Technical Cooperation
TRAINING

Designing IAEA Technical Cooperation Projects using the Logical Framework Approach

A Quick Reference Guide




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Contents

1. INTRODUCTION

This quick reference guide is designed to support the project design phase of the technical cooperation (TC) programme cycle. It focuses on the transition from project concepts to Project Documents. The IAEA's TC programme uses the logical framework approach (LFA), which is applied by most multilateral and bilateral agencies dealing with technical cooperation programmes and projects.

This reference guide is designed for the use of Member State counterparts and institutions, as well as IAEA staff, responsible for the preparation of TC Project Documents and for project implementation and monitoring. It complements the material on project design and implementation already available on the Programme Cycle Management Framework (PCMF) IT platform and in the Technical Cooperation Operations Manual.

Training workshops are available to support this guide. These workshops provide opportunities for additional and more in-depth understanding of how the LFA is applied within the context of the IAEA's TC programme.

2. THE IAEA's TECHNICAL COOPERATION PROGRAMME: CONTEXT

The IAEA's statutory mandate for technical cooperation

The IAEA's statutory mandate "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world" is principally carried out through the mechanism of the TC programme. As a scientific and technical organization, the IAEA contributes to the achievement of sustainable development goals in Member States through the peaceful application of nuclear science and technology within a wider development context. A thorough assessment of this context is essential in order to facilitate the linkages and partnerships that will ensure maximum programme impact.

The technical cooperation framework: Key policy documents

The design and management of the technical cooperation programme is guided by various IAEA policy documents. The key documents are:

a) The IAEA Statute;

b) The Revised Guiding Principles and General Operating Rules to Govern the Provision of Technical Assistance by the IAEA (INFCIRC/267);

c) The IAEA Medium Term Strategy;

d) The Technical Cooperation Strategy: The 2002 Review (GOV/INF/2002/8/Mod1) (TCS);

e) The Revised Supplementary Agreement Concerning the Provision of Technical Assistance by the IAEA (RSA);

f) General Conference TC resolutions and Board decisions, which provide the guidance of Member States on a continuous basis.

Various key principles are derived from these policy documents, which guide the way TC activities are designed and managed.

Identifying national priorities: The Country Programme Framework

The Country Programme Framework (CPF) provides a frame of reference for TC between a Member State and the IAEA for the medium term (4–6 years). The CPF helps to ensure that a country's TC programme and its individual projects are effectively focused on agreed national needs and priorities within the overall framework of that Member State's national plan for the use of nuclear related technology. It is based on identified national priorities, reflecting national development plans, regional priorities and the country's development aims in specific sectors.

Identifying regional priorities: Agreements, strategies and frameworks

In a like manner, where regional priorities are determined within regional or cooperative agreements, regional programme frameworks or strategies generally provide the frame of reference for identifying regional TC projects. Some regional projects may, however, also originate outside regional or cooperative agreements.

Partnerships and the United Nations Development Assistance Framework

The IAEA relies on collaboration with numerous partners to promote peace and development through the peaceful application of nuclear science and technology. At the global level, such partners include research, development and training institutions that participate in the transfer of knowledge and technology through the TC programme, as well as agencies of the United Nations system and other international organizations. At the national level, development partners normally include other United Nations organizations, government agencies and institutions, as well as non-governmental organizations that provide input to the programme or project or disseminate its results to end users.

The IAEA also participates in the United Nations Development Assistance Framework (UNDAF) in a number of Member States. UNDAF is a strategic programme planning framework at the country level. It lays the foundation for cooperation among United Nations organizations, governments and other development partners through the preparation of a complementary set of programmes and projects.

3. TECHNICAL COOPERATION IN THE IAEA: ROLES, PROCESS AND QUALITY

Roles and responsibilities

The TC programme is a 'one house' effort that mobilizes most of the IAEA Secretariat to deliver high quality projects to Member States. The programme is developed according to the principle of shared responsibility by the country and the Secretariat, with the leading role taken by the country (Fig. 1). The programme is needs based and is developed through a consultative process with all programme stakeholders to identify development needs, gaps and priorities where nuclear technology has a relevant and competitive role. National projects are designed by the counterparts; regional projects are designed by a lead country selected from among the Member States in that region.

Member States' authorities and institutions should exercise full and effective leadership over their specific development processes. This includes setting goals, national policies and strategies, and implementing and coordinating all development actions. Furthermore, institutions in Member States require financial resources, qualified human resources and other types of support from other local institutions, as well as government policies that are conducive to a favourable working environment. Meeting these conditions fulfils a central criterion: all TC projects must address an area of real need in which there is a national programme enjoying strong government commitment and support. This also applies to regional projects: there must be strong regional or subregional commitment. The IAEA is responsible for supporting Member States in developing and implementing projects designed to contribute to their own development programmes or projects.

