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# NATIONAL DEVELOPMENT STRATEGY FOR THE AROMATIC AND MEDICINAL PLANTS SECTOR

**MOROCCO INTEGRATED AGRICULTURE AND  
AGRIBUSINESS PROGRAM**

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## BACKGROUND AND GOALS

The importance of the AMP sector is increasingly growing due to world demand strong increase recorded during the last decades for AMP and associated products on the one hand, and the increasing number of users and diversity of AMP enhancement fields on the second hand.

This trend offers real development opportunities for Morocco, through the adoption of an appropriate policy regarding AMP management, exploitation and enhancement. AMP are indeed high value resources, able to contribute in improving the level of living of Moroccan deprived populations, particularly in arid and semi arid areas.

But despite these promising prospects, a certain amount of constraints still hinder the AMP sector full development. In order to face these constraints and take advantage of available opportunities, it is necessary to develop and implement a consistent national strategy to ensure the sector harmonious sustainable development.

There is no denying that without a sound vision and a participatory approach involving all stakeholders, such a strategy will not be easy to implement for this poorly organized sector.

To be able to mobilize and federate most actors under a strategy ensuring the AMP sector sustainable development (resource sustainability, added value increase for local population, combating desertification ...), the USAID launched the AP3 project AP3 aiming to support efforts undertaken by partnering institutions to develop and implement policies and strategies likely to support agricultural value chains development in general and more particularly AMP.

Under the present project, a workshop was organized by the HCEFLCD on 19 December 2006, bringing together about a hundred participants representing administration, education and research centres, private firms, NGOs, donors and international organizations.

Pursuant to workshop recommendations, the High Commissariat for Water and Forests and Combating Desertification (HCEFLCD) was in charge to manage the preparation of an overall workplan for aromatic and medicinal plants (APM) that should be reviewed and validated by an ad hoc Committee, made up of all AMP sector actors.

Within this framework, the USAID, through the Integrated Agriculture and Agribusiness program (IAA), hired consultants to assist institutional partners completing and finalizing the national strategy for developing the AMP sector in Morocco, under the coordination of HCEFLCD officials.

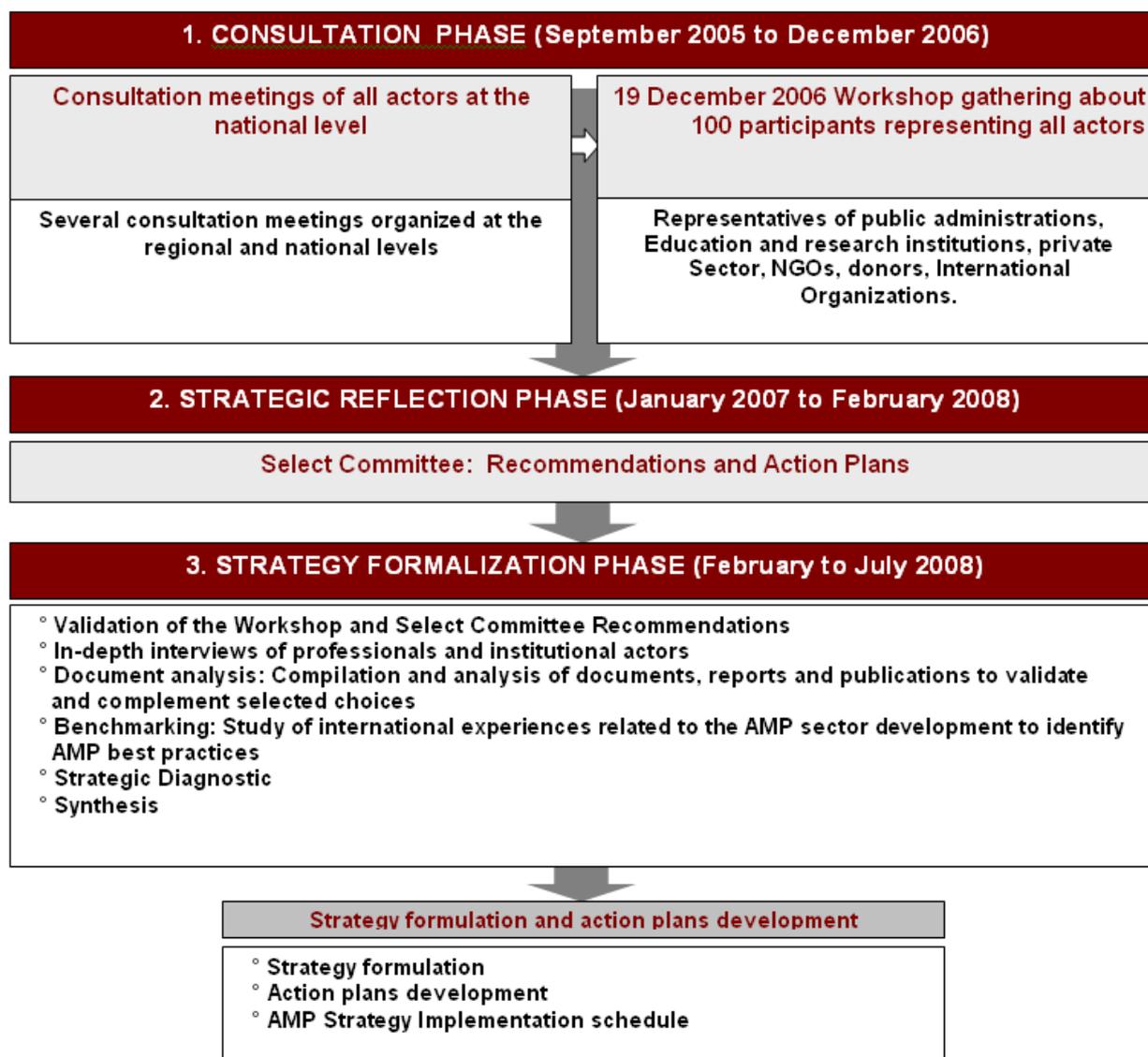
Based on the 2006 December workshop recommendations and work plan prepared by the ad-hoc Committee, the USAID is aiming at proposing a national strategy to develop and promote the AMP sector and ensure a better integration and efficiency of its value chains. This includes:

- Developing a strategic diagnostic of the AMP sector;
- Redefining the AMP sector positioning and clarify its vision;
- Defining strategic lines for AMP development;
- Formalizing a strategic action plan;
- Developing the action plan implementation schedule.

## METHODOLOGY

The elaboration of the development strategy for the Morocco AMP sector required resorting to a strongly participatory approach. Indeed, the project stakeholders, partners and several sector actors were involved in the reflection process regarding the strategy design and implementation mode, through discussions, workshops, meetings or within the Committee.

The study included 3 stages depicted as follows:



### Consultation phase

This stage consists in organizing meetings at the national scale, followed by a workshop organized on 19 December 2006 in Rabat by the USAID (AP3 project) and attended by about a hundred representatives from public departments, education and research institutions, private sector, NGOs, donors and international organizations<sup>1</sup>.

This consultation phase allowed identifying the main AMP development issues as well as their potential solutions.

<sup>1</sup> See in Annex 2 the list of participants to the Rabat Workshop held in on December 19, 2006.

## **Strategic reflection stage**

At the end of the workshop held on 19 December 2006, a select Committee<sup>2</sup> was charged to identify the AMP sector development strategy main lines, based on the workshop recommendations. Five strategic lines were advocated to develop the AMP sector:

1. Developing production, based on the AMP sector potential and social-economical environment and enhancing product quality and value chain competitiveness;
2. Reorganizing marketing channels and setting up upgrade mechanisms;
3. Consolidating and integrating research and development activities for sustainable management and value chain development;
4. Identifying and implementing economic and financial mechanisms able to promote investments and foster the AMP sector;
5. Legislative and regulatory support to protect AMP natural resources and eliminate constraints.

## **Strategy formalization phase**

The formalization of the Moroccan AMP sector development strategy was assigned by the USAID (IAA program) to consultants who conducted to this end:

- A global comparative study on success stories (international benchmarking) to see how they can foster the Moroccan case;
- Discussions to validate main conclusions of former consultation and strategic reflection phases;
- Compilation and analysis of documents developed on the national development strategy for the AMP sector.

The Follow-up Committee members, including HCEFLCD officials and USAID representatives, were requested along the study phases for guidance and progress validation.

All proposals made under this study take into consideration all views, observations, suggestions and recommendations gathered among concerned actors.

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<sup>2</sup> The Select Committee, facilitated by the HCEFLCD and Secretariat, includes representatives from the following entities:

- Ministry of Agriculture and Maritime Fisheries
- USAID (IAA Program)
- UNDP
- SOMAPAM
- ADEPAM

## I. THE AMP WORLD MARKET

### I.1. Main AMP producing countries

Over half AMP world production is ensured by developing countries. This situation can be explained by the production shift of an important amount of species from industrialized countries to countries with lower cost manpower. However, developed countries are still dominating production based on advanced technologies to compensate the comparative advantage related to manpower cost.

Three types of AMP and AMP by-products producing countries can be globally distinguished:

1. Countries with a large domestic market (China, India, Indonesia...), cheap manpower and dynamic research-development activities. Taking advantage of large spaces, cheap labour force, and high domestic market consumption potential, India and China are the world leaders regarding certain species. Through research-development activities, they became extremely competitive regarding typical Mediterranean products such as marjoram, basilic...;
2. Countries mainly oriented towards international markets and also taking advantage of low cost labor force and lush wild biomass. Morocco, which belongs to this category, exports its entire production while importing its domestic consumption needs. These countries draw on their wild and often lush vegetation and suffer from international market contingencies. They are faced with serious technological and scientific levels constraints due to a weak level of research-development and production system organization.
3. Industrialized countries produce AMP at large scale, thus ensuring a third of the essential oils world production. They hold prominence on the AMP international scene and have definite comparative advantages associated to technology mastering. They take advantage from intensive agriculture supported by strong research-development activities. Public authorities and professional organizations foster and support the AMP sector.

Let us mention the special case of East European countries that developed AMP processing activities in the past; however their production is currently destabilized under major geopolitical effects. East European countries offer now a range of rather diverse essential oils, but with many fluctuations both in quality and quantity. They have dynamic research-development activities predisposing them to restart AMP and by-products production activities in the near future. They are thus potentially extremely competitive.

As a result, Morocco must arm itself to face increasingly open and diversified competitiveness. The AMP sector professionals should be able to face competition based either on lower labor force costs and large agricultural areas availability (India, China...), or on very advanced “technologies” at the cultivation level as well as processing and marketing level.

## I.2. The AMP world market

The AMP international market is promising, but remains very demanding in terms of product quality (standardization, supply, production system...) and trade relations reliability.

### I.2.1. Essential oils world market

Essential oils are mainly enhanced for aromatherapy, perfumery and cosmetics markets. They can either be included in the composition of more elaborated products (creams, perfumes, candles...) or be used as is. They are sought for their fragrant or therapeutic properties.. The main consumption markets are developed countries (Europe, Japan and Northern America) representing 80% of world outlets.

<b>Essential oils world market</b>			
<b>Markets</b>	<b>World market (in billion euros)</b>	<b>Imports share</b>	<b>Exports share</b>
<b>Western Europe</b>	<b>35</b>	<b>49%</b>	<b>65%</b>
<b>United States &amp; Canada</b>	<b>35</b>	<b>-</b>	<b>15%</b>
<b>Japan</b>	<b>14</b>	<b>-</b>	<b>5%</b>
<b>Eastern Europe</b>	<b>5</b>	<b>8%</b>	<b>2%</b>
<b>Mediterranean region</b>	<b>2</b>	<b>3%</b>	<b>1%</b>

Source: ANIMA, 2005, "La filière cosmétique dans la région euro méditerranéenne", Notes et Etudes.

Each market has its own specificities:

- US market: a very demanding and competitive market, with relatively slow growth while very innovating regarding both products and distribution methods;
- European market: Germany is the biggest market (20 %), followed by France (18 %), United-Kingdom (16 %), Italy (14 %) and Spain (10 %). It is moderately growing, by approximately 3.5% per year;
- Japanese market: a mature market, with a slow growth but still limited entry of imports;
- Emerging countries market: a promising market, particularly expanding for low and medium quality products;
- Asian market: a highly growing market, still far below the level reached by industrialized countries, but that will benefit local production (mass products at low prices).

The essential oils market is generally characterized by:

- The existence of a high number of references, which creates confusion in their classifications;
- The difficulty to set raw material prices based on their origin due to the lack of traceability;
- The existence of a high number of actors who cumulate several roles: traders are sometimes also processors, pharmaceutical companies , etc.;
- The demand saturation trend of industrialized countries, contrasting with emerging countries stamina.

The essential oils world market is currently facing a serious threat related to essential oils restricted use at a therapeutic end. In fact, current regulations are more and more drastic and impose increasingly heavy constraints in terms of skills and specific equipment on the processing level and in terms of marketing for products requiring specific medicinal property.

### **1.2.2. The AMP world market competitive advantage determinants**

On the AMP world market, competitiveness is now conditioned by the following success key factors:

- the complexity and difficulty to master production costs. In fact, AMP sector production costs mostly depend on environmental factors and technology used for selection, extraction, drying...;
- the finished product quality that depends on production factors and producers' know how;
- the marketing and commercial capacity that is measured by listening and adaptation quality to a continuously evolving market as well as trade relationship quality at the international scale (customer relationships, logistics, transportation...).

Until recently, essential oils, aromatic extracts, perfumes, aromats value chains included a great number of small sized units. Production organization was similar to a line of independent activities performed in more or less specialized small units:

- Production of vegetal raw material (biomass)
- Biomass processing (distillation, extraction, drying, conditioning...)
- Trade and marketing
- Advanced processing (extraction of pure products, formula preparation...)
- Industrial use (aroma, perfumery, cosmetics...)

This processing organization is currently being overtaken by a grouping and a concentration fostered by the sector internationalization, where large processing units operating on the international market<sup>3</sup> replaced small national and even local production units.

The relation among the line's different levels is replaced by direct links between the final user and vegetal biomass producer, who in most cases is located in different countries. On the other hand, the various production links, from the plant to the finished product, are well integrated. This integration is ensured among "links" in different countries (international characteristic).

In general, private companies develop AMP strategies (internationalization, diversification, etc.) including several factors:

- Consumers' needs and expectations (authenticity, customization, development of niche products, etc.)
- Evolution of offered products
- Increase of R&D costs
- Distributors (specialty channels, large distribution...) increased power
- Etc.

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<sup>3</sup> For example, six (6) units are sharing more than half of the world perfumery sector turnover. See Hartman (1995)

Moroccan professionals are due to know that they will increasingly be confronted to well organized competitors, who master production from growth to finished products through all intermediaries processing.

## II. THE MOROCCAN AMP SECTOR

### II.1. AMP sector organization

#### II.1.1. AMP enhancement

The diversity of stakeholders in the Moroccan AMP sector can be appreciated through the chain of trades and activities (extraction, drying, distillation, conditioning, cold chain...) developed along the AMP sector (herb product exploitation, pharmaceutical industry, extraction and processing, etc.).

This variety of stakeholders makes the AMP sector approach even more complex and imposes first to undertake the classification of AMP activities. In the whole, the AMP production system distinguishes the biomass production process (collecting) from “processing” and involves several actors.

##### *II.1.1.1. Biomass production*

AMP production in Morocco is mainly ensured by wild plants while the cultivated AMP share remains very weak.

#### **A. Wild plants**

The exploitation of wild plants follows two main regimes:

1. The exploitation submitted to an administrative authorization that distinguishes forest areas from community traditional areas:
  - The exploitation of plants growing in forest areas such as: rosemary, artemisia, myrtle, etc., is submitted to an administrative authorization delivered by the High Commissariat for Water and Forests and Combating Desertification (HCEFLD) under certain conditions set forth in the legislation on forest products assignment<sup>4</sup>;
  - Plants growing on lands owned by traditional collectivities are also subject to parcels award proceedings under the responsibility of the supervising authority, which is the Ministry of Interior.

Theoretically, administrative authorizations are aimed at facilitating growing areas management, protecting natural resources from over-exploitation risks and enhancing them to benefit local populations in disadvantaged areas.

