

# 2015

Rohit Kumar

Center for International  
Development, Harvard  
University



## **CONDITIONS FOR RE-OPENING EXPORTS OF ALBANIAN MUSSELS TO THE EU**

## Contents

Abstract.....	3
Methodology .....	3
Introduction.....	4
Albania's production potential .....	5
European market for mussels.....	7
Expectations from exporting countries .....	8
Control systems developed by Albania .....	10
Sources of pollution in Butrint .....	11
Complications introduced by the requirement of purification.....	13
Gaps: Albania vis-à-vis EU requirements.....	15
2011 FVO audit report.....	15
Developments since 2011 .....	15
Government's approach .....	16
Analysis of the issue as a common-pool problem .....	18
Recommendations .....	19
Developing Shengjin as a potential export site.....	22
References.....	23

## Table of figures

FIGURE 1 - MUSSEL FARMING AND EXPORT FROM BUTRINT .....	4
FIGURE 2 - MUSSEL FARMS IN THE BUTRINT LAGOON.....	5
FIGURE 3 - MUSSEL FARMING IN THE CORE ZONE .....	6
FIGURE 4 - MUSSELS AS FILTER FEEDERS .....	9
FIGURE 5 - MAP OF THE AREA AROUND THE BUTRINT LAGOON .....	11
FIGURE 6 - PROCESS FLOW: FARM TO MARKET.....	13
FIGURE 7 - PURIFICATION PLANT, BUTRINT.....	14
FIGURE 8 - DYNAMICS OF THE PURIFICATION PROBLEM.....	17
FIGURE 9 - APPROACHES TO RESOLVE THE COMMON-POOL PROBLEM .....	21
FIGURE 10 - SHENGJIN IN ALBANIA.....	22

## Abstract

The Centre for International Development (CID) at Harvard University has been leading a two year project with the Government of Albania to help identify and implement growth strategies by studying the constraints that bind specific sectors. In May this year, the Ministry of Agriculture tasked CID to look at the ban imposed by the European Union (EU) on the export of mussels from Albania. The research was sponsored by the Open Society Foundations, as a part of the grant OR2013-10995 *Economic Growth in Albania* granted to CID.

During the research project, we studied the value chain of mussel production and certification in Albania, mapped the requirements laid down by EU legislation and identified shortfalls in compliance. This report presents our findings and recommendations.

The Butrint lagoon is the main production center for mussels in Albania. By 1989, production from the lagoon had increased to 5,000 tons per year. It dropped dramatically in the 1990s due to an outbreak of cholera and the subsequent ban on the export of mussels by the EU. The ban has not been lifted since. Albania still cannot export mussels to the EU because these do not meet the required sanitary standards.

Our research finds that lack of reliable and affordable purification facilities is at the root of the problem. Unless this constraint is alleviated, it will continue to frustrate efforts to ensure compliance with standards.

## Methodology

The project began with a thorough review of the existing literature and data on mussel production in Albania. The review was used to map a preliminary list of candidates to interview. These included stakeholders (both public and private) and experts who were knowledgeable about the issues affecting the sector.

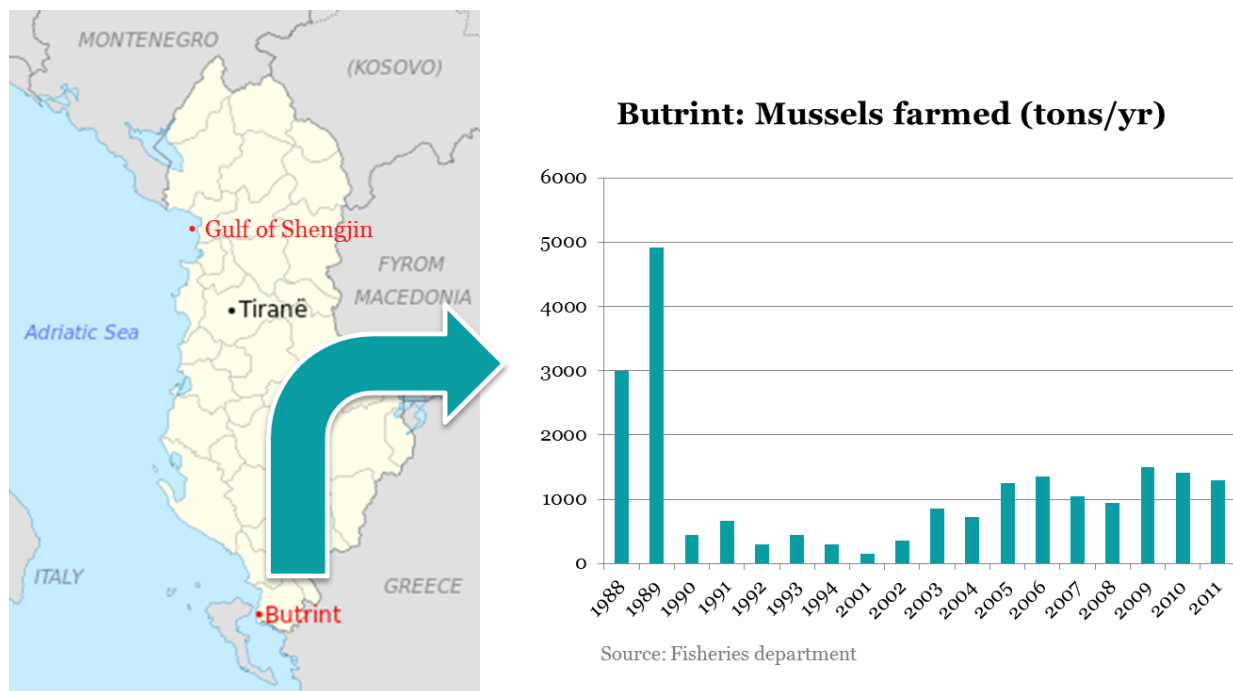
Extensive discussions with stakeholders and experts were followed up with site visits (Butrint in the South, Shengjin in the North) to understand the constraints affecting the sector.

