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Development of food security through sustainable actions: an analysis of public policies in the State of Santa Catarina from 2015 to 2019

Desarrollo de la seguridad alimentaria a través de acciones sostenibles: un análisis de las Políticas Públicas en el Estado de Santa Catarina de 2015 a 2019

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ABSTRACT

This research identifies and examines sustainable strategies and public policies that develop food security in the state of Santa Catarina from 2015 to 2019, in order to obtain relevant information to clarify the State's investment in related actions. The results obtained show that in the state of Santa Catarina, during this period, programs and actions that reformulated or modified the food system to develop sustainable food security strategies and public policies did not receive the highest amounts committed. This article intends to reinforce the importance of understanding how experiences that link public policies, sustainability and food security have been built in the State in order to promote local development in its multiple aspects – economic, social, cultural, environmental and health and wellbeing – being of the population and, considering that the reality of Santa Catarina can be applied in other contexts, it is expected that this study will strengthen the development of Public Policies by introducing new elements to the technical and scientific debate on the subject.



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Keywords food security; sustainable development; public policy; sustainability.

RESUMEN

Esta investigación identifica y examina estrategias sostenibles y políticas públicas que desarrollan la seguridad alimentaria en el estado de Santa Catarina desde 2015 hasta 2019, con el fin de obtener información relevante para esclarecer la inversión del Estado en acciones relacionadas. Los resultados obtenidos muestran que en el estado de Santa Catarina, de 2015 a 2019, los programas y acciones que reformularon o modificaron el sistema alimentario para desarrollar estrategias de seguridad alimentaria sostenibles y políticas públicas no recibieron los mayores montos comprometidos. Este artículo pretende reforzar la importancia de comprender cómo se han construido en el Estado experiencias que vinculan las políticas públicas, la sostenibilidad y la seguridad alimentaria para promover el desarrollo local en sus múltiples vertientes: económica, social, cultural, ambiental y de salud y bienestar. de la población y, considerando que la realidad de Santa Catarina se puede aplicar en otros contextos, se espera que este estudio fortalezca el desarrollo de las Políticas Públicas al introducir nuevos elementos al debate técnico y científico sobre el tema.

Palabras clave: seguridad alimentaria; desarrollo sostenible; políticas públicas; sostenibilidad.

1. Introduction

Food systems are essential for the health of humanity and the sustainability of the planet. Food reserves will have to double by 2050, not only to feed the largest number of people, but also to guarantee increasingly protein-rich and resource-intensive diets for an expanding middle class (Tercek, Adams, 2014). Thereby, humanity faces the challenge of feeding sustainably and accessibly.

It was in the 1970s that scientific studies on environmental preservation and food safety began. The "Limits to Growth" report was carried out in 1972 by the Massachusetts Institute of Technology (MIT) at the World Conference on the Human Environment and presented the world with issues to be solved in order to achieve sustainability, where insufficient food production, the depletion of natural resources and the control of industrial and population growth were discussed for the first time.

In 1974, the First World Food Conference took place in Italy, establishing food safety as a priority and linking its concept to storage policy, strengthening strategies and international agreements on agricultural products. Thus, the concept of food security arises, referring to a guarantee of regular access to food, as a social right provided for all (Campos et al, 2019).

However, almost 50 years later, there are still few solid solutions to these issues, according to the Food and Agriculture Organization of the United Nations (FAO), data from 2019 showed that about 820 million people worldwide did not have sufficient access to food in 2018, compared to 811 million the previous year, the third consecutive year of increase. This means that one in ten people on the planet starved that year and considering people in moderate condition of food insecurity, the total reaches 2 billion, about 26.4% of world population.

In Brazil, with the return of democracy, the food security policy intensifies through the creation of the Federal Constitution of 1988, offering municipalities and states greater autonomy and

generating the involvement of civil society and private initiatives. However, it was only in 2010 that the right to food was included in the Federal Constitution and became a social right. The 6th Article from Constitutional Amendment n.064/2010 guarantees the right to food and was included among individual and collective social rights; however, it is clear that the legislation does not guarantee the realization of this right in practice, and it remains a great challenge.

Hunger is not a natural phenomenon, but an artificial product of defective economic circumstances, a product of human creation and, therefore, capable of being eliminated by the will of man himself (Castro, 1980). In this sense, Singer (2002) argues that the world produces abundant food to feed its entire population and, according to some estimates, it would be able to feed ten times more people. He claims that people go hungry not because there are too many. But because the unequal distribution of land, the manipulation of Third World economies by developed countries, the waste of food in the West, among other aspects, are the main aggravating factors.

In order to redesign chains, it is prudent to reevaluate all processes, qualifying agriculture as sustainable denotes dissatisfaction with its current situation and the search for a new production standard that does not harm the environment. Sustainable agriculture must make the functions of producing material goods, food, and raw materials (productive function) and services (social function) compatible with the systems with which it is directly linked, that is, the environment, society and the economy (Ruesga Navarro, 2002).

Sustainable agriculture allows sheltering from those who are satisfied with simple adjustments in the productive pattern - economic vision of sustainability - to the more radical ones who see this notion as a long-term objective that allows structural changes, not only in agrarian production, but also throughout society (Marzall, 1999).

