



Islamic Republic of Iran
Ministry of Industry, Mine, and Trade



National Export Strategy 2021-2025

Medicinal Herbs Strategy

Preserve and share traditional Iranian
plant knowledge with the world





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FOREWORD

BY THE MINISTRY OF INDUSTRY, MINE, AND TRADE



Non-oil exports have become increasingly important to Iran in recent years. Increasing international trade is not only a means of boosting economic growth and the nation's welfare, but also contributes to strengthening international relations and the stabilization of economic and political affairs by paving the way for reinforcing friendly relations based on mutual interests with a wide range of trade partners. Trade is one of the most important forms of exchange between countries and fostering this will lead to connections such as foreign investments, scientific and technical exchanges, and cultural relations, all of which will contribute to the country's growth and prosperity in all respects. Hence, expanding trade would provide a basis for development in other areas of cooperation and is of great importance from this perspective. In addition to substantial investment to expand export potential, growing foreign trade requires strategic targeting as well as addressing constraints. In this context, Iran's Trade Promotion Organization developed a National Export Strategy (NES) with the support of the International Trade Center (ITC) that has similar experience in designing NES in more than 50 countries. The strategy is going to cover general trade-related factors such as ensuring export quality that is relevant to the export of all goods. It also addresses a number of sector-specific strategies in form of independent strategies. All activities in the framework of designing strategies have led to diagnosing sets of plans of actions in order to tackle issues and problems to facilitate export procedures.

The plan of actions indicated in the strategies will be implemented by I-TPO in close collaboration with national stakeholders during the next 5 years and I-TPO will enjoy ITC support during the implementation period.

I would like to thank each and every entity from the private sector, distinguished exporters as well as managers and exports from various ministries and institutions who have contributed to the development of the NES and sincerely appreciate their contributions. Also, the initiative would not be successful without supports from the European Union and the ITC. We hope all contributors to the designing of the NES would continue their support to the I-TPO during the course of implementation of the recommended actions so that we achieve the goals of this strategy in practice and we witness the export promotion of non-oil exports in our country.

Ministry of Industry, Mine, and Trade

FOREWORD

BY IRAN'S TRADE PROMOTION ORGANIZATION



The ITPO signed a Memorandum of Understanding with the International Trade Centre (ITC) in 2016 in order to benefit from its expertise in expanding non-oil exports. One of the most important clauses of this MOU concerned the development of the NES. Implementation of the memorandum materialized after the European Union (EU) made a fund available for the ITC to provide technical assistance to ITPO in 2018. The NES development process started at the beginning of the Iranian year 1398 (April 2019), enjoying the technical assistance of the ITC as well as the contribution of international experts. The result of the 1.5 years of cooperation is now being presented to you.

The following points as regards these documents are worth mentioning:

- The NES has been developed in collaboration with the public and private sectors, relying on the expertise of the ITC. In fact, public and private stakeholders in each sector were consulted by the experts of the ITC in the process of designing the NES and, therefore, the results are agreed upon by these entities. Reaching such a consensus on non-oil exports is unprecedented and thus the proposed plans of actions in the NES are of great importance.
- Around 500 key participants from the production and export sectors of the country have been consulted by the expert group of the ITPO and the ITC during the process of NES preparation.
- While proposed solutions envisaged in the document address Iran's specific problems, they also make use of worldwide experience and international expert's viewpoints.
- Independent International consultants have been consulted in addition to the ITC experts and their views have been reflected in the documents.
- International experts' field visits to production and export chains and sites played a key role in understanding the current situation and designing the NES.
- The implementation of planned activities of the NES will take several years and require the support of the ITC and international experts.
- Through the process of the NES development in each sector, a set of reviews, consultation with stakeholders, and also field visits were organized and strategic objectives were set in order to address problems and remove constraints at the first step; then, operational objectives were set under each strategic objective; after that, relevant activities were designed under each operational objective; and finally, a leading entity and its partners were listed for each activity. More than 350 actions have been designed in total. We expect that non-oil exports to be revolutionized as a result of the implementation of this plan of action. More information regarding the NES and expert recommendations are listed in the following table:

Sectors	Strategic Objectives	Operational Objectives	Activities
Fruits and Vegetables	3	11	47
Medicinal Herbs	3	13	40
Tourism	4	11	41
ICT	3	15	50
Auto parts	3	8	29
Petrochemicals	4	12	33
Trade information and Promotion	3	7	35
Quality Management	3	15	56
Entrepreneurship	3	10	28
Total	29	102	359

- The NES has been developed with the goals of:
 - o Fostering coherence and coordination between stakeholders at the sectoral and national levels;
 - o Elaborating a comprehensive approach to removing constraints and expanding exporting in priority sectors;
 - o Identifying and addressing exporters' needs for support services;
 - o Supporting the SMEs throughout the export process;
 - o Providing necessary training in priority sectors with the support of national and international experts;
 - o Developing export promotion and branding;
 - o Making effective use of ICT in export-oriented marketing; and
 - o Identifying and assigning appropriate entities for the implementation of the designed activities in the NES.

The design of the NES would not have been possible without the support of the ITC and its experts, who have experience in designing export strategies in more than 50 countries. The NES is also the result of cooperation between representatives of 17 national ministries and various organizations and stakeholders with mandates related to the promotion of non-oil exports. This collaboration benefitted the design of the NES. Also, the process enjoyed the network and sincere cooperation of Iran's Chamber of Commerce, Industry, Mine, and Agriculture in inviting the private sector to participate in consultation meetings and as a result, a large number of the private sector and associations' representatives and a variety of stakeholders were engaged. None of this would have taken place without the support of the EU and its work on "Trade for All" that is promoting economic and

trade relations between countries as the best way to secure worldwide stability and peace.

Therefore, the ITPO, for its part, appreciates all entities and individuals who contributed to the designing of the NES. We hope to be privileged to have support from all actors in the implementation phase of the NES. Like the designing of the document that has resulted from the contribution of a wide range of national and foreign institutions and individuals, its implementation also could not happen without relying on all of those actors. Therefore, the ITPO, during the implementation phase, will seriously maintain and strengthen the established mechanisms and networks built during the course of the NES development. We hope that this move proves to be a big step towards the promotion of the non-oil export of the country and contributes to the improvement of the Iranian nation's living standards.

[Iran's Trade Promotion Organization](#)



FOREWORD

BY THE INTERNATIONAL TRADE CENTRE



Iran's place between east and west has long put it in a pivotal position in global trade. With natural resources, a rich tourism offer, high-quality agricultural products and a well-rooted manufacturing industry, the country is well positioned to take the next step toward greater trade-led growth.

The country has the potential to leverage its assets to become a centre of innovative digital solutions. With its highly-educated and productive labour force and investment attractiveness Iran could position itself to be a major exporter to markets across the region and around the world.

These strengths have been cultivated in a challenging external context. But there have also been clear domestic constraints which have contributed to impeding the realization of Iran's potential for growth. However, the need to build greater economic resilience, especially with the impact of global pandemics, has taken centre stage.

Against this backdrop, Iran has developed its new National Export Strategy (NES). The document reflects a growing consensus on the need to focus on trade-led growth to complement domestic resilience.

Trade-led success will require consistent and organized efforts. In developing the strategy, key actors have acknowledged the need to tackle the private sector's critical challenges. The NES proposes tailored solutions and leverages the country's strengths and competitive advantages.

During the consultations for this NES, all stakeholders recognized the need for further policy convergence and stronger coordination at the level of institutions if the country was to move forward. This coherence is at the core of the NES – joining forces toward a shared vision and making strategic choices that further develop the economy. The NES provides a framework for setting priorities, coordinating action and defining concrete steps. It was designed through analysis and consultation involving hundreds of voices from across the public and private sectors and input from international market experts.

The International Trade Centre (ITC) commends the leadership of the Ministry of Industry, Mine and Trade, the Iran Trade Promotion Organization and applauds the enthusiastic involvement of the private sector in the design of this strategy. ITC will continue to support Iran to ensure that the objectives of the NES are attained rapidly to support greater inclusive, sustainable, and resilient development.

Finally, ITC wishes to thank the European Union for its support to this initiative as part of its EU-Iran Trade Development project.

Pamela Coke-Hamilton

Executive Director of the International Trade Centre

A handwritten signature in black ink, appearing to read 'P. Coke-Hamilton'.

ACKNOWLEDGMENTS

The Medicinal Herbs Strategy forms an integral part of Iran's National Export Strategy (NES). It was developed under the aegis of the Islamic Republic of Iran and the leadership of the Ministry of Industry, Mine and Trade (MoIMT) and the Trade Promotion Organization of Iran (ITPO), in close collaboration with the Ministry of Agriculture Jihad (MoAJ). This strategy was elaborated thanks to the technical assistance of the International Trade Centre (ITC) and falls under the framework of the project "European Union (EU) – Iran Trade Development: Trade-Related Technical Assistance, capacity building, and value chain development for inclusive and sustainable trade-led growth in Iran".

The document benefited particularly from the inputs and guidance provided by the sector stakeholders that steered the formulation of the strategy, namely:

Organization

Technical support and guidance from ITC was rendered by the following people:

Name	Designation	Organization
Trade Strategy team		
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Mr. Eric Buchot	Senior advisor	ITC
Assisted by:		
Ms. Alexandra Golovko	Associate advisor	ITC
Mr. Alexander Kasterine	Head, Trade and Environment	ITC
ITC local team		
Dr. Hossein Zeinali	National medicinal herbs expert	ITC
Dr. Hossein Mahmoudi	National organic agriculture expert	ITC
Mr. Hadi Seyedi	ITC representative in Iran	ITC
Mr. Majid Bahrami Forouzan	ITC representative in Iran	ITC
Mr. Mehdi Yaghoubi	Media support consultant	ITC

NOTE TO THE READER

The Iran NES was developed on the basis of a participatory approach, during which more than 400 Iranian industry leaders, small business owners, farmers and public sector representatives held consultations to reach consensus on key sector competitiveness issues and priority activities. These inclusive consultations were held in Tehran and in some sector-specific regions, including Kerman, Yazd and Isfahan.

Besides in-depth research and value chain analysis, these consultations were complemented by:

- [Factory visits where supply chain assessments](#) were carried out to gain further knowledge on key issues such as quality procedures, technical skills, lean management, quality of raw materials and access to markets, etc.
- [Interviews with domestic, regional and international buyers](#) to guide the NES with strategic insights and market intelligence as well as buyers' requirements in terms of quality standards, food safety, packaging, buying cycles, distribution channels and prices, etc.

The NES is aligned with existing national and sector-specific plans and policies and builds on ongoing initiatives in areas related to private sector development, regional integration, investment and economic empowerment of youth. Equally importantly, the NES initiative already accommodates budgeting to support implementation of critical pilot activities identified during the design process. This will ensure that impact and momentum are generated from early on, and support further resource mobilization and confidence-building.

The principal outputs of the Iran NES design initiative are endorsed, coherent and comprehensive export strategy documents with a five-year detailed plan of action (PoA) and implementation management framework. These documents include:

- I. A main NES document, which contains trade support functional strategies, offering critical support across value chains and acting as enablers for sector development;
- II. Individual NES priority sector strategies packaged as separate documents, but in alignment with the main NES findings and overarching strategic objectives.



	<p>Main NES document including trade support functional strategies:</p> <ul style="list-style-type: none"> • Quality management • Trade information and promotion • Entrepreneurship
<p>NES Iran</p>	<p>Individual NES priority sector documents:</p> <ul style="list-style-type: none"> • Fruits and vegetables • Medicinal herbs • Information and communication technology (ICT) • Tourism • Petrochemicals • Automobile parts

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ACRONYMS AND ABBREVIATIONS

FAO	Food and Agriculture Organization
GI	Geographical indication
IP	Intellectual property
IRICA	Islamic Republic of Iran Customs Administration
ITM	Iranian traditional medicine
NES	National Export Strategy



EXECUTIVE SUMMARY

More than 60,000 species of plants worldwide are considered to have medicinal properties, with very high levels of country specificity. Plants used in traditional medicine are not only used by local health care systems, they are also being traded. An estimated 4,000–6,000 species are traded globally based on their commercial use and value. According to studies, the majority of these plants are collected from the wild, which poses important ecological challenges. However, medicinal plants provide a substantial income for rural populations and, in most cases, have an important cultural value through local medical systems.

Even though it is difficult to identify precise demand figures on the international level, using proxies, the demand of medicinal herbs is on the rise. The drivers of this demand are factors such as ageing populations in developed countries, the rise in chronic disease and unhealthy lifestyles, the rising costs of quality medical treatments and the stress associated with the modern lifestyle. Developing and internationalizing a national alternative medicinal system presents a number of opportunities for development, given that an appropriate legal framework is in place.

The medicinal herbs in Iran are victims of their own success due to these international trends as well as local consumption growth. In Iran, like other countries with a rich history of traditional plant-based medicine, this has led to an inflow of new firms in an otherwise traditional and long-established sector. It has also put pressure on the primary resources, especially considering the predominant rangeland harvest of medicinal herbs, and has led to degradation of quality.

These latest developments call for a strategic response around a threefold approach:

- Strengthening safeguards and frameworks to maintain the highest level of quality of production;
- Carefully narrowing down the species for exports of medicinal plants to avoid further pressure on endemic resources;
- Developing knowledge about Iranian traditional medicine and its principles – locally and internationally – to educate consumers and sensitize them about the product and how to select it.

Exports of medicinal herbs will bring further revenue and resilience to Iranian producers, but they need to be carefully framed and producers' capacities need to be built to meet the constantly growing quality requirements of key markets.

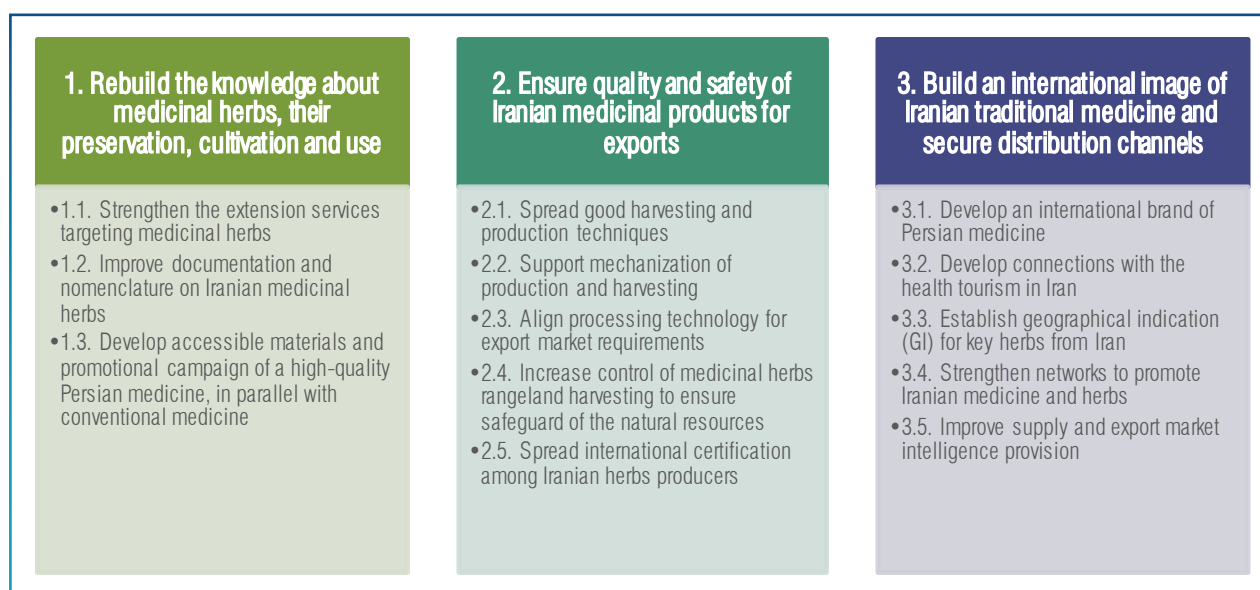
The implementation of this strategy will thus lead to increased exporting through reduced uncertainty and improved connections with high-potential markets, expanded downstream activities for increased domestic value added and export diversification, increased efficiency and sustainability in natural resource usage, a sustainable income secured for rural populations and especially an improved national image through the development of a national medicine brand.

Vision and strategic objectives

In line with the strategic approach presented above, the following is a delineation of the proposed vision. The vision statement was discussed and agreed with all stakeholders in the medicinal herbs sector:

“ Preserve and share traditional Iranian plant knowledge with the world. ”

The strategy's plan of action will respond to this vision by addressing constraints and leveraging opportunities in a comprehensive and strategic manner. To this end, particular efforts will be made to realize the following three strategic and operational objectives.



Strategic Objective 1: Rebuild the knowledge about medicinal herbs, their preservation, cultivation and use

The first strategic objective focuses on building the knowledge about medicinal herbs and Iranian traditional medicine (ITM). As identified in the diagnostic of the sector, it suffers a lack of dissemination of the existing knowledge to all steps of the value chain, from production to the consumer –both national and international. The strategic objective thus focuses on three main operational targets. The first is to build capacities of producing communities through targeted extension services. The second is to create a widely accessible nomenclature about plant-based Iranian medications to ensure compliance with international markets. The last objective is to develop accessible promotional tools targeting the local market, educating the population about the plants, their use and their quality, to ensure a more selective market and a higher-quality proposition.