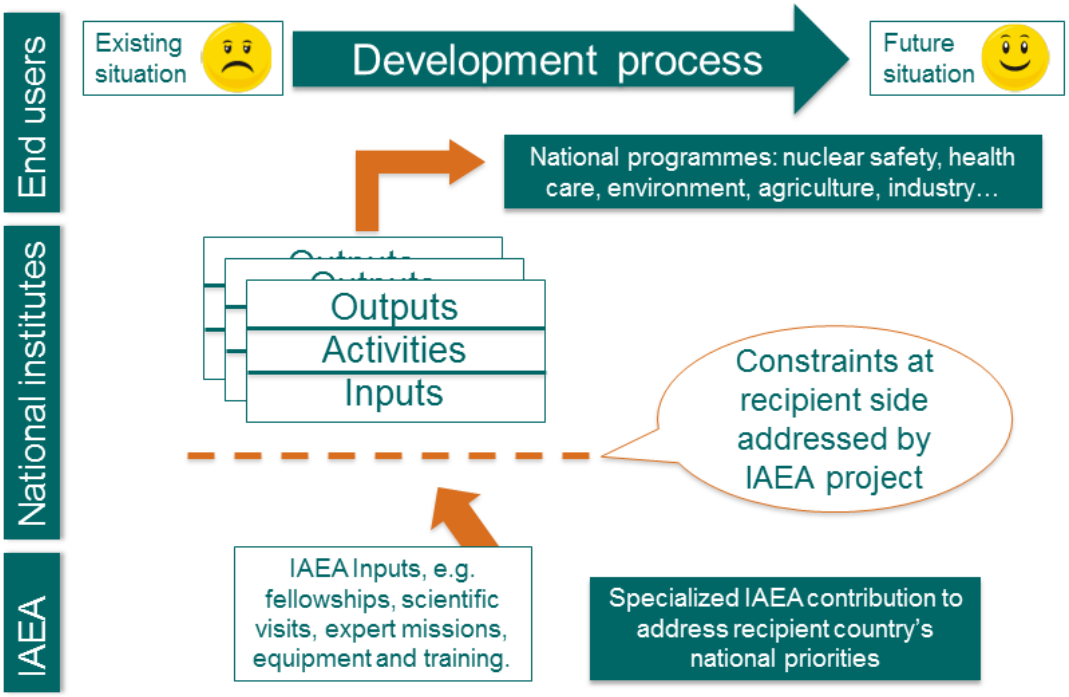

Fig. 1. The TC programme: A shared responsibility!

Planning and designing the technical cooperation programme

The TC programme is prepared over a two year period of continuous dialogue between the IAEA Secretariat and Member States. Country programmes are prepared on the basis of upstream work that may include country fact-finding missions, support for the preparation of a CPF, early engagement of potential partners and pre-project assistance.

Member States submit Country Programme Notes (CPNs) that contain an overview of the programme, details of the consultative process followed to identify potential projects, links with country priorities and an overview of the national regulatory infrastructure (Fig. 2). The CPN also lists project concepts in order of priority. These concepts are prepared by Member States according to guidelines issued by the Secretariat and are in line with the national CPF and any relevant regional agreements or strategies. The Secretariat provides feedback on individual CPNs to Member States.

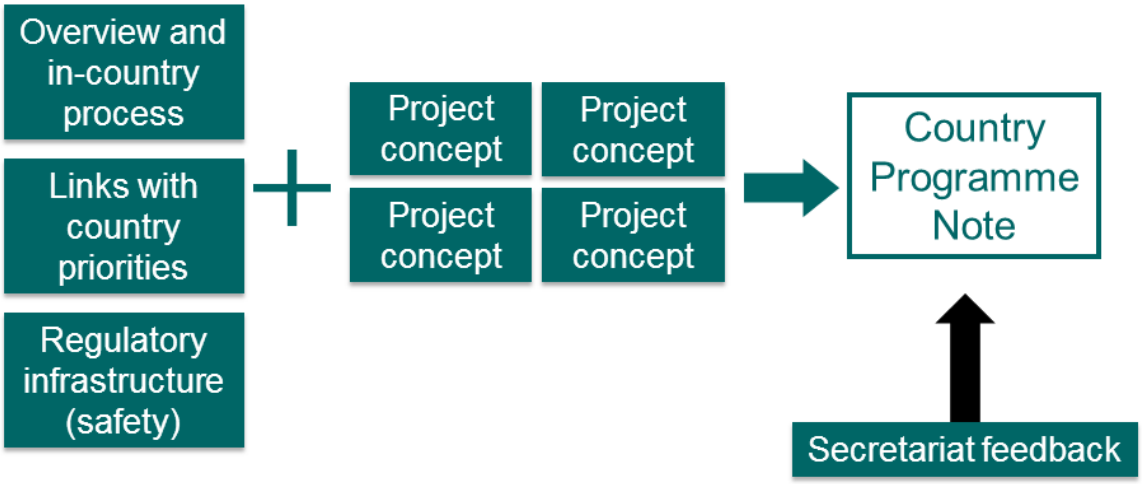

Fig. 2. Country Programme Note content.

Regional and interregional projects are also prepared on the basis of regional and interregional Programme Notes and project concepts (Fig. 3). Project concepts are usually developed into full Project Documents. National, regional and interregional Project Documents are combined to create the IAEA's biennial TC programme.