Such as it has been practiced, the award system has always been a serious constraint to trade development and did not allow ensuring AMP sustainable management, considering that:

- The award duration does not allow producers forecasting and engaging on long term markets
- Competition among producers does not allow genuine protection of AMP resources.

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<sup>4</sup> To exploit AMP growing in forest areas, an authorisation is requested from the Water and Forests Department, either after an open bid, or through negotiated solicitation (single tender). In both cases, the beneficiaries must pay fees to the government. Only AMP professionals are eligible to bid for market on AMP exploitation.

- AMP preservation measures do not always suit AMP stakeholders
- Etc.

This model which has its limitations has been progressively replaced over the last years by a new awarding method aiming at associating local populations (through cooperatives) to natural AMP resources' enhancement process (collecting, processing, marketing, etc.).

In fact, the HCEFLCD wished to enhance forest areas which abound with lush and diversified vegetation by contributing to their preservation and enabling them to offer jobs and wealth creation products to local populations, through a new system of parcels awarding.

The HCEFLCD is indeed oriented towards less earnings, but under a logic of development where awarding is from now on coupled with community works schemes.

The goal of conserving and enhancing forest areas under a logic of sustainability has not been welcomed by some contractors annuitants. However, the HCEFLCD is convinced that sustainability is related to the preservation of growing areas, which means that some activities should be delegated to local populations and private companies specialized in AMP production and marketing. It is here about creating a tripartite synergy among:

- Cooperatives in charge of AMP collecting and production based on accurate specifications;
- Private companies focusing on AMP products enhancement, processing and sales;
- HCEFLCD which manages forest areas and watches over resource preservation.

This model also allows building partnerships between cooperatives and private producers:

- Private companies find a certain interest in this operating method since they can work with several cooperatives to ensure regular supply
- The increasing number of cooperatives shows flexibility and willingness to engage in this enhancement process in compensation of parcels awards over a long period (pluriannual purchase over a 3-year period with renewal at subsequent negotiated prices).

This approach starts to give clear results: in a certain amount of regions<sup>5</sup>, the population conducts community works schemes (guarding, trails, water points' development...) and parcels are being exploited for the sake of AMP resource preservation.

2. Free exploitation on private lands where harvesting is conducted by local populations, with no particular administrative procedure. This practice entails major risks regarding the sustainability of some fragile species like Ormenis<sup>6</sup>. To face their cash difficulties, producers (generally, aromatic and medicinal plants in their region, such as field mint or mint poliot, are seasonally cultivated or exploited by small farmers) resort to cash-advances in compensation for product distribution (fresh or slightly wilted plants) to traders who ensure drying, cleaning and conditioning. It is important to report that these intermediaries are not often specialized in AMP.

## **B. Cultivated plants**

<sup>5</sup> See the Beni Yaala Zkara (Jerada) cooperative experience.

<sup>6</sup> Ormenis, which is a threatened species, perfectly illustrates this situation and requires adequate protection.

Production is globally ensured by wild AMP, while cultivated AMP represent about 2%<sup>7</sup>. In Morocco, AMP cultivation is spread in several regions and concerns approximately thirty species<sup>8</sup>. Except for some modern farms, AMP cultivation remains traditional and does not really play its role to increase production to meet an increasingly growing demand.

The Ministry of Agriculture should take over and encourage farmers to produce cultivated AMP. It is high time to stop drawing only from natural spaces and try to develop AMP domestication and intensification. This policy should:

- Ensure complementarity between "cultivated" and "wild", including regarding product offer regularity;
- Guarantee AMP products quality (traceability);
- Ensure the balance between AMP supply and demand;
- Enhance "bour" (rainfed) lands (which are dependent on climatic conditions)
- Protect threatened plants species
- Etc.

### C. AMP harvest main stakeholders

Depending on AMP types, we can find several types of stakeholders:

- The AMP sector professionals, more or less specialized in AMP, operating in different regions (High Atlas and Anti Atlas for artemisia, High Plateaus of the Oriental for rosemary, Rif for local AMP, etc.). Provided with adequate funding, professionals manage to channel directly their production towards foreign markets. They exploit each region either directly, or through regional collectors and have branches in several cities of the kingdom (Tetouan, Larache, Tanger, Meknes, Azrou, Marrakech, Agadir...). In the field, collectors are in most cases farmers who temporarily give up agriculture to focus on regional AMP species exploitation (rosemary, pennyroyal mint, etc.).
- The exploitation of **plants growing on traditional community lands** is submitted to the same rules and requirements as forest areas plants. The Directorate of rural affairs of the Ministry of Interior is in charge of parcels awarding and supervising.
- **Plants growing on private lands** are generally harvested by local populations with no particular administrative constraint: pennyroyal mint, origano, yearly tansy, ormenis, etc.

#### II.1.1.2. Processing

The Morocco AMP sector is characterized by a high number of small size production units, most of which were created during the last three decades, including:

- Foreign firms or affiliates of foreign groups specialized in the production of natural molecules and AMP by-products including only a few units<sup>9</sup>;
- Moroccan agribusiness firms trying to cover all value chain links from cultivation to processing and marketing. Their number<sup>10</sup> is also limited and they are generally located in Morocco's main cities (Casablanca, Marrakech);

<sup>7</sup> This is an estimate. In Morocco, there is lack of official data on cultivated plants.

<sup>8</sup> See table on main aromatic and medicinal plants cultivated in Morocco – Annex 5

<sup>9</sup> Mainly NATUREX (France), BIOLAND (France), LOKOUS (Spain), Mc DORNIC (USA), SOABIMEX (filiale Yves ROCHER)

<sup>10</sup> SOCOPRAG in Marrakech with modern units of verbena growing; MOKALA in Casablanca also specialized in verbena industrial production, Groupe Benchaïb, etc.

- Firms specialized<sup>11</sup> in dried plants marketing, either cultivated AMP (verbena, rosebuds, orange flower, sage, red vine-leaf, olive tree leaf, cactus flower, iris root...) or wild (rosemary, myrtle, poliot mint, mallow...)
- Firms specialized in essential oils and flavouring extracts<sup>12</sup>. Most of them are mobile units. These firms can also market dried plants, but also other types of products (cereals...). The rest includes modern units with fixed equipment.

AMP firms often cumulate herb production, oil extraction and trade activities. Other producers collect and distillate wild plants to complement their farming activity.

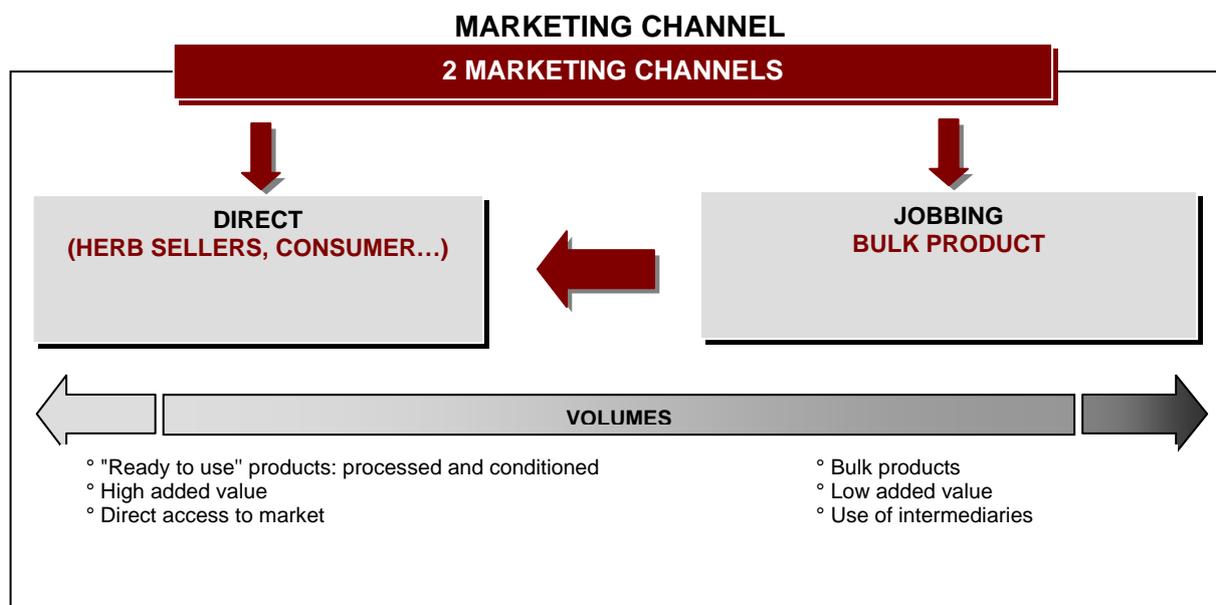
### II.1.1.3. Marketing method

There are two distinct marketing channels: direct sales to consumers and bulk trade, the latter being predominant (see figure next page).

**Bulk trade:** Most Moroccan AMP production is exported on international markets through traders. In general, exporting firms ensure quality control, product cleaning and sorting before final packing. They are often integrated downstream and get supplied in raw material through intermediaries or wholesalers.

**Direct sales to users and consumers:** Sales to laboratories, herbalists, prescribers and final consumers represent a small share and only include ready-to-use products. They should represent a significant added value source for AMP value chains if well exploited.

The AMP sector is undoubtedly weakened by a lack of visibility and market mastering. This is due to the fact that producers are undertaking very little prospecting and sales left to traders who do not seek to develop new and specific markets. Most Moroccan production is thus sold thanks to Morocco AMP "quality image" on classical markets.



<sup>11</sup> There are many processing units of this type, among which: Santis Trade in Casablanca, SOPLAMMA in Marrakech, Hedismar in Marrakech; SUOREX in Marrakech; Plantes de Soleil in Marrakech, etc.), see list in **Annex 3**.

<sup>12</sup> There are many firms. Some own fixed units with modern equipment like BIOAROMAT in Berrechid, Arômes du Maroc in Kalaât M'gouna. Others, far more numerous, have a simple equipment easy to transport and use on wild AMP collecting areas, e.g.: établissements Nassime-El Ward in Meknès, Haddou El Younsi in Tétouan, Benkirane in Ouezzane, Laroussi in Larache, Cheddadi in Tangier, N'tifi in Tangier

## II.1.2. Regulatory and organizational framework

### II.1.2.1. Regulatory framework

Current legislation on AMP does not allow addressing several issues, and remains silent on a certain number of provisions that should protect the AMP sector. In order to preserve the resources sustainability, the legislation should thereby be reviewed to organize AMP exploitation (harvesting, collecting and processing) and promote local populations.

Additionally, the international agreements signed by Morocco on biodiversity incite collecting streamlining species on an ecological basis and promoting plants cultivation as an alternative to exploiting threatened stands.

### II.1.2.2. Organizational framework

In order to face different constraints hindering AMP trade development, Moroccan AMP professionals met in 1995 under the Moroccan Association for the Development of Aromatic and Medicinal Plants (ADEPAM), which counts only twenty members.

This association is a valuable tool to supervise professionals in particular and develop the AMP sector in general. Its goals include:

- monitoring and follow-up
- awareness
- training
- support of markets prospecting (merchandizing)

Nevertheless, the association low membership level shows that AMP professionals are still reluctant to undertake collective activities.

The ADEPAM as well as other new organizations (SOMAPAM, AMAPPAM...) should become trusty representatives to coordinate and direct professionals' activities. To be able to fully play their role, it will be necessary to build their capacities to become the AMP professionals' leading arm.

## II.2. Evolution of Moroccan AMP sector indicators

### II.2.1. Production

Morocco holds a significant place on the AMP international market with a production marked by its wealth and diversity.

***It is worth saying that the AMP national production is practically entirely intended to export.***

Plants exploited in Morocco are either used for essential oils extraction and flavouring extracts through distillation or extraction with solvents, or plants used as is "fresh" or "dried" for herb production, aromats, food industry, etc.

#### II.2.1.1. Moroccan production of essential oils and aromatic flavourings

Among plants commonly used in Morocco for essentials oils and aromatic flavouring production, we find: rosemary (*Rosmarinus officinalis* L.), artemisia (*Artemisia herba-alba* Asso.), Atlas cedar (*Cedrus atlantica*), common European myrtle (*Myrtus communis* L.), Terguist thyme, thymol thyme, (*Origanum elongatum* Emb. and Maire), Moroccan sweet thyme – Moroccan thyme

(*Thymus satureioides* Coss), bay laurel (*Laurus nobilis* L.), Moroccan oregano (mainly *Origanum compactum*), oakmoss (*Evernia prunastri*), cedar moss (*Evernia furfuracea*); Morocco wild chamomile (*Ormenis mixta* S/multicaulis L. species), pennyroyal mint (*Mentha pulegium* L.), etc.<sup>13</sup>

New products were recently introduced on the market such as "Morocco blue chamomile" or "Morocco blue tansy" (*Tanacetum annuum* L.). *Ammi visnaga* is another new product that is still seeking a safe place on the international market.

#### II.2.1.2. AMP production of dried leaves

In this area, we find various plants, among which rosemary, thyme, oregano, carob and by-products. However, these plants are threatened due to cutting and collecting techniques. Drying and cleaning techniques should be in turn improved.

On the international market, "Moroccan rosemary"<sup>14</sup> could be competitive considering that, except Algeria, a potential competitor regarding prices, other main suppliers propose much more higher prices (Spain and France).

Other dried herbs (thyme, oregano...) are produced by natural stands located in different regions of the kingdom (central High Atlas, Anti Atlas...).

#### II.2.2. Exports

Demand and prices fluctuations are the AMP international market fundamental specificities.

##### II.2.2.1. Evolution of essential oils Moroccan exports

Tables 1 and 2 and Figure 1 summarize the progress of **Moroccan exports** of essential oils and aromatic flavourings from 1999 to 2003. They represent extracted AMP (distillation or extraction with solvents) and do not include fresh or dried products commercialized on herbs, aromats and food markets.

**Table 1: Essential oils exports by weight (1999-2003)**

Product	Weight (Kg)					
	1999	2000	2001	2002	2003	Mean
Rosemary essential oil	56 161	25 640	62 244	77 945	71 300	58 658
Myrtle essential oil	1 322	191	0	0	0	303
Eucalyptus essential oil	0	0	404	5	65	95
Other essential oils	549 173	270 414	389 845	465 893	307 793	396 624
<b>Total Essential Oils (kg)</b>	<b>606 656</b>	<b>296 245</b>	<b>452 493</b>	<b>543 843</b>	<b>379 158</b>	<b>455 679</b>

Source: Office des Changes – Exchange Control Office -, 2006

On all essential oils, rosemary ranks first with a yearly average of 58 tons.

<sup>13</sup> Annex 4 gives an exhaustive list of wild and cultivated species, among which some species are regularly exploited; while other species are exploited at relatively weak tonnages.

<sup>14</sup> For information, rosemary is harvested in the Oriental region and has high aromatic qualities.

Under formal statistics, oils extracted from more classical plants such as oregano, laurel, thyme, etc. are also classified in "other essential oils".