Strategic Objective 2: Ensure quality and safety of Iranian medicinal products for exports

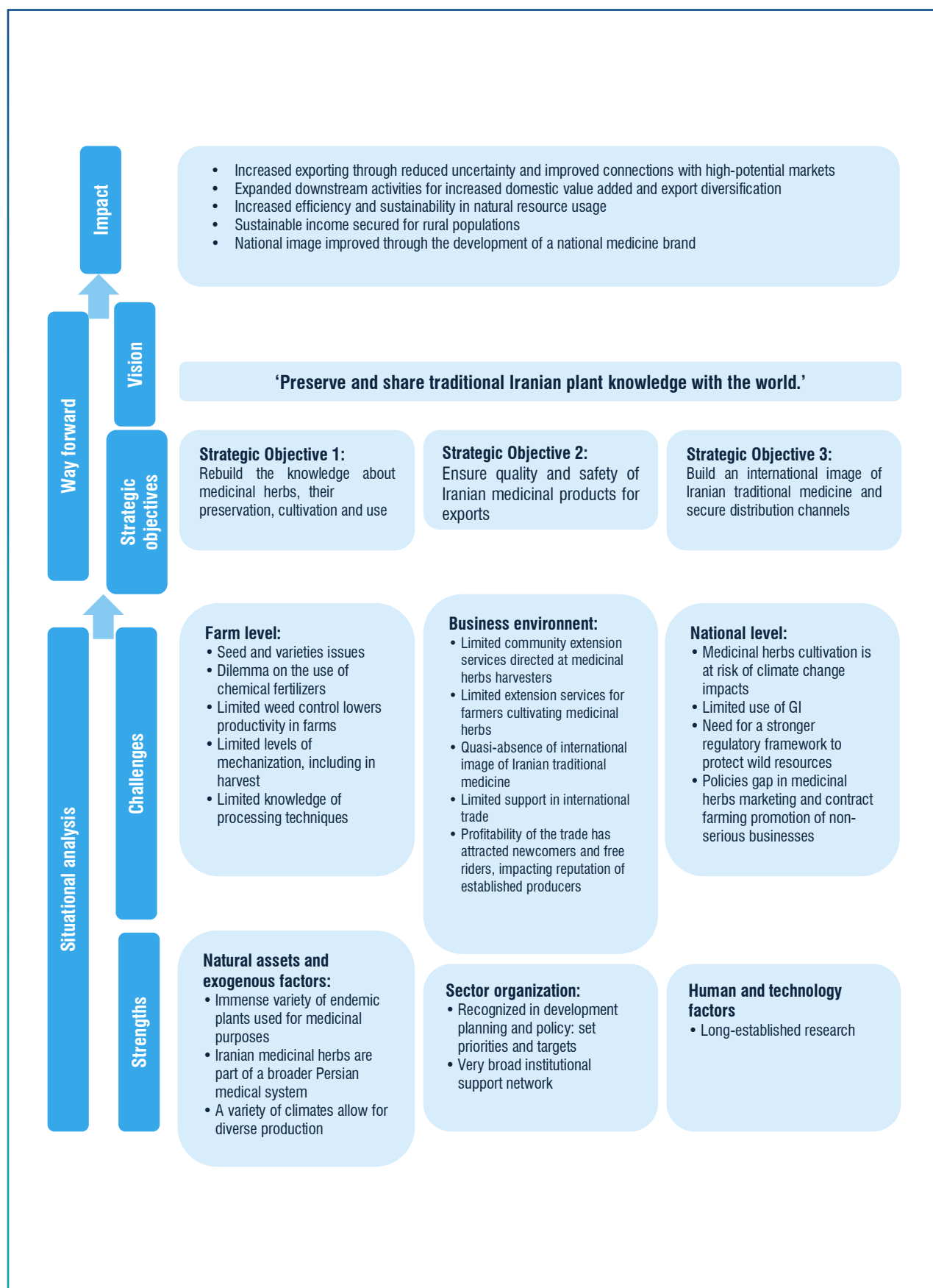
The second strategic objective focuses the upgrading of the quality and safety of those selected plants for exports. This answers the current issues of rejection of products by international buyers. To ensure the quality of the production, there are five main focus areas. The first is to spread good harvesting and production techniques, particularly through the proliferation of contract farming pilots. This will empower buyers and processors to have oversight on the production process and a responsibility to invest in skills and equipment. The second level of action is to spread investment in mechanical production and harvesting.

The third area is to support modernization of the plant processing techniques and technologies through research and development. The fourth area is to protect rangeland from over-exploitation by building capacities of communities and accompanying them to transit to cultivation. The final objective is to increase compliance of Iranian producers with key market requirements, particularly the newly developed regulations on European markets.

Strategic Objective 3: Build an international image of Iranian traditional medicine and secure distribution channels

The third strategic objective responds to trends in the medicinal herbs sector worldwide. To increase trust of end consumers and widen reach of medicinal plant products, the strategy proposes to develop a national brand for ITM and to promote it through a variety of channels, both traditional and non-traditional. The first objective is thus to develop a brand linked with a quality certification, and to protect it through intellectual property (IP). The second objective is to connect the medicinal herbs sector with a non-traditional export – the tourism sector, particularly health tourism. Health tourism, wellness and convalescence facilities could be a major market opportunity for Iranian herb-based medicines and remedies. The third objective is to ensure protection and visibility of Iranian medicinal herbs through geographical indication (GI). This will ensure that re-exported products are still recognizable as Iranian-made products. The fourth objective is to use non-traditional market linkages such as diaspora to promote production in key markets. Finally, the strategy also proposes to strengthen the flow of market information and intelligence to exporters and capacity building on how to use it their advantage.

Figure 1: Medicinal Herbs Strategy's theory of change



Milk Thistle Extract



1000 MG*

**TRADITIONAL
HERB**

CONCENTRATED EXTRACT
Herbal Supplement

180 RAPID RELEASE
SOFTGELS

GLOBAL TRENDS IN SUPPLY AND DEMAND

A DIFFICULT SECTOR TO DEFINE AT GLOBAL LEVEL, BUT WITH AN UNDENIABLE VALUE

More than 60,000 species of plants worldwide are considered to have medicinal properties worldwide, with very high levels of country specificity. A complete list of all plants used in traditional medicines around the world does not exist, but approximately 30,000 species of plants with a medical use are documented in traditional systems and national pharmacopoeias, being included in the Global Checklist of Medicinal Plants. The lists of medicinal herbs used in different countries and traditional medicines are highly specific, which contributes to the difficulty of creating an exhaustive global list of plants (e.g. Chinese traditional medicine ingredients differ greatly from plants used in Ayurveda).

Plants used in traditional medicine are not only used by local health care systems, they are also being traded. An estimated 4,000–6,000 species¹ are traded globally based on their commercial use and value. The trade supply chains for traded medicinal herbs are usually long, complex and non-transparent, posing challenges for the traceability of these products. End users are often unaware of the fact that raw ingredients are being collected from the wild, or which country they came from. Much of the trade is unreported and/or unregulated. There are different levels of value added for medicinal herbs (raw/dried, within fragrances, oils or medical preparations) and they are often aggregated in various HS codes without standardized practice. These complexities make global trade analysis or separation

by species or origin (wild or cultivated stocks) close to impossible.² Estimates of the scale of trade are dependent on customs line codes, which are challenging to include in trade estimates given the variety of species involved in each country and differences in how they are captured by national customs.

According to studies, the majority of these plants are collected from the wild, which poses important ecological challenges.³ Medicinal plants are serving national traditional medicines as well as modern, or conventional, medicines. Plants that are harvested in nature are sometimes called the “hidden harvest”. These wild plants provide a source of raw materials for local use and for the manufacture of a wide variety of pharmaceutical, herbal, food, cosmetic and fragrance products. Pressures on wild resources can pose major ecological and socioeconomic challenges. The conservation status of medicinal plants is poorly known.⁴ Medicinal plants have been used by humans before industrialization and used to be resistant to collection pressures. However, the population increase, urbanization, and the growing interest for natural-based food and health products creates a growing international demand, which increases harvesting pressure. This trend applied both for long-traded species and species that were not traded internationally in the past (e.g. for superfoods or cosmetics).

Medicinal plants provide a substantial income for rural populations and, in most cases, have an important cultural value through local medical systems. Rangeland harvesters are often among the poorest and most vulnerable members of society. Wild plants can provide

1.– Iqbal, 1993.

2.– Shanley et al., 2015.

3.– Schippmann et al., 2006.

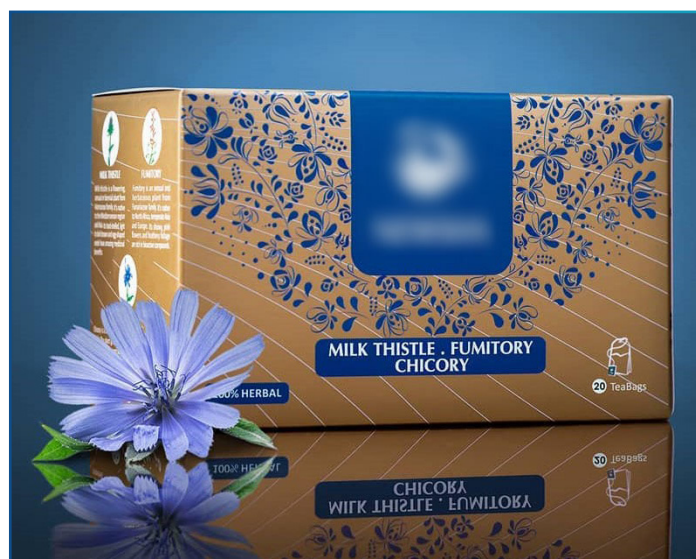
4.– Secretariat of the Convention on Biological Diversity, 2010.

supplementary and, sometimes, major sources of income for households, generating seasonal work for villagers. However, the medicinal herbs value chains usually include multiple layers of stakeholders and traders/brokers, with a limited value being captured at the producers' level.⁵ There would be ways to increase the contribution these resources have to livelihoods, increasing both the amount and the security of income from the trade, and supporting value addition locally. In addition, in many regions of the world, such as in Africa, parts of Asia, and Central and South America, people rely on traditional plant-based medicines for their primary healthcare, since they already have knowledge of these plants' use and they are more affordable. In some countries, some traditional plant-based medicines are being integrated through regulations into mainstream health systems. For example, in December 2016, the Chinese Government announced its aim to integrate traditional Chinese medicine (TCM) into the healthcare system by 2020.

A GROWING DEMAND FOR TRADITIONAL MEDICINE AND NATURAL PLANTS

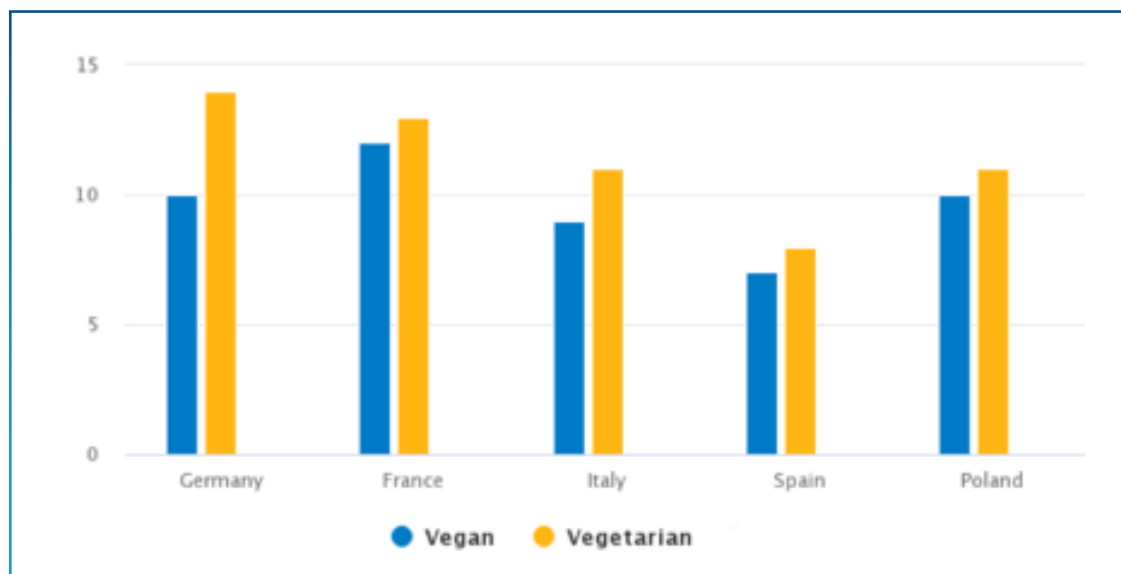
Even though it is difficult to identify precise demand figures on the international level, using proxies, the demand of medicinal herbs is on the rise. For floricultural products, UN Comtrade statistics show clear progression. The global trade of non-wood forest products (NWFP) of plant and animal origin was estimated at \$20.6 billion in 2010 by the Food and Agriculture Organization (FAO). The global market for complementary and alternative medicine products is forecast to grow at a compound annual growth rate of 18.2% until 2024. In comparison, the European pharmaceutical market is forecast to grow at approximately 3% per annum.

The drivers of this demand are factors such as ageing populations in developed countries, the rise in chronic disease and unhealthy lifestyles, the rising costs of quality medical treatments and the stress associated with the modern lifestyle. This trend is also rising in developing countries as people grow more wealthy, urbanized and sedentary, and increasingly adopt Western lifestyles and products. Many consumers are reacting and seeking better ways to take care of themselves, actively making lifestyle changes and taking greater responsibility for maintaining good health. These trends strongly apply to healthcare treatment selection. These factors, together with the following specific trends, create a very favourable environment for traditional medicine products:



- Growing consumer concerns about potential side effects of pharmaceutical drugs or conventional medication. However, major use for natural remedies is as a complement to conventional medicine. This represents an opportunity for suppliers of natural ingredients, especially for products not grown in the target market (e.g. the European market is interested in Asian products such as turmeric or others that cannot be grown locally).
- There is more potential to grow alternative herbal remedies if they are part of a traditional or alternative medicine system. The long-term tradition component is indeed a very important factor in the eyes of consumers, showing higher levels of trust towards natural-based medicines tested over centuries. Indeed, stigma can be associated with using plants, as many see this as ineffective. This is particularly the case in Western markets. For instance, the Swiss Government officially recognized Ayurveda and its practices in 2015. The first officially approved Ayurvedic practitioners started practicing in 2019. The Swiss Government has also approved a list of Ayurvedic medicines. In Germany, it is estimated that 90% of the population use herbal medicines.
- There is a growing percentage of vegetarian/vegan consumers looking for plant-based products (Figure 2). More investment is expected in plant-based proteins, especially as consumers demand vegan and plant products. Exporters of natural ingredients for health products from developing countries can take advantage of this trend, especially since research and development (R&D) investment and innovation involves a wide range of natural ingredients.

5.— United Nations Conference on Trade and Development (UNCTAD). *Applicability of traceability systems for CITES-listed medicinal plants (Appendices II and III) – Greater Mekong: Preliminary assessment*, 2017.

Figure 2: Share of young adults who are vegetarian or vegan in selected European countries (2017)

Source: Centre for the Promotion of Imports (CBI).

In response to the growing demand, a wellness industry has developed, which often builds on complementary and alternative medicine, nutrition and weight loss, spa, fitness and mind–body activities, beauty and anti-ageing, and preventive and personalized health monitoring.

Developing and internationalizing a national alternative medicinal system presents a number of opportunities for development, given that an appropriate legal framework is in place. On one side, it is increasing export revenues and creating jobs in the economy. However, beyond the purely economic opportunity, it is also strengthening and consolidating the national tradition and contributing to project a positive image of the country through a millennial knowledge of traditional remedies to common and chronic illnesses. There is also a high potential to connect the traditional herbal medicine system with the tourism sector and particularly the health tourism and rehabilitation.

GLOBALIZATION HAS LED TO A NARROWING DOWN OF THE TRADED SPECIES

The growing global demand for medicinal herbs (particularly in the renowned species with pharmacopoeias) has put pressure on natural resources and led to plant substitution. This high commercial value of particular herbal products leads to scarcity of populations of the species used in the product. This also

creates a problem of herbs' substitution. These practices could potentially pose threats to patient safety. An illustration of this phenomenon is the substitution of *Eleutherococcus nodiflorus* ("Wu Jia Pi"), used in traditional Chinese medicine (TCM) to treat muscles and joints pain, with a similar-looking plant from the unrelated species *Periploca sepium*, which, in inappropriate dosages, can be toxic.

The number of plants covered by official pharmacopoeias tends to diminish with greater globalization of the medicinal herbs sector. Several key examples illustrate this trend, particularly the Federative Republic of Brazil, the United Kingdom of Great Britain and Northern Ireland, and the People's Republic of China. The number of native Brazilian plant species within the Brazilian Pharmacopoeia decreased from 196 in the 1926 edition to 32 in 1959, to four in 1977. Although the 2010 edition cites 65 species, most are European or Asian plants, with only 14 being native to Brazil. A similar trend also occurs in the British Pharmacopoeia. The increasing popularity of traditional Chinese medicine (TCM) and Ayurvedic medicine in the West has led to some of the plants used in these medicines being included in pharmacopoeias, although globally the number of these species covered by formal monographs remains low. In China, for example, 10,000–11,250 species (approximately 34% of the native flora) have documented medicinal uses, but only 563 are cited in the Chinese Pharmacopoeia.⁶

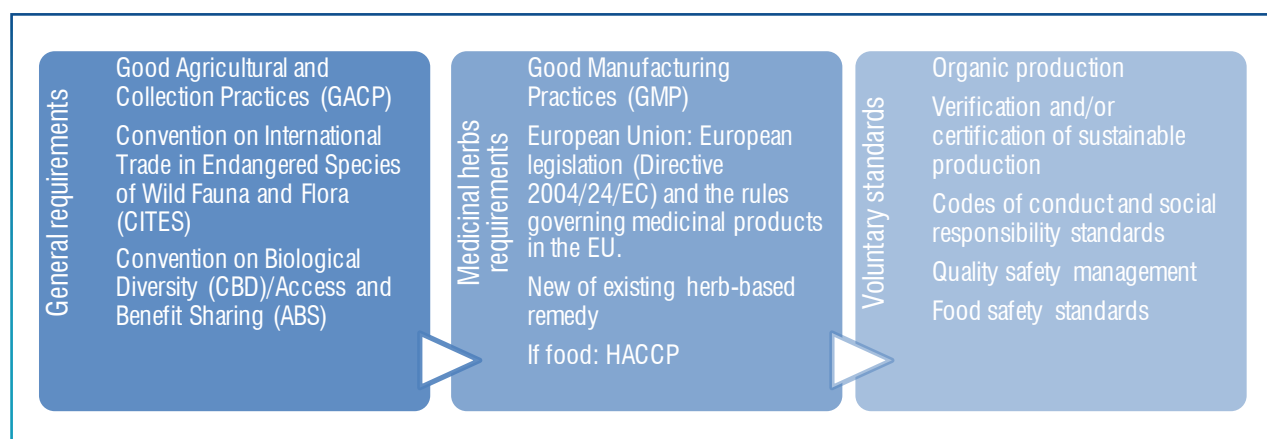
6.— Royal Botanic Gardens Kew, State of the World's Plants 2017.

More effective regulation can be achieved through more precise use of scientific plant names and greater awareness of the many alternative synonyms in use. However, clarity on which plants have or have not been studied in drug discovery programmes is also needed. This is now becoming possible through the collation of global data sources on medicinal plants and “big data” analytics. Such approaches will be hugely important in improving our ability to realize current and future medicinal benefits from plants.⁷

INCREASED MARKET ENTRY REQUIREMENTS

Due to the growing demand for traditional medicines, most markets have increased their regulatory requirements for access to ensure high safety and sustainability standards.

Figure 3: Types of requirements applicable to medicinal herbs



Source: Centre for the Promotion of Imports (CBI).