## Introduction

Albania has two main sites for mussel production - one in Butrint in the South and the other around Shengjin in the North. While production in Shengjin is a recent development (currently at approximately 500 tons per year), production in the Butrint lagoon has been ongoing on for several years now. It was started in the 1970s by building overhanging cemented panels that could be used to grow mussels.

Locals consider the conditions of the water in the Butrint lagoon as ideal for mussel production – both the temperature and salinity are just right. The lagoon is fed by fresh water from the rivers that drain into it, and it is connected to the sea by a thin channel called the Vivari Channel. This allows for mixing of fresh and saline water in the lagoon, giving it its ideal conditions.

In 1989, the production from the lagoon peaked at 5,000 tons. However, it dropped dramatically in the 1990s due to an outbreak of cholera and the subsequent ban on the export of mussels by the EU. The ban has not been lifted since, and current production is only 1,200-1,500 tons per year.



**Figure 1 - Mussel farming and export from Butrint**

Being the main production center for mussels, Butrint was the focus of our study. The Ministry of Agriculture wanted CID to study the situation and develop strategies to re-open mussel exports. This would allow Albania to fully exploit the lagoon's potential. It could also serve as an incentive for entrepreneurs to develop new production sites like Shengjin.

The current production from Butrint has plateaued at the level that satisfies domestic demand. This is significantly below the lagoon's potential. Given the ban on exports to the EU, growers have no incentive to farm more than what can be sold to the domestic market.

## Albania's production potential



**Figure 2 - Mussel farms in the Butrint lagoon**

Some estimates indicate that Butrint has the potential to produce over 10,000 tons of mussels per year, if the government does not impose any restrictions.<sup>1</sup>

The Butrint lagoon represents one of the most important coastal wetland sites of Albania. It has abundant bio-diversity, both in terms of habitats and species, and is an important stop-over site for migratory birds. It is rich in waders, and is one of the two wetland sites in Albania where the slender-billed curlew, a globally critically endangered species is observed.<sup>1</sup> For its unique ornithological values, the wetland complex of Butrint has been classified as a Ramsar site since 2003.<sup>2</sup>