According to the FAO Global Food Losses and Food Waste study (2020), in 2011, in addition to obstacles in food production and distribution, food inequality also faces food loss. Losses refer to the decrease in the mass of food available for human consumption in the production, post-harvest, storage, and transport stages.

Food waste is related to losses arising from the decision to discard food that still has value and is mainly associated with the behavior of larger and smaller vendors, food service providers and consumers (FAO, 2020). According to this study, around a third of food produced for human consumption is lost or wasted globally, which equates to around 1.3 billion tons per year. Thus, huge amounts of resources used in food production are used in vain and the gas emissions caused by the production and distribution of food that are lost or wasted are also purposeless emissions, contaminating soil and water for free.

The study further reveals that it is in low-income countries that food is lost mainly during the early and intermediate stages of the food supply chain, and clarifies that food supply chains in developing countries must be strengthened, specifically small farmers, so that they can organize themselves, diversify and increase their production and marketing, and points out that investments in infrastructure, transport, food and packaging industries are necessary, and both the public and private sectors have a crucial role to play.

According to research carried out by the Massachusetts Transport and Logistics Center (MIT CTL) in 2019, another factor that hinders the achievement of healthy food for all is communities with limited access to sources of nutritional food, renowned for food deserts, representing a

major health threat worldwide. Urban populations in emerging economies often buy their food supplies from small family retailers called nanostores. According to MIT CLT (2019), nanostore is defined as a small family-owned establishment, operated by less than five people, located in densely populated neighborhoods. For a number of reasons, they offer low-nutrition foods to their customers.

This research concluded that five million people (2.5% of the population) suffer from food insecurity in Brazil and portrays the main factors that lead consumers to choose between buying nutritious and non-nutritious foods. The main factors pointed out are the consumer's awareness and perceptions of the products offered; accessibility; price; availability of healthy alternatives and buyer characteristics, such as income level, age, properties and the price that individuals are willing to pay for food products.

For the MIT CLT (2019), some measures can be taken to reverse these scenarios, but governments need to invest more in health campaigns and redesign supply chains that can alleviate the problem by promoting healthier food options in underserved communities. The complexity of the concept of food security adopted by Brazil imposes the challenge of qualifying and systematizing the dimensions and indicators involved in this concept.

The state of Santa Catarina created its Food Security Council - CONSEA in 2004, and in 2011 joined the National Food and Nutrition Security System - SISAN, which ended up being published only in 2014 (Brazil, 2012). According to Mick et al. (2017), the I Plan SAN/SC was characterized by meeting a good part of the normative aspects defined by the SISAN regulation, but due to presenting differences in its relevance assessment, it demonstrates a limit in overcoming the sectorization of public management, which is a gift challenge given the complexity of a concept that involves numerous dimensions related to the quantity of food, but mainly to the quality of food.

In light of this scenario, the present work, which presents food security and sustainable public policies as its object of study, proposes to address strategies that developed food security in Santa Catarina in the years 2015 to 2019 for the possibility of contributing to a public policy executed in the territory where the Graduate Program to which the researcher is linked is located.

2. Sustainable development and Sustainability: close but distinct concepts

The emergence of sustainable development as a political and social project of humanity has promoted the orientation of efforts towards finding paths to sustainable societies.

The term sustainable development appears in the 1980s from the relationship between preserving the planet and meeting human needs, and according to the Brundtland Report of 1987 it can be defined as “satisfying the needs of the present without compromising the ability of future generations to meet their own needs”. Assuming a multi-dimensional character, it incorporates different and maintenance of natural capital to achieve economic prosperity and equity for current and future generations (Sobrinho, 2008). This concept, according to Sartori, Latronico and Campos (2014), brings together issues that can be organized in a unique way and that seek as the ultimate goal, sustainability itself and based on sustainability principles such as long-term perspectives and understanding of non-linearity of environmental and human systems. The concept of sustainability, on the other hand, appears related to renewable

resources and refers to the existence of ecological conditions necessary to sustain human life and its future generations, being summarized in the capacity of system to resist or adapt to changes.

3. Methodology

In order to identify sustainable public policies and strategies that develop food security in the State of Santa Catarina, this descriptive study was based on official secondary data from 2015 to 2019. For this, the total amount pledged¹ by the state government to sustainable public policies and strategies that develop food security was described, the state's budget execution was considered, which its expenditure is classified according to programs and actions (Lima and Castro, 2003) that organize state activities for the achievement of strategic objectives defined in the multiannual plan for a period of four years. The source of the data was the Transparency Portal of Santa Catarina, a social control tool maintained by the State's Comptroller General (CGE), which, since 2016, has made the financial execution of the Santa Catarina state government available on the internet.

Initially, it was necessary to determine which programs and actions of the state are related to food security, sustainability, and agriculture, since they were associated by different agencies and there is no official list of actions and programs that comprise them. For this purpose, the elements of the concept of food and nutrition security adopted by the National Food Security Council (COESEA), which are in the text of LOSAN², and criteria of the concept of sustainable food systems adopted by the World Economic Forum (2017), were used as criteria.