Medicinal herbs imports on the Western markets became highly scrutinized and regulated. Three general requirements are applicable to all agricultural products, including medicinal herbs products. These requirements are mandatory for any company wishing to export to Western markets:

- **Good Agricultural and Collection Practices (GACP):** A requirement for herbal medicinal products, and for both cultivated and wild resources. Demonstrating sustainable sourcing practices by implementing GACP is especially crucial for wild-collected ingredients.
- **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):** CITES provides a list of plant species that may not be exported and/or imported or where export and/or import is restricted. If the product is listed in Annex A and Annex B of Regulation (EC) No. 338/97, the company will need an export permit from the origin country's CITES authority. An import permit from the destination country is also needed.
- **Convention on Biological Diversity (CBD)/Access and Benefit Sharing (ABS):** The requirement comes

from the Nagoya Protocol of the Convention on Biological Diversity (CBD). Many countries have signed this protocol and adopted it into national law. ABS is especially important for ingredients from native/endemic species, as well as those where there is a local tradition of use. Companies need to comply with requirements on ABS in the usage of genetic resources. The national legislation of the country of origin defines the specific meaning of this usage of genetic resources. If the company's botanical product falls under the scope of ABS, any usage is covered by protection and profit sharing.

Five additional requirements are specific to medicinal herbs and food supplements and are also demanded from exporters:

- **Good Manufacturing Practices (GMP):** Ensure that medicinal products meet all identity, quality, efficacy and safety requirements.
- **EU: European legislation (Directive 2004/24/EC):** This procedure provides a specific, simplified regime for traditional herbal medicine products if they can meet certain requirements.

7.– Ibid, 2017.

- **EU: The rules governing medicinal products in the EU:** Quality, documentation, labelling, packaging, certification and traceability standards are set out in this set of rules. These rules also specify marketing authorization of medicinal products and their ingredients that are sold in Europe.
- **New of existing herb-based remedy:** There are two types of herbal medicinal products on the European market: well-established-use herbal medicinal products (10 years of usage) and traditional-use herbal medicinal products (30 years of safe use, of which at least 15 years is in the European Union). Otherwise, there is a need to establish the product as a “new medicinal product”, which will be a very lengthy process and large investment (€5 million to €15 million).
- **If food supplement:** Hazard Analysis Critical Control Points (HACCP) standards.

Finally, a number of voluntary standards can be helpful to set products into a higher market niche. Certification for these voluntary standards being very costly in most cases, a careful cost–benefit analysis needs to be undertaken at the individual firm level:

- **Organic production:** Organic certification is more common for food supplements than for herbal medicinal processed products, which cannot be labelled as organic. However, some herbal medicine companies use organic ingredients (exclusively) to adhere to their company philosophy. Raw medicinal herbs can, however, be labelled organic (see next chapter for the trends in that market).
- **Verification and/or certification of sustainable production:** These include the United Nations Conference on Trade and Development (UNCTAD) BioTrade Initiative: BioTrade Principles and Criteria, and the FairWild Standard (environmental sustainability), as well as Fairtrade certification such as FLO Fairtrade or Fair for Life.
- **Codes of conduct and social responsibility standards:** Applicable sets of standards could be the United Nations Global Compact, or the labour standards of the International Labour Organization.
- **Quality safety management:** ISO 9001:2015 is an industry management standard that sets out the criteria for a quality management system.
- **Food safety standards:** Mostly for food supplements, large international retail can ask for: International Food Standard (IFS), ISO 22000 (food safety management) and ISO 31000 (risk management).

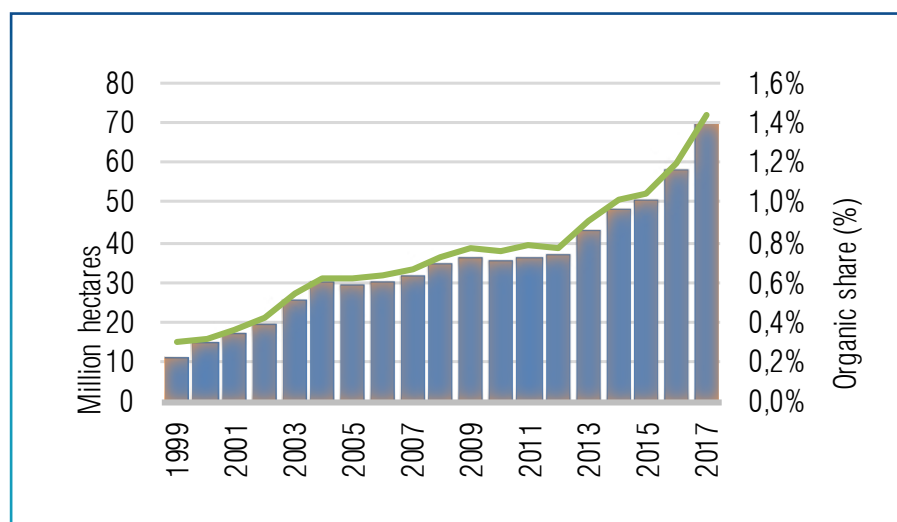
ORGANIC TRENDS IN WESTERN MARKETS

Organic farming offers the possibility of win-win solutions for challenges and problems faced by farmers all around the world. Organic agriculture, by building synergies, can increase food production and food and nutrition security while restoring the ecosystem services and biodiversity that are essential for sustainable agricultural production. Furthermore, as many policy-makers, like former FAO Secretary General da Silva, believe (2014),⁸ approaches like agroecology and organic farming can play an important role in building resilience and adapting to climate change.

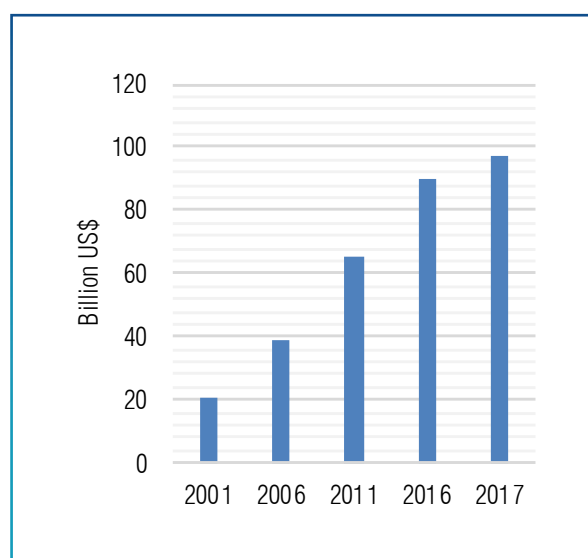
Globally, approximately 70 million hectares of organic land, including in-conversion areas, were recorded. Asia has 6.1 million hectares (9%) organic agricultural lands. Almost a quarter of the world's organic agricultural land (16.8 million hectares) and more than 87% (2.4 million) of the producers are now in developing countries and emerging markets. Approximately 1.4% of the farmland is organic.



8.– Agroecology for Food Security and Nutrition. 2014. FAO International Symposium, 18–19 September 2014, Rome, Italy.

Figure 4: Growth of the organic agricultural land and organic share (1999– 2017)

Source: Ecovia Intelligence, 2019.

Figure 5: Organic food and drinks sales (2001–17)

Source: Ecovia Intelligence, 2019.

The market of organic food and drink reached \$97 billion in 2017. Although organic food sales are growing steadily, there are still persistent challenges. These include the rising number of standards, demand concentration (approximately 90% of sales are in North America and Europe), supply shortfalls and competing eco-labels.⁹ In 2017, the countries with the largest organic markets were the United States of America (€40 billion), the Federal Republic of Germany (€10 billion) and the French Republic (€7.9 billion). The largest single market was the United States (47% of the global market), followed by the European Union (€34.3 billion, 37%) and China (€7.6 billion, 8%). The highest per capita consumption in 2017, with almost €300, was found in the Swiss Confederation and the Kingdom of Denmark. The highest market shares were reached in Denmark (13.3%), the first country with an organic market share of more than 10%, the Kingdom of Sweden (9.1%) and Switzerland (9%). The general picture of the global organic market is shown in Figure 5.

In 14 countries (led by the Principality of Liechtenstein: 37.9%), 10% or more of the agricultural land is organic. Apart from the organic agricultural land, there is organic land dedicated to other activities, most of which are areas for wild collection and beekeeping. Other areas include aquaculture, forests, and grazing areas on non-agricultural land, which constitute more than 42.4 million hectares.

9.– For more information, see Sahota (Page 146 at Willer and Lernoud, 2019).

A UNIQUE AND COMPETITIVE PRODUCTION BASE

Iran's medicinal herbs sector is an important direct and indirect contributor to growth and exporting. Its wide variety of products, both on the production and processing sides, is supported by a combination of natural assets and established export connections,

sector organization factors and human factors. These strengths support the sector's potential to contribute to export growth, development and job creation, particularly in rural areas.

Exports have been considerable in selected medicinal herbs products

Robust exports, especially in saffron and Persian shallots

- | | |
|------------------|---------------------|
| 1. Saffron | 9. Hibiscus |
| 2. Damask rose | 10. Fennel |
| 3. Cumin | 11. Echinum amoenum |
| 4. Black caraway | 12. Zataria |
| 5. Henna | 13. Chamomile |
| 6. Indigo | 14. Nigella |
| 7. Coriander | 15. Asafoetida |
| 8. Liquorice | |

‘We have been exporting for many years and acquired an in-depth understanding of our markets and clients’ needs.’

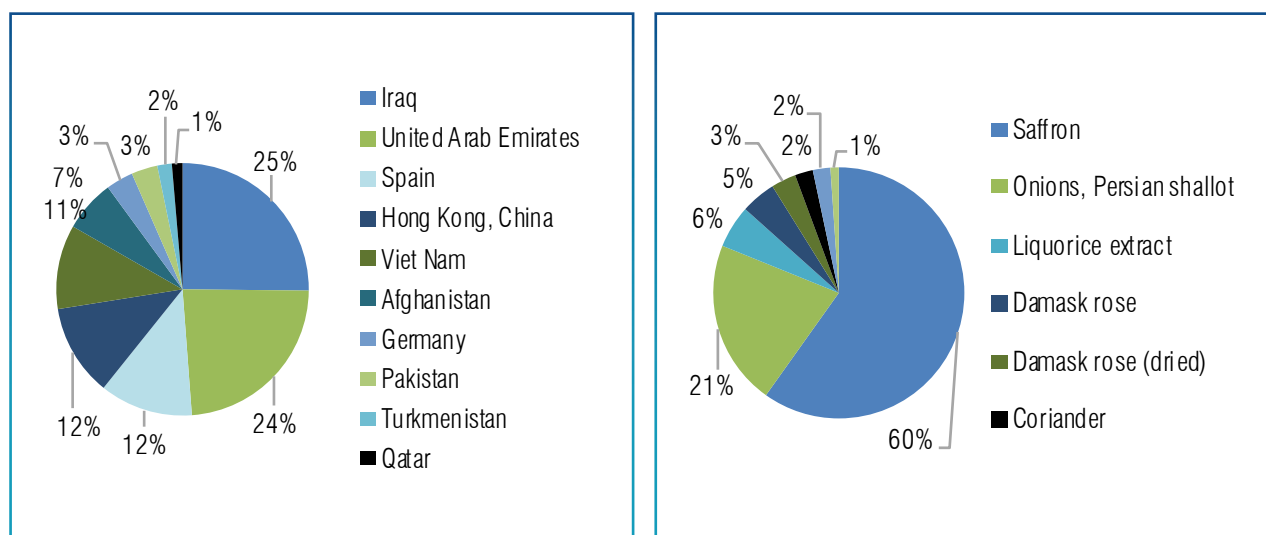
The product list in the Iranian medicinal herbs is very diversified. Approximately 850 species of plants possess an aromatic importance in Iran and 10% of these species are cultivated. However, a specific list of 15 plants has been identified as priority species for export by Iranian Government, in order to ensure preservation of other species and limit exploitation of wild resources. The criteria used to shortlist the species were the climate, the market opportunity and the benefits of these plants on culture and society. These priority plants for exports are:

When looking at the current export basket, the major two exported products are saffron and Persian shallots, together representing approximately 81% of exports. Extracts of liquorice and damask rose follow with 6% and 5% respectively. Both saffron and Persian shallots exports picked up in 2018, reaching \$351 million and \$124 million respectively (8% and 21% compound annual growth rate in the past 10 years). Exports in other medicinal herbs have been stagnant, indicating that production growth was mostly translated in sales growth on the local market and exports growth in the two main products.

Iran is producer of more than 90% of saffron in the world, while it represents approximately 71% of world exports. This shows the important re-export and re-branding activity occurring. The United Arab Emirates and the Kingdom of Spain represent almost 50% of

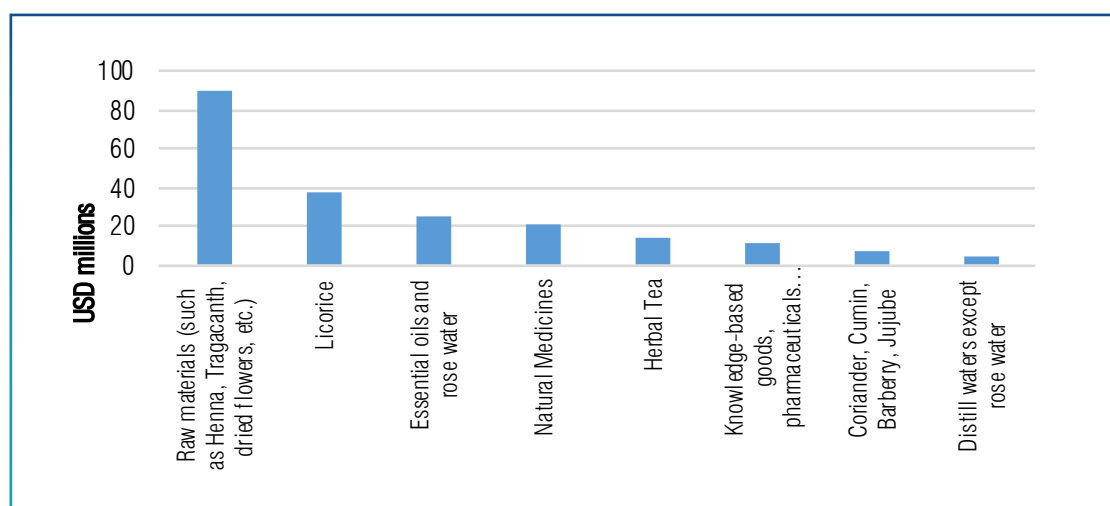
Iran's total saffron exports. Spain's Manchegan locally produced saffron only represents a half ton of the country's exports, while the total re-exported saffron was approximately 79 tons¹⁰ in 2018.

Figure 6: Medicinal herbs raw products – export markets and export products (2018)



Source: Trade Map, ITC.

Figure 7: Exports of value-added products (2018)



Source: Iran Food and Drug Administration (IFDA), 2019.

10.– ITC Trade Map, 2020.

Natural strengths and institutional enablers

A variety of climates allow for a diverse production



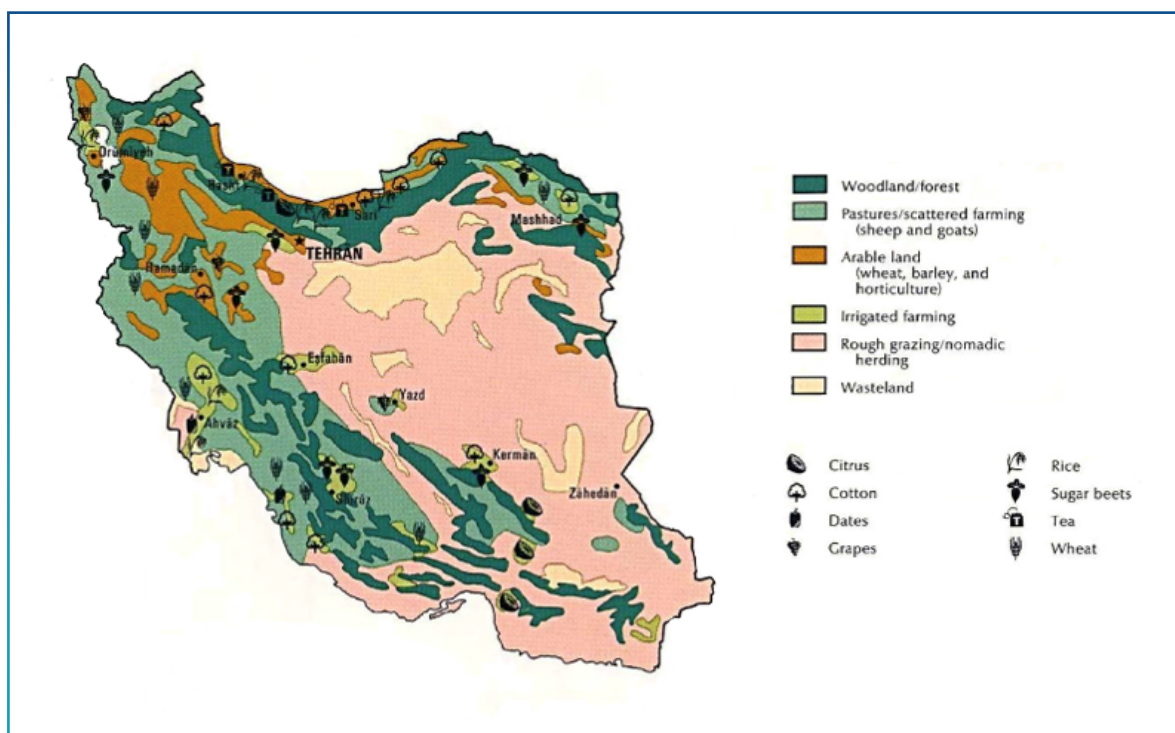
Our country is endowed with climates ranging from arid to Mediterranean to humid and even cold. We are so lucky that we can grow any type of produce.'

Iran has more than 50 million hectares of land that is suitable for agriculture, with low prices achieved both through existence of industrial-scale farming and currency depreciation.

Iran's temperate climate is generally well suited to the production of numerous varieties of plants, and various microclimates around the country are suited to the needs of particular products, resulting in high value and a strong export orientation.

Even if the interior deserts receive less than 50mm of water per year and the western and north-western areas approximately 500 mm, areas along its Caspian Sea coast enjoy a more plentiful 1,000 mm. In addition to rainfall, Iran relies on surface and groundwater sources to irrigate nearly 9 million hectares of its cultivated area. The medicinal plants production is, however, spread in different areas in the country.