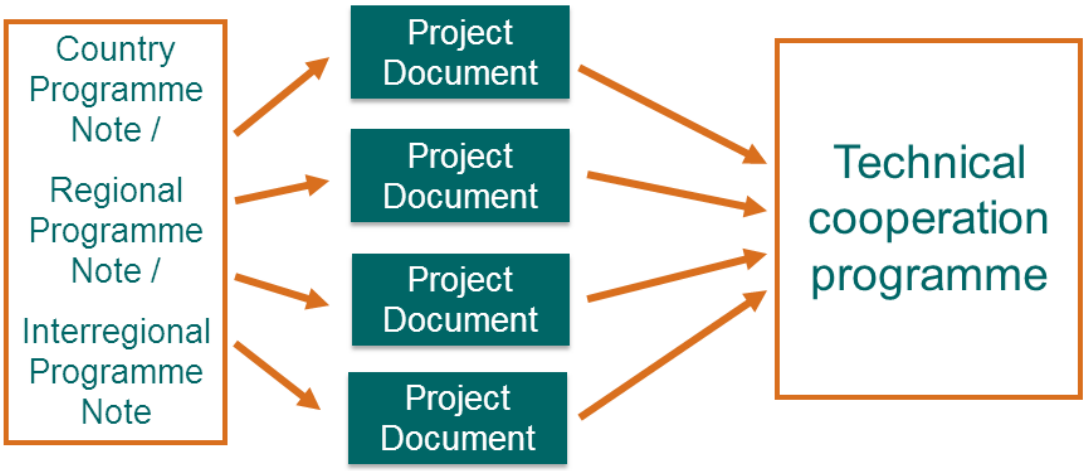

Fig. 3. From Programme Note to TC programme.

Technical cooperation projects: Definition and project types

A project is an undertaking that addresses an identified problem or a gap in development in a specific area. It does so through a set of related activities leading to planned outputs and the outcome, hence contributing to the achievement of the overall objective. A project has a defined time period with start and end dates, an allocation of resources, and defined roles and responsibilities for the project team. All IAEA TC projects are planned and designed following the logical framework approach (LFA) (described in Section 4). A TC project can be national, regional or interregional, based on its geographical scope:

- National projects focus on the development needs and priorities of individual Member States.
- Regional projects seek to achieve greater implementation efficiency or to improve effectiveness by addressing common objectives in multiple Member States within the same region in a consolidated manner. Regional projects utilize national capabilities to achieve common objectives, enhancing human resources through group activities, technical networking and south–south cooperation, as well as in-kind contributions of host facilities. There are two options for submitting regional projects:
    - Those proposed by a group of Member States in response to their expressed needs in their region;
    - Those proposed by Member States in a region collaborating within a Regional/Cooperative Agreement, through the respective Agreement.
- Interregional projects serve the common needs of several Member States in different geographical regions, where cooperation across regions is necessary to achieve expected outcomes. They can be transregional or global in scope, focused on capacity building or on joint activities with other organizations.

The project cycle

Project planning and design is part of the *TC programme cycle* (Fig. 4), a process involving the following stages:

- Planning and approval;
- Implementation;
- Review.

Analysis is carried out using the LFA during each stage, at varying levels of detail.

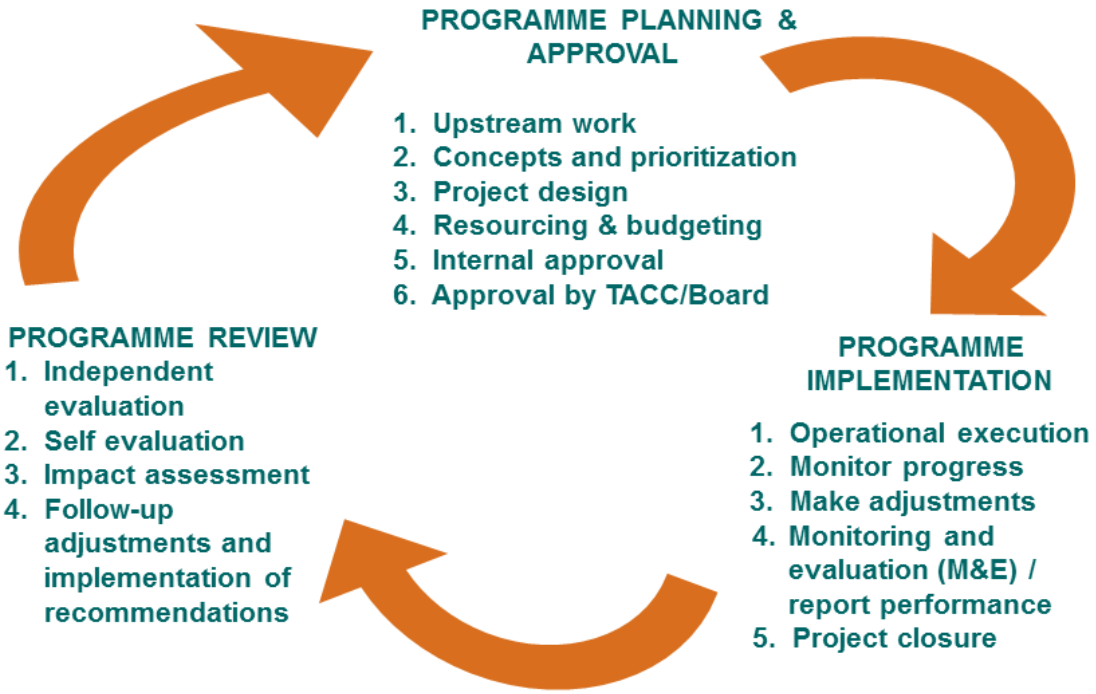

Fig. 4. The TC programme cycle.

Quality in technical cooperation: Key criteria

The IAEA TC programme and its constituent projects must meet defined quality criteria. These include relevance, effectiveness and efficiency, as well as ownership and sustainability.

Relevance is the degree to which project aims are consistent with end user requirements, country needs, where the IAEA can support national programmes, and partners' and donors' policies. This typically includes needs identified in the CPF, UNDAF or other government strategy declarations.

