The Efficiency Lab
Lessons Learned

A guide to analysing the efficiency of development interventions

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connecting innovators for development

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1. Introduction to The Efficiency Lab

The Efficiency Lab is an initiative of several member organisations of Partos implemented in the framework of The Spindle. It was conceived as a response to the ground-breaking evaluation of the MFSII[1] (Medefinancieringsstelsel 2) programme, which was published in June 2015. The evaluation was a massive undertaking that resulted in 200 technical papers, evaluations of individual projects and organisations and eight country-level case studies.

One of the surprising revelations made by the MFSII evaluation team was that, despite the scope of the study, they were unable to provide answers to the efficiency question. The report noted that the evaluated projects had either not collected relevant data on this topic, and/or rarely analysed the efficiency of their interventions. In their recommendations, the evaluators challenged NGOs and other actors to take steps to address this gap by paying more attention to efficiency in their interventions.

The Efficiency Lab (hereafter referred to as The Lab) was established as a direct response to this challenge. The project team identified two core objectives for the initiative:

- Develop a common understanding among Partos members about the concept of efficiency and the various methods for analysing efficiency, including their advantages and disadvantages.
- Identify and/or develop a recommended repertoire of appropriate policies, methods and tools for addressing the efficiency question in development interventions.

The Lab was supported in this endeavour by a panel of experts composed of:

- Markus Palenberg[2], CEO of the Institute for Development Strategy in Munich, Germany
- Pol De Greve, Development Economist at Context International Cooperation
- Antonie de Kemp, evaluator at IOB

Nine[3] Partos members were represented in the core group of The Lab. The group met a total of seven times between 2017 and 2019 and convened three conferences during this period.

1st Efficiency Lab Conference, November 2017: The panel of experts presented their views on why the efficiency question is rarely addressed in a satisfying way, and what can be done to overcome this problem. They presented recommendations on how to assess efficiency for a sample of ten projects representing common development interventions; value chain development, primary and informal education, higher education, micro finance, water supply, sanitation and hygiene, disability, sexual and reproductive health and rights, gender equality, lobbying and advocacy/influencing policy, conflict prevention and peace building, and renewable energy.

2nd Efficiency Lab Conference, June 2018: Markus Palenberg and Pol de Greve presented a set of methods and tools that can be used to analyse the efficiency of development interventions. After the conference, four Partos members (Woord en Daad, Aflatoun, Simavi and War Child) conducted pilot studies, applying a selection of these methods to their own practice. Their staff were also trained in the application of these methods.

3rd Efficiency Lab Conference, May 2019: This final conference discussed the findings of the pilot studies and took stock of lessons learned by The Lab. Drawing on these lessons, participants explored some implications for upcoming evaluations of ongoing Dutch government funded programmes in the framework of "Dialogue and Dissent,"[4] the successor to MFSII.

This guide contains an overview of the main findings and lessons learned over the course of this project. We hope it will help members of Partos and other development NGOs to improve their performance in analysing efficiency.

A detailed overview of the four pilot studies is contained in Annex 1.

2. What is efficiency, and why is it *that* relevant?

In their analysis of the efficiency question, the MFSII evaluators stated that *"... clearly, the efficiency question is highly relevant, and there appears to be ample room for improvements."* However, the evaluation report did not define efficiency, nor did it explain WHY the efficiency question is so important. This relevance gap became the starting point of The Efficiency Lab and is also the first theme addressed in this report.

In this Guide, we adopt the definition of efficiency offered by the Ministry of Finance of the Netherlands: *"Efficiency is the extent to which optimal effects are achieved at the lowest possible cost without undesirable side effects."* It is important to point out that according to this definition, efficiency is about the relationship between costs and effects[5] of an intervention, project, programme or policy, and NOT about the relationship between costs and activities or outputs.

In order to explore why the efficiency question is relevant, The Lab took a deep dive into the entire project or programme cycle.[6] It found that there are a number of stages at which efficiency analysis is of crucial importance. This includes when teams:

- **Select interventions during the design stage of a project:** At this stage teams compare various options and try to select an intervention, or mix of interventions, that are expected to achieve optimal effects at the lowest possible cost, without undesirable side effects.
- **Qptimise efficiency during the implementation stage:** During the implementation stage the selected interventions need to be executed in the most efficient way. Project teams try to maximise the positive effects and minimise costs while avoiding undesirable side effects.
- **Evaluate pilot interventions:** Pilots of innovative approaches need to be compared with conventional interventions in terms of their efficiency. A new intervention that, on balance, does not generate more desired effects per euro spent will rarely be considered an improvement.

- **Assess the scalability of innovative interventions after a pilot:** The key question that emerges after an innovative intervention has been successfully piloted is whether the costs of scaling up are proportionate with the expected effects.
- **Account for their performance during implementation and in the evaluation stage:** Project costs need to be accounted for to donors, beneficiaries, and other stakeholders. Such accounting includes addressing whether results have been achieved at an acceptable cost and whether project implementers have done their best to achieve these effects at the lowest possible cost.

The diverse applications of efficiency questions listed above clearly indicate that measuring efficiency is not only relevant for accountability, which is the current focus in development practice. By systematically posing the efficiency question when selecting, executing, evaluating and assessing the scalability of development interventions, implementers and evaluators can contribute to the search for more effective solutions to development challenges. In fact, the efficiency question could be one of the main drivers of innovation in development cooperation.

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[1] MFSII was the grant framework through which the Dutch Ministry of Foreign Affairs allocated €1.9 billion to 20 alliances of Dutch development NGOs and their Southern partners between 2011 and 2015. The aim of MFSII was to contribute to building and strengthening civil society in the South.
[2] Markus Palenberg is the author of what is considered to be the standard reference for analysing efficiency, 'Tools and Methods for Evaluating the Efficiency of Development Interventions,' Evaluation Working Papers. Bonn: Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (2011)
[3] Aflatoun, Cordaid, GPPAC, Oxfam Novib, Pax,Simavi, SNV, War Child and Woord en Daad
[4] "Dialogue and Dissent" is the policy framework of the Dutch Ministry of Foreign Affairs (MoFA) for strengthening civil society in low- and middle-income countries for the period 2016-2020. Financing is channelled through strategic partnerships with 25 consortia of civil society organisations (CSOs) in the Netherlands and abroad. Each of these consortia focuses on lobbying and advocacy activities in a specific thematic area, such as water, food security, sexual and reproductive health and rights or gender equality.

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[5] In this report, we adopt the following definitions for a number of common terms used to describe results in development interventions:
- **Results:** All impacts, outcomes and outputs of an intervention.
- **Effects:** All impacts and outcomes of an intervention (NB: this does not refer to outputs as defined below).
- **Impacts:** "Positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended" (Source: 'Glossary of key terms in evaluation and results-based management,' DAC Working Party on Aid Evaluation (WP-EV) 2002)
- **Outcomes:** The direct effects of a project, obtained in the short- and medium-term, and which focus on observable changes in behaviour, performance, relationships, policies and practices of actors.
- **Outputs:** The direct and early results of an intervention's activities. Outputs refer to the most immediate sets of accomplishments necessary, to produce outcomes and impacts. (Source: 'A Guide to Actionable Measurement,' Bill & Melinda Gates Foundation, 2010)
[6] The Efficiency Lab limited the scope of its work to the efficiency of projects and programmes and the mix of interventions within these projects and programmes. The Lab did not venture into the efficiency of policies or the efficiency of organisations.

