

SUBSIDIES ON FOOD PRODUCTS

(Analysis and Proposals for Public Policies)

The case of Bolivia

Julio Prudencio Böhr

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SUBSIDIES ON FOOD PRODUCTS

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The theme of subsidies is part of the configuration of agricultural price policies implemented for several decades, especially by developed countries, either through the Farm Bills legislation in the United States (direct aid to farmers, public intervention in markets to stabilize product prices, minimum prices for farmers, among others) or the Common Agricultural Policy (CAP) of the European Union (indicative prices for each product, intervention prices, internal market protection mechanisms, general subsidies, among others).

Today, many countries implement a multiplicity of types of subsidies, some of those mentioned above having been eliminated, especially by the guidelines of the World Trade Organization - WTO, and new ones implemented (such as subsidies for agricultural insurance premiums, against price fluctuations and natural risks, for example.)

In the country, various types of subsidies¹ have been implemented for years, which in recent months have gained much prominence, generating much discussion and debate.

Subsidies on food products can be classified into two aspects: subsidies on consumers and subsidies on agricultural products.

¹ Defined as monetary aid on account of public resources granted to a branch of production or a company to help it keep the price of a product or service low, and/or to compensate for expenses incurred. It is different from public spending on infrastructure and development, on research; in knowledge transfer services; inspection services, etc.

CHAPTER I

I. SUBSIDIES DESTINED TO CONSUMERS

Subsidies directed at consumers are a social policy instrument established a few decades ago, starting with the economic crisis of the 1980s and widely spread in the 1990s. As a consequence of the effects of the Structural and Economic Adjustment Programs, and the growing external debt increased poverty with a high social cost. Based on this, Conditional Transfer Programs² (social protection networks) were established to assist the poorest families with a minimum income, so that they have access to health and education³.

The conditional transfer programs have developed a series of “conditionalities” in health and education, such as the obligation to attend schools, the obligation of prenatal check-ups, periodic health check-ups, and others.

Subsequently, these Social Protection networks were expanded to all vulnerable populations: the unemployed; to retirees and the sick, either through monetary resources or through medicines and nutrients; expanding the objectives to achieve Food and Nutritional Security; and poverty reduction.

With regard to food, subsidies to consumers are represented through coupons for the exchange of food and/or through in-kind transfers for the purchase of food/nutrients.

Subsidies to consumers are classified into the Prenatal and Breastfeeding subsidy; in the Juana Azurduy bond; in Complementary School Food; and in the Carmelo nutritional reinforcement⁴.

Table No. 1
Subsidies to consumers (Bs)

Years	Pre Natal Breastfeeding	Juana Azurduy Bonus	School complementary feeding (School breakfast)	Nutritional reinforcement (Carmelo)	Total Bs	Total \$us
2019	98.508.000		439.750.366		538.258.366	77.335.972
2020	67.814.100	187.000.000	504.534.801	46.326.600	168.675.501	24.234.986
2021	84.401.700	100.378.960	486.163.000	66.559.806	552.807.207	79.426.323
2022	163.000.000	166.000.000	479.000.000	35.000.000(*)	808.000.000	116.091.954
2023	163.000.000	187.000.000	473.000.000	35.000.000(*)	823.000.000	118.247.126

(*) Preliminary statistics.

Source. Ministerio Educación. Rendición Pública de Cuentas (2020); minedu.gob.bo (publicado 9/11/2021)

² With different names depending on the country; Progesa-Oportunidades (Mexico); Bolsa Escola-Family Bag (Brazil); Families in Action (Colombia); Chile Solidario System Bridge (Chile); Solidarity Network (El Salvador); Together (Peru); Let's move forward (Costa Rica); Citizen Income (Uruguay), among others.

³ Which is insufficient since this income must be complemented with the necessary infrastructure for their development; That is, having schools, health centers, equipment, trained technical personnel, drinking water, electricity, roads, medicines, among others, to achieve the effectiveness of these services.

⁴ The prenatal subsidy consists of the delivery to the pregnant mother of a food package worth 300 Bs, in the last 4 months of pregnancy. The breastfeeding subsidy consists of the delivery of food products during the first 12 months of the child's life, for a value of 2,000 Bs/month (meats, vegetables, fruits, groceries, nuts, oats, milk, cereals and others) . The Juana Azurduy bonus is an economic incentive for controls for 9 months (450 Bs) + 120 Bs/birth and control + 125 Bs/bi-monthly control of a child born = total 1,820 Bs. Complementary School Feeding consists of the delivery of food rations for all schoolchildren, either through school breakfast, snack or lunch depending on the region and municipality (the amount of money that the State grants ranges between 0.50 Bs and 2.00 Bs/day/school). Carmelo is a nutritional reinforcement (vitamins, minerals, proteins, essential amino acids, omega) for all older adults, with free monthly distribution and a value of 54 Bs.