Figure 8: Land use on Iranian territory

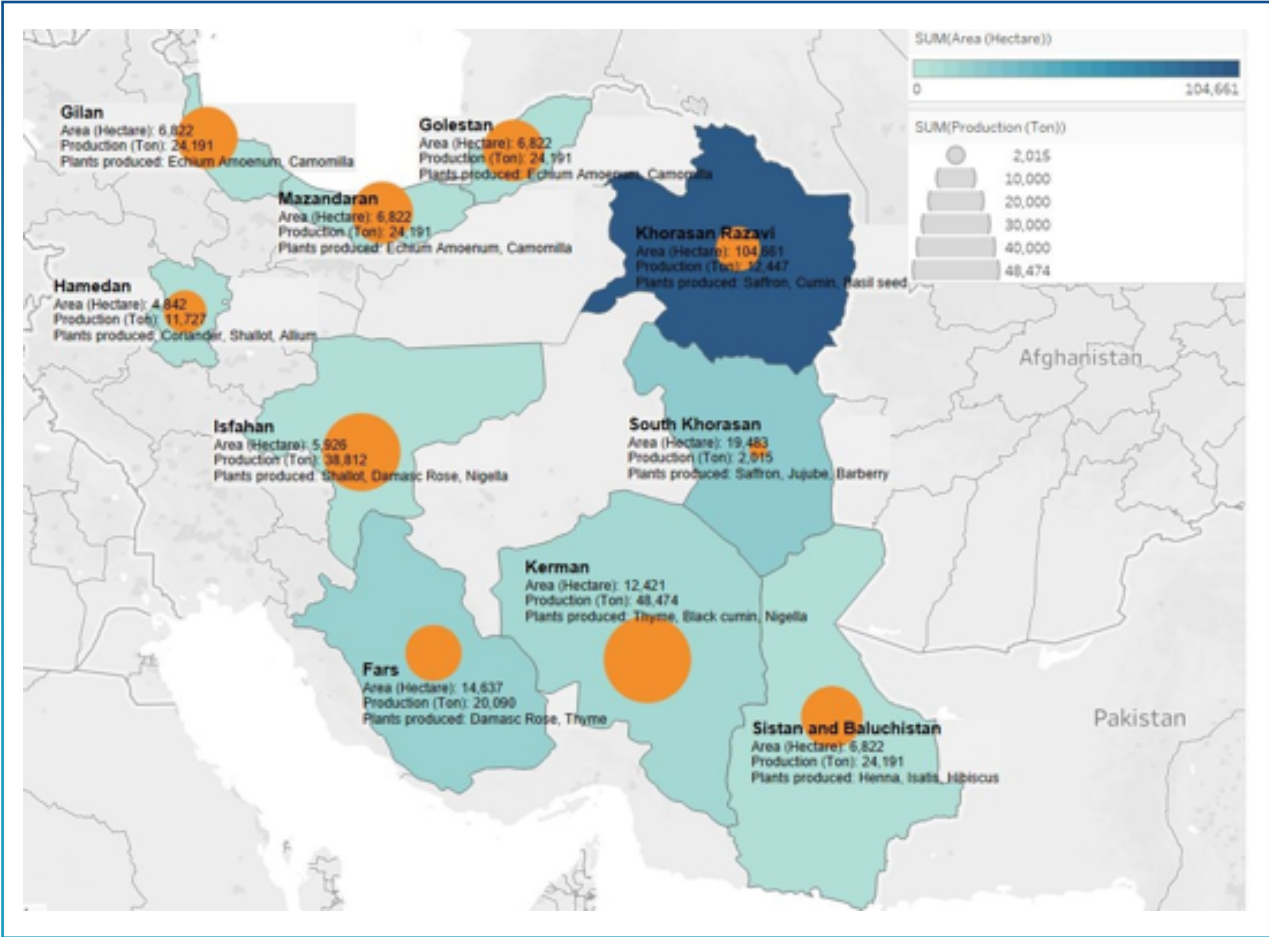


Source: University of Texas Libraries.

The widespread geographical repartition of medicinal plants is presented in Figure 9. The largest area of production is Khorasan Razavi, where most of the saffron is produced. The largest production in tons is registered

in Kerman, where the main production is thyme, black cumin and nigella. It is also to be noted that wild collection of resources happens on an estimated 5,000 hectares.

Figure 9: Geographical repartition of medicinal herbs production



Source: Compiled by ITC.

Iranian medicinal herbs are part of a broader Persian traditional medical system

“My grandmother used to know exactly which plant would help in case of a back pain or a common cold. The use of Iranian medicinal plants is deeply rooted in our culture and traditions and has a long history.”

Iran's herbs-based products are not isolated – they are integral part of a medical system. The wide variety of plant-based treatments are prescribed along specific concepts and guidelines. Iranian traditional medicine (ITM), also known as Persian traditional medicine (Persian: ایرانی سنتی طب, *romanized: tebbe sonnati-e irāni*), is one of the most ancient forms of traditional medicines. Traditional remedies have been used in Iran for more than 3,000 years, and most households store herbal petals, essences, powders and extracts to provide relief for different kinds of ailments. *Sabzi khordan*, or edible herbs, are prescribed by both doctors and grandmothers to cure everything from joint pains to high cholesterol.

The ITM is a holistic medicine that has been based on individual differences and a determinant basic concept of “temperament” (*mizaj*). According to ITM, everybody has a definite *mizaj*, which is determinant to construct all physical or mental characteristics. The temperaments are classified into nine categories: moderate, warm, cold, wet, dry, warm and dry, warm and wet, cold and dry, and cold and wet. The temperament applies to the human being and its entire environment (organs, age, psyche, colours, seasons and food, etc.). An illness is characterized by a misbalance or excess in the natural characteristic of an individual.

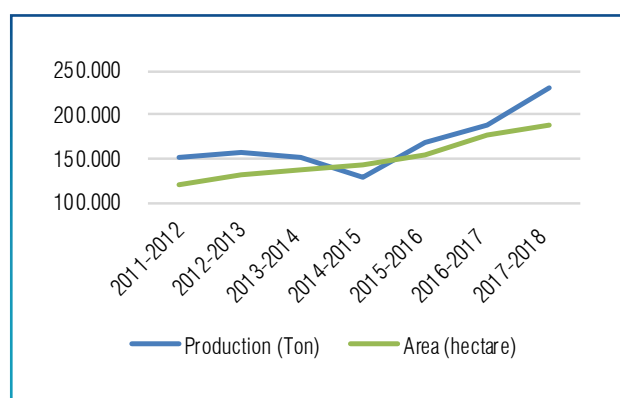
As already mentioned in the overview of global trends in the sector, there is more potential to grow market shares for medicinal herbs if they are part of a traditional or alternative medicine system. The long-term tradition component is indeed a very important factor in the eyes of consumers, showing higher levels of trust towards natural-based medicines tested over centuries.

Positive production and internal consumption trends

The production of medicinal herbs has shown a steady positive dynamic since the 2014–15 season. Figure 8 presents the trends in production quantity and area in this period, illustrating a steady production growth. It also shows that the overall yields started increasing since 2016.

In addition, it is estimated that approximately 2,100 hectares are allocated to organic medicinal plant production. This represents approximately 1% of the total production, leaving room for further growth.

Figure 10: Production of medicinal plants in 2011–18 (quantity and area)



Source: Statistics from Ministry of Agriculture Jihad.

Table 1: Organic production area (hectares)

Product	Fully converted	In-conversion	Total
Saffron	637.6	39.1	676.7
Rose (rose water, rose oil)	1 014.9	0.28	1015.46
Other medicinal plants	405.8	1.4	407.2
Total cultivated	2099.08		
Wild collection (all species)	Approximately 5000		

Source: Statistics from Ministry of Agriculture Jihad.

An acknowledged importance from policymakers and established institutional network

‘Although our country is gradually transitioning to the secondary and tertiary sectors, we should not neglect our farmers. That is why our plans for modernization should also affect traditional sectors.’

The importance of agricultural development is highlighted in most of the Iranian Government’s plans and policies, including the 20 Year National Vision and Sixth National Development Plan. These instruments set a number of economic and social goals for agriculture and the food sector in Iran. Targets relevant to export competitiveness include enhanced economic contribution and productivity, commercialization, and sustainable use of natural resources.

The governmental support has also translated into a strong institutional network at the service of agricultural production, and specifically medicinal herbs. This network is both centralized in Tehran and spread over the different municipalities. Key players from the government include:

- Ministry of Agriculture Jihad
- Ministry of Health and Medical Education
- Agricultural Planning, Economic and Rural Development Research Institute (APERDRI)
- Plant Protection Organization
- Iran Food and Drug Administration
- Department of Environment
- The Iran Chamber of Commerce, Industries, Mines and Agriculture
- Federation of Iranian Food Associations
- Iran Dried Fruit Exporters Association
- Iranian National Standards Organization (INSO)

On the regional/rural side, there are 1,076 horticulture offices and 1,370 agricultural cooperatives in 3,332 villages covering approximately 1.147 million people. Government-owned multipurpose warehouses are spread all over the country to facilitate weighing, cleaning, grading and sorting of products.

The sector is supported by strong academia and research

In addition to the institutional support, the sector benefits from strong research infrastructure in the Tehran, Isfahan and Khorasan Provinces. The following research institutions cover the sector:

- Medicinal Plants and Drugs Research Institute, Shahid Beheshti University, Tehran
- Research Institute of Forest and Rangelands
- Essential Oil Research Institute, University of Kashan, Isfahan
- Saffron Institute, Torbat Heydarieh, Khorasan
- Seed and Plant Improvement Institute, Karaj

In addition, there are about 15 scientific journals covering the medicinal herbs sector.

However, most of the research is only available in Farsi, which could be an obstacle for exports. The medicinal herbs products certification indeed requires pharmacopoeias to be available translated in the target markets' languages.

Unrealized export potential in the sector

Strong export growth potential in saffron, Persian shallots and liquorice

By far the most important export growth potential comes from saffron. It has an export potential of \$286 million, out of which 25% is still untapped. It is followed by fresh onions and shallots (\$199 million, 25% untapped) and extracts of liquorice (\$40 million, 43% untapped).

Other medicinal herbs with considerable export potential include fruits nes, fresh (\$15 million), live plants and mushroom spawns (\$15 million) and coriander seeds (\$14 million). For these products, untapped export potential is relatively small, ranging between 9% and 17% of total export potential.

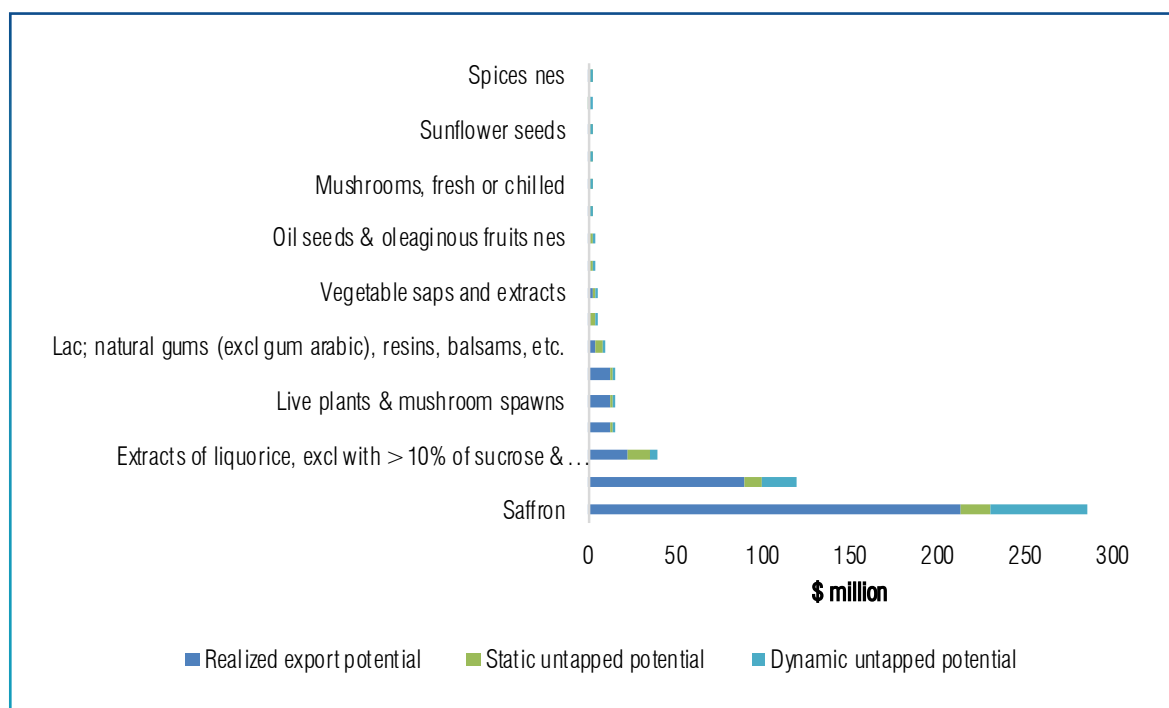
The next most important products are smaller in terms of total export potential; however, their relatively high shares of untapped export potential imply considerable export growth potential. These products include "Lac; natural gums, resins, gum-resins, balsams and other natural oleoresins" (\$4.9 million untapped export potential), "Vegetable saps and extracts" (\$2.2 million) and "Ephedra and other plants" (\$1.3 million).

The share of static in total untapped export potential is relatively high for most medical herbs. With the exception of the top products, saffron (23%) and onions

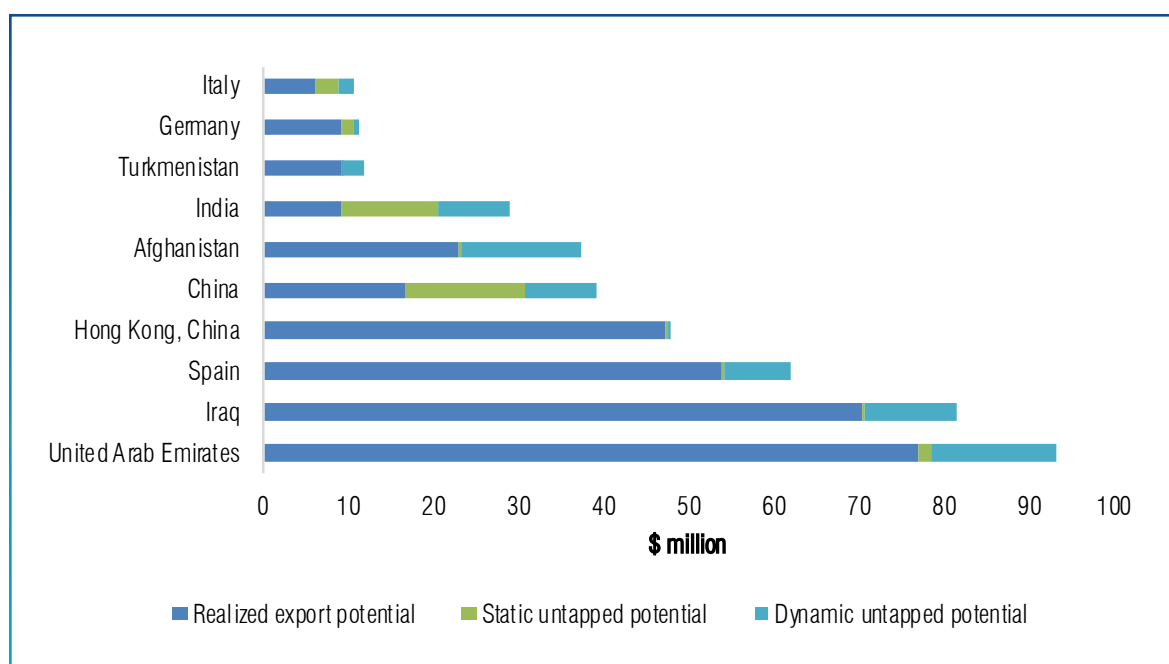
and shallots (33%), it lies above 60% for all products in this category. Addressing and reducing frictions could contribute to significantly increasing Iran's exports in these products.

Figure 12 illustrates the Top 10 export destinations for medicinal herbs and plants from Iran. The largest market is the United Arab Emirates, with a total export potential of \$93 million, closely followed by the Republic of Iraq (\$82 million) and Spain (\$62 million). In all three top markets, there is considerable dynamic untapped export potential (\$14 million, \$11 million and \$8 million respectively). Another market with large dynamic untapped export potential is the Islamic Republic of Afghanistan (\$14 million).

However, the markets with the largest opportunities for export growth are China and the Republic of India. While total export potential is only \$37 million in both of them, untapped export potential is \$22 million and \$20 million respectively. In these two markets, a large share of untapped export potential is explained by frictions (63% and 58% respectively). Identifying and addressing frictions to exports in medicinal herbs could potentially enable substantial increases in export to China and India.

Figure 11: Export potential, medicinal herbs

Source: ITC calculations based on the Export Potential Assessment (EPA).

Figure 12: Top 10 destination markets for medicinal herbs and plants (USD million)

Source: ITC calculations based on the Export Potential Assessment (EPA).



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DIAGNOSTIC OF THE VALUE CHAIN'S COMPETITIVENESS

Despite the sector's strength and potential, a number of challenges are also faced. Unleashing the potential of the medicinal herbs sector through trade will require that the root causes of major challenges are identified and solutions developed. Fundamentally, these issues arise from constraints on the sector's capacity to compete in the present, connect through accessing and using information and knowledge, and change by adapting to changing conditions and opportunities.

The competitiveness assessment carried out looks at weaknesses of firms, the wider business ecosystem and the national environment to help identify what bottlenecks to growth firms are currently facing. The assessment follows the different stages of the value chain:

- **Access to inputs and resources** covers issues related to human resources capabilities, access to finance, and access to equipment or infrastructure.
- **Firms' operations and production** covers issues related to the value-addition processes, quality assurance, investment, research and development, and competition, etc.

- **Market entry** covers issues related to the accessibility of national and international markets, customs procedures, trade information and promotion, etc.