3. Room for improvement: Adapting measurement tools to analyse the efficiency of different development interventions

Having established the relevance of the efficiency question and its potential for boosting innovation in the sector, The Lab turned to the next question posed by the MFSII evaluators: Why is it that efficiency is not addressed more systematically in the development sector? To find answers to this question, we drew on practical examples of development interventions to identify some challenges that practitioners encounter when trying to incorporate an efficiency perspective. The following three factors emerged:

- There are diverging views about what constitutes efficiency. Some agencies define efficiency as the relationship between costs and outputs.[7] If one follows this logic, can organising a plethora of trainings, workshops or procurements at an acceptable cost be qualified as efficient if there are no demonstrable, or even negative impacts of such interventions? In our view, an efficiency analysis that narrowly focuses on the link between costs and outputs (activities) will be unlikely to generate new insights that can lead to the development of better interventions.
- Because of the diverse interpretations of efficiency, not only among NGOs but also among donors and evaluators, there is a lack of clarity about the methods and tools that can be used to analyse efficiency.
- The efficiency question is often raised too late in the project cycle, usually when an evaluation is imminent. This also means that it is often too late to identify the most appropriate methods for analysing efficiency. If project staff do not know which methods will be used to assess efficiency then they cannot gather the most relevant data during the implementation phase. As a result, evaluators will likely not have access to the data needed to conduct a comprehensive efficiency analysis at the conclusion of a project.

Based on these real-life dilemmas, The Lab identified a number of important lessons that can help development projects and programmes to overcome challenges in dealing with efficiency questions.

Lesson 1: A useful definition of efficiency must be based on the premise that without effectiveness, there can be no efficiency. The definition of efficiency used by the Dutch Ministry of Finance meets this criterion.

Lessons 2: The design stage of a project or programme is the most appropriate point at which to identify methods for analysing efficiency throughout the project cycle. Once project teams are aware of, and (if necessary) trained, in using these methods then it becomes clear which data need to be gathered. Another important advantage of early identification is that project staff can focus their efforts on gathering data that will be relevant in assessing efficiency. In addition, the data gathering exercise can in itself help stimulate a team to define outcomes in the most precise terms possible.

Lesson 3: Not all assessment methods are applicable to all projects. As a rule of thumb, the easier it is to quantify the results and costs of an intervention, the larger the choice of methods. In general, costs and results are relatively easy to quantify for projects that focus on the improvement of income, productivity (value chain development) or services (water supply, education, health services).

The choice of methods is much more limited for projects with more intangible results, or projects where outcomes may not be directly attributed to the intervention. Examples of such projects can be found in such areas as peace building and conflict resolution, or influencing decision makers through lobbying and advocacy campaigns which is the focus of projects implemented under the "Dialogue and Dissent" policy framework. How to deal with efficiency questions for projects that fall under this last category was one of the issues addressed at the third Efficiency Lab conference on 23 May 2019. The conclusions of these deliberations can be found in Chapter 4.

Lesson 4: It is important to explicitly state the purpose for analysing efficiency at a specific moment in the project cycle, because the choice of method depends on the purpose.

Two broad categories of purposes and corresponding methods can be distinguished.

- *When the purpose is to compare an intervention in terms of efficiency with a benchmark or with other interventions:* Useful methods include cost benefit analysis, social return on investment, cost utility analysis, or efficiency ratings by stakeholders. This is usually the case when:

  - Selecting interventions at the project design stage
  - Evaluating a pilot intervention
  - Assessing the scalability of an innovative intervention after a pilot
  - Accounting for project performance at the evaluation stage

- *When the purpose is to make an ongoing project or intervention more efficient:* Useful methods include financial analysis, unit cost benchmarking, efficiency ratings by stakeholders, or the follow-the-money-method. This is usually the case when:

  - Optimising efficiency during project implementation
  - Accounting for project performance at the implementation stage

Lesson 5: In reality, it is quite difficult for practitioners to identify the most appropriate methods for analysing efficiency for a specific project or intervention. To address this problem The Lab has developed several instruments to guide project teams through the selection process.

- The first tool is an options chart (see Annex 2). This is a flow chart that guides the user through a series of questions concerning the proposed intervention. By responding with "yes" or "no" the user is able to identify the most appropriate methods for assessing the efficiency of a specific intervention or programme choice.
- The second guidance tool is a set of cases and recommendations tailored to common project types and intervention approaches in Dutch development cooperation. This "toolbox" was developed by The Lab's panel of experts, who identified the most appropriate methods and tools for analysing efficiency in various project settings. These cases and recommendations can be downloaded on the Partos/Spindle website.[10] Annex 3 contains a brief introduction to the cases.
- Finally, four Partos member organisations experimented with a selection of the above-mentioned methods. Their experiences, documented in Annex 1, may provide inspiration to others.

Lesson 6: In order to reap the benefits of efficiency analysis, it is important to do it regularly and systematically.

As the MFSII evaluators observed, one of the factors that make it hard to evaluate the efficiency of development projects is the absence of benchmarks. Benchmarks will only emerge if efficiency analysis and the gathering of relevant data becomes a routine part of development practice. Only then will it be possible to compare various interventions in terms of their costs and effects.

For a systematic inclusion of efficiency analysis in all programmes, organisations need to develop policies and procedures at the organisational level that apply to all projects, programmes, and also to other activities that are not within a specific project or programme. Therefore, Barrett, van Wessel and Hilhorst[11] have proposed that every organisation should formulate a Theory of Efficiency (ToE) comprising procedures to be followed for monitoring and analysing efficiency. The Lab developed a generic example to help organisations developing their own ToE (See Annex 4).

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[7] For example, the OECD's Development Assistance Committee (DAC) defines efficiency as follows: "Efficiency measures the outputs - qualitative and quantitative - in relation to the inputs. It is an economic term which signifies that aid uses the least costly resources possible in order to achieve the desired results. This generally requires comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted."

[10] https://thespindle.org/efficiencycases/
[11] Jennifer B. Barrett, Margit van Wessel and Dorothea Hilhorst (2016). 'Advocacy for Development Effectiveness, Monitoring and Evaluation,' Wageningen University

Methods that can be used to analyse the efficiency of development projects

The methods listed below can be used to analyse the efficiency of development interventions. In-depth discussions of these and other methods can be found in Markus Palenberg's book, *Tools and Methods for Evaluating the Efficiency of Development Interventions.*[8]

Cost Benefit Analysis and Social Return on Investment: These two methods outline procedures for evaluating the efficiency of an intervention by weighting outcomes/benefits against costs (whereby both costs and benefits are expressed in monetary units). The results of these calculations are expressed in various ways, including net present value, internal rate of return, social return on investment and benefit-cost ratio.