<https://defensoria.gob.bo/uploads/files/informe-defensorial-dificultades-en-la-compra->

AasaMinsalud.gob.bo/programas-de-salud/unidad-de-recursos

www. SEDEM. Subsidios (Prenatal, de natalidad y lactancia; subsidio universal pre natal por la vida

www. Ministerio de economía y finanzas. Asignación presupuestaria para políticas sociales.

Of the different subsidies to consumers, the Juancito Pinto school breakfast is the one that demands the most resources (although the average per beneficiary is the lowest) and the number of beneficiaries is also the highest⁵.

The total subsidies to consumers between 2019 and 2021 varied between 538 million Bs and 552.8 million Bs; However, in 2022 it increased to 808,000,000 Bs (1.4 times more) mainly due to the increase in the prenatal-breastfeeding subsidy, which practically doubled.

⁵ The number of beneficiaries in each item varies from year to year. Unfortunately, government agencies do not have updated information. For example, in 2019, 1,232,589 “Carmelo” bags were distributed, and in 2021 only 857,900 (preliminary data).

CHAPTER II

SUBSIDIES ON AGRICULTURAL PRODUCTS

Subsidies for agricultural products⁶ are a Public Policy instrument used for many decades by different countries, especially the most developed countries⁷. In the country, subsidies have also been used for a long time, however, now, they call for greater reflection and analysis:

i) Because the country has economic problems and no longer has the resources as in the past to cover those expenses that increase more and more every day.

ii) Because the high amounts of certain subsidies are harmful since they generate high emissions of Greenhouse Gases (GHG), contaminating the environment, influencing deforestation, killing biodiversity and generating an invisible environmental cost, among others.

iii) In parallel, there is a need to support, redirect and expand subsidies towards:

a) nutritionally healthier products (products with a lower price and higher nutritional content-higher energy value);

b) and also, to increase the productive yields of the basic foods of the national population.

2.1. The General State Budget and the programming of food subsidies

GSB subsidies increase year after year, in 2022 they reached 5,088 million Bs and in 2023 they will reach more than 8,079.2 million Bs, that is, they will increase 59% from one year to the next.

The majority of the subsidies are for the Hydrocarbons category, representing 78.61% in 2022 and 94.58% in 2023.

Regarding food subsidies⁸, they have had variations in recent years since from 258 million Bs programmed in 2021 they decrease to 168.1 million Bs in 2022 and increase again to 437.2 million Bs in 2023. That is to say that between in 2021 and 2023, food subsidies increase 1.6 times more.

⁶ There are subsidies on agricultural products and inputs; and there are also subsidies based on the factors of production (capital, labor, land) and subsidies unrelated to production.

⁷ For more information about this, see Mounier A. (2016)

⁸ "Between 2009 and 2014 the food subsidy was 2,284.9 million Bs." In "2014, the food subsidy was 842.3 million Bs and in 2015 it was 730.7 million Bs" (<https://ejunoticias2015>).

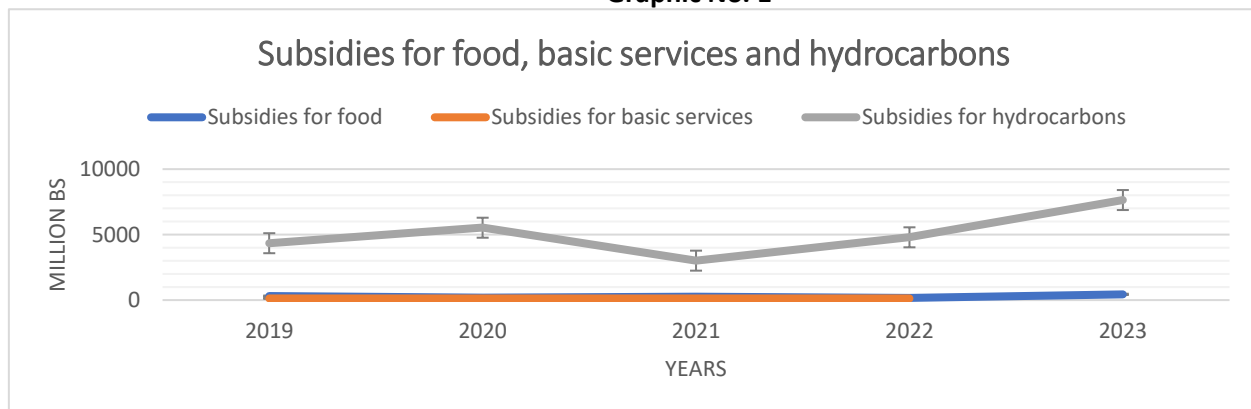
Table No. 2
General State Budget – Subsidies (Millions of Bs)

