

A topographic map of the Tuscany region in Italy, rendered in a light beige color against a darker beige background. The map features intricate contour lines that define the region's complex terrain, including the Apennine mountains and the Tuscan archipelago. The map is centered and occupies most of the page's area.

CERTIFIED

FUTURE

A STRATEGY FOR
SUSTAINABLE & RESILIENT
AGRICULTURE IN TUSCANY

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FUTURE

— A STRATEGY FOR
SUSTAINABLE & RESILIENT
AGRICULTURE IN TUSCANY

REFLECTION PAPER

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STUDENT

Patrick Tobias Maurer
5384915

MENTORS

Verena Elisabeth Balz
Alexander Wandl

DELEGATE OF THE BOARD OF EXAMINERS

Stavros Kousoulas

DELFT UNIVERSITY OF TECHNOLOGY

Faculty of Architecture and the Built Environment
Department of Urbanism 2021/22
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Fig. 1. - made by author

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ABBREVIATIONS AND TERMS

Geographical Indication	GI
Protected Geographical Indication	PGI
Protected Designation of Origin	PDO
Typical geographical indication	IGT
Geographical protected indication	IGP
Designation from protected origin	DOP
Designation from Controlled Origin	DOC
Designation from Controlled and Guaranteed Origin	DOCG
Tradicional Speciality Guaranteed	TSG
Regional Agency for environmental protection in Tuscany	ARPAT
Italian Assosiation for Biologic Agriculture	AIAB
Ministry Agricultural Policy and Forestry	MIPAAF
Regional institute for economic Program in Tuscany	IRPET
Common Agricultural Policy	CAP
Nationa Planning Strategy	PSN
Sustainable Development Goals	SDG'S
Organic farming	BIO

*not all of them compare in the reflection paper.



Fig.2. - made by author

DIFFICULTIES AND HOW TO OVERCOME THEM

During my first master's year at TU Delft, I cultivated a strong interest in agricultural processes, including rural development, market trends, social aspects, and many more. In Q3, I managed to collect and enrich my knowledge about the agri-food sector as I worked with the team on a strategy for agricultural circularity for Zuid-holland. In the literature research made for this quarter, I came across the definition of Geographical Indications. As a student with an Italian background, I was already quite familiar with the term, and the possible socioeconomic benefits GIs can bring to local farming communities. Regardless, they never seemed to be a relevant spatial planning tool till then. At that moment, I thought that transforming the GIs from simple economic-politic tools to planning policies could be an efficient solution adaptable to the Tuscan situation, as to others, to find a way to push the agri-food sector towards sustainable development. There were already some cases that could help me demonstrate that food certificates can affect an agri-food system's environmental stability. Nevertheless, finding the correct information to demonstrate the thesis was one of the more significant issues the research had to solve.

The number of available research papers about food quality certifications is impressive. Still, the number shrinks to a mere few when the search keywords are environmental sustainability or spatial planning. Most of the time, the existing knowledge about GIs and other certificates is produced by researchers specializing in agricultural or economic sciences. These papers tend to use a rather technical language and are less accessible to non-experts in the field. On top of that, the first group, which specializes in agricultural sciences, focuses on analyzing the effects of the certification on the single agribusiness and not on the whole agri-food system. The second group, which specializes in economic and political sciences, is looking at

larger-scale effects that match the scope of this research. Still, the topic differs, as the researchers insist on elaborating upon the "direct effects" GIs have on the economic and social aspects of an agri-food system and not on the indirect environmental effects it could cause.

Finding evidence to sustain the research hypothesis that GIs are in some way influencing environmental sustainability in literature research was not the only difficulty encountered. Another hurdle comes from drawing clear conclusions from the policy analysis. While the policy that organic farmers must follow in order to be entitled legally to use the bio certificate is one for all product typologies, the GIs have a more fragmented policy scheme where every food product has a different disciplinary. To understand what is meant by excessive fragmentation and to get behind all the regulations and policies farmers that belong to a defined geographical indication must follow, it is necessary to investigate three to four different scales of legal jurisdiction, depending on the scale of the certification.