Cost effectiveness analysis: This is a procedure for evaluating the efficiency of an intervention by weighting outcomes against costs, whereby the principle outcome is expressed in "natural units." For example, the natural unit of an education project is one graduated student. The efficiency of the intervention can be expressed in costs per graduated student.

Cost utility analysis: This is a procedure for evaluating the efficiency of an intervention by weighting outcomes against costs, whereby the outcome is captured in a "utility value." An index for measuring the level of wellbeing is one example of a utility value. A utility value that is often used to assess the efficiency of medical interventions is the Quality-Adjusted Life-Year (QALY). QALY is therefore a measure for the quality and quantity of life lived.

Comparative ratings by stakeholders: This is a procedure for evaluating the efficiency of an intervention based on feedback from stakeholders. Two types of comparative ratings can be distinguished.[9]
- *Comparative rating of efficiency.* Stakeholders are asked to rate specific aspects of an intervention's efficiency against real or hypothetical alternatives.
- *Comparative rating of effectiveness and cost analysis.* With this approach, stakeholders are asked to rate the effectiveness of different alternatives. The evaluator then assesses the costs of each alternative in order to rank them in order of efficiency.

Financial analysis: This is a procedure for evaluating the efficiency of a (business oriented) intervention in terms of its profitability, whereby both costs and benefits are expressed in monetary units.

Unit cost benchmarking: This is a procedure for evaluating the efficiency of an activity by weighting outputs against costs, whereby the output is expressed in natural units. For example, the efficiency of a training can be expressed in training costs per participant.

"Follow-the money" or Expenditure Tracking: This involves systematically scanning all project or programme expenditures and identifying opportunities to reduce costs or increase yield.

To conclude, efficiency is not the only criterion used to select an intervention or mix of interventions to address a specific problem. Depending on the type of project, or development challenge addressed by the intervention, other criteria may be considered. These could include its relevance and whether the intervention contributes to important objectives, such as equity, sustainability or developing the capacity of the implementing organisation. It must be noted, however, that depending on the type of project or stakeholders involved (including donors) these different criteria for selecting a specific intervention may not be considered as equally important. Moreover, prioritising or "trading-off" various alternatives becomes more difficult when the number of criteria are increased.

Project designers and practitioners are therefore advised to make use of the "Multi-Attribute Decision Making" (MADM) method in combination with any of the methods described above. MADM offers a systematic approach for listing and assigning weighting factors to all criteria that matter (including those that are not easily quantified). This approach also makes it easier for implementers to explain their ranking of the different criteria and hence avoid making project decisions in an arbitrary manner.

[8] Palenberg, M. (2011). 'Tools and Methods for Evaluating the Efficiency of Development Interventions,' Evaluation Working Papers. Bonn: Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung
[9] Ibid, page 51

4. Analysing the efficiency of lobbying and advocacy projects

It is not easy to analyse the efficiency of interventions in the area of lobbying and advocacy. The effects are often intangible and difficult to capture in numerical values. Attributing changes to the intervention is also problematic because decision making occurs in complex systems influenced by many other factors. Therefore, the choice of monitoring methods is much more limited compared to projects that produce more tangible results. If the options chart presented in Annex 2 is applied to lobbying and advocacy, only two types of methods emerge:
- Multi-Attribute Decision Making (MADM); and
- Efficiency ratings by stakeholders

MADM: Multi-Attribute Decision Making is usually undertaken at the project design stage when teams are developing interventions, or a mix of interventions. MADM involves systematically listing all criteria that matter and assigning weighting factors to these criteria. In order to consider efficiency, cost should be one of the criteria used. In the hypothetical case presented in Graph 1, four different types of campaigns aimed at influencing decision making on climate change climate are compared. The criteria are listed in the left column. The next four columns (2-5) present the scores for various lobbying and advocacy interventions. The weighing factors are listed in the final column. Developing a list of criteria and weighing factors can be done by one person, a team of experts or stakeholders. The conclusion of this fictional example would be that "Direct Lobby" is the preferred intervention. The advantage of using MADM is that this method makes it possible to be very transparent why a specific intervention has been selected.

Methods	Mobilisation via social media	Direct lobby	Stunts	Public hearings	
Criteria			Scores		Weight
Reach out to policy makers	3	5	2	3	0.20
Reach out to public	4	1	4	2	0.10
Reach out to journalists and other influencers	4	1	3	3	0.15
Influence on policy makers	1	5	2	3	0.15
Relevant for agenda setting	2	4	1	4	0.10
Use of content in policy debate	2	4	2	3	0.10
Influence on policy implementation	1	3	1	2	0.05
Cost *(1=high, 5=low)*	4	2	3	2	0.15
Ranking *(1=low, 5=high)*	**2.80**	**3.25**	**2.35**	**2.80**	

Source: Presentation by Pol De Greve and Markus Palenberg at the 3rd Efficiency Lab conference on "Analysing the efficiency of development interventions," Partos, The Hague, 23 May 2019

Efficiency Ratings by Stakeholders: This tool is typically applied during the evaluation stage of a project and entails asking stakeholders to rate the effectiveness of different (real or hypothetical) interventions. The evaluator then assesses the costs of each alternative in order to come to a conclusion about efficiency. The results can be presented in a similar way as in the diagram below.
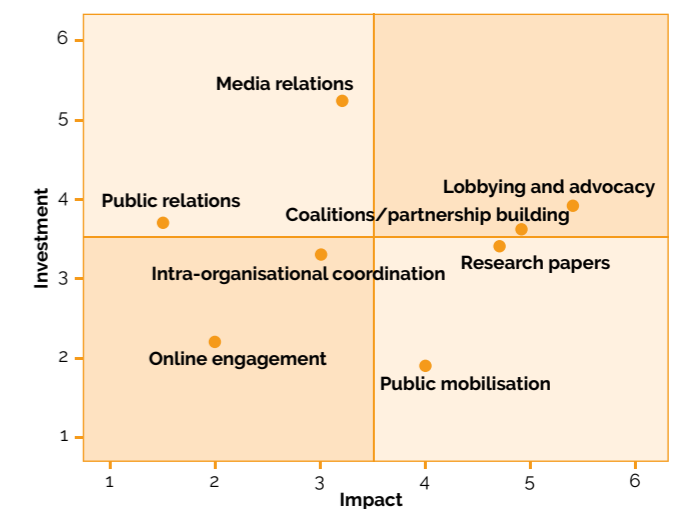
Source: Dr. Brian Cugelman and Eva Otero. 2010. 'Basic Efficiency Resource: A framework for measuring the relative performance of multi-unit program,'. Leitmotiv and AlterSpark. Please note that it is not clear how impact was assessed in the case presented by Cugelman and Otero, but if impact is assessed using efficiency ratings by stakeholders the results can be presented in a similar diagram.

Annex 1: Four pilots on analysing efficiency in development projects

WOORD EN DAAD: MEASURING EFFICIENCY IN VALUE CHAIN DEVELOPMENT PROJECTS

Woord en Daad analysed the efficiency of a value chain development project in the cashew sector in Benin and Burkina Faso. The aim of the project is to contribute to increased income for at least 10,000 smallholder farmers and 2,500 workers employed in the sector. Interventions include the provision of extension services, inputs and access to credit. The project also provides support to cashew processors and facilitates dialogues among diverse actors in the value chain.