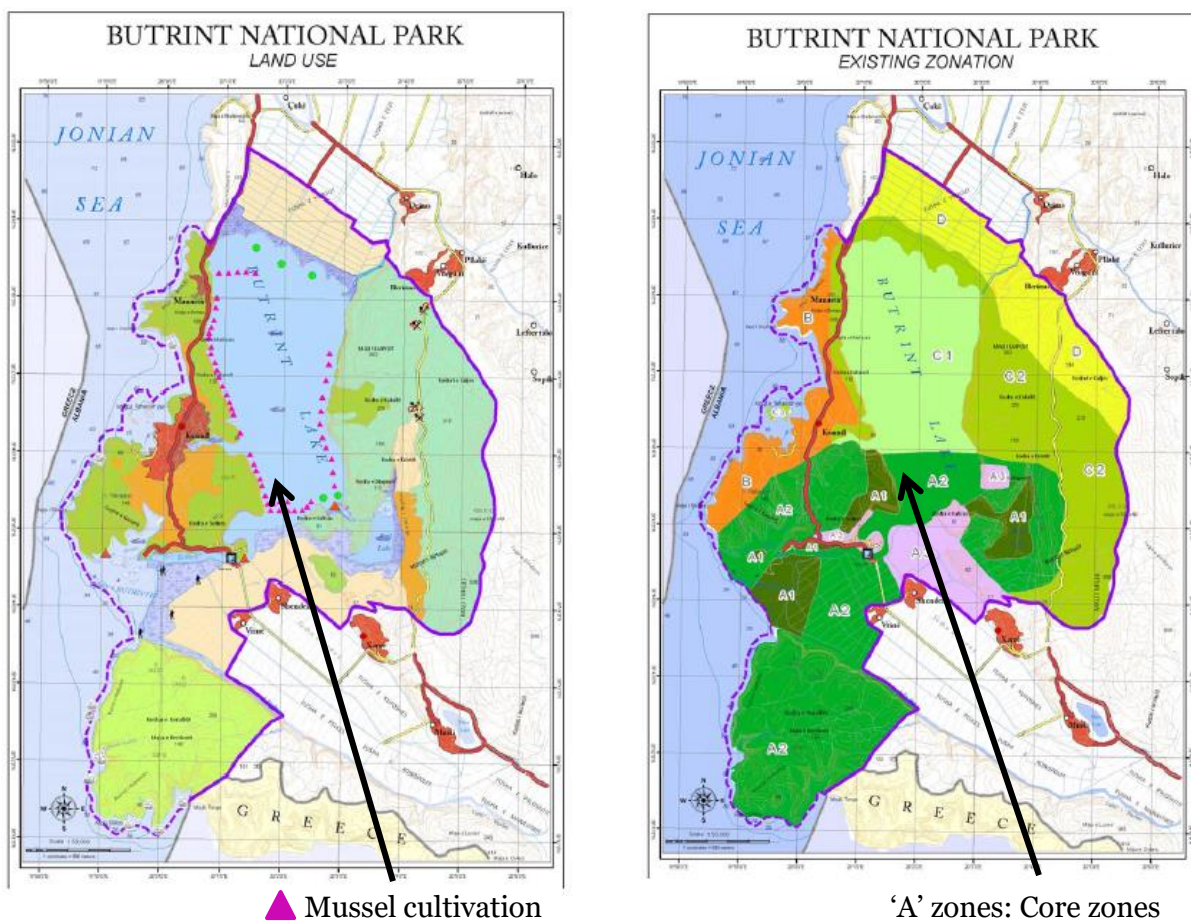
---

<sup>1</sup> Based on our conversations with growers, experts and government officials. Scientific estimates of the potential of the lagoon were not available. Studies would have to be undertaken to determine the potential.

<sup>2</sup> The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

By virtue of being included in the Ramsar treaty, the lagoon is now protected. It is divided into core and non-core zones. Each zone has a prescribed list of compatible and incompatible activities. Fishing and aquaculture are classified as "incompatible" with the purpose of the core zone, and only traditional and non-intensive activities are allowed in the non-core zone.<sup>i</sup> Currently, mussels are farmed in both the core and the non-core zone (See Figure 3).

Mussel farming is inherently non-intensive<sup>ii</sup> and does not interfere with the natural environment. Therefore, farming can continue in the non-core areas. However, as per the management plan and based on our conversations with the Ministry of Environment, it appears that farming may have to be discontinued in the core zone.



**Figure 3 - Mussel farming in the core zone**

The Fisheries Department in the Ministry of Agriculture is the agency responsible for issuing permits. At present, there is lack of consensus between the two Ministries (Agriculture and Environment) on the way ahead for aquaculture permits with respect to the core zone in Butrint. In due time, the Ministry of Agriculture will have to make a call on the question of renewing the

licenses of growers who are currently harvesting mussels in the core zone. If the Ministry does decide to enforce the ban in the core, it'll decrease the total production potential of the lagoon and our initial estimate of 10,000 tons per year may be unattainable.

While it would be ideal to have hard data on the actual production potential of the lagoon, no studies have been conducted so far. Based on what we know now, there appears to be much scope to increase production because the current level of production is only 1,200-1,500 tons per year. Even the previous maximum was much higher (5,000 tons per year in 1989).

## European market for mussels

The EU market for mussels is estimated to be approximately 600,000 tons per year, of which about 100,000 tons is of non-EU origin (net of import-export). The per capita consumption of mussels varies widely across the different countries in the EU: from less than 200 grams per person per year to about 4 kg per person per year.<sup>iii,3</sup>



*Picture by Susie Middleton*

As the numbers suggest, the EU itself is a very large producer of mussels – about 500,000 tons are produced each year. Three countries produce more than two thirds of all EU mussels. Spain is the largest producer (over 200,000 tons per year), followed by France (80,000 tons per year) and Italy (65,000 tons per year).<sup>iii</sup> Intra-EU trade in mussels is extensive, but imports into the EU are substantial too, especially from the point of view of a small producer like Albania. The largest importers of mussels in the

EU are France, Italy, Belgium and the Netherlands (although Netherlands mainly processes its imports and then re-exports).

However, exporting mussels to the EU is hard. Under the import regulations on mussels, only a handful of non- EU countries are allowed to export to the EU. Among these, Norway, New

---

<sup>3</sup> These wide differences hint at opportunities to increase mussel consumption in the future through promotional activities and development of new mussel-based products.

Zealand and Chile are the major exporters, but Thailand and Vietnam are qualified to export too.<sup>iv</sup>

While mussel exports to the EU are dominated by high income countries, the fact that Thailand and Vietnam can export is good news for Albania. It indicates that the regulations are not infeasible for lower income countries. Many factors should work in the favor of Albania – geographical proximity to the EU, low labor costs, and the timing of mussel production in Butrint.<sup>4</sup> This is not to negate the importance of some other key factors that affect exports – business relationships and marketing, both areas where Albania considerably lags behind its competitors.

Still, *prima facie*, Albania does seem to have a comparative advantage and there is merit in addressing the constraints that prevent Albania from exporting to the EU.

## Expectations from exporting countries

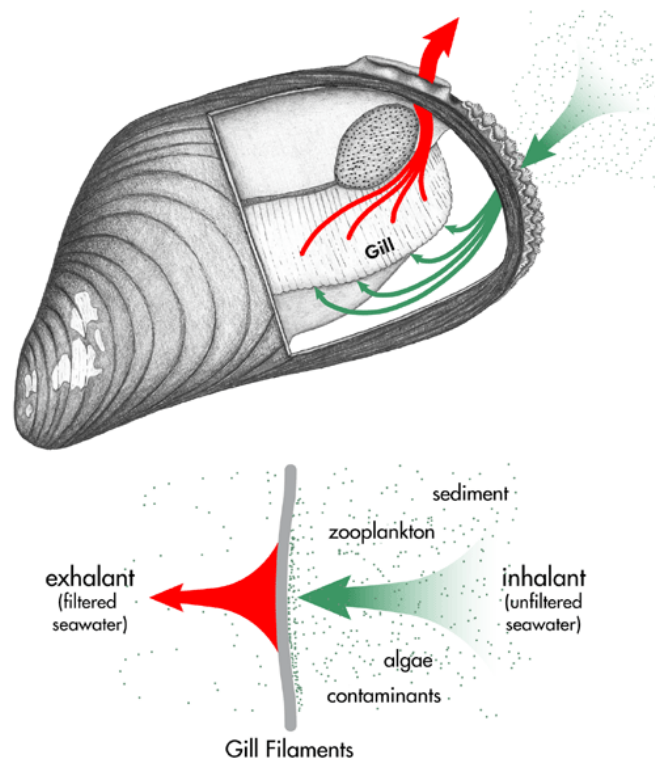
Mussels are filter feeders. They strain the surrounding water through their gills to trap and transfer food particles to their digestive tract. If the surrounding water is contaminated with disease-causing bacteria, these also get consumed as food. Because mussels circulate large quantities of water through their gills each day, bacteria concentrations in mussels from polluted waters can reach dangerous levels that may result in serious illnesses. Therefore, countries mandate that mussels be harvested from approved waters only.<sup>v</sup>