Subsidies	2019	2020	2021	2022	2023*
I. FOOD	301	194	258	168,1	437,2
Production and commercialization			189		437
Corn					219
Wheat Flour					168
Rice					50
Gather			69		
Rice Wheat, corn.					
II. BASIC SERVICES	126	124	124,2	125,6	
Dignity Rate, Diesel oil for electricity, discounts for 3rd person. age					
III. SUBSIDIES AND INCENTIVES IN HYDROCARBONS	4.345	5.528	3.013,4	4.794,6	7.642
Diesel	2.727	3979		794, 6	4.705
Others (Oil production incentives-15.7 Mill)	1.461	1398			2.937
Inputs and additives – 2,637					
LPG – 106	119	114			
(Gas-oil – 37)	38	37			
GENERAL TOTAL SUBSIDIES	4.772	5.846	3.395,1	5.088	8.079,2

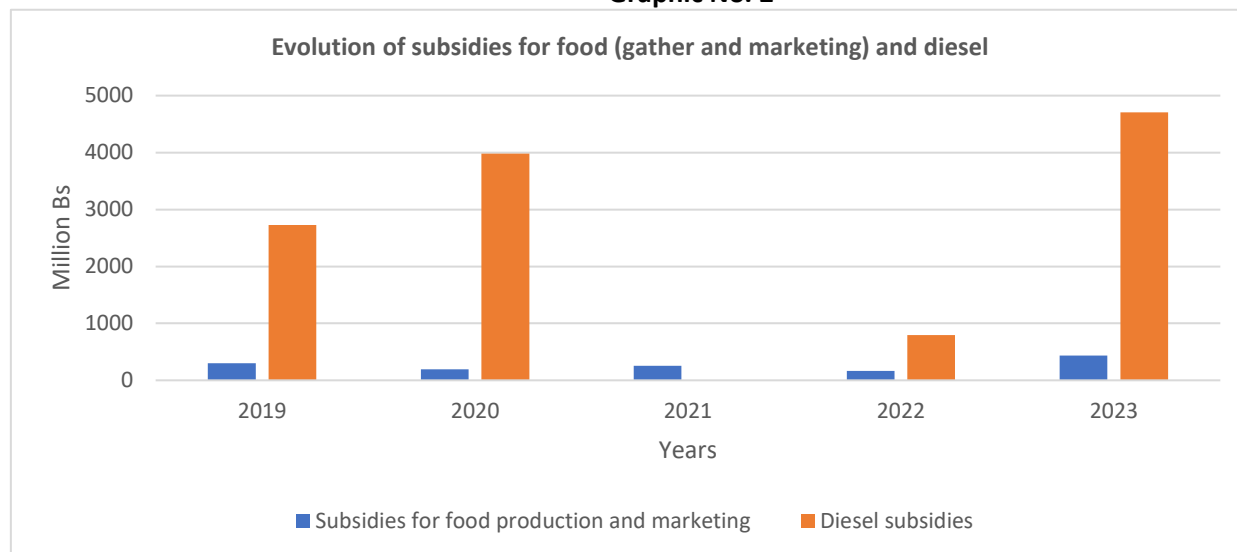
(*) Budgeted

Source. <https://www.economiayfinanzas.gob.bo/>

Graphic No. 1



Graphic No. 2



Food subsidies are for the production/marketing and gather, mainly of corn, wheat and rice.

Of the total subsidies programmed by the GSB in 2023, 50% (219 million Bs) correspond to corn, 38.42% to wheat and the balance (11.43%) to rice.

In 2020, the subsidy for the production/marketing of the 3 mentioned products was 189 million Bs and 69 million Bs for gather. On the other hand, in the GSB 2023, the subsidy for collection is not programmed, but for the marketing of the 3 products in an amount 2.31 times more than in 2021.

In the GSB Accountability Reports, the information provided is very general and does not show details of subsidies for derived products.

On the other hand, there are a series of Supreme Decrees (SD)⁹ that are regularly issued on subsidies to producers, and it is not known if these are included in the provisions of the GSB; if they exceed the budgeted amount or if there are remainders at the end of each management¹⁰.