Therefore, government programs and actions related to the production chain (production, supply, commercialization), food consumption, health and respect for cultural habits, and environmental, social, and economic sustainability were selected. As the legislation requires that the name of each program and action is as clear as possible, expressing its object³ in clear language, the names of the programs and actions are related to nutritional and food health, sustainability and agriculture, which allowed it to be identified with reasonable precision all related actions.

Once the programs and actions were identified, the number of resources pledged by the state to them during the years 2015 to 2019 was surveyed. As all government actions are linked to a government program⁴, the sum of the amounts allocated for each action allows to identify the programs that received the largest proportion of the resources destined in each year of the analyzed period.

For the survey of pledged resources, a database was organized containing all the programs and actions carried out by the state government between 2015 and 2019, obtained through

¹ "The commitment of the expense is the act emanating from the competent authority that creates an obligation for the state to pay for condition implements regardless of pending or not" (Art. 58 of Law 4.320 / 64).

² Brazil. Law 11.346/2006. Source: encurtador.com.br/oyPR4.

³ Brazil, Ministry of Finance, National Treasury Secretariat. National spending manual. Brasília, DF: Ministry of Finance / General Accounting Coordination of the National Treasury Secretariat 2008.

⁴ To meet the different needs of society, the government needs to organize its work in detail. To organize its activities, the budget is not limited to the division by areas of activity (formally called budget functions), it also presents budget programs and actions (Brazil, 2011).

consultation with the Transparency Portal, which generates Excel spreadsheets for each survey carried out.

As it is evident, the way in which the information is made available, both regarding the transferred resources and those applied directly, allows the association between program, action, and expenses.

As it is possible that a government program and action has part of the budgetary resource spent directly and another part transferred, when proceeding to the aggregation of the amounts, the amount effectively spent by the state government on food and nutrition security is not identified, however, the money destined for them. The programs and actions were then ranked according to the volume of funds received.

4. Results and discussion

Eight programs were chosen, which follow: Hunger Eradication in Santa Catarina (2015, 2016) and Eat Well SC (2017, 2018 and 2019), Strategic Environmental Management, Technology and Innovation for Sustainable Development, Rural Santa Catarina, Sustainable Environmental Development, Family Farming, Rural ProPav (rural road paving) and Competitive Agribusiness, shown in table 1. The values are expressed in reais and show the amount transferred to the state in the period evaluated, they are shown in ascending order from left to right.

Table 1. Amount pledged to programs by the State of Santa Catarina from 2015 to 2019.

PROGRAM YEAR	HUNGER ERADICATION IN SANTA CATARINA AND EAT WELL SC	STRATEGIC ENVIRONMENTAL MANAGEMENT	TECHNOLOGY AND INNOVATION FOR SUSTAINABLE DEVELOPMENT	RURAL SANTA CATARINA VALUE PLEDGED	SUSTAINABLE ENVIRONMENTAL DEVELOPMENT REAL (R\$)	FAMILY FARMING	RURAL PROPAV (RURAL PAVING)	COMPETITIVE AGRIBUSINESS
2015	3,825,525.68	782,064.18	2,995,372.23	3,781,099.60	9,618,117.92	3,713,605.00	164,597,434.67	61,945,035.88
2016	72,954.88	3,286,291.51	719,304.00	2,720,004.12	6,076,364.20	899,029.00	104,157,918.13	69,949,977.85
2017	139,761.41	3,310,352.87	3,872,416.00	17,802,310.82	10,928,469.08	32,048,711.90	144,083,666.24	37,563,797.71
2018	78,719.60	3,579,734.93	4,181,339.27	---	6,498,768.28	16,970,325.97	89,385,234.46	380,918,341.47
2019	167,650.16	3,830,607.27	3,556,662.18	---	5,229,242.93	44,595,895.51	39,748,497.64	360,390,111.02
TOTAL	4,284,611.73	14,789,050.76	15,325,094.18	24,303,414.54	38,350,962.41	98,227,567.38	541,972,751.14	910,767,263.93

The programs Eradication of Hunger in Santa Catarina (2015, 2016), and Eat Well SC (2017, 2018 and 2019), had the lowest resource received during the period analyzed. With its highest value in 2015 and the lowest in 2016, it is possible to notice the drastic drop in transfers from then on. The variation between the highest and lowest value is R\$ 3,752,570.80. We consider the parameter adopted by Veiga (2008) to achieve sustainable development, freedom of choice and opportunities. The capabilities of individuals are potentially infinite; therefore, public policies must establish priorities in order to preserve and expand the substantive freedoms

benefitted from (Veiga, 2005). For that, the Public Administration must be “preventive, cautious and effective (not just efficient)” (Freitas, 2015). The programs do not maintain an average pledged value, the great variation points to it as a small opportunity to choose food purchases for citizens who receive aid, but it does not represent a preventive, precautionary and effective purpose for the problem of food security.

