						
Costs	**Currency**	**# of persons**	**Cost (single event)**	**# of events**	**# of projects dealt with at a meeting**	**Total costs (in project)**
International flight	USD	1	2,000.00	4	2	8,000.00
Hotel accommodation abroad	USD	1	100.00	16		1,600.00
Per Diem abroad	USD	1	50.00	16		800.00
Visa fee	USD	1	20.00	4		80.00
Vaccination	USD	1	0.00	1		0.00
Reproduction of documents	USD	1	0.00	4		0.00
Other costs	USD	1	0.00	4		0.00
						0.00
						0.00
						0.00
External financing*						0.00

USD	**Total cost for the meeting participation**	**10,480.00**
USD	**Total cost for a single project**	**5,240.00**

*Refers to any resources obtained from outside the NSB to support the participation in the project

Figure A4.6: *Average costs for the attendance of meetings for an international standardization project*

In Figure A4-6, you find a listing for: the types of costs (in US Dollars – USD); the number of persons for which these costs occur; the number events and the cost of an individual event. In the column on the right you find the total costs for the cost type and the final total cost for a project based on the assumptions described.

In Figure A4-6, it is assumed that one person attends four meetings for a project of an international committee. Each of the costs for international flights, on average, is USD 2,000. One meeting is assumed to last four days on average, which results in 16 nights of hotel accommodation and USD 50 costs for each day.

On this basis, the total costs for one person to participate an international standardization meeting, amounts to USD 10,480. However, since in many cases more than one project is being discussed at such meetings, we assume (in the column "# of projects dealt with at a meeting") that the costs for the meeting attendance could be spread over several projects (in the example above over two projects). This brings down the costs for traveling to attend a meeting per individual project to half the total costs (or a third, if three projects would be discussed in which the NSB is actively participating).

If you can assume that there is always at least partial external funding for projects, then this can be considered as well and deducted from the total project costs.

Please note that in **Sheet #11**, there is another possibility to express external funding of a certain number of projects. So, you can also choose **Sheet #11**, in particular, if only a certain number of projects receive external funding whereas others do not.

The costs and the cost types can be adjusted as can be the number of persons who participate in meetings or travel to meetings. If at some of the meetings two persons are sent by the NSB, whereas other meetings are attended only by a single person, it is possible to calculate with an average participation per meeting of 1.5 persons or 1.25 persons.

Sheet 10 : Financial resources required by the NSB to implement the standardization plan						
Financial resources required by an NSB to organize national meetings Note : The cost figures in the columns below are given as examples only and need to be replaced with real figures.						
Costs	**Cur-rency**	**# of per-sons**	**Cost (single event per person)**	**# of events**	**# of projects dealt with at a meeting**	**Total costs (in project)**
Domestic travel costs	XYZ	1	200.00	4	2	800.00
Domestic hotel accommodation	XYZ	1	100.00	4		400.00
Per day per person	XYZ	1	50.00	1		50.00
Rent of meeting rooms	XYZ	1	0.00	1		0.00
Food & drinks	XYZ	1	1,000.00	1		1,000.00
Social events	XYZ	1	2,000.00	1		2,000.00
Reproduction of documents/mailing	XYZ	1	100.00	1		100.00
Other costs	XYZ	1	0.00	1		0.00
						0.00
						0.00
External financing*						0.00

XYZ	**Total cost**	**4,350.00**
XYZ	**Cost for a single project**	**2,175.00**

*Refers to any resources obtained from outside the NSB to support the project

Figure A4.7 : *Average costs for the organization of national meetings of a standardization project*

As with the costs to attend international meetings, the cost types can be adjusted, as well as the results for the costs, so that they reflect as far as possible the typical conditions that apply for an NSB in a specific country. If more than one project is being discussed at a meeting, the costs for the attendance at a national meeting can be spread over the number of projects discussed. Figure A4-7 shows an example where two projects are discussed typically at the same meeting).

Sheet 11: Financial resources required by the NSB to implement the standardization plan
Basis for this calculation: Number of national projects of the five types (Na, Ev, Ac, Mo and Na) and the costs to organize/attend meetings, except those projects that are fully externally funded and which can be deducted from the total numbers of projects identified in the plan. Note: The cost figures and number of projects in the columns below are given as examples only and need to be replaced with real figures.
Maximum number of international meetings with physical participation*: 30

Project type:	Ad	Ev	Ac	Mo	Na	
Number of projects in plan	403	1147	55	0	0	
Number of projects with full external funding	20	3	20	0	0	
Projects needing NSB funding	383	1144	35	0	0	

	Ad	Ev	Ac**	Ac**	Mo	Na
	(Costs in local currency)	(Costs in local currency)	(Costs in USD)	(Costs in local currency)	(Costs in local currency)	(Costs in local currency)
Projects needing NSB funding	383	1,144	35	35	0	0
Costs per single project	4,350	4,350	10,480	4,350	0	4,350
Costs for project types	1,666,050	4,976,400	314,400	152,250	0	0

Total costs						
In local currency	6,794,700					
In USD	314,400					

*Maximum number of meetings
**Active participation (Ac)

Figure A4.8: *Calculation of the total costs for the implementation of the standardization plan (combined costs of national and international meetings)*

Figure A4-8 shows a calculation of the total costs for the implementation of the plan based on the costs of participation in international meetings, as well as the organization of national meetings and the number of projects typically being discussed at each meeting.

Sheet #11 will contain already the number of projects that you entered in **Sheet #6** (see line : " **Number of projects in plan** "). Some of these projects may be funded externally, e.g. by industry and there is no need for funding by the NSB. The number of projects of each type with external funding can be entered in the line : " **Number of projects with full external funding** ". The number of these projects is deducted from the total number of projects, because only the remaining projects need to be funded through NSB-resources. For each of the projects, an average cost has been calculated, which is multiplied with the total number of these types of projects.

We also include in the calculation that it may be possible that, due to the costs of physical attendance at international meetings, an NSB can send experts to a limited number of international meetings, if at all. The number of international projects to which an NSB can send experts can be defined in **Sheet #11** (" **Maximum number of international meetings with physical participation** "). If no physical attendance is possible at all, the number should be set to zero. If all meetings can be attended the number should be set to the number of projects with active participation (the number of " Ac "-projects).

For projects for which " **Active participation** " (**Ac**) has been selected as the national project type, but where physical meeting attendance is not possible, participation remains limited to the submission of comments, the attendance of web conferences, voting on all ballot instances and possibly the indirect participation through participating-member twinning arrangements with other participating-members in the committee.

It should also be noted that projects with active participation would not only imply the attendance of international meetings, but also the organization of national meetings to prepare for international meetings and/or to review the outcome of international meetings. For this reason, two columns are shown that cover the costs for international and national meetings.

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*May 2020

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ISBN 978-92-67-11088-2

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