While the pilot commenced when the project was already at the implementation stage, the analysis was based on figures and assumptions that were included in a project proposal that was submitted (and awarded a grant) two years before. The pilot can therefore be seen as an example of an ex-ante efficiency analysis.

In carrying out this pilot, Woord and Daad aimed to find out how an ex-ante efficiency analysis can help provide insights on the relationship between the costs and the anticipated effects of a value chain development project, as well as factors that influence these results.

Because many of the costs and effects of a value chain development project can be expressed in monetary values, Woord and Daad chose cost-benefit analysis (CBA) as the measurement tool.

Application of CBA analysis in the cashew value chain

The first step in the analysis was calculating the costs and benefits of the project (in euros) for all relevant stakeholders. They included; cashew farmers, processors, local de-shelling units, cashew apple processing units, micro finance institutions, employees working in the processing industry and the project managers (Woord en Daad). The data was derived from the business cases of each of the stakeholder groups.

Table one shows how the incremental benefits of the project were calculated for farmers

Table A1. Calculation of incremental benefit for farmers

Year	Costs for one average farmer in €		Benefits for one average farmer in €		Net result in € for one average farmer (Benefits-Costs)		WiP-WoP = net incremental benefit in € for one average farmer	WiP-WoP = net incremental benefit in € for all 10,000 farmers
	WoP	**WiP**	**WoP**	**WiP**	**WoP**	**WiP**		
0	213	213	387	387	174	174	0	0
1	234	251	425	456	191	205	14	140,000
2	255	295	464	533	209	238	30	300,000
3	268	326	483	594	215	268	53	530,000
4	298	385	541	713	243	328	85	850,000
5	318	451	580	859	262	408	146	1,460,000
6	341	514	619	973	278	459	181	1,810,000

For one average farmer, the costs and benefits per year were calculated for the "with project" situation (columns 3 and 5) and the "without project" situation (Columns 2 and 4) over a period of seven consecutive years. Subsequently, the net incremental benefit for one average farmer (Column 8) was calculated by subtracting (for each year) the "without project" results (Column 6) from the "with project" results (Column 7). This was multiplied by 10,000 to arrive at the net incremental benefit of all farmers (Column 10). It must be noted, however, that this is a simplified calculation. In fact, individual farmers started experiencing the benefits of participating in the project at different stages. Subsequently, in a more sophisticated version of the analysis, a distinction was made between various cohorts of farmers.

The same calculation was done for the costs and benefits of all other stakeholders. Table 2 shows how this was done for 10 planned cooperative cashew apple processing units to be established by the project.

Table A2. Calculation of incremental benefit of 10 planned cooperative cashew apple processing units

Year	Costs for one cashew processing unit in €		Benefits for one cashew processing unit in €		Net result in € for one cashew processing unit (Benefits-Costs)		WiP-WoP = net incremental benefit in € for one cashew processing unit	WiP-WoP = net incremental benefit in € for all 10 cashew processing units
	WoP	**WiP**	**WoP**	**WiP**	**WoP**	**WiP**		
0	-	-	-	-	0	0	0	0
1	-	1,463	-	1,866	0	403	403	4,031
2	-	1,463	-	1,866	0	403	403	4,031
3	-	1,463	-	1,866	0	403	403	4,031
4	-	1,463	-	1,866	0	403	403	4,031
5	-	1,463	-	1,866	0	403	403	4,031
6	-	1,463	-	1,866	0	403	403	4,031

The figures for net incremental benefits listed in the last columns of Tables 1 and 2 represent an ideal situation where the farmer or other stakeholder is able to use all this money from the first year (Year 0). This is of course not the case in real life. In the economic theory underlying the CBA method, the present value of a euro that can be spent in the future is worth less than a euro that can be spent right now. The further a benefit is pushed to the future the more its present value diminishes. Therefore, the net incremental values need to be corrected with a percentage called a discount rate.[12] This is done in Table 3.

Table A3. Discounted net incremental benefits for all farmers for discount rates between 0 and 7%

WiP-WoP= net incremental benefit in € for all 10,000 farmers	Net incremental benefits in € for all farmers for various discount rates							
	0%	1%	2%	3%	4%	5%	6%	7%
0	0	0	0	0	0	0	0	0
140,000	140,000	138,614	137,255	135,992	134,615	133,333	132,076	130,841
300,000	300,000	294,089	288,351	282,779	277,267	272,109	266,999	262,032
530,000	530,000	514,413	499,431	485,025	471,168	457,834	444,998	432,638
850,000	850,000	816,833	785,269	755,214	726,584	699,297	673,280	648,461
1,460,000	1,460,000	1,389,140	1,322,367	1,259,409	1,200,014	1,114,948	1,090,997	1,040,960
1,810,000	1,810,000	1,705,102	1,607,228	1,515,847	1,430,469	1,350,650	1,275,979	1,206,079

In Table 3. the discounted net incremental value is for farmers is calculated using discount rates ranging from 0 to 7%. In the pilot, discount rates up to 20 were calculated but not printed here because of lack of space. In theory, discount rates can be used to infinity but 1% and 30% are commonly seen as extremes.

Similar to what was done for the farmers, the discounted net incremental benefits were calculated for all other stakeholders for discount rates up to 20%.
In an excel sheet the discounted net incremental benefits for all stakeholders were added up, resulting in figures for the net present value (NPV) for the entire project. Table 4 shows the net present value for all stakeholders for discount rates ranging from 1 to 20%.

[12] For further explanation on discount rates and other economic concepts visit the website www.freeeconhelp.com

Table A4. Net present value of the project

Discount rate	NPV project
0%	8,017,394
1%	7,581,066
2%	7,171,259
3%	6,786,109
4%	6,423,903
5%	6,083,061
6%	5,762,127
7%	5,459,757
8%	5,174,711
9%	4,905,843
10%	4,652,091
11%	4,412,417
12%	4,185,842
13%	3,972,109
14%	3,769,858
15%	1,387,695
16%	3,396,639
17%	3,225,004
18%	3,062,109
19%	2,907,751
20%	2,761,808

Table A5. Net present value of the project excluding the processors

Discount rate	NPV project
0%	1,658,149
1%	1,490,634
2%	1,334,575
3%	1,189,126
4%	1,053,508
5%	927,006
6%	808,963
7%	698,773
8%	595,878
9%	499,767
10%	409,964
11%	326,019
12%	247,412
13%	174,197
14%	105,622
15%	64,163
16%	-18,823
17%	-74,908
18%	-127,567
19%	-176,783
20%	-222,597

The analysis

Investors are primarily interested in the net present value (or worth) of a project. An NPV higher than 0 indicates that the joint earnings of all beneficiaries is higher than the anticipated costs. According to the NPV rule,[13] if the NPV is lower than 0 the project would not be a good investment. In Table 4, the NPV is higher than 0 for all discount rates up to 20%, which is a very promising result. As the discount rate increases the NPV will eventually become 0. The discount rate for which the NPV is 0 is called the Internal Rate of Return (IRR). For this project, the IRR is higher than 20% which is very high for a value chain development project.