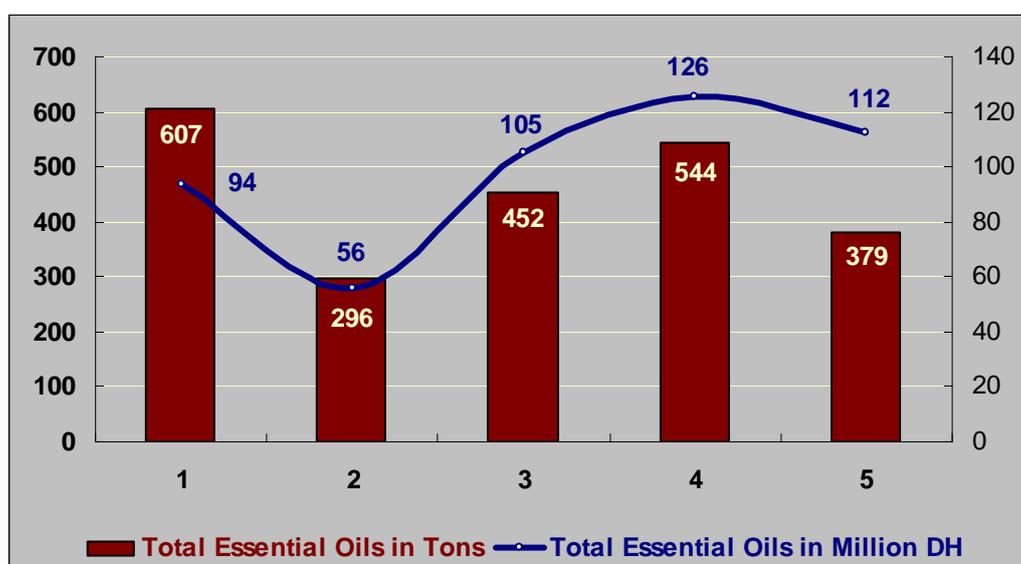
**Table 2: Export values for essential oils (1999-2003)**

Product	Values in thousand Dirhams						Average price in Dh/kg
	1999	2000	2001	2002	2003	Average	
Rosemary essential oil	10 801	4 122	11 849	22 939	17 812	13 505	230,23
Myrtle essential oil	611	83	0	0	0	139	458,81
Eucalyptus essential oil	0	0	35	8	13	11	118,93
Other essential oils	82 459	51 805	92 954	102 809	94 655	84 936	214,15
<b>Total Essential Oils (MDH thousand)</b>	<b>93 872</b>	<b>56 010</b>	<b>104 838</b>	<b>125 756</b>	<b>112 480</b>	<b>98 591</b>	<b>216,36</b>

Source: Office des Changes, 2006

Wild AMP essential oils exports values are in progress. They increased from DH 56 million in 2000 to DH 112.4 millions in 2003.

**Figure 1: Total essential oils exports by weight and value (1999-2003)**



Up to 1980, France was the main AMP exporter. The trend clearly changed from 1990 to 2000: a breakthrough on American markets allowed rebalancing the Moroccan exports structure in this area.

With about 20% of the exports volume in essential oils and aromatic flavourings, the US market is the second outlet after France (53%). Other destinations are Japan (6.3%), Canada, Switzerland and Spain (4%), and Germany (2.1%).

#### II.2.2.2. Dried AMP exports

Tables 3 and 4 show weight and values progress for dried AMP and carob exports from 1999 to 2005.

About 50% of exports include products for the food sector (spices, aromats) while 34% are plants intended for perfumery, cosmetics and similar industries. But despite their diversity, plants used for medicinal properties represent only 5% of AMP Moroccan exports receipts.

**Table 3: Dried AMP and carobs exports patterns (tons)**

Product	Weight in Tons						
	1999	2000	2001	2002	2003	2004	2005
Thyme	1 322	1 201	1 146	1 051	1 334	1 433	1 464
Oregano	206	147	77	25	5	63	54
Thyme & Oregano	1 528	1 347	1 223	1 076	1 339	677	785
Rosemary	1 802	2 081	2 151	2 302	3 195	3 152	3 207
Other	162	96	99	197	113	118	162
Carob	16 755	6 748	6 923	13 535	24 619	23 167	22 065
<b>Total</b>	<b>20 211</b>	<b>10 273</b>	<b>10 396</b>	<b>17 109</b>	<b>29 265</b>	<b>27 113</b>	<b>26 220</b>

Source: EACCE, 2006

**Table 4: Dried AMP and carobs exports patterns (Dirhams)**

Product	Price per product in Dirhams						
	1999	2000	2001	2002	2003	2004	2005
Thyme	11 750 418	12 279 000	13 554 763	13 009 782	14 061 545	16 581 771	18 634 022
Oregano	3 429 771	2 806 011	1 600 213	486 477	103 394	763 828	733 788
Thyme & Oregano	15 000 738	15 085 011	15 154 976	13 496 259	14 164 939	7 897 077	9 598 427
Rosemary	16 021 804	17 614 466	19 738 436	23 511 605	27 891 783	26 300 760	28 797 265
Other	1 056 601	699 979	1 055 693	1 663 611	930 417	788 347	1 056 601
Carob	227 223 959	100 000 000	209 354 932	236 089 143	354 897 715	406 533 393	535 000 000
<b>Total</b>	<b>258 591 025</b>	<b>133 399 456</b>	<b>245 304 036</b>	<b>274 760 619</b>	<b>397 884 855</b>	<b>441 519 578</b>	<b>574 452 293</b>

Source: EACCE, 2006

Rosemary is the most important exported aromatics from Morocco (12.70% of all dried AMP). The United States of America are the first customer for rosemary (45%). They are followed by France (15%) and Spain (10%).

Thyme exports are as important as rosemary's. The average thyme exported tonnage is 1140 t/year with an average value of 12.9 million DH. In value, they both represent approximately 4% of dried AMP and carobs. USA (36%), France (12%), Japan (9%) and Spain (7%) are the main thyme markets for Morocco.

Oregano is represented by "*Origanum compactum* Benth", an excellent food flavouring particularly appreciated for pizzas and similar products. Exports volume is limited by raw material unavailability.

**Table 5: Exports patterns for essential oils, dried AMP, carobs and related species (1999-2003)**

Product designation	1999		2000		2001		2002		2003		Average weight Kg	Average value MDH
	Weight Kg	Value MDH	Weight Kg	Value MDH	Weight Kg	Value DHS	Weight Kg	Value MDH	Weight Kg	Value MDH		
Moss and lichens	942	6 796	60 940	414 086	66 250	289 491	190 170	1 449 076	60 990	59 288	75 858	443 747
Laurel leaves	29 459	212 393	28 216	442 436	15 979	172 911	5 462	156 469	21 500	235 149	20 123	243 872
Pyrethum	53 965	1 513 154	36 779	1 607 565	37 397	2 431 288	48 821	2 180 630	41 910	2 163 844	43 774	1 933 159
Henna leaves for dyeing	590	8 574	2 400	69 287	193	3 268	4 091	97 349	683	38 715	1 591	43 439
Other woods, roots and barks, moss and lichens	496 201	4 230 976	279 122	2 584 633	304 891	3 422 082	422 330	4 218 161	387 777	5 948 484	396 358	4 080 867
Thyme	1 190 270	6 762 061	721 192	7 695 465	758 777	8 878 066	690 295	8 460 698	1 008 340	10 387 897	873 775	8 436 837
Carob and by-products	19 183 831	299 799 535	7 887 103	186 328 377	7 529 243	234 901 316	12 878 519	243 104 824	26 297 351	329 061 753	14 755 209	258 639 161
Rosemary essential oil	56 161	10 801 151	25 640	4 122 429	62 244	11 849 222	77 945	22 938 656	71 300	17 811 580	45 824	13 504 608
Myrtle essential oil	1 322	611 370	191	82 815	0	0	0	0	0	0	303	138 837
Eucalyptus essential oil	0	0	0	0	404	34 694	5	8 208	65	13 470	95	11 274
Diverse spices	5 316 600	66 017 707	5 810 071	49 695 750	5 416 310	46 344 303	6 948 562	64 619 858	4 259 816	41 731 080	5 550 272	53 681 740
Other plants and plant parts	9 050 576	70 656 146	9 523 943	131 487 948	9 206 979	144 120 518	9 744 740	161 393 550	10 317 474	148 748 174	9 568 742	131 281 267
Other mucilages and plant thickeners, except modified	4 430	1 329 215	7 240	1 757 386	2 100	1 733 948	3 524	1 805 119	16 050	607 254	4 324	1 446 584
Other essential oils	549 173	82 459 116	270 414	51 805 127	389 845	92 953 956	465 893	102 808 754	307 793	94 654 570	396 624	84 936 305
Oleoresin	73 792	16 937 462	266 287	57 951 667	202 910	56 508 517	295 176	63 788 980	315 860	54 905 283	230 805	50 018 382
Softwood resine	0	0	0	0	0	0	1 250	26 250	0	0	250	5 250
Resinoids	114 262	29 785 685	0	0	4	16 841	1 511	2 027 365	7 052	3 607 521	24 566	7 087 482
<b>Exports/year</b>	<b>36 121 574</b>	<b>591 131 341</b>	<b>24 919 538</b>	<b>496 044 971</b>	<b>23 688 635</b>	<b>603 660 421</b>	<b>31 778 294</b>	<b>679 083 947</b>	<b>43 113 961</b>	<b>709 974 062</b>	<b>31 988 493</b>	<b>615 546 180</b>

Source : Office des Changes – Exchange Control Office - , 2006



**Table 6: Summary of AMP global exports (1999-2003)**

	1999	2000	2001	2002	2003
Exports in quantity (Tons)	36 328	25 066	23 766	31 804	43 039
Exports in value (DH)	591 131	496 045	603 660	679 084	707 810
Average unit price (DH/Kg)	16,27	19,79	25,40	21,35	16,45

Data related to the overall sector (essential oils, AMP, carob and related species) show that the average annual export global earnings from 1999 to 2003 amount to DH 615 million for an average annual volume of 32,000 tons, i.e. an average sales unit price of MDH19.85/kg.

About 50% of annual receipts stem from carob seeds and related species. This is mainly due to massive imports of unprocessed carob which are reexported once processed (carob flour, mucilage, etc.) allowing professionals to achieve significant profit margins.

### II.2.3. Imports

Main imported products are relishes among which, apart from cumin, imports cannot be replaced by local production. Imported products include pepper, which ranks first with 43% of global imported quantities, followed by ginger (16%), cumin (12%), curcuma (9%), cinnamon (9%) and cloves (5%).

### III. SUMMARY OF THE SECTOR DIAGNOSTIC

Based on the AMP sector analysis and its environment, the strategic diagnostic includes extracting determining variables in terms of:

Strengths, weaknesses, opportunities and threats (SWOT)  
Sector positioning.

#### III.1. AMP sector SWOT analysis

The SWOT analysis describes the Moroccan AMP sector in terms of:

Strengths: i.e. assets and intrinsic advantages regarding organization and operating;

Weaknesses: i.e. failures proper to the AMP sector;

Opportunities and benefits offered to the AMP sector;

Threats and constraints restricting and even compromising the AMP sector development.

<b>STRENGTHS</b>
<ul style="list-style-type: none"><li>• Rich and diverse flora, with high endemism</li><li>• Ecosystems offering conducive ecological conditions</li><li>• Actors' ancestral know how regarding AMP production and processing</li><li>• 'Morocco's AMP' fame recognized at the international level</li><li>• Several existing institutions and research centers working on AMP in Morocco</li><li>• Important association network including NGOs interested in the AMP sector</li></ul>

<b>WEAKNESSES</b>
<ul style="list-style-type: none"><li>• Production is dominated by wild plants with very limited room for "cultivation";</li><li>• Low added value generated at the production level: AMP are generally produced under the form of dried leaves and crude essential oils intended to the international market</li><li>• Predominantly traditional production infrastructure and weak investments efforts not allowing to strengthen and modernize the production devices</li><li>• Distribution markets obscurely organized with multiple intermediaries not favouring information transparency and fluidity</li><li>• Poorly developed local market, and completely ignored by AMP sector professionals, despite some development opportunities</li><li>• Neglected sector with a still important social and territorial dimension. Unlike other sectors (citrus, leather, textile...) which get incentives through government programs aiming at supporting research and development, financing and investing, promoting exports, etc.</li><li>• Poorly structured sector with embryonic professional and interprofessional organizations</li><li>• The existence of several actors in the AMP sector sometimes results in overlappings and lack of coordination (administration, professionals, NGOs, education and research institutions, medias, local collectivities...)</li><li>• Lack of rigorous and enabling regulations</li><li>• Absence of a consensual development strategy for the AMP sector</li></ul>

## OPPORTUNITIES

- A continuously growing world demand for AMP consumption. Several studies show that interest for natural products and remedies based on medicinal plants is currently increasing on the market. The demand for natural products associated to alternative medicine is growing by nearly 15% to 25% per year
- Industries using AMP for sustained development: agrofood, pharmaceutical, cosmetics, etc.
- Research and development results available to increase products quality and productivity
- Morocco current touristic development is an opportunity for the AMP sector, provided that new synergies are created in this area (e.g. local products)
- The international market became more and more demanding regarding compliance with sustainable management criteria for natural resources
- Free trade agreements with USA, the EU...

## THREATS

- Emergence of new international competitors (Eastern Europe, Turkey, South America, China, India, Central Africa...)
- Volatile global markets and prices and marketing constraints making it difficult to meet success conditions on foreign markets
- Specifically Moroccan AMP products are not currently protected against their domestication by other countries or multinational firms
- Nearly the entire AMP exploited and marketed volume (over 90%) is wild, which is a threat for the resource and reduces its development potential
- Climatic vagary is often unfavourable, impacting availability and regularity of market supply
- The growing use of chemical products and pesticides might harm AMP quality and natural potential

### III.2. AMP sector positioning

In Morocco, AMP production is mainly based on wild biomass harvesting (over 90%). This production is characterized by its great diversity, with approximately 4000 reported documented species and several hundreds harvested species. Production related to cultivation remains insignificant and is not supported by any governmental assistance.

The Moroccan AMP sector is facing a double challenge:

- Adapting production methods to sustainable development conditions, including through: promoting local populations, mastering collecting, enhancing wild productions, developing crops (modernization, varietal selection, production channels...).
- Mastering markets: production being intended to various uses (food, cosmetics, perfumery, aromatherapy, pharmacy, etc.).

The Moroccan AMP sector is threatened although it benefits from an important development potential.

Threats are related to resources as well as markets with two important types of risks:

- Risk related to raw materials unavailability due to wild species frequent collection (plundering) and little planting
- Risk of loosing traditional markets: sellers markets can turn towards other production batches, **the AMP sector being positioned as an unprocessed raw materials supplier**, suffering therefore also from irregularity, and even from supply weak volume.

Faced with this severe assessment, Morocco has also great assets, which could be the basis for a stronger AMP sector development. Its assets are also related to resources and markets:

- A rich, specific and preserved flora, with a potential strengthened by climatic conditions facilitating aromatic and medicinal plants production, with a recognized quality standard;
- A strong potential of marketing development: a tourist destination for over 10 million tourists by 2010 where authenticity is still preserved.

AMP Moroccan firms certainly take advantage from the country specific ecological conditions and existing lush wild species. However, these assets cannot satisfy Moroccan firms to build their determinative and sustainable comparative advantages on international markets.

**It is clear that any firm wishing to evolve in the AMP sector has to comply with technical and commercial performance levels and quality requirements and make the required efforts to adapt and innovate while relying on know how and sustained research-development policies.**

The AMP sector main actors (institutional, professionals, NGOs...) are aware of the necessity to develop a sound AMP strategy with potentialities aiming at re-boosting the AMP sector value chains. This requires defining priority actions and setting up means as well as implementation conditions.

The prerequisite step is to define a clear vision for the AMP sector, taking into consideration its development potentialities and prospects; it is thus required to involve all actors in a national development strategy for the AMP sector.

## IV. DEVELOPMENT STRATEGY FOR THE MOROCCO AMP SECTOR

### IV.1. AMP sector vision

Morocco owns unique assets, namely a considerable biodiversity reserve, touristic sites, etc.

To enhance Morocco AMP potential, alliances should be built among producers (HCEFLCD, traditional communities, agricultural sector), agencies (HCEFLCD, Ministries of Agriculture, Tourism, Handicrafts, Interior...), professional organizations, private sector, users' groups, etc.

The AMP sector development strategy fits within the framework of an overall policy to give a real impetus and address land planning and sustainable development concerns.

The strategy final objective is to fulfill key conditions and factors for the success of the Moroccan AMP sector and sustainably develop significant domestic and international market shares.

*To enable the AMP sector to shift from a sector which supplies raw materials to a genuinely industrial sector offering a range of high added-value products targeting local and international markets.*

*The AMP sector development, and even its survival, is linked to its evolution from rudimentary to industrial stage.*

Such a shift cannot be done without performing "Great actors"<sup>15</sup> with confirmed capacities and skills in the area of AMP.

The Moroccan AMP sector needs thus to be boosted by "great actors" with performing financial and human resources as well as the technical, commercial and managerial know how required to create and maintain a competitive advantage on an increasingly globalized international market and an economic and commercial environment which are evolving rapidly.

To provide them all chances of success, they must be encouraged and supported to be able to face challenges, significantly increase production and quality and improve marketing and distribution systems, regulatory and incentive framework, supervising and training, etc.