Because mussels are very sensitive to pollutants in the water, the sanitary standards demanded by the EU are strict. The 2004 EU regulations for controls on products of animal origin intended for human consumption<sup>vi</sup> lay down specific rules for the export of mussels to the EU.

---

<sup>4</sup> In our conversations with growers, we were told that labor forms 80% of the total cost of production of mussels. Albania may have a distinct advantage here. While labor is paid 50 euros a day in Greece, it costs only 20 euros a day in Albania. The current cycle of mussel farming in Butrint also gives Albania a head start of one or two months in the EU market before mussels from other EU countries like Greece flood the market.

The EU requires each country to identify competent authorities and vest in them the responsibility of fixing the location and boundaries of production areas and of monitoring these areas. The competent authorities must classify production areas depending on the level of contamination and ensure that all necessary purification processes are followed before any mussels are allowed to be exported. Finally, the EU law requires each exporting country to have proper control systems in place to ensure that only mussels that are safe for human consumption reach the market. Therefore, it is imperative that the authorities demonstrate the capability to be able to detect and stop (or recall) the export of contaminated mussels.



**Figure 4 - Mussels as filter feeders**

*(Source: [www.gulfofmaine.org](http://www.gulfofmaine.org))*

Many government officials and businessmen hold a narrative that dismisses these requirements as a smokescreen – meant to disguise the real motives of the EU. Given the subjectivity involved in the assessment of control systems, they believe that the EU uses these control system metrics to deny market access to other countries to protect its local producers. According to this narrative, lobbying by other mussel producers within the EU is the primary reason why the EU does not permit exports from Albania.

Though plausible, this explanation does not stand scrutiny in light of available evidence. So far, the maximum production from the Butrint lagoon has never exceeded 5,000 tons (a level reached in 1989). Production since then has been much lower. Even 5,000 tons is only a small fraction of the total EU market (less than 1%). It is unlikely that growers from other countries would undertake the efforts required to block imports from a small producer like Albania. The real problem in the mussel's story seems to lie elsewhere.

## Control systems developed by Albania

Since 2007, Albania has made progress in developing control systems for harvesting and exporting mussels. The Fisheries Inspectorate in the Ministry of Agriculture is responsible for monitoring harvesting (in the Butrint lagoon and at all other locations). This includes regular sampling of mussels and surrounding waters for analysis. The Food Safety and Veterinary Institute (FSVI) is tasked with conducting microbiological analysis on these samples. The results of the tests are then used by the Ministry of Agriculture to classify the lagoon on the basis of the level of contamination. This may impose additional obligations on mussel growers if contamination is beyond the level suitable for human consumption. Obligations are imposed on all mussel production and sale, whether intended for domestic consumption or export. Finally, the National Food Authority (NFA) is responsible for food safety (i.e. it is tasked with ensuring that only products that are safe for human consumption reach the market).

The results of the microbiological analysis conducted by the FSVI are used to classify the mussel production areas as either Class A, B or C:

- Class A: when the results are below 230 MPN *E. coli* / 100gr of flesh and intravalvular liquid, the mussels are considered safe for human consumption and are allowed to be sold directly to the market.<sup>5</sup>
- Class B: when the results are between 230 MPN and 4600 MPN *E. coli* / 100gr of flesh and intravalvular liquid, mussels must undergo purification before being placed on the market.
- Class C: when the results are above 4600 MPN *E. coli* / 100gr of flesh and intravalvular liquid, the area must be closed for harvesting; mussels are considered unfit for human consumption.

---

<sup>5</sup> Where the Most Probable Number (MPN) method is a method of getting quantitative data on concentrations of contaminants such as *E. coli*

## Sources of pollution in Butrint

Microbiological analysis shows that the concentration of the *E. coli* bacteria in the lagoon is well above the level that is considered safe for direct human consumption. In fact, the Butrint lagoon has been classified as Class B for some years now. This status remained unchanged in 2015.

*E. coli* is commonly found in the lower intestine of warm-blooded organisms. Its cells are able to survive outside the body for a limited amount of time, which makes *E. coli* a good indicator for fecal contamination.<sup>vii</sup> The survival of *E. coli* is strongly influenced by factors such as salinity, sunlight, and temperature etc., all of which are likely to affect its concentration in the lagoon.<sup>viii</sup>

The sources of fecal contamination in the Butrint lagoon are not entirely clear. There are two large towns near the lagoon (Sarandë and Ksamil), and some small villages. Almost every national and local official we met asserted that no waste was dumped into the lagoon.



