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Mainstreaming Biodiversity Management into Medicinal and Aromatic Plants (MAPs) Production Processes in Lebanon

Project final report

2013

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PROJECT BRIEF

Project short title: Medicinal and Aromatic Plant Project (MAP Project)

Project Duration: 15 June 2008 - 30 April 2013

Implementing Partners: Lebanese Agriculture Research Institute (LARI)

Donors: GEF and UNDP

Project objective: Integrate conservation objectives into gathering, processing and marketing of globally significant medicinal and aromatic plants (MAP)

PROJECT BACKGROUND

- There are more than 300 MAP species found and utilized in Lebanon tens of which are endemic
- National production is predominately supplied from wild harvesting (98%)
- MAP species are threatened by unsustainable harvesting practices, habitat loss, damage and fragmentation as well as fires and climate change
- Despite their great potential, only few species have been valorized and integrated into full market chain
- There is a long tradition of using medicinal and aromatic plants in Lebanon as they form a source of raw material used for traditional recipes, remedies and handcrafts
- MAPs provide additional sources of income for rural communities from wild harvesting, cultivation processing and selling these plants

PROJECT IMPLEMENTATION SCOPE

During the entire implementation phase, the project team had to keep in mind the following two important issues: (i) MAPs are a valuable but vulnerable and neglected natural resource in Lebanon mainly in terms of conservation, sustainable development, legislation, enforcement; (ii) many poor and marginalized people are living from these resources so one cannot neglect the immense socioeconomic dimension from any activity embarked upon the project.

From the onset, the project faced two major challenges concerning the preselected target species and project pilot sites. With respect to the preselected target species, there was a lack of accurate data related to quantities, distribution, use and market. With respect to the preselected pilot sites, the project had to select completely new sites as the preselected sites did not contain sufficient areas and quantities of the target species. Therefore, the project needed to acquire solid and accurate information before initiating any activities, as such the project team devoted time to conduct field visits to more than 150 villages and met with more than 200 stakeholders including local community members, local authorities, private sector, NGO's, religious orders, collectors, middlemen, certification bodies & quality control bodies etc.). During this phase the project conducted a thorough situation analysis for MAP sector in Lebanon (needs, gaps, species distribution, prices, quantities, harvesting pressures, quality, market etc.)

According to the original project document, the project was planned to focus on the entire commercial value chain of the seven project target species including the development and

implementation of sustainable wild harvesting standards. The project's original strategy assumed that sustainability issues for all seven selected target species can be addressed by a single comprehensive resource management objective that addresses the management needs of important indigenous MAP species by providing "incentives for local communities to sustainably harvest MAP species from the wild through increased income generation from value-added locally produced MAP products that are quality controlled, sustainably harvested certified and branded." During the first year of implementation, the project conducted preliminary assessments of suitability for sustainable wild harvesting of the selected target species. Based on the latter assessment, only two of the seven pre-selected target MAP species, *Salvia fruticosa* and *Origanum syriacum* were assessed to be present in sufficient abundance and have sufficiently strong market potential to support the application of this strategy to improve management of wild collection over the long-term. The remaining five pre-selected target MAP species have limited geographic distributions, smaller populations, and more limited potential for expanding or transforming markets. For these five higher-risk species, the project focused on contributing to better knowledge of their conservation status (distribution, abundance, population trends, harvest impacts, and other potential threats) and to use them as pilot species to orient and guide conservation and management action for the MAP sector in Lebanon.

The project worked on both a macro level (national scale) and a micro level (pilot sites scale). On the national front the project actively sought to develop and strengthen the enabling environment for sustainable use of MAPs through the identification of legal constraints and the required intervention points at the regulatory level. The four project pilot sites were considered as experimental sites for developing sustainable harvesting standards, for product development and value-added processing, for marketing and sales and for certification and branding. The pilot sites informed the regulative framework (through the scientific findings with respect to sustainable harvest standards), informed MAP business development at the country level and they showcased how to increase the profitability of commercial MAP products. The project successfully achieved the challenge of moving from impact at the pilot site level to a significant impact at the country level with respect to the MAP sector.

Project Target Species

According to the original project document, the project was planned to work on seven target MAP species (Table 1). During the course of project implementation, the project identified additional four MAP species that deserved prompt attention. The first three species (*Thymbra spicata, Thymus syriacus* and *Sauterja thymbra*) collectively belong to the Zaatar group to which two of the project target species belong to (*Origanum syriacum and Origanum ehrenbergii*). It was necessary to understand the additional three plants' national distribution, use and potential for admixing on purpose or for falsification reasons with the main and prevalently used *Origanum syriacum* plant. The fourth additional species (*Laurus nobilis*) which is commonly harvested and used MAP species in Lebanon. Furthermore, *Laurus nobilis* is wild harvested by one of the project pilot sites and one of the identified MAP based national companies by the project was interested in buying the plant material certified as organic and sustainably harvested. As such the project in collaboration with the national certification company conducted several field visits and developed sustainably harvesting standards.

Table 1: Original project targeted MAP species

Species	English Vernacular Name	Arabic Vernacular Name	Photo
Althea damascena Mouterde, (syn. *Alcea damascena* Mouterde)	Damascus Hollyhock	Khetmiyyat lubnan	
Cyclotrichium origanifolium (Labill.) Manden. & Sheng. (syn *Calamintha origanifolia* (Labill.) Boiss)	Majoram-Leaved Calamint	Hashishat-al-bahsa, Hashishat-al-jabal, Hashishat-al-bouhays	
Clinopodium libanoticum (Boiss.) Kuntze, (syn. *Micromeria libanotica* Boiss.)	Lebanon Savory	Zoufa lubnan	
Origanum syriacum L.	Hyssop of the Bible	Zūbā' ; Za'atar	
Origanum ehrenbergii Boiss.	Ehrenberg's Marjoram,	Za'aytri, Al Zouwayba'a	
Salvia fruticosa Mill.	Lebanon Sage	Kassaine al loubnani, Maryameye	
Viola libanotica Boiss.	Lebanon Violet	Banafsaj lubnan	

Project Pilot Sites

A four level selection process was undertaken to identify the project's pilot sites as follows:

First level: Areas known to have target species based on literature, altitude, habitat, topography, team knowledge and local knowledge as well stakeholder meetings with 200 stakeholders including local community members, local authorities, private sector, NGO's, religious orders, collectors, middlemen, certification & quality control bodies etc.). During this phase the project did situation analysis for MAP sector in Lebanon (needs, gaps, species distribution, prices, quantities, harvesting pressures, quality, market etc.)