The different value chain stages are further subdivided into three levels:

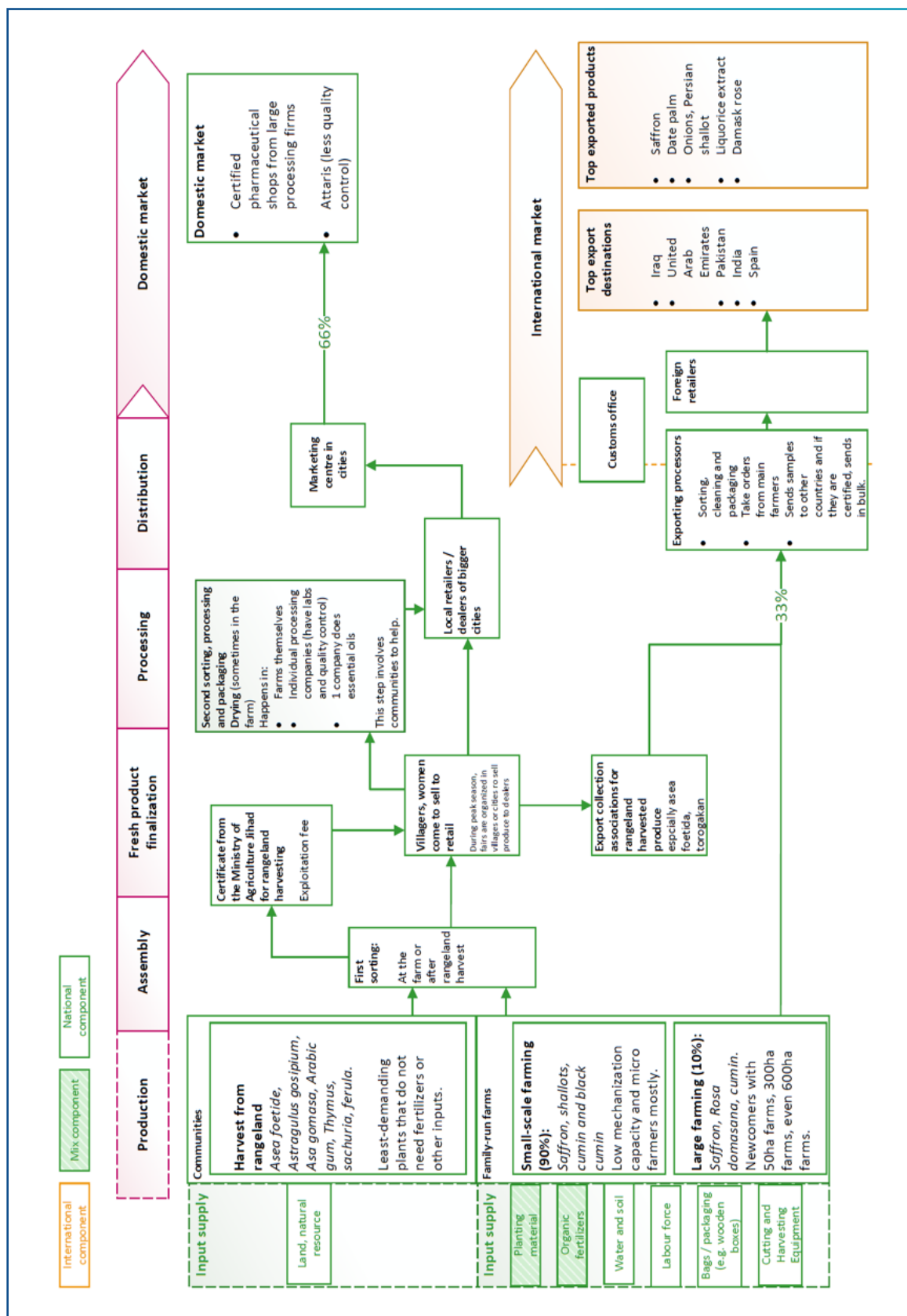
Firm capabilities	Assesses whether firms can manage resources under their control.
The business ecosystem	Is made up of support institutions that supply enterprises with the resources or competences they need to be competitive.
The national environment	Refers to the broader framework in which firms operate typically encompassing relevant policies and regulations.

The following section will present the value chain diagram of the medicinal herbs sector in Iran and an overview of the bottlenecks along that value chain, the firm capabilities, the business ecosystem and the national environment impacting this value chain.

Table 2: Summary of competitiveness constraints in medicinal herbs

Farm level	Business environment	National environment
<ul style="list-style-type: none"> • Seed and varieties issues • Dilemma on the use of chemical fertilizers • Limited weed control lowers productivity in farms • Limited levels of mechanization, including in harvest • Limited knowledge of processing techniques 	<ul style="list-style-type: none"> • Limited community extension services directed at medicinal herbs harvesters • Limited extension services for farmers cultivating medicinal herbs • Quasi-absence of international image of Iranian traditional medicine • Limited support in international trade • Profitability of the trade has attracted newcomers and free riders, impacting reputation of established producers 	<ul style="list-style-type: none"> • Medicinal herbs cultivation is at risk of climate change impacts • Limited use of GI • Need for a stronger regulatory framework to protect wild resources • Policies gap in medicinal herbs marketing and contract farming promotion

The value chain



Farm-level constraints

Limitations in exportable production quantity and quality

Relevant operational objectives:

- 1.1. Strengthen the extension services targeting medicinal herbs
- 2.1. Spread good harvesting, production and post-harvesting techniques
- 2.2. Support mechanization of production and harvesting
- 2.5. Spread international certification among Iranian herbs producers

“We harvest all the plants from rangeland. They should be natural and organic, but we get our products rejected by foreign markets.”

The current quantities of exportable and high-quality primary production are relatively low due to a number of reasons, most of them rooted in the fact that most producers are small-scale farmers and enterprises. This small scale limits the human and financial capacities, the mechanization of production and the possibilities to directly connect with the suppliers and export markets. Among the numerous issues producers face, the following categories have the most impact on their competitiveness:

- **Quality and quantity of seeds:** The seeds used by producers lack uniformity, which hampers compliance of the herbs in foreign markets. Most of the seed varieties are endemic in Iran and their supply is limited in quantity. Finally, the supply of seeds has a high level of dormancy, therefore reducing the yield and cost competitiveness.
- **Use of chemical fertilizers:** Some producers, especially the smaller ones, turn to chemical fertilizers, growth hormones or elicitors to increase their yields. This is due to the costly organic alternative fertilizers, which often have a negative impact on yields. The herbs treated with chemical fertilizers, however, get returned by buyers in international markets. The organic certification is also very difficult and costly to achieve, even for those producers that never used chemical fertilizers.

- **Limited weed control:** The control of weed on the production area is a widespread issue affecting productivity. The small scale of farming, with generally low mechanization levels, does not allow to use effective techniques to eliminate weed. A lack of research on potential low-cost techniques for small-scale farmers and dissemination of such techniques are the main causes of this issue.
- **Limited levels of mechanization:** The levels of mechanization are low for all steps of the production process. This, however, has the most impact at the harvesting stage. This is due to the large variety of plant types cultivated and the very different requirements these plants have for harvesting. Different type of equipment would be required for each plant, which increases the investment levels required from farmers. Their small scale of production, in turn, does not incentivize them to invest in mechanical equipment.
- **High proportion of rangeland sourcing:** An important proportion of the production comes from rangeland. In these cases, the harvesters have no control on the plant production and issues with contaminations are frequent due to this. In addition, this limits the available quantities.

Limited knowledge of processing techniques

Relevant operational objectives:

- 2.3. Align processing technology for export market requirements
- 2.5. Spread international certification among Iranian herbs producers

“I have a small production and do not have the means to invest much in it. In addition, the broker buys it anyway on the market.”

The limited understanding of producers of the importance of processing techniques and their impact on the safety of the final product is a major constraint, for both the local and the international market. The health risks associated with bad processing techniques may

lead to a bad reputation of Iranian products, which, in turn, jeopardizes potential national branding initiatives on the ITM. There are several levels of processing, but the most challenging one is the initial processing stage, often at the charge of small producers themselves.

The major capacity gaps in this first processing stage are the following:

- **Disinfection and fumigation:** There is a general lack of knowledge about appropriate disinfection techniques. Important techniques like disinfection by gamma rays, ozone, ultraviolet (UV) or ultrasonic are not used by producers.
- **Drying:** Proper drying of medicinal herbs is an essential factor to ensure their preservation and avoid pests and moulds. There are important drying techniques, durations and equipment that are required for the process to be successful. However, this is an important gap at the production level and results in issues at further processing stages or for the final product.
- **Sorting capacities:** Sorting needs to happen at different stages, at both the production and processing levels. Inefficiencies in sorting occur with any type of product: seeds, leaves or flowers. These require

different sorting equipment and techniques. As a result, the final product is not homogenous and the rejection rates increase during commercialization.

- **Packaging:** The packaging of medicinal herbs products is a major issue. The prevalence of bulk packaging such as containers, packages or pallets has an impact on conservation of the product and also decreases its competitiveness.

The price setting mechanism for raw produce is not consistent and generates a high number of middle-men

Relevant operational objectives:

- 1.1. Update and rationalize raw product marketing mechanism

The fragmented and small-scale nature of fruits and vegetables cultivation in Iran (between 70% and 85% of total

Business environment constraints

Absence of a widespread knowledge about ITM and the medicinal herbs

Relevant operational objectives:

- 1.2. Improve documentation and nomenclature on Iranian medicinal herbs
- 1.3. Develop accessible materials and promotional campaign of a high-quality Persian medicine, in parallel with conventional medicine
- 3.3. Establish GI for key herbs from Iran
- 3.4. Strengthen networks to promote Iranian medicine and herbs and to bring market information
- 3.5. Improve supply and export market intelligence provision

There is a general lack of dissemination of the existing research and knowledge accumulated through centuries to producers and consumers, both national and

“Most of our saffron is re-exported to Europe through Spain. Our end consumers are not aware that they are using Iranian saffron.”

international. In addition, the regaining of popularity of medicinal plants and the rising demand has brought new players and producers in the sector. The lack of knowledge about the herbs and their final use, their active substances and the harvesting techniques has a negative impact on the safety of the overall production and impacts these plants' reputation among consumers. The lack of understanding and knowledge can particularly be noted at the following levels:

- **Production level:** Lack of understanding of the product they grow and its use in the value chain, which does not incentivize them to invest in its quality. The small-scale and scattered production makes it difficult to monitor and organize it.
- **National consumption:** The consumers in Iran do not have an in-depth knowledge of the medicinal herbs and the ITM. They do not necessarily distinguish

reliable from non-reliable sources of plants. This is due in part to the limited visibility of the certification provided by the Ministry of Agriculture Jihad and the absence of communication about research to the public.

- **Export markets:** The buyers and consumers on foreign markets have limited awareness about Iranian medicinal herbs and the ITM. One of the primary reasons is the amount of re-exports in the medicinal herbs sector (often due to sanctions) and the lack of GI protection. Consumers in the end market often are not aware they are consuming an Iranian product. However, the issue is also rooted in the lack of market entry capacity at the firm level. Indeed, exporters have very limited awareness about market entry requirements (technical and voluntary certification), the current trends in the sector and the benefits of GI, etc. This is due to the fact that export support for the players in the sector is still very limited and most associations and support services are geared towards the domestic market.

Limited response to the recent degradation of the image of medicinal herbs

Relevant operational objectives:

- **1.3.** Develop accessible materials and promotional campaign of a high-quality Persian medicine, in parallel with conventional medicine
- **2.5.** Spread international certification among Iranian herbs producers
- **3.1.** Develop an international brand of Persian medicine



The increase in demand and entry of new firms in the sector has led to an overall decrease in quality of production. This has had a negative impact on the sector's image and impacted high-quality producers. A few major root causes lead to this issue:

- **Regulation of the sector:** There is a lack of regulation and control over new firms entering the sector, as well as regulation retail of shops (*attaris*).
- **Absence of easily accessible research:** The research on the sector is mostly targeting sector specialists and botanists and is rarely targeting the wider public and end consumers. There is a need to educate end consumers about ITM and medicinal herbs to increase their understanding of quality characteristics and distribution channels.
- **Absence of an ITM branding:** The absence of an overarching branding initiative that would ensure visibility for the best producers in Iran.

“As a consumer, I know about the traditional medicinal plants. But I do not trust all retailers. It seems the quality levels are very variable, especially in *attaris*.”

National environment constraints

Need for a stronger regulatory framework to protect wild resources

Relevant operational objectives:

- **2.4.** Increase control of medicinal herbs rangeland harvesting to ensure safeguard of the natural resources

“As a research institution, we advocate for the government to support the transition from rangeland harvest to cultivation. It is the only way to safeguard Iran's rich variety of endemic medicinal plants species.”

The prevailing use of rangeland for medicinal herbs production is an important threat to the sector, especially considering the national growth in demand as well as exports. The lack of a framework for rangeland

harvest is thus as priority to ensure the sector's sustainable growth and limit depletion of resources.

The current regulation gives full control to communities to exploit their territories and resources. In addition, the communities are usually not aware of the preservation requirements and the endangered species not to collect. Sensitization work towards communities would, therefore, be an effective first step in the preservation of rangeland. However, it needs to be complemented by a regulatory framework.

There are, therefore, no safeguards or means to control the natural resource and the rangeland harvesting. A number of research bodies are advocating the authorities to organize a transition from rangeland harvest to cultivation; however, these propositions have not yet been integrated in the sector development plans.

Agriculture, and medicinal herbs in particular, is at risk of climate change impacts

Relevant operational objectives:

- 1.2. Improve documentation and nomenclature on Iranian medicinal herbs

The droughts became more frequent during the past decades. We need to know how to anticipate it and minimize losses.'

Iran is categorized as a country "vulnerable" to climate change, according to United Nations Framework Convention on Climate Change (UNFCCC) definitions. There is a list of current and future effects that will affect agriculture and particularly medicinal plants. These include:

- Declining annual mean rainfall in dry areas;
- Increased flooding in wet areas;
- Increasing temperatures;
- Rising aridity in southern basins;
- Greater weather variability;
- Decreased spring and summer rainfall.

It will be important for policies to take into account these risks and anticipate through targeted measures. Prioritizing research and development in the areas of resilient species is one of the important areas of action.

Policies gap in medicinal herbs marketing and contract farming promotion

Relevant operational objectives:

- 2.1. Spread good harvesting, production and post-harvesting techniques

We need the support of the government to develop contract farming in the medicinal herbs sector. This is the only way to ensure the highest quality from production to the end consumer.'

Contract farming is seen by sector stakeholders as one of the key solutions to resolve issues at the production level, related to quantity and quality. However, the mandate on marketing in agriculture has changed ministries in the past years. The marketing of medicinal herbs used to be under the Ministry of Economic Affairs and Finance, but has transitioned to the Ministry of Agriculture Jihad. However, the Ministry of Agriculture Jihad faces capacity challenges to implement correct measures to implement contract farming, since they have not yet developed the required competency in the field. To support the Ministry of Agriculture Jihad, a national working group was created by sector stakeholders called the [National Agribusiness Working Group](#). This working group focuses on three areas:

- **Contract farming:** Identification of pioneer farmers in contract farming and using them to provide advisory services to 20 new companies to spread contract farming (e.g. Novin Saffron).
- **Business development services:** Provision of services to companies through the agricultural engineering organization.
- **Establishment of public-private partnership:** Specific areas include technology transfer, research and extension.

THE WAY FORWARD

The medicinal herbs sector in Iran is a victim of its own success. The current local and international trends create a favourable context with a growing global demand for medicinal plants. In Iran, like other countries with a rich history of traditional plant-based medicine, this has led to an inflow of new firms in an otherwise traditional and long-established sector. It has also put pressure on the primary resources, especially considering the predominant rangeland harvest of medicinal herbs, and has led to a degradation of quality.

These latest developments call for a strategic response around a threefold approach:

- Strengthening safeguards and frameworks to maintain the highest level of quality of production;
- Carefully narrowing down the species for exports of medicinal plants to avoid further pressure on endemic resources;
- Developing knowledge about Iranian traditional medicine and its principles –locally and internationally–

to educate consumers and sensitize them about the product and how to select it.

Exports of medicinal herbs will bring further revenue and resilience to Iranian producers, but they need to be carefully framed and producers' capacities need to be built to meet the constantly growing quality requirements on key markets.

The implementation of this strategy will thus lead to increased exporting through reduced uncertainty and improved connections with high-potential markets, and expanded downstream activities for increased domestic value added and export diversification. It will also increase the efficiency and sustainability in natural resource usage and secure a sustainable income for rural populations. Finally, it will strengthen Iran's positive national image through the development of a national medicine brand.

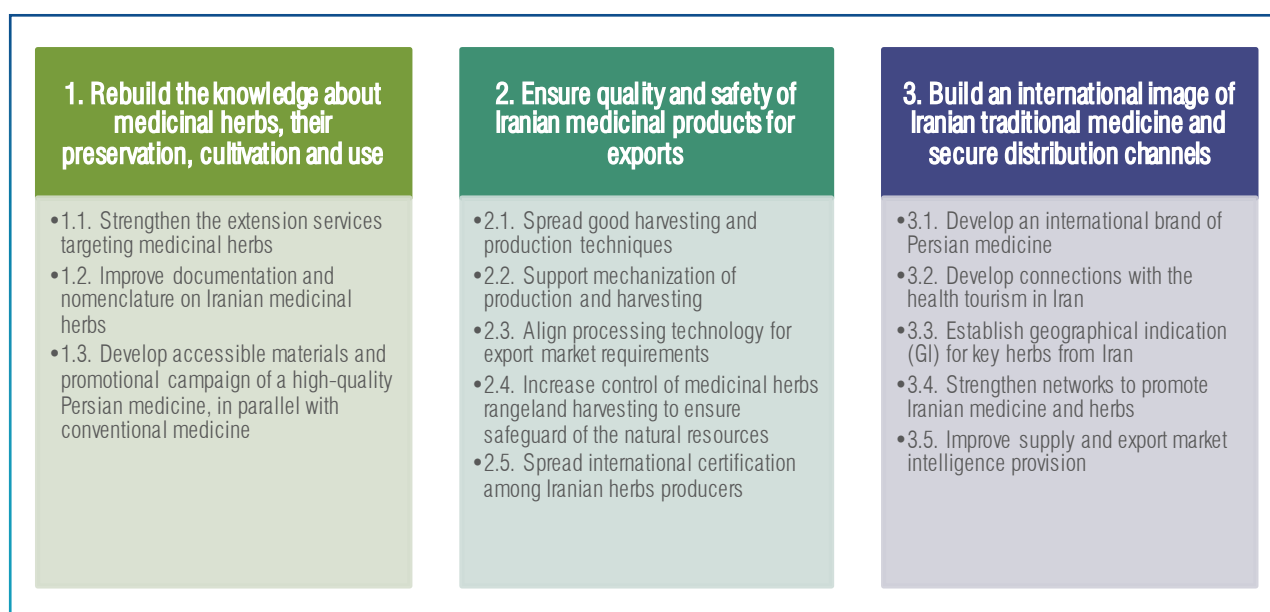
Vision and strategic objectives

In line with the strategic approach presented above, the following is a delineation of the proposed vision. The vision statement was discussed and agreed with all stakeholders in the medicinal herbs sector.

Preserve and share traditional Iranian plant knowledge with the world.

The strategy's plan of action will respond to this vision by addressing constraints and leveraging opportunities in a comprehensive and strategic manner. To this end, particular efforts will be made to realize the following three strategic and operational objectives.





