



# Final Evaluation Report

**Climate Smart Agriculture: Enhancing Adaptive Capacity of the Rural Communities in Lebanon (AgriCAL)**

**February 2024**

## Table of content

<b>1. Project General Information .....</b>	<b>3</b>
<b>2. Project timetable and components, outcomes and budget at design:.....</b>	<b>3</b>
<b>4. Evaluation General Information .....</b>	<b>6</b>
<b>5. Evaluation Results .....</b>	<b>7</b>
<b>5.1. Evaluation of project outcomes: achievements and ratings .....</b>	<b>8</b>
<b>5.2. Risks to sustainability and progress towards impacts .....</b>	<b>13</b>
<b>5.3. Evaluation of Processes Influencing Achievement of Project Results.....</b>	<b>15</b>
<b>5.4. Evaluation of Contribution of Project Achievements to the Adaptation Fund Targets, Objectives, Impact, and Goal: elements and ratings .....</b>	<b>17</b>
<b>5.5 Evaluation of M&amp;E Systems: dimensions and ratings .....</b>	<b>18</b>
<b>6. Project financial management.....</b>	<b>18</b>
<b>7. Conclusions, Lessons Learned, and Recommendations.....</b>	<b>19</b>
<b>7. References .....</b>	<b>25</b>
<b>7.1 Bibliography.....</b>	<b>25</b>
<b>7.2 List of stakeholders consulted: .....</b>	<b>25</b>
<b>8. Annexes .....</b>	<b>28</b>
<b>8.1 Annex 1: Financial performance: .....</b>	<b>29</b>
<b>8.2 Annex 2: Hill lake status and beneficiaries:.....</b>	<b>30</b>
<b>8.2 Annex 3: Term of References for the evaluation .....</b>	<b>32</b>
<b>8.2 Annex 5: Agrical Management Response.....</b>	<b>37</b>
<b>8.3 Annex 6: Revised Results Framework.....</b>	<b>39</b>

## 1. Project General Information

Adaptation Fund Project ID	GRANT NO. C-AF-1-LB
Project/programme category	REGULAR
Country	Lebanon
Title of project/programme	AgriCAL
Type of Implementing Entity	IFAD
Executing Entity/ies	Ministry of Agriculture
Amount of financing requested (In U.S Dollars)	7,860,825

## 2. Project timetable and components, outcomes and budget at design:

Project timetable	Expected Date	Actual Date
Start of Project/Programme Implementation	2013	2018
Mid-term Review	2014	None
Project Closing	2017	April 2024
Final Evaluation	2017	2024



Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
1. Water Management	Output 1.1: Rainwater harvested from greenhouse roof tops Output 1.2: Rainwater harvested from agriculture roads (Cancelled, not feasible) Output 1.3: Water efficient irrigation systems deployed	Increased water availability and efficient use through water harvesting and irrigation technologies	1,626,800
2. Adaptation Techniques Roll-out	Output 2.1: Enhanced early warning system to farmers through improved existing system Output 2.2: Expanded farmer outreach and ensured financial and management sustainability of the warning system Output 2.3: Capacity building on adaptation techniques for vulnerable field crops enhanced Output 2.4: Guidelines and recommendations on agricultural adaptation techniques for vulnerable areas developed Output 2.5: National fodder resource assessment prepared	Increased adaptation to climate change for rangeland and crop production	1,800,000
3. Rangeland Management	Output 3.1: Pilot sustainable rangeland management plan implemented  Output 3.2: Restored degraded rangeland areas & reduced flood risks	Increased resilience of shepherds and small ruminants to climate change through sustainable rangeland management	2,550,000
4. Climate Index Insurance (Cancelled, too small budget for such a complex undertaking)	Output 4.1: Measurable climate indices identified & the appropriate index for trial selected Output 4.2: Functional mechanism for index insurance elaborated	Climate index insurance initiated in Lebanon	260,000
5. Policy and Knowledge Management	Output 5.1 Policy advocacy activities implemented Output 5.2 Knowledge management system established and knowledge management activities implemented	Policy influenced & lessons learned & shared through a knowledge management system	320,000
5. Project management & execution cost			688,200
6. Total Project/Programme			7,245,000
7. Project Cycle Management Fee charged by the Implementing Entity (8.5%)			615,825

#### 4. Evaluation General Information

The evaluation started on 1 December with desk study of available documentation (design documents, supervision mission reports and implementation support reports) as well as initiating agreement with the PMU on organization and methodology of the field visits.

The field phase took place from 18 December 2023 to 5 January 2024 and was done remotely due to the rapidly deteriorating security situation. Nevertheless, the PMU organized Zoom and WhatsApp meetings with key stakeholders in Beirut (Ministries), Tal Amara Riyaq or Lebanese Agricultural Research Institute (LARI), Rihan, Bentael, Ehmej, Menjez, Nabatiyeh South, Beeka and Moudweh. A list of persons and institutions met can be found in annex 2.

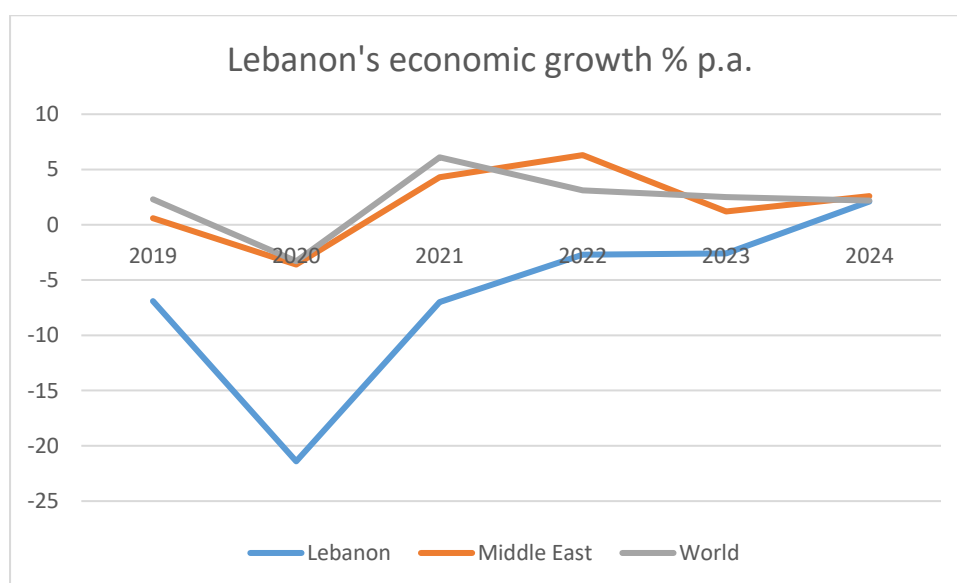
The lead evaluator was Peter Frøslev Christensen, independent consultant, who was hired to undertake the evaluation. He was supported by the PMU, in particular the PMU head, Raymond Khoury. Financial and beneficiary data was obtained from IFAD with the help of especially Thoodan Abdulkarim Ali Al-Eryani, IFAD Programme Officer Lebanon, and Carlo Spinello, Financial Manager, IFAD. The evaluator would like to extend his thanks to all those contributing.

The evaluation used a mixed methodology relying on both quantitative and qualitative data, gained from interviews, surveys and extraction from the M&E database of AgriCAL. In addition, financial information was provided by IFAD. The criteria for undertaking the evaluation were mentioned in the ToR and were the standard criteria used for project evaluations as defined by OECD-DAC: relevance, efficiency, effectiveness, impact, and sustainability. The ratings used followed the Adaptation Fund's criteria using a six step grading: 6) Highly satisfactory, 5) Satisfactory 4) Moderately satisfactory 3) Moderately unsatisfactory, 2) Unsatisfactory 1) Highly unsatisfactory.

## 5. Evaluation Results

### Project context

During the implementation phase, Lebanon and its people have experienced an unprecedented crisis, which had significant ramifications for the project. The challenges have been (and continue to be) exceptionally large. In this period Lebanon's socio-economic conditions have deteriorated to untenable levels. The economy has contracted by more than 45% since 2018 and is expected to contract a further 2.6% in 2023 (see figure below).<sup>1</sup> The expected return to positive growth in 2024 is now probably unrealistic given the accelerating regional armed conflicts and the risk of an Israel-Lebanon war. Given these prospects, investors, tourists and those Lebanese who can are fleeing the country.<sup>2</sup> The Lebanese pound has lost approximately 98% of its real value, while food prices have increased ten-fold since May 2019. Unemployment is exceptionally high, and 60% of the population has been pushed into poverty. The World Bank estimates that the crisis is likely to rank in the top three most severe crises episodes globally since the mid-nineteenth century.<sup>3</sup> The existing economic and financial crises were compounded by the Covid-19 crisis starting in 2020, hitting tourism and remittances. Alongside this, the explosion in the port of Beirut on 4 August 2020 caused significant loss of physical assets and degraded the port's handling capacity, increasing trading costs, including for agricultural inputs. Lebanon was reclassified by the World Bank as a lower-middle income country, down from upper-middle income status in July 2022. Such a brutal contraction is usually associated with armed conflicts or wars.



Source: EUI, Lebanon, Country Profile, December 2023. 2023 and 2024 figures are estimates.

The Banque du Liban (BdL, the central bank) has introduced currency controls resulting in a substantial discrepancy between the official government exchange rates and the black market one. This has also impacted the project's ability to perform its duties. Shortages of fuel have restricted the mobility of staff, including extension staff, and project supervision has also been hampered by this. Moreover, staff were being asked only to work half-time and receive proportional salary cuts. Even those still

<sup>1</sup> Economist Intelligence Unit: Lebanon Country Report, December 2023

<sup>2</sup> Thus Lebanon, uniquely in non-war the middle east, has experienced population degrowth since 2016.

<sup>3</sup> Bank: Lebanon, 'Public Finance Review - Ponzi Finance?' July 2022

working full-time struggled to make ends meet, as salary payments were delayed, and hyperinflation eroded their real value. As a consequence, many civil servants have left their jobs, several of whom have emigrated along with over 200,000 people since the start of the crisis.<sup>4</sup> Frequent strikes among public servants, including MoA staff, have also impacted the project. Lebanon has thus been entrenched in a socioeconomic and financial crisis, further exacerbated by an institutional and political vacuum. A highly polarized political landscape fractioned along congressional lines, a presidential vacuum, a caretaker government with restricted executive powers, an interim central bank governor and limited legislative action by parliament have all markedly slowed the progress needed for a comprehensive crisis resolution plan and further cemented the standstill of project implementation that has characterised the last two years.