The second program, in the order of values, is Strategic Environmental Management, which, compared to the first, has a transfer investment. The best value was in 2015, and as of 2016 its transfer increased gradually, being the highest in 2019. In the last four years, the transfer remained at an average of R \$ 3,501,746.65, the difference between the highest and lowest value is R\$ 3,048,543.09. When dealing with the environmental dimension, the compromise of biodiversity, causes severe impoverishment of the well-being of the population, as “there cannot be quality of life and longevity in a degraded environment” (Freitas, 2012, p. 65). What creates the duty for the government to take care of the environment in all its administrative acts, public policies and administrative acts must balance the sustainability criteria with costs and benefits, as there must be a rational and consistent motivation for the chosen option; from then on, there would be a line with the confrontation, preferably preventive, of the damages caused by the lack of priority in the allocation of scarce resources (Freitas, 2005). What validates the importance and necessity of the program, the gradual increase in the amount pledged in recent years indicates the improvement of state investment in advances in environmental management.

The third program, Technology and Innovation for Sustainable Development, had its lowest amount pledged in 2016 and the highest in 2018. The difference between the highest and lowest amount is R\$ 3,462,035.27. The importance of sustainability in administrative contracts is constituted as a form of intervention of benefits, inducing patterns of production and consumption compatible with lasting development (Freitas, 2013). Sustainability is a constitutional principle and, as such, it is indispensable for public policies; here, it should be noted that sustainable development is, like that one, long lasting and multidimensional: social, environmental, economic, ethical and legal-political (Freitas, 2015). Thus, the public administrator must pass more advantageous proposals that are in accordance with sustainable policies. However, administrative acts must balance sustainability criteria with costs and benefits, as there must be consistent motivation for the option chosen (Freitas, 2015). Only with the incorporation of sustainability criteria will the government obtain advantages that truly serve the public interest (Freitas, 2012), therefore, the relevance of the program, which maintained a not too high average value of commitment compared to those analyzed.

Santa Catarina Rural, is the fourth, and had its highest value in 2017, since then, there is no pledged amount passed on to the program. The difference between the highest and lowest value is R\$15,082,306.70. Despite the cut in the amount pledged, the Family Farming program, aimed at family farming, obtained an increasing pass-through, as it will be discussed below.

The fifth, Sustainable Environmental Development, had its lowest transfer in 2019 and highest in 2017, the difference in value between them is R\$ 5,699,226.15. There is a drop in investment in recent years and added to the Strategic Environmental Management and Technology and Innovation for Sustainable Development programs, both aimed at sustainable management, represent the amount of R\$ 68,465,107.35. This transfer is equivalent to R\$ 842,302,156.58 less than the program with the highest amount transferred in the evaluated

period. Which points to the weak investment in sustainable development in the value pledged by the State of Santa Catarina.

Family Farming is the sixth program, the lowest transfer was in 2016 and the largest in 2019. The difference between the highest and lowest amount is R\$ 43,696,866.51. By inserting in public policies, criteria that give preference or incentives to family farmers or to regional producers and traders, it is a way to meet social and territorial distribution criteria, since such measures could contribute to the minimization of the rural exodus (Veiga, 2015). Despite the emphasis on investment in family farming, in addition to the Santa Catarina Rural program, the state invested R\$ 122,530,981.92 in this segment, a low value, as measured by the programs evaluated.

ProPav Rural (rural paving), is the second program with the largest distribution of funds, 2015 with the highest value and 2019 with the lowest. The difference between the highest and lowest value is R\$ 124,848,937.03. Despite the drop in recent years, there is a high investment. The lowest amount invested is R\$ 35,922,971.96 more than the highest amount transferred to the Eradication of Hunger in Santa Catarina (2015). Competitive Agribusiness is the program, among those analyzed, that had the largest amount distributed to the state, 2018 was the biggest transfer and 2017 the lowest. The difference between the highest and lowest value is R\$ 343,354,543.76. There has been great growth in transfers to the program in the past two years. What reinforces the data from the reports of the Central Bank of Brazil (2010), pointing to more than 80% of the resources available via credits for family farmers went to crops for export, such as soybeans, corn and the purchase of machinery and equipment. These data reveal that the majority of family farmers have remained in search of credit and continue to deplete the natural resources of their land, with greater debts each year.

Table 2. Amount pledged in shares by the State of Santa Catarina from 2015 to 2019.

ACTION YEAR	SUPPLEMENTARY ACTIONS TO SUPPORT RURAL DEVELOPMENT AND FISHERS	STRUCTURING AND ORGANIZATION OF LOCAL PRODUCTIVE ARRANGEMENTS	ACTIONS IN THE AREA OF AGRICULTURE	CAPTURE, STORAGE, AND USE OF WATER IN AGRICULTURE PLEGDED AMOUNT REAL (R\$)	PROMOTION OF AGRICULTURE ACTIVITY	DISTRIBUTION OF SCHOOL MEALS	SCHOOL MEALS
2015	---	1,367,807.95	3,976,827.43	---	---	118,824,753.72	---
2016	28,650.00	---	---	---	---	---	143,981,143.22
2017	---	---	---	9,687,641.45	23,293,592.24	---	170,236,354.33
2018	---	---	---	3,844,436.85	14,676,621.53	---	154,917,437.97
2019	---	---	---	119,934.00	40,469,993.16	---	153,562,097.87
Total	28,650.00	1,367,807.95	3,976,827.43	13,652,012.30	78,440,206.93	118,824,753.72	622,697,033.39

The early actions selected were eight, but the Special Food Card (2015) action had no pledged value and was replaced by the Professional training action (2019). Thus, the seven actions evaluated are: (i) supplementary actions to support rural and fishing development, (ii) structuring and organization of local productive arrangements, (iii) actions in the area of agriculture, (iv) capture, storage and use of water in agriculture, (v) promotion of agricultural activity, (vi) distribution of school meals and (vii) school meals. Represented in table 2, the values are shown in reais and show the amount transferred to the state in the period evaluated, they are in ascending order from left to right.