Different but at the same time complementary, policies can be found on European, national, regional, and local scales (with the local scale meaning the defined area of the GI certificate). The European scale gives general indications of the principles followed by GIs and the procedural iter to approve a new certification. The national scale adapts the European policy to the national context. Since some certificates were used already before the approval of the common European policy, every nation has its pre-existing acronyms. This is indeed the case for countries where food quality schemes, such as France, Greece, or Italy, already play an integral role. The general European distinction of GIs into PDOs and PGIs is insufficient in the Italian case. Italian PDOs divide into DOCs and DOCGs exclusively for wine and DOPs for all other food products. The same happens to PGIs that become IGTs exclusive for wines or IGP for all other food products. It is understandable that this new distinction also brings the necessity of additional policies that specify

the characteristics of the new classification. The regional or local scale, depending on the GI scale, contains the most specific policy regulating GIs. In this case, the policy gives precise indications of all the rules the applying farmers must follow. It describes the particular characteristics that the product must have and defines the geographical borders of the GI.

The main problem behind the last scale is that, even though a general scheme is followed, these policies differ one from one another, and each GI has its own very explicit policy. It is necessary to distinguish the specific agricultural practices needed to achieve the qualities for which a traditional food product is known. On the other hand, having to handle eighty-nine different policy papers only for the Tuscan scale in addition to the national and European scale becomes challenging.

The challenge of finding useful information is not limited to the literature and policy analysis. Maybe the most important hurdle, also because the reaction to it changed the whole structure of the research, is a spatial data-related one. GI does not have to respect traditional institutional borders. The confined area described in the disciplinary does follow its own, often geomorphological-related, rules. This means that often the border of a GI does not match any municipal, provincial, regional, or national border. What does not seem like a big problem becomes crucial in data evaluation. To make an example, the chianti Classico DOC area comprehends parts of central Tuscany, including many provinces, such as Florence, Pisa, Siena, and Arezzo. Even by knowing the total number of registered agribusinesses for the certification, it is impossible to know how they are distributed across the different provinces. Another issue connected to data evaluation is the absence of geodata sources that include agri-businesses that are GI certificated. Even creating such information becomes challenging as the most important information is missing, a complete list of the names of the agri-businesses that applied for the certificate.

Each of these challenges that the research has encountered brought a solution that profoundly shaped the research outcome. The scarcity of topic-specific information in literature research forced the study to conduct a combined use of different methods to achieve satisfying results. The parts of available data helpful to the investigation have not all the same format and exist in the form of text, tables, or mappable information. After a first analysis of the different parts, through statistical analysis and spatial investigation, the primary strategy used to surpass the obstacle is to translate most information into the same format and produce the missing information through the elaboration of the results. Through research by design and, later, through maximization, the data was spatialized and became quantifiable.

To overcome the complexity of the political system, after a general analysis, only the points in each policy that could possibly directly affect the environmental sustainability of the farming practices were selected. The policies that act on different scales were then confronted and merged into a single list containing the rules of each analyzed certificate (Gi, organic and Cap in this specific case). This narrowed down the scope but limited the findings to direct effects. Still, to know which of the rules really has spatial influences and so with, also include the parts of policies that have indirect effects, the research needed to make use of interviews with both users and specialists.

The interviews turned out to be a significant addition to the study as they revealed many indirect influences, strengths and weaknesses of the policies and the institutions behind the certificates that do not appear on paper.

Finally, the maximization method is used to solve the issue of missing geodata information. The research can't precisely determine how many Gi-certified farmers are registered in Valdera. At the same time, this information, important as it might be for the study, cannot be made up through speculations or approximations. An alternative method that does not necessarily need the missing data information



Fig. 3 — made by author

must be used. What the research does know and needs to make use of is what rules GI and other certificated sustainable agricultural farmers must follow. In this case, the maximization method comes in quite handy. As the word maximization says, the policy is maxi-

MERITS AND DEFECTS OF THE MAXIMIZATION METHOD

The most decisive advantage of using the maximization method is that it perfectly bridges the analytical part of the research with the strategical part. The first part of maximization helps to conclude the analytical part by drawing conclusions from the maximized policies. In this way, it is possible to answer the question, what if all farmers apply for a certificate and, additionally, observe what specific rules have the highest impact on spatial outcomes. Successively the maximized results of the policies are confronted with the environmental criticalities in the area, and the ones that score best are selected and merged into the optimization phase.

The optimization phase can be considered as the best possible outcome from joining different policies from different food quality certificates. This allows a comparison between the effect caused by the optimization and the pre-established principles that are used as guidelines for the strategy. The result, and final phase of the maximization process, called integration, becomes the main structure of the policy behind the new certificate and represents the environmental engagement of the policy. Everything else included in the framework for the new policy is meant to increase the financial support and participation rate of farmers that apply for the certificate.