## 5.1. Evaluation of project outcomes: achievements and ratings

### 5.1.1. Relevance of project outcomes (Rating: 5, Satisfactory)

The relevance of the overall project and its objective to improve climate adaptation was very high at project design in 2012. The project design documentation convincingly argued that Lebanon is particularly prone to the negative impacts of climate change, with agriculture being the most vulnerable sector. Unfortunately, the last decade has only underlined the severity of climate-induced challenges faced by agriculture in Lebanon. In this timespan Lebanon has seen higher temperatures, reduced precipitation and high evapotranspiration: decreasing soil moisture and increasing aridity, thus affecting the overall agricultural yield of crops. In many areas this has caused a decrease in productivity for most of the crops and fruit trees, especially wheat, tomatoes, cherries, apples, olives and grapes.<sup>5</sup> Climate change has also increased the risk of droughts, pests, diseases and wildfires, which can damage crops and livestock. This is because warmer temperatures, changes in precipitation patterns, and increased CO<sub>2</sub> levels are creating a more favourable environment for the outbreak of pests and diseases, and increase the frequency of wildfires, which damage crops and reduce productivity.<sup>6</sup> Climate change has thus threatened the food security and livelihoods of many communities that rely on agriculture, as well as the national economy.

The concurrent non-climate crises also affecting Lebanon have undermined especially farmers adaptive capacity and increased pressures on natural resources, further accentuating the need for assistance in this space. The Syrian refugee crises, peaking in 2015, have seen the influx of 1.5m displaced persons all of whom need access to land, water and food, which were already scarce commodities in Lebanon. This has exacerbated climate vulnerability and can be seen as the start of a prolonged economic crisis. The economic crisis described above has also undermined farmers' ability to adapt to climate change, hence increasing the relevance of the overall project.

At component level, the *first outcome* of 'increasing water availability and efficient use through water harvesting and irrigation technologies' was and still is very relevant, as water is becoming increasingly scarce. The relevance of gravity-based irrigation systems from roof-tops and hill lakes is particularly relevant, due to the increased energy cost and difficulties in obtaining fuel and electricity (needed for pumping).

---

<sup>4</sup> Middle East Monitor: *Lebanon: emigration increased by 346% last year*, 2022. 60% of the youth consider leaving Lebanon according to ArabBarometer, July 2022.

<sup>5</sup> World Bank: *Droughts and Agriculture in Lebanon: Causes, Consequences, and Risk Management* 2019

<sup>6</sup> UN Lebanon: *Climate change in Lebanon: a Threat Multiplier*, 2021



The *second outcome* on increasing adaptation to climate change for crop production remains very relevant, as heatwaves, droughts and erratic precipitation patterns become more prevalent. Thus, the early warning system that has been put in place is also highly relevant as it feeds into the LARI APP (for smartphone), which can inform farmers of e.g. irrigation schedules (especially relevant for drip irrigation) and warn about disease outbreaks and weather abnormalities. The relevance of building research capacity, especially of the Lebanese Agricultural Research Institute (LARI), has also been high, as has the LARI's production of technical guidelines on adaptation techniques. However, relevance has been somewhat compromised by the limited dissemination of results, partly as a consequence of limited financing, but also due to outputs being too focused on research and academia and less on applications to commercial agriculture.

The *third outcome* of increasing resilience of shepherds and small ruminants to climate change through sustainable rangeland management was and is also relevant, as shepherds are highly vulnerable to the impacts of climate change on rangelands and have also seen increased marginalisation due to encroachment (from e.g. urban development, refugees and field crop agriculture). However, while relevant at objective level, there was limited implementation of the planned activities (see also next section on effectiveness).

The *fourth outcome* on designing a climate index insurance scheme was in itself probably relevant at the time of design, but relevance was diminished by the mismatch between resources and time allocated to this endeavour and the broad ambitious scope of the outcome. With the rapidly deteriorating context, the relevance weakened further and the outcome was eventually dropped in 2017 as it was correctly deemed unfeasible to implement.

The fifth outcome on policy and knowledge management was also relevant and policy makers have been informed through both formal and informal engagement. The planned activities were e.g. workshops, policy dialogues, organizing a national forum to review and integrate climate risk reduction strategies and help climate related policies get adopted. However, the main outputs and knowledge products were not produced, limiting real world relevance.

All in all, the rating for relevance out of the outcomes proposed is 5: satisfactory. All but one of the outcomes were highly relevant, with only the outcome on climate insurance being less relevant considering the capacity, the immaturity of the Lebanese agricultural insurance market and the resource envelope of the project.

### **5.1. 2. Effectiveness (Rating: 2 unsatisfactory)**

The project's effectiveness suffered considerably from a variety of factors. Most important has been the successively deteriorating political, economic, social and, more recently, security situation which has severely undermined performance. However, initially the performance was also hampered by the design choice to use the IFAD loan transfer modalities, which starts with transferring the amount to the ministry of finance then it goes from finance to AgriCAL, adding too many steps that caused delays, although AgriCAL is a purely grant based project and a direct transfer to the project DA should have been considered. This caused delays of more than four years as a decree was needed to rectify the transfer system, which needed to be drafted by the Ministry of Agriculture but approved by the cabinet of the government, which given the accelerating political instability proved difficult and protracted. Only in 2018 did the first transfer materialise and activities could start. However, already the following year economic and financial crisis impacted the project with the growing discrepancy of real and official exchange rates and the resultant challenges. Moreover, the Lebanese court of audit began to obstruct financial transfers to the project, again introducing significant delays. Combined with Covid-19, the port explosion and the general implosion of the economy,

frequent strikes among government employees conspired to severely degrade AgriCAL's implementation capabilities. This is also reflected in the core components, as demonstrated below:

In the *component 1 on water management*, the main focus was on installing irrigation networks, connecting farmers to the hill lakes that had been constructed under an earlier IFAD/OFID project (the Hilly Areas Sustainable Agriculture Development Project, HASAD). A survey to the benefitting municipalities by this evaluation, carried out by the PMU, revealed that out of 12 supported hill lakes, only 5 were providing water to farmers. Moreover, the number of benefitting farmers was, at the time of the survey (end-December 2023) only 70 i.e. 10% of the expected 698 beneficiaries at redesign stage covering an area of 30 ha, 11% of the area expected at redesign.<sup>7</sup> However, the construction cost has increased to over USD 1m, against a design estimate of USD 426,000.<sup>8</sup> This implies a unit cost of USD 15,000 per beneficiary (design: USD 1000/beneficiary) and USD 34,000 per ha (design: USD 2000/ha), excluding the funding previously provided under HASAD. The non-functional hill lakes may still be connected / rectified, and more farmers may also be connected to already working lakes, but interviews with beneficiaries and local authorities also pointed to the challenges of financing existing production costs (including water) and the dire state of local authorities' fiscal positions may undermine the sustainability of existing schemes. From the current and potential hill lakes beneficiaries, 108 have received drip irrigation systems from the AgriCAL project and distributed by LARI. 600 additional beneficiaries are yet to receive the same support but even though the remaining drip irrigation systems were procured, distribution to beneficiaries was halted due to the security situation in the country.

In addition to hill lakes, AgriCAL successfully constructed two roof-top water collection points providing water to greenhouses. The value of the two irrigation schemes was USD 89,000 combined, provided as a grant to the two farmers who were owners of the greenhouses. At design, it was expected that 100 poor farmers would benefit from such schemes to the total cost of USD 663,000. These schemes are innovative for climate change adaptation with incentives for operation and maintenance (O&M) and a simple institutional set-up that would ensure sustainability. The stored water within these systems will be used in late summer/autumn; the period when the water table is low and exposed to salinity. This provides a good model for enhancing crop resilience to climate change. The project formalised the arrangement with the two farmers and has signed with them a Memorandum of Understanding (MoU). The MoUs include their commitment to carry out all the needed operation and maintenance works; allow field visits for other farmers to the greenhouses with the rainwater harvesting system for the next 5 years; and to install a water meter to calculate the amount of rainwater harvested that was used in irrigation.<sup>9</sup> However, due to the economic crisis and limited manpower, the envisaged field visits by other farmers that could have replicated the scheme has not materialised (beyond immediate neighbours) and thus this main outcome has been a considerable grant to the two, already wealthy, farmers who nevertheless are benefiting well from the investment and have a clear incentive to ensure sustainability.<sup>10</sup> The rating of this component is 2 **unsatisfactory**.

---

<sup>7</sup> The limited number of beneficiaries was due to a combination of lack of funding for O&M, no funding for connecting lakes and willingness to pay for water among potential beneficiaries. See annex 2 for more details.

<sup>8</sup> See IFAD Aide Memoire, November 2022 for construction cost. In addition PMU cost further adds to the high unit costs, but these remain unquantified.

<sup>9</sup> Interviews with the two concerned farmers. See also IFAD: AgriCAL Aide – Memoire, December 2022

<sup>10</sup> The farmers were chosen due to their capacity to operate and manage the irrigation as well as due to their demonstration potential, as they were supposed to be role models. They already owned greenhouses prior to the project support.

In *component 2 on adaptation techniques roll-out* three weather stations have been installed, are operational and provide data to the weather information system, including the LARI APP. The LARI APP has seen 53,000 downloads since its launch and the evaluation team interviewed a group (selected by LARI) of farmers using the app. All the participants agreed on its good usability and found it particularly relevant for farmers transitioning to drip-irrigation, where it provided accurate knowledge on soil moisture and assisted in estimating evapotranspiration which resulted in improved irrigation scheduling and dosage. This helped reduce energy (pumping) and water costs. The app also provides early warning in case of extreme weather events (e.g. droughts, heat waves) and rainfall. Despite the positive feedback, the evaluator could not assess wider usage of the app, nor its relevance to non-drip irrigation users.<sup>11</sup>

Under this component AgriCAL also supported capacity development for LARI and MoA staff. This included training on irrigation and crop modeller trainer expert, expert trainer in greenhouse, hydroponic and soilless agriculture and the evapotranspiration training. In total these activities benefited some 45 people from, amongst others, LARI, the ministry of agriculture and academia.<sup>12</sup> Additional beneficiaries were supposed to be generated through farmers field days, which were substantially reduced to due to lack of time and finance. Related, LARI has also produced guidelines on agriculture adaptation to climate change. The topics include guidelines on: a) rain-fed agriculture adaptation; b) integrated pest management of grape; c) integrated pest management for peach and apricot diseases; d) calendar for fodder species in natural rangeland; e) soil-borne diseases; e) crop rotation; and f) existing agricultural practices at farm level and existing agriculture machinery at farm level. However, dissemination of the guidelines has been limited, undermining effectiveness, although IFAD has committed to publishing them online.<sup>13</sup> All in all, the effectiveness in terms of contributing to improved adaptation of farmers is still limited due to the reduced outreach, although academically valuable capacity and research has been produced.