2.2. Subsidies through state companies: the case of EMAPA

Subsidies/support are provided through several state of companies, however, the most significant and representative company is EMAPA, which is why it is considered for this analysis.

⁹ SD 255 of 2009 (grants 98 million Bs for food production and marketing), SD 2237 of 12/31/2014; SD 3778 of 1/16/2019; SD 4441 of 1/6/2021 and several others authorizing disbursements of money and actions to be carried out by EMAPA.

¹⁰ Both questions were posed to the corresponding institutional authorities, without any response.

EMAPA¹¹ began its activities in 2007/8 through support for wheat, corn, rice and initially soybeans, with seeds, agrochemicals, diesel¹²; gather/purchasing production; and then market it as raw material to the manufacturing industry (baking and balanced foods) and also in its stores/markets and in the “Fair Price and Weight Fairs¹³”.

The amounts subsidized for collection and marketing – and not for increasing productivity – have been increasing over the last 13 years, going from 58.6 million Bs. in 2009¹⁴ to 410.5 million Bs. in 2022. That is to say, they increased 7 times more.

Table No. 3
EMAPA Subsidies for gather and commercialization (2009-2022) (Bs)

Years	Gather Subsidies	Commercialization Subsidy	Total Subsidy
2009	29.082.558	29.556.320	58.638.878
2010	6.332.969	115.231.314	121.564.283
2011	35.914.801	212.376.306	248.291.107
2012	42.552.313	333.726.810	376.279.123
2013	59.913.368	470.091.025	530.004.393
2014	87.451.705	463.128.858	550.580.563
2015	61.457.226	405.170.458	466.627.684
2016	14.719.366	377.717.716	392.437.082
2017	115.342.236	79.618.132	194.960.368
2018	23.180.803	299.678.091	322.858.894
2019	26.488.275	302.661.747	329.150.022
2020	54.157.992	203.921.089	258.079.081
2021	36.837.440	134.279.547	171.116.987
2022	63.050.429	347.548.943	410.599.373

Source. EMAPA

Currently and according to its electronic portal, EMAPA subsidizes families of small and medium-sized livestock producers (poultry, pigs, dairy farmers); to the baking sector (to stabilize prices); to the dairy sector; to the poultry sector (small poultry and dairy producers; stabilizing the price of chicken, eggs); to complementary food aimed at the livestock sector (beef, dairy); to families with grains, flakes, flour and pearled quinoa; and to fish farming projects (pacú, tambiqui, surubí) through the sale of fingerlings and balanced feed.

¹¹ EMAPA is the main state food company; but it is not only a company that enters the market but has also become an operational instrument of the government to implement intervention policies in the food market (temporary regulations such as the application of subsidies, prohibition of exports of certain products that there is a shortage in the domestic market, direct imports of basic foods to supply the population; direct sale of food, among others); and to avoid price increases (price regulatory agent) due to concealment and speculation by traders, intermediaries and others.

¹² Which they delivered to the producer as a form of advance payment. In reality, it was a credit at 0% interest.

¹³ A detailed analysis of food subsidies in Prudencio J. (2017); where it can be seen, for example, that “EMAPA supported two agricultural campaigns a year (summer and winter); and from 2007 until the winter campaign of 2015, it supported 523,324 hectares, 36% corresponding to corn, 30% to rice, 17% to wheat and 17% to soybeans.”

¹⁴ There is a significant increase in subsidies between 2009 and 2010, due to the international crisis.

However, in the recent “2022 Final Management Public Accountability Report”, EMAPA shows information in terms of subsidies for gather and marketing, only for wheat, rice and corn.

Of the total annual subsidies, the majority of these are allocated to marketing, with the exception of 2017 when the subsidy for gather was gather than the subsidy for marketing, as the previous table shows.

Of the subsidies for gather, more than two thirds of this (69.14%) are allocated to the gather of corn, 19.09% to the gather of rice and only 11.76% to wheat.

On the other hand, in marketing subsidies, the majority goes to wheat and corn (45.5% each) and 9% to rice.