The AMP sector current situation needs sound measures to be undertaken by all stakeholders, e.g. either collective and voluntary measures (cooperatives, trade unions, economic interest groups, etc.) or business projects. These objectives cannot be met without:

- A strong will both from national and local professionals and public authorities
- Support provided by all actors, particularly at the regional level
- Global and integrated development tools: agricultural, touristic, industrial, scientific, territorial, etc.

<sup>15</sup> "Great actor" means production and commercial structures that will play the role of engine in the AMP sector, such as multinational firms and national business groups (consortium) or groups of individuals (cooperatives).

## IV.2. Strategic lines

The strategy of the Moroccan AMP sector should also address its development and consolidation of current situation. Its constructive and dynamic implementation will require a set of integrated actions along the main following lines:

- Consolidating and developing current knowledge to address markets professionally
- Optimizing production and marketing to better enhance Moroccan AMP
- The sector regulation, organization and encouragement to prepare an appropriate and stimulating framework for professionals and resources protectors.
- Promoting the AMP sector while creating positive synergies with other sectors
- Promoting local populations, resource preservation and sustainable management

### IV.2.1. Line 1: Strengthening and developing specific knowledge on Morocco AMP

Enhancing AMP natural resources goes first and above all through developing specific knowledge on plant species. To this end, it is necessary to develop and implement a research and development program specific to AMP with accurate goals.

In the 80's, some laboratories and research centres in Morocco started to collect important scientific and technical data on AMP natural resources.

There are many examples of research works<sup>16</sup> with real and positive impact. However, they remain isolated, with a short range and do not entirely address the global objectives for AMP enhancement at the national level.

A real research and development program with national objectives and directions clearly defined and meeting truly the AMP sector needs should be engaged. The R&D program should be based on the following priority actions:

- Build on, consolidate and integrate Research & Development activities at all the sector segments;
- Develop an in-depth diagnostic of the natural heritage (inventory and mapping), existing production potential and social and economic conditions for its exploitation ;
- Categorize AMP through technical sheets based on the specifications elaborated by professionals;
- Develop a user's charter and code of practice and best practices covering all aspects of the AMP value chain;
- Define more accurately the AMP preservation, conservation (in-situ and ex-situ, gene library) and enhancement conditions;
- Study the conditions for their domestication, particularly high added value and threatened species, as well as AMP that could be introduced;

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<sup>16</sup> A few examples of research which had an impact on the AMP sector:

- Mastering and improving the production quality of some stands (white artemisia)
- Developing a nomenclature of AMP products
- Selecting, planting and diversifying production
- Developing new products
- Preserving natural species and stands
- Improving collected products yields and quality.

- Mitigate the lack of information by developing a scientifically designed strategy, covering all products range and attracting all stakeholders, particularly through the following actions:
  - Developing a national information program on AMP;
  - Creating botanical gardens with pedagogical objectives;
  - Developing ecotourism itineraries (routes, channels) related to AMP in synergy with tourism;
  - Introducing AMPs in school programs on environmental and health education;
  - Involving NGOs in the value chain development, including the information mission.

Research and development policies will be namely based on:

- **National research centres for technical support and specialized information**, including in plant production. They will play a key role in creating and disseminating technical progress in agriculture in general and AMP in particular. Among these agencies, the Institut National des Plantes Médicinales et Aromatiques (INPMA) –National institute for Aromatic and Medicinal Plants - <sup>17</sup> and Institut National de Recherche Agronomique (INRA) – National Institute for Agricultural Research - should play a more important role on the economic level through fostering feasibility studies on investment potential, guiding investors towards high-added value products intended both for national market and exports;
- **Professional organizations** of plant producers and processors, who could develop technical and development activities upon their members request.

#### IV.2.2. Line 2: Supply enhancement

Despite the importance of wild AMP production potential in Morocco, production is often linked to climate vagaries, and some species are threatened, under the population pressure, livestock impact, archaic exploitation (lifting, overgrazing, clearing mainly on collective lands...), etc.

Among recommended measures, domestication is the best way to save some plants from extinction and preserve the resource.

AMP enhancement should focus on product quality (label) enhancement, based on chemical, organoleptic and olfactive recognized attributes. Products standardization is also a way to diversify the Moroccan AMP production.

Last, AMP enhancement requires better market knowledge (trends, requirements, competition, etc.) and marketing channels mastering.

##### IV.2.2.1. AMP domestication and intensification

AMP cultivation offers unquestionable advantages of a better production mastering regarding both quality and quantity, including diversification possibilities.

Key success factors in this area are mainly the following:

- Mastering planting costs;
- Planting know how availability<sup>18</sup> (technical sheets);

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<sup>17</sup> INPMA is the unique Moroccan research and development institute specialized in plants and plant raw materials.

<sup>18</sup> Note that for some species, these techniques exist and are published by various research centres, e.g.: Iteipmai and INRA (France) - INIA (Spain)

- Mastering cultivation technique adapted to each species.

Three complementary strategies can be adapted for AMP planting in Morocco:

### **A. Specialization**

As things stand at present, it seems difficult for Moroccan AMP producers to face the "giants"<sup>19</sup> specialized in the cultivation and production of certain products on large areas through advanced technologies.

There is an alternative for Morocco, which consists in specializing in "niches" where there is an unquestionable comparative advantage. In developed countries, big producers are not always interested in small tonnages, especially for production demanding specific care. Specializing in niche markets could be a solution, provided that production conditions are mastered to deter potential competitors.

### **B. Production diversification and intensification**

Production intensification is ensured through planting products with relatively important tonnages and which are already known on the international market under the "Morocco" label.

This intensification is possible through production techniques mastering, mastered distribution policy, efficient marketing and promotion, etc. It could focus on several types of products to diversify the Moroccan AMP production. "Coriander seed" is a good example in this sense. Various wild products currently growing in large areas can thereby be developed through intensification (rosemary, artemisia, thyme, myrtle...).

### **C. Production enhancement based on wild plants**

Production based on wild plants is resumed to collecting. A certain number of countries, including Eastern Europe, have a great tradition in this area being strengthened through great efforts to modernize drying techniques and important research and development activity.

Morocco has a significant competitive advantage including some abundant spontaneous stands and species. Rosemary is a good example allowing an average current production of over 60 tons of essential oil per year and placing Morocco among the three main world producers in this field, with Spain and Tunisia.

The natural phytomass abundance is a definite asset provided that its exploitation is well mastered. The current collecting system is indeed a serious constraint to maintain Morocco as a leader for some plants. Most wild plants grow in semi-arid to arid regions and phytomass production are thus strongly affected by unsteady climate conditions.

Improving production requires notable efforts in:

- Mechanizing harvesting operations
- Improving storage conditions
- Strengthening processing capacities

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<sup>19</sup> Most striking examples: coriander in the USA, lavender and lavandin in France, and fennel and pyrethrum in Australia.

#### *IV.2.2.2. Standardization and labelling (branding)*

There is an increasing demand for quality. Ensuring quality requires actions aiming to guide and incite professionals in this field. The objective is defining profile types for each product through analyses and specifying attributes. Products sound quality and requirements (standardization, biochemical tests, therapeutical...) via scientific and technical providers selected by professionals is a prerequisite to maintain on the AMP world market. Priority actions in this area include:

- Developing a system of norms and standards, at the level of the entire value chain, complying with international market requirements;
- Fostering the certification and labellisation system through technical guidance and financial support;
- Standardizing production regarding both quality and productivity;
- Setting growing cultivation techniques adapted for each plant species;
- Etc.

#### *IV.2.2.3. Marketing channels support and assistance*

Foreign markets offer real development opportunities for the value chains of the Moroccan AMP sector. Some studies<sup>20</sup> confirmed these opportunities, including the US market which absorbs 1/5<sup>th</sup> of world production and which is linked with Morocco by a free trade agreement.

Other markets (Europe, Canada, Japan...) offering real opportunities can also be targeted. Success on these markets requires marketing channels mastering. To this end, actions to optimize AMP marketing through setting up common structures (cooperatives for instance) can be undertaken, to ensure both international and domestic market development.

#### **Developing the international market, through:**

- Clients prospecting through attending international fairs and shows;
- A prerequisite selection of markets and target clients based on annual goals;
- Direct commercial partnerships with AMP users (laboratories...);
- Defining ranges of adapted products, well designed sales conditions (volumes by producer, transport conditions, sales commission, etc.);
- Contacts and pre-negotiations with presentation of scientific and commercial materials;
- Marketing actions to enhance products on international market through focusing on income distribution under fair trade.

Currently new niches and needs arise in the area of herb trade (fresh, frozen, dehydrated...), "organic", "natural", aromatherapy, etc. A permanent adaptation effort should be done, namely through competitive, marketing and commercial intelligence to provide professionals with useful information.

#### **Developing the national market, through:**

- Product offers intended to local clients and tourists (for example organic products focusing on Moroccan origin);

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<sup>20</sup> Study conducted by AMS-1995

- Commercialization on a market with high volume potential, through speciality shops channels, parapharmacy, local products, etc.
- A range of post-processed products (perfumes, cosmetic...) to complement the range of essential oils;
- Developing a "collective label", jointly traded and developed along with several success key factors, based on products specificities and producers' involvement (organic, natural, etc.).

These collective and other actions should be backed through strong commercial and promotional structures (cooperatives). These structures would play a prospecting role and ensure backing logistics. The goal of this type of organization is sharing AMP marketing on international and domestic markets, either in totality, or for new markets and products.

Producers will sell their production (essential oils, extracts, dried plants...) based on sales prices defined by sharers/members. The collective structure would ensure storage, transportation, invoicing and customer relationship management. The structure status should be open to accept, according to predefined modalities, new "sharers"/members to address a genuine collective project at the region level, or even at the country level.

This organization is conditioned by a strong existing willingness of professionals to contribute to the AMP sector development.

Such a strategy should undertake communication and promotion campaigns for each cooperative brand and be based on awareness and distribution networks.

#### **IV.2.3. Line 3: Organizing the AMP sector**

##### *IV.2.3.1. Regulation system*

In the AMP sector, the regulation system is a necessary regulatory factor. To be enhanced, several actions are needed:

- Promote law and regulations enforcement aiming at AMP conservation and sustainable management;
- Ensure a better knowledge on law and regulations among local populations in general and AMPs stakeholders in particular;
- Draft and implement exploitation specifications adapted to each AMP ecosystem and in compliance with local social and economic conditions;
- Regulate products marketing and exports on international market, under free trade agreements and Intellectual and Commercial Property Rights Agreements (ADPIC) ;
- Respect Morocco biodiversity agreements that incite nations to rationalize rare species collecting and promote cultivated plants as an alternative to wild stands exploitation;
- Promulgate laws aiming at AMP enhancement and conservation linked to sustainable development.

##### *IV.2.3.2. Interprofessional organization*

Creating organizational structures is necessary to develop the AMP sector. This structure should ensure that the AMP strategic plan is implemented in the best possible conditions. It could be an interprofessional federation ensuring coordination among different stakeholders both at the national and regional level and would:

- Identify the value chain actors, according to their missions and activities while promoting coordination and integration mechanisms;
- Strengthen producers organizing and follow-up;
- Strengthen, foster and supervise existing or future professional organizations;
- Set a multipartite and pluriannual partnership system for AMP exploitation and sustainable enhancement;
- Create a national observatory to follow up and assess AMP sector progress.

#### *IV.2.3.3. Institutional partnership*

The AMP sustainable development strategy implies all stakeholders (private processors, users, institutions, NGOs, international organizations, etc.) participation. It should be designed and implemented in compliance with current opportunities.

The diversity of the AMP sector actors (administrations, collectivities, local populations, professionals, etc.) is a source of conflicts needing conciliation among diverging interests.

It is thus urgent to set a dialogue among partners in view to ensure genuine partnership for co-management, concertation, negotiations, compromise, etc.

The partnership among administration, collectivities, AMP professionals and organized local populations, should foster private investments in the AMP sector and improve local populations living conditions through the added value generated by enhanced and processed AMP. To this end, the HCEFLCD has initiated a few years ago an approach aiming to promote local populations in harmony with resources preservation, while ensuring market regular supply.

Lease is now matched with community goals. The goal of conserving and enhancing forest species aiming sustainability was not well welcomed by some contractors; it was thus necessary to delegate some activities to the local population and private companies specialized in AMP production and marketing in order to set synergy among three parties:

- cooperatives specialized in AMP collection and production;
- private companies related to AMP products enhancement, processing and sales;
- the HCEFLCD for forest management and resource preservation monitoring.

This scheme allowed creating partnership between cooperatives and private producers:

- Private companies are relieved from social issues (work card, Social Security contribution...) and can work with several cooperatives to ensure supply regularity;
- Cooperatives are showing flexibility and willingness to engage in this enhancement process in consideration of parcel lease contracts over a longer period (pluriannual purchase over a 3-year period with renewal at negotiated prices).

#### **IV.2.4. Line 4: AMP sector promotion policy**

The AMP sector professionals are aware that they are facing well organized world competitors who master production and marketing processes and that the key to success on this market is based on production organization capacity and confirmed technical and technological skills.

These are necessary, but not sufficient conditions to guarantee success. In fact, success on foreign markets needs accurate knowledge of market needs and capacities to manage sustainable commercial relationships.

Thus, the AMP sector should be promoted through communication campaigns (not only limited to products, but including also all components of the Morocco offer: regional image, touristic potential), assistance enabling prospecting new markets, and support provided to different distribution channels, etc.

#### *IV.2.4.1. Promoting policy and incentives*

The AMP sector needs incentives and fostering measures including:

- Set up incentive measures to encourage private investments in the AMP sector, particularly through funding lines;
- Anticipate economic and financial instruments to foster the AMP value chain upgrading and commercial enhancement to ensure competitiveness on international markets and encourage consumption on local markets;
- Take, alike for agricultural products, customs rights exemption and lines on imports (equipments, irrigation materials...);
- Etc.

#### *IV.2.4.2. AMP sector general development*

Developing the AMP sector on the technical, scientific, commercial and promotional levels is necessary to start, follow up and control anticipated actions.

The goal is to induce collective involvement at several levels:

- foreign markets prospection and common trade actions to position the Moroccan offer on international markets;
- creating the collective "Morocco AMP" to support national and international commercial development ;
- coordinating professionals: information transfer and sharing, firms follow-up, value chains management;
- supervising AMP categorization and testing cultivation;
- communication through technical and economic information and communication documents by plant and use of market.

#### *IV.2.4.3. Synergies with other sectors*

- AMP are used in pharmaceutical industry, phytotherapy, cosmetics, detergent industry to which they are increasingly appreciated. These job creating value chains are submitted to growing competition towards which they must be responsive.
- The AMP sector has strong opportunities to meet the local market challenge by focusing on quality products.
- Marketing potential on local markets (local population and tourists) is rather high. Sales; based on communication and promotion, can potentially reach a market of nearly 10 million

tourists, added to local population, through "specialized networks": speciality shops, thalassotherapy centers, by-products and local networking.

#### **IV.2.5. Line 5: AMP sector sustainable development**

##### *IV.2.5.1. Training and supervising*

Under the global strategy to enhance AMP, a training program should be considered for senior staff and technicians in charge of AMP products and by-products management and operating. The training will be provided through vocational training institutes and largely based on practice (preparation of phytomass intended to processing operations, use of distillation equipment, processed products conditioning, essential oils and extracts, etc.). The professionals should attend different training institutions pedagogic activities and participate in trainees selection, based on industry and market value chains identified needs.

An on-going training system should be set up (scientific, technical and commercial assistance) to local populations to:

- Improve their knowledge on aromatic, medicinal and food species attributes and products, on industries and markets related to AMP;
- Guide producers and local firms towards profitable activities and reliable markets;
- Train young technicians who will contribute to creating and operating AMP enhancement rural units.

It is advised to start training facilitators, who are the key on the agrotechnology and commercial transfer process to local populations.

##### *IV.2.5.2. Empowering local populations*

Wild AMP often grow on collective or domanical lands which are subject to abusive uses such as clearing for cultivation, overgrazing and fire wood collecting, etc.

Such a behavior results in AMP resource degradation, and leads to desertification hazards with disastrous effects on AMP survival.

To promote sustainable development, it is recommended to call the local populations attention on AMP wealth to safeguard and protect it through sound use. In other terms, populations must be involved through a participatory and productive process to benefit from added value generated locally by AMP conditioning and processing.