Sustainability refers to the continuation of benefits after the completion of a programme or project, the probability of continued long term benefits, or the resilience to risk of the net benefit over time.

Effectiveness is the extent to which the project outcome was achieved, or is expected to be achieved.

Efficiency is a measure of the productivity of the implementation process and how resources (funds, expertise, time, etc.) are economically converted into results. Efficiency answers the question: "Could the same results have been attained at a lower cost?".

4. THE LOGICAL FRAMEWORK APPROACH

The logical framework approach: An introduction

The LFA is a widely adopted methodology used by most multilateral and bilateral agencies working in development or technical cooperation.

The LFA helps stakeholders to think through and analyse the 'logic' of a project in a systematic and structured way, first by conducting a detailed analysis of a number of elements, and second by relating the results of these analyses to each other and to the project's overall objective. This ensures a sound project proposal and a high quality project. The LFA provides a project structure in which major components are explicitly and clearly interrelated, and interrelationships are clarified. The LFA plays a particularly critical role in project planning and design, but it can also be used throughout the project cycle, including implementation, monitoring and evaluation.

The LFA is essentially a sequence of analytical steps comprising the following:

a) A situation analysis that reviews project context and relevance;

b) A stakeholder analysis that covers counterpart mandate and vision, end users and any other organizations, group or institution having an interest or being affected by the project;

c) A problem analysis that examines the problem in detail from the perspective of different stakeholders; and

d) An objectives analysis where the project team decides on the scope of the project (see Fig. 5).

On the basis of these analyses, the project team constructs a logical framework matrix (LFM) that summarizes the project and shows the logical linkages between the project elements. This is an iterative process of testing, review and validation that then continues with the preparation of a suitable work plan. The LFA steps and the LFM elements are explained in this section.

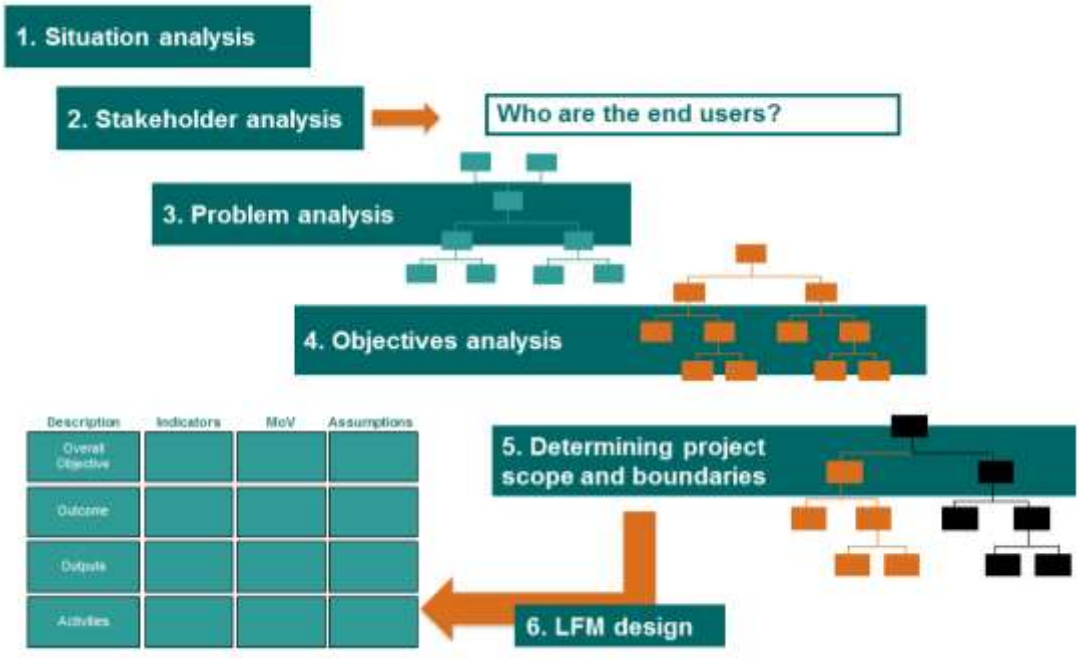

Fig. 5. The logical framework approach: A step-by-step overview.

Applying the LFA has several additional advantages. A key advantage is that it creates a dialogue amongst the project team, helping to clarify their roles during implementation, as well as how they can ensure project sustainability and maximize results. This dialogue also establishes and expands ownership of the project. Another critically important advantage is that applying the LFA clarifies both the project scope and what it can realistically achieve. This supports a better understanding of how the project will complement other projects with the same or similar aims. A good project design will anticipate possible constraints during the project implementation phase and will thus contribute to smoother implementation.

The LFA can be used in a flexible manner according to the context and scope of the project. While it is commonly used in major complex projects — for example, it is possible to organize a 3–4 day project design workshop for all project stakeholders using the LFA to gain a common understanding of, and common agreement on, all aspects of the project — it can also be used in small groups or even by an individual team member thinking through the project's logic.

Applying the logical framework approach: The project design steps

During the design phase of the TC programme cycle, the project concept is developed into a Project Document that includes the following sections:

- Project background and justification;
- Project description;
- Implementation aspects;
- Work plan;
- LFM.

Using the LFA, the project is designed systematically, using a logical thought process.

Ideally, the situation analysis, stakeholder analysis and problem analysis should have been carried out in the CPF and/or during the concept phase. During the design phase, these areas are examined in more detail. The steps are briefly explained below.