Second level: Areas affected by clusters bombs were omitted from the first selection list

Third level: Field visits were conducted in the remaining villages (150 villages) to investigate the status and potential and each site was evaluated based on a matrix of criteria (Table 2). Based on the above assessment matrix twenty-two sites were shortlisted from five regions in Lebanon (

Table 3). From thee later shortlist, five potential sites were further filtered as they received the highest score in their respective regions as shown in the table 6 below.

Fourth level: From the five final sites, areas affected by mines (based on official army maps), as such Sfarey (Maarous) site in Jezzine was omitted.

Table 2: Assessment matrix for the third selection criteria for identifying project pilot sites

Required factors (if any are 0 then site omitted)	1. Amount in excess of requirement for local home use (OS and/or SF) 2. Support and acceptance of local authority
Threats/pressures	1. Pressure from outsider collectors 2. Potential threat on MAP from local collectors (Competition, overharvesting, destructive) 3. Imminent land change in the near future that will remove/modify/alter natural habitats
Market drive	1. Existing market for *Origanum syriacum* at high prices or 2. Existing market for *Salvia fruticosa* at high prices
Assets	1. Existence of local facilitator (NGO, reserve, active coop, middlemen etc) 2. Existing local commercial collectors 3. Willingness of local communities to become MAP commercial collectors 4. Ease of physically controlling access to the harvesting site
Ease of implementation	1. Practicality of harvesting site for resource assessment and monitoring 2. Initial acceptance of local collectors of project objectives

Table 3: Shortlist of 22 potential sites after the third level selection

Region	Site Investigated	Required factors (if any are 0 then site omitted)	Threats / pressures	Market drive	Assets	Ease of implementation	Total score
CHOUF-ALEY	**Mrusti**	**2**	**2**	**0**	**4**	**1**	**9**
Jezzine	Barty	2	2	2	3	1	**10**
	Libaa	2	1	1	3	1	**8**
	Rimat-Deir Chkadeef	2	3	1	3	1	**10**
	Saydon	2	2	1	4	1	**10**
	Joun	2	2	1	2	1	**8**
	Sfarey (Maarous)	**2**	**3**	**1**	**4**	**1**	**11**
Metn-keserwan-Jbiel	Deir Mar Elias Chouwah Roum	2	2	1	1	1	**7**
	Kfarmashoun	2	2	1	2	1	**8**
	Hsarat	**2**	**3**	**1**	**3**	**1**	**10**
	Lehfed	2	1	0	2	0	**5**
	Al Kafr	2	2	1	2	0	**7**
	Bentael	2	2	1	2	0	**7**
	Kfoun	2	2	1	2	0	**7**
Batroun-Koura-Becharre-Ehden	Kfifane-Dier Hardine	2	2	1	2	0	**7**
	Assia	**2**	**3**	**1**	**3**	**1**	**10**
	Kfarhay	2	3	1	2	1	**9**
	Mitreet	2	3	0	2	1	**8**
Dounniye-Akkar	Kfar Habo	2	2	2	2	1	**9**
	Mejdel	**2**	**2**	**2**	**4**	**1**	**11**
	Aandqet	2	1	1	4	1	**9**
	Qbayat	2	1	1	2	1	**7**

The four final identified pilot sites (Mejdel, Hsarat, Assia and Mrusti) (Figure 1) fulfilled the following requirements:

- Sufficient quantity of target MAP species to enable commercial exploitation
- Supportive local authority interested in project activities and the project's potential in providing an additional source of income the village's concerned inhabitants
- Acceptance of project initiative and willingness to engage in project activities among identified potential collectors
- Surface area of the pilot site provides sufficient quantity of the target MAP species thereby allowing for commercial exploitation
- Ease of controlling access to the harvesting site thereby restricting harvesting to the identified local collectors as well as allowing the project team to undertake the required field assessments and studies

Figure 1: Map showing the project's pilot sites

The pilot sites (

Table 4) were identified to enable the project team and its partners to test the project's strategy under the most appropriate conditions, as well as to provide different models to implement the project's main objective of integrating conservation objectives into the gathering, processing and marketing of MAPs. The pilot sites were intended to provide tools, capacity and lessons learned that can applied to additional MAP species and site conditions across Lebanon.

Table 5 provides a comparative matrix of the four pilot sites in terms of each site's unique characteristics for serving as a model pilot site to carry out the project's objectives and activities.

Table 4: Description of the project pilot sites

Pilot Site	Site Description	
Hsarat	• **Location:** The site is located in Jbeil in the North Governorate of Lebanon, near Hsarat village, covering an area of approximately 214,000 m^2 at an altitude range between 240-390 m asl. • **Harvesting activities:** Before 1975 there was a large segment of the village (approximately 20 people) who collected sage and sold it as dried bulk material to middlemen. They halted their collection activities in 1975 for several reasons: onset of the Lebanese civil war, unreliability of the middleman and the collectors went into different occupations mainly the army. From 1975 until 2011 the local inhabitants did not collect sage, they only harvest *Origanum syriacum* for home use whenever available • **Wild MAP status:** Rich population and distribution of the target species *Salvia fruticosa*	

Pilot Site	Site Description	
Mejdel	• **Location:** The site is located in Akkar, in the North Governorate of Lebanon, near Mejdel village, covering an area of approximately 160,000 m^2 at an altitude range between 320-510 m asl. • **Harvesting practices:** Since 1985, the site has been harvested annually by local harvesters from Mejdel Village (primarily women), harvest and sell to a local middleman who is also the "Mokhtar" of the village. From 1985-1996 mainly fresh sage was exported to Jordan. After 1996 and with the enactment of a new Ministerial Decision from MoA which forbid the export of fresh sage, only dry sage was exported to Jordan. Currently approximately 5 to 7 people from Mejdel collect from the site, in addition to foreign harvesters from nearby villages. In total approximately 10 tons of fresh sage (3 tons of dry sage are harvested from the site annually). • **Wild MAP status:** Rich population and distribution of the target species *Salvia fruticosa*	

Pilot Site	Site Description	
Mrusti	• **Location:** The site is located in Chouf, in the Mount Lebanon Governorate near the Mrusti village covering an area of approximately 100,000 m^2 at an altitude range between 1350-1550 m asl. • **Harvesting practices:** Locals from Mrusti village are the main collectors in the site. They harvest mainly at full bloom which usually falls in end of June. Traditionally, they harvest only the flower and a short section of the upper stem leaving leaves on the stem. • **Wild MAP status:** Rich population and distribution of the target species *Origanum syriacum*	

Pilot Site	Site Description	
Assia	• **Location:** The site is located in Batroun, in the North Governorate of Lebanon, near Assia village covering an area of approximately 273,000 m^2 at an altitude range between 750-950 m asl. • **Harvesting activities:** Local community members from Assia and neighboring sites collect primarily for home use. The locals claim that commercial collectors from North Lebanon harvest from the site. • **Wild MAP status:** Rich population and distribution of the target species *Origanum syriacum* on site.	