The final sub-component relates to the initial ambition to implement a national fodder resource assessment. However, this activity was considerably downscaled to cover only two locations (demo plots in Nabatieh and Bekaa), where demo plots were made. However, limited resources (incl. mobility) for interactions with shepherds and a lack of laboratory equipment and chemicals for soil and plant analysis, severely reduced the scope of the assessments.<sup>14</sup>

Thus, the effectiveness of this component is rated as 2 **unsatisfactory**, as only a fraction of the outcomes planned have been achieved.

*The third component on rangeland management* had two core subcomponents, the first being the development of community-based sustainable rangeland management plans for Baalback, which was started but not completed due to delays and resignations from contracted consultants. However, the project did manage to undertake limited training of around 92 shepherds (against a redesign target of 200) in forest laws and regulations as well as the provision of 180 tons of fodder for their animals. The fodder distribution reportedly reduced conflicts in the area temporarily at least, as there was less competition for resources and less pressure on rangelands.<sup>15</sup> Moreover, authorities and beneficiaries also gained insights into determining sustainable animal intensity on some rangelands.

---

<sup>11</sup> Interviews with farmers adopting drip-irrigation and using the app.

<sup>12</sup> See IFAD: AgriCAL Aide – Memoire, December 2022.

<sup>13</sup> Interviews with LARI and IFAD staff.

<sup>14</sup> Interviews with LARI researchers.

<sup>15</sup> Interviews with MoA officials and shepherds.

The second subcomponent was related to the construction of infrastructure to restore degraded rangeland areas and reduce flood risk in watersheds. The infrastructure included gabions, hafeers and dams as well as upgrading a nursery. At design, 300 ha degraded land was expected to be restored through plantation of shrubs and tree seedlings, however none were achieved due to many interruptions in flow of funds, strikes and gradually eroding confidence in contractors that AgriCAL could honour contractual commitment in a timely manner. Only one nursery was rehabilitated in Abdeh, which is still producing seedlings. Given the very limited achievements of this component, the rating is also 2 **unsatisfactory**.

The fourth component on climate insurance was cancelled and is hence not evaluated.

*The fifth component on M&E, policy and knowledge management* was also marred by delays and cancellations. The main visible element was supposed to be policy advocacy activities and the convening of a national forum on climate change and agriculture in Lebanon. This was planned to include all stakeholders to discuss topics related to climate change and food security, climate smart agriculture and adaptation to water scarcity. One of the outputs of the forum would be a policy document that could guide some of the policy processes in Lebanon, such as the updated Nationally Determined Contribution (NDC) and the National Adaptation Plan (NAP). However, due to challenges in formulating ToRs and contracting the consultant none of these activities materialised. Nevertheless, the AgriCAL managed to engage in adaptation policy conversations more informally through its strong network within MoA, LARI and the Ministry of Environment. However, among policy makers there was some disappointment that more technical work of LARI and other partners was not translated into more actionable policy briefs.<sup>16</sup> This component is rated 3 **moderately unsatisfactory**, given the reasonable performance of the M&E system and the informal policy work.

All in all, the project's effectiveness is rated unsatisfactory due to limited achievement of the activities, outputs and outcomes that were established at design. The main causes were outside the control of the project and were initially related to poor design of the fund transfer mechanism, but later also from the extreme crises that engulfed Lebanon. Moreover, the dysfunctionality and patronage networks of the state administrative system also conspired to undermine effectiveness. IFAD, having no office in the country and with 6 different country directors for Lebanon throughout the duration of AgriCAL, faced difficulties in understanding and navigating the intricacies of this complex system, with clear shortfalls in promoting effectiveness.

### 5.1.3 Efficiency (Rating: 2 unsatisfactory)

Overall efficiency has been low. In *component one* the cost of connecting one farmer and one ha with hill lake water for irrigation was 15 and 17 times higher than envisaged in the redesign (and this is excluding costs incurred in the previous HASAD project and administrative/PMU costs). The two roof-top greenhouse water-harvesting schemes had unit costs close to USD 45,000, significantly higher than planned and with very limited spill over and demonstration effects, as the demonstrations were cancelled due to budget and capacity constraints in MoA. In *component two* the early warning system has by far the highest outreach with 53,000 having downloaded the app and some also improving their farm practices as a result. However, the actual use (including numbers and intensity in terms of frequency and impact) is unknown, making efficiency difficult to estimate. As for the LARI-focused capacity development, fodder assessment and production of guidelines, the costs have been comparatively modest (USD 166,000 against redesign estimate of USD 180,000) but so have the outputs, with limited translation into farmer-facing actionable products, and most outputs either

---

<sup>16</sup> Interview with MoA and MoE officials.

being downscaled or not achieved. *Component three* on rangeland management had a similar experience with substantial efforts investment into ToR design and tender documentation but with subsequent delays, cancellations and reduced outputs. The component of policy and advocacy follows the same pattern with reduced expenditures as compared to budget, but with further reduced production of outputs and tangible products. However, there has been some informal policy dialogue ongoing, but this is obviously hard to quantify. Finally, it should be noted that the execution cost (i.e. project management cost - PMC) had the closest disbursement level to the design estimate (85%). Again, this indicates much higher unit costs for management, as the outputs were much reduced. Against this background, the overall rating is **2 unsatisfactory**.

#### 5.1.4 Overall Rating

The project was and is highly relevant, as accelerating climate change is necessitating adaptation among farmers. All but one of the outcomes were found highly relevant and could have potentially contributed to increasing the adaptive capacity of farmers and also informed the policy conversation and generated learning lessons. However, a multiplicity of factors severely undermined both implementation effectiveness and efficiency. Most of these factors are ascribable to an uncondusive context that continuously deteriorated during project implementation. AgriCAL's **overall rating is hence 2 unsatisfactory**.

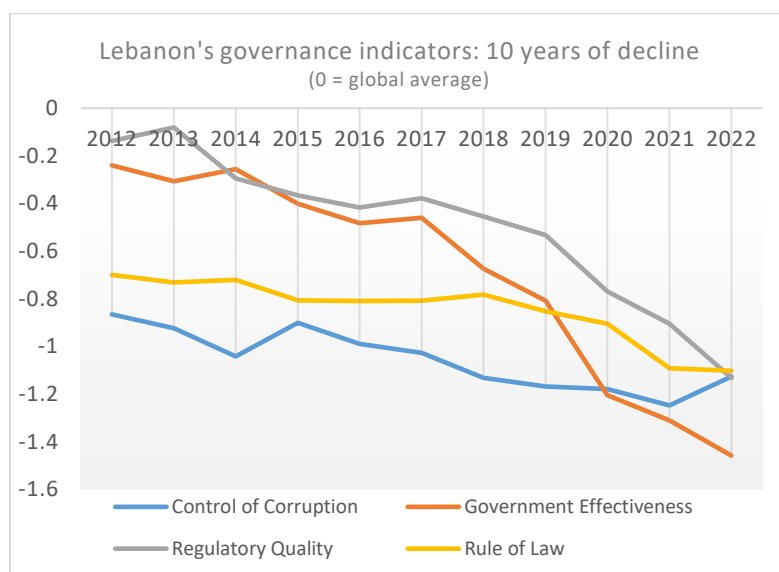
## 5.2. Risks to sustainability and progress towards impacts

*Financial and economic sustainability* is questionable, driven primarily by the severe economic downturn that has diminished incomes and increased expenditures for all strata of Lebanese society, farmers included. Thus, farmers interviewed stated that they would struggle to pay the real cost of the irrigation water from the hill lakes if municipalities stopped subsidising. Municipalities, on their side, are in a political, economic and (especially in southern Lebanon) security crisis. The clear success in terms of sustainability is the rooftop water harvesting schemes, where both farmers involved are maintaining the infrastructure granted and will most likely continue to do so for the economic life of the tanks. However, the impact is limited and concentrated among already wealthy farmers, although they also have expanded demand for labour marginally. The early warning system is mostly likely sustainable in the short-term as the provider (Debbane) has been contracted for five years of support. However, the long-term sustainability is more dubious and may depend on identifying additional donor financing, as the current fiscal position of the government is extremely challenging. LARI is confident that one such donor can be identified as concessional climate finance continues to be available. As for the capacity development of LARI, the sustainability is not ensured. First of all, LARI staff struggle to put their research into practice, in part due to limited funding. Moreover, there is a significant brain drain with skilled staff seeking opportunities outside Lebanon. This also affects AgriCAL trained staff. The rangeland activities related to fodder were often one-off activities (e.g. distribution of fodder) but some of the training on regulatory frameworks may have more lasting impacts. The sustainability and impact of the policy engagements and knowledge products have been limited. All in all, the financial and economic sustainability is rated as moderately unlikely, mainly due to an extremely adverse context, combined with high levels of political and administrative dysfunctionality.

*Socio-political impact and commitment to underpin sustainability* has weakened over the project implementation period, as Lebanese society and its political underpinnings have become increasingly fragmented, primarily along confessional lines and patronage networks. There are still elements

within the political system that seek to promote the outcomes of AgriCAL, but with a deepening financial, economic, political and security crisis this has been progressively undermined. Hence socio-political sustainability and impact is rated moderately unlikely.

*Institutional framework and governance sustainability.* The project has been able to rely on some institutional capacity for e.g. irrigation network expansion, nursery rehabilitation and fodder distribution. Moreover, the institutional set-up of AgriCAL was also leveraged by IFAD to provide Covid-19 emergency assistance to vulnerable farmers and managed to exceed the target number of beneficiaries.<sup>17</sup> The new World Bank Green Agric-food transformation project builds on these insights in irrigation and water harvesting to promote better institutional foundation. Nevertheless, the severe and multifaceted crisis has undermined institutional capacities among both central and local authorities. The core institutions such as the ministries (esp. agriculture and environment) have seen increasingly demoralised staff leaving their jobs or working at below normal levels of efforts. Governance has also suffered considerably during the period as can be seen from the graph below, using data from the World Bank. Government effectiveness, in particular, has fallen to abysmal levels, which partly explains the difficulties AgriCAL faced in ensuring that its government partners delivered on their commitments. All too often, government staff were left unpaid (and consistently underpaid with rampant inflation) without means of mobility and having to navigate the complex web of informal networks and dispense favours to get things moving. The recent secure instability in the country (which is not only confined to the southern sector) only adds to governance and institutional fragility. At the municipality level, many of the same dynamics are playing out, with many being non-functional since the local elections in May 2023. Besides, their finances are also challenged, with limited means for e.g. ensuring O&M of irrigation infrastructure and proper rangeland management



All in all, the prospect of institutional and governance sustainability has deteriorated through the project period and with that also the degree of impact the project has had. The escalation of the regional conflicts only increases the fragility of Lebanon's institutions and further undermines governance quality. Consequently, the rating is unlikely.