Step 1: Situation analysis

Planning and designing a project that addresses the real needs of target groups or users can only be achieved on the basis of a realistic analysis of the existing situation. A thorough analysis of the situation and the sector involved helps to reveal internal and external factors that may affect the success of the project.

Initially, the situation analysis examines the macro level: the specific context and prevalent conditions where the project will take place, including the legal and regulatory frameworks.

Once the problem has been better identified, another focused analysis is conducted, examining where the problem is located and identifying contextual issues, especially institutional shortcomings, technological, safety and thematic issues.

Some of this information may already be available in the CPF or in reports of previous IAEA projects. Additional information may be required to provide a thorough understanding of the context

of the project. It is important to remember that in a dynamic environment situations may change and it is important to keep abreast of developing situations.

Step 2: Stakeholder analysis

A stakeholder analysis identifies the parties involved in, or affected by, the project. Apart from the project team, stakeholders can be the end users, beneficiaries, sponsors or partners.

Stakeholder analysis is the first step in building effective partnerships and ensuring that development plans are accurate, relevant and usable. It is important to know who has an interest in different project activities. Based on the analysis, a strategy for each stakeholder can be 'thought out', ensuring that the stakeholder is brought into the project at the right time, for the right purpose.

It is important to engage stakeholders early in a project, as this provides an opportunity to participate and contribute to the project's design, thereby broadening ownership, leading to smooth implementation and ultimately to greater project benefits.

Step 3: Problem analysis

When designing a project, the project team must analyse the situation carefully to identify the major *problems*, their *causes* and their *effects*.

A systematic way of doing this is by creating a 'problem tree'. The value of the problem tree increases with the detail and accuracy of the information available on the causes and effects of a problem. In developing the problem tree, note that the causes must be stated as 'negatives' that can be demonstrated, rather than as the absence of a solution. This emphasizes the importance of conducting technical, economic or social studies as part of problem and stakeholder analysis when the necessary information does not exist. This may also help in creating baseline data.

Example of a problem tree

Figure 6 shows a simplified example of a problem tree. The example refers to a project to help a Member State improve its energy planning.

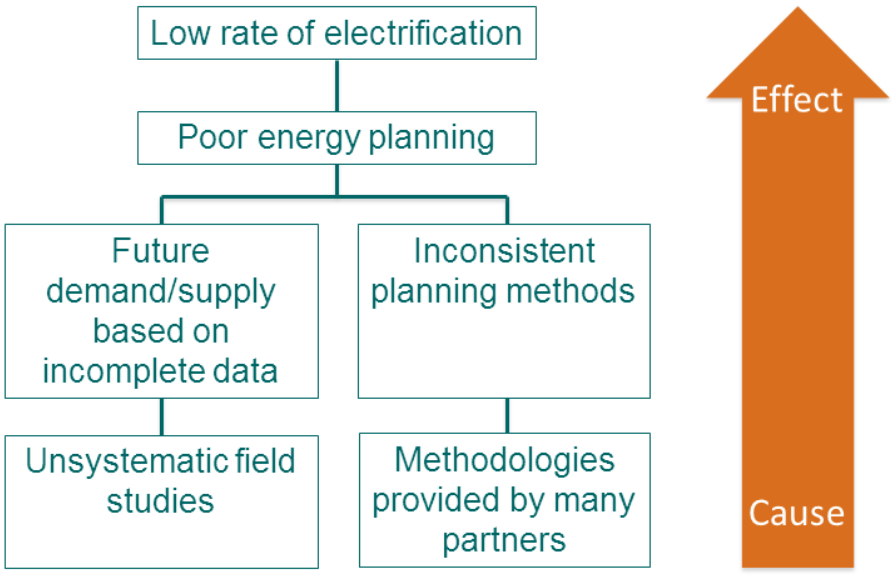

Fig. 6. Example of a problem tree.

Step 4: Objectives analysis

This is done using an 'objective tree', a visualization of a desired future positive state. The construction of an objective tree begins with reformulating each element of the problem tree as a positive statement; in other words, reformulating the negative statements in the problem tree into a positive desirable state, as shown in Fig. 7.

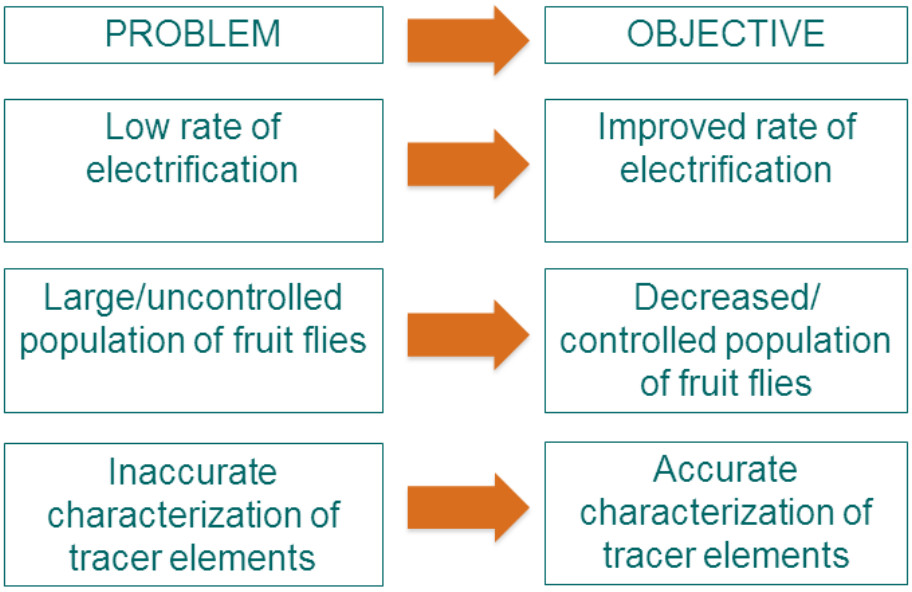

Fig. 7. From a problem tree to an objective tree.