Because all figures were included in an excel sheet it was possible to experiment with the model and see the results for a different set of assumptions. For example, the assumption that processors would benefit from this project was changed into the assumption that the processors would not benefit at all (net benefit 0). The results for this changed assumption are shown in Table 5.

This new assumption changed the picture significantly. We see in Table 5 that the NPV becomes 0 between the discount rates 15 and 16%. For this project, the IRR is between 15 and 16% which is generally considered very acceptable. The fact that the IRR goes down significantly after excluding the processors suggests that processors are the big winners of the project.

Conclusion

The pilot was considered very successful, which helped to convince the team members involved that applying CBA when designing a value chain project can generate valuable insights for improving or fine-tuning the intervention approach. Cost-benefit analysis helps to clarify which elements of an intervention are of critical importance to ensure that the main target of the intervention (smallholder farmers) will benefit from the project. It also helps with identifying the types of data that need to be gathered to support monitoring and evaluation of a value chain intervention.

Lessons learned
- CBA analysis provides valuable insights on the assumptions underlying the project and the benefits of the project for the various stakeholders, in particular for smallholder farmers.
- Because the model and all data could be captured in an excel sheet it was possible to experiment with the assumptions[14] and find out the effects of contextual factors such as farm gate prices on the income of farmers.
- NPV and IRR are not the only factors to consider in a cost-benefit analysis. A project with an NPV higher than 0 and a high IRR that does not ultimately generate substantial improvements in the income of farmers cannot be considered as contributing to combatting poverty. Other factors such as the net benefits for the average farmer and the number of farmers reached by the project need to be looked at. When designing a value chain intervention, therefore, project teams should also consider incorporating MADM analysis to enable them to list and weight all relevant factors.

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[13] The net present value rule is the idea that company managers and investors should only invest in projects, or engage in transactions that have a positive NPV and avoid investing in projects that have a negative NPV.

[14] By tinkering with the model the CBA analysis pilot found out that the IRR was very sensitive to prices paid for farmers' produce. When the hypothetical farm gate price was raised by 2%, the IRR became 4% and with an increase of the farm gate price to 4%, the IRR rose to 14%. During the implementation phase it had become clear that the farm gate price for cashew nuts was much higher than used in the business case for the average farmer. So, for farmers the project turned out much more successful than anticipated in the project design stage.

AFLATOUN: MEASURING EFFICIENCY IN EDUCATION PROJECTS

In Tanzania, pregnant teenage girls are forced to leave school. Most young mothers do not return to school after giving birth. It is estimated that between 2003 and 2011, 55,000 pregnant girls between the age of 13 and 18 dropped out of school. In 2018, Aflatoun and the Karibu Tanzania Organization (KTO) piloted[15] an innovative education approach targeting young mothers who had dropped out of the public secondary school system. The organisations developed a special programme geared to the needs of these girls by combining elements of secondary and vocational education. The programme was offered through Folk Development Colleges (FDCs), which are vocational training institutions for adult education. Three

out of the 55 FDCs in the country – located in the districts Bigwa, Masasi and Mbinga - were selected for the pilot. 56 young mothers participated in the pilot.

With a view to scaling up the programme to 20 FDCs in Tanzania in 2019 and 2020, the partners were interested in comparing and analysing the efficiency of the three pilot schools in offering the programme to the young mothers. In particular, the partners wanted to understand what factors had influenced the efficiency of the intervention.

A consultant was hired to conduct the efficiency analysis. It was decided to use cost effectiveness analysis for this. The study showed a significant difference in costs per student between the three FDCs (see Table 1).

Table A6. Costs of delivering combined secondary/vocational education to young mothers through FDCs (for students with one child)

	Cost per student in €			
	Bigwa	**Masasi**	**Mbinga**	**Average**
Education costs	273	204	271	249
Food costs	174	245	110	176
Childcare costs	109	34	45	63
Boarding costs	45	38	45	43
Total costs	**602**	**521**	**472**	**532**

A close analysis of the costs showed that these differences could be largely explained by differences in student/teacher ratio and utilisation of childcare facilities. In Bigwa the childcare costs per student were relatively high because the childcare facilities were under-utilised. In Bigwa and Mbinga the student/teacher ratio was lower than in Masasi. This observation resulted in the conclusion that when scaling up the programme costs can be reduced by

ensuring that classrooms and childcare centres are operating at full capacity.

The consultant also compared the education costs of the young mothers following the new programme with the costs of educating regular students in the public secondary school system and Institutes of Adult Education (IAE centres).

Table A7. Estimated costs for offering secondary education per student. A comparison of three education systems.

	Cost per student	
	In Tanzania shillings	**In euros**
Public school system	357,660	163
IAE Centre	290,000	132
FDC	548,724	249

As expected, the educational cost of delivering secondary education (excluding supplementary services such as boarding or childcare) is significantly higher in a FDC than the equivalent cost of delivery through the public secondary school system. This is primarily due to the advantages of specialisation, economies of scale, and larger class sizes in the public schools. Furthermore, the FDC approach combines secondary education, vocational education and a life skills programme. The vocational training elements are a particularly costly component of the FDC option.

Lessons learned from conducting an efficiency analysis for a pilot project
Conducting a cost effectiveness analysis is a rather straightforward method, provided the data are available. Efficiency analysis is essential for formulating recommendations concerning scaling-up interventions.

PILOT BY SIMAVI: MEASURING EFFICIENCY IN HEALTH PROJECTS

Simavi and its partners (SOLID and KIDS) are developing an innovative approach to improve the health and well-being of pregnant women and young mothers. The aim is to combine interventions in the WASH (water, sanitation and hygiene) and SRHR (sexual and reproductive health and rights) sectors, based on the hypothesis that combined interventions generate more impact than sector-specific projects.

The partners developed a prototype project on maternal health in the region of Kapilvastu targeting 1,500 women and their babies.[16] The specific objectives of the project were to ensure that the women were able to:

- practice healthy and hygienic behaviour during and after pregnancy and delivery;
- deliver their babies with the help of a skilled, women-friendly birth attendant, who is able to address inclusion of most vulnerable groups; and
- make free and informed decisions regarding their health and that of their babies;

An additional objective was to reach out to disadvantaged women in particular.

After an inception phase that included conducting a baseline review and undertaking capacity building for programme staff, the implementation phase was launched in April 2019.

The partners plan to address two efficiency questions as part of the pilot:

- Question 1: How can the efficiency of the intervention be improved during the implementation phase? To address this question, the pilot will use the "Follow-the-money" method to identify opportunities to reduce costs and increase effects.
- Question 2: How much enhanced health and wellbeing has been achieved by the end of the pilot project and how can this be related to costs? In the evaluation stage cost utility analysis will be used to compare benefits and costs in terms of health and wellbeing to costs. However, work is still ongoing to develop a specific tool for measuring health and wellbeing.