<sup>17</sup> This was financed by IFAD not AF. See IFAD: Completion report - RPSF funded project 'Improving Greenhouses Productive Capacity of Small Scale Farmers in Lebanon' June 2022.

*Environmental sustainability* is reasonable as the infrastructure work undertaken was minor (mainly network related) whereas the major infrastructure works planned (gabions and dams) were cancelled, due to numerous delays in all aspects of the design, compliance with the EIA process, and procurement processes. Moreover, private contractor also began to doubt the government's (and by extension, Agrical's) ability to timely honour its contractual obligations and hence it became difficult to attract qualified bidders. The few farmers benefitting from the network and the rooftop harvesting have close to no environmental impact. The few farmers that have adopted drip irrigation have seen energy cost reduced which have had a small positive environmental impact. The rating is hence moderately likely.

*Uncertainties on climate change impacts.* The technical climate models presented at design have broadly proven correct, with also broadly correct assessments of the *then* existing adaptive capacity. Inclusive stakeholder workshops were held during design, representing many voices and capacities. However, that adaptive capacity has been continuously eroded with the hollowing out of state capacity, which undermined the government's implementation ability. At the same time the target group, poor farmers, have seen multiple vulnerabilities increase manyfold, not only related to climate, but also to shocks such as the refugee influx, economic crisis, soaring prices, increased corruption and erosion of security. Thus, the scale and ambitions of AgriCAL became increasingly too unfit as capacity was ebbing out of the system. However, it would have been difficult to foresee the catastrophic decline at the time of design, but more efforts could arguably have been made at an earlier stage to adjust the project's scale to make it more commensurate with falling implementation strength. The uncertainties of climate change impacts are rated as **moderately unlikely**.

All in all, there are severe risks to the sustainability of the comparatively few impacts that AgriCAL has made, with the notable exception of the rooftop greenhouses. These risks almost exclusively arise from factors outside the control of the project and IFAD, and were difficult to predict at the time of the design. There are positive impacts for the early warning system and the uptake of the LARI APP for providing climate related advice. However, the depth and scale of this impact is not quantifiable and the medium to long-term sustainability is also not ensured. Similarly with the irrigation networks where farmers, municipalities and water cooperatives are struggling to finance needed O&M. All in all, **the project sustainability is unlikely**.

### 5.3. Evaluation of Processes Influencing Achievement of Project Results

*Preparation and readiness:* The project was prepared in 2011 and institutional memory has been lost in the meantime, undermining efforts to fully assess the preparation process. However, from the design report it is clear that AgriCAL was developed in response to the request of MoA, with IFAD then drafting a project brief based on consultations with MoA. This original project brief was shared and discussed with the main Government institutions. Individual meetings were held with the Ministry of Agriculture and its relevant departments, the Ministry of Environment and its Climate Change Unit, the Green Plan and LARI. Given that Lebanon then lacked a national climate change coordinating committee, it was necessary to approach key stakeholders individually and not through an overarching institutional arrangement. Nevertheless, the Ministry of Environment as UNFCCC Focal Point played a key role in providing initial guidance for the IFAD recruited project formulation team. AgriCAL's objectives and components were aligned with national objectives, at that time commensurate with capacities and mostly (but not entirely) realistic within the timeframe of four years. However already then it was known that projects could become blocked rather easily and there *was* no risk assessment and no mitigation strategy in place to deal with such challenges, also indicating limited learnings from

previous projects. Moreover, IFAD probably faulted in using the same fund transfer mechanisms it had used for loans previously.

*Country ownership* was initially high as was the commitment of staff and key partners. The project was aligned to relevant policies, most notably within agriculture where AgriCAL supported the government's objectives of increasing the mobilization of water resources, improving water efficiency and disseminating improved farm technology. The anchoring in the Green Plan unit in MoA was also appropriate as it had solid experience from the HASAD project. The overall policy and regulatory framework were also conducive, although the procurement law at that time was rather complex as were the financial transfer modalities.

*Stakeholder involvement* ; According to both the project design document and interviews with local stakeholders privy to the design process, there was robust engagement of the core ministries, other external development partners (e.g. FAO) as well as LARI. During implementation the project also had good involvement of beneficiaries, including the irrigation network, shepherds and greenhouse owners. AgriCAL also engaged with water user associations, cooperatives and municipalities, as well as contractors. However, stakeholder confidence in the project's ability to provide timely payment and delivery of inputs was gradually eroded as delays and blockages marred implementation throughout the project.

*Financial management* was marred by high staff turnover as well as prolonged periods of vacancies in accountancy roles. Despite this, the project was not the main cause of delays and funding transfer problems, which were more related to the overall financial and governance problems in Lebanon, exacerbated by the economic crises which lead to dollar shortages. AgriCAL also managed robust segregation of duties in procurement, despite shortages. See also section 3 above.

*Implementing Entity supervision and backstopping.* IFAD has provided supervision and backstopping using different modalities. The first years from 2012 to 2016 was mainly use to address the issues pertaining to allowing financial transfers to reach the project, which was only resolved in 2016. Thus, regular implementation supervision missions started in 2017 and continued until 2022, which was appreciated by the ministries, but nevertheless was largely unable to solve the issues of delays and implementation obstacles, although not for lack of trying.<sup>18</sup> Between implementation support missions, IFAD provided support from both HQ in Rome and the regional hub in Cairo. IFAD also helped to restructure the project in 2021. The restructuring was made to give a more accurate description of the project in terms of which activities were cancelled and also updated the logframe indicators to more (at that time) realistic numbers (see 8.3 Annex 5 for more details). IFAD later also attempted to transfer implementation responsibility to an outside entity to increase the pace of implementation. However, the bureaucratic complexity of the transfer proved insurmountable. While all stakeholders praised both the supervision mission support and IFAD's offices for having highly competent staff, they also deplored the lack of country presence as well as the frequent change in country directors (i.e. the key IFAD liaison).<sup>19</sup> IFAD, (but even more so GoL), should have been more careful in using the same fund transfer mechanisms from their sovereign loan operations to a grant project. Finally, the fact that IFAD managed a grant also meant that no loan ratings were fed into IFAD's project management system, thus not triggering the 'problem project status' that AgriCAL would have obtained had it been a sovereign loan project. This may have diminished attention in the wider IFAD system.

---

<sup>18</sup> IFAD, in particular during supervision and implementation support missions, made concrete proposals to unblock the funding, engagement with one of the main bottlenecks, the court of audit and the ministry of finance. See the related reports.

<sup>19</sup> Interviews with key ministries, development partners and AgriCAL staff.



*Delays in project/programme start-up and implementation.* As amply evidenced above, delays in both start-up and implementation severely impacted implementation and caused the project to significantly underperform, as well as prolonging implementation from 4 to 10 years. The delays and cancellation also undermine the sustainability of some aspects of the project (e.g. limited on-field irrigation support and training to farmers and their water user associations). From the project's official start in 2013, five years passed for the first disbursement reached the project account. Throughout the project's lifespan there have been conflicts over transfer and accounting procedures.

#### 5.4. Evaluation of Contribution of Project Achievements to the Adaptation Fund Targets, Objectives, Impact, and Goal: elements and ratings

*Contributions towards AF Goal of meeting the costs of concrete adaptation projects, in order to implement climate-resilient measures.*

Lebanon ratified the Kyoto protocol in 2006 and is one of the most receptive hotspots of the Earth's climate system, affected by global warming and related changes. In the eastern Mediterranean, heat stress is expected to intensify, while the winter precipitation will diminish due to the northward shift of the mid-latitude storm track. In addition to changes in the mean, climate changes in extremes may negatively impact human health, water resources, tourism, agriculture and energy demand, all of which are considered as critical sectors for the socio-economic stability of small countries like Lebanon. However, the project contributed to only a limited extent in the implementation of climate resilient measures. Probably the biggest impact (potentially) is the early warning system and the use of the data in the LARI App. However, the real outreach and depth of use is not measured and the long-term sustainability may also be compromised should LARI be unable to identify new donors. The 70 farmers connected to the irrigation networks have also seen improvements in climate resilience, but at a high unit cost and again with varying degrees of sustainability.

*Contributions towards AF Impact of increasing the resiliency at the community, national, and regional levels to climate variability and change.*

Again, resilience of community has been increased in the hill lake communities where the irrigation networks are functional. This improves the reliability and availability of water and decreases costs. At the national level the improved weather forecasting is also increasing resilience by improving and optimising irrigation regimes as well as providing early warnings for extreme weather events. However, the degree to which this is having a direct impact on farmers is uncertain.

*Contributions towards AF Objective of reducing the vulnerability and increase adaptive capacity.*

Again, vulnerability has been reduced but most often not to the extent expected and with much higher unit costs and varying sustainability. However, even these, mostly minor, achievements are at risk of being undermined by the escalating conflict both regionally and nationally, with declining government coherence and effectiveness. Again, this is clearly caused by factors outside the control of both the project and IFAD. It was also difficult to predict this at project design stage.

The *overall rating* of the contribution of AgriCAL's achievements to the AF targets, objectives, impact, and goal is assessed as 2 **unsatisfactory**.

### 5.5 Evaluation of M&E Systems: dimensions and ratings

The project M&E system design consisted of an M&E Excel based matrix developed by an IFAD consultant at the onset of the project. The M&E matrix was well developed and reflected the project RBM framework; however, no specific M&E plan with clear deadlines and budgets was developed. Although the M&E matrix that was developed captured the requirements of the project RBM framework, it was never used by the project as a result of the implementation delays and as a result of its complexity. Instead during the IFAD implementation support mission in 2020 a more effective Excel based system was put in place with the help of the IFAD Country Team. The new system was based on having a verifiable beneficiaries' database where all the relevant information is entered and automatically aggregate in the RBM framework using hidden pivot tables and connecting formulas. The system enabled monthly tracking of results where any entered results could be captured by refreshing the pivot tables. It also enabled capturing duplications of beneficiaries had all the necessary data been entered.

Unfortunately, the designed M&E system was not fully utilized by the project where important data fields about the beneficiaries are often missing such as date of birth, ID numbers, phone numbers, governorate, village, GPS coordinates, and size of land holding. In many cases the available beneficiary data consisted of only names, gender, and phone numbers. Nonetheless, the system could accurately report on the results in a timely manner to meet the PPR requirements. The biggest issue that the project M&E system had is the fact that beneficiaries of the early warning system were never accurately captured. This is due to the fact that the LARI early warning system app does not require a registration step upon download from the app store. This registration step was requested more than once by the IFAD Country Team, but LARI never managed to get it done with the software developer and this has weakened the project's M&E system significantly, especially, taking into consideration that the bulk of the project's beneficiaries are the early system users. As a result, the total number of early system users can be verified from the app (52,598 beneficiaries), but the gender and age disaggregation cannot be done due to the lack of the registration step. Accordingly, in the final PPR the project had to estimate the number of female beneficiaries based on a percentage calculated by FAO regarding the number of women in the agricultural sector, but unfortunately no such estimation for youth was available.