Besides the advantages, the method brings some limitations with it. First of them all, and common to all scenario-based approaches, is the infinity of possible outcomes. As much as the scenarios are built upon specific rules, they remain speculative tools and often risk misinterpretation.

mized (or extended) to the entire agricultural land in the area, which is available information. In this way, the research has the possibility to produce and observe the results of the policies' full potential displayed in the selected agri-food system.

Some indicators are necessarily dependent on the researcher's interpretation, especially when it comes to the indirect consequences of a policy. For example, when maximizing GI rules, rules can be very straightforward and leave no place for interpretation, as the law that indicates productive land over 700 meters of altitude and on low fertile soil is not suited for production. The outcome of this law in the maximization will clearly show that productive land on low fertility soils and over 700 meters altitude is withdrawn from production. Less direct rules leave more space for doubts, such as the GI rule that indicates that no permanent crops should be placed on low-slope land. Maximizing this rule would mean forcing land use change for all vineyards, olive groves and other arbustive cultures placed on lower slope soils, but what happens to the productive land after the forced land use change is challenging to say. It limits the possible answer of the researcher to a generic one.

To say that the land use changes to a specific crop would be complete speculation. The only possibility is to limit the options of available crops following the policy's limitations.

GIB OR GEOGRAPHICAL INDICATED BIODISTRICT

Besides the advantages and limitations, the maximization method presents, its final output, the integration map, must be considered as the vision for an environmentally sustainable agri-food system. Furthermore, as it is the combination of the most efficient parts of different policies and the spatial principles defined by the researcher, it also indicates how to achieve such a vision.

This process lays the foundations for the creation of a new certification, the GIB or geographically indicated bio district. Unlike the existing certifications, the GIB is considered as both a market tool and a spatial planning instrument. It preserves the classic characteristics of a food quality certification, as it presents a controlled label, a non-mandatory policy that applies only to the farmers that chose to register and the consortium that develops marketing strategies and represents farmers in legal matters. What differs from the existing certifications is how a GIB is created. The procedure can be initiated not only by a group of farmers that share the same principles but also by institutional forms such as municipal unions. In this way, there is the chance to use the certification to defend the rights of already pre-established sustainable farming groups but also to stimulate the creation of farming unions in regions where this is not the case.

Still, as the tool remains a non-mandatory one, how much the new certification positively influences the sustainability and resilience of the agri-food system it is applied to, depends entirely on the participation of the local agri-businesses. What the report proposes is the full expression of this certificate. That all farmers of an area decide to apply to a non-mandatory tool remains a difficult but not impossible scenario. The critical element to achieve high participation numbers stays in finding the right balance between the costs and benefits of a certificate.

To conclude, the grade of success for the certificate depends on participation, while participation relies on the possibility of providing sufficient financial support. This means that the number of possible outcomes for the certification is unlimited. The policy will always positively influence environmental sustainability; the two criteria it depends on will define how much this influence will be.

Scientific contribution: The project's position at the intersection between the two topics, qualitative food chains and spatial planning, made clear that there is a knowledge gap between certifications and their spatial impact. Little has been explored when it comes to the question of what possible spatial outcomes food quality schemes can create when they are legally linked to a specific area. Food quality schemes were always seen as the result of a particular characteristic of a productive area. Distinct traditions and conditions of territory led to the creation of quality schemes that must be protected via a certification. It is never the other way around where the certification is used to intentionally modify a system and influence spatial outcomes in order to stimulate higher qualitative engagement.

Through researching the spatial influence and especially the environmental engagement of existing certifications, the research contributes to answer some of the questions raised by the knowledge gap. The intersection between certifications and spatial planning must be further researched to be entirely covered, but the first milestone is set.

In addition to the scientific relevance of the chosen topic and its position, the use of less "traditional" methods could be seen as innovative strategies to adapt not only for this specific context but also for other research papers interested in exploring the spatial influence of policies or evaluating environmental risks.

The first, less "traditional method" used is the research by design one. It is indeed a widely used method, but the study used it to obtain something very specific. While usually, the layer approach method is used by researchers to introduce maps that investigate multiple topics at the same time as a support for analytical research. In this case, the method is used to produce precise results to conclude the analytical paragraph. It is used with the goal not of supporting evidence but of elaborating it and producing results that make data quantifiable.