Table 5: Comparative matrix of the project pilot sites

	Hsarat	Mejdel	Mrusti	Assia
Target MAP species	*Salvia fruticosa*	*Salvia fruticosa*	*Origanum syriacum*	*Origanum syriacum*
Landownership	Private	Public	Public (within buffer zone of a biosphere reserve)	Private
Harvesting history	No sage collection since 1975	Commercial collectors	Small scale commercial collection but mainly collection for home use	Mainly collection for home use
Socioeconomic status of the collectors	Medium	Very poor	Poor	Medium
Village context	• Medium development status in terms village infrastructure, facilities, services and average income • Inhabited year round • Mainly agricultural village	• Low development status in terms village infrastructure, facilities, services and average income • Inhabited year round	• Medium development status in terms village infrastructure, facilities, services and average income • Inhabited year round • Mainly agricultural village	• High development status in terms village infrastructure, facilities, services and average income • Mainly inhabited in the summer

PROJECT IMPACTS

The project succeeded in mainstreaming biodiversity in national policy that positively contributes to the conservation and sustainable utilization of natural resources. The MAP project has induced behavioral change on two levels:

- Macro national level: The project contributed to the development of legislation and regulating systems for the medicinal and aromatic plants (MAPs) sector in Lebanon. The project closely collaborated with the Lebanese Ministry of Agriculture and other concerned government institutions to develop a new Ministerial Decision which has mandated that any commercial collector must obtain a permit to collect, transport and export sage and oregano. As such, all sage and oregano collected in Lebanon should be collected under new sustainability standards. Furthermore, the project has placed MAPs mainly sage and oregano on the agenda of several government institutions mainly Ministry of Agriculture, national customs and national standard organization (Libnor) which has created a positive change in the institutional perception of MAPs in Lebanon. Table 6 illustrated the project's main impacts on the national level.
- Micro-local level: Through the project's activities, local collectors, middleman and traders have begun to understand the link between sustainable harvesting, impact on their livelihoods and quality of the production. As such, a positive change in collection behavior has resulted on a voluntary basis as they were able to experience firsthand the direct implication of applying sustainability guidelines.

- Table 7 illustrates the project's main impacts on the pilot site level.

Table 6: National level impacts

Pre-project	Post-project
Conservation: Low knowledge of the distribution, status, biology, value and market of important national medicinal and aromatic plants	• Detailed national distribution mapping for 9 MAP species • Population assessments for 9 MAP species • Geographic and time variation of the essential oil yield and profile for two of the most collected and used Lebanese MAP species (oregano and sage) • Market assessments, feasibility studies and business plans for two of the most collected and used Lebanese MAP species (oregano and sage)
Conservation: Lack of adequate and effective management for important national medicinal and aromatic plants	• Conservation operational guidelines developed for important national medicinal and aromatic plants • Conservation assessment of target MAP species in accordance to international recognized system (IUCN Redlist)
Institutional: Lack of effective regulation governing the utilization of MAPs and lack of enforcement of existing regulation	• Draft Decree for medicinal and aromatic plants submitted to the Ministry of Agriculture • New Ministerial Decision (1/179) was enactment on 3/3/2012 to regulate wild harvesting of sage and oregano and to ensure that it's done according to sustainability criteria in terms of time, quantity and method as well as to regulate its transport and export • Permit for wild harvesting, transport and trade of sage and oregano based on scientifically derived sustainability standards • Developed capacity building tools to support concerned government entities to implement and enforce the new MAP regulation
Institutional: Low priority; technical capacity and low level of sensitization for the management and conservation of MAPs	• Significant and positive change in the perception of the Ministry of Agriculture (main national entity mandated for regulating MAP) towards the project's objective and the importance of sustainable wild harvesting. The later is clearly proved by the Ministry's immense support and collaboration with the project to achieve national results for the MAP sector • Recommendations for national strategy for MAP with technical supporting documents • For the first time a common forum for the main MAP stakeholders in Lebanon (Ministry of Agriculture, customs, traders, middlemen and companies) to exchange information, interests, challenges and needs in order to achieve complementary results for moving forward the MAP sector • Technical tools that can be utilized in the management of the MAP sector in Lebanon
Institutional: Inappropriate and ineffective national standards for Oregano and sage (Libnor) that do not adequately contribute to the protection of public health, safety, and environment, and to the facilitation of trade and the increase of Lebanese	• Modified and approved new standard for sage • Modified draft standard for Oregano submitted for approval which will complement the marketing and regulation initiatives undertaken by the project by providing specific standards for different categories of "zaatar" thereby (i) allowing for transparent market differentiation of zaatar quality categories and (ii) provide the customs and MoA import /export staff with a an effective and useful

Pre-project	Post-project
exports	tool to monitor and control the import, export and national consumption of “Zaatar” which currently is very challenging without clear and effective standard
Certification: Lack of a national certification for sustainable wild harvesting of MAPs	• Sustainable wild harvesting standards incorporated into a new national certification seal • Capacity built in the development of sustainable wild harvesting certification and implementation in the field which can be translated to other MAP species
Market: Minimal interest for sustainably wild harvested MAPs	• Increased interest due to strengthened association between sustainable harvesting practices and high quality MAP’s and improved marketability through: certification, branding, packaging, improved collection methods, improved post harvest and processing practices.
Awareness: Low level of awareness about the existence and importance of sustainably harvested MAP products	• Increased awareness through diverse marketing opportunities, promotion events, improved sales & marketing capacity
Social: Negative perception of commercial collectors and the profession as a whole Conflicts among collectors and between collectors and landowners	• Comprehensive regulative framework that legitimizes the profession of wild collection, protects landowners’ sovereignty and control over their land, and eliminates unproductive competition

Table 7: Hsarat Pilot site impacts

Pre-project	Post project
No sage collection since 1975	Informal MAP enterprise (2 collectors and 2 defoliators)
Unsustainable wild harvesting mainly from foreign harvesters	Applied the sustainability standards for wild harvesting in the 2011 before the Ministerial Decision was adopted Obtained permit for sustainable wild harvesting in 2012 season based on new Ministerial Decision
Influx of foreign harvesters (February – November)	Significant reduction in foreign harvesters and increased control efforts by local collectors and village inhabitants
Conflict between beekeepers and foreign harvesters who collect very early in the season before the plants have flowered	Beekeepers satisfied with delayed harvesting practices
Overall, plants and site in poor health because some areas had not been harvested for many years leading to aging and low productivity plants while in other areas over and early harvesting have decreased the vigor of the plants)	Improved status of wild sage
Lack of knowledge about the impact of their harvesting practices on the plant's health and productivity. They had long held a misconception that the best time to harvest was at full bloom	Collectors aware of the impact of early harvesting on the productivity and quality of plants
Lack of MAP processing facilities	Drying unit installed on-site which facilitated drying practices and improved quality of final end products
Lack of knowledge about MAP processing, marketing and sales	Capacity building (theoretical and practical) on processing, marketing, sales and GHP/GMP Greater interest and willingness to explore value added products such as sage essential oil and infusions