In regard to the project baseline, a full baseline was developed during design, but unfortunately due to the prolonged implementation delays over the years, the baseline became obsolete as it no longer reflected the reality at the time of implementation and evaluation. In general, the project M&E system was aligned with the national M&E framework, but regrettably the implemented activities did not generate much data and the project implementation was completely halted, as previously mentioned, before meaningful M&E data can be collected. Considering that the M&E system was well designed during the past few years and that it could have generated all the required data had the project continued, the M&E system is rated **2 unsatisfactory**.

## 6. Project financial management (Rating: 2, Unsatisfactory)

During implementation, the project experienced financial management (FM) staff turnover as well as a period of vacancies in the role, mainly due to the impact of the economic/financial crisis on wages especially after 2019. In 2023, an experienced Finance Manager (since mid-2022, including 4 months stop/vacancy period) has been leading FM operations to project closure satisfactorily, keeping accounting under control, providing efficient IFR reporting to IFAD and regular WA submission. Project's records are aligned to IFAD's. Although there is only one FM staff, the segregation of duties has been sufficiently secured, with involvement of procurement managers (for orders preparation) and a project coordinator (co-signing payment with MoA Finance Officer). An accounting software

(ERP) was completed late on Q3-2022, but not used, as most of the project's transactions were already executed and the FM Manager opted for an alternative database, ACCESS based (sub-optimal as non-ringfenced accounting software) to maintain the residual transactions (about 600; 20% in value) in the residual implementation period. Budget was approved in Q2 and, at mid-December, has been fully executed in line with plans.

Although IFAD timely replenished upon withdrawal application (WA) submission, AgriCAL suffered late release of funds on the designated account (DA) by the Recipient, due to lengthy no-objection from the Court of Audits (in charge of reviewing the project's accounts prior to fund transfer), contributing to delays in implementation. This was partly overcome with frequent recourse to direct payments (for equipment) by one third of total expenses. This payment method is currently discouraged by IFAD.

Overall disbursement rate reached only 41% of the total grant of USD 7,2 million, whereas project expenditure reached 39%, leaving USD 4,4 million un-spent balance by the closing date. At the time of the evaluation mission, project liquidity on the DA amounted to USD 134,822 of which USD 17,288 is the residual projected expense for winding up the project (i.e. PCR, audit fees and salaries). The residual liquidity amount of USD 117,534 has been refunded to IFAD (with value date 27 Dec 2023).

An external auditor is already appointed to audit the Financial Statements for the period 1 January 2023 to 29 February 2024. The audit report will be submitted to IFAD by closing date. Due to non-materiality of residual expenditure (audit fee, Project Coordinator and Finance Manager's salaries) IFAD will accept a certified Statement of Expenditure for the transactions in the period 1 March to 21 April 2024. It is agreed that Project will submit: IFR-Q4 with WA-15, IFR-JAN/FEB-25 with WA-16, WA-17 with IFR March-closure (by 15 April 2024).

## 7. Conclusions, Lessons Learned, and Recommendations

As is evident from the above evaluation and the associated scores, AgriCAL, while being relevant at the objective level, severely underperformed and failed to reach the intended beneficiaries in most of the components, the early warning system being the notable exception. This is despite several project extensions amounting to an additional six years beyond the initial four years. While IFAD and GoL committed faults in the design of the financial transfer mechanism, it was the overall adverse and deteriorating context that caused most of the implementation failures documented above, culminating with the regional armed conflict that is threatening to engulf the whole country in war. This is even more challenging as Lebanon desperately needs to improve its adaptive capacity in the face of accelerating climate change that is especially affecting poor farmers. Thus, the project had very laudable and relevant objectives and was also building on then a strong foundation of commitment, as well as on the achievements of a previous IFAD project (HASAD).

It is difficult to distil learnings from the very unique Lebanese context that are relevant to other jurisdictions. However, it is clear that when engaging in fragile contexts, speedy adaptability becomes key, both in terms of adjusting financing modalities and in terms of changing partners. Thus, earlier and easier use of direct payment modalities with higher thresholds would have eased implementation bottlenecks but would probably have contravened the financial regulation of IFAD.

This also points to weaknesses in the core modus operandi of IFAD, which is structured around sovereign loans and grants that finance projects implemented by governments. In contexts characterised by high levels of governance fragility, this model may not be appropriate, unless both parties commit to high levels of flexibility, which can be challenging. Here the use of a contractor / partner outside the government system (e.g. an NGO) may be preferable if the primary objective is to

deliver tangible benefits for the ultimate beneficiaries. Thus, this will also entail a shift to a more humanitarian / emergency approach which may also come with trade-offs.

Perhaps most fundamentally, the use of a contractor will do little to develop the capacity of the partner government in terms of designing, implementing and sustaining climate adaptation measures, as this will be outsourced. Indeed, the contractors may poach the most talented and capable staff resources from the government by way of higher salaries, more perks and a project environment characterised as an island of plenty in a sea of misery. This could have the unintended consequence of undermining already limited state capacity. There may thus be an unenviable trade-off between delivering on the ground and developing state capacity.

Exactly how to balance such trade-offs obviously depends on the different weights attached to potentially opposing objectives but also on the prospects of having reasonable implementation traction when working with the government. Clearly, in fragile contexts ambitions should be commensurate with capacities, resources and timeframes (clearly not the case of AgriCAL's climate insurance component). It would be recommendable to at least stay engaged with the government, having some activities implemented through it and also having the adaptability to scale up the share of assistance channelled through government systems as and when capacities and commitment increases.

Moreover, the contractor model may also have challenges in terms of sustainability, as parallel project set-ups and their support mechanisms tend to stop once the project is over. Moreover, government ownership also tends to be lower when implementation is outsourced, potentially compromising sustainability. Thus, it would be key to ensure either strong inbuilt sustainability (e.g. higher profits as seen in the rooftop water harvesting) or firm and credible assurance from local authorities, incl. water user associations.

## Logical Framework

Output	Indicator	Baseline	Target	Cumulative Results (2023)	Cumulative Results % (2023)	Source of Verification
<b>Outcome 1:</b> Increased water availability and efficient use through water harvesting and irrigation technologies	Number of beneficiaries	No supplementary water available from water harvesting in the project focus areas	750	180	24.0	Mid-term and final evaluations Project progress reports
	Number of km of hill lake primary irrigation networks constricted		32.9	32.9	100.0	
	Number of hectares served by efficient irrigation systems		262.5	141.3	53.8	
	Quantity (m3) of supplementary water available for agriculture as a result of water harvesting and the use of efficient irrigation systems		479800	480080	100.1	
<b>Output 1.1:</b> Rainwater harvested from greenhouse roof tops	Number of Beneficiaries	Zero hectares out of 1000ha approx. Zero m3	52	2	3.8	Green Plan field reports Procurement reports
	Number of greenhouse demonstrations		2	2	100.0	
	Quantity of stored water for supplementary irrigation		800	1080	135.0	
<b>Output 1.2:</b> Improved access to climate resilient water & Water efficient irrigation systems deployed	Number of Beneficiaries	15,000ha all over the country. Data in focus area not available.	698	178	25.5	Green Plan field reports Procurement reports
	Number of km of hill lake primary irrigation networks constricted		32.9	32.9	100.0	
	Number of hectares served by efficient irrigation systems		262	29.3	11.2	
	Quantity of water supplied to farms		479000	479000	100.0	
<b>Outcome 2:</b> Increased adaptation to climate change for crop production or income	Number of Beneficiaries		60235	52635	87.4	Mid-term and final evaluations Project progress reports Livelihood surveys Agriculture observatory annual production survey

	Change in food security in the programme area as a result of using climate resilient agricultural and livestock production methods, measured as increase in quantity of local production		25%	0%	0.0	
<b>Output 2.1:</b> Enhanced early warning system to farmers through improved existing system	Number of meteorological stations installed in the project focus areas	60 weather stations	13	3	23.1	LARI weather reports
	Number of staff trained on meteorological observation and analysis	4 staff	15	0	0.0	Training reports and evaluations
	Frequency of production of improved climate risk information (for pest outbreak prediction, water demand, etc)	Not available	Daily			LARI weather reports Farmers' satisfaction survey
<b>Output 2.2:</b> Expanded farmer outreach and ensured financial and management sustainability of the warning system	Number of farmers receiving climate risk information	49000 farmer	60000	52598	87.7	LARI weather reports Farmers' satisfaction survey
	Financial flow to sustain the system	Zero %	50%	0%	0.0	LARI financial reports
<b>Output 2.3:</b> Capacity building on adaptation techniques for vulnerable field crops enhanced	Number of project beneficiaries trained on agricultural adaptation measures disaggregate according to gender	None	200	37	18.5	Training reports and evaluations
	Number of professionals trained to enable rolling out of climate resilient agricultural production technologies and methods	None	20	10	50.0	Training reports and evaluations
<b>Output 2.4:</b> Guidelines and recommendations on agricultural adaptation techniques for vulnerable areas developed	Agricultural adaptation techniques for vulnerable areas identified	None	5000 Copies of the guidelines	0	0.0	Published guidelines Project website
<b>Output 2.5:</b> National fodder resource (NFRA) assessment prepared	List of fodder species, their distribution and nutritional value prepared The carrying capacity of the rangelands in the sampled areas calculated	Non existent	Nationwide assessment completed	0	0.0	Published NFRA study

<b>Outcome 3:</b> Increased resilience of shepherds and small ruminants to climate change through sustainable rangeland management	Increased productivity of the rangelands in the focus areas measured by increase in income of locally produced meat and quality of dairy products		25%	0	0.0	Mid-term and final evaluations Project progress reports Milk production monitoring MoA
	Number of beneficiaries		47870	92	0.2	
<b>Output 3.1:</b> Pilot sustainable rangeland management plan implemented	Management plan prepared and adopted	Non existent	2	0	0.0	Published management plan
	National guidelines prepared and adopted	Old obsolete guidelines not based on scientific results	Adopted national guidelines	7	0.0	Published national guidelines MOA Decisions
	Number of professionals trained on sustainable rangeland management	None	20	0	0.0	Training reports and evaluations
	Number of households trained and participating in rangeland management and dairy product processing disaggregated according to gender	None	200	92	46.0	Field surveys
<b>Output 3.2:</b> Restored degraded rangeland areas and reduced flood risks (Faara and Al-Qaa)	Number of households benefiting from flood risk reduction		47650	0	0.0	Field survey MOA reports
	Number of nurseries rehabilitated	One in the focus areas	1	1	100.0	
	Number of seedlings produced	Zero	500000 seedlings/year	0	0.0	
	Area covered by flood risk reduction measures	2 watersheds managed out of 14	23000 hectares	0	0.0	
<b>Outcome 4:</b> Policy influenced and lessons learned and shared through a knowledge management system	Level of increase in awareness about climate change among decision makers and farmers	Non existent	60%	0	0.0	Mid-term and final evaluations Project progress reports
<b>Output 4.1:</b> Policy advocacy activities implemented	Number of policies/plans/strategies revised or developed as a result of policy advocacy activities	None	3	0	0.0	Published policies/plans /strategies Governmental decisions and decrees

<b>Output 4.2:</b> Knowledge management system established and knowledge management activities implemented	Number of knowledge products developed for use in policy advocacy activities	None	4	0	0.0	Policy Briefs
	Number of lessons learned and best practices up taken in the project outreach strategy	None	8	0	0.0	Experience Notes
	Number of relevant networks or communities through which lessons learned are disseminated	None	Notes disseminated through website and other media Project outputs disseminated through at least two networks	0	0.0	Project website Project inputs to networks



## 7. References

### 7.1 Bibliography

Adaptation Fund: AgriCAL Project Document, February 2012.