**Figure 5 - Map of the area around the Butrint lagoon**

However, during our site visit,<sup>6</sup> we learned that Sarande had no sewage treatment system until a year ago; the city's waste was dumped untreated into the sea. Malltezi and Sulce (2011) in a paper published in the *Journal of Coastal Research* said that the seawater quality of the bay is threatened by anthropogenic activities in the city of Sarande.<sup>ix</sup> One of the main contributors of pollutants in the bay was the sewage that was discharged untreated into the Bistrica River a few hundred meters prior to its discharge to the sea.

There have been improvements since 2011. A sewage treatment plant is now operational. Waste water from the city is collected and piped to this plant where it is treated before being released into the sea. However, we were told that the sewage system does not serve the entire city and a part of the waste is still discharged untreated into sea waters. It is possible that the sewage from the city flows back into the lagoon during the high tide, via the Vivari channel that connects the lagoon to the sea. This could contribute to the increased concentration of *E. coli* bacteria in the lagoon.

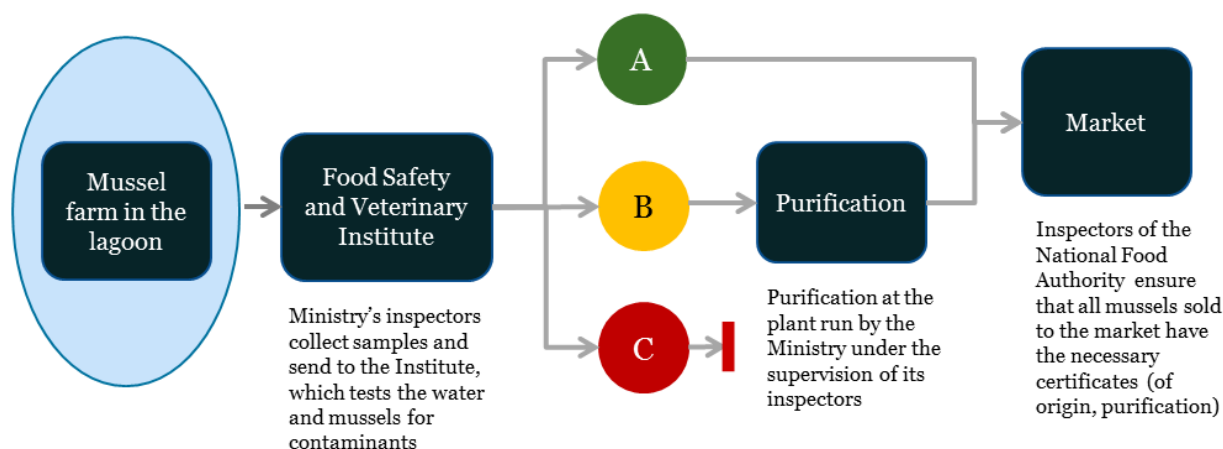
The other big town, Ksamil, is yet to get a sewage system. So far the town has only relied on using septic tanks, which opens the possibility of groundwater and surface water pollution from overflowing or damaged tanks. This could also contribute to the growth of *E. coli* in the lagoon. A new sewage system is currently being planned for Ksamil with funding from the EU.<sup>x</sup>

Irrespective of the original source and mechanism by which fecal contaminants enter the lagoon, the fact remains that the current concentration of contaminants is considered unsafe from the point of view of human consumption. As a result, all mussels harvested from Butrint must be purified before being placed on the market. This has major implications for mussel production in the lagoon. Mussel growers need access to reliable and affordable purification facilities. Without these, the viability of their business is impacted.

---

<sup>6</sup> Site visits to the Butrint lagoon were undertaken between 29th June and 1st July, 2015

## Complications introduced by the requirement of purification



**Figure 6 - Process flow: Farm to Market**

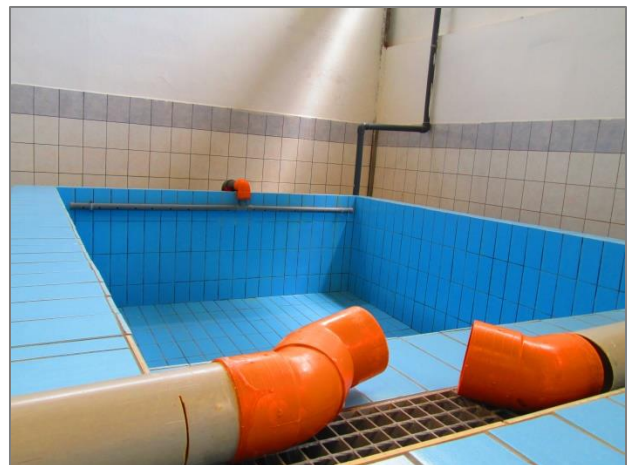
Figure 6 illustrates the movement of mussels from the farm to the market. The Ministry of Agriculture, based on the analysis conducted by the FSVI, classifies the lagoon as either A or B or C. If the lagoon is classified as Class A, the growers can collect the appropriate classification certificate from the authorities and sell the mussels directly to the market. The certificate is important as it helps the NFA inspectors to ascertain the quality of the produce being sold in the market.

If the lagoon is classified as Class B, growers must put their mussels through a purification process. Presently, there is only one purification and dispatch center where mussels may be purified. This center was set up with external assistance and is currently managed by the staff of the Ministry of Agriculture. It has three purification tanks, each with a capacity of 600-750 kgs. A complete cycle takes 48 hours. For purification, the tanks are filled with clean sea water and the mussels are held in these tanks under conditions which maximize the separation of contaminants from the mussels. Microbiological tests are done both before and after purification. Once the results are received, mussels are stored in a storage room, and later washed and packed to be sold to the market. The growers must ensure that they receive the origin and purification certificate from the facility to allow for inspections by the NFA.