PILOT BY WAR CHILD: MEASURING EFFICIENCY IN PEACEBUILDING PROJECTS

War Child's pilot started with an attempt to conduct an efficiency analysis of a proposal for a community-based peacebuilding project in Jonglei, South Sudan.

After comparing the various analytical tools, it was concluded that it is very hard to subject a peacebuilding project to an efficiency analysis. The intended and realised impact[17] and outcomes[18] of such a project can hardly be captured in quantifiable indicators. For this reason, conflict prevention and peacebuilding projects are rarely subjected to an efficiency analysis.[19] In recognition of this, and because community peace building is not within War Child's "core business," the organisation decided to shift the focus to projects that aim to improve the wellbeing of children in fragile and volatile environments. Such projects are more common in the practice of War Child.

For the pilot, two projects were selected: a bicycle project and an e-hub project in Bogota, Colombia. Both projects targeted young people who run the risk of being recruited by violent gangs and sought to improve their wellbeing through providing them with opportunities to engage in further education, training or employment. The bicycle project provided training to young people to become professional bicycle repairers while the e-hub project focused on improving young people's access to the internet. On the input (cost) side, both projects offered professional skills development as well as life skills development. However, there were variations in the kind of training offered to participants with some receiving only one of the trainings, while others were able to access both. The question posed by the study was which of the two approaches was most efficient, meaning which approach generated the best results per euro spent.

Choice of method
When these projects started War Child did not yet have its new monitoring framework in place. The framework calls for the application of standard methods that War Child uses to measure results in terms of improved wellbeing. For the age group covered by the two projects (age 10+) the short Warwick Edinburgh Mental Wellbeing Scale (age 10+) was supposed to be used. In that case, a cost utility analysis should have been conducted to assess which of the two projects had contributed the most per euro to boosting the wellbeing of participants.

To make up for the lack of required data, the project decided to use the unit cost benchmarking method to measure the number of youth that was expected to be trained by the end of the project period. The following overview shows that it is really important to distinguish among the participants in the analysis; whether those that received either professional or life skills only, or those that received both.

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[16] In addition to these women, 9,000 community members are expected to benefit from improved WASH/ SRHR facilities. In total, around 23,000 people are expected to benefit from enhanced awareness on issues concerning WASH and SRHR

[17] Impact: "Contribution to an environment of peace, tolerance and inter-ethnic understanding."
[18] Outcomes:
· Increased participation of young women and men in the political life of their community/payam and country
· Young men and women participate in platforms for organising, training, learning, and dialogues (REFLECT groups)
· Local and/or traditional community-based resolution mechanisms function better
[19] Kemp, Antonie de (2017). 'Efficiency analysis in conflict prevention and peace building: Recommended approaches for assessing efficiency.' Discussion paper for The Partos Efficiency Lab

Urban projects in Bogota, Colombia	Project budget	# of young people trained	A) Cost per trainee (in €) (in professional skills and/or life skills)	B) Cost per trainee (in €) (In professional skills and life skills)
Peace Bicycles Youth Centre	70,000	150	467	4,670
Connectivity and E-Learning Hubs for Youth Entrepreneurs Affected by Urban Conflict	150,000	280	535	535

Findings

In comparing the training costs for each of the two projects, the bicycle project was considered to be more efficient (costs per trainee were only €467, which is significantly lower than the €535 per trainee in the e-hub project.) However, when training included both life skills AND professional skills the e-hub approach emerged to be the most efficient approach by far. In terms of the anticipated cost per trained participant, however, initial estimates for the bicycle project were nine times higher than the e-hub project It is not possible to explain these differences but this analysis points to some questions for decision makers tasked with choosing between the two approaches.

Though these findings are valuable, it is too early to conclude that the e-hub approach is more efficient than the bicycle project. Instead, they suggest the need for careful scrutiny and comparison of the assumptions underlying the plans of the two projects. For example, it is possible that the team that designed the bicycle project simply made a mistake or overestimated the costs for training youngsters in both skills sets.

Lessons learned

- Analysing the efficiency of a peacebuilding project is complicated by the difficulty of capturing the intended and realised impact and outcomes of the project in quantifiable indicators.
- Projects that focus on outcomes such as wellbeing can be analysed using cost utility analysis. However, this requires having a sophisticated system in place that can express changes in wellbeing through a numeric value, such as an index. War Child is making headway in its efforts to establish an organisation-wide monitoring framework that can generate such data. The organisation therefore expects that it will soon be able to quantitative data to compare the efficiency of different interventions.
- In order to come up with conclusions about the efficiency of a project it is important to understand its effectiveness (outcomes and impact). If data about effectiveness are missing or hard to quantify only a partial efficiency analysis is possible.[20]
- Examining a proposal through an efficiency lens can reveal flaws or inconsistencies in a project's design, theory of change or underlying assumptions. However, additional analysis is needed before drawing firm conclusions.

[20] In the comparison between the bicycle project with the e-hub project there were no data available on the expected or actual effectiveness of the project in stimulating young people to engage in further education, training or employment. Therefore, this cost unit analysis is only a partial efficiency analysis.

Annex 2: Options chart for identifying methods that can be used to analyse the efficiency of development projects
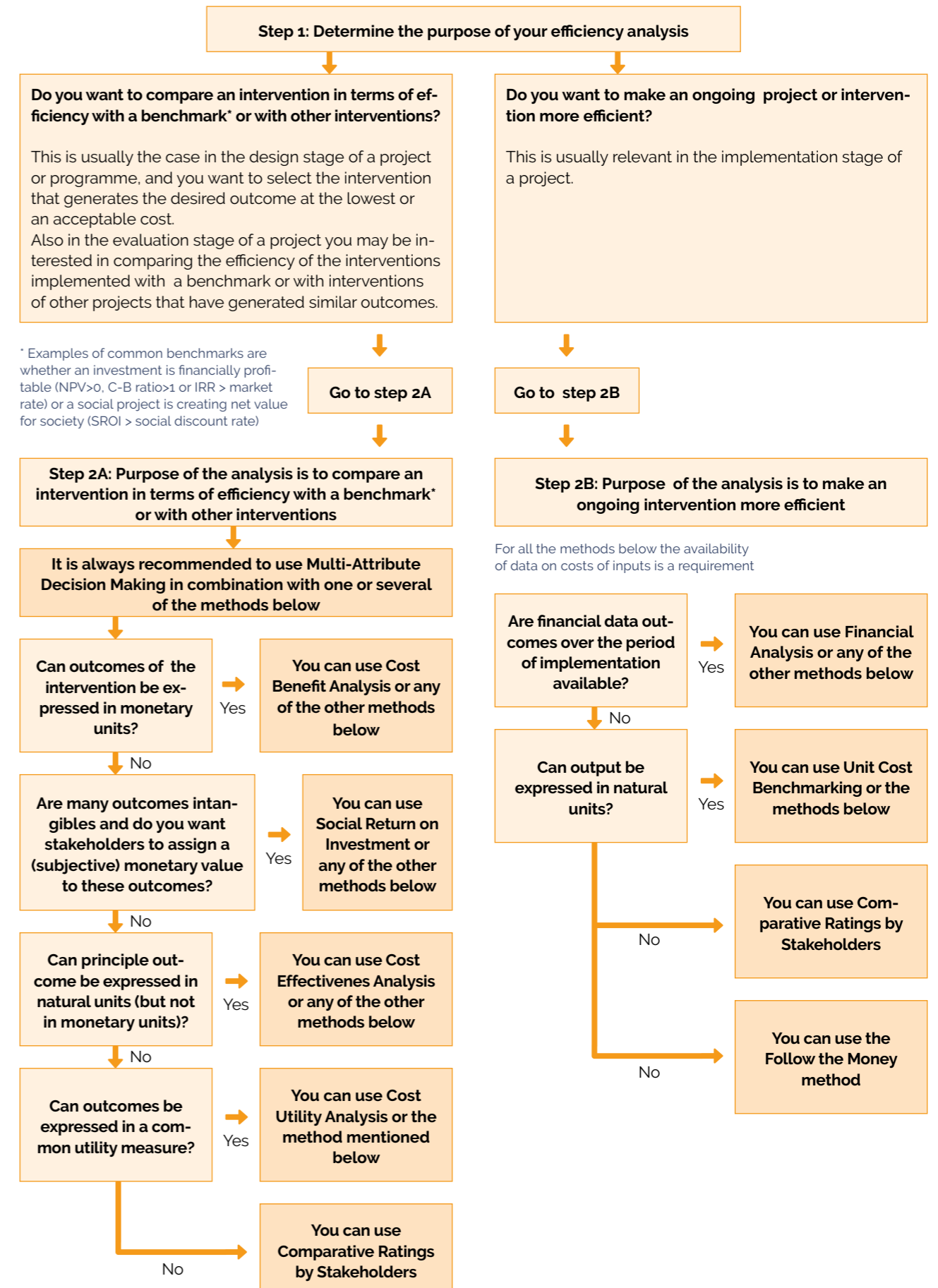
Annex 3: Ten examples of how to analyse efficiency in development interventions