Al Dirani et al.: "Exploring climate change adaptation practices and household food security in the Middle Eastern context: a case of small family farms in Central Bekaa, Lebanon." Food Security 13, no. 4, 2021.

Economist Intelligence Unit: Lebanon Country Report, December 2023

Haddad et. al.: 'Climate Change in Lebanon: Higher-order Regional Impacts from Agriculture' in the Journal of ERSA, 2014.

Halwani & Halwani. "Climate change in Lebanon and the impact to water resources." Climate Change in the Mediterranean and Middle Eastern Region, 2022

IFAD AgriCAL - Implementation support mission, Aide Memoire, November 2022.

IFAD: AgriCAL Implementation support mission, Aide Memoire, December 2021

IFAD: AgriCAL Implementation support mission, Aide Memoire, February 2017

IFAD: AgriCAL Implementation support mission, Aide Memoire, June 2019

IFAD: Completion report - RPSF funded project 'Improving Greenhouses Productive Capacity of Small Scale Farmers in Lebanon' June 2022.

Middle East Monitor: Lebanon: emigration increased by 346% last year, 2022.

UN Lebanon: Climate change in Lebanon: a Threat Multiplier, 2021

UN: 2023 3rd Quarter Sector Dashboard -Food Security and Agriculture, November 2023.

WFP: Climate change, agriculture, & livelihoods in Lebanon, 2022

World Bank: Droughts and Agriculture in Lebanon: Causes, Consequences, and Risk Management' 2019

World Bank: Economic Monitor, Lebanon - The Normalization of Crisis is No Road for Stabilization, April 2023

World Bank: Economic Monitor, Lebanon - In the Grip of A New Crisis, December 2023.

World Bank: Lebanon, 'Public Finance Review - Ponzi Finance?' July 2022

World Bank: Lebanon: Green Agri-Food Transformation for Economic Recovery. PAD, June 2023

### 7.2 List of stakeholders consulted:

#### Beneficiaries

Abdo Kerbaj - Zahleh (Bekaa), Component Two, Farmer

Alfons Bou Chhab - Zahleh (Bekaa), Component Two, Farmer

Ali Atef Zaytoun - Kfartibnit (Nabatiyeh South), Component Three, Shepherd  
Antonio Younes - Zahleh (Bekaa), Component Two, Farmer  
Elias Semaan - Zahleh (Bekaa), Component Two, Farmer  
Gaby Bechara - Zahleh (Bekaa), Component Two, Farmer  
Hanna Semaan - Zahleh (Bekaa), Component Two, Farmer  
Joseph Micheal - Minjiz (North Lebanon), Component One, Farmer  
Mohamad Jaber Mansour - Kfartibnit (Nabatiyeh South), Component Three, Shepherd  
Samir Mouawad - Rihan(Byblos), Component One, Farmer  
Nawal Allaw - Moudweh (Baalbak), Component One, Farmer  
Pierrot Khoury - Ehmej (Byblos), Component One, Farmer  
Sarkis Kerelos - (Bentael ) Byblos, Component One, Farmer  
Younes Younes - Zahleh (Bekaa), Component Two, Farmer

#### **Other stakeholders**

Abed Al Kader Haj - Lebaa, Component Two, LARI Staff  
Ahmad Mazraany, AgriCAL, M&E office,  
Ali Baalbaky. Component three site officer  
Alisar Mousawi - Bekaa, Component Two, LARI Staff  
Celine Berbary - Bekaa, Component Two, LARI Staff  
Dana Kenaan, WFP, programme officer  
Dr. Akram Wehbeh, Lebanese Governor for IFAD,  
Elias Namroud AgriCAL procurement officer,  
Fadi Alwan, Green Plan, Green Plan, executive committee member  
Georges Chemaly, Focal point, Green Plan Component one  
Hala Mounajed Ministry of Environment focal point, component four  
Hamzeh Abdalbaki, WFP, agricultural adviser  
Hiba Kourany, Component Two, Lari Student  
Dr. Ihab Jomaa, Lari, Focal Point  
Lea Kai, Ministry of Environment / UNDP  
Micheal Dib Component three (nursery)  
Mohammed Moussa, Green Plan, executive committee member

Nakhoul Jabbour AgriCAL financial officer,

Nivine Akil Nassrallah, Component Two, Lari Student

Raymond Khoury, AgriCAL project manager

Salem Darwich, Minister of Agriculture Advisor,

Thoodan Al-Eryani, Senior programme officer, IFAD

Vrej Jiyani, Country director, IFAD

Wafa Dikah Hamzeh Minister advisor

Walid Rechmany, Green Plan Head of the technical department

Zeina Tamim, Ministry of Agriculture, Focal Point component Three

Anwar Kozah component three flood reduction

Marina Fawaz, Ministry of Finance.

## **8. Annexes**

### 8.1 Annex 1: Financial performance:

More detail information is available in [this spreadsheet](#).

#### AGRICAL (Lebanon) - IFAD Grant (Adaptation Fund) 1000004460 / G-C-AF-1

Table 1A: Financial performance by FINANCIER (USD) @ 15 Dec 2023

FINANCIER	Appraisal	Disbursement	%	Expenditure	%
IFAD Grant (AF)	7 245 000	2 942 277	41%	2 807 455	39%
Government					
<b>TOTAL</b>	<b>7 245 000</b>	<b>2 942 277</b>	<b>41%</b>	<b>2 807 455</b>	<b>39%</b>

Table 1B: Financial performance by COMPONENT (USD) @ 15 Dec 2023

COMPONENT	Original Allocation	Re-Allocation (Dec 2021)	actual	%
Water Management	1627000	1 920 000	1 272 430	66%
Technical Support to Farmers	1800000	1 012 800	491 187	48%
Rangeland Management	2550000	3 467 000	412 359	12%
Climate index-based insurance, Policy and knowledge Management	580000	157 000	47 750	30%
Execution Costs	688000	688 200	583 728	85%
<b>Total Project EXPENDITURE</b>	<b>7 245 000</b>	<b>7 245 000</b>	<b>2 807 455</b>	<b>39%</b>
<i>Outstanding advance on DA</i>			<b>134 822</b>	
<b>Total IFAD DISBURSEMENT</b>			<b>2 942 277</b>	

Table 1C: IFAD Loan - 200001702- disbursement (USD) @ 15 Dec 2023

CATEGORY	Original Allocation	Re-Allocation (Dec 2021)	IFAD view/records		PROJECT view/records			
			disbursed	%	balance	expensed	%	balance
Technical Assistance	2 378 000	1 154 270	371 781	32%	782 489	381 080	33%	773 190
Equipment, Vehicles and Supplies	3 741 000	5 428 201	1 874 531	35%	3 553 670	1 877 469	35%	3 550 732
Meetings and Workshops	124 000	46 850	3 552	8%	43 298	3 500	7%	43 350
Training	391 000	8 500	0	0%	8 500	0	0%	8 500
Project Management Cost	611 000	607 179	547 686	90%	59 493	545 405	90%	61 774
<i>AUTHORISED ALLOCATION</i>			<i>144 726</i>		<i>-144 726</i>			<i>0</i>
<b>Total</b>	<b>7 245 000</b>	<b>7 245 000</b>	<b>2 942 277</b>	<b>41%</b>	<b>4 302 723</b>	<b>2 807 455</b>	<b>39%</b>	<b>4 437 545</b>

of which:

to/from Designated Account  
via Direct Payments

1 947 731  
994 545

1 812 910  
994 545

Total LIQUIDITY available to Project	134 822
Forecasted expenditure till closing date	17 288
Outstanding amount on DA to be refunded to IFAD (by closing date)	117 534
Forecasted residual unspent balance by closure	4 420 257

appendix 1  
@ 30/09/2022  
Cum Exp. %

1 070 000 56%  
196 000 19%  
346 000 10%  
42 000 27%  
513 000 75%  
2 167 000 30%

242 000 21%  
1 469 500 27%  
3 500 7%  
0 0%  
452 000 74%  
2 167 000 30%

**8.2 Annex 2: Hill lake status and beneficiaries:**

Network	Status of irrigation network	Number of farmers actively using (of which women)	Hectares covered by irrigation	O&M who is responsible (Water committee /municipality / WUA)	O&M cost. Who collects, how much per farmer and is it enough for O&M	Impact: Higher productivity, other crops introduced or more reliable
Minjez	Working	10 (1♀)	3.5	Municipality	Municipality: 2023 was for free, it will be 0.5\$ in 2024 it will be enough to ensure the management	Higher productivity and other crops
Moudweh	Working	15 (5♀)	6	Cooperative	Cooperative 2023 was for free, it will be 0.3\$ in 2024 it will be enough to ensure the management	Higher productivity and other crops
Ehmej	Working	27 (8♀)	8.3	Municipality	Municipality: 2023 was 0.25 \$ per cubic meter it will be 0.5\$ in 2024 it will be enough to ensure the management	Higher productivity and other crops
Bouday	Working	18 all ♂	9	Municipality	For free	Higher productivity and other crops
Beit Lif	Working	10 all ♂	2.5	Municipality	For free	Higher productivity and other crops (vegetables)
Zrarir	Not working	Regarding the Zrarir network, the project successfully installed an inlet to fill the hill lake with water, and it is functioning very well. The hill lake is currently full of water. However, there was a technical issue with ensuring that water reached the network through gravity, indicating that the problem lies at the hill lake's level, not within the network itself. Correspondence is ongoing between the municipality and the Green Plan (Hasad PMU) to address this issue with the contractor responsible for constructing the hill lake and the outlet chamber.				