Strategic Objective 1: Rebuild the knowledge about medicinal herbs, their preservation, cultivation and use

The first strategic objective is to focus on building knowledge about medicinal herbs and Iranian traditional medicine (ITM). As identified in the diagnostic of the sector, it suffers of a lack of dissemination of the existing knowledge to all steps of the value chain, from production to the consumer –both national and international. The strategic objective thus focuses on three main operational targets. The first is to build capacities of producing communities through targeted extension services. The second is to create a widely accessible nomenclature about plant-based Iranian medications to ensure compliance with international markets. The last objective is to develop accessible promotional tools targeting the local market, and educating the population about the plants, their use and their quality, to ensure a more selective market and a higher-quality proposition.

Strategic Objective 2: Ensure quality and safety of Iranian medicinal products for exports

The second strategic objective focuses on the upgrading of the quality and safety of those selected plants for exports. This answers the current issues of rejection of products by international buyers. To ensure the quality of the production, there are five main focus areas. The first is to spread good harvesting and production techniques, particularly through the proliferation of contract farming pilots. This will empower buyers and processors to have an oversight on the production process and a responsibility to invest in skills and equipment. The second level of action is to spread investment in

mechanical production and harvesting. The third area is to support modernization of the plant processing techniques and technologies through research and development. The fourth area is to protect rangeland from over-exploitation by building capacities of communities and accompanying them to transit to cultivation. The final objective is to increase compliance of Iranian producers with key market requirements, particularly the newly developed regulations on European markets.

Strategic Objective 3: Build an international image of Iranian traditional medicine and secure distribution channels

The third strategic objective responds to trends in the medicinal herbs sector worldwide. To increase trust of end consumers and widen reach of the medicinal plants products, the strategy proposes to develop a national brand for ITM and to promote it through a variety of channels, both traditional and non-traditional. The first objective is thus to develop a brand linked with a quality certification, and to protect it through IP. The second objective is to connect the medicinal herbs sector with a non-traditional export –the tourism sector, particularly health tourism. Health tourism, wellness and convalescence facilities could be a major market opportunity for Iranian herbs-based medicines and remedies. The third objective is to ensure protection and visibility of Iranian medicinal herbs through GI. This will ensure that re-exported products are still recognizable as Iranian-made products. The fourth objective is to use non-traditional market linkages such as diaspora to promote production in key markets. Finally, the strategy also proposes to strengthen the flow of market information and intelligence to exporters and capacity building on how to use it their advantage.

The key potential products for exports

In line with the 15 priority species for export identified by the Iranian Government, the strategy shortlists the herbs and herbs-based products with the most export potential in order to ensure preservation of other species and limit exploitation of wild resources.

SAFFRON

Saffron¹¹ is the most expensive culture in the world among aromatic and medicinal plants and the most strategic culture in Iran. The cultivation of this very expensive traditional spice extends from the Mediterranean to Europe and Asia. Saffron contains compounds¹² known for their health benefits. Studies have demonstrated the various pharmacological effects of saffron and its active components, including antioxidant, anti-tumour, memory and learning enhancer, neuroprotective, anti-anxiety, antidepressant and anti-hypertensive. The main saffron-producing countries are Iran, Spain, the Hellenic Republic, the Republic of Italy, the Republic of Turkey and India. Of these countries, almost 90% of all saffron is produced in Iran. According to the FAO's Global Important Agricultural Heritage



Systems (GIAHS), Iran is the world's largest producer of saffron and the province of Khorasan Razavi, with a production of approximately 78%, is the largest producer. In this sense, the main saffron cultures in Iran are found in Khorasan-e-Razavi, South Khorasan, North Khorasan, Isfahan, Fars, Kerman and Yazd.

Table 3: Cultivation area, production and global yield of saffron in 2017

	Country	Cultivation area (ha)	Production (ton)	Yield (kg/ha)	Global share (production)
1	Iran	108 084	376	3.6	88.9
2	India	5 707	22	3.9	5.2
3	Afghanistan	5 204	10.7	2.1	2.5
4	Greece	1 800	7.2	4	1.7
5	Morocco	200	2.6	3.2	0.6
6	Spain	165	2.3	14	0.5
7	Italy	500	1	2	0.2
8	China	500	1	2	0.2
9	Azerbaijan	35	0.23	6.6	0.1
Total		122 195	423.03	-	100

Source: Statistics from Ministry of Agriculture Jihad.

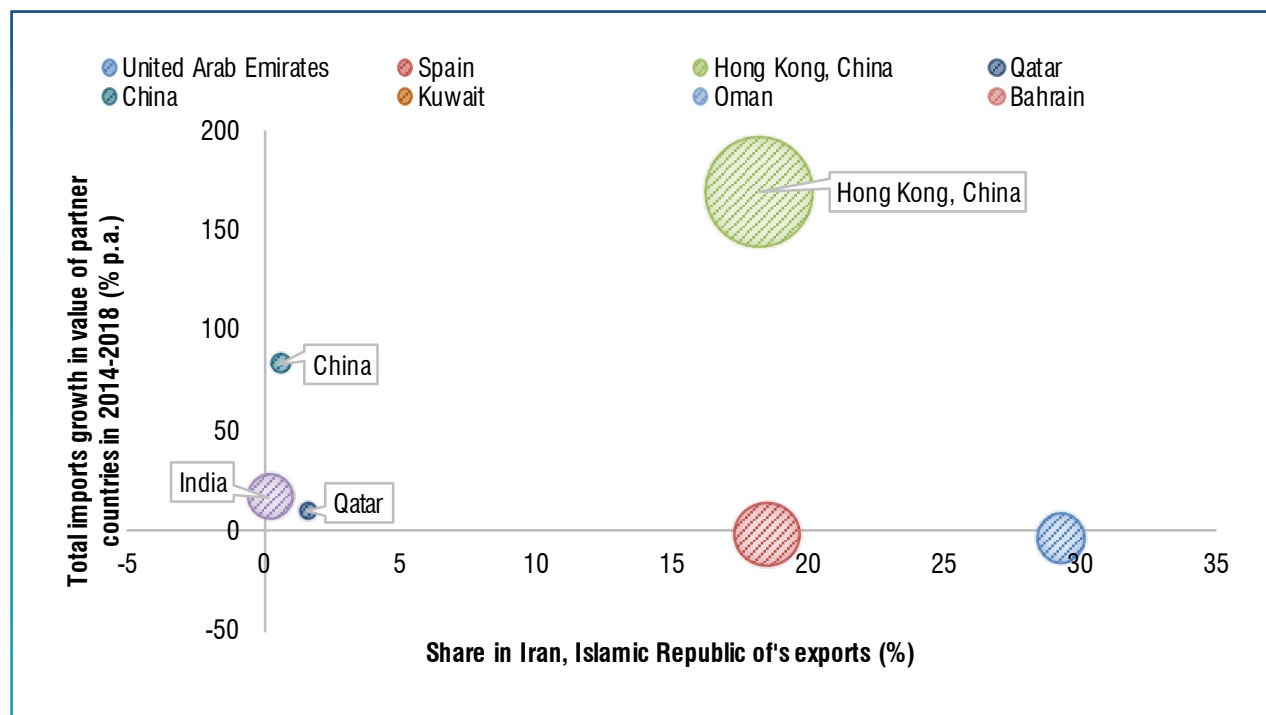
Worldwide saffron exports grew at an average annual rate of 12% per annum in 2014–18. Iran is the leading exporter of saffron with a value of 72% of world exports, followed by Spain, Afghanistan and Hong Kong Special Administrative Region (China). However, it is

important to underline that part of the saffron exports from Spain and Hong Kong (China) originates from Iran. The Top 5 importers of saffron from Iran are Hong Kong (China), Spain, the United Arab Emirates, China and Germany.¹³

11.– *Crocus sativus* L.

12.– E.g. crocins, safranal, crocetin, picrocrocin and secondary metabolites such as terpenes, flavonoids, anthocyanins and carotenoids.

13.– Trade Map, ITC.

Figure 13: Prospects of market diversification for saffron (HS 091020) (2018)

Note: Bubble size = share of partner countries in world imports (%).

Source: ITC calculations based on the Islamic Republic of Iran Customs Administration (IRICA) statistics.

Beyond the traditional United Arab Emirates and Spanish markets for saffron, both currently declining, the following markets represent interesting diversification opportunities (see Figure 13).

Current markets with growth potential

Hong Kong (China) is the world's largest importer of saffron, and an important re-exporter in the South-East Asia region. Hong Kong represents 33% of the world's saffron imports and 49% of Iran's saffron exports. Iran has gained the leadership on this market, as it is the 1st importer (78% market share). In 2014–18, the annual growth in total saffron imports by Hong Kong (China) was an astounding 169%, with a growth in the value of Iran's saffron imports of 121% in the same period. Iran managed to take advantage of this growing market, but did not sustain the trading relationship, as exports declined over the 2017–18 period. There is a high potential to increase this trading relationship further and increase the presence of Iranian saffron in Asia, especially for its wellness and medicinal uses.

Promising new markets

China is ranked 14th among saffron importers and represents only 1.2% of the world's saffron imports and 0.6% of Iran's saffron exports. Iran has gained the

leadership in this market, as it is the 1st importer (98% market share). However, in 2014–18, the annual growth in China's total saffron imports was approximately 83%, with a decline of 75% in the value of Iranian imports in 2017–18. The Chinese market is an interesting one for medicinal saffron-based products due to the growing middle class and young population, curious about other traditions.

India: The Indian saffron market is the 4th after Hong Kong, Spain and the United Arab Emirates, with 6.1% of world imports, and is very dynamic. The Indian market has indeed grown steadily at 17% annually in 2014–18. Iran has an important potential to take advantage of this market. The Indian market currently only represents 0.2% of total exports, but, since first connections were already established with Indian buyers, further exchanges can be envisaged. In addition, India's main supplier is Afghanistan. Given the production levels in Afghanistan and the exported amounts, there could be indications of Iranian saffron already being re-exported to the Indian market. The GI protection of Iranian saffron would allow greater visibility for Iran as a supplier on that market.

The State of Qatar: The country represents a growth opportunity for Iranian saffron exports, as it is among the most dynamic regional markets, growing at 10%



annually in 2014–18. Iran has gained the leadership on this market, as it is the 1st importer (84% market share). Although the market is not growing as fast as the Chinese one, it is closer and of a similar size (0.9% of world imports). Qatar is not a fully untapped market, since it already represents 1.6% of Iranian saffron exports. It will thus facilitate the increase of the trade relationship.

PERSIAN SHALLOT

Persian shallot¹⁴ is an Asian species that originates from the centre and south-west of Asia. This plant is different from common shallot and it has high genetic diversity. It is one of the most important medicinal and industrial species from *Allium* genus in Iran that grows naturally in

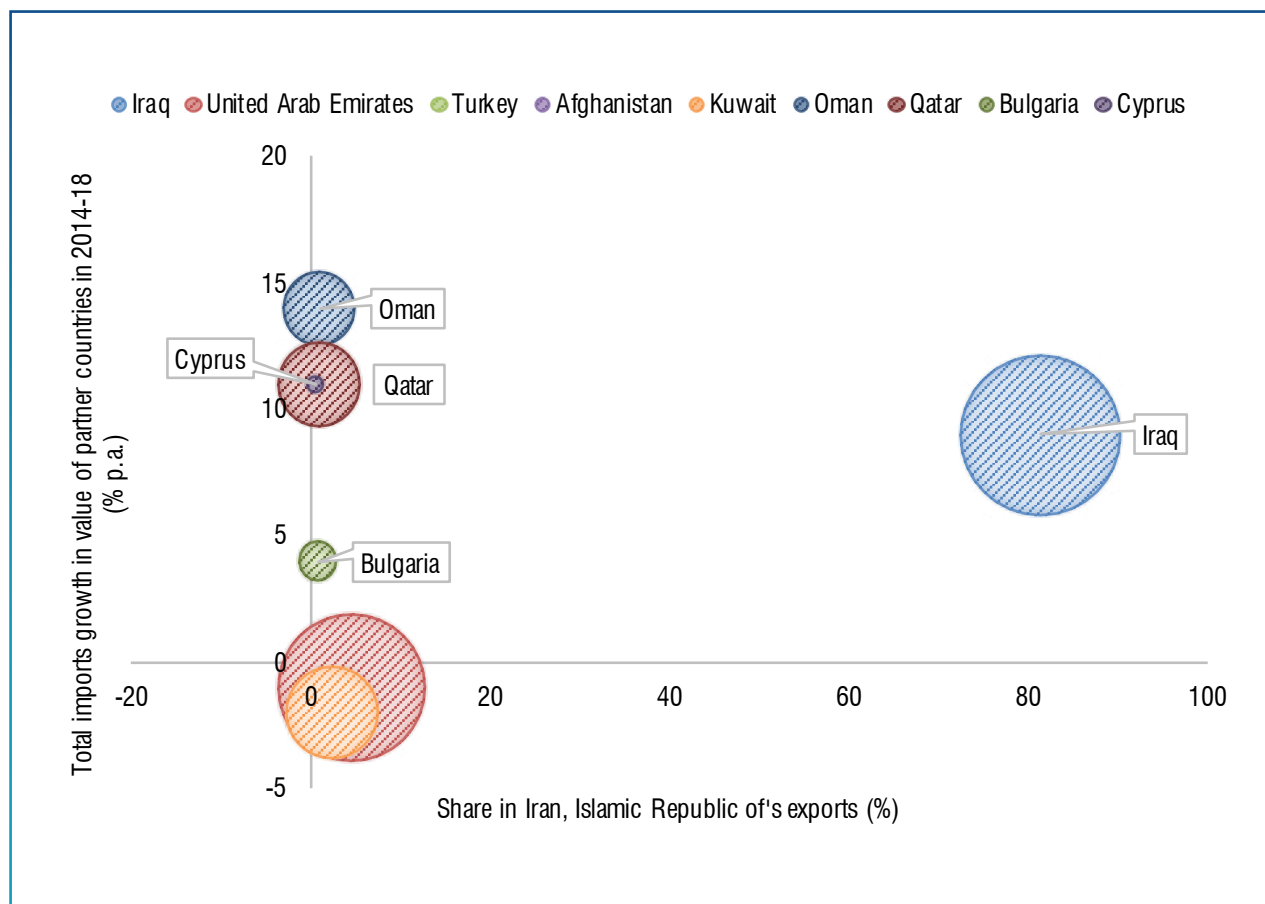
high lands with very cold to semi-cold climates. Shallot is endemic of Iran and it grows as wild plant in Zagros Mountains in west, south and central areas of Iran. This plant is used as spice in traditional medicine and food industries. Sulphur compounds, allyl propyl and methyl sulfanyl are the most important essential oil components of this plant. Dry and hot temperament, kidney stones and bladder repellent, joint pain reduction, anti-parasite and reducing blood pressure are the important medicinal properties of this plant and it can cope with diabetes, arthritis, cold and flu, anxiety, fever, cough, headache, haemorrhoids, asthma, arteriosclerosis and cancer. The hillside of the Zagros Mountains in Lorestan, Kordestan, Ilam, Chaharmahal and Bakhtiari, west areas of Isfahan and other provinces have the potential for cultivation development of this valuable plant.

Table 4: Spatial distribution of area and production in 2018

No.	Province	Cultivation area (hectare)	Production (ton)	Share (production)
1	Isfahan	293	2 366	39.4
2	Chaharmahal and Bakhtiari	278.41	963.48	16.1
3	Lorestan	234.76	2 263.12	37.7
4	Hamadan	43	260	4.3
5	Khouzestan	30.8	128.2	2.1
6	Kordestan	16	5.6	0.1
7	Kermanshah	5.7	1.7	0.0
8	Markazi	4	11.2	0.2
9	Fars	2	0	0.0
10	Zanjan	1	3	0.0
11	North Khorasan	0.5	0	0.0
12	Golestan	0.1	0	0.0
Total		909.27	6 002.3	

Source: Statistics from Ministry of Agriculture Jihad.

14.– *Allium hirtifolium* Bioss.

Figure 14: Prospects of market diversification for Shallots (HS 070310) (2018)

Note: Bubble size = share of partner countries in world imports (%).

Source: ITC calculations based on the Islamic Republic of Iran Customs Administration (IRICA) statistics.

Since shallots exports from Iran are highly concentrated, there is an important market diversification potential. It is, however, important to note that Persian shallots are counted under the same HS code as onions (070310), which could lead to an important distortion of these trends, as Iran is also a large onion producer.

Current markets with growth potential

Iraq: Iranian exports of Persian shallots are highly concentrated on the Iraqi market, which represents 81% of total exports. Iran has gained the leadership in this market, as it is the 1st importer (93% market share). However, the Iraqi market is among the top world markets for this product and has shown an important growth (9% annually in 2014–18). There is thus still further potential to capitalize on this traditional trade partner, especially considering the close cultural ties between the countries.

Promising new markets

The Sultanate of Oman: Oman is a potential new market for Persian shallots. Oman is a regional market, positioned 31st among world importers. It also presents the highest import growth among importers of 14% annually in 2014–18. For Iran, Oman represents an opportunity due to its proximity and the availability of a first trade relationship (Oman currently represents 0.9% of Iranian total exports).

Qatar: Similarly to Oman, Qatar is another neighbouring country that has a growing demand. The market is a larger one than Oman (ranked 26th worldwide) and also presents considerable import growth in 2014–18 (11% annually). Iran can also capitalize on the established trade relationship, as the country represents 0.8% of total exports.

Other potential markets for Persian shallots could be the Republic of Cyprus and the Republic of Bulgaria. Iran already has small exports in both these markets, but their size is relatively limited.

CUMIN

Iran is the 3rd producer of cumin¹⁵ in the world after India and the Syrian Arab Republic (statistics of 2016). Cultivation area of cumin in 2018 was approximately 20 725.65 hectares and the production was more than 12 000 tons. The major provinces in production of cumin were Khorasan Razavi, South Khorasan, Golestan and North Khorasan respectively.

Cumin is the 3rd strategic product in the country after saffron and damask rose and a huge amount of this product exports to Japan, the Republic of Korea, the Islamic Republic of Pakistan, Turkey and the State of Kuwait (Resourcetrade, 2016). According to Trade Map statistics, in global export of cumin, Iran has the 5th grade after India, Syria, Turkey and the Federal Democratic Republic of Ethiopia, in 2016.