Table 8 Mejdel Pilot site impacts

Pre-project	Post project
Unsustainable wild harvesting mainly from foreign harvesters	Applied the sustainability standards for wild harvesting in the 2011 before the Ministerial Decision was adopted and in 2012 season based on new Ministerial Decision
Influx of foreign harvesters (February – November)	Increased control efforts by local collectors and village inhabitants
Poor overall health of the site and plants due to over and early harvesting	Improved status of wild sage
Lack of knowledge and interest of the status of their MAP wild resource	Collectors had a complete change of perception about the impact of their past unsustainable harvesting practices on the status and long terms health of the MAP resources plan specifically to the low number of new seedlings
Limited sale outlets mainly in bulk with minimal processing through middleman to traders	Processed end products Sale in retail
Lack of MAP processing facilities	Drying unit installed on-site which facilitated drying practices and improved quality of final end product Processing center established in the village for the cooperative
Lack of knowledge about MAP processing, marketing and sales	Capacity building (theoretical and practical) on processing, marketing, sales and GHP/GMP Greater interest and willingness to explore value added products Greater understanding of the importance and value of quality control, hygiene processing and certification
Established cooperative for medicinal plants however they faced significant administrative, financial and management issues	Active legal cooperative with up to date financial, administrative and management status Elected a new cooperative president, added new members some of which are sage collectors increase the scope of the cooperative agro food production to approximately 20 products Focusing on value added final products

Table 9: Mrusti Pilot site impacts

Pre-project	Post project
Small scale commercial collection but mainly collection for home use	Small scale commercial collection but mainly collection for home use
Unsustainable wild harvesting mainly from foreign harvesters	Applied the sustainability standards for wild harvesting in the 2011 before the Ministerial Decision was adopted and in 2012 season based on new Ministerial Decision
Lack of knowledge about the impact of their harvesting practices on the plant's health and productivity. They had long held a misconception that the sustainable and best method of harvesting is to collect only the flower and top leaves	Collectors aware of the impact of their traditional harvesting method and its negative impact on the plant
Lack of MAP processing facilities	Drying unit installed on-site which facilitated drying practices and improved quality of final end product
Lack of knowledge about MAP processing, marketing and sales	Capacity building (theoretical and practical) on processing, marketing, sales and GHP/GMP Greater interest and willingness to explore value added products
Informal workshop group associated with the Arz Al Shouf Nature Reserve	Agriculture cooperative which includes 5 collectors

Table 10: Assia Pilot site impacts

Pre-project	Post project
Mainly collection for home use	Small scale commercial collection but mainly collection for home use
Unsustainable wild harvesting mainly from foreign harvesters	Applied the sustainability standards for wild harvesting in the 2011 before the Ministerial Decision was adopted and in 2012 season based on new Ministerial Decision
Influx of foreign harvesters (February – November)	Reduction in foreign harvesters and increased control efforts by local collectors and village inhabitants
Lack of knowledge about the impact on their harvesting practices on the plant's health and productivity. They had long held a misconception that the sustainable and best method of harvesting is to collect only the flower and top leaves	Collectors aware of the impact of their traditional harvesting method and its negative impact on the plant
Lack of MAP processing facilities	Drying unit installed on-site which facilitated drying practices and improved quality of final dried material Installment of threshing machine Rehabilitation of an existing warehouse to serve as a MAP processing center
Lack of knowledge about MAP processing, marketing and sales	Capacity building (theoretical and practical) on processing, marketing, sales and GHP/GMP Greater interest and willingness to explore value added products
Established cooperative for medicinal plants however they faced significant administrative, financial and management issues	improved all its legal and financial documentation and is currently operating as a formal cooperative for the production of dried oregano

PROJECT ACHIEVEMENTS

The project has achieved results on four main levels in the MAP sector in Lebanon:

- Institutional level (sustainable utilization of Lebanese wild medicinal and aromatic plants)
- Environmental level (conservation of Lebanese wild medicinal and aromatic plants)
- Socio-economic level (ensure income generation and sustainable livelihood for harvesters)
- Market/consumer level (meet market demands)

Table 11: Achievements with respect to overall project objective

Project Objective	Set Target / Achievement
To integrate conservation objectives into the gathering, processing and marketing of globally significant MAPs	Operational guidelines for each of the project's target species by end of the project **100% (worked on four additional MAP species: national distribution surveys and density assessments for 3 species and development of sustainable wild harvesting for one MAP species)** 8 value-added branded products traceable to sources harvested according to adopted sustainable wild harvest guidelines for target species **100%**

Table 12: Achievements with respect to project outcome one

Outcome 1: Appropriate collection methods ensure a viable long-term supply of MAP raw_materials of globally significant MAP species

Set Outputs / Achievements	Set Targets / Achievements
1.1 Community-based enterprises (CBE) for MAP collecting and primary processing established, or appropriate existing CBEs involved • Identified pilot sites and CBEs based on a comprehensive and strategic field investigation process in more than 150 villages/sites and meetings with meetings with more than 200 stakeholders • Established CBEs for wild MAP collection and processing at the 4 project pilot sites • Reactivated 2 dormant and inactive cooperatives (Mejdel and Assia) with all required and proper legal and administrative procedures • Established a new cooperative in Mrusti pilot site • Equipped the CBE's at each project pilot site with the required equipment, machinery and infrastructure in order to improve post-harvest and primary processing of MAPs • Build the CBE's capacity to effectively manage and sustainably use their natural resources as well as to effectively operate pre-processing value adding enterprises that produce certified sustainably harvested end-products. Provided a comprehensive training program on the following topics: Administrative, management, financial issues for cooperatives, herb post harvest quality control issues, practical marketing issues for cooperative products, participatory management planning and sales techniques (21 training sessions for 370 participants) • Improved production capacity and quality at the CBEs **1.2 Collectors trained in MAP identification and sustainable harvesting methods** • Developed the capacity of local collectors and forest rangers on the importance of MAPs and their sustainable wild harvesting (4 sessions, 40 participants) • Developed training material and tools on sustainable wild harvesting and post harvest best practices (brochures, illustrated guideline for best practices in MAP harvesting and post harvesting, training documentary on sustainable wild harvesting of MAPs in Lebanon, illustrated identification guide for selected MAPs in Lebanon) **1.3 Certification system for sustainable harvest developed and applied** • Developed and implemented sustainable MAP wild harvesting standards based on vigor technical field work	Resource management plan implemented in each project pilot site by end of project **100%** Majority local collectors, involved in the collection and primary processing of commercially viable target species collected from project sites by end of project **3 project pilot sites only have local collectors**

