The impact of green logistics on the fruit and vegetables sector in the region of Souss Massa Draa: challenges and opportunities

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Abstract—In a highly competitive global market, standards and regulatory requirements imposed by importing countries become a minimum threshold that Moroccan standards must adopt. Due to the shortage of water, increasing inputs and production costs, starting with oil prices which affects production costs directly, logistics costs are thus subject to a regular increase.

Keywords—Green logistics; Fruits and Vegetables sector; Green Paper; road transport; intermodal transport; and carbon tax

I. INTRODUCTION

In a highly competitive global market, standards and regulatory requirements imposed by importing countries become a minimum threshold that Moroccan standards must adopt. Due to the shortage of water, increasing inputs and production costs, starting with oil prices which affects production costs directly, logistics costs are thus subject to a regular increase.

Logistics infrastructure also handicapped by the vulnerability of road transport (regulatory changes, aging fleet, unexpected passengers’ expectations in Tangier or Algeciras…). Faced with so many parameters, current and others to appear in the near future (carbon tax) –all of which threaten the competitiveness of produce dealers. In this regard, maritime transport is deemed necessary as an economic and environmental solution.

I. IMPORT CONDITIONS INCREASINGLY DRACONIAN

Faced with the rise of globalization, increased pressure for products imported from countries with lower production costs, trade agreements and changes in demand, the European Commission launched a public consultation called "green Paper" for the European Union which pertains to the quality of agricultural products where the application of fiscal taxes on polluters is expected.

- The new framework of the Green Paper:

The Green Paper examines the standards, quality programs and certification as well as the existing labeling systems in the EU - including geographical indications, organic farming and quality certification programs, private and regional; it also examines what could be improved to take advantage of EU agriculture’s strengths and to educate consumers thoroughly on marketed products.

The European Commission believes that EU farmers already meet some of the most stringent agricultural requirements in the world and have the necessary expertise to offer products with the qualities required by the market.

Therefore, the Commission asks them not to consider these requirements as a burden, but instead as a real possibility to seize by giving consumers exactly what they want, and especially by distinguishing their products in the market and thus selling them at higher prices.

The document invites organizations and individuals from all backgrounds to take part in the consultation.
The food producers, farmers, processors, retailers, distributors, NGOs, traders, consumers and government agencies are particularly encouraged to contribute and suggest improvements.

The consultation on the Green Paper has run until 31 December 2008. Based on its results, the commission has developed legislative proposals for action in May 2009.

• General appearance of the Marco Polo II program:

A program, which aims to reduce road congestion, improve the environmental performance of freight transport within the community and to strengthen inter-modality\(^1\) in order to contribute to establishing an efficient and sustainable transport system.

The program applies to actions involving the territories of at least two EU state members, or the territory of a Member State and the territory of a close third country.

• The inter-modality, an alternative solution:

Using maritime transport requires an additional day compared to road transport via trucks when everything goes well, it offers more reliability in delivery and helps avoiding working with buffer stocks. The ship carries two arguments here: the economic and the environmental arguments.

II. EXPORTS OF FRUITS AND VEGETABLES IN THE REGION SOUSS MASSA DRAA (SMD) VERSUS THE NEW MARKET RULES: ENVIRONMENTAL CONCERNS OR NEW PROTECTIONIST MEASURES

A. Overview of the supply chain of fruits and vegetables in the SMD region

Based on a diagnosis made with stakeholders in the supply chain of fruits and vegetables in the Souss Massa Draa region, we outlined the key stakeholders in the chain. The process constituting the chain is represented as follows:

Supply chain of fruits and vegetables has been the subject of a study done by the World Bank; this study has revealed the following:

• Morocco is ranked 64th behind Egypt and Asian countries, according to the index which reflects the opinion of international operators;
• Logistics costs are defined as "the sum of the costs carried by the sequence of operations of goods' movement" forms 25% of the added value of Morocco;
• The cost of transportation logistics alone forms 60% of total logistics costs.
B. Sustainable Development: Prospects and Implications

The term "sustainable development" appeared in 1980. It went popular after the World Commission on Environment and Development’s report, and then at the summit of RIO. However, the policies implemented and addressing this concept remained well below the issues at hand.