If the lagoon is classified as Class C, there is no question of purification; contamination is considered too high for the purposes of human consumption

As mentioned in the previous section, the Butrint lagoon has been classified as Class B for several years now. As a result, purification is an additional step that must be undertaken by all mussel growers. Currently, there are three main problems with this step:

- **Capacity of the purification plant is limited:** Current capacity is only a fraction of the total requirement. The plant is only capable of purifying approximately 2 tons of mussels every 48 hours.<sup>7</sup> Mussel farming is seasonal and most mussels in the Butrint lagoon are produced over a period of five months. Assuming that the plant is run 24x7 during this five month period, the maximum processing capacity of the plant is 150 tons in any given year. This is insignificant even compared to the current levels of production in Butrint. So though the law mandates all growers to purify, the lack of processing capacity makes it impossible for them to do so.
- **Cost of purification is high:** Due to shortages in the supply of electricity, the plant is forced to rely on the more expensive diesel operated generators. Currently, the cost of purification varies between 10 and 35 leke/kg, depending on the availability of electricity or the lack thereof. For perspective, compare this cost with the selling price of mussels in the domestic market (around 50 leke/kg).
- **Current operating model is unsustainable:** The operating costs for the purification plant are high. Currently, the plant's operations are highly subsidized by the government. This is unsustainable. Due the drain on resources, there is also no incentive to increase the plant's capacity.



**Figure 7 - Purification plant, Butrint**

---

<sup>7</sup> Each tank has a capacity of 600-750 kgs and there are three tanks available for purification.

Given the problems associated with purification, mussel growers often just ignore the law and bypass the purification step to sell directly to the market. The enforcement agencies are also put in a no-win situation. They look away because there is no way to alleviate the constraint on purification.

## **Gaps: Albania vis-à-vis EU requirements**

### **2011 FVO audit report**

The Food and Veterinary Office (FVO) of the European Union conducts regular audits of exporting countries to ensure that their systems meet the EU requirements. The latest audit for fisheries and molluscs produced in Albania was conducted in 2011.

In the audit report, the FVO officials acknowledged that the control systems implemented by the Albanian authorities had improved since 2007, when a previous audit was conducted and none of the requirements were in place. However, they also pointed out that several deficiencies continue to exist and undermine the ability of the competent authorities to give full guarantees that mussels produced in Albania meet the requirements of EU legislation.<sup>xi</sup>

The officials pointed out several shortfalls in Albania's control systems. In particular, the report identified some vital laboratory tests that had not been accredited. It also highlighted that inspectors were not aware of important procedures. On occasion, mussels were being sold to the market without purification. When this happened, the contaminated products were not recalled from the market either.

Due to these gaps in implementation, the auditing team was not satisfied with the control systems in place and did not accept Albania's plea for lifting the ban on mussel export.

### **Developments since 2011**

It has been four years since the last audit. While conducting our research for this project, we reached out to all the competent authorities involved in the process (Inspectorate in the Agriculture Ministry, FSVI, and the NFA) and requested an update on the status of compliance with the recommendations made by the FVO in 2011.

Based on discussions with the authorities, it seems that progress has been made since the last audit. Many tests have now been accredited, and inspectors have been re-trained. But unfortunately, several gaps still remain.

During our site visit in June-July, we noticed that the purification plant was not working. Upon inquiry, the local inspectors told our team that the lagoon had recently been classified as Class A and purification was not required. Hence, all mussel growers had been asked to sell their produce directly to the market. It was only later, at a meeting organized in the Ministry of Agriculture, when we learned that the Butrint lagoon had continued to be classified as Class B this entire time. It seems that the local inspectors had re-classified the lagoon based on the latest test results (which indicated low concentrations of *E. coli*), without any consultations with the competent authority in the Ministry.

Though tests for contaminants are done frequently (fortnightly or monthly), often there is a significant variation in the results due to changes in weather conditions. Therefore, even though the concentration of pollutants in the lagoon fluctuates widely over short periods, the lagoon is classified as Class A, B or C only once a year, based on an average. A notification is sent out from the Ministry classifying the lagoon and instructing local inspectors to issue directions to all mussel producers. Local inspectors are not authorized to make any classification decisions.

From other sources, we also learned that enforcement is not perfect: mussels are often sold directly to the market without purification, even when the lagoon is known to be Class B. In many cases, inspectors are unable to stop these sales.

These instances highlight big gaps in implementation. Clearly, the control systems governing the production of mussels in Albania are not yet adequate. It is unlikely that EU will agree to re-open exports until all these gaps are plugged.

## Government's approach

The Government of Albania has taken a three-pronged approach to address the issues raised by the FVO: (1) Impress upon the FSVI the need to develop, validate and get accreditation for the missing tests, as per the standards required by the EU; (2) train local inspectors to ensure that they are fully aware of the requirements; and (3) enforce the food safety law by issuing instructions to the NFA to be more heavy-handed in their inspections.