Fair trade can also leverage local population development. Partnership among administration, local collectivities, value chain professionals and organized local populations should be established. This will enable AMP sustainability and improve local populations' living conditions.

##### *IV.2.5.3 Natural resources sustainable management and environmental preservation*

Most Moroccan AMP are obtained from wild plants collecting. To preserve threatened AMP resources, a control strategy should be developed for sustainable development, through:

- Fostering training for cooperatives members who are involved in AMP collecting
- Developing a charter on collecting, and informing professionals and local population about best practices

- Establishing collecting quotas by species and by region that would be edited on a yearly basis depending on available data on threatened species
- Introducing organic certification
- Integrating certification criteria taking into account the harvesting impact on the plant species preservation
- Promoting environment-friendly technologies transfer at the production and processing levels
- Developing planning and sustainable exploitation plans

## V. STRATEGIC ACTION PLAN

The actions identified under this strategic action plan result from analysis and synthesis, based on interviews, comparative studies of some international experiences and concertation meetings with the AMP sector different actors as well as different program partners.

<b>Line 1: Consolidate and develop knowledge specific to Moroccan AMP</b>
Action 1: Develop a diagnostic of the natural heritage (inventory and mapping)
Action 2: Develop data sheet of AMP Moroccan AMP
Action 3: Set up a national research program
<b>Line 2: Enhance the "Morocco AMP" offer</b>
Action 1: Develop an agricultural policy of AMP domestication and intensification
Action 2: Adopt a standardization program for Moroccan AMP
Action 3: Set up structures to support marketing channels
<b>Line 3: Organize the AMP sector</b>
Action 1: Improve the regulatory system
Action 2: Found an interprofessional structure representing the AMP sector
Action 3: Build institutional partnerships enabling the AMP sector development
<b>Line 4: Promote the AMP sector</b>
Action 1: Adopt incentives and fostering actions
Action 2: Design and implement a development program
Action 3: Pilot actions to create synergies with other sectors
<b>Line 5: Ensure AMP sustainable development</b>
Action 1: Provide training and technical assistance to stakeholders
Action 2: Promote local populations
Action 3: Ensure the resource preservation and sustainable management

Based on action plan, different stakeholders should necessarily get involved in this AMP development project and make important strategic and useful choices for implementation.

**Line 1: Consolidate and develop knowledge specific to Moroccan AMP**

**Action 1: Establish a diagnostic of natural heritage (inventory and mapping)**

**Goals and link with the AMP development strategy:** Ensure a better knowledge to develop the resource sustainable management plan

<p><b>Actions to be implemented</b></p>	<ul style="list-style-type: none"> <li>▪ Develop maps on AMP biogeographic allocation at the national and regional scale</li> <li>▪ Develop synthesis map at 1/2000 000 for national planning</li> <li>▪ Develop a composite (symbol) map at the regional and local scale</li> <li>▪ Develop an inventory of availabilities on AMP mobilizable resources</li> <li>▪ Identify areas with high production potential with selection of species to be enhanced</li> <li>▪ Estimate periodically, through phytomass sampling, by species and by regions.</li> </ul>
<p><b>Supervising entities</b></p>	<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM</li> <li>▪ INPMA</li> <li>▪ Donors</li> <li>▪ MADRPM</li> <li>▪ MENESRS</li> </ul>

**Line 1: Consolidate and develop knowledge specific to Moroccan AMP**

**Action 2: Develop data sheets on Moroccan AMP**

☞ **Goals and link with the AMP development strategy:** Preserve endangered AMP heritage and increase production potential to face demand

**Actions to be implemented**

- Ensure endangered species inventoring and monitoring
- Prepare data sheet for each AMP (origin, species, phytomass, products, process, technology, yielding, harvesting method, chemical composition...).
- Select and cultivate several wild species
- Share with producers cooperatives
- Conduct research and analysis programs on molecular compositions
- Proceed to data processing and confirmation

**Supervising entities**

- University research laboratories
- INPMA
- INRA
- MADRPM
- HCEFLCD
- MENESRS

**Line 1: Consolidate and develop knowledge specific to Moroccan AMP**

**Action 3: Set up a national research program**

☞ **Goals and link to the AMP development strategy:** Better enhancement of AMP resources through prospection of new products that may potentially be exploited in Morocco and improving output of AMP extraction.

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Develop quality standards and controls;</li> <li>▪ Introduce incentives for research;</li> <li>▪ Encourage private sector innovation to develop AMPs sector;</li> <li>▪ Develop a scientific research program for AMP sector monitoring (production and productivity studies; growth model, regeneration, etc.);</li> <li>▪ Seek new AMP extraction processes;</li> <li>▪ Define and introduce performing equipment for phytomass processing ;</li> <li>▪ Set up a seed bank by ecologic region for conservation of plant genetic material ;</li> <li>▪ Develop data sheets following recognized international models;</li> <li>▪ Evaluate each region AMP natural potential;</li> <li>▪ Evaluate the plant technico-economic specificities (best harvesting period, appropriate distillation technique, etc.)</li> <li>▪ Evaluate the possibility to diversify products.</li> </ul>
<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ MADRPM</li> <li>▪ HCEFLCD</li> <li>▪ MENESRS</li> </ul>

**Line 2: Enhance the "Morocco AMP" offer**

**Action 1: Develop an agricultural policy of AMP domestication and intensification**

**Goals and link to the AMP development strategy:** Planting AMP allows reducing production costs, mastering AMP resources and considering the AMP sector value chains development. The goal is to develop cultivation of attractive species while improving production techniques mastering

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Improve cultivation techniques, genetic selection and wild plants domestication;</li> <li>▪ Conduct studies on biomass output and quality factors;</li> <li>▪ Improve techniques: drying, cleaning, packing...</li> <li>▪ Ensure products quality monitoring and control at all production levels ;</li> <li>▪ Stabilize produced quantities through gradual cultivation, in parallel with wild species collecting and production;</li> <li>▪ Initiate a production standard, e.g. first stage for a "Moroccan label".</li> </ul>
<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ MADRPM</li> <li>▪ INPMA</li> <li>▪ Donors</li> <li>▪ MI (DAR)</li> </ul>

**Line 2: Enhance the "Morocco AMP" offer**

**Action 2: Adopt a standardization program for Moroccan AMP**

☞ **Goals and link to the AMP development strategy:** AMP products should be based on recognized chemical, organoleptic and olfactive qualities. Producers should be trained and well monitored. Products standardization is a means to diversify production and master quality (label).

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Proceed to product standardization based on chemical, organoleptic and olfactive qualities;</li> <li>▪ Develop required knowledge on Moroccan products to reach standardization.</li> <li>▪ Establish compulsory (quality) specification standards.</li> <li>▪ Require control for local or imported essential oils;</li> <li>▪ Adopt measures to encourage AMP exports;</li> <li>▪ Develop quality control for exported AMP, alike other agricultural products;</li> <li>▪ Ensure product traceability, from culture to dried product through control carried out by cooperatives</li> </ul>
<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ Professional associations: SOMAPAM, ADEPAM, AMAPPAM</li> <li>▪ INPMA</li> <li>▪ Partners</li> <li>▪ Ministry departments</li> <li>▪ Associations and NGOs</li> <li>▪ HCEFLCD</li> <li>▪ MADRPM</li> <li>▪ MCI</li> </ul>

**Line 2: Enhance the "Morocco AMP" offer**

**Action 3: Put in place marketing channels backing structures**

☞ **Goals and link to the AMP development strategy:** Developing the Morocco AMP sector should consider national market and international market constraints: modern industry and skilled marketing channels would strongly impulse Morocco AMP on AMP world market.

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Study national et international market opportunities and seek new outlets;</li> <li>▪ Put in place short and reliable distribution channels offering more flexibility and regularity to market supply;</li> <li>▪ Create new joint structures (cooperatives) that will allow ensuring prospecting and marketing activities, etc.</li> </ul>
<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ AMAPPAM</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM</li> <li>▪ HCP</li> <li>▪ Donors</li> <li>▪ USAID</li> </ul>

**Line 3 : Organizing the AMP sector**

**Action 1: Improve regulatory frame**

☞ **Goals and link to the AMP development strategy:** In order to preserve the resources sustainability, legislation should be reviewed to organize AMP exploitation (harvesting, collecting and processing) and promote local populations.

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Promulgate specific law defining AMP and their exploitation modalities (harvesting, collecting and processing) and ensuring their conservation and sustainable management;</li> <li>▪ Promote enforcement of laws and regulations aiming at AMP conservation;</li> <li>▪ Disseminate law and regulations among local populations in general and AMP stakeholders in particular;</li> <li>▪ Develop and implement exploitation specifications adapted to each AMP ecosystem and based on local social and economic conditions;</li> <li>▪ Regulat AMP product marketing and exports on international markets, under current free trade agreements and TRIPS agreements.</li> </ul>
<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ MADRPM</li> <li>▪ HCEFLCD</li> <li>▪ OMPIC</li> </ul>

**Line 3 : Organizing the AMP sector**

**Action 2: Create an interprofessional structure representing the AMP sector**

☞ **Goals and link to the AMP development strategy:** Creating an interprofessional structure, representing all stakeholders is a must to develop the AMP sector.

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Create a specialized structure with the following roles:             <ul style="list-style-type: none"> <li>- Collect economic information, develop, support and assess action programs in the Moroccan AMP sector;</li> <li>- Support AMP professional associations;</li> <li>- Coordinate and facilitate stakeholders participation in AMP resource management;</li> <li>- Incite operators to found an organization to enhance Morocco AMP products competitiveness;</li> <li>- Promote cooperation with appropriate international (World Bank, NGOs) and national institutions and other institutions, a better access to markets for disadvantaged entrepreneurs.</li> </ul> </li> </ul>
<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ MI</li> <li>▪ MADRPM</li> <li>▪ HCEFLCD</li> <li>▪ ODECO</li> <li>▪ Professional associations</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM</li> <li>▪ AMAPPAM</li> </ul>

**Line 3 : Organizing the AMP sector**

**Action 3: Develop Institutional partnerships to promote AMP sector development**

☞ **Goal and link to the AMP development strategy:** The AMP sector development strategy should be based on a participatory and sustainable approach involving administration, local collectivities, AMP professionals, local populations, donors, etc. in view of developing institutional partnership enabling to the sector development.

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Develop partnership agreements among concerned departments (HCEFLCD, local collectivities...) aiming at AMP sound management and better resources control, namely through:             <ul style="list-style-type: none"> <li>- resources sustainable exploitation avoiding illicit channels;</li> <li>- selling AMP exploitation parcels and collection located on collective and domanial lands.</li> </ul> </li> <li>▪ Develop partnership agreements between the HCEFLCD and donors, to ensure financial support, purchase distillation equipment, and conduct technical or management training, etc.</li> <li>▪ Foster partnership between cooperatives and exploitants/processors. It is about:             <ul style="list-style-type: none"> <li>- Support groups for the constitution of cooperatives,</li> <li>- Supervise and sensitize cooperatives...</li> <li>- Provide management and marketing training and communication to members post-constitution.</li> <li>- Contribute to the cooperatives capacity building, ensure the resources sustainable exploitation,</li> </ul> </li> <li>▪ Develop partnership agreements between HCEFLCD, producers' cooperatives on the one hand and research Institutions on the other hand in order to develop niche products (organic, natural...), provide technical training...</li> </ul>
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<b>Supervising entities</b>	<table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ MI</li> <li>▪ MADRPM</li> <li>▪ HCEFLCD</li> </ul> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>▪ ODECO</li> <li>▪ Professional associations</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM</li> <li>▪ AMAPPAM</li> </ul> </td> </tr> </table>	<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ MI</li> <li>▪ MADRPM</li> <li>▪ HCEFLCD</li> </ul>	<ul style="list-style-type: none"> <li>▪ ODECO</li> <li>▪ Professional associations</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM</li> <li>▪ AMAPPAM</li> </ul>
<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ MI</li> <li>▪ MADRPM</li> <li>▪ HCEFLCD</li> </ul>	<ul style="list-style-type: none"> <li>▪ ODECO</li> <li>▪ Professional associations</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM</li> <li>▪ AMAPPAM</li> </ul>		

**Line 4: Promoting the AMP sector**

**Action 1: Adopt incentives and fostering measures**

☞ **Goals and link to the AMP development strategy:** Improving the AMP sector competitiveness goes also through incentives and fostering measures.

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Foresee economic and financial instruments able to encourage the AMP value chain upgrading as well as AMP commercial enhancement to ensure competitiveness on international markets and foster consumption on the local market;</li> <li>▪ Introduce incentives to foster private investment in the AMP sector;</li> <li>▪ Take measures for customs duties and imports taxes exemption (equipment, irrigation material...);</li> <li>▪ Etc.</li> </ul>
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<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ Ministry of Foreign Trade</li> <li>▪ Ministry of Finance</li> <li>▪ MCI</li> <li>▪ Crédit Agricole</li> <li>▪ MAMDA</li> <li>▪ Professional associations</li> </ul>
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**Line 4 : Promote the AMP sector**

**Action 2: Design and implement a global development program**

☞ **Goals and link to the AMP development strategy:** Developing local market is possible based on communication along Morocco AMP products range. The communication plan will be developed with research Centres, depending on the strategy adopted by professionals.

<b>Actions to be implemented</b>	<ul style="list-style-type: none"><li>▪ Develop specifications on Morocco AMP products;</li><li>▪ Develop collective promotions targetting distribution networks and retailer groups;</li><li>▪ Create and use collective brands;</li><li>▪ Utse the Moroccan AMP organic and natural image to distinguish Moroccan products;</li><li>▪ Etc.</li></ul>
<b>Supervising entities</b>	<ul style="list-style-type: none"><li>▪ HCEFLCD</li><li>▪ MADRPM</li><li>▪ Professional organizations</li><li>▪ SOMAAMP</li><li>▪ ADEPAM</li><li>▪ AMAPPAM</li></ul>

**Line 4: Promote the AMP sector**

**Action 3: Pilot actions to create synergies with other sectors**

☞ **Goals and link to the AMP development strategy:** AMP are used by several sectors (pharmaceutics, phytotherapy, cosmetics, thalassotherapy, detergents, food, etc.). All these sectors are AMP outlets.

**Actions to be implemented**

- Regulate AMP sales through "specialized" networks: specialty shops, large distribution, thalassotherapy centres, parapharmacy...;
- Create local networks under the national strategy of touristic development;
- Develop research programs with academic research centres;
- Set up facilitation and mobilization programs targeting local populations for the success of AMP domestication and intensification policies.