Table No. 4
Subsidies according to activity (2022) (Bs)

Activity	Total Budget	Product	Subsidised Amount
To the gather	925.814.335,97	Chala rice	12.037.964,45
		Wheat grain	7.415.864,75
		Corn grain	43.596.600,56
			63.050.429,76 (15.3%)
To Commercialization	138.931.944,92	Rice and byproducts	30.661.420,88
		Flour and byproducts	158.346.694,46
		Hard yellow corn	158.540.828,25
			347.548.943,59 (84.65)
		TOTAL	410.599.373,34 (100%)
(+ Subsidy to promote wheat production (SD 3919))			
Program	Portfolio placement	Recovery	Subsidy
Wheat	8.535.743,75	6.435.563,53	741.019,76

Source. EMAPA Informe de rendición pública de cuentas final gestión 2022

Wheat subsidies represent a Budget special since, to the previous subsidy figures, we must add 741,019.76 Bs for the subsidy to promote wheat production, and also the replacement to EMAPA of 568 million Bs made by the Ministry of Economy and Public Finance for the last 5 years (2017-2021), with a missing balance of 60 million Bs (Source. EMAPA, Surrender Report...), which means that the subsidies between 2017 and 2021 were 628,000,000 Bs.

2. 3. Food subsidies

As defined above, subsidies are not only made directly through money for gather and processing, but also through other capital factors such as subsidies for agricultural insurance, seeds, fuel for the operation of agricultural machinery and transportation of products; to chemical fertilizers, to electrical energy for the operation of the product processing machinery; and irrigation, among others.

So, subsidies on agricultural products could be classified into 3 groups: subsidies on basic food products of the population; to inputs/raw materials (corn, for example, as feed for poultry and livestock); and those products whose main purpose is export.

2.3.1. Subsidies on basic foods: the case of wheat

Wheat is the most representative product of the population's basic foods, and the subsidy for it dates back several years¹⁵.

Since its inception (2007-2008), EMAPA supported the collection and marketing of wheat (and also corn, rice and soybeans) with diesel, agrochemicals and seeds; varying the number of hectares supported, depending on the years, as well as the number of producers per region. In 2011, it supported 2.3% of the national total cultivated wheat area and in 2013, 6.8%. Likewise, between 2007/8 and 2014/15 it supported 22,757 wheat producers, located mainly in Chuquisaca, Cochabamba and Potosí; always highlighting that the area supported by producer varied from one department to another (in Santa Cruz, for example, the area supported by producer was 10.2 Has/average/producer in 2014/15; while in Chuquisaca it only reached 2.43 Has/average/producer) (Prudencio J. 2017).

Since 2019, through DS 3919, the Multisector Program to Promote wheat production was established (for 5 years) authorizing EMAPA to subsidize up to 15% of the price of certified seed for small producers; to SEDEM through EEPS the subsidy to purchase raw materials such as seed grain up to 44% above the base price established by EMAPA; and to the Ministry of Economy and Finance to replace the amount of the subsidy.

Table No. 5
Total Budget for Wheat Production and Subsidies through
Institutions according to Supreme Decree 3919 (2019-2023)

Institution	2019	2020	2021	2022	2023	Total
Budget to promote wheat production	83.189.294	266.125.630	191.227.286	90.756.443	126.021.550	757.320.203 (100 %)
Subsidies according to institution						
EMAPA	224.385	1.730.164	3.052.230	4.806.106	7.698.333	17.511.218
Empresa Estratégica de Producción de Semillas EEPS	1.223.846	6.088.051	8.524.052	10.960.051	12.180.000	38.976.000
Instituto de Seguro Agrario INSA (Public-Private Transfer for Agrarian Insurance premium subsidy)	1.300.500	41.336.333	55.715.980	64.917.651	95.115.084	258.385.548
Total wheat subsidies	2,748,731	49,154,548	67,292,262	80,683,808	114,993,417	314.872.766 (41.57 %)

Note. Through SD 4905 of 05/04/2023, additional resources of 16 million Bs are determined in favor of INSA for payment of the premium for agricultural insurance for the 2022-2023 agricultural campaign (within the framework of Law 144)

¹⁵ For many years, the State has subsidized wheat and wheat flour through commercial imports (and in the past, through food donations), channeling these subsidies through the different milling industries (A detailed analysis about this in Prudencio J. 1991; 1995).

Of the 757,320,203 Bs allocated to wheat production, 41.57% (314,872,766 Bs) corresponds to subsidies. Of the total of this subsidy, the majority (258.3 million Bs.) corresponds to agricultural insurance (82.06%) followed then by the subsidy for seed production (38.9 million Bs. = 12.37%) and then to EMAPA (17.5 million Bs. = 5.56%)¹⁶.

At the beginning of the program (2019), the subsidy represented 2.7 million Bs, while at the end of it, the annual subsidy reaches 114.9 million Bs.

2.3.2. Subsidies on inputs

According to the Ministry of Productive Development and Plural Economy, the subsidies are for inputs such as wheat flour and corn¹⁷, among others, so that their derivatives (basic products of the family basket) such as chicken meat, bread, pork, milk and eggs keep prices stable and allow the population to access adequate food and within the family budget.