In light of the evidence presented in the earlier section, it appears that the government's current approach only attempts to treat the symptoms of the underlying problem, but not the problem itself. Lack of reliable and affordable purification facilities is at the root of the problem. Unless this constraint is alleviated, it will continue to frustrate efforts to ensure compliance with standards. If there is insufficient capacity to purify all mussels produced in the lagoon, can the

government really enforce a law that requires mandatory purification? Even if the government manages to build adequate capacity, can it ensure that growers will comply if the cost of purification continues to be prohibitive? And, if growers do not purify, and the law cannot be implemented, do inspectors have any reason to become better at inspections?

There is a need to recognize the circular nature of this problem: All growers cannot (and will not) purify if the purification center does not have adequate capacity and if the costs of purification continue to be prohibitive. And unless a majority of growers wish to purify, there is no pressure on the government to conduct proper inspections, or to improve purification facilities.

The resulting outcome is a bad equilibrium in which growers break the law, and inspectors cannot enforce it. In such a context, an approach that does not mend the underlying issues is unlikely to work.



**Figure 8 - Dynamics of the purification problem**

## Analysis of the issue as a common-pool problem

Consider all parties that have a stake in finding a solution to the issue of mussel production in the Butrint lagoon. Currently, there are some 25 small unorganized growers that have a license to harvest mussels in the lagoon. They would benefit financially if exports were to open up. Though each grower would ideally like to export, none has the incentive to pay the costs needed to solve the problem of purification.

Solving the problem would require a grower to either make upfront investments himself (or herself), or to put effort into convincing a party that is able and willing. The grower will also need to put pressure on the government to improve its control systems to ensure compliance with EU regulations. The investment in time or money is likely to be substantial.

In contrast, the gains from solving the problem are unlikely to be attractive, especially when compared to the effort required to solve it. The gains shall accrue to all mussel growers, irrespective of whether they invested resources in solving the problem or not. Therefore, under the present set up, costs will be private but returns will be distributed among all growers.

This is the curse of the common-pool problem. A common-pool resource is a type of resource whose size or characteristics make it difficult to exclude potential beneficiaries from obtaining benefits from its use. This decreases incentives for investment: it becomes difficult for a private player to capture benefits resulting from any investment that he or she makes to develop the resource. The result is an equilibrium in which no party is willing to invest the effort needed to improve the situation.

What is needed in the context of Butrint, is a way to create a player that has a large enough stake in the lagoon to internalize the benefits from solving the problem. To be able to capture benefits, such a player should manage both purification and sales. This will create incentives for the player to invest in solving problems along the entire chain – from harvest all the way to export. Investments will be required for better technologies, increased purification capacity and improved marketing.<sup>8</sup> Pressure will also have to be put on the government to improve electricity supply and to strengthen control systems to fit EU requirements. A larger player may even be able to bring in experts to develop its own processes to facilitate compliance with government regulations.

---

<sup>8</sup> Capital investments are likely to be significant. No studies have been conducted so far and a detailed business plan would have to be developed to assess the prospects of recovering the investment.

## Recommendations

For the past several years, the Butrint production area has been classified as Class B. This is due to the high concentration of *E. coli* in the lagoon. While we have presented a hypothesis on the sources through which *E. coli* might be entering the lagoon, the exact mechanism still remains to be established. If the hypothesis presented above is correct, improvements in sewage systems of Ksamil and Sarande should lead to a noticeable reduction in the levels of *E. coli* in the lagoon. Effective pollution mitigation strategies (sewage collection, treatment, etc.) can then be used to reduce concentrations further to eliminate the need for purification altogether.

At this point we do not have enough information to make this claim with certainty. Detailed studies would need to be conducted to establish the actual reasons for the high concentration of *E. coli* in the lagoon. At the same time, pollution reduction alone is neither a necessary nor a sufficient strategy for opening exports of Butrint mussels to the EU – not necessary because EU regulations do not ban exports from Class B areas, and not sufficient because opening exports would still require improvements in Albania's control systems even if Butrint became Class A.

Therefore, due to the common-pool nature of the problem described in the previous section, a player is required in the system to internalize the externalities of solving the problems in mussel purification and control. There are three broad ways of doing this, and each of which has its pros and cons.

**1) Organize the growers into a cooperative** – Presently there is only limited cooperation between the growers who harvest mussels in the lagoon. This limits their possibilities. Organizing all growers can help vest the rights over the lagoon in one single large entity – the cooperative. Membership to the cooperative could be made mandatory by prescribing it as an obligation under the license to harvest. Any cooperative should be owned and managed by the growers. This would allow sharing of costs and profits among all members. It would also improve the ability of the growers to push the government to deliver better services and to become more responsive to their demands.

Though a cooperative could improve collective action, it would be unlikely to close the existing gap in expertise, capital and market connections. The current license-holders are all small farmers with limited technical knowledge and managerial expertise for handling large operations. They are unlikely to have the connections that might be crucial for tapping the competitive markets in EU. More importantly, they might not have access to capital.

Improving the current purification facilities will require large capital investment in plant and

machinery. Unaided, a cooperative might not be able to raise the required resources from financial institutions.

**2) Create a joint company** – This solution could create an entity that exploits the lagoon as a single company. The current licenses could be grandfathered into the company by giving all growers shares. Shares should also be allocated to strategic investors who bring in capital, know-how and market connections. The government may also choose to keep some shares if it wishes to be involved in the management of the company. The purification plant could be owned and managed by this joint company. The capital brought in by the strategic investors could be used to increase the capacity of the purification plant. Their domain expertise and know-how could be used to improve harvesting techniques and to develop processes for increasing compliance with sanitary standards. Market connections in Europe might prove useful in forming new partnerships in the EU. These partners and their connections within the EU administration might also prove invaluable while making a case for opening exports from Albania.