The shares with the lowest transfer value are supplementary actions to support rural and fisheries development, they had a low amount pledged only in 2016. The second lowest amount transferred was for structuring and organizing local productive arrangements, with a low value pledged only to the year 2015. Actions in the area of agriculture had the third smallest transfer, only in 2015. The value of the three shares added up is R\$ 617,323,748.01, the lowest of the action with the highest amount pledged during the evaluated period. It is clear, then, the lack of investment in the state in actions that preside and encourage rural agriculture, entrepreneurship and management for them during these years. Another point is that, since 2016, these actions have not received any pledged amount, but there has been greater investment by the state in this regard, in the action to promote agricultural activity, which in the evaluated period, had the third largest amount pledged, which were from the years 2017 to 2019. The action to promote agricultural activity received an amount of R \$ 73,066,921.55 more than the supplementary actions to support rural and fisheries development, structuring and organization of local productive arrangements and actions in the area of agriculture combined. However, compared to the highest amount pledged during the period, it still remains low. In this sense, Morgan (2006) points to the neglect of conventional cost / benefit analyzes that have difficulties in quantifying the benefits of good nutrition and healthy habits, many of which occur in the long run. Emphasizes the issue of the cost of a lifetime to public coffers, which, according to the author, would be one of the most important ingredients in the recipe for sustainable food chains. Investing in “good” foods, considered here as healthy and adequate from an environmental and cultural point of view to the detriment of industrialized ones, would be the most economical way to invest in health.

The action of capturing, storing and using water in agriculture had the fourth largest amount pledged during the period evaluated, with transfers from the years 2017 to 2019. In this perspective, a law that should be highlighted is Law 12,187/09, which instituted the National Policy on Climate Change (PNMC), which, in its article 6, XII, provides that bids must adopt criteria of preference for products that generate less emission in the production process, more energy and water savings, and less waste generation (Brazil, 2009).

The state of Santa Catarina made significant investments in the area during the period evaluated, in addition, Decree No. 7,746/2012 was issued, which regulates the sustainability guidelines within the scope of the Federal Public Administration. They are: I - less impact on natural resources such as flora, fauna, air, soil and water; II - preference for materials, technologies and raw materials of local origin; III - greater efficiency in the use of natural resources such as water and energy; IV - greater generation of jobs, preferably with local labor; V - longer useful life and lower maintenance cost of the asset and the work; VI - use of innovations that reduce pressure on natural resources; and VII - environmentally regular origin of natural resources used in goods, services and works (Brazil, 2012).

Along the same lines, in 2015, Decree 8,538 was issued, which aims to regulate the different forms of favored, differentiated, and simplified treatment for family farmers, rural producers, micro-companies, small businesses, individual micro-entrepreneurs and cooperative consumer societies in public procurement. goods, services and works within the scope of the Federal Public Administration. According to article 1, this decree has as main objectives: “I - to promote economic and social development at the local and regional level; II - increase the efficiency of public policies; and III - encourage technological innovation” (Brazil, 2015).

The actions, Distribution of school meals (2015) and School meals (2016 to 2019), had the highest amounts pledged during the entire period evaluated, totaling R\$ 741,521,787.11. In this regard, the State, through its programs, actions and policies, among which those referring to the food consumption of populations, such as school meals, has the power to influence consumption practices and choices, shaping the agri-food system and the population health. If you consider that the target audience is children (schoolchildren), who generally do not have the power to make decisions and are influenced by their consumption choices, the importance of this control should be emphasized, mainly because habits, behaviors and preferences acquired in childhood would shape, in part, those that would be more easily maintained until adulthood, creating patterns that would become resistant to change (Triches, 2014).

On the other hand, in the study by Morgan and Sonnino (2007) on school feeding programs in Italy and the United Kingdom, the authors highlight that in both places the School Food Service was being used to “empower the consumer” through the use of educational programs, in which the message of the classes had effects in the canteen. Choices were restricted in order to help promote adequate eating patterns by relating them to the consumption of food from the local culture. The rationale of this approach, the authors point out, is that informed choices presuppose some knowledge of what are the appropriate diets that need to be acquired and, therefore, it is necessary to acquire the ability to exercise that choice. Thus, the process of nutritional education would not only be a conventional injunction but would constitute a learning experience about local production and the appreciation of cultural diversity in food. Consumers with discernment for this type of demand are the most important factor in creating and maintaining adequate eating habits for the body and the environment (Morgan, Sonnino, 2017).