The *cause–effect* relationships identified in the problem tree are converted into *means–ends* relationships in the objective tree; in other words, causes are reformulated as means that lead to ends. A simplified example of an objective tree is given in Fig. 8.

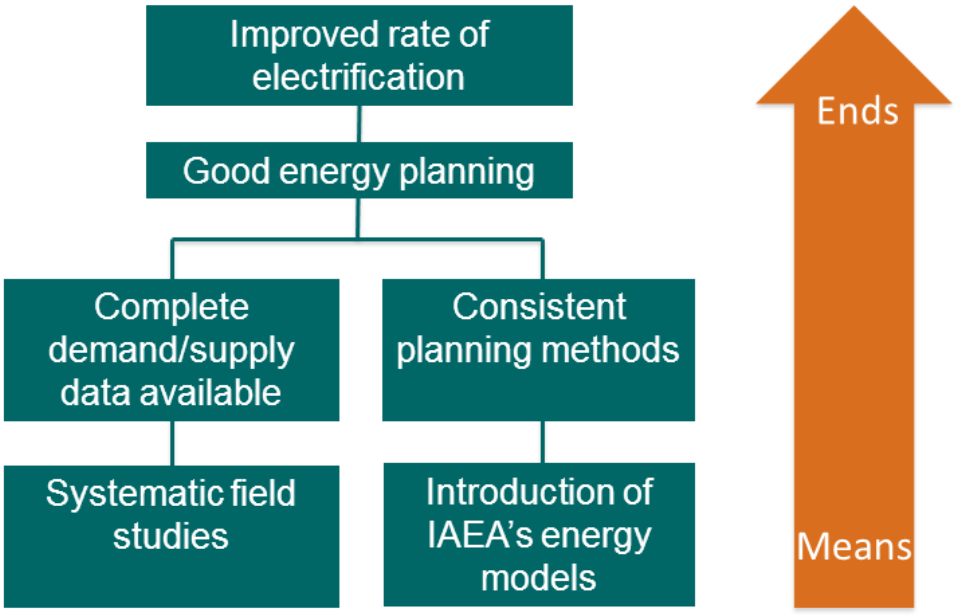

Fig. 8. Example of an objective tree.

Step 5: Determination of the project scope and boundaries

Once the objective tree is complete, it is examined to identify likely points of intervention. The determination of a project from among various options is called 'alternatives analysis'. Based on the complexity of the problem and objectives analysis, the project team carries out the alternatives analysis to determine the scope and boundaries of the project. This is particularly important when part of the problem or objectives would or could be addressed through other projects supported by other development partners (e.g. The Food and Agriculture Organization of the United Nations, World Health Organization).

In some cases, the entire objective tree may represent a single project size intervention, while in others it may highlight two or more alternative 'projects'. Alternatives need to be further analysed in order to prepare a project design. Project teams may consider the following factors when taking a decision:

- Probability of success;
- Cost–benefit ratio;
- Mandate of the organization
- Skills and specialization of the organization;
- Macro policy and political feasibility;
- Risk analysis and management planning;
- Activities or plans of other projects/organizations already operating in the area;
- Social and environmental risks;
- Time horizon and sustainability;
- Resources available.

Consideration of these factors leads to identification of the assumptions and risks that will affect the project.

Step 6: Design of the logical framework matrix

The objective tree is then used to define the elements of an individual project LFM. The LFM is a tool that ensures that all essential elements of a project are summarized. Furthermore, it helps to verify the project design logic, revealing inconsistencies, for example, if an objective is misconceived or badly chosen, or if the causal linkages are not logical. If applied consistently, the LFM assists in reviewing and improving design quality, thus improving the chances of achieving the intended outcome, thereby contributing to the overall objective. Figure 9 shows how to move from a problem tree to an objective tree to the basic LFM design elements.