**Supervising entities**

- HCEFLCD
- Ministry of Agriculture
- Ministry of Higher Education and Scientific Research
- Ministry of Trade and Industry
- Ministry of Tourism
- NGOs
- Professionals
- Any other AMP sector actor

**Line 5: Ensure sustainable development for the AMP sector**

**Action 1: Provide training and technical supervising to AMP stakeholders**

 **Goals and link to development strategy:** Improve training and AMP exploitation techniques extension.

<b>Actions to be implemented</b>	<ul style="list-style-type: none"> <li>▪ Develop programs to promote local employment and offer training, recycling and knowledge opportunities, particularly in the area of AMP enhancement. The program will focus on business management, product development, funding, production and quality control, marketing and business legal issues; markets access and technology, etc;</li> <li>▪ Improve operators' technical skills through targeted training sessions</li> <li>▪ Extend AMP exploitation, processing and conditioning techniques;</li> <li>▪ Conduct training and awareness workshops for operators;</li> <li>▪ Extend existing research</li> <li>▪ Insert young graduates in the AMP sector and incite them to create AMP enhancement units.</li> </ul>
<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM.</li> <li>▪ INPMA</li> <li>▪ MI</li> <li>▪ Donors</li> <li>▪ Professionals</li> </ul>

**Line 5: Ensure the AMP sector sustainable development**

**Action 2: Promoting local population**

 **Goals and link to development strategy:** Integrate local populations in sustainable development efforts

<p><b>Actions to be implemented</b></p>	<ul style="list-style-type: none"> <li>▪ Create cooperatives by region and plant type (for instance, rosemary for the Oriental region...) and build their capacities in the areas of             <ul style="list-style-type: none"> <li>✓ Equipment for cooperatives (storage houses, distillation units...);</li> <li>✓ Supervision and technical training (collecting, conditioning; drying, processing...);</li> <li>✓ Management training (accounting-finance, market studies, marketing, project management...);</li> </ul> </li> <li>▪ Conduct social and economic studies and assess benefits on local population;</li> <li>▪ Raise local populations awareness (associations, farmers, collectors...) on the need of preserving AMP resources;</li> <li>▪ Promote links with NGOs specialized in rural women promotion, micro credit, etc.</li> </ul>
<p><b>Supervising entities</b></p>	<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM.</li> <li>▪ INPMA</li> <li>▪ MI</li> <li>▪ Donors</li> <li>▪ Professionals</li> </ul>

**Line 5: Ensure the AMP sector sustainable development**

**Action 3: Ensure resource preservation and sustainable management**

☞ **Goals and link to the development strategy:** Ensure better knowledge of biological diversity factors to ensure AMP conservation and sustainable management

<b>Actions à mettre en œuvre</b>	<ul style="list-style-type: none"> <li>▪ Conduct studies on species-geographical ranges to acquire required knowledge to design management measures based on environment protection;</li> <li>▪ Collect data on exploited resources to know their sustainability threshold and undertake conservation and sustainable management measures;</li> <li>▪ Develop and implement conservation plans aiming at reestablishing natural cycles and productivity of each region to allow survival of endangered species;</li> <li>▪ Define exploitation techniques (felling period, cutting height, cutting rotations, fallowing lands, etc.) to ensure a better productivity and species sustainability;</li> <li>▪ Adopt international standards for sustainable collecting and plants certification (BfN, Federal Office for nature Protection) ;</li> <li>▪ Reduce the pressure on endemic, rare or vulnerable species and resources, and on overexploited species;</li> <li>▪ Ensure availability of information on environment and resources;</li> <li>▪ Ensure conservation and availability of primary data gathered under specific projects or resulting from any research or study developed in Morocco;</li> <li>▪ Seek international networks with access to databases.</li> </ul>	
<b>Supervising entities</b>	<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ SOMAPAM</li> <li>▪ ADEPAM.</li> <li>▪ INPMA</li> <li>▪ MI</li> </ul>	<ul style="list-style-type: none"> <li>▪ Donors</li> <li>▪ Professionals</li> <li>▪ Creation of an entity to monitor and assess actions carried out by different stakeholders</li> </ul>

## **VI. STRATEGY IMPLEMENTATION**

The stakeholders' implication goes inevitably through negotiation phases beyond this study scope and they are the only ones able to achieve, if they want to, a collective action.

That is why the below schedule is given beyond any contingency that will be inevitably met during implementation, particularly efficient engagement of all partners in the approach.

In addition, these actions are all linked and will be achieved on a complementary basis.



## **VI.2. Recommendations for strategy and action plan implementation and follow-up**

To give the AMP sector all chances to succeed in its strategy implementation, basic conditions should be met.

Managed by a Follow-up Committee, the strategic action plan should include priorities and schedules. The value chain common needs should obviously be given special prominence during prioritization. Creating several committees specialized in strategic lines is desirable to better take into account all relevant stakeholders' availability and interests. In addition, a follow-up process coupled with progress indicators is vital for efficient management of implementation plan.

Thus, the implementing approach of the strategic action plan should be well structured and able to:

- Identify institutional decision-makers to implement and follow-up strategy and action plan;
- Assess action plan implementation feasibility;
- Assess the national and external human resources required for action plan implementation and follow-up;
- Estimate required budgets for action plan achievement and seek required funding;
- Identify donors and partners for action plan implementation.

It is important that all stakeholders work together cooperatively so that AMP public interest prevails over individual interests. In this direction, it is determining that the Follow-up Committee members share a common vision of the AMP sector development challenges.

Another success factor is recognizing established AMP firms' inputs and respecting basic values related to the AMP sector development.

For all these reasons, the Follow-up Committee has to ensure that implementation is as transparent as possible. To this end, a communication plan should be developed and implemented. Last, a meeting with all value chain actors should be organized annually for debriefing and information on common issues. The aim is to provide regular update on the AMP strategy and action plan progress to all relevant stakeholders.

## **ANNEXES**

**Annexe 1 : List of abbreviations**

**Annexe 2 : List of participants at the workshop of 19 December 2006 in Rabat**

**Annexe 3 : List of companies and professionals in the AMP sector**

**Annexe 4 : List of the main aromatic and medicinal plants in Morocco**

**Annexe 5 : List of the main aromatic and medicinal plants cultivated in Morocco**

## Annex 1 : List of abbreviations

<b>IAA</b>	<b>I</b> ntegrated <b>A</b> griculture & <b>A</b> gribusiness
<b>ADEPAM</b>	<b>A</b> ssociation <b>D</b> es <b>P</b> lantes <b>A</b> romatiques et <b>M</b> édicinales du Maroc - Association of Medicinal and Aromatic Plants of Morocco
<b>ADPIC</b>	<b>A</b> ccords de <b>D</b> roit de <b>P</b> ropriétés <b>I</b> ntellectuelles et <b>C</b> ommerciales – Agreements on Trade Related Intellectual Property Rights -
<b>AMS</b>	<b>A</b> lliance <b>M</b> édicale et <b>S</b> cientifique – Medical and Scientific Alliance -
<b>ANIMA</b>	Réseau Euro-Méditerranéen des Agences de Promotion des Investissements - Euro-Mediterranean Network of Agencies for the Promotion of Investments
<b>ASMEX</b>	<b>A</b> ssociation <b>M</b> arocaine des <b>E</b> xportateurs - Moroccan Association of Exporters-
<b>BfN</b>	Office fédéral pour la protection de la nature - Federal Office for Nature Protection -
<b>CMPE</b>	<b>C</b> entre <b>M</b> arocain de <b>P</b> romotion des <b>E</b> xportations - Moroccan Center for Export Promotion -
<b>EACCE</b>	<b>E</b> tablishement <b>A</b> utonyme de <b>C</b> ontrôle et de <b>C</b> oordination des <b>E</b> xportations – Autonomous Institution of Exports Control and Coordination -
<b>FAO</b>	<b>F</b> ood and <b>A</b> griculture <b>O</b> rganization of the United Nations
<b>GIE</b>	<b>G</b> roupement d'Intérêt <b>E</b> conomique – Economic Interest Group -
<b>HCEFLCD</b>	<b>H</b> aut <b>C</b> ommissariat aux <b>E</b> aux et <b>F</b> orêts et à la <b>L</b> utte <b>C</b> ontre la <b>D</b> ésertification - High Commission for Waters and Forests and the Fight against Desertification -
<b>INIA</b>	<b>I</b> nstitut <b>N</b> ational de la <b>R</b> echerche et de la <b>T</b> echnologie <b>A</b> gronomique et <b>A</b> limentaire – National Institute for Research and food and Agricultural Technology -
<b>INPMA</b>	<b>I</b> nstitut <b>N</b> ational des <b>P</b> lantes <b>M</b> édicinales et <b>A</b> romatiques – National institute for Medicinal and Aromatic Plants -
<b>INRA</b>	<b>I</b> nstitut <b>N</b> ational de la <b>R</b> echerche <b>A</b> gronomique, - National Institute for Agricultural Research -
<b>MADRPM</b>	<b>M</b> inistre de l' <b>A</b> griculture, du <b>D</b> éveloppement <b>R</b> ural et de la <b>P</b> êche <b>M</b> aritime – Ministry of Agriculture, Rural Development and Maritime Fishery -
<b>MENFCRS</b>	<b>M</b> inistère de l' <b>E</b> ducation <b>N</b> ationale, de l' <b>E</b> nseignement <b>S</b> upérieur, de la <b>F</b> ormation des <b>C</b> adres et de la <b>R</b> echerche <b>S</b> cientifique – Ministry of National Education, Higher education, Executive Training and Scientific Research -
<b>NGO</b>	<b>N</b> on <b>G</b> overnmental <b>O</b> rganisations
<b>AMP</b>	<b>A</b> romatic and <b>M</b> edicinal <b>P</b> lants
<b>UNDP</b>	<b>U</b> nited <b>N</b> ations <b>D</b> evelopment <b>P</b> rogram
<b>R&amp;D</b>	<b>R</b> esearch and <b>D</b> evelopment
<b>SMAEX</b>	<b>S</b> ociété <b>M</b> arocaine d' <b>A</b> ssurance à l' <b>E</b> xportation – Moroccan Export Insurance Company -
<b>SOMAPAM</b>	<b>S</b> ociété <b>M</b> arocaine des <b>P</b> lantes <b>A</b> romatiques et <b>M</b> édicinales – Moroccan Company for Aromatic and Medicinal Plants -
<b>EU</b>	<b>E</b> uropean <b>U</b> nion
<b>USAID</b>	<b>U</b> nited <b>S</b> tates <b>A</b> gency for <b>I</b> nternational <b>D</b> evelopment

## Annex 2 : List of participants at the workshop of 19 December 2006 in Rabat

Restricted Committee	
<ul style="list-style-type: none"> <li>▪ HCEFLCD</li> <li>▪ Ministry of Agriculture</li> <li>▪ USAID</li> </ul>	<ul style="list-style-type: none"> <li>▪ PNUD</li> <li>▪ ADEPAM</li> <li>▪ SOMAPAM</li> </ul>

In addition to the **medias**, about de 120 stakeholders of the AMP value chain attended the workshop, they represent :

Development Organizations and Institutions	Research & Development Institutions
<ul style="list-style-type: none"> <li>▪ USDA</li> <li>▪ USAID</li> <li>▪ GTZ</li> <li>▪ ADS</li> <li>▪ FAO</li> <li>▪ The Foundation Mohammed V</li> <li>▪ Development Agency of the Oriental Region</li> <li>▪ UNDP</li> </ul>	<ul style="list-style-type: none"> <li>▪ INPMA</li> <li>▪ IAV Hassan II</li> <li>▪ ENAM, Meknes</li> <li>▪ ENAM, Meknes</li> <li>▪ INRA</li> <li>▪ National Forestry School of Engineers</li> <li>▪ Faculty of Sciences and Techniques Errachidia</li> <li>▪ Faculty of Science of Tétouan</li> <li>▪ Faculty of Sciences of Oujda</li> <li>▪ Faculty of Sciences Rabat/ Ass Ibn Al Battar</li> </ul>

Ministries	Companies of Collecting/ Processing / Exportation
<ul style="list-style-type: none"> <li>▪ ODECO (Office for Cooperation Development)</li> <li>▪ Ministry of Agriculture</li> <li>▪ Crédit Agricole</li> <li>▪ Ministry of National Education and Research</li> <li>▪ Directorate of Rural Affairs Ministry of the Interior</li> <li>▪ Ministry of Health</li> <li>▪ High Commission for Waters and Forests</li> </ul>	<ul style="list-style-type: none"> <li>▪ Baba Sidi Herbs</li> <li>▪ Nasimo El Ward</li> <li>▪ VIALYS</li> <li>▪ Herbex Inc,</li> <li>▪ Générika Laboratory Inc,</li> <li>▪ ASD CASABLANCA</li> <li>▪ Phytobio Aroms</li> </ul>

NGO	Consulting Offices
<ul style="list-style-type: none"> <li>▪ ADPAM</li> <li>▪ AMAPPAM</li> <li>▪ SOMAPAM</li> <li>▪ Association PAM – AMP Association - (les femmes rurales et la biodiversité) - (Rural women and biodiversity) ASILAH</li> <li>▪ ENDA MAGHREB</li> <li>▪ Association Espace Sciences et Vie Sefrou – Sciences and Life Space Association Sefrou -</li> <li>▪ Association de TARGA – TARGA Association -</li> <li>▪ Fondation Crédit Agricole pour le Micro Crédit – Foundation Crédit Agricole for Micro Credit -</li> <li>▪ Association Marocaine de la promotion de la femme rurale - Moroccan Association for the Promotion of Rural Women -</li> <li>▪ Association marocaine d'appui à la promotion pour la petite entreprise – Moroccan Association for the Assisting of Small Businesses Promotion</li> <li>▪ ANADEC: Association Nationale pour le Développement du Cactus – National Association for Cactus Development -</li> </ul>	<ul style="list-style-type: none"> <li>▪ UNICONSULT</li> <li>▪ INTERP</li> <li>▪ Link One</li> </ul>
	<p style="text-align: center;"><b>Producers</b></p> <ul style="list-style-type: none"> <li>▪ Les Aromes du Maroc ; Production et transformation – Aromas of Morocco : Production and processing -</li> <li>▪ Al Khouzama Cooperative</li> <li>▪ Ouest Marocain – Moroccan West -</li> <li>▪ Les amandiers – Almond Trees -</li> <li>▪ 4 Seasons Plantations</li> <li>▪ Ste Rachidi – Rachidi Inc, -</li> <li>▪ UNIVET</li> <li>▪ Coopérative des PAM de Khenifra – AMP Cooperative of Khenifra -</li> <li>▪ Cooperative Beni Yaala Zkara de Jerada 6 Beni Yaala Zkara Cooperative of Jerada -</li> <li>▪ Centre des Herboristes et des Huiles Naturelles - Herbalists and natural oils Center</li> </ul>

<b>American Participants</b>
<ul style="list-style-type: none"> <li>▪ Global Scents of Adventure</li> <li>▪ Penn State University</li> <li>▪ The Vetiver Network (International)</li> </ul>

### Annex 3 : List of companies and professionals in the AMP sector

NAME	ACTIVITY	CONTACT INFORMATION
Benider Mohamed SOCOPRAG	Dried plants, verbena growing (modern culture) (Production, processing and trading)	483, Quartier Sidi Ghanem, Marrakech Tel : 04 44.66.72 Fax : 04 44.60.34
Chater Ahmed Soplarma	Herbs and essential oils (Production and trade)	82 Bis, Azli Quartier Industriel, Marrakech Tel : 04 34.94.03 Fax : 04 3.18.47
Raji; Les plantes du Soleil	Herbs and essential oils (Production and trade)	N°41 Ibn Marine, Appt. 1, Marrakech Tel : 04 44.53.52 Fax : 04 42.79.21
HAJ JAWAD Lahcen HEDISMAR	Herbs and essential oils (Production and trade)	42 Bis, Arsat Aouzal Bab Doukkala, Marrakech
Aboukassim El Hassan Nassimo-El-ward	Herbs and essential oils (Production and trade)	1, Rue Ghana, N°22, Meknès Tel : 05 52.17.84 Fax : 05 52.41.80
Bahouss Abdelatif Caroube Ikhlass	Carob, essential oils (Production and trade)	B.P. 111- Meknès Tel : 05 55.09.29 Fax : 05 52.28.99
ELAZIZ Abdellah (délégué commercial) HERBEX	Packaging of medicinal and aromatic plants in infusettes; brand: Pharmaflöre - (processing)	Km 4, B.P. 130, Mohammadia-Est Tel : 03 32.32.60 Fax : 03 32.35.96
RACHIDI ALAOUI Hafid, Sté RACHIDI	Essential Oils (Production and trade)	Av., Hassan II Ahadaf, Azrou Tel : 05 56.13.94 Fax : 05 56.37.05
CHEDDADI Lahcen	Essential Oils (Production)	Bni Makkada Hay Saâda Ksibat Rue 4 N°19
EL YOUNSI Haddou Sté HADDOU ET FILS	Essential Oils (Production and trade)	5, Av. M'hamed El Khateb, Tetouan Tel : 09 96.72.91 Fax : 09 96.45.15
BENKIRANE Ahmed Sté SOMEDCA	Herbs and essential oils (Production and trade)	Quartier industriel, Rue de Fès, Ouezzane Tel : 07 90.76.58
BENNANI Khalid Sté SANTIS TRADE	Herbs and essential oils (Production and trade)	7, Rue Abou Ghaleb Chiani Casablanca Tel : 02 23.74.16 Fax : 02 23.68.57
BACHA Bouchta	Essential oils (Production)	B.P. 192-Sidi Slimane Tel : 07 50.12.35
AL HACHAMI Mohammed	Essential oils (Production)	Azrou Tel : 05 56.62.28
M'HAMEDY Youssef Sté SUOREX	Herboristerie et huiles essentielles (production et négoce)	34, Rue Mauritania, Guebs, Marrakech Tel et Fax : 04 30.42.48
CHERRAT Mohammed	Herbs and essential oils (Production and trade).	Ouezzane
KHARBOUCHE	Mint farmer	Rue 28 N° 20 Toulal - Meknès
AGRIN MAROC	Producer, processor and exporter of dried aromatic and medicinal plants	Quartier Industriel Sidi Brahim – BP 1683 – 30003 Fès Tél : 035 64.14.63 / Fax : 035 64.02.26 E-mail : MouhssineC@agrinmar Site web : <a href="http://www.agrinmaroc.co.ma">www.agrinmaroc.co.ma</a>
AROMAFRESH	Groupe Herbex – Herbex Group -, AMP producer	23, Av. Alger – BP 714, Larache Tél : 039 91.43.95 E-mail : aromafresh@menara.ma
Coopérative Al Khouzama – Al	Producer and seller of fresh and dried lavender, and essential oils	Hay PAM N° 126, Oulmès centre Fax : 037 5230.88