It can be a struggle to determine which method is the most appropriate for analysing efficiency at a particular stage of the project cycle. The Efficiency Lab documented ten of the most common project types in Dutch development cooperation and invited the panel of experts to formulate, for each case, recommendations concerning the most appropriate methods and tools for analysing efficiency. The cases and recommendations can be found on the Partos website.[21] By using the explanation provided by the panel of experts, project teams can find practical guidance on how to find a workable method for analysing the efficiency of their own project.

The following is a brief overview of the cases.

CASE 1: VALUE CHAIN DEVELOPMENT
Since the turn of the century, practitioners in agricultural development have shifted their attention from farming systems, with a focus on technology and productivity at farmer household level, to value chains. In addition to the introduction of new technologies to enhance productivity ("push" factors), the value-chain development approach primarily focuses on market opportunities ("pull" factors). Instrumental in this approach is the establishment of business linkages among farmer groups and actors downstream the value chain including, traders and processors. This case explains how to analyse efficiency in value chain development projects.

CASE 2: BASIC EDUCATION
Accelerated education (AE) programmes aim to promote access to education for disadvantaged groups at an accelerated pace. Such groups include out-of-school children and youth who missed out or had their education interrupted due to poverty, marginalisation, conflict or crisis. The goal of AE is to provide learners with the equivalent of certified competencies for basic education and learning approaches that match their level of cognitive maturity. This case explains how to analyse efficiency when piloting an AE programme in a country.

CASE 3: HIGHER EDUCATION
Governments invest in higher education to strengthen their capacity to acquire and generate knowledge in support of their economic and social development, and to pass on this knowledge to future generations. Donor organisations and programmes such as Nuffic, DAAD and Erasmus+ support international collaboration between higher education institutions with the aim of strengthening the capacity of universities in low and lower-middle income countries. This case explains how to analyse efficiency in projects that support capacity development in higher education.

CASE 4: SANITATION AND HYGIENE
Sustainable Development Goal (SDG) 6 calls for access to adequate and equitable sanitation and hygiene for all by 2030. Most sanitation projects have a strong market-oriented approach and are based on three assumptions:
- On the demand side, people's behaviour needs to change towards adopting improved sanitation practices.
- On the supply side, a well-functioning, private sector-based supply chain for sanitation products and services is a prerequisite for effective and sustainable coverage.
- An enabling environment providing regulation and funding is needed to support these changes.
This case explains how to analyse efficiency in sanitation and hygiene projects.

CASE 5: WATER SUPPLY
SDG 6 calls for universal and equitable access to safe and affordable drinking water for all by 2030. Most projects in the area of water supply have a strong market-oriented approach which is usually based on three assumptions:
- On the demand side, people's attitudes need to be changed towards developing a willingness to pay for water supply services.
- On the supply side, a well-functioning private sector-based supply chain for water is a prerequisite for an effective and sustainable coverage
- An enabling environment providing regulation and funding is needed to support these changes.
This case explains how to analyse efficiency in water supply projects.

CASE 6: MICRO FINANCE
Micro-finance projects seek to help poor and excluded people to get access to financial services including loans, saving facilities, insurance and money transfer services. Micro financing has its roots in the work of the Grameen Bank in Bangladesh which pioneered micro-credit loans to groups of excluded people in the 1970s. Many projects followed this example through providing micro-credit services to poor people or supporting the establishment of micro-credit schemes and institutions. Increasingly, micro-finance projects tend to focus on developing the capacities of existing financial institutions to become more inclusive. This case explains how to analyse efficiency in micro-finance projects.

CASE 7: DISABILITY INCLUSION
People with disabilities often lack access to education and employment, which contributes to high poverty levels among this population group. Due to the stigma and discrimination that they face, coupled with the common perception that they are not able to perform normal duties, people with disabilities often struggle with low self-esteem. This in turn leads to self-exclusion, leading to a downward spiral. This case explains how to analyse efficiency in projects that aim to enhance the inclusion of people with disabilities.

CASE 8: FROM CONFLICT TO PEACE
Violent conflict continues to affect the lives of millions of people around the world. Some of the frictions that trigger conflict may also hinder social and economic development. In fact, peace can be viewed as a pre-condition for all other development interventions to succeed. It is therefore important to monitor tensions from an early stage and to prevent conflict through Interventions such as facilitating dialogue, consensus building and influencing all stakeholders who can contribute to maintaining or building peace. This case explains how to analyse efficiency in projects that aim at conflict prevention and peace building.

CASE 9: PREVENTION OF GENDER-BASED VIOLENCE
Every year millions of women fall victim to gender-based violence and many even lose their lives as a result. Gender-based violence is rooted in cultural norms, practices, traditions and patriarchal attitudes that perpetuate stereotypes regarding the roles, responsibilities and identities of women and men in all spheres of life. This case explains how to analyse efficiency in a project that aims to prevent gender-based violence. The project combines a number of interventions that focus on the positive transformation of harmful social norms by targeting individuals (men as well as women) and communities, as well as actors within the policy and legislative environment.