Kournayil	Not working	After numerous attempts to engage with the relevant municipal authorities, AgriCAL failed received any substantive response. After these endeavors, a former representative of the municipality disclosed that the anticipated connections between the farmers and the networks had not been established.
Barqua	Not working	Barqua Hill Lake is not yet functional. AgriCAL was waiting for the contractor to finalize the remaining work on the hill lake- as part of the Hasad project- before it could be filled with water. AgriCAL has installed the network and developed a Plan B, which involves connecting the network to the hill lake and another water network that supplies the agricultural lands from different sources. If the hill lakes are not completed by the next irrigation season, water may be distributed to the farmers from this alternate source
Nahleh	Not working	For Nahleh Hill Lake, the inlet is fully operational, but there was a technical problem with the outlet, and AgriCAL was waiting for the municipality to address it. However, the municipality resigned , and there was no responsible municipal authority to manage the network
Kfarchouba	Not working	The Kfarchouba municipality has announced that farmers are awaiting drip irrigation systems and other support incentives from donors before they can begin utilizing the network. In all cases, Kfarchouba Lake, situated along the Lebanese southern borders, was inaccessible due to the ongoing military conflict in the area
Ain Bnayah	Not working	At Ain Al Bnayah, the region was a source of sand carriers, and due to the current situation, all the farmers would extract sand from their land instead of cultivating it, as this was more profitable for them.
Kaykab	Not working	AgriCAL faced a technical problem with soil erosion at Kaykab Hill Lake, and hoped for the municipality to address it.

## 8.2 Annex 3: Term of References for the evaluation

### Terms of Reference for Consultants and other persons hired by IFAD under a non-staff contract

Consultant  Intern  Fellow  Conference Service

Minimum number of years of relevant experience required (consultants only):

1yr  2yr  8yrs  12+yrs

<b>Full Name:</b>	Mr. Peter Christenson
<b>Specialization:</b>	Team Leader
<b>Expected Start Date of Assignment:</b>	03 December 2023
<b>Expected End Date of Assignment:</b>	15 December 2023
<b>Total number of working days (max. 240 in a 12-month period):</b>	Total 12 days
<b>Division/Department:</b>	NEN/PMD
<b>Location:</b>	Home Based
<b>Reports to (name and title):</b>	Vrej Jijyan, Country Director, NEN/PMD
<b>GENERAL DESCRIPTION OF TASK(S) AND OBJECTIVES TO BE ACHIEVED</b>	
Expected Activities:	
<p>The International Fund for Agricultural Development (IFAD) is an International Financial Institution and a Specialized United Nations Agency whose mission is to enable poor rural people to overcome poverty, and does so by working within the nexus of poverty, food, environment, and climate change issues. IFAD continues to strengthen its capacity to respond to the threats to global and country environmental commons while promoting agriculture and rural development in developing countries, through different resources and instruments. The Fund prioritizes mobilizing and leveraging international resources for climate and environmental activities and implementing its strategies and policy on environment and climate change.</p> <p>The Environment, Climate, Gender and Social Inclusion Division (ECG) takes the lead in mainstreaming cross-cutting themes of environment and climate, nutrition, gender, youth, and indigenous peoples into IFAD's portfolio, to strengthen the quality of IFAD's operations and achieve improved impacts in these</p>	



areas. It contributes to the generation of evidence and knowledge on these cross-cutting themes, and facilitates their use in IFAD projects and activities. ECG is leading IFAD's work with the Adaptation Fund.

The overall goal of the Climate Smart Agriculture: Enhancing Adaptive Capacity of the Rural Communities in Lebanon (AgriCAL) project is to increase community resilience and adaptive capacity to climate change in Lebanon. The objective is to support the implementation of climate change adaptation measures in the agriculture sector in three highly vulnerable focus areas.

The project consists of five components:

- a) Component 1 - Water Management, aimed at increasing water availability and efficient use through water harvesting and irrigation technologies.
- b) Component 2 - Adaptation Techniques Roll-out, aimed at assessing vulnerability, evaluating the foreseen impact and providing adaptation measures to climate change
- c) Component 3 - Rangeland Management, aimed at increasing resilience of shepherds and small ruminants to climate change through sustainable rangeland management
- d) Component 4 - Climate index-based insurance, Policy and Knowledge Management
- e) Component 5 – Project management and KM

Under this assignment, the consultant will undertake the terminal evaluation of AgriCAL

The objectives of the Evaluation are the following: assess (i) overall project performance; (ii) implementation progress against logical framework; (iii) fiduciary aspects, including quality of financial management and procurement; (iv) targeting; (v) monitoring & evaluation (M&E) system and reporting; (vi) knowledge management (KM); (vii) progress against Annual Work Plans and Budgets (AWPBs); (viii) institutional set-up for project implementation, including PMU staffing, etc.

The consultant will assess if the implementation of the Project (including its progress, performance, overall management, contribution to and achievement of expected results, behavioural changes, etc.) was aligned with the project's funded agreement obligations (agreement between AF and IFAD) and IFAD's project document. The evaluation will be guided by the [Adaptation Fund guidance](#) in accordance with following criteria: impartiality, objectivity, independence; relevance, utility, credibility, measurability, transparency, ethics, and partnerships.

The consultant will work in close coordination with IFAD's project delivery team (PDT) and the Project Management Unit (PMU) who will provide key project documentation prior to the start of work, and assist the consultant in developing a detailed mission programme to facilitate consultations with key stakeholders and beneficiaries.

### **Main tasks**

- Desk review of relevant documents including baseline studies, progress reports and any records of surveys conducted during the Project, stakeholder maps, etc. (all of which will be provided by PDT/PMO prior to mission);
- Lead remote final Evaluation mission (December 3 to December 15, 2023 tentatively) which will involve:
  - (i) Assessing project progress, performance and quality of implementation in line with the defined objectives, and legal and financial agreement;
  - (ii) Identifying barriers, challenges and bottlenecks during implementation of the project;
  - (iii) Undertaking survey/questionnaires, focus groups or key informative interviews with relevant stakeholders, beneficiaries, EE's, possibly national and or local Governments, and where relevant other development partners;
  - (iv) Collecting data as needed (government data/records, public expenditure reporting, GIS data, etc.) to validate evidence of results and assessments (including but not limited to: assessment of TOC, activities delivery, and results/changes occurred);
  - (v) Liaise with key implementing partners and stakeholders, which include IFAD, AF NDA, etc.;
  - (vi) Liaise with and coordinate inputs from other mission members who will participate in the independent mission;
- Discuss the final evaluation report and mission findings with PDT and AF NDA to validate the findings of the evaluation, and address any comments received, as well as lead a validation meeting for the final evaluation of the final report.

#### Expected deliverables

1. **Inception report** (in English) on proposed final evaluation methodology, work plan, interview list, and proposed structure of the final Evaluation report.
2. Final **evaluation mission findings, to be presented and discussed** (in English) at mission wrap-up meeting with IFAD (PDT) and project teams, and AF NDA representatives if possible.
3. **Draft final evaluation report** (in English) to be submitted for PDT's, PMU and AF NDA review.
4. Lead a **validation meeting** of the final evaluation report, once comments received have been addressed.
5. **Final evaluation report** (in English) to be submitted, including a 2-3 page executive summary.

#### Documents that will be shared with the consultant to undertake the assignment:

- Project design report
- All annual project performance reports
- Other relevant document as needed.

#### KEY PERFORMANCE INDICATORS

Expected Outputs (please include any travel if applicable):

Required Completion Date:

<p>Inception report on proposed independent evaluation methodology, work plan, interview list, and proposed structure of the report</p> <p>Presentation of final evaluation findings at mission wrap-up</p> <p>Draft final evaluation report for review</p> <p>Validation meeting</p> <p>Final independent evaluation report submitted to IFAD for submission to AF.</p>	
<p><b>Travel requirements and Payment conditions</b></p> <p>As a result of the security situation in the country this assignment will be done remotely and no travel will be required.</p> <p><b>Minimum Qualifications of the Consultant</b></p> <ul style="list-style-type: none"> <li>• Master’s Degree, preferably in natural resources and/or rural development. Background on both environmental and climate change issues will be an asset. In particular, knowledge of climate change issues in relation with agriculture and rural poverty will be valuable.</li> <li>• The consultant must have at least 10 years of previous working experience in the management of the project cycle related to development initiatives. Experience in the design and implementation of IFAD and/or AF projects will be an advantage.</li> <li>• Experience in undertaking AF evaluation will be an advantage and familiarity with the AF programmes is a requirement.</li> </ul>	

Clearance by COM if TORs include communication activities (see section 4.7(iii)):

Name: .....Signature.....

Date:.....

Clearance by CFS if TORs include financial management responsibilities:

Name: .....Signature..... Date:.....

## 8.2 Annex 4: AgriCAL management response

### Climate Smart Agriculture: Enhancing Adaptive Capacity of the Rural Communities in Lebanon (AgriCAL)



#### Acknowledgment of Challenges and Limitations

Thank you for the thorough evaluation of the AgriCAL project. We acknowledge the significant external challenges—such as economic crises, political instability, and security concerns—that have impacted the project's implementation. These factors, beyond our control, have undeniably affected our project timelines, activities, and overall effectiveness. Understanding these limitations is crucial for us and our stakeholders, as it sets the context within which the project was executed.

#### Reflection on the Project's Achievements

Despite these challenges, the AgriCAL project has achieved notable successes. For instance, the implementation of the early warning system and the adoption of the LARI App by a segment of our farmer-beneficiaries have shown positive outcomes. These achievements demonstrate our team's resilience and adaptability in the face of adversity, and they highlight the potential impact of our interventions in improving agricultural practices and outcomes and the installation of the irrigation networks has and will increase the positive impact of the project.

#### Commitment to Learning and Improvement

We are committed to learning from this experience to enhance our future projects. The evaluation has provided us with valuable insights into areas where our approaches can be improved, particularly in risk assessment, project design, and implementation strategies. Moving forward, we will integrate these lessons into our planning and execution processes to increase the effectiveness and efficiency of our interventions.

#### Plan for Addressing Sustainability and Scalability Issues

The concerns regarding the sustainability and scalability of the project's impacts are well noted. In response, we are exploring additional funding opportunities, strengthening our partnerships with local institutions, and considering the implementation of cost-recovery mechanisms for certain project components. These steps are aimed at ensuring the long-term sustainability and scalability of our interventions.