Set Outputs / Achievements	Set Targets / Achievements
• Incorporated sustainable wild harvesting standards into a new national certification for high quality Lebanese products “Cedar Excellence” seal which includes quality, hygiene, social and economic criteria • Assisted project sites to obtain organic and wild harvesting certification for two seasons • Implemented sustainable wild harvesting at pilot sites in accordance to developed standards and new decision **1.4 Management plans for target species collection from project sites developed and implemented** • Developed and implemented management plans for each pilot site CBE which tackle both the wild MAP resources as well as other products produced by the CBE **1.5 Community-based resource use agreements set up and enforced** • Resource management included in the management plans developed for each project pilot site • Resource management agreements secured through the permit required by the Ministerial Decision **1.6 Conservation assessments according to IUCN Redlist criteria** • Gained unavailable and essential knowledge about all project target species in terms of their status, limitations and potential through distribution surveys, density assessments, marketable productivity (kg), prices and market channels monitoring, mapping and discussion with concerned stakeholders at a national level • Developed and implemented comprehensive species assessment and monitoring programs at the four project pilot sites to provide sound, technical and indicative standards for sustainable harvesting that feed into certification and regulation processes • Finalized IUCN Redlist conservation assessment for the seven project target MAP species after consultation with national experts and government entities	

Table 13: Achievements with respect to project outcome two

Outcome 2: Value-added processing and product improvement result in increased value of globally significant MAPs harvested in biodiversity-

Outputs / Achievements	Set Targets / Achievements
2.1 Manufacturing and trading companies upgraded • Conducted national and international market research and investigations to identify potential buyers • The project established contact with 32 national companies and 100 international companies through the attendance of the World Organic Trade Fair BIOFACH. However only 9 national companies expressed tangible interest in purchasing from the pilot sites and accordingly the CBE's have been put in direct contact with them • Provided technical capacity assistance in the extraction of essential oil from MAP species to a national manufacturing company to produce a new MAP based body and hair care production line • Developed a unique brand "Nabta" for a new line of body and hair care products made from sustainably harvested MAPs for a national manufacturing company "Khan Al Saboun" purchasing sage from the project pilot sites • Organized a press conference on the role of the private sector in promoting sustainable wild harvesting of medicinal and aromatic plants • Initiated a long-term alliance between a well-established and successful national marketing cooperative with a long history of cooperation and support with a large network of national cooperatives across Lebanon. The alliance has enhanced the marketability and accessibility of local production from the project's CBEs to national and international markets. The cooperative provided guidance and support to enhance the CBE's product image, develop and implement marketing strategies as well as improve logistical and financial issues pertaining to marketing and sales • Allowed for market expansion and improved competiveness and marketability for the production of the community based enterprises and higher prices through: certification, better marketing and sales techniques, improved collection methods, improved post harvest and processing practices, links to national markets **2.2 Locally processed MAP products branded** • Developed a unified brand "Lebanese VILLAGE products" representing products that are 100% natural, quality controlled, traditionally made, no preservatives or additives, made in Lebanon and processed by local communities. The brand name is owned by UNDP and right of use given to Atayeb Al Rif national cooperative through a signed MoU. The unified brand name was intended to facilitate the CBE's transition into the market by incorporating sustainably harvested MAP products into a large production line with	At least 800 tons by end of project (of which 5 tons will come from project sites) Volumes of sustainably harvested target species traded in processed form **Project sites: 400 kg of fresh oregano and 9,900 kg of fresh sage** **Nationally: The annual sustainably wild harvested volume if harvested in accordance to new Ministerial Decision will be:** **- Approximately 600 tons of dry sage collected from the wild are exported out of the country annually** **- Approximately 250 tons of pure oregano consumed nationally annually** **- Approximately 100 tons of pure oregano exported annually** **- Approximately 100 tons of "Zaatar" which includes on average 10%**

Outputs / Achievements	Set Targets / Achievements
existing markets channels	**oregano (10 tons) annually**
2.3 Innovative MAP based products developed and introduced into the market	

• Conducted biological, chemical and physical testing for MAPs to identify potential marketing challenges
• Conducted essential oil analysis for MAP species at different collection periods and regions in order to provide the market with accurate data on yield and profile variation
• Developed and introduced 8 products into the market:
  • Dried pure oregano from Assia (*Origanum syriacum* collected from Assia project pilot site, dried, cleaned and threshed)
  • Dried pure oregano from Mrusti (*Origanum syriacum* collected from Mrusti project pilot site, dried, cleaned and threshed)
  • Dried Zaatar mix from Assia (*Origanum syriacum* collected from Assia project pilot site, dried, cleaned, threshed, grinded and mixed with sesame, sumac and salt)
  • Dried sage leaves from Hsarat (*Salvia fruticosa* collected from Hsarat project pilot site, dried, cleaned and threshed)
  • Dried sage leaves from Mejdel (*Salvia fruticosa* collected from Mejdel project pilot site, dried, cleaned and threshed)
  • Infusion bags of sage
  • Infusion bags of oregano
  • Ready to eat single serving of “Zaatar” sachets (with and without oil)
	5 community based enterprises applying sustainability guidelines for target species
	
	4 community based enterprises
	
	At least 20% Increased price of sustainably harvested wild MAPs along the value chain from raw products to locally manufactured products meet business plan targets, create adequate incentives
	
	***Salvia fruticosa* increase by 40%**
	
	***Origanum syriacum* increase by minimum 30%**

Table 14: Achievements with respect to project outcome three

Outcome 3: Supply chain framework strengthened for sustainable harvest of globally significant MAP species and awareness promoted for conservation-friendly MAP products