Table No. 6
Price of main subsidized foods (Bs) and percentage of food subsidy (2022)

	Chicken (Kg)(Bs)	Battle Bread (Unid) (bs)	Eggs (unit) Bs	Pork meat (Kgs)(Bs)	Rice (Kgs)(Bs)
Real price	18,75 (100%)	0,60 (100 %)	1.00 (100 %)	30,11 (100%)	7.45 (100 %)
Consumer price	15,30 (81.6%)	0,50 (83,3 %)	0.68 (68 %)	25,10 (83.36%)	5.90 (79,19 %)
Subsidy (Bs)	3,45 (18.4%)	0,10 (16,6 %)	0,32 (32%)	5,01 (16.64%)	1.55 (20.80 %)

Source. Ministerio de Desarrollo Productivo y Economía Plural. Rendición Pública de Cuentas final 2022 (LP 2/16/2023)

As the previous table shows, the amount of the subsidy in the official sales price to the consumer, in the 2022 management, varies between 16.6% (unit of battle bread)¹⁸ and 32% (eggs), highlighting that these prices are due apply in EMAPA stores and/or large retailers since with the exception of bread; prices for the common consumer are a little higher. For example, the price of eggs in markets, fairs and neighborhood stores ranges between 0.80 Bs and 1.00 Bs. In the case of chicken, the price in markets and fries is 18 Bs/kg as of May 2023.

According to official data, the subsidy for these 5 essential products meant for all consumers a saving of 5,446,457.79 Bs in 2022, varying the savings from 1.6 million Bs in the case of chicken to 277,899 Bs. in the case of the pig.

It also highlights that the product in which the consumer saves the most money is bread and chicken (1.5 million Bs and 1.6 million Bs respectively), but they are the ones that have the least subsidy of the whole.

¹⁶ From 2019 to 2023, the amount of the subsidy corresponding to EEPs increased 10 times more, that of EMAPA increased its value 34 times more, while that of INSA, 73.1 times more; which demonstrates the great importance that this program gives to agricultural insurance.

¹⁷ For the consumption of meat and dairy cattle, and poultry breeding.

¹⁸ "In 2011, a quintal of wheat flour cost 193 Bs and the government gave it to bakers at 135 Bs/qq; That is, it subsidized 58 Bs/qq or 30.06% of the final price" (<https://ejunoticias.2015>). "Between 2014 and 2015 the price of flour was between 145-160 bs/qq; and the State subsidized 40% of the final price" (Viceministry Micro and small business <https://produccion.gob.bo>). With this data, supposedly the current bread subsidy would have been reduced, however, the data in the previous MDPEP table does not clarify whether or not they consider the DS 4539 subsidies.

Table No. 7
Cost of the total subsidy of the main basic foods (2022) (Bs)

	Chicken (Kgs)	Battle Bread (units)	Eggs (unit)	Pork meat (Kgs)	Rice (Kgs)
Amount Consumed	482.445,257	15.913.986,875	3.981.739,520	55.468,868	411.977,000
Real Cost	9.045.848,430	9.548.392,125	3.981.739,520	1.670.167,611	3.069.228,600
Consumer Cost	7.381.412,430	7.956.993,438	2.707.582,740	1.392.268,580	2.430.664,300
Consumer Savings	1.664.435,99	1.591.398,68	1.274.156,73	277.899,03	638.564,30
Total Subsidy (Bs)	5.446.454,73				

Source. Ministerio de Desarrollo Productivo y Economía Plural. Rendición Pública de Cuentas final 2022 (LP 2/16/2023)

An important piece of information missing from the MDPEP statistics is related to the subsidy granted to the price of corn, which increased as a result of strong speculation and occultation of the product by some agroindustrial producers and merchants, who took advantage of the international conflict Russia-Ukraine wanted to raise the price of this product/input, import corn and (legalize) the production of transgenic corn among other demands, to which the Public Policy established advance purchases, price control, controlled distribution of the product and subsidies, among others (in this regard, see Prudencio J. 2022).

According to the general manager of EMAPA, “For the 2023 administration, EMAPA will buy corn from small and medium producers at 110 Bs/quintal and then will sell this to poultry, dairy and pig farmers at the subsidized price of 75 Bs/quintal (El Deber 04 /3/2023)”, that is, with a subsidy of 35 Bs per quintal; which in percentage terms means a subsidy of 31.81% of the total cost of corn (a percentage similar to that of the egg subsidy).