Sustainable development should be imposed on all countries as the only possible response to the constraints arising from growth in recent decades. This economic expansion with an unprecedented scale has created serious problems. These appear in the fields of global environment and society but also in the economy.

1) environmental degradations

Over the next fifty years, the world population will go beyond 9 billion people and the world's economic output may quintuple. These phenomena will be part of a large renewable measure. The total area of excellent quality agricultural land will be reduced. A severe worsened resource scarcity may cause conflicts, either internal or international ones. Analysts and policymakers who are looking at the social impact of environmental change on a large scale in developed countries, pay excessive attention to climate change and the depletion of stratospheric ozone.

2) Climate-change: a priority for sustainable development

The major challenge is of course the increased greenhouse effect, caused by human activities. International dialogue addressing this issue has already started. It involves setting national emission quotas of carbon dioxide. In addition to the refusal of the United States to ratify the Kyoto Protocol, developing countries are not sufficiently involved in this dialogue, which is detrimental to their mobilization.

Another reason to relativize the current attention drawn on the international negotiations on climate change is that, if the greenhouse effect is related to the consumption of fossil fuels, the global energy system is subject to several constraints.

We can optimize the solution to each of these issues only through a comprehensive and global approach. It is necessary to define a global energy policy concept that takes into account the common goals of all countries, including developing countries.

Europeans are sounding the alarm. Several attempts, reports, howling NGOs and climatologists, awareness of the dangers of climate warming have now reached the stage of practical implementation, of the standards of marketing and transportation for manufactured or imported products, hence, comes the need to plan and implement policies and measures that also encompass the environmental aspect in the strategies of manufacturing or marketing exported product in addition, there is the concept of the paying polluter (carbon tax), carbon footprint and Marco pollo; these are moderations which are staring to be considered as taxing regulations for products consumed in the territory of overseas countries. To better understand the implications of the new applications of importing countries in terms of environmental requirements, we will present in through the demands on agricultural product.

III THE FRUIT AND VEGETABLES SECTOR:
THE FUTURE IS FOR ECOLOGICAL PRODUCTS

19 questions about the quality of fruits and vegetables: marketing standards, farming requirements and quality schemes have been asked, and based on the answers; the European Commission will develop legislative proposals.
Therefore, non-European companies can see these new regulations as barriers to entering the market. Thus, imposing taxes related to the level of GHG\(^2\) emissions is also planned by NGOs, moreover, each company must have a certification on its carbon footprint or GHG emission records, which is a method developed with the aim of evaluating the energy inherently and the GHG emissions.

On this basis we can compare the gases emitted with other companies and with the preset tolerable limit, this generates a reduced evolution over time which is more manageable, especially the carbon footprint requires going through some essential steps to measure so as to specify the center of carbonic issue. Analysis of Carbon footprint is accompanied by the introduction of a carbon strategy and an action plan to minimize emissions (e.g. by optimizing energy consumption, modes of transport of goods, purchases and consumption of raw materials, the location of suppliers, etc.).

The action plan may include all elements in the supply chain of fruits and vegetables while following certain logic in its application which allows:

- Doing a diagnosis of the supply chain “from tree to plate”, decomposition of the chain, location of emission centers, measuring the amount emitted by each element, proposing solution to reduce emitting and then implementing the plan;

- Preparing a carbon footprint in the Fruit and vegetable industry; its threats and opportunities.

The fact that controlling carbon emissions and integrating the components of the dashboard is essential in the near future for the penetration and competitiveness of Morocco label on international markets.

Products quality in the region SMD, including fruits and vegetables is no longer to prove to consumers especially importers, either by the products color or by their taste. This helped exporting companies secure large market share without much effort.

However today with fierce competition from neighboring and distant countries, and encouraging the consumption of local products, the label Morocco realizes every day that it is obligated to adapt to the new game rules. On the French market for example, the government an open multi-party debate (grenelle de l'environnement) which aimed at giving the consumer an indication of the ecological price. Moreover, several projects have emerged in this sense such as environmental labeling in the UK to the image of the brand Tesco (supermarket).