However, care must be taken while designing an ownership structure. While it may be desirable (and attractive) to engage as many stakeholders as possible, a diffused ownership structure may not be conducive to good management and may render the company ineffective. Also, there could be issues in integrating the growers into the company if outside investors are seen as a threat. This could create political constraints.

**3) Bring intermediaries between the growers and the market** – Under this arrangement, entities could be created to serve as intermediaries between the growers and the market. These intermediaries would buy the entire mussel production from the growers in the lagoon, purify it and then sell to the market. The purification plant(s) would be owned and managed by the intermediaries. To prevent the exercise of monopoly power and to afford more options to the growers, it would be advisable to create more than one intermediary. The actual number may be decided based on other considerations as well, such as scale of operations, efficiency and total expected returns. The intermediaries could be private investors or companies operated by way of some public-private partnership. As in the above case, they would be expected to bring in capital, know-how and market connections.

The success of this option would depend on actual law enforcement and the willingness of the growers to sell their entire produce to the intermediaries. Consider a hypothetical situation where law enforcement is weak (i.e. growers can sell mussels to the local market without purification) and the price offered by the intermediaries is not very attractive. In this case, some or all growers may choose to bypass the intermediaries and sell directly to the market. Not only would this violate the law, it would also hurt the financial viability of the intermediaries. Thus uncertainty over government enforcement would pose an additional risk to the intermediaries, who would already be bearing the substantial risk involved in meeting EU requirements and establishing profitable export markets.

	<u>Pros</u>	<u>Cons</u>
Organize the growers	Enables them to work collectively and raise their demands more effectively	Does not fix the problem of capital, expertise and market connections
Create a joint company	Allows growers, investors and the govt. to be stakeholders Investor brings in capital, know-how and connections	Diffused ownership structure may reduce effectiveness Potential for political constraints
Bring intermediaries between growers and market	Creates entities that buy from the growers, purify and sell Intermediaries brings capital, know-how and connections	All growers may not sell to intermediaries Intermediaries bear substantial risk

**Figure 9 - Approaches to resolve the common-pool problem**

These three options described in this section are only broad outlines of potential solutions that would need further exploration and detailing. Each proposal should be deliberated over with different stakeholders before selecting the one that appears most suitable for Butrint.

## Developing Shengjin as a potential export site

When the FVO audit team visited Albania in 2011, the Butrint lagoon was the only mussels producing area in Albania that had been identified for potential export to the EU.

Several developments have happened since then. As mentioned in the initial few pages of this report, mussel harvesting has also picked up in the north of Albania, particularly in the Gulf of Shengjin.



**Figure 10 - Shengjin in Albania**

At present, a single enterprise harvests all mussels grown in the gulf.<sup>9</sup> The current level of production is 500 tons per year, all sold to the domestic market. During our site visit,<sup>10</sup> the owner of the enterprise alerted our team to the potential of increasing mussel production in Shengjin. As in the case of Butrint, current production in Shengjin is also constrained by the lack of demand in the local Albanian market.

Mussels in Shengjin are grown in the open sea (classified as Class A). Therefore, all mussels harvested here are considered safe for human consumption and can be sold directly to the market, without any purification. This opens up the possibility of exporting to the EU.

Shengjin does not suffer from the common-pool issues that affect Butrint. Production is controlled by a single firm and there is no need for purification. This also reduces the demands on Albania's control systems, thus making it simpler for Albania to demonstrate their effectiveness to the EU.

Given the number of factors that align well in Shengjin, it should be seriously explored as an alternative site for first exporting mussels to the EU. If exports open up, the attraction of a new market will most likely expedite the resolution of the common-pool problem in Butrint as well.

<sup>9</sup> Mare Adriatik is the firm that harvests mussels in the Gulf of Shengjin.

<sup>10</sup> Our team visited Shengjin on 22<sup>nd</sup> July, 2015.

## References

- i Integrated Coastal Zone Management and Clean-up Project, Project ID PO86807. “Butrint National Park Management Plan.” (2010)
- ii FAO, “Aquaculture Systems and Practices: A Selected Review.” <http://www.fao.org/docrep/t8598e/t8598e05.htm>. (1989)
- iii FAO. “The European Market for Mussels”. GLOBEFISH Research Programme publication, Volume 115. (2014)
- iv Pawiro, S. "Bivalves: global production and trade trends." Safe management of shellfish and harvest waters”. (2010)
- v The Department of the Environment, Maryland. “Clean Water – Safe Shellfish.” <http://www.mde.state.md.us/assets/document/factsheets/cleanwater.pdf>
- vi “Corrigendum to Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption”. Official Journal of the European Union. (2004)
- vii Thompson, Andrea. "E. coli Thrives in Beach Sands". Live Science. (2007)
- viii Whitman, Richard L., et al. "Solar and temporal effects on Escherichia coli concentration at a Lake Michigan swimming beach." Applied and Environmental Microbiology. (2004)
- ix Malltezi, J., and S. Sulçe. "Pathogenic Water Quality at Saranda Bay in Albania." Journal of Coastal Research. (2011)
- x External Aid programmes, EU. “Construction of the sewerage systems in Vlora, Ksamil, Kavaja and Shengjin, Albania.” (2011)
- xi Food and Veterinary Office, European Commission. “Final report of an audit carried out in Albania from 15 to 25 November 2011 in order to evaluate the control systems in place governing the production of fishery products and live bivalve molluscs intended for export to the European Union.” (2012)