Outputs / Achievements	Set Targets / Achievements
3.1 National MAP Association established to facilitate roles and partnerships important to ongoing sustainable management of MAP resources in Lebanon • Supported the national MAP steering committee based at the Ministry of Agriculture and participated in all meetings and activities • Developed conservation operational guideline for medicinal and aromatic plants in Lebanon based on the project's experience, activities and outputs • Developed a categorized list of the most important wild Lebanese medicinal and aromatic plants	At least 5000 of MAP consumers aware of the existence and importance of sustainably harvested MAP products **4500**
3.2 Guidelines on sustainable harvesting practices and/or conservation strategies agreed for each target species, training modules developed and widely applied • Developed and implemented theoretical and practical training sessions on sustainable wild harvesting of MAPs and the implementation of the new Ministerial Decision for sage and oregano targeting Ministry of Agriculture staff from all regions in Lebanon (forest rangers, extension service engineers, export and import departments) and customs staff (7 sessions 250 participants) • Conducted trainings for customs and MoA export and import staff on sustainable wild harvesting of MAPs and the implementation of the new Ministerial Decision for sage and oregano (2 sessions, 20 participants) • Developed and implemented a comprehensive resource assessment and monitoring programs at the four pilot sites to provide sound, technical and indicative standards for sustainable wild harvesting to feed into certification and regulation • Developed practical, quick and easily adopted methodologies and tools for assessing the productivity (kg) of *Salvia fruticosa* "Kaseen" and *Origanum syriacum* "Zaatar" in any site and to ensure the easy, effective and proper implementation the new permit system for sustainable harvesting to be implemented by the Ministry of Agriculture staff	Permit system developed and adopted by local and national government authorities by end of project **100%** New decree considering project recommendations/results by end of project **100%**
3.3 Certification system developed, agreed and put into practice / same as 1.3 • Developed and implemented sustainable MAP wild harvesting standards based on vigor technical field work (resource assessments, species & site monitoring, species regeneration assessments and	MAP association established and facilitating broader implementation of project objectives by end of

Outputs / Achievements	Set Targets / Achievements
assessments of different harvesting practices) • Incorporated sustainable wild harvesting standards into a new national certification for high quality Lebanese products "Cedar Excellence" seal which includes quality, hygiene, social and economic criteria • Assisted project sites to obtain organic and wild harvesting certification for two seasons • Implemented sustainable wild harvesting at pilot sites in accordance to developed standards and new Ministerial Decision	project **National MAP steering committee**
3.4 Regulative framework on collection, processing as well as on national and international trade developed	Business plan for each community based enterprise by end of project
• Assessed the existing institutional framework for MAP conservation and management in order to identify gaps and necessary actions • Collaborated with MoA to involve and train custom officials for better control of MAP import and export	**100%**
• Provided technical and legal input as well continuous support, guidance and lobbying to the Ministry of Agriculture to develop the new Ministerial Decision (1/179) that was enactment on 3/3/2012 to regulate wild harvesting of sage and oregano and to ensure that it's done according to sustainability criteria in terms of time, quantity and method as well as to regulate its transport and export. Under the new decision, a permit must be attained for all sage and oregano collected in Lebanon for commercial purposes	At least 3 national manufacturing companies conditioning purchase to sustainable
• Monitored the first implementation season of the new Ministerial Decision by following up with forest rangers, collectors, traders and customs in collaboration with MoA. The monitoring helped the project and MoA identify gaps, challenges, technical problems such as miscalculation of the allowed harvestable yield which will guide the modification of the Ministerial Decision in the medium term as well as better orient the draft MAP decree	**100%**
• Provided technical input to modify the national standard (Libnor) for sage and participated in all technical committee meetings which led to the successful modification and adoption of a new standard. • Provided technical input to develop and adopt a new national standard (Libnor) for "zaatar" based on a rigorous methodology developed and implemented by the project. The methodology is based on the experience gained by the project in this sector, data collected during the project's duration as well as specific sampling and testing. The standard will provide more accurate, comprehensive and useful standards to meet both the diverse market demands as well as the health, safety and authenticity concerns of consumers. The national standard will complement the marketing and regulation initiatives undertaken by the project by providing specific standards for different categories of "zaatar" thereby allowing for a well-justified market niche for high quality production characterized by artisanal and local production versus the commercial production. The national standard will provide the customs and MoA import /export staff with a an effective and useful tool to monitor and control the import, export and national consumption of "Zaatar" which currently is very challenging without clear and effective standards. Furthermore, Libnor will propose	**The project 4 national companies representing different sectors including:** • **National food manufacturing company "Second House" that sells locally and exports to Europe and US** • **National food manufacturing company "Adonis Valley" that sells locally and exports to Europe and US** • **National specialty shop "Batrouniyat" that promotes and sales local and artisanal production**

Outputs / Achievements	Set Targets / Achievements
the new Zaatar standard as a regional codex standard. **3.5 Consumer awareness for sustainably harvested products raised** Sage and oregano products from the four-project pilot sites were exhibited in various local and international expositions targeting different audience as follows: • City Mall, Lebanon 7 days general public, approximately 500 people • American University of Beirut, Lebanon ,1 day, students, approximately 250 people • American University of Beirut, Lebanon, 1 day, university staff, approximately 250 people • France Au Liban, Paris, 3 days, French and Lebanese consumers, approximately 750 people • Horeca, Lebanon 4 days, professionals (restaurants, food safety, traders national, regional and international NGO), approximately 1200 people • Garden Show, Lebanon 4 days, families, approximately 350 people • City Mall, Lebanon, 3 days, general public, approximately 100 people • ABC mall Christmas fair, Lebanon, 30 days, general public, approximately 1000 people **Additional**: Established seven oregano cultivation demonstration plots across Lebanon. The cultivation plots served as good examples of cultivating a nontraditional new crop in areas where either oregano does not exist in the wild or the quantity in the wild is insufficient to be a commercially viable source of living. Cultivation cannot completely replace wild harvesting but it is a viable option to complement wild harvesting practices in Lebanon; therefore, it was vital to assess its viability in various geographic and climatic conditions. The project provided each of the farmers with a comprehensive data sheet to be regularly filled out covering many important topics such as cost, revenue, irrigation, weeding, pest management, diseases etc. The project team conducted regular follow up and monitoring field visits to each plot in the presence and in close collaboration with the Ministry of Agriculture regional extension service centers. The field visits also serve to build the Ministry staffs' capacity to provide technical support and guidance for these plots as well as additional cultivation initiatives in their region of coverage beyond the project's duration.	• **Arz al Shouf Cedar Nature reserve (MoU signed in March 1st 2011)** • **Khan Al Saboun national company specialized in soaps and cosmetics with has a national, regional and international market base (MoU signed in April 1, 2011 with the project)**