That being said, the balance of carbon emissions will enable companies in the SMD region to have strong arguments when dealing with clients who are seeking environmental offers, then to minimize the tax base in case of the application of the carbon tax.

A. From marketing mix to logistics mix complementarity to achieve competitiveness

Within a global context increasingly challenging and marked by major upheavals: volatility of energy prices, food crisis, depletion of natural resources, pesticides, etc.... The carbon footprint is required; it is considered a diagnosis of the performance of companies exporting fruits and vegetables from the SMD region.

When we look into the details of GHG emissions based on the product's life cycle and at the transport process of fruit and vegetables, especially given that the SMD region exports products overseas. GHG emissions account for 32%\(^3\).

So we must think of some optimization route, such as the choice of transport mode (in the sector (See table 1)), maritime transport at the expense of road transport and inter-modal transport, which can minimize carbon invoice then strengthened commercially by eco-labels.

TABLE N° 1: Citrus fruits exports statistics by means of transport

\(^2\) Green House Gas

\(^3\) Source pack info N 73, November/ December 2008
1) Eco-Labeling: opportunity and advantage for Morocco label: the case of SMD region

Anticipating measures to promote the ecological aspect is a difficult task for Small and Medium enterprises, especially to detect high carbon emission elements. It is true that adopting this new competitive advantage seems to be a choice for Moroccan companies in general and in particular the SMD region, but the prognostic signs affirm the opposite, because even the American Vice President stressed that products not complying with the quotas relating to GHG emissions will find difficulties in accessing the U.S. market, whereas with the free Trade Agreement, Morocco is obligated to comply. One more reason to start anticipating any changes threatening the Fruit and vegetables sector in the SMD region. It is especially important to inform the European, American, or other consumers about the emitted quantity all along the supply chain of the fruit and vegetables sector in the region. This latter is already done via labels containing the emitted amount in large areas, however, the consumer who is informed and aware of the threats posed by the greenhouse effect and global warming becomes curious and demanding in terms of carbon emissions as well as the amount of calories. (See picture below).

2) Choosing the right mode transport

The choice of transport mode can minimize the carbon emission rate. Indeed, maritime transport plays a vital role in the economic development of the region SMD plus it has advantages in terms of cost, quality and safety for exporters in the region.

It is true that this mode of transport still suffers from a range of disabilities (low investment, no charters, dilapidated fleet ... etc...), but it is the most environmentally friendly way compared to the road transport mode.

This is what has been affirmed in the Marco Polo II program, which aims at reducing road congestion, improving the environmental performance of freight transport in the European Community and enhancing inter-modality to contribute in the achievement of an efficient and sustainable transport system.

All in all, we can say that the carbon footprint is now an essential tool for determining the commercial policies of fruits and vegetables in the SMD region which can be improved by a logistics policy in terms

<table>
<thead>
<tr>
<th>Means of transport</th>
<th>Quantity in tons exported via maritime transport (Conventional vessel+ container ship)</th>
<th>Quantity in tons exported via road transport (International Road Transports)</th>
<th>Quantity in tons exported via airplanes</th>
<th>Total Quantity exported in tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>130684.03</td>
<td>10580.56</td>
<td>0.54</td>
<td>141265.13</td>
</tr>
<tr>
<td>Other citrus fruits</td>
<td>597.94</td>
<td>10350.11</td>
<td>-</td>
<td>10948.05</td>
</tr>
<tr>
<td>Berries</td>
<td>210089.84</td>
<td>3.58</td>
<td>3.68</td>
<td>210097.1</td>
</tr>
<tr>
<td>Total (in tons)</td>
<td>341371.81</td>
<td>20934.25</td>
<td>4.22</td>
<td>362310.28</td>
</tr>
<tr>
<td>% exported by means of transport</td>
<td>94.22%</td>
<td>5.77%</td>
<td>0.01%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Food Exports Control and Coordination Organization (FECCO), March 2012

strong arguments for consumers who are seeking green offers day after day.

VI. REFERENCES


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