The second method is the maximization method. Again, the research uses the principles and follows the structure of the technique but changes its application. The use of the maximization method in the development of the study points out the utility of the method when it comes to evaluating and confronting the effects of different policies. This approach to the procedure can be a helpful tool for any future research needs to compare diverse options and build a vision out of the combined opportunities.

Social relevance: The project proposes to create a new certification that is attributed to agri-food systems that commit to a specific grade to organic farming, the GIB. This will positively influence the system's environmental sustainability and regeneration of polluted natural resources such as water, soil, or biodiversity.

As much as the improvement and preservation of natural resources is the primary goal of the research, the GIB also has other positive effects that are not environmentally correlated. These effects depend entirely on aspects of the policy and the consortium that stay behind the certifications governance. The policy that legally regulates the GIB certificate does sustain smaller familiar agri-businesses by decreasing the monopolization of pro-

ductive landfills and increasing the financial support for local owners.

Additionally, the policy distributes financial resources in relation to the structural changes an agri-business must fulfil to apply. It provides financial aid and loans to transitioning agri-businesses at the beginning and not at the end of the process as for existing Certifications. The consortium guarantees strategies for product branding and certificate fraud protection. In this way, the economic sustainability of small, local agri-businesses is improved. At the same time, the consortium becomes the leading representative for the GIB agri-businesses in legal causes and promotes the certification through the inclusiveness of non-members and consumers. To guarantee a fair distribution of power in the consortium, the active members have an equal voice in decision-making. This further balances out the possibility of excessive market monopolization, improves collaboration and creates stronger interdependent farming communities.

CONCLUSIONS AND ETHICAL REFLECTION

The research focused in its early steps on understanding the true nature of food quality certifications. A needed step to demonstrate the initial hypothesis is that certificates positively affect the sustainability of the agricultural system. Once the investigation proceeded, some examples of the positive effects of GIs on the agri-food system were found. But at the same time, the same amount of evidence was found demonstrating that the certificates can also produce negative inputs that harm the agri-food system.

A too-high success of a GI certificate, for example, often causes a few greater enterprises to monopolize the market. This forces smaller agribusinesses either to merge into larger corporations or to sell their land concessions. In addition to the market monopolization comes the complementary monoculturalization of the productive area legally under the GI influence. At the same time, the legislation behind PGIs allows the producers to practice only one of the production steps in the defined area, increasing the possibility of importation and so that more prominent producers occupy the market niche. This also puts PDOs in a bad light as their labels are too similar and can barely be distinguished by the average consumer. To avoid monopolization and monoculturalization, the GIBs policy proposes the following: “The GIB certification engages in protecting food products that come from a specific geographical area defined as Biodistrict. All steps of production must happen inside the specified area. The GIB label certifies that products were processed according to the practices of sustainable agriculture and inside the Biodistrict’s border”. The fact that the policy limits production to the indicated area becomes essential because it limits the size of agri-food businesses to the confined space. At the same time, point 6a in the framework shows the following: “The forced resting period for land units indirectly influences the size of land units and the diversification of production.

As a result, land units over 50 hectares are split into 25 or smaller units”. The limitation stimulates an increased diversity in productive land use. Finally, another element that could make the problem of market monopolization less relevant for the study is that this often happens for certificates that protect only a particular product, as for the GIs. In these cases, the niche market they occupy is quickly filled up by only one enterprise that monopolizes the system. The market niche occupation by relatively few entities seems more challenging in certifications such as the biological one, where one label represents all products and creates a global market niche that is too big and diverse to be entirely monopolized. In conclusion, there are two ethical issues that GIB cannot control, which are greenwashing phenomena and corruption in the system. Unfortunately, episodes of greenwashing, the improper use of the certificates and corrupt institutions in charge of the controls are not rare. For example, I likewise discovered a case of greenwashing during my research. As I don’t want to be sued for defamation, I won’t use the name of the two involved businesses. During my field investigation, I had the chance to talk with the owners of different agri-businesses, including certified and non-certified ones. One of the interviewed farmers was a conventional producer of wheat. When the question “to whom do you sell your products?” came up, he answered that he sells mainly to two mills in the Tuscan region. It sounded immediately strange to me as I occasionally encountered one of the mills during previous online research and was pretty sure of the fact that they were selling only organic products. As soon as I had the chance, I double-checked. At that point, I knew I had found a case of greenwashing. This made me assume that the more steps in the production chain of a food product, for example, pastry, bakery or meat goods, the more frequent greenwashing phenomena will be.



Fig.4. - made by author