Table 15: Achievements with respect to project outcome four

Outcome 4: Learning, evaluation, and adaptive management

Outputs / Achievements	Set Targets / Achievements
4.1 Monitoring programme established • Ensured regular and effective collaboration with the implementing entity (Lebanese Agriculture Research Institute) and the Ministry of Agriculture (main government entity responsible for regulating the MAP sector) • Conducted annual project broad meetings **4.2 Adaptive management and strategic planning system established** • Monitored the impact, adoption success and challenges of the new Ministerial Decision on different stakeholders (Ministry of Agriculture, collectors, middlemen, trainers, traders and customs) in order to provide accurate field based suggestions and recommendations for required adaptive management in the regulation of the MAP sector • Conducted project midterm evaluation during which recommendations were taken into consideration in an adaptive management approach to orient the project's activities in the remaining implementation phase **4.3 Lessons learned and impact data are gathered, documented and disseminated to key internal and external audiences** • All project outputs / deliverables uploaded on websites for wide and easy access • Uploaded short documentary on project impact in one pilot site (Mejdel) on You Tube • Uploaded on websites and You Tube a training documentary on sustainable wild harvesting of MAPs in Lebanon and the implementation of the Ministerial Decision regulating wild harvesting, transport and trade of sage and oregano in Lebanon • Media coverage in 1 TV program, 3 radio interviews, 3 magazine articles and 10 newspaper articles • Conducted an exchange with a newly initiated UNDP project on Morocco on MAPs. The exchange involved technical issues pertaining to the development and implementation of field assessments and surveys undertaken in the Lebanon project as well as overall project activities, results and lessons learned. • The methodologies developed and implemented by the project for the target species national surveys and assessments were highly evaluated by IUCN for its scientific vigor, accuracy and precision. IUCN might consider the project's methodology for calculating the species distribution parameters under the Redlist assessments.	Results incorporated In the annual work plans **Annual updates of gender analysis, risk mitigation strategy and impact assessment**

PROJECT DELIVERABLES

1. Categorized list of the most important wild Lebanese medicinal and aromatic plants (MAPs)
2. International market study for selected medicinal and aromatic plants (MAPs) in Lebanon (*Alcea* sps*, Micromeria* sps, *Origanum sps, Satureia* sps, *Thymus* sps, *Viola* sps*, Thymbra spicata*, *Salvia fruticosa*, *Cyclotrichium origanifolium*)
3. Assessment of suitability for sustainable wild harvesting for selected medicinal and aromatic plants (MAPs) in Lebanon (*Salvia fruticosa, Origanum syriacum, Althaea damascena, Cyclotrichium origanifolium, Origanum ehrenbergii, Viola libanotica, Clinopodium libanoticum*)
4. National distribution surveys, mapping and population assessments for selected medicinal and aromatic plants (MAPs) in Lebanon (*Salvia fruticosa, Origanum syriacum, Althaea damascena, Cyclotrichium origanifolium, Origanum ehrenbergii, Viola libanotica, Clinopodium libanoticum, Thymbra spicata, Satureja thymbra*)
5. Monographs for selected medicinal and aromatic plants (MAPs) in Lebanon (*Salvia fruticosa, Origanum syriacum, Althaea damascena, Cyclotrichium origanifolium, Origanum ehrenbergii, Viola libanotica, Clinopodium libanoticum*)
6. *Salvia fruticosa* "sage" population and species characteristics under wild conditions in Lebanon
7. *Origanum syriacum* "Oregano" population and species characteristics under wild conditions in Lebanon
8. IUCN Redlist conservation assessment reports for selected medicinal and aromatic plants (MAPs) in Lebanon (*Salvia fruticosa, Origanum syriacum, Althaea damascena, Cyclotrichium origanifolium, Origanum ehrenbergii, Viola libanotica, Clinopodium libanoticum*).
9. Developing sustainable wild harvesting standards for *Salvia fruticosa* "sage" and *Origanum syriacum* "Oregano" in Lebanon
10. Developing sustainable wild harvesting standards for *Laurus nobilis* in Lebanon
11. Legal study on the existing institutional and legislative framework that affects the medicinal and aromatic plants (MAPs) sector in Lebanon
12. Ministerial Decision (179/1, 2012) and permit for the wild harvesting, transport and trade of sage and oregano in Lebanon
13. Draft decree for medicinal and aromatic plants conservation and management in Lebanon
14. Establishing national standard for "Zaatar" in Lebanon
15. Lebanese national standard (LIBNOR) for *Salvia fruticosa*
16. Sustainable wild harvesting training material for *Salvia fruticosa* "sage" and *Origanum syriacum* "Oregano" in Lebanon
17. "To keep on harvesting sage and oregano": Training documentary on sustainable wild harvesting in Lebanon
18. Illustrated guideline for best practices in medicinal and aromatic plants (MAPs) harvesting and post harvesting
19. Illustrated identification guide for selected medicinal and aromatic (MAPs) plants in Lebanon
20. Selected medicinal and aromatic plants within the Medicinal plants project in Lebanon brochure
21. *Origanum syriacum* "Oregano" brochure
22. Management planning for medicinal and aromatic plants (MAPs) community based enterprises in Lebanon
23. Management of medicinal and aromatic plants (MAPs) community based enterprises with special emphasis on marketing and sales

24. Enterprise/cooperative management plans for the four project pilot sites (Mejdel, Assia, Hsarat, Mrusti)
25. Good Hygiene practices (GHP) and Good Manufacturing Practices (GMP) training material for medicinal and aromatic plants (MAPs)
26. Developing a feasibility study for the cultivation of *Origanum syriacum "*Oregano" based on demonstration plots in Lebanon
27. Business plan for *Origanum syriacum* "Oregano" community based enterprises
28. Business plan for *Salvia fruticosa* "Sage" community based enterprises
29. Business plans for the four project pilot sites (Mejdel, Assia, Hsarat, Mrusti)
30. Guideline for developing national management and monitoring plans for medicinal and aromatic plant in Lebanon: Case studies: *Salvia fruticosa* "sage" and *Origanum syriacum* "Oregano"
31. Branding & packaging & labeling (Lebanese village products and Nabta)
32. Marketing tools (flyer, bags, business cards, posters)

PROJECT INSTITUTIONAL EXIT STRATEGY

The project has achieved significant milestones with respect to the MAP sector in Lebanon; however, the long term conservation and proper management of MAP resources Lebanon can only be ensured with the continuation and expansion of initiatives beyond the project's duration. Institutional adoption, implementation, continuation and expansion are key elements in ensuring sustainability of project impacts.

The project was able to achieve critical steps in promoting institutional sustainability including:

- Promoting institutional ownership of project activities
- Supporting capable existing institutions rather than establishing new one
- Building sufficient capacity within key institutions to adapt to change , to adopt and follow through with initiated activities,

The section below provides a brief summary of the main areas/issues that need to be tackled beyond the project.