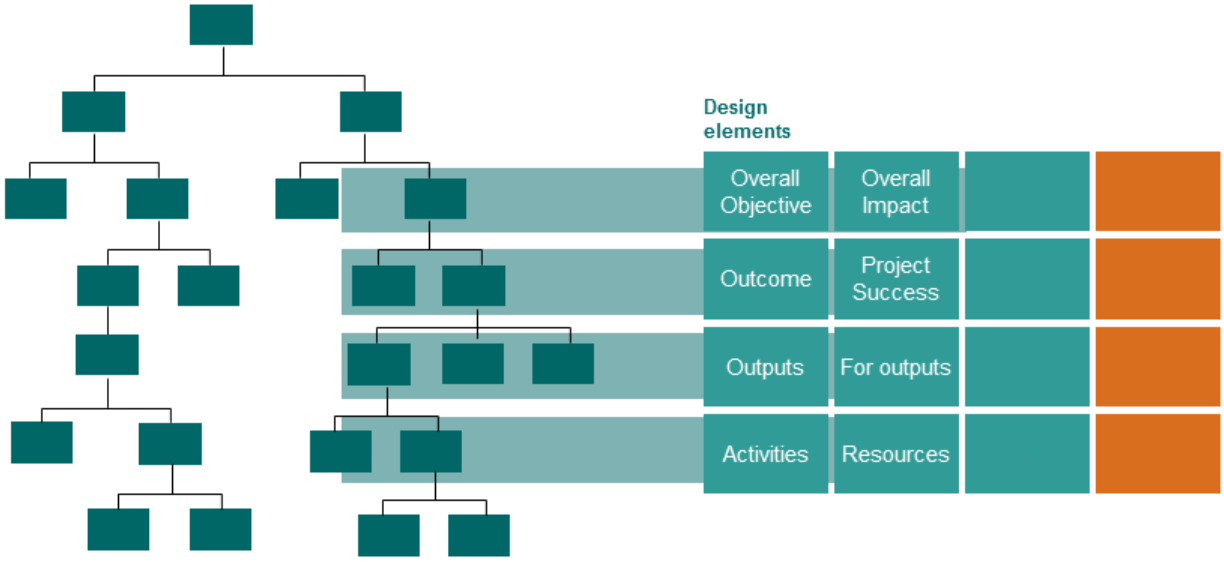

Fig. 9. From a problem tree to an objective tree to LFM design elements.

Project design elements

The project design contains the following specific elements: an overall objective, an outcome, some outputs and various activities. It establishes linkages between these elements via *logical cause–effect relationships*.

Overall objective

The overall objective reflects the long term goal to which the project contributes. This overall objective is not attained by the project alone, but requires the contributions of other programmes or projects.

Outcome (or project specific objective)

The outcome is the planned result of a project, achieved through the collective effort of stakeholders and partners. It represents the change or improvement that occurs as a result of the project. Outcomes are normally achieved after the completion of a project. The time frame for attaining outcomes may vary from project to project, based on the type of intervention and the particular country context.

Outputs

An output is the product that results from the completion of activities within a project. Outputs must lead to achievement of the project outcome.

Activities

Activities are actions taken or work performed to convert inputs into specific outputs (inputs refer to those from both Member State and TC resources). Member State inputs can include, but are not limited to, investment in infrastructure, new staff or additional resources necessary for the project, etc. From the TC side, typical inputs are expert missions, fellowships, scientific visits, training courses and field procurement.

Building the logical framework matrix

Once a project's LFM design elements have been identified, their causal relationship, as well as indicators, their means of verification and the assumptions, must be set out clearly in relation to each other.

A complete LFM has four columns (Fig. 10): column I represents the project description; column II are the indicators used to assess progress and performance; column III lists the means of verifying those indicators and column IV reflects the main assumptions that have to be in place for the project to achieve the desired results.

I Design Elements	II Indicators	III Means of Verification	IV Assumptions
Overall Objective	For long term impact	Documents	For long term sustainability
Outcome	For project success	Documents	Outcome to overall objective
Outputs	For project deliverables	Documents	Output to outcome
Activities	Inputs and resources		Activity to output

Fig. 10. The logical framework matrix.

Indicators

Project indicators are quantitative or qualitative variables that provide a simple and reliable way to measure achievement, or to capture results fully or partially generated by a project. Thus, the indicators facilitate comparison of the actual performance against the planned performance. An indicator should be SMART (specific, measurable, achievable, relevant/reliable and timely/trackable), so that the planned or achieved result can be described in terms of quality, quantity and timeliness.

During implementation, progress in performing activities and producing outputs leading to the achievement of the outcome are monitored by counterparts and project managers on a continuous basis.

Means of verification

Means of verification are the sources of information necessary to verify the accomplishment of indicators. They should include the information that is to be made available, in what form, by whom and when.

Baseline data, implementation records and progress reports are necessary to monitor progress and evaluate the achievement of the project's outcome.

Assumptions

Assumptions are external factors outside the control of the project team, but which need to occur for the project to produce the intended results.

The likelihood of these assumptions occurring should be analysed at the formulation stage and monitored throughout implementation, as these assumptions are decisive factors in taking corrective actions or modifying the work plan. Assumptions that are important but improbable are called 'killer' assumptions. In such cases, the project design should be revamped, otherwise the project must be abandoned.

TABLE 1. EXAMPLE OF A LOGICAL FRAMEWORK MATRIX

Design elements	**Indicator**	**Means of verification**	**Assumption**
Overall Objective: Effective energy reform strategy and programme	*(when available from the related programme)*		
Outcome: Improved energy planning	1. Systems and protocols adapted and in use by April 20xx for continued updating of models	Department of Energy report to final review meeting	Energy demand/supply models are used in energy strategy. Strategy will be approved
Output: 1. Protocols and systems for future energy requirements and options developed 2. A national database of projected energy demand and supply 3. Energy planners fully capable of energy modelling	1. Protocols completed by November 20xx 2. Database covering all regions of the country developed by July 20xx 3. Four energy planners fully capable of using IAEA energy models by end of project	Department of Energy report Department of Energy log book for data collection Expert report	Report being used as basis for further energy planning Database being maintained and updated regularly
Activities: 1.1 To collect data 1.2 To test run simulation models 1.3 To adapt model to country situation 1.4 To develop protocols for data collection and analysis 2.1 To design the database 2.2 To populate the database with results of the models 3.1 To train staff	**Inputs (Summary)** • Expert missions (IAEA) • Fellowships in simulation models (IAEA) • Training courses (IAEA) • Software and computers (CP) • New staff hired (CP) • Building adapted (CP) • ……		Trainees remain in the institution performing their expected duties

Completing the Project Document

Once all the analytical steps have been carried out and the LFM has been constructed, the formulation of the Project Document is straightforward. (See PCMF for relevant Project Document templates, http://pcmf.iaea.org).