Food systems today are not suitable for this purpose; fundamental transformation is needed; social and ecological priorities must be at the heart of food systems. Bold new "smart policies" are needed to redesign food systems, business strategies and consumer decisions. Policies can carefully direct the power of these choices, and can strengthen integrated efforts in infrastructure, economic policy, financial markets and other areas. The proposed policies are described in the following sections (World Economic Forum, 2017).

4.1. Assess and integrate the true costs of food systems

Integrating health care costs and national capital loss considerations into food-focused decision making in national budgets, planning and policies would strengthen collaboration in traditional silos. Examples include the integration of nutrition into educational systems and the prioritization of prevention in health policy, linked to the choice of food.

Thus, despite the great value of the state pledged to the actions, Distribution of school meals (2015) and School meals (2016 to 2019), within the evaluated period, there are no food education jobs that teach and encourage students to cook or learn how they should eat. The objective of educational programs would be to promote knowledge to consumers by making them aware of what they are consuming, as well as to create a commitment to food with taste and characteristics produced locally.

4.2. Adopt a “government-wide” approach to designing food, agricultural and environmental policies to enable healthier diets

Several policies could be redesigned to strengthen health and nutrition. For example, public subsidies can be redirected towards highly nutritious crops, lowering the price of nutritious food. In addition, social marketing campaigns can promote diversity and prioritize nutrient-rich foods. Practical environmental policies can encourage better sustainable production performance on the market, testing and scaling strategies that reward smart climate change approaches and actors. Public funds can better leverage private investment for these purposes. There is no specific program or action to design food, agricultural and environmental policies, to allow healthier diets, during the periods evaluated. But actions, supplementary actions to support rural and fishing development (2016), structuring and organization of local productive arrangements (2016), actions in the area of agriculture (2016) and promotion of agricultural activity (2017 to 2019), help in practices that can encourage better sustainable production performance in the state market. Despite the pledged value, the actions are still specific in agriculture and not in the food system.

4.3. Create a favorable environment for technologies designed for inclusion and oriented towards challenges in food systems

For existing innovations, policies can support large-scale accessibility. For technologies selected from the Fourth Industrial Revolution⁵, participatory processes between regulators and innovators will be critical to shaping a future that puts people and technological tools first at the service of their needs. Continuous public investment and in consultancy services will be critical to allow the acceptance of appropriate technologies adapted to the specific needs of actors in contexts of different food systems.

The action, Collection, storage and use of water in agriculture (2017 to 2019), and the programs, Santa Catarina Rural (2015 to 2017) and Family Farming, are the ones that would most provide incentives for new sustainable technologies to food producers in the State. Despite the value, these policies do not create a better food system.

4.4. Address structural inequality and meet basic needs

There are populations left behind in the evolution of food systems, and social programs can complement government safety nets to protect the most vulnerable.

The programs, Hunger Eradication in Santa Catarina and Eat Well SC, act in this sense and are the programs with the lowest pledged amount within the evaluated period. This weakens the security and protection of the most needy and vulnerable population.

⁵ Fourth Industrial Revolution is an expression that encompasses some technologies for automation and data exchange and uses concepts of cyber-physical systems, Internet of Things and Cloud Computing. Industry 4.0 facilitates the vision and execution of "Intelligent Factories" with its modular structures, cyber-physical systems monitor physical processes, create a virtual copy of the physical world, and make decentralized decisions. With the Internet of Things, cyber-physical systems communicate and cooperate with each other and with humans in real time, and through cloud computing, both internal and intra-organizational services are offered and used by participants in the value chain. Source: encurtador.com.br/hpzT0.

4.5. Influence new food standards and aspirations

Consumer choices will be shaped by a trio of markets, policies and social influences. For the latter, institutions and social actors can promote a new type of food that supports personal and planet health. Traditional and social media, including influential culture, could reshape perceptions of which foods are pleasant and desirable, and can create taboos in behaviors such as food waste.

There is no spread of influences, incentives, at school, business or social levels, within the programs and actions evaluated.

4.6. Raise the needs of future generations

The institutions' social role is fundamental to defend climate change, ecological services, protect and offer technical assistance. These agents can also ensure that the needs of the poorest populations are among the priorities for future technological development.

The programs, Strategic Environmental Management, Technology and Innovation for Sustainable Development and Sustainable Environmental Development, are the policies that foster sustainable development, evaluated during the period. The programs received pledged amounts every year, but they are not within the largest transfers.

The programs, ProPav Rural (paving rural roads) and Competitive Agribusiness, are not suitable for policies that aim to create a new food system, but they were the programs with the highest pass-through values during the evaluated period. This indicates a certain freezing state in stimulating new, more sustainable and effective chains.

5. Conclusions

In Brazil, the evaluation of social policies and programs gained strength after the redemocratization process, with the main focus being the final results of public interventions, but although the analysis of the final results of SAN programs is important, this seems insufficient to guide the conducting policy, reviewing strategies and correcting problems.

Despite the consolidation of theoretical and legal frameworks, the challenge of implementing a SAN Public Policy is very broad, as in addition to the economic interests inherent in a policy that aims to ensure social well-being above the needs of capital accumulation, the perspective instituting an intersectoral system is still a challenge.