Issue 1: MAP Harvesting and Trade Regulation

Objective

- Prevent destructive wild-collection practices while supporting sustainable collection practices
- Reduce overall harvesting intensity
- Maintain (or increasing) the productivity of the wild-collected populations
- Reduce conflict over access to MAP resources
- Support multiple use approach for MAP resources (e.g., availability of flowers for honey production)
- Ensure traceability in trade in terms of specific species, amount, form and destination

Recommended actions to be undertaken by the Ministry of Agriculture

- Ensure continuation in the implementation and enforcement of Ministerial Decision (179/1 2012) for the wild harvesting, transport and trade of sage and oregano
- Continue with training and follow up with MoA regional centers, forest rangers etc to strengthen enforcement and implementation of the Ministerial Decision (179/1 2012)
- Ensure continuation of the exiting coordination and communication channels with customs to strengthen implementation of the Ministerial Decision (179/1 2012) and to create specific HS codes for sage and oregano
- Enact a new decree from the Council of ministers that will make the new Zaatar national standard (Libnor) mandatory
- Modify the Ministerial Decision (179/1 2012) based on the lessons learned from the first couple of implementation seasons
- Identify incentives for landowners to become engaged in the enforcement of the new Ministerial Decision (179/1 2012)

- Focus for the For the first couple of years of implementation, the main issue to enforce in the time of harvesting which will
- Adopt the national certification for sustainable wild harvesting offered by LibanCert company "Cedar Excellence seal"
- Develop wild harvesting permit for additional priority MAP species based on scientifically derived sustainable harvesting standards. Applying the permit system to the 365 species of MAPs native to Lebanon would be unmanageable. Therefore, the permit system needs to focus on those species most in need of collection management, including
    - Species with high commercial value and are highly traded where there are concerns about sustainability and likelihood of managing harvest within sustainable limits
- Forbid the wild harvesting of selected species if they:
    - High-risk and threatened species (permission not allowed for wild-collection)
    - Populations of MAP species located in areas that require special management and protection (sensitive habitat, protected areas) should also not be allowed for wild collection, except under very rigorous management systems

- Apply different management and monitoring efforts depending on the status of the species of concern

    - Species that have a medium-risk of unsustainable wild harvesting (should be the focus of collection regulation and harvest management effort)
    - Species that have a low risk of unsustainable wild harvesting (wild-collection should be permitted without rigorous management effort if there are no indications that current harvest levels and practices are unsustainable)

Issue 2: Conservation of MAP

Objective

The proper conservation of MAP in Lebanon should be based on systematic assessments of MAP resources in order to identify priority species for sustainable use, sustainable wild harvesting under permit system, strict management and control and *in-situ* conservation. Proper and comprehensive assessment and prioritization of MAP spies will better direct management efforts on the local and national level.

The Lebanese Agriculture Research Institute (LARI) will be acquiring a new gene bank department with sufficient resources and staff to undertake the required technical studies, assessments, surveys to guide conservation and management efforts for MAPs. LARI will need to collaborate with other national research institutes and universities.

Recommended actions to be undertaken

Tasks	Responsible entity
Conduct an assessment of the suitability for sustainable wild harvesting for species that are commercially collected and traded	• LARI • Universities • Research centers

Tasks	Responsible entity
	In collaboration with concerned governments institutions (MoA, MoE)
Develop sustainable harvesting standards for selected species upon need	• LARI • Universities • Research centers In collaboration with concerned governments institutions (MoA, MoE)
Develop and implement monitoring programs for wild harvested MAP under a regulated permit system to assess the effectiveness of the adopted sustainable standards and to guide any required adjustments in harvest protocols to maintain the target resource at sustainable levels.	• LARI • Universities • Research centers In collaboration with concerned governments institutions (MoA, MoE)
Conduct field observations, studies and assessment on priority species to determine the best management approach	• LARI • Universities • Research centers In collaboration with concerned governments institutions (MoA, MoE)
Conduct IUCN conservation assessment for priority species	• LARI • Universities • Research centers In collaboration with concerned governments institutions (MoA, MoE)

Issue 3: Awareness Dissemination

Objective

Disseminate information using the various tools, deliverables, material developed by the project to MAP sector stakeholders on the following issues

1. New regulation for medicinal and aromatic plants
2. Importance of MAP's in Lebanon and their sustainable wild harvesting
3. Best practices in the collection and post harvest activities for MAPS
4. Need and methods for the conservation and management of MAPs
5. Benefits of sustainably harvested MAP based products which will increase the consumer demand for such products thereby providing a financial incentive for adhering to sustainable wild harvesting standard and regulation

Recommended actions

MAP sector stakeholder	Message to be conveyed	Responsible entity
Consumers	• Benefits of sustainably harvested MAP based products	NGO in collaboration with concerned ministries (Ministry of Agriculture, Ministry of Environment, Ministry of Economy and Trade)
MAP based traders, companies, Mills	• New regulation for medicinal and aromatic plants • Importance of MAP's in Lebanon and their sustainable wild harvesting • Best practices in the collection and post harvest activities for MAPS • Benefits of sustainably harvested MAP based products	Ministry of Agriculture Ministry of Economy and Trade
Cooperatives & community based enterprises dealing with MAPs and/or general agriculture and agro-processing	• New regulation for medicinal and aromatic plants • Importance of MAP's in Lebanon and their sustainable wild harvesting • Best practices in the collection and post harvest activities for MAPS • Benefits of sustainably harvested MAP based products	Ministry of Agriculture through its regional forest centers
Municipalities	• New regulation for medicinal and aromatic plants • Importance of MAP's in Lebanon and their sustainable wild harvesting	Ministry of Agriculture through its regional forest centers
Nature Reserves	• New regulation for medicinal and aromatic plants • Importance of MAP's in Lebanon and their sustainable wild harvesting • Best practices in the collection and post harvest activities for MAPS • Conservation and management of MAPs • Benefits of sustainably harvested MAP based products	Ministry of Environment
Environmental & social NGO's / foundation	• New regulation for medicinal and aromatic plants • Importance of MAP's in Lebanon and their sustainable wild harvesting • Best practices in the collection and post harvest activities for MAPS • Conservation and management of MAPs • Benefits of sustainably harvested MAP based products	Ministry of Environment
Scouts associations	• New regulation for medicinal and aromatic plants • Importance of MAP's in Lebanon and their sustainable wild harvesting	NGO in collaboration with concerned ministries (Ministry of Agriculture, Ministry of Environment)

MAP sector stakeholder	Message to be conveyed	Responsible entity
Universities	• Importance of MAP's in Lebanon and their sustainable wild harvesting • Conservation and management of MAPs	NGO in collaboration with concerned ministries (Ministry of Agriculture, Ministry of Environment)
Schools	• Importance of MAP's in Lebanon and their sustainable wild harvesting	NGO in collaboration with the Ministry of Higher Education