Although the seeds of cumin are widely used as the spice for their distinctive aroma, they are also commonly used in traditional medicine to treat a variety of

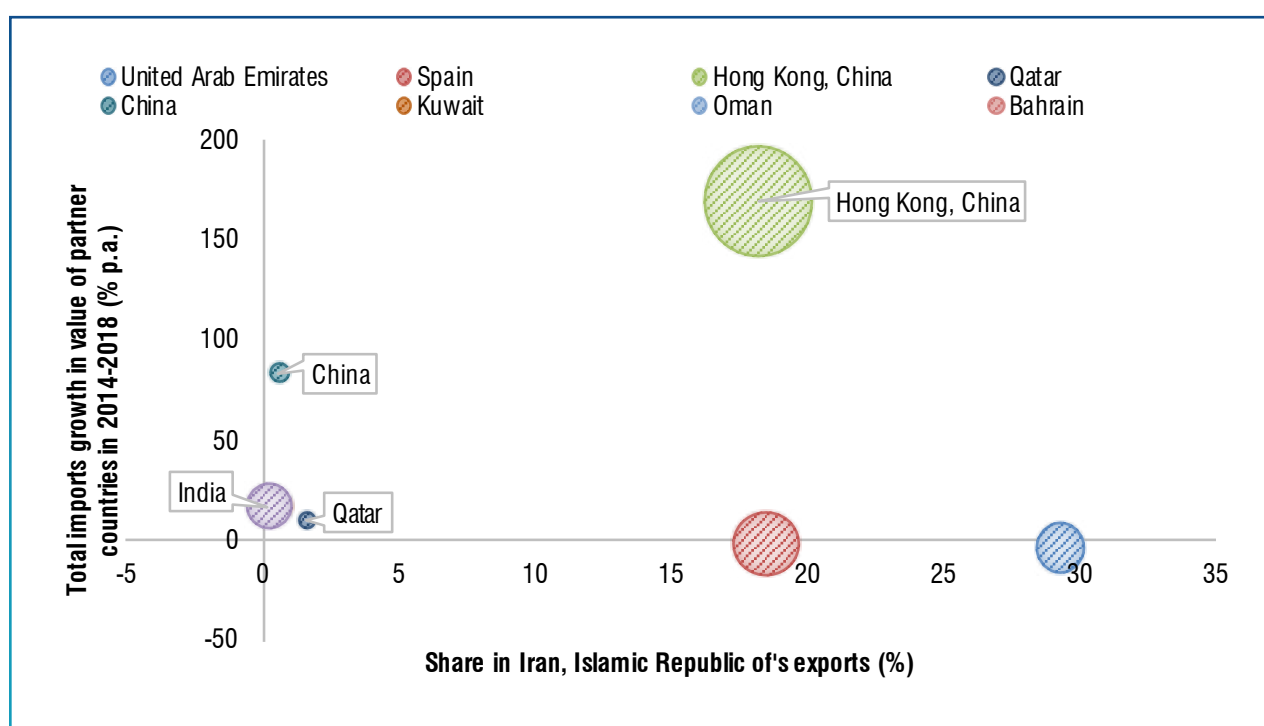
diseases, including chronic diarrhoea and indigestion, acute gastritis, diabetes and cancer. The literature presents ample evidence for the biological and biomedical activities of cumin, which have generally been ascribed to its bioactive constituents such as terpenes, phenols and flavonoids.

Table 5: The major provinces in production of cumin in Iran

The major provinces in production of cumin (2018)	Cultivation area (hectare)
Khorasan Razavi	11 524
South Khorasan	2 779
Golestan	2 590
North Khorasan	1 765
Semnan	716

Source: Statistics from Ministry of Agriculture Jihad.

Figure 15: Prospects of market diversification for cumin (HS 090931) (2018)



Note: Bubble size = share of partner countries in world imports (%).

Source: ITC calculations based on the Islamic Republic of Iran Customs Administration (IRICA) statistics.

Exports of cumin from Iran are currently quite limited and evenly distributed among the Islamic Republic of Pakistan, Afghanistan, the United Arab Emirates and Japan. Among these, Japan is the only market

presenting substantial market growth. There is also an important potential to tap into large and growing untapped markets. The following present the most promising market trends.

15.– Cuminum cyminum.



Current markets with growth potential

Japan: Japan is the 10th world importer of cumin and Iran has gained the largest market share with 47%, closely followed by India (45%) –Iran's main competitor in this market. The growing market trend on the Japanese market (8% growth in 2014–18) leaves some space for Iran to increase exports to the country and increase the market share.

Promising new markets

Bangladesh: Bangladesh is the 1st world importer of cumin and it grew 42% in 2014–18. It is an untapped market for Iran. Iranian exporters can envisage prospecting this market through trade embassies and potential diaspora in the country.

The Federal Democratic Republic of Nepal: Similarly to the People's Republic of Bangladesh, the Nepalese market is a major world importer (ranked 5th) and has grown 44% in 2014–18. The same approach as Bangladesh could be envisaged to prospect this market.

India: India is a smaller market for cumin, but still represents 1.3% of world imports. Similarly to Nepal and Bangladesh, it has been very dynamic, growing by 43% in 2014–18. It is advisable for exporters to prospect this market.

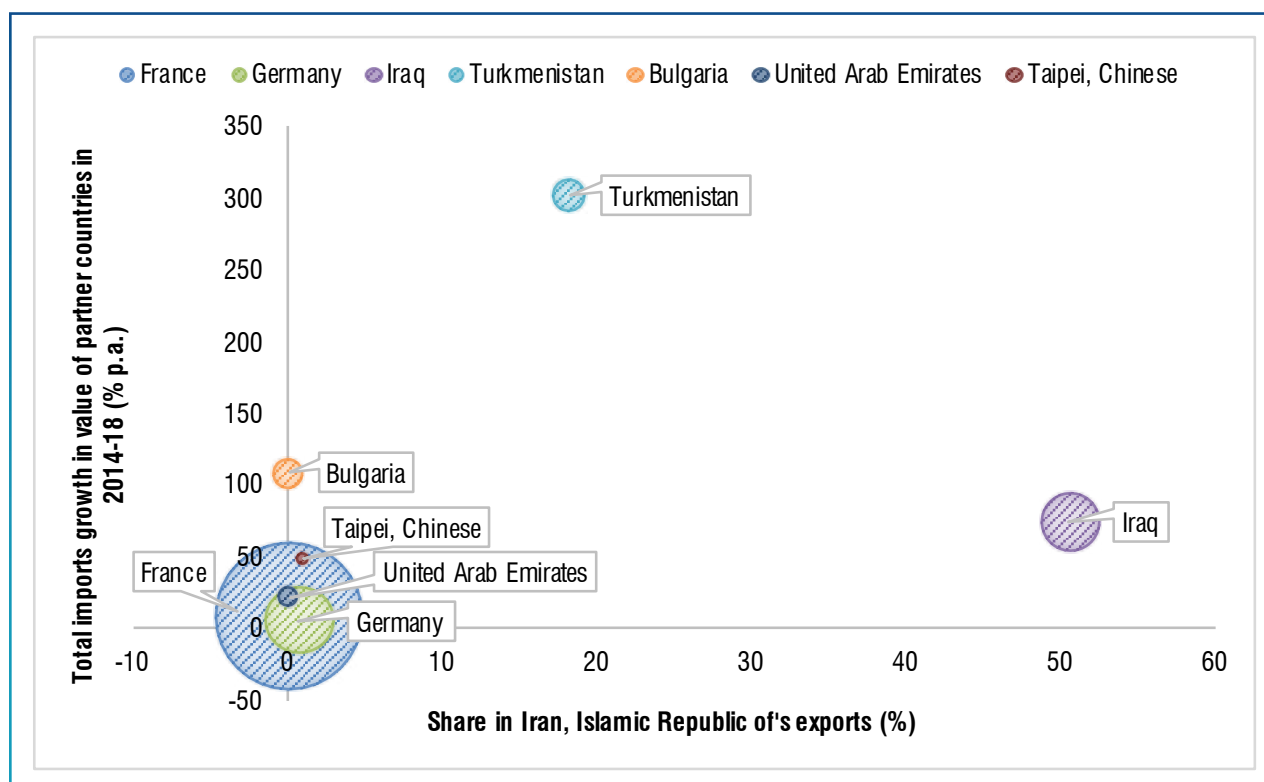
Other potential opportunities to consider are the Arab Republic of Egypt, France, Kuwait and Australia.

DAMASK ROSE

Rosa damascena, a member of the *Rosa* genus from Rosaceae family, has the common name of summer damask rose. There are many reports concerning the composition of the essential oil of *R. damascena*. Quercetin, kaempferol, cyanidin, lycopene, rubixanthin, zeaxanthin, xanthophyll and taraxanthin have been isolated from the hips of the rose plant. The yield of the volatile oil is very low and it is about one part of oil from 3,000 parts of flowers.

These plants have been used extensively in various foods, the food industry, nutritional products and the cosmetic industry. In Iranian traditional medicine (ITM), these plants are also used as medicinal herbs. The volatile oil obtained from the *R. damascena* flower is used in perfumery; therefore, it is very valuable oil in the cosmetic industry. The main products derived from *R. damascena* are rose water (mostly religious and food application), rose essential oil (very rare and expensive), dried flowers and petals, hips, as well as flower extracts. Among those products, two have been medically tested and used in traditional medicine: dried flowers and flower extracts.

Concerning the dried damask rose flowers, the dried buds are mostly intended for export and dried petals are often used as a medication, as it can solve problems with the digestive system. Some Iranians eat it with yogurt. Another reason for drying petals is to store them when distilleries cannot accept the whole produced flower anymore. They use them later for distillation.

Figure 16: Prospects of market diversification for dried Damask rose (HS 060390) (2018)¹⁶

Note: Bubble size = share of partner countries in world imports (%).

Source: ITC calculations based on the Islamic Republic of Iran Customs Administration (IRICA) statistics.

The current exports of dried damask roses are concentrated on three major markets: Iraq, the Socialist Republic of Viet Nam and Turkmenistan. Among those, Iraq and Turkmenistan hold further growth potential. However, there are also a wide range of fairly untapped markets such as Bulgaria, the United Arab Emirates, Chinese Taipei, France and Germany, which all present an upward import trend. However, the current marketing approach of this product does not clearly specify the medical properties of the flower, nor its use/posology. There is further scope to increase the connection of the products with the ITM branding.

Current markets with growth potential

Turkmenistan: Although Turkmenistan only represents 0.6% of world imports, the country's imports have grown by 303% in 2014–2018. Iranian exporters have dominated the Turkmen market and managed to capture that increased local demand. Growing the market share on this neighbouring market represents a low-hanging fruit for Iranian exporters.

Iraq: The neighbour represents approximately 50% of total exports of dried flowers from Iran. It is also a growing market (74% growth, 2014–18) in which Iranian exports have dominated (99.5% of market share). Much like in the case of Turkmenistan, growing the export share in Iraq represents a low-hanging fruit option for Iranian exporters.

Promising new markets

Bulgaria: Bulgaria is an untapped market with very similar size and dynamics as Turkmenistan. It represents a fairly close market; however, being part of the European Union, common market entry regulations apply (see EU market entry technical regulations and voluntary standards in the chapter "Increased market entry requirements").

The United Arab Emirates and Chinese Taipei: These two markets might be limited in size (0.2% and 0.1% of world imports respectively), but they offer exposure opportunities since they are large re-export and

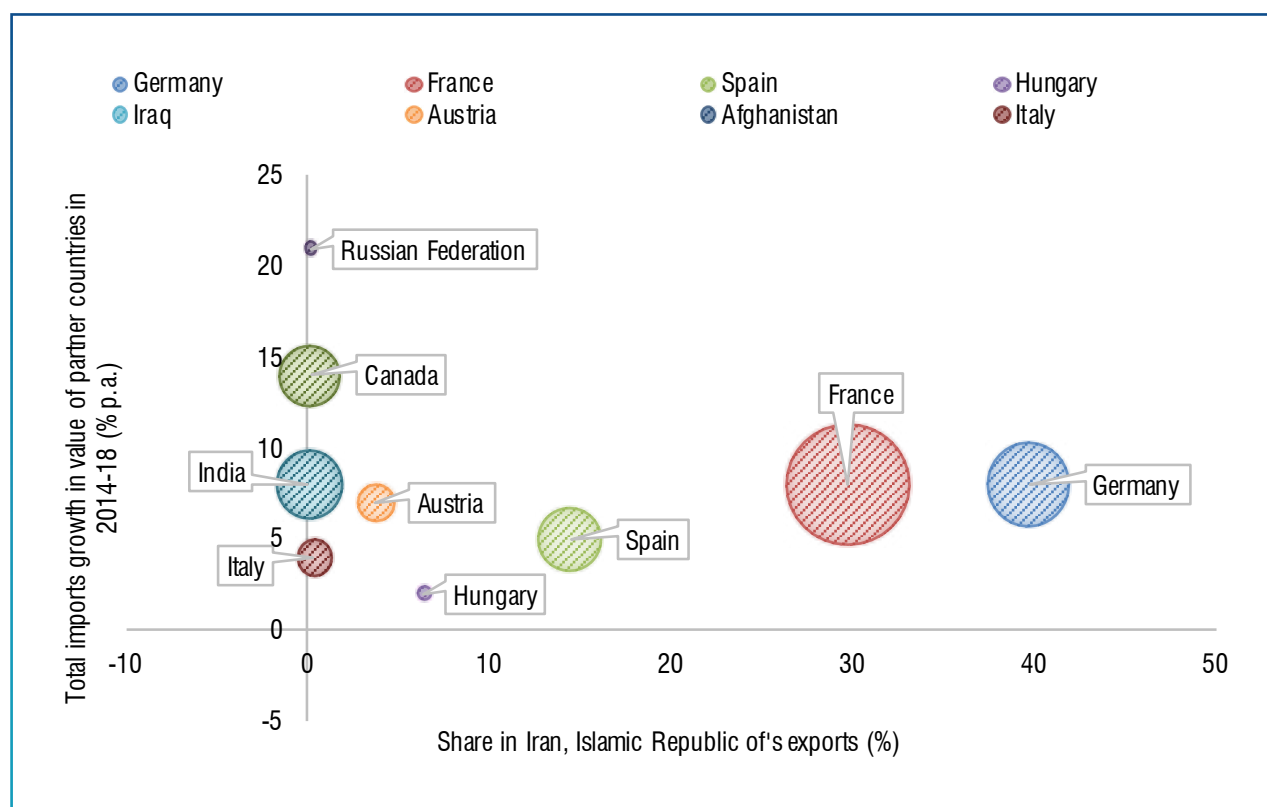
16.– The dried Damask rose is part of the HS 060390 "Dried, dyed, bleached, impregnated or otherwise prepared cut flowers and buds" category, which includes other dried flowers/sub-products.

international hubs. There are established export relationships, but there is considerable potential to grow them, especially considering the dynamic market growth rates on both these markets (22% in the United Arab Emirates and 49% in Chinese Taipei).

France and Germany: These two major European markets are also among the main world importers of dried flowers. France is ranked the 2nd importer and Germany is in 10th position. Some Iranian exporters already managed to penetrate those markets and thus comply with the entry requirements. Strong branding initiatives could contribute to increase the market share and spread the positive image of Iranian medicinal products in Europe.

The damask rose extract includes hydrosol, absolute, ethanolic, aqueous and chloroformic extractions from flowers, petals and hips (seed pot) of this plant. In comparison with rose oil, hydrosol and absolute are less expensive. The ethanolic, aqueous and chloroform extracts are prepared for research purposes. The effect of essential oil and hydroalcoholic extract of *R. damascena* on rat paw oedema induced by carrageenan was demonstrated. Essential oil had no anti-inflammatory effect while the extract could significantly reduce oedema, which maybe acted by inhibiting the mediators of acute inflammation. In addition, *R. damascena* contains vitamin C (13), which has antioxidant and anti-inflammatory effects.

Figure 17: Prospects of market diversification for damask rose extracts (HS 330129) (2018)¹⁷



Note: Bubble size = share of partner countries in world imports (%).

Source: ITC calculations based on the Islamic Republic of Iran Customs Administration (IRICA) statistics.

The HS code used for market identification covers a broader range of products in addition to damask rose extracts. However, it gives an indication of the current target markets for Iranian exporters. Essential oils from Iran are mostly sold to the European market (Germany,

France and Spain). There is an opportunity for essential oil producers to build on existing trade relations to increase presence in the European market. The branding and networking activities under this strategy will also contribute to reinforce this presence.

17.– Extracts of damask rose are part of the HS 330129 "Essential oils, whether or not terpeneless, incl. concretes and absolutes" category, which includes other dried flowers/sub-products in this category.

PLAN OF ACTION

To achieve the vision and strategic objectives discussed, a robust, actionable and realistic strategic plan of action is required. This is provided below, and constitutes the heart of this strategy. The plan of action is structured along the three strategic objectives described above and their operational objectives. For each objective, the plan of action outlines detailed activities and their implementation modalities, which include:

- Priority level: Priority 1 being the highest and 3 the lowest.
- Start/end dates: The desired time-frame of the activity.
- Targets: Quantifiable targets that allow monitoring of the activity from the implementation stage to completion.
- Leading implementing partners: One accountable lead institution per activity. (The institution can also have a technical role or can solely have an oversight and coordination role.)
- Supporting implementing partners: Any institution that should be involved at any stage of the activity's implementation.



Strategic objective	Operational objective	Activity	Priority	Period					Reform or project	Targets	Leading implementing partners	Supporting implementing partners
				2021	2022	2023	2024	2025				
1. Rebuild the knowledge about medicinal herbs, their preservation, cultivation and use	1.1. Strengthen the extension services targeting medicinal herbs	1.1.1. Develop and implement a national training programme for producers and harvesters of medicinal herbs on the following aspects: 1. End use of plants and required handling; 2. Seed production; 3. Use of organic fertilizers; 4. Weed control; 5. Use of machinery; 6. For rangeland harvest: sustainable management of the resource; 7. Post-harvest activities and drying. This training programme would be connected to a certification.	2						Project	<ul style="list-style-type: none"> Planning and holding of training courses (74 courses) for prioritized 30 medicinal plants 	Research Institute of Forests and Rangelands	Educational institutes of the Forests, Range and Watershed Management Organization + Iranian Medicinal Plants Society + Iranian Institute of Medicinal Plants + Faculties of medicinal plants + Private Institutions
		1.1.2. Integrate medicinal herbs topics above in the general extension services.	3						Project	<ul style="list-style-type: none"> Seven topics in 1.1.1. integrated in extension service provision 	Agricultural Research Education And Extension Organization (AREEO)	Private institutions + Iranian Medicinal Plants Society
		1.1.3. Create demonstration plots in well-performing production sites. Identify such sites by their performance and proximity to other smallholder producers.	2						Project	<ul style="list-style-type: none"> Four plots set up by 2021 Four other plots set up by 2023 	Research Institute of Forests and Rangelands	Iranian Institute of Medicinal Plants + Iranian Medicinal Plants Society + Private institutions + Private sector
		1.2.1. Develop a widely accessible medicinal herbs registry, or pharmacopeia, and nomenclature, with available information on properties, usage history (required for international certification), side effects and processing methods.	1						Project	<ul style="list-style-type: none"> Overarching Pharmacopeia developed and translated to English 	Iranian Institute of Medicinal Plants	Governmental and universities and institutions + Iranian Medicinal Plants Society
		1.2.2. Finalize the list of tariff lines and HS codes for all key medicinal herbs in Iran to have a complete coverage of the product range.	1						Project	<ul style="list-style-type: none"> Full list of HS codes developed to cover Iranian herbs 	Ministry of Agriculture Jihad	Private institutions + Iranian Medicinal Plants Society + Medicinal plants unions
	1.2. Improve documentation and nomenclature on Iranian medicinal herbs	1.2.3. Create an information bank for medicinal plants production and consumption, especially to assess the domestic annual consumption.	1						Project	<ul style="list-style-type: none"> Online system created to monitor plant production by region and consumption 	Ministry of Agriculture Jihad	.P.