In order to develop new food systems, a necessary discontinuity of the existing structure is understood, and the shortening of the supply chain is pointed out as a purpose to be pursued. But it is not enough to destructure production, without deconstructing consumption, then, as an inherent part, the state could move this gear, feeding back the process towards the institutionalization of a new agrifood model. Thus, the article argued that changes in production and consumption models only occur since the structure can be more easily modified with the interference of the state, as a key actor in this process by its regulatory power, concluding that the state should determine which program and actions are capable of generating lower environmental impacts while producing economic and social benefits.

Considering the school as a space for socialization and multiplication of values, the normative contexts it provides become relevant, influencing school actions and procedures, such as favoring the consumption of fresher, natural and seasonal foods and health, thus encouraging, short supply chains and more suitable forms of production from a social and environmental point of view.

The article also considers that conventional food supply chains (large-scale and long) could be replaced by local chains (small-scale and short) which, in addition to potentially improving this aspect, could also provide for the insertion of local family farmers and benefit the environment. It was also found that in the state of Santa Catarina, from 2015 to 2019, programs and actions that reformulated or modified the food system, to develop sustainable food security strategies and public policies, did not receive the highest amounts committed and this negligence makes it difficult to quantify the benefits of good nutrition and healthy habits, in addition to harming investments in health due to this prioritization of processed foods.

Thus, with these considerations, it is intended to reinforce the importance of understanding how experiences that interconnect public policies, sustainability and food security have been built in the State of Santa Catarina in order to promote local development in its multiple aspects: economic, social, cultural, environmental and health and well-being of the population.

References

- Aurélio Sobrinho, C. (2008). *Desenvolvimento sustentável: uma análise a partir do Relatório Brundtland*. [Trabajo final de máster]. Universidade Estadual Paulista. <http://hdl.handle.net/11449/88813>
- Brazil, Conselho Nacional de Segurança Alimentar e Nutricional (2012). *Sistema Nacional de Segurança Alimentar e Nutricional*. www.encurtador.com.br/dkAEJ
- Brazil, Controladoria Geral da União (2011). *Portal da Transparência do Governo Federal*. www.portaldatransparencia.gov.br
- Brazil, Instituto Nacional de Alimentação e Nutrição (1992). *Diretrizes gerais do INAN/MS para uma política nacional de alimentação e nutrição*. Ministério da Saúde, Brasil.
- Brazil, Ministério da Fazenda, Secretaria do Tesouro Nacional (2008). *Manual de despesa nacional*. Ministério da Fazenda/ Coordenação de Contabilidade Geral da Secretaria do Tesouro Nacional, Brasil.
- Brazil. (1955). *Programa Nacional de Alimentação Escolar*. Decreto nº 37.106.
- Brazil. (1964). *Art. 58 da Lei 4.320*.
- Brazil. (2006). *Lei no 11.346, de 15 de setembro de 2006. Cria o Sistema Nacional de Segurança Alimentar e Nutricional – SISAN, com vistas em assegurar o direito humano à alimentação adequada e dá outras providências*. Diário Oficial da União. http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2006/lei/111346.htm

- Brazil. (2006). *Política Nacional da Agricultura Familiar e Empreendimentos Familiares Rurais, sancionada pela Lei nº 11.326.*
- Brazil. (2009). *Lei 12.187/09. Política Nacional sobre Mudança do Clima (PNMC), que em seu artigo 6º, XII.*
- Brazil. (2009). *Política Nacional de Segurança Alimentar e Nutricional e da Agroecologia. Diretrizes de execução, alinhadas com a temática da sustentabilidade. Lei nº 11.947.*
- Brazil. (2010). *Artigo 6 da Constituição Federal. Emenda Constitucional.* [http://www.planalto.gov.br/ccivil_03/constituicao/emendas/emc/emc64.htm#:~:text=E menda%20Constitucional%20n%C2%BA%2064&text=Alterar%20o%20art.,a%20alim enta%20C3%A7%C3%A3o%20como%20direito%20social.&text=2%C2%BA%20Esta %20Emenda%20Constitucional%20entra%20em%20vigor%20na%20data%20de%20 sua%20publica%C3%A7%C3%A3o](http://www.planalto.gov.br/ccivil_03/constituicao/emendas/emc/emc64.htm#:~:text=E%20menda%20Constitucional%20n%C2%BA%2064&text=Alterar%20o%20art.,a%20alim%20enta%20C3%A7%C3%A3o%20como%20direito%20social.&text=2%C2%BA%20Esta%20Emenda%20Constitucional%20entra%20em%20vigor%20na%20data%20de%20sua%20publica%C3%A7%C3%A3o)
- Brazil. (2010). *Decreto no 7.272, de 25 de agosto de 2010. Regulamenta a Lei no 11.346, de 15 de setembro de 2006.*
- Brazil. (2010). *Ministério do Desenvolvimento Social e Combate à Fome. Nota Técnica DA/SAGI/MDS nº 128/2010: Relatório da Oficina Técnica para análise da Escala Brasileira de Medida Domiciliar de Insegurança Alimentar.*
- Brazil. (2010). *Nota Técnica DA/SAGI/MDS nº 128/2010: Relatório da Oficina Técnica para análise da Escala Brasileira de Medida Domiciliar de Insegurança Alimentar. Ministério do Desenvolvimento Social e Combate à Fome.*
- Brazil. (2012). *Art. 19 da Lei nº 10.6961, de 2 de julho de 2003 e regulamentado pelo Decreto nº 7.775, de 4 de julho de 2012.*
- Brazil. (2012). *Decreto nº 7746/2012.*
- Brazil. (2012). *Política Nacional de Agroecologia e Produção Orgânica. Decreto N 7.794.* <http://www.in.gov.br/autenticidade.html>
- Brazil. (2012). *Política Nacional de Agroecologia e Produção Orgânica – PNAPO Decreto N 7.794.* <http://www.in.gov.br/autenticidade.html>
- Brazil. (2015). *Decreto nº 8.538, de 6 de outubro de 2015.*
- Castro, J. (1980). *Geografia da fome (o dilema brasileiro: pão ou aço).* Ed. Antares Achiamé.
- Ellen Macarthur Foundation (s.f.). *The Ellen MacArthur Foundation works in Education & Training.* <https://www.ellenmacarthurfoundation.org>
- Freitas, L. (2013). *Avaliação de escolas e universidades.* Komedí.
- Freitas, J. (2015). *O controle dos atos administrativos e os princípios fundamentais.* Malheiros Editores.