CASE 10: DOMESTIC BIOGAS
Domestic biogas plants have a direct positive effect on rural peoples' energy supply, environment, health and agricultural production. The Netherlands Development Organisation (SNV) supports the formulation and implementation of national biogas programmes in some developing countries. The programmes seek to strengthen institutional arrangements that can bring together multiple actors at different levels with a view to providing farm households with access to sustainable energy as a by-product of their livestock keeping. SNV further advises these actors on how to develop a commercially viable and market-oriented biogas sector. This case explains how to analyse efficiency in domestic biogas projects.

Annex 4: A generic example of a Theory of Efficiency

In order to reap the benefits of efficiency analysis, it is important to do it regularly and systematically.

For a systematic inclusion of efficiency analysis in all programmes, organisations need to develop policies and procedures at the organisational level that apply to all projects, programmes, and also to other activities that are not within a specific project or programme. Therefore, Barrett, van Wessel and Hilhorst[22] have proposed that every organisation should formulate a Theory of Efficiency (ToE) comprising procedures to be followed for monitoring and analysing efficiency. The Lab developed a generic example to help organisations developing their own ToE. The generic example can be tailored to the specific requirements of a development organisation for its programmes, projects and interventions. Most organisations already gather part of the data that are relevant for conducting an efficiency analysis. This generic example of ToE will help them to capture all these efforts in one comprehensive conceptual framework. It may also lead to discovering gaps in their data, to searching for better methods to analyse the data, and to improving the application of the findings of efficiency analysis.

The main aim of the ToE is to ensure that an organisation is able to systematically develop and implement projects that result in optimal effects at the lowest possible cost, without undesirable side effects.
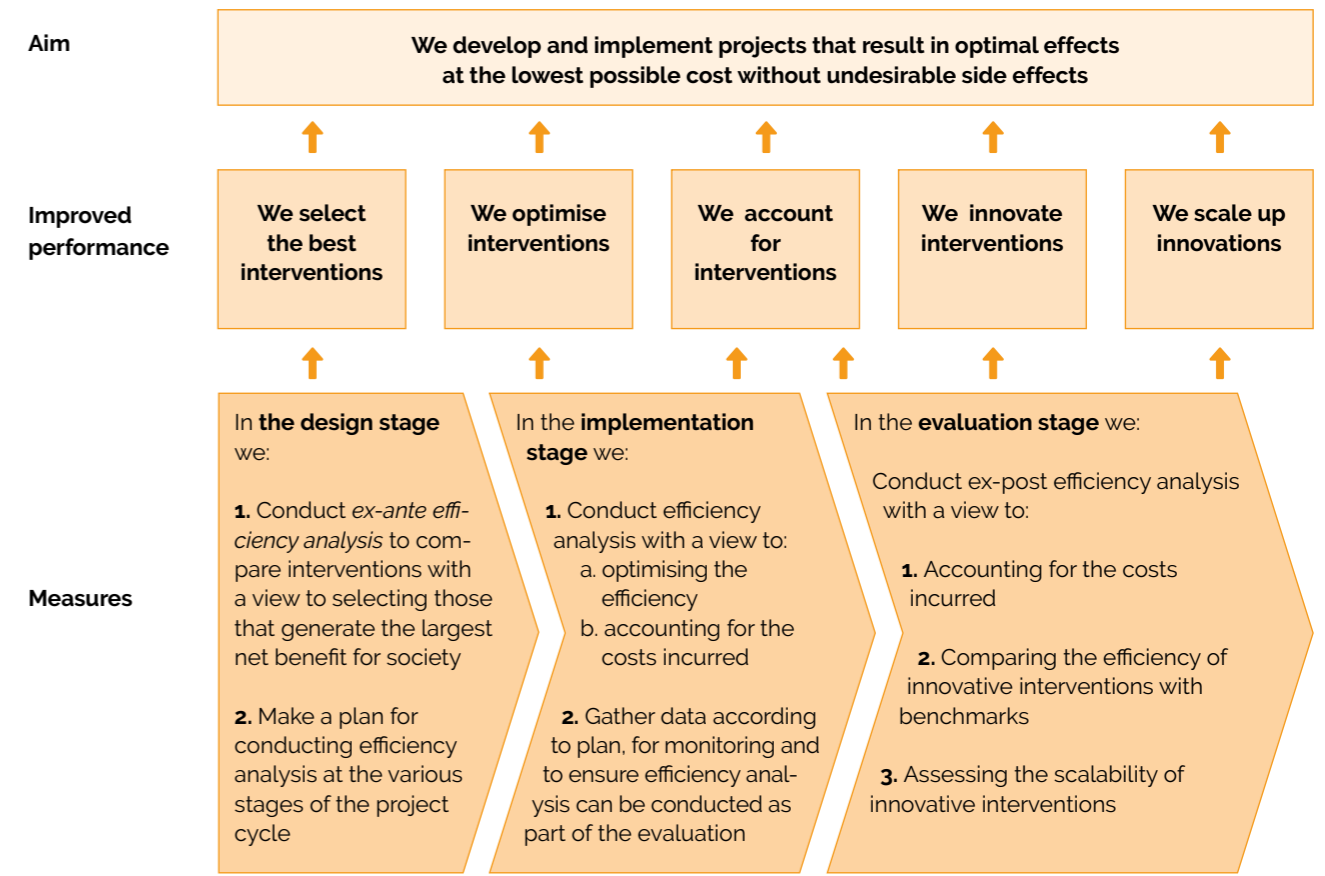
In order to achieve this an organisation can seek to optimise its performance in five areas:

- Selecting interventions that generate the largest net benefit to society
- Optimising the efficiency of current interventions
- Justifying the costs of interventions
- Contributing to the development of improved interventions
- Scaling up innovative interventions

Measures required to optimise performance in all these areas include gathering relevant data and using these for the analysis. It should be noted, however, that identification of the most appropriate methods for analysing efficiency at various stages of the project cycle is best be done during the design phase of a project or programme (see Lesson 2 in Chapter 3).

Annex 2 provides guidelines on how to select the most appropriate analytical methods.

[22] Jennifer B. Barrett, Margit van Wessel and Dorothea Hilhorst (2016). 'Advocacy for Development Effectiveness, Monitoring and Evaluation,' Wageningen University

Generic example of a theory of efficiency

Aim

We develop and implement projects that result in optimal effects at the lowest possible cost without undesirable side effects

Improved performance

| We select the best interventions | We optimise interventions | We account for interventions | We innovate interventions | We scale up innovations |

Measures

In **the design stage** we:

1. Conduct *ex-ante efficiency analysis* to compare interventions with a view to selecting those that generate the largest net benefit for society

2. Make a plan for conducting efficiency analysis at the various stages of the project cycle

In the **implementation stage** we:

1. Conduct efficiency analysis with a view to:
a. optimising the efficiency
b. accounting for the costs incurred

2. Gather data according to plan, for monitoring and to ensure efficiency analysis can be conducted as part of the evaluation

In the **evaluation stage** we:

Conduct ex-post efficiency analysis with a view to:

1. Accounting for the costs incurred

2. Comparing the efficiency of innovative interventions with benchmarks

3. Assessing the scalability of innovative interventions

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