#### Engagement and Communication with Stakeholders

We recognize the importance of continuous engagement with our stakeholders, including beneficiaries, government entities, and funding partners. Your feedback is invaluable to us and will play a critical role in refining our strategies and approaches. We are committed to maintaining open lines of communication to ensure that our projects are responsive to the needs and expectations of the communities we serve.

### **Future Directions and Commitment**

Finally, we reaffirm our commitment to improving the adaptive capacity and resilience of rural communities in Lebanon. Despite the setbacks, we are actively developing plans and seeking opportunities to continue our work in this area. Our dedication to our mission remains unwavering, and we are optimistic about the future direction of our projects.

**Project Director**

A handwritten signature in blue ink, consisting of a series of loops and a final stroke that ends in a small arrowhead pointing to the right.

**Raymond Khoury**

## 8.3 Annex 5: Revised Results Framework

Output	Indicator	Baseline	Original Target	Revised Targets	Source of Verification	Risks and Assumptions
<b>Component 1: Water Management</b>						
Outcome 1: Increased water availability and efficient use through water harvesting and irrigation technologies	Number of beneficiaries	No supplementary water available from water harvesting in the project focus areas	n.a.	700 beneficiaries + 50 indirect beneficiaries 12 hill lakes 32.9 km of primary irrigation networks	Mid-term and final evaluations Project progress reports	Political instability might cause effectiveness or implementation delay.  Delays in programme implementation, and particularly in the development of infrastructure intervention.  Farmers cooperate with the project and provide the land and required contributions.
	Number of km of hill lake primary irrigation networks constricted		n.a.			
	Number of hectares served by efficient irrigation systems		150 Hectare	262.5 Hectare		
	Quantity (m <sup>3</sup> ) of supplementary water available for agriculture as a result of water harvesting and the use of efficient irrigation systems		By year 4, 75,000 m <sup>3</sup> of supplementary water available for agriculture in the project focus areas	By end of project, at least 479,800m <sup>3</sup> of supplementary water available for agriculture in the project focus areas		
Output 1.1: Rainwater harvested from greenhouse roof tops	Number of farms/hectares using the SSG Number of greenhouse demonstrations	Zero hectares out of 1000 ha approx.	135 Farms/5 Hectares	2 demonstrations / 0.5 ha 2 beneficiaries + 50 indirect beneficiaries	Green Plan field reports Procurement reports	
	Quantity of stored water for supplementary irrigation	Zero m <sup>3</sup>	25,000 m <sup>3</sup>	800 m <sup>3</sup>		
Output 1.2: Rainwater harvested from	Number of farms/hectares using the water supply for supplementary irrigation	Zero hectares	120 Farms/10 Hectares	Cancelled	Green Plan field reports Procurement	

Output	Indicator	Baseline	Original Target	Revised Targets	Source of Verification	Risks and Assumptions
agriculture roads	Quantity of stored water	Zero m <sup>3</sup>	50,000 m <sup>3</sup>		reports	
Output 1.2: Water efficient irrigation systems Deployed Output 1.2 Improved access to climate-resilient water & Water efficient irrigation systems deployed	Number of Beneficiaries	15,000 ha all over the country. Data in focus area not available.	n.a.	698 beneficiaries	Green Plan field reports Procurement reports	
	Number of km of hill lake primary irrigation networks constructed		n.a.	12 hill lakes 32.9 km of primary irrigation networks		
	Number of hectares served by efficient irrigation systems-with access to climate-resilient water source		150 ha	262 Hectares		
	Quantity of water supplied to farms m3		By year 4, 75,000 m3 of supplementary water available for agriculture in the project focus areas	At least 400,000 m <sup>3</sup>		

**Component 2: Adaptation Techniques Roll-out**



Output	Indicator	Baseline	Original Target	Revised Targets	Source of Verification	Risks and Assumptions
Outcome 2: Increased adaptation to climate change for crop production	Change in food security in the programme area as a result of using climate-resilient agricultural and livestock production methods, measured as increase in quantity of local production or income  Number of beneficiaries		By year 4, 25% increase in crop and livestock production or in income in the focus areas  20,335 beneficiaries	By end of project, 25% increase in crop and livestock production or in income in the focus areas compared to individual baselines  60,235 beneficiaries	Mid-term and final evaluations Project progress reports Livelihood surveys Agriculture observatory annual production survey	Low human and institutional capacity for the implementation of climate change related interventions, especially at the local level.  Project capable of mobilizing partners to contribute to the financial sustainability of the warning system.
Output 2.1: Enhanced early warning system to farmers through improved existing system	Number of meteorological stations installed in the project focus areas	60 weather stations	2 additional weather stations	12 additional weather stations	LARI weather reports	Farmers perceive the benefits of acting to the early warning system recommendations, and expand its use.
	Number of staff trained on meteorological observation and analysis	4 staff	15 staff	15 staff	Training reports and evaluations	
	Frequency of production of improved climate risk information (for pest outbreak prediction, water demand, etc)	Not available	Daily	Daily	LARI weather reports Farmers' satisfaction survey	
Output 2.2: Expanded farmer outreach and ensured financial and management sustainability of the warning system	Number of farmers receiving climate risk information	49,000 farmers	20,000 farmers	60,000 farmers	LARI weather reports Farmers' satisfaction survey	
	Financial flow to sustain the system	Zero %	50% of the system's cost covered by non-core budget	50% of the system's cost covered by non-core budget	LARI financial reports	
Output 2.3: Capacity building on adaptation techniques for vulnerable field	Number of project beneficiaries trained on agricultural adaptation measures disaggregated according to gender	None	At least 300 farmers	At least 200 farmers (30% women)	Training reports and evaluations	

Output	Indicator	Baseline	Original Target	Revised Targets	Source of Verification	Risks and Assumptions
crops enhanced	Number of professionals trained to enable rolling out of climate- resilient agricultural production technologies and methods	None	20 professionals	20 professionals	Training reports and evaluations	
Output 2.4 Guidelines and recommendations on agricultural adaptation techniques for vulnerable areas developed	Agricultural adaptation techniques for vulnerable areas identified	None	5000 copies of the guidelines (on different techniques) published and disseminated on websites and networks	5000 copies of the guidelines (on different techniques) published and disseminated on websites and networks	Published guidelines Project website	
Output 2.5: National fodder resource (NFRA) assessment prepared	List of fodder species, their distribution and nutritional value prepared The carrying capacity of the rangelands in the sampled areas calculated	Non existent	Nationwide assessment completed	Assessment conducted in Bekaa North (Road Hadath baalbeck – Afca) and Terbol to Anjar.	Published NFRA study	
<b>Component 3: Rangeland Management</b>						
Outcome 3: Increased resilience of shepherds and small ruminants to climate change through sustainable rangeland management	Increased productivity of the rangelands in the focus areas measured by increase in income of locally produced meat and quantity of dairy products  Number of beneficiaries		increase in income and milk productivity by year 4 of the project  220	increase in income and milk productivity by end of the project  12,420 beneficiaries + 35,450 indirect beneficiaries	Mid term and final evaluations Project progress reports Milk production monitoring by MoA	Lack of incentives for particular local communities to cooperate in activities that do not yield immediate financial value, but aim at longer- term resilience, may reduce stakeholder

Output	Indicator	Baseline	Original Target	Revised Targets	Source of Verification	Risks and Assumptions
Output 3.1: Pilot sustainable rangeland management plan implemented	Management plan prepared and adopted	Non existent	One management plan	Two management plans	Published management plan	engagement and comprehensive participation
	National guidelines prepared and adopted	Old obsolete guidelines not based on scientific results	Adopted national guidelines	Adopted national guidelines	Published national guidelines MOA Decisions	
	Number of professionals trained on sustainable rangeland management	None	20 professionals	20 professionals	Training reports and evaluations	
	Number of households trained and participating in rangeland management and dairy product processing disaggregated according to gender	None	200 households	200 households (30% Women) + 450 indirect households	Field surveys	
Output 3.2 Restored degraded rangeland areas and reduced flood risks	Number of beneficiaries	None	n.a	12,200 households + 35,450 indirect beneficiaries	Field survey MOA reports	
	Number of nurseries rehabilitated	One in the focus areas	2 nurseries	1 nursery		
	Number of seedlings produced	Zero	125,000 seedling/year	500,000 seedling/year		
	Area covered by flood risk reduction measures	2 watersheds managed out of 14	166km (2 additional watersheds)	366km (2 additional watersheds)		

**Component 4: Climate index-based insurance, Policy and Knowledge Management**

Output	Indicator	Baseline	Original Target	Revised Targets	Source of Verification	Risks and Assumptions
Outcome 4: <del>Climate index-based insurance initiated</del> , Policy influenced and lessons learned and shared through a knowledge management system	<del>Amount of compensation funds disbursed to affected farmers</del>	Not existent	<del>At least 50% of farmers' losses due to climate change compensated for through the climate index insurance scheme</del>	Cancelled	<del>Mid-term and final evaluations</del> Project progress reports	National stakeholders cooperate and agree on designing and implementing the climate index insurance scheme  Changes in the government structures and functions of the implementing partners  Decision and policy-makers at all levels are slow to appreciate the need to mainstream climate change considerations into activities and investments
	Level of increase in awareness about climate change among decision makers and farmers (gender disaggregated)		At least 60% of targeted decision makers and farmers show increase in the level of awareness	At least 60% of targeted decision makers and farmers show increase in the level of awareness	Mid-term and final evaluations Project progress reports	
Output 4.1: <del>Climate index-based insurance initiated</del>	<del>Climate index adopted</del>	None	<del>By year 2, 1 climate index</del>	Cancelled	Project reports <del>LARI weather reports</del>	
	<del>One index piloted</del>	None	<del>One focus area or one crop</del>			
Output 4.1: Policy advocacy activities implemented	Number of policies/plans/strategies revised or developed as a result of policy advocacy activities	None	By year 4, at least 3 policies/plans/strategies	By end of project, at least 3 policies/plans/strategies	Published policies/plan s/strategies Government al decisions and decrees	
Output 4.2: Knowledge management system established	Number of knowledge products developed for use in policy advocacy activities	None	By year 4, at least 8 policy briefs	By project end at least 4 policy briefs	Policy Briefs	

Output	Indicator	Baseline	Original Target	Revised Targets	Source of Verification	Risks and Assumptions
and knowledge management activities implemented	Number of lessons learned and best practices up taken in the project outreach strategy		Every year of project implementation, at least 8 lessons learned and best practices consolidated in Experience	Every year of project implementation, at least 8 lessons learned and best practices consolidated in Experience	Experience Notes	
	Number of relevant networks or communities through which lessons learned are disseminated		Notes disseminated through website and other media  Project outputs disseminated through at least two networks	Notes disseminated through website and other media  Project outputs disseminated through at least two networks	Project website Project inputs to networks	