- Freitas, L., & Miranda, C. (2012). *Relatório de pesquisa*. Loed, Faculdade de Educação da UNICAMP.
- IBGE. (2013). *Pesquisa Nacional por Amostra de Domicílio – Segurança Alimentar*. <https://biblioteca.ibge.gov.br/visualizacao/livros/liv91984.pdf>
- Lima, D. V., & Castro, R. G. (2003). *Public accounting*. Atlas.
- Machado, M. (2017). *Avaliação do Plano Estadual de Segurança Alimentar e Nutricional de Santa Catarina*. UFSC.
- MIT Center for Transportation & Logistics. (2019). *Supply Chain Management and Logistics*. <https://ctl.mit.edu/>
- Marzall, K. (1999). *Indicadores de sustentabilidade para agroecossistemas*. Faculdade de Agronomia da Universidade Federal do Rio Grande do Sul.
- Morgan, K., & Sonnino, R. (2010). Rethinking School Food: The Power of the Public Plate. In Worldwatch Institute, *State of the World 2010. Transforming Cultures: From Consumerism to Sustainability* (pp. 69-74). Routledge.
- Morgan, K., & Sonnino, R. (2008). *The school food revolution: public food and the challenge of sustainable development*. Earthscan publishing for a sustainable future.
- Morgan, K., & Sonnino, R. (2007). Empowering consumers: the creative procurement of school meals in Italy and the UK. *International Journal of Consumer Studies*, 31, 19-25.
- Morgan, K., & Sonnino, R. (2017). The urban foodscape: world cities and the new food Equation. *Cambridge Journal of Regions, Economy and Society* p. 209–224.
- Organización de las Naciones Unidas, ONU. (2011) *Relatório do Desenvolvimento Humano*. http://hdr.undp.org/sites/default/files/hdr_2011_pt_summary.pdf
- Organización de las Naciones Unidas para la Alimentación y la Agricultura, FAO. (2019). *El Estado de la Seguridad Alimentaria y la Nutrición en el Mundo*. FAO. <http://www.fao.org/publications/sofi/2020/es/>
- Organización de las Naciones Unidas para la Alimentación y la Agricultura, FAO. (2020). *Losses and food waste in Latin America and the Caribbean*. FAO. <http://www.fao.org/americas/noticias/ver/pt/c/239394/>
- Ruesga Navarro, A. (2002). *Caracterización de la agricultura sostenible. La Práctica de la Agricultura y Ganadería Ecológicas*. Comité Andaluz de Agricultura Ecológica.
- Sartori, S., Latronico, F., & Campos, L. P. (2014). Sustentabilidade e desenvolvimento sustentável: uma taxonomia no campo da literatura. *Ambiente & sociedade*, 17, 1-22.
- Singer, P. (2002). Ética Prática. In I. P. A. Veiga (org.), *Projeto político-pedagógico da escola: uma construção possível* (p. 192). Papirus.

- Tercek, M., & Adams, J. (2014). *Capital Natural: Como as empresas e a sociedade podem prosperar ao investir no meio ambiente*. Alaúde.
- Triches, M., & Gerhardt, E., & Schaneider, S. (2014). *Políticas alimentares: interações entre saúde, consumo e produção de alimentos* (pp. 109-120). Interações.
- Veiga, J. (2005). O Prelúdio do Desenvolvimento Sustentável. In CAVC, *Economia Brasileira: Perspectivas do Desenvolvimento* (p. 243-266). USP.
- Veiga, J. (2008). *Desenvolvimento sustentável: o desafio do século XXI*. Garamond.
- World Economic Forum. (2017). *Shaping the future of global food systems: a scenarios analysis*. World Economic Forum.