Strategic objective	Operational objective	Activity	Priority	Period					Reform or project	Targets	Leading implementing partners	Supporting implementing partners
				2021	2022	2023	2024	2025				
1. Rebuild the knowledge about medicinal herbs, their preservation, cultivation and use	1.2. Improve documentation and nomenclature on Iranian medicinal herbs	1.2.4. Increase funding into research of impact of climate change on endemic populations of plants and develop a selection of species authorized for rangeland harvesting.	1						Reform	<ul style="list-style-type: none"> Funding to climate change impact research increased by at least 15% 	Research Institute of Forests and Rangelands	Iranian Institute of Medicinal Plants + Iranian Medicinal Plants Society + Universities + International funding agency
		1.3.1. Develop a reference manual about Persian medicine, how it fits with conventional medicine, the history, the principles and the plants used and their application. The target audience would be civil society, to sensitize people about the quality requirements and consolidate traditional knowledge among consumers.	1						Project	<ul style="list-style-type: none"> Reference manual on Persian medicine developed, including in English 	Ministry of Health and Medical Education	Association of Producers of Herbal Medicines and Products (APHMP)
		1.3.2. Develop a promotional campaign about Persian medicine and its use, what it can and cannot do, and sensitize public about the labels and certifications in the sector to favour only high-quality providers. Use social and conventional media to disseminate the campaign.	1						Project	<ul style="list-style-type: none"> National sensitization campaign carried out to increase consumer awareness 	Iranian Medicinal Plants Society	Executor of medicinal plants + Medicinal plants unions and associations + Private sector + International Agriculture Union of Medicinal Plants of Iran
	2.1. Spread good harvesting, production and post-harvesting techniques	1.3.3. Integrate medicinal herbs optional courses into medical education curricula and strengthen education for pharmacologists specialized in Persian medicine. Consider integrating sensitization about Persian medicine in school and familiarize physicians with the use of medicinal herbs for their patients.	2						Project	<ul style="list-style-type: none"> Optional courses on Persian medicine and remedies developed and integrated in curricula 	Association of Producers of Herbal Medicines and Products (APHMP)	Universities + Private educational institutes
		2.1.1. Spread the use of contract farming for medicinal plants production, conditional to training at the farm level and mechanization support by the processing or exporting firm.	1						Project	<ul style="list-style-type: none"> At least 30% of production transition to contract farming 	Dr. Zeinali	Medicinal plants unions and associations
2. Ensure quality, quantity and safety of Iranian medicinal products for exports	2.1. Spread good harvesting, production and post-harvesting techniques	2.1.2. Federate medicinal plants farmers as well as rangeland harvesters through the creation of provincial unions and use them to coordinate and disseminate information and techniques.	2						Project	<ul style="list-style-type: none"> At least five provincial producers' unions established 	Dr. Zeinali	Medicinal plants unions + Iranian Institute of Medicinal Plants + Private sector

Strategic objective	Operational objective	Activity	Priority	Period					Reform or project	Targets	Leading implementing partners	Supporting implementing partners
				2021	2022	2023	2024	2025				
2. Ensure quality, quantity and safety of Iranian medicinal products for exports	2.1. Spread good harvesting, production and post-harvesting techniques	2.1.3. Use contract farming to create pilots of fully organic production through provision of organic or bio-fertilizers and use of mechanized sowing and weeding equipment.	2						Project	<ul style="list-style-type: none"> At least 10 fully organic pilots conducted 	Dr. Zeinali	Iranian Institute of Medicinal Plants + Private institutions + Medicinal plants unions
		2.1.4. Develop production of certified seeds such as henna, common liquorice, Allium hirtifolium, Carum persicum, fennel, hemp, zataria multiflora, ferula asafoetida, Alhaji camelorum, flaxweed, jujube and Echium amoenum.	2						Project	<ul style="list-style-type: none"> At least six new certified seeds production in Iran 	Research Institute of Forests and Rangelands + Universities	Universities + Private sector
		2.2.1. Target agricultural research into medicinal plant harvesting mechanization techniques and sterilization of medicinal plants, with a particular focus on organic techniques (weed control, etc.). Develop scientific societies for training and production development.	2						Project	<ul style="list-style-type: none"> Funding into mechanization and sterilization research increased by 50% At least two scientific societies established 	Abu Raihan Campus, University of Tehran	Universities + Private sector
	2.2. Support mechanization of production and harvesting	2.2.2. Develop a list of plants and corresponding machine tools according to regions, and possible suppliers, and disseminate the information through producers associations and cooperatives.	1						Project	<ul style="list-style-type: none"> Manual on plants and machinery developed Disseminated to farmers Manual updated every three years 	Abu Raihan Campus, University of Tehran	Private sector + Medicinal plants unions and associations
		2.2.3. Support the creation of firms targeting mechanization of planting, weeding and harvesting machines.	2						Project	<ul style="list-style-type: none"> Investment targeting campaign carried out 	Medicinal plants unions	Private Sector
		2.2.4. Develop a cluster policy (industrial parks, etc.), investment promotion, and improved access to imported equipment for processing.	2						Project	<ul style="list-style-type: none"> Cluster policy implemented Access to imported equipment facilitated 	Dr. Zeinali	Private sector + Medicinal plants unions

Strategic objective	Operational objective	Activity	Priority	Period					Reform or project	Targets	Leading implementing partners	Supporting implementing partners
				2021	2022	2023	2024	2025				
2. Ensure quality, quantity and safety of Iranian medicinal products for exports	2.3. Align processing technology for export market requirements	2.3.1. Develop capacity-building modules for processors about available sustainable drying and disinfection methods, including gamma rays, ultraviolet (UV), microwave, ozone and ultrasonic.	1						Project	<ul style="list-style-type: none"> Capacity-building modules developed Conducted every year 	Medicinal plants unions	Universities + Medicinal plants unions + Private sector + Universities
		2.3.2. Provide manuals and capacity building to processors about sorting methods and requirements on traceability of products.	2						Project	<ul style="list-style-type: none"> Manuals developed Capacity-building modules developed Disseminated every year 	Medicinal plants unions	Medicinal plants unions + Private sector, associations and universities
		2.3.3. Provide manuals and capacity building on branding and packaging of medicinal herbs in Iran. The company-level branding should be connected to the national-level traditional medicine brand (see Operational Objective 3.1.).	1						Project	<ul style="list-style-type: none"> Manuals developed Capacity-building modules developed Disseminated every year 	Medicinal plants unions	Medicinal plants unions + Private sector and associations
	2.4. Increase control of medicinal herbs rangeland harvesting to ensure safeguard of the natural resources	2.4.1. Appoint provincial and city administrators and executives for development of management of medicinal plants and control of local harvesting in rangeland. Distribute animal husbandry activities in connection with medicinal herb-growing zones in such a way that they do not overlap.	3						Reform	<ul style="list-style-type: none"> One regional administrative point per production region 	Forests, Range and Watershed Management Organization	Research Institute of Forests and Rangelands + Private sector + Medicinal plants unions and associations
		2.4.2. Develop information channels to local communities and nomadic populations about local vulnerabilities and provide benefits to transit to cultivation by provision of small plots and training about cultivation techniques.	1						Project	<ul style="list-style-type: none"> Training modules to remote and nomadic communities once a year 	Research Institute of Forests and Rangelands	Private sector + Medicinal plants unions and associations
		2.4.3. Support rangeland monitoring through the development of digital application using the Global Positioning System (GPS) monitoring and databases.	1						Project	<ul style="list-style-type: none"> App developed 	Research Institute of Forests and Rangelands	Private sector + Universities

Strategic objective	Operational objective	Activity	Priority	Period					Reform or project	Targets	Leading implementing partners	Supporting implementing partners
				2021	2022	2023	2024	2025				
2. Ensure quality, quantity and safety of Iranian medicinal products for exports	2.5. Spread international certification among Iranian herbs producers	2.5.1. Support exporters in compliance with Good Agricultural and Collection Practices (GACP), Good Manufacturing Practices (GMP), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Hazard Analysis Critical Control Points (HACCP), sanitary and phytosanitary (SPS) and the Convention on Biological Diversity (CBD)/Access and Benefit Sharing (ABS).	2						Project	<ul style="list-style-type: none"> Capacity-building modules developed Disseminated every year 	Research Institute of Forests and Rangelands	Private sector + Universities
		2.5.2. Develop organic production of medicinal herbs and derived products (see how to market organic components in herb-based medicines) and include an organic certification within the Ministry of Health and Medical Education.	1						Reform	<ul style="list-style-type: none"> Organic certification is in place Promotional campaign held 	Medicinal Plants Export Union	Private sector
		2.5.3. Establish a specific European Union market expert unit/desk to support exporters to comply with the European legislation (Directive 2004/24/EC), the rules governing medicinal products in the European Union and the product registration for the European market.	1						Project	<ul style="list-style-type: none"> EU market help desk established 	Ministry of Industry, Mine and Trade	Private sector
		2.5.4. Publicize the list of voluntary standards required in target markets, including organic, sustainability and corporate social responsibility (CSR).	2						Project	<ul style="list-style-type: none"> Full list of voluntary standards for EU markets available online 	Dr. Zeinali	Private sector
		2.5.5. Develop participatory guarantee systems (PGS) as local quality assurance systems on organic farming in key production regions.	1						Project	<ul style="list-style-type: none"> At least 10 PGS pilots conducted Approach broadened in case of success 	Dr. Zeinali	Organizations under the Ministry of Agriculture Jihad
3. Build an international image of Iranian traditional medicine and secure distribution channels	3.1. Develop an international brand of Persian medicine	3.1.1. Develop a brand proposition for Persian medicine through a competition mechanism, using international branding experts and using examples and collaborating with India, the Democratic Socialist Republic of Sri Lanka and China, and targeting the export market and the tourism sector. Define rules and certification procedures for coverage of the national brand, based on factors such as domestic value added, product quality, environmental sustainability, and others determined in collaboration with sector stakeholders.	1						Project	<ul style="list-style-type: none"> Persian medicine brand developed in cooperation with other traditional medicine providers Certification procedure developed with the brand 	Trade Promotion Organization of Iran	Private sector

Strategic objective	Operational objective	Activity	Priority	Period					Reform or project	Targets	Leading implementing partners	Supporting implementing partners
				2021	2022	2023	2024	2025				
3. Build an international image of Iranian traditional medicine and secure distribution channels	3.1. Develop an international brand of Persian medicine	3.1.2. Align export products' brands with the national branding initiative.	2						Project	<ul style="list-style-type: none"> At least 10 major medicinal herbs producers aligned with national Persian medicine brand 	Medicinal plants unions	Private sector
		3.1.3. Identify suitable IP right protection for newly developed products and existing IP unprotected products. Develop an international registration strategy for promoting brands in exporting markets (trademarks, collective marks, or patents in case of inventive products).	1						Project	<ul style="list-style-type: none"> IP protection identified for the brand IP strategy developed 	Medicinal plants unions	Private sector
		3.2.1. Target the community-based tourism, ecotourism and health tourism subsectors and integrate information and products stands within accommodation/lodges and rehabilitation resorts.	1						Project	<ul style="list-style-type: none"> Promotional material distributed in tourism segments At least five business collaborations set up 	Dr. Zeinali	Private sector
	3.2. Develop connections with health tourism in Iran	3.2.2. Build touristic products in rehabilitation and health tourism built around Iranian medicine. Use examples of Ayurvedic resorts. Collaborate with Ministry of Health and Medical Education to develop relevant regulations and quality standards for such touristic products to ensure high quality and safety.	2						Project	<ul style="list-style-type: none"> Investment promotion campaign carried out At least five new investments in tourism products around Persian medicine 	Dr. Zeinali	Private sector
		3.3.1. Broaden the GI coverage of saffron in other important production areas, beyond Khorasan.	3						Project	<ul style="list-style-type: none"> At least two new regions with saffron GI 	Trade Promotion Organization of Iran	Private sector
	3.3. Establish GI for key herbs from Iran	3.3.2. Develop GI for additional priority medicinal herbs for export such as Persian shallot, damask rose and liquorice.	2						Project	<ul style="list-style-type: none"> GI developed for at least three other plants/regions 	Trade Promotion Organization of Iran	Private sector

Strategic objective	Operational objective	Activity	Priority	Period					Reform or project	Targets	Leading implementing partners	Supporting implementing partners
				2021	2022	2023	2024	2025				
3. Build an international image of Iranian traditional medicine and secure distribution channels	3.4. Strengthen networks to promote Iranian medicine and herbs and to bring market information	3.4.1. Set up export clusters under the Union of Iranian Exporters of medicinal herbs, food products and saffron to coordinate export activities of small producers. The clusters could be managed by the Iranian Centre for Medicinal Plants (ICMP).	2						Project	<ul style="list-style-type: none"> At least five export clusters set up 	Trade Promotion Organization of Iran	Private sector
		3.4.2. Mobilize and resource target market-based Embassies of Iran to deliver trade information on medicinal plants to the exporters' association. The information should contain a detailed market profile with a section on consumer trends and preferences and latest successful products in medicinal herbs. Use fixers in markets to do quarterly bulletins by e-mail.	1						Project	<ul style="list-style-type: none"> At least one appointed person on medicinal herbs from Iran in each target market embassy 	Ministry of Foreign Affairs	Private sector
	3.5. Improve supply and export market intelligence provision	3.5.1. Develop new and regularly updated sources of information on domestic and international markets, including detailed information by product-market combinations for major products and target export markets.	1						Project	<ul style="list-style-type: none"> New online platform with market information developed 	Dr. Zeinali	Medicinal plants unions and associations + Private sector
		3.5.2. Carry out capacity-building workshops and related activities targeting farmers and small and medium-sized enterprises (SMEs) through the exporters' association on accessing, understanding and reacting to market information.	2						Project	<ul style="list-style-type: none"> Yearly capacity building organized through exporters' associations and clusters 	Dr. Zeinali	Medicinal plants unions and associations + Universities and research centres

GUIDELINES ON STRATEGY IMPLEMENTATION

The objective of the Medicinal Herbs Strategy for Iran is to create an enabling environment for the medicinal herbs sector and to ensure its preservation while contributing to the country's exporting, growth and development. Achieving this ambitious objective will depend on the implementation of the activities defined in this strategy.

It is the translation of priorities into implementable projects that will contribute to achieving the substantial increase in export competitiveness and in export earnings envisaged under the strategy. These will be driven by reforming the regulatory framework, optimizing institutional support to exporters and strengthening firms' capacities to respond to market opportunities and challenges. Allocation of human, financial and technical resources is required to efficiently coordinate, implement and monitor work on the strategy.

Successful execution of activities will depend on stakeholders' abilities to plan and coordinate actions in a tactical manner. Diverse activities must be synchronized across public and private sector institutions to create sustainable results and it is, therefore, necessary to foster an adequate environment and create an appropriate framework for the strategy's successful implementation.

Key to achieving the targets will be coordination of activities, monitoring progress and mobilizing resources for implementation. To that effect, industry representatives recommended that an advisory committee of public sector and business representatives for the medicinal herbs sector be rapidly established, operationalized and empowered. The advisory committee is to be responsible for overall coordination, provision of policy guidance and the monitoring of industry development along the strategic orientation.

It is recommended that the advisory committee be empowered to meet quarterly and to implement the following functions:

- Create a shared understanding of key market challenges and opportunities facing the sector;
- Set goals and targets that, if achieved, will strengthen the sector's competitive position and enhance Iran's overall capacity to meet the changing demands of markets;
- Propose key policy changes to be undertaken and promote these policy changes among national decision makers;
- Support the coordination, implementation and monitoring of activities in the sector by the government, business, institutions or international organizations to ensure alignment to goals and targets, as required to contribute to resource identification and alignment.

As part of the overall trade policy and NES design process, it has been recommended that an inter-ministerial and multisectoral business council be organized and structured to address overall challenges and opportunities to Iran's trade performance. It is recommended that chairs of advisory committees, such as that for the medicinal herbs sector, be members of the council to consult on key trade thematic areas ranging from policy to regulations to trade negotiations.

The presence of the advisory committee to oversee the strategy's implementation is a key success factor, but it is not sufficient to effectively fulfil its assigned functions. The strategy's success depends on business sector support and participation in implementation, proactive networking and communication, and resources for implementation (Table 6).

Table 6: Key success factors for effective implementation

Factor	Details
Business sector support and participation in implementation	The business sector clearly expressed its willingness to contribute, directly or in partnership with public institutions, to the implementation of the strategy. Their implementation efforts can range from providing business intelligence to institutions to contributing to project design, promotion and branding, or policy advocacy, etc. In brief, the business sector's practical knowledge of sector operations is essential to ensuring that the strategy remains aligned to market trends and opportunities.
Proactive networking and communication	The key implementing institutions detailed in the plan of action need to be informed of the content of the strategy and the implications for their programming during its implementation period. This networking and communication is essential to build further ownership and to provide institutions with the opportunity to confirm the activities they can implement in the short to long term. It will be important for the members of the advisory committee and other institutions to reach out to relevant institutions nationally to create awareness and support for the development of the medicinal herbs sector.
Resources for implementation	<p>The advisory committee, in collaboration with other institutions, will need to leverage additional support for efficient implementation. Effective planning and resource mobilization is indispensable in supporting strategy implementation. Resource mobilization should be carefully planned and organized.</p> <p>As the medicinal herbs sector is a priority of the NES, the government should define annual budget allocations and supports to drive the industry growth. This commitment will demonstrate clear engagement towards strengthening the sector and will encourage private partners to support development. In addition to national budget support, resource identification will require the effective targeting of foreign investors in line with the strategy's priorities. Investment flows to Iran should also be considered as a valuable driver of strategy implementation and overall industry development.</p> <p>The various implementation modalities detailed will determine the success of the strategy's implementation. However, high-level support from the government, in collaboration with strong championship by the business sector, will be the real driver of successful strategy implementation.</p>



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