Project work plan

A project work plan shows *how* and *when* defined project activities are to be carried out (Fig. 11). The work plan is derived from the activities level of the LFM and is developed through an iterative process of testing, review and validation.

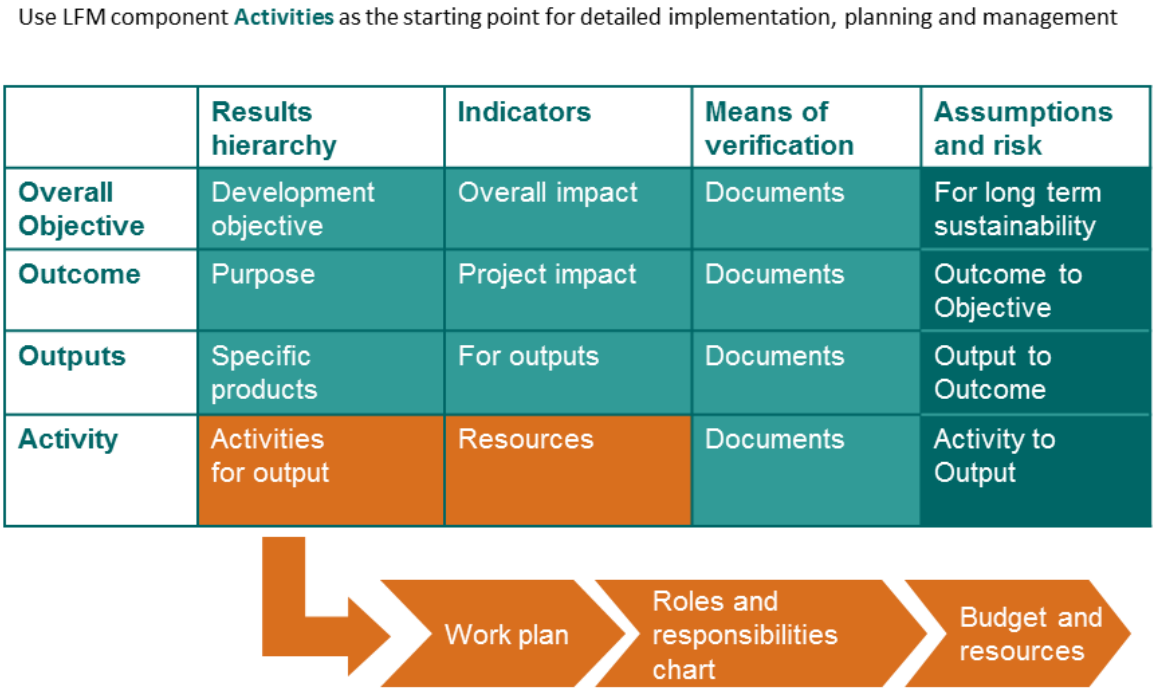

Fig. 11. From LFM to project implementation.

A work plan indicates the necessary activities for each output, showing:

- What is to be done;
- When it is to be done;
- Who will do it;
- What it will cost.

The work plan should provide the basis for developing terms of reference for contracting out certain activities, as well as the direction for implementation of project activities and the application of necessary resources. The work plan identifies Member State and IAEA inputs.

Using the LFM to monitor and assess implementation

Good project design contributes to smooth implementation, effective monitoring, achievement of intended outcome and increased sustainability. The LFM is a basic reference tool for monitoring, assessment and evaluation (Table 2).

TABLE 2: MONITORING USING THE LFM AS A REFERENCE POINT

Design element		Monitoring tool	Actions as a result of monitoring
OVERALL OBJECTIVE Assumptions	→	Assessment	• Improve future TC planning (lessons learned) • Report on project's contribution to higher level objectives at country level or theme level
OUTCOME Assumptions	→	Achievement report Self-evaluation	• Country acknowledges project complete • Close project • Improve future TC planning • Contribute to 'good practices'
OUTPUTS Assumptions	→	Periodic progress report Work plan	• Inform partners about outputs attained • Validate or revise work plan, revise budget • Redefine project components, if required • In-depth project review, if required • Suspend project, in extreme case
ACTIVITIES Assumptions	→	Work plan Resources/inputs	• Validate or revise work plan • Revise budget

Critical factors for project success

In all phases of the project cycle, certain factors are critical for success:

- Team approach to develop, implement and evaluate projects;
- Continuous communication and coordination to ensure appropriate progress monitoring and regular feedback to all major stakeholders throughout the entire process;
- An attitude of constructive engagement to ensure that even the most difficult of challenges has a reasonable chance of resolution.

By closely adhering to these basic principles, a project will have a better likelihood of success.

List of resources

- PCMF Reference Desk. http://pcmf.iaea.org
- The IAEA Statute: http://www.iaea.org/About/statute_text.html
- The Revised Guiding Principles and General Operating Rules to Govern the Provision of Technical Assistance by the IAEA (INFCIRC/267): http://www.iaea.org/Publications/Documents/Infcircs/Others/infcirc267.pdf
- The Revised Supplementary Agreement Concerning the Provision of Technical Assistance by the IAEA (RSA);
- The Technical Cooperation Strategy: The 2002 Review (GOV/INF/2002/8/Mod1)

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