2.3.3. Subsidies on export products: the case of soybeans

2.3.3.1. The diverse subsidies/support for soybeans

Among the subsidized export products, soybean is the most representative in economic terms, production and cultivated area, so its analysis is very significant with respect to the rest of the products exported in the East (such as sugar cane, sunflower, sorghum, beef and pork).

Soybeans were directly subsidized by EMAPA at the beginning of the company's creation (2007-2008) through seeds, agrochemicals and diesel, supporting its campaigns from 2007/8 to 2015. Of the total area (planted) supported according to EMAPA in that period, soybeans represented 17%, benefiting 5,563 producers (see EMAPA 2017, cited by Prudencio J. 2017).

As already noted, subsidies are not only direct in monetary terms but also through other support disciplines and public policies (indirect subsidies), such as,

Release of payment of export taxes

Soybean producers in all Latin American exporting countries pay taxes, except producers in Bolivia. In Paraguay they pay 10% of the total exported value; In Brazil they pay 30% (18% for the specific export rate and 12% for the general rate) and in Argentina 29.8% on profits.

The Unified Agricultural Regime (UAR)

Soybean exports only pay the Unified Agricultural Regime, which is 29.07 Bs /Hectare/year and not the Value Added Tax (VAT); and neither the Business Profits Tax (BPT) nor the Transfer Tax (TT). In Argentina, soybean farmers pay \$90,000/year in taxes per hectare (that is, \$392.29/hectare). for example:

According to the CAO, in 2022 the cultivated area of soybeans was 1,490,865 hectares¹⁹ and the exported production was 3,539,439 MT for a value of 1,765 million US dollars, which means that soy exporters paid for the UAR, only 0.035% of the total exported value of soybeans (= 6.2 million \$us /1765 million \$us).

In other words, the price of soybeans exported in 2022 was 498.66 \$us/Tm, and if we consider an average productive yield of 2.3 Tm per hectare²⁰, an exporting soybean producer earns \$1,146.91 \$us for the production in one hectare and in exchange pays the State only 29.07 Bs (4.17 \$us) for the UAR.

The release of taxes for the import of agricultural machinery

Another aspect to consider on the subject of taxes is that in July/2021, through Supreme Decree 4539²¹, they freed all imports of agricultural machinery from VAT, whose highest value machinery corresponds to the machinery used for soybeans (threshers, harvesters ...).

Bank credits

Another external support is related to the facilities for soybean farmers to obtain capital (credits) under adequate conditions. In January 2017, the government created the Investment Fund of US\$150 million with AFP resources to cover the debts of agricultural producers with commercial houses and suppliers of agricultural inputs (transgenic seeds, agrochemicals, machinery).

Likewise, there are observations that several banks have granted all kinds of credits for the expansion of soybean crops and the use of biotechnology for biofuels, as is the case of the FASSIL bank²². Likewise, "72% of the BDP's first-tier loans favored the agricultural sector, with an annual interest rate of 0.5%; that is, the soybeans, ranchers and intercultural communities involved in extractive agriculture, deforestation and agribusiness" (G. Colque FTIERRA, Página Siete, 04/16/2023).

Other supports

There is also a series of other supports for soy exporters through inputs for their agroindustry, in gas prices for the processing industry, electricity, and gasoline subsidies, among others. "... 24% of the diesel in Santa Cruz goes to transportation consumption, 24% to large industries and 18% to the productive agricultural sector." (Romero Carlos. Ancient Minister denounces YPFB for debt to Trafigura. Página Siete 05 23 2023).

The lack of precise information prevents a detailed analysis in this regard, but the support provided by government policies is evident, as recognized by the national authorities themselves.

The Minister of Economy, Marcelo Montenegro, responded to the new president of CAINCO, who questioned the results of the economic model... and highlighted the "benefits" provided by the Productive Social Community Economic Model, with the subsidies for hydrocarbons, electric energy, the incentives of the Unified Agricultural Regime (UAR) and other inputs that this sector receives...."

¹⁹ Therefore, they had to pay 43,339,445.55 million Bs (6,281,079 \$us) for the UAR

²⁰ The productive yield per hectare of soybeans fluctuates between 1.8 MT/ha and 2.3 MT/ha.

²¹ SD 4539 of 07/07/2021 promulgates "tax incentives for the purchase of agricultural machinery with 0% taxes. This DS was immediately promulgated, in the 2nd. Semester of 2021, imports of agricultural machinery reached a CIF value of 403 million (<https://INE.gob.bo>)

²² Since III/2019, the FASSIL bank granted all kinds of credits for the expansion of soybean crops and the use of biotechnology for biofuels. (www.fassil.com)

2.3.3.2. Subsidies through diesel

Use of diesel in agricultural machinery

The economic sectors with the highest consumption of diesel are transportation, mining and agribusiness, there being no precise data on this consumption since there are no records on the number of legal and illegal exploitations in mining²³, nor is there a record of the number of cars. shots that circulate without restriction throughout the country; and legal and illegal industrial use (such as the manufacture of cocaine) that uses fuels and inputs is not controlled either.