Khouzama Cooperative -		
Coopérative Jerada – Jerada Cooperative -	AMP producer and collector, especially rosemary (dried and essential oils)	Rue de la post N° 4 Jerada Tél : 036 68.34.50 Fax : 036 68.84.22
Distillateur de Sidi Slimane – Distiller of Sidi Slimane -	Distillation of AMP	Ben Slimane BP 192 Tél : 037 50.32.63
EL ALAMI Abdellah	AMP and essential oils producer	5 lot Benjelloun Av. Mohamed El Kassi Fès Tél : 035 74.82.45
ERELEM	Essential oils production	Z.I. du Sahel, Had Soualem, lot 144, Had Soualem Tél : 022 96.44.25 Fax : 022 96.45.64 E-mail : <a href="mailto:erelem@techno.net.ma">erelem@techno.net.ma</a>
Ferme « Chetouani Chikh » - « Chetouani Chikh » Farm	AMP Producer	Oujda Fax : 036 68.49.02
Ferme Ain Smar Sfrou – Ain Smar Farm -	Producteur PAM	84 Rue Imam Malik N° 6 Fès E-mal : <a href="mailto:cherif163@yahoo.fr">cherif163@yahoo.fr</a>
L'Herbier de l'Atlas – The herbarium of the Atlas -	AMP wholesale production and exportation	187, Q.I Sidi Ghanem- Route de Safi-Marrakech, Maroc Tél : 024 33.58.34 / Fax : 024 33.58.35 E-mail : <a href="mailto:benider@menara.ma">benider@menara.ma</a> Site web : <a href="http://www.herbier-atlas.com">www.herbier-atlas.com</a>
Les AROMES du MAROC – The aromas of Morocco -	Production and marketing of essential oils, concretes and absolutes for fine perfumery, cosmetics and aromatherapy	Agroparc, Km 5, Route d'Azemmour 21000 Casablanca Tél : 022 89.69.15 E-mail : <a href="mailto:latrach@somaines.co">latrach@somaines.co</a>
Pépinière EL Khatabi – El Khatabi nursery -	AMP farmer	10 Bld. Hassan II Hay Essalam El Kbab Khénifra Fax : 035 38 42 58 E-mail : <a href="mailto:elkhatabi2@wanadoo.fr">elkhatabi2@wanadoo.fr</a> E-Mail: <a href="mailto:melkhatabi@menara.ma">melkhatabi@menara.ma</a>
Producteur de Debdou –Producer of Debdou -	AMP producer in Debdou	CR Sidi Ali Ben Kacem Kayadat El Gaada, Dairat Debdou Province de Taourirt
SANTIS	AMP production and exportation company	7, Rue Abou Ghaleb Chiani 20100 , Casa Tél : 022 23.74.07 / 022 23.74.16 Fax : 022 23.68.57 E-mail : <a href="mailto:santis@santis-co.com">santis@santis-co.com</a> Site web : <a href="http://www.santis-co.com">www.santis-co.com</a>
SBA	AMP distillation	SBA Quartier Industriel, route de Fès B.P 43, 16200 Quazzane Tél : 037 90.77.51 Fax : 037 90.85.70
Sté Rachidi – Rachidi Inc -	AMP producer	423 Rue Souhil Ben Kacem Bir Rami EST Kénitra Tél : 037 36.05.58 Fax : 037 37.33.05 E-mail : <a href="mailto:rachidi@menara.ma">rachidi@menara.ma</a>
TAROMED	Essential oils producer	IAV Hassan II BP 6202 Rabat-Instituts, Rabat Tél : 035 58.91.56
Wadnaselixir	AMP production, processing and marketing: raw AMP. Essential oils. AMP honey (lavender, rosemary,	Rabat Tél : 062 56.86.69 E-mail : <a href="mailto:wadnas.elixir@gmail.com">wadnas.elixir@gmail.com</a>

	thyme, oregano)	
4 SEASONS PLANTATIONS SARL - 4 SEASONS PLANTATIONS Limited liability company -	Producer and exporter of fresh and dried AMP	239 Hay Nahda Complement 1 Rabat Tél : 037 65.60.23 Fax : 037 65.60.22 E-mail : <a href="mailto:4SP@gmail.com">4SP@gmail.com</a>
Aromweb	Exportation of essential oils and aromatic plants	
Atlas Naturel Products	Essential oils exporter and distiller	CR Mrija par Guercif BP 56 Fax : 035 20.05.43
Baba Sidi Herbs	Company specialized in the production and export of aromatic and medicinal plants, and essential oils	BP 7034 Sidi Abbad Marrakech Tél : 024 30.43.89 Fax : 024 30.52.87 E-mail: <a href="mailto:babasidi-herbs@menara.ma">babasidi-herbs@menara.ma</a> Site web : <a href="http://www.babasidi-herbs.com">www.babasidi-herbs.com</a>
Derrij & Fils - Derrij & Sons -	Producers and exporters of AMP, spices and essential oils since 1988	25 Av. Hassan II Casablanca Tél : 022 26.88.68 / Fax : 022 27.76.14 E-mail : <a href="mailto:derrifherbes@wanadoo.fr">derrifherbes@wanadoo.fr</a> Site web : <a href="http://www.derrijetfils.iffrance.com">www.derrijetfils.iffrance.com</a>
Ets Benchaib	Import Export Herboristerie, Huiles essentielles et épices	Rue Soldat Raphael Mariscal Ain Borja 20300 Casablanca Tél : 022 62.02.98 / 022 61.81.55 Fax : 022 62.02.78 E-mail : <a href="mailto:benchaib@benchaib.net">benchaib@benchaib.net</a> Site web : <a href="http://www.benchaib.ma">www.benchaib.ma</a>
Florarome	Essential oils exporter	54 Lot Ennamae QI Bensouda Fès E-mail: <a href="mailto:moroccan oils@yahoo.com">moroccan oils@yahoo.com</a>
Haddou et Younoussi et Fils – Haddou and Younoussi and Sons -	Essential oils exporter and producer	5, Rue M'hammad Al Khatib, Tétouan Tél : 039 96.72.91 / 039 70.49.00 Fax : 039 96.45.15 E-mail : <a href="mailto:haddou@haddou.ma">haddou@haddou.ma</a> Site web : <a href="http://www.haddou.ma">www.haddou.ma</a>
Lancaster International	AMP exporter	N° 11, Rue La Gramta APTT: 4 Oasis Casablanca Tél : 022 23.70.44 E-mail : <a href="mailto:peterston@securenym.net">peterston@securenym.net</a>
L'Atlas du Caroubier – The atlas of Carob -	Exportation of carob seeds and AMP as is	Fès E-mail : <a href="mailto:hakim34@yahoo.fr">hakim34@yahoo.fr</a>
MARJAC	AMP products exporter	11, Rue Ibrahim Hafid-ex Chateaubriand, Casablanca 20000 Tél : 022 26.04.47 Fax : 022 26.50.54
Mokawalat Al Antaki	AMP exporter	Z3, R 15 Hay Benis Bel Khayat, Fès Tél: 035 70.31.83 E-mail: <a href="mailto:rachdi_int_aintaki@hotmail.com">rachdi_int_aintaki@hotmail.com</a>
NASSIMO EL WARDE Sarl - NASSIMO EL WARDE Limited Liability Company-	Distillation and exportation of plant essential oils	1, Rue Ghana Meknès Tél : 035 52.17.84 Fax : 035 40.20.03 E-mail : <a href="mailto:Nassimo-el-warde@menara.ma">Nassimo-el-warde@menara.ma</a>
Naturex	Distillation and extraction of aromatic and medicinal plants	Technopole Nouasser BP 42, 20240 Nouasser, Casablanca Tél : 022 53.89.41 Fax : 022 53.89.95 E-mail : <a href="mailto:naturexmaroc@naturex.com">naturexmaroc@naturex.com</a> Site web : <a href="http://www.naturex.com">www.naturex.com</a>

Herbalist Elarbi Hechlaf	Herbalist	E-mail : <a href="mailto:etoilledunord@hotmail.com">etoilledunord@hotmail.com</a>
Herbalist Amarti Ejjilali	Herbalist	Av. Layoun N° 30 El Hay Jadid Arfoud Fax : 035 58.84.86
Herbalist Kamal Mohamed	Herbalist	
Herbalist Abaazzahrae	Herbalist	Route de Sefrou, elnarjiss, Bld El Wafa, Rue Tan Tan, N° 55 Fès Tél : 035 61.47.92 / Fax : 035 61.54.10
VIALYS	Exporter and distiller of essential oils	119, Av. des FAR Casablanca Tél : 022 44.89.52 / Fax : 022 44.99.46 E-mail : <a href="mailto:karimataktak@vialys-export.com">karimataktak@vialys-export.com</a> Site web : <a href="http://www.vialys-export.com">www.vialys-export.com</a>
ZAKAMEX	AMP collection and processing into essential oils in addition to packaging	BP 107, Meknes Fax : 035 46.91.22 E-mail : <a href="mailto:zakamex@yahoo.fr">zakamex@yahoo.fr</a>
Biolandes Maroc	Producer, processor, exporter	BP 87 Khémisset Tél : 037 55.26.18 / Fax : 037 55.45.74 E-mail : <a href="mailto:bioandes@iam.net.ma">bioandes@iam.net.ma</a>
Centres des Huiles & des Herbes Naturelles – Natural oils and herbs centre -	Natural herbs preparation	Jardin du Kadi, Rue 175, N° 2 Kénitra Fax : 037 36.38.95
Phytobio Aroms	Laboratory specialized in manufacturing natural products	Casablanca Tél : 022 43.04.48

**Annex 4 : List of the main aromatic and medicinal plants in Morocco**  
**According to (Hmamouchi, M. 2002) ; Rejdali ;1999) ; etc**

Scientific Name	English Name	Family	Part used	Uses
Acacia gummifera / radiana	Gum	Mimosaceae	Resin	AM
Achilea ptarmica / millifolium	Milfoil	Compositae	Aerial part	AM
Adiantum capillus veneris	Montpellier Capillary	Polypodiaceae		
Agave americana	Agave	Agavaceae	Seed	MIT
Agropyron repens	Quack grass	Poaceae	Rhizome, broom, Leaves	VM
Ajuga iva	Bugle	Lamiaceae	Aerial part	MI
Allium cepa	Onion	Aliaceae	Bulb, Leaves, Seed	FM
Allium sativum	Garlic	Aliaceae	Bulb	FIMA
Aloes ferox	Aloe	Aliaceae	Leaves sap	M
Aloe vera/vulgaris	Aloe	Aliaceae	Juice	M
Amaranthus sp	Amaranth	Amarantaceae		
Ammi Visnaga	Visnaga	Apiaceae	Fruit, flower	MIT
Anagallis arvensis	Scarlet pimpernel	Primulaceae		
Anchusa officinalis	Anchusa	Boraginaceae		
Anethum foeniculoides Maire & Weil	Fennel	Apiaceae	Aerial part	AFM
Anethum graveolens L.	Bastard fennel	Apiaceae	Seed, Aerial part	AM
Angelica archangelica	Angelica	Apiaceae	Stems, Roots, Leaves, Seed	A
Anthemis nobilis	Chamomille	Compositae	Flower	AMT
Anvillea radiata Coss		Asteraceae	Whole plant	MFP
Apium graveolens	Lovage cooking herb	Apiaceae	Seed, Leaves	AM
Apium graveolens var: rapaceum	Celery	Apiaceae		
Arbutus unedo	Strawberry tree	Ericaceae		
Arctium lappa	Burdock	Compositae		
Aristolochia longa	Aristolochia	Aristolochiaceae	Aerial part	AM
Armoracia rusticana	Horseradish	Brassicaceae		
Artemesia absinthium	Absynthe	Compositae	Aerial part	AM
Artemesia herba-alba (Asso)	White mugwort	Asteraceae	Aerial part	AM
Arum maculatum	Lords-and-ladies	Araceae		
Asarum europaeum	European wild ginger	Aristolochiaceae	Aerial part	AM
Asparagus officinalis	Asparagus	Asparagaceae	Aerial part	M
Asparagus acutifolius L.	Wild Asparagus	Liliaceae	Roots, Rhizome, Young shoots	M
Asphodelus acaulis	daffodil	Aliaceae		
Astrantia major	Astrantia major	Apiaceae		
Atractylis gummifera	Glue thistle	Solanaceae	Roots	M
Avena sauva	Oat	Poaceae		
Beta vulgaris	Cultivated beet	Amaranthaceae		
Borrago officinalis	Borage	Boraginaceae	Leaves, Flowers	A

<i>Brassica napus</i>	Turnip	Brassicaceae		
<i>Brassica nigra / sinapis alba</i>	Black mustard	Brassicaceae		
<i>Brassica oleracea</i>	Cabbage	Brassicaceae	Leaves, Graine	AM
<i>Bryonia dioica</i>	White bryony	Cucurbitaceae		
<i>Calamintha officinalis</i>	Calamint	Lamiaceae		
<i>Calystegia sepium</i>	Hedge Bindweed	Convolvulaceae		
<i>Camomilla suaveolens</i>	unsavoury chamomile	Compositae		
<i>Cannabis sp</i>	Cannabis (cultivated hemp)	Moraceae	Aerial part	AMT
<i>Capparis spinosa</i>	Caper tree	Capparidaceae	Fruit	MF
<i>Capsella bursa pastoris</i>	Shepherd's-purse	Brassicaceae		
<i>Capsicum annum</i>	Pimento, Pepper	Solanaceae	Fruit	A
<i>Carduus marianus</i>	Milk thistle	Compositae	Leaves, Seed	M
<i>Carrum carvi</i>	Caraway	Apiaceae	Seed	M
<i>Cedrus atlantica</i>	Cedar	Pinaceae	Aerial part	AM
<i>Centaurea calcitrapa</i>	Purple/red starthistle	Compositae		
<i>Celtis australis</i>	Hackberry/ Lote tree	Cannabaceae		
<i>Centaurea cyanus</i>	Cornflower	Compositae		
<i>Centaurium erythrea</i>	Lesser centaury	Gentianaceae		
<i>Ceratonia siliqua</i>	Carob tree	Cesalpinieae	Fruit pulp	M
<i>Cetraria islandica</i>	Iceland moss	Parmeliaceae		
<i>Chamaerops humilis</i>	Fan palm	Arecaceae		
<i>Chenopodium ambrosioides</i>	Epazote	Amaranthaceae	Leaves, Seed	AM
<i>Cistus albidus / C. Salviifolius</i>	White cistus / Salvia Cistus	Cistaceae	Aerial part	AMI
<i>Citrullus vulgaris</i>	Watermelon	Cucurbitaceae		
<i>Citrus bigaradia</i>	Sour orange tree	Rutacées		
<i>Citrus limonum</i>	Citronnier	Rutaceae	Bark, Leaves, Fruit juice	AFM
<i>Citrus sinensis</i>	Orange	Rutaceae		
<i>Cleome arabica</i>	Cleome arabica	Cleomaceae		
<i>Cnicus benedictus</i>	Knapweed	Compositae		
<i>Colchicum automnale</i>	Autumn crocus	Aliaceae		
<i>Conyza canadensis</i>	Fleabane	Compositae		
<i>Colocynthis vulgaris Schrader</i>	Gourd	Cucurbitaceae	Aerial part	M
<i>Coriandrum sativum</i>	Coriander	Apiaceae	Aerial part, Graine	AFM
<i>Corriogiola telephifolia</i>	Corriogiola telephifolia	Caryophyllaceae	Roots	M
<i>Cucumis melo</i>	Melon	Cucurbitaceae		
<i>Crocus sativus</i>	Saffron	Iridaceae	Stigmas	AFM
<i>Cucumis sativus</i>	Cucumber	Cucurbitaceae		
<i>Cucurbita pepo</i>	Squash	Cucurbitaceae		
<i>Cupressus sempervirens</i>	Cypress	Cupressaceae	Leaves, fruit	AM

<i>Cydonia oblonga</i>	Quince tree	Rosaceae		
<i>Cynara cardunculus</i>	Cardoon	Compositae		
<i>Cynara scolymus</i>	Artichoke	Compositae	Leaves, stem	M
<i>Cynoglossum</i> sp	Hound's tongue	Lamiaceae		
<i>Cytisus scoparius</i>	Broom	Fabaceae		
<i>Daphne gnidium</i>	Flax leaved daphne	Thymeleaceae	Leaves	M
<i>Datura stramonium</i>	Jilsonweed	Solanaceae	Flower, Seed	MIT
<i>Daucus carotta</i>	Carrot	Apiaceae	Rhizome	AMF
<i>Delphinium staphysagria</i>	Staphisagria	Ranunculaceae	Seed	TM
<i>Dryopteris filix..mas</i>	Fern	Aspidiaceae		
<i>Ecballium elaterium</i>	Wild cucumber	Cucurbitaceae		
<i>Emex spinosa</i>	Lesser jack	Polygonaceae		
<i>Equisetum arvense</i>	Field horsetail	Equisetaceae		
<i>Erica arborea/umbellata</i>	Heather	Ericaceae		
<i>Eriobotria japonica</i>	Loquat tree	Rosaceae		
<i>Erodium salzmanni</i>	Erodium	Geraniaceae		
<i>Eucalyptus globulus</i>	Eucalyptus	Myrtaceae	Feuille	AM
<i>Euphorbia amygdaloïdes</i>	Wood Spurge	Euphorbiaceae		
<i>Euphorbia resinifera</i>	Resin Spurge	Euphorbiaceae	Latex Resin	TM
<i>Foeniculum vulgare</i>	Fennel	Apiaceae	Seeds, Leaves, petioles	A
<i>Fumaria ouazzanensis</i>	Fumitory	Fumariaceae		
<i>Galium aparine</i>	Cleavers	Rubiaceae		
<i>Geranium robertianum</i>	Herb Robert	Geraniaceae		
<i>Glechoma hederacea</i>	Ground ivy	Lamiaceae		
<i>Grataegus laciniata</i>	Oriental hawthorn / Silver thorn	Rosaceae		
<i>Hedera helix</i>	Common ivy	Araliaceae	Leaves	M
<i>Helianthus annuus</i>	Sunflower	Compositae		
<i>Hordeum vulgare</i>	Barley	Poaceae	Graine, son	FM
<i>Horundo donax</i>	Reed	Poaceae		
<i>Hyoscyanus niger</i>	Henbane	Solanaceae		
<i>Inula viscosa</i>	Inula viscosa	Compositae	Leaves, Roots	M
<i>Iris germanica</i>	German iris	Iridaceae		
<i>Juglans regia</i>	Walnut Tree	Juglandaceae	Fruit, Fruit bark, Trunk bark, Leaves	AM
<i>Juncus acutus</i>	Spiny rush	Juncaceae	Aerial part	MI
<i>Juniperus phoenicea</i>	Phoenicean Juniper	Cupressaceae		
<i>Lactuca sativa</i>	Lettuce	Compositae		
<i>Lactuca virosa</i>	Bitter lettuce	Compositae		
<i>Lamium album / flexuosum</i>	Deadnettle	Lamiaceae		
<i>Lapsana communis</i>	Nipplewort	Compositae		
<i>Laurus nobilis</i>	Bay laurel	Lauraceae	Leaves, Fruit	AM
<i>Lavandula dentata / officinalis</i>	Lavender	Lamiaceae	Aerial part	AMI
<i>Lavandula multifida</i>	Branched lavender	Lamiaceae	Aerial part	AMI

<i>Lavandula stoechas</i>	Topped lavender	Lamiaceae	Aerial part	AMI
<i>Lavatera cretica</i>	Cornish mallow	Malvaceae		
<i>Lawsonia inermis</i>	Henna	Lythraceae	Aerial part	MI
<i>Lens culinaris</i>	Lens	Fabaceae		
<i>Lepidium sativum</i>	Watercress	Brassicaceae		
<i>Levisticum officinale</i>	Lovage	Apiaceae		
<i>Linum usitatissimum</i>	Cultivated flax	Aliaceae	Seed	M
<i>Lycopodium clavatum</i>	Lycopodium	Lycopodiaceae		
<i>Malus communis</i>	Apple tree	Rosaceae		
<i>Malva sylvestris</i>	Marshmallow	Malvaceae		
<i>Marrubium vulgare</i>	White horehound	Lamiaceae		
<i>Maurus alba</i>	White mulberry			
<i>Medicago sativa</i>	Alfalfa	Fabaceae	Young shoot	M
<i>Melilotus officinalis</i>	Yellow Sweet Clover	Fabaceae	Leaves, Flowers	A
<i>Mentha piperita</i>	Peppermint	Lamiaceae	Leaves	A
<i>Mentha pulegium</i>	Pennyroyal	Lamiaceae	Aerial part	AFM
<i>Mentha rotundifolia</i>	False apple-mint	Lamiaceae	Leaves, Stem	AFM
<i>Mentha viridis</i>	Green mint	Lamiaceae	Aerial part	AFM
<i>Mercurialis annua</i>	Annual mercury	Euphorbiaceae		
<i>Mondragora autumnalis</i>	Autumn mandrake	Solanaceae		
<i>Myrtus communis</i>	Myrtle	Myrtaceae	Leaves, Flowers	AMI
<i>Narcissus sp</i>	Narcissus	Liliaceae		
<i>Nerium oleander</i>	Oleander	Apocynaceae	Stem,Leaves	AMTI
<i>Nicotiana tabacum</i>	Tobacco	Solanaceae		
<i>Nigella sativa</i>	Black cumin	Renunculaceae		
<i>Ocimum basilicum</i>	Basil	Lamiaceae	Leaves, Seeds	
<i>Olea europea</i>	Olive tree	Oleaceae		
<i>Olea europea var. oleaster</i>	Wild olive tree	Oleaceae		
<i>Ononis natrix</i>	Large yellow restharrow	Fabaceae	Aerial part	MIT
<i>Ononis spinosa</i>	Spiny restharrow	Fabaceae		
<i>Opuntia fucus – barbarica</i>	Cactus	Apocynaceae		
<i>Origanum compactum</i>	Bentham	Lamiaceae		
<i>Origanum majorana</i>	Majoram	Lamiaceae	Fresh or dried leaves	AM
<i>Origanum vulgare</i>	Oregano	Lamiaceae	Leaves	AM
<i>Ormenis mixta</i>	Wild Chamomile	Asteraceae	Aerial part	M
<i>Ormenis praecox</i>	Brownish chamomile	Asteraceae	Aerial part	M
<i>Oxalis acetosella</i>	Wood-sorrel	Oxalidaceae		
<i>Papaver rhoes</i>	Field poppy	Papaveraceae	Seed, Aerial part	MTI
<i>Papaver somniferum</i>	Opium poppy	Papaveraceae	Seed, Capsule	MT
<i>Pennisetum sp</i>	Millet	Poaceae		
<i>Peganum harmala</i>	Harmal	Nitrariaceae	Seed, Root	TIM
<i>Phalaris sp</i>	Canarygrass	Poaceae		
<i>Pimpinella anisum</i>	Anise	Apiaceae	Seed	AM

<i>Pinus halepensis</i>	Aleppo pine	Pinaceae	Aerial part	M
<i>Pinus sylvestris</i>	Scots pine	Pinaceae	Buds, Leaves	M
<i>Pistacia atlantica</i>	Betoum	Anacardiaceae	Fruit, Leaves	M
<i>Pistacia lentiscus</i>	Mastic	Anacardiaceae	Bark	AM
<i>Pisum sativum</i>	Peas	Fabaceae		
<i>Plantago coronopus</i>	Buck's horn plantain	Plantaginaceae		
<i>Polygonum aviculare</i>	Common Knotgrass	Polygonaceae		
<i>Polygonum bistorta</i>	Common bistort	Polygonaceae		
<i>Polypodium vulgare</i>	Common polypody	Polypodiaceae		
<i>Populus alba</i>	White poplar	Salicaceae	Leaves, Bark	M
<i>Portulaca oleracea</i>	Pigweed	Portulacaceae	Aerial part	FVIM
<i>Prucus carica</i>	Fig tree	Moraceae		
<i>Prunus amygdalus</i>	Almond tree	Rosaceae	Seed	M
<i>Prunus armeniaca</i>	Apricot tree	Rosaceae	Leaves	M
<i>Prunus domestica</i>	Plum tree	Rosaceae		
<i>Prunus persica</i>	Peach tree	Rosaceae	Leaves	M
<i>Pulmonaria officinalis</i>	Lungwort	Boraginaceae	Whole plant	M
<i>Pyrethrum cinerariifolium</i>	Pyrethrum	Compositae		
<i>Pyrus communis</i>	Pear tree	Rosaceae	Fruit, Leaves	M
<i>Quercus suber/rotundifolia/tozaie/zeen</i>	Cork/Holm/Pyrenean/ZeenOak	Fagaceae	Aerial part	M
<i>Raphanus sativus</i>	Cultivated radish	Brassicaceae		
<i>Reseda alba</i>	White mignonette	Resedaceae		
<i>Ribes uva - crispa /alpinum</i>	Gooseberry/Red current	Saxifragaceae		
<i>Ricinus communis</i>	Castorbean	Euphorbiaceae	Aerial part	ATM
<i>Rosa centrifolia/damascena</i>	Rose tree	Rosaceae	Flower	AM
<i>Rosa sempevirens / canina</i>	Evergreen/Dog rose	Rosaceae	Fruit	M
<i>Rosmarinus officinalis</i>	Rosemary	Lamiaceae	Leaves	AM
<i>Rubia peregrina</i>	Wild madder	Rubiaceae		
<i>Rubus ulmifolius</i>	Elmleaf blackberry	Rosaceae		
<i>Rumex acetosa</i>	Garden sorrel	Polygonaceae	Leaves	M
<i>Ruta montana</i>	Wild rue	Rutaceae	Aerial part	AM
<i>Rota chalepensis</i>	Egyptian rue	Rutaceae		
<i>Salix babylonica</i>	Peking/Babylon willow	Salicaceae		
<i>Salvia lavandifolia / officinalis</i>	Sage	Lamiaceae	Leaves, Flowers	AM
<i>Saponaria officinalis</i>	Saponaria	Caryophyllaceae	Roots, Leaves	TM
<i>Scolymus hispanicus</i>	Common Golden Thistle	Asteraceae	Aerial part	IM
<i>Secale cereale</i>	Rye	Poaceae		
<i>Sedum acre/Sedifonne/modestum</i>	Stonecrap	Crassulaceae		
<i>Sesamum indicum</i>	Sesame	Pedaliaceae	Seed	AM

<i>Sisymbrium officinale</i>	Common hedge mustard	Brassicaceae		
<i>Smilax aspera</i>	Rough bindweed	Aliaceae	Leaves, Roots	M
<i>Solanum melongena</i>	Eggplant	Solanaceae		
<i>Solanum nigrum</i>	Black nightshade	Solanaceae	Berry, Stem, Leaves	MFIT
<i>Succisa praemorsa</i>	Aschers	Dipsacaceae		
<i>Symphytum officinale</i>	Comfrey	Boraginaceae		
<i>Tamarix articulata</i>	Tamarix	Tamaricaceae	Fruit	M
<i>Taraxacum officinale</i>	Dandelion	Compositae		
<i>Tetraclinis articulata</i>	Barbary thuja/Sandarac	Cupressaceae	Leaves, Twigs	M
<i>Thymus broussoneti</i> <i>Vulgaris</i>	Thyme	Lamiaceae	Feuille, Sommités fleuries	AFM
<i>Thymus serpyllum</i>	Thyme	Lamiacées	Feuille, Plante fleurie	AFM
<i>Thymus satureoides</i>	Thyme	Lamiacées	Feuille, Plante fleurie	AFM
<i>Trifolium repens</i>	White clover	Fabaceae		
<i>Trigonella foenum-graecum</i>	Fenugreek	Fabaceae	Seed	M
<i>Umbilicus rupestris / horizontalis</i>	Navelwort/ horizontal navelwort	Crassulaceae		
<i>Urginea scilla</i>	Sea squill	Aliaceae		
<i>Urtica urens / dioica</i>	Stinging nettle	Urticaceae	Leaves, Stem, Seeds	TM
<i>Valeriana officinalis</i>	Valerian	Valerianaceae		
<i>Verbascum Thapsus</i>	Great or Common Mullein	Scrophulariaceae		
<i>Verbena officinalis</i>	Verbena	Valerianaceae	Leaves, Flower, Roots	AFM
<i>Viburnum tinus</i>	Laurestine	Caprifoliaceae	Whole plant	MI
<i>Vicia faba</i>	Bean	Fabaceae		
<i>Vitex agnus castus</i>	Chaste tree = Vitex	Lamiaceae	Seed	AM
<i>Vitis vinifera</i>	Common grape vine	Vitaceae	Leaves, Fruit	FM
<i>Zea mays</i>	Maize	Poaceae	Stigma	M
<i>Zizyihus lotus</i>	Jujube tree	Rhamnaceae	Fruit, Bark	FVM
<i>Zygophyllum gaetulum</i>		Zygophyllaceae	Aerial part	FVM

### Legend

**F** : Food

**M** : Medicinal

**T** : Toxic

**A** : Aromatic

**C** : Condimental

**S** : Spice

**I** : Industry

**V** : Veterinary

## Annexe 5 : List of the main aromatic and medicinal plants cultivated in Morocco

ESPECES	PRINCIPALES REGIONS
Lavender	Khemisset- Oulmes
Mint	All regions of Morocco
Verbena	Haouz
Henna	Ouarzazate _ Errachidia
Rose tree	Ouarzazate - Khemisset
Iris	Marrakech
Coriander	Gharb – Loukous – Tadla – Tafilalt - Al Houceima - Beni Mellal – Casablanca – Chefchaoun – Essaouira – Fes – Figuig – Khenifra – Marrakech – Meknes - Nador – Oujda – Settât - Sidi Kacem – Taounate - Tetouan
Pepper	Doukkala – Haouz - Moulouya – Tadla – Tafilalt - Al Hoceima - Beni Mellal – Casablanca – Chichaoua – Marrakech - Mekhnès – Nador - Settât - Sidi Kacem
Parsley	Tadla – Tafilalet – Al Houceima – Essaouira – Fès – Meknes – Nador – Oujda – Sidi Kacem – Tetouan
Saffron	Taroudant
Garlic	Chefchaouen - Meknes – Oujda - Tetouan
Fenugreek	Gharb – Chefchaouen – Safi – Settât – Sidi Kacem – Taounate
Anise	Chefchaouen – El Hajeb – Taounate
Black cumin	Chefchaouen – Essaouira -
Cumin	Tafilalet – Chichaoua – Essaouira – Figuig
Basil	Agadir
Oregano	Chefchaouen - Taounate
Thyme	Tafilalet – Marrakech - Taounate
Safflower	
Orange Tree	Khemisset
Jasmin	Khemisset
Carob tree	Chefchaouen – Marrakech – Nador – Sidi Kacem - Taounate
Pennyroyal	Taounate
Sage	Tetouan
Absinth	Guelmim – Khenifra - Nador - Taounate
Caraway	El Hajeb - Ifrane
Sesame	Haouz – Tadla – Beni Mellal – Fes
Celery	Tadla – Tafilalet – Al Houceima – Meknes – Nador – Oujda - Tetouan
Fennel	Tadla – Tafilalet – Casablanca – Chichaoua – Essaouira – Meknes - Taounate