To all this is added the calculation of the price of a liter of refined diesel in the country and its distribution costs (rates) by oil pipeline, polyduct, tankers, barges and others. Therefore, specialists emphasize that it is not possible to know the real cost of a liter of diesel placed at gas stations in a respective location²⁴.

Despite these difficulties, an approximate calculation is made regarding the consumption of diesel by soybeans based on reference data from an MDRyT study that determines what, for the production of one hectare of soybeans, the use of diesel for agricultural machinery It varies between 80 liters/Ha minimum²⁵ and 120 liters/Ha maximum²⁶.

Considering these two parameters and the area planted and harvested of soybeans in the 2021/2022 season, we can calculate the amount of diesel used by agricultural machinery²⁷, as well as what that production entails in terms of the real and subsidized price; as shown in the following table.

Table No. 8
Use of diesel used by agricultural machinery in soybean production

	Use of diesel in agricultural machinery for soy production (2021/2022 campaign)	
	Minimum consumption (80 lt)	Maximum Consumption (120 Lt)
Area planted with soybeans (Has)	1.505.326	1.505.326
Diesel Use (Lt/Ha)	X 80	X 120
Total diesel used (Lts)	120.426.080	180.639.120
Harvested soybean area (Has)	1.490.865	1.490.865
Diesel use (Lt/Ha)	X 80	X 120
Total diesel used (Lts)	119.269.200	119.269.200 (**)
Total Diesel used (Lt) on surfaces	239.695.280	299.908.320
National diesel subsidy price (Bs/Lt)	3.72 Bs/Lt (0.539 \$us/Lt)	3.72 Bs/Lt (0.539 \$us/Lt)
Diesel price internationally	1.75 \$us/Lt (12.09 Bs/Lt)	1.75 \$us/Lt (12.09 Bs/Lt)
Subsidized amount (Lt/bs)	8.37 Bs/Lt	8.37 Bs/lt
Subsidized amount (Lt/\$us)	1.21 \$us/Lt	1.21 \$us/Lt
Total diesel used (Lts)	239.695.280	299.908.320
Total national diesel price (x 3.72 Bs/Lt)	891.666.441,6 Bs (129.227.020,5 \$us)	1.115.658.950,4 161.689.702,9 \$us

²³ From the exploitation of gold that pollutes so much, nor from the mining cooperatives of other minerals.

²⁴ Despite this situation, fuel prices in Bolivia are set by SD 27992 of January 28, 2005, which establishes the price of gasoline at 3.74 Bs/Lt; and diesel at 3.72 Bs/Lt.

²⁵ Although according to some agricultural businessmen in the CAO, "one hectare of soy or corn uses 70 Lt/ha of diesel" (El Deber 03/28/2023).

²⁶ Although according to Fanor Fernández, leader of the Federation of Sugar Cane Producers of the Integrated North of Santa Cruz, "fuel use is more or less 150 Lts/Ha" (El Deber 05/28/2023).

²⁷ The fuel used only by the machinery for planting and harvesting is considered. The diesel used by fumigation machinery, which also uses diesel, and is used by the majority of agribusinesses, is not considered.

Total international diesel price (x 8.37 Bs)	2.006.249.494 Bs (290.760.796,23 \$us)	2.510.232.638,4 Bs 363.801.831,6 \$us
Total subsidy (national price – intern.price)(Bs)	1.114.583.052 Bs	1.394.573.688 Bs
Total subsidy (\$us)	161.533.775,7 \$us	202.112.128,69 \$us
The diesel subsidy in the 2021/22 soybean agricultural campaign varied between \$161,533,775.7 and \$202,112,128.69		

(*)According to a MDRyT study <https://Dgsc.gob.bo/datos/AGROPECUARIOS/informe%20>

(**) [Según especialistas, el uso del diésel es el mismo en la cosecha, sin depender de la maquinaria \(Ver pie de página 33\)](#)

Source. Built by the author based on data from the MDRyT and SIIP.producc.go.bo

From this table it is concluded that the 2021/2022 soybean production used between 239.6 and 299.9 million liters of diesel for a value that ranges between 891.6 million Bs (129.2 Million \$us) and 1,115.6 million Bs (161.6 Million \$us); However, the real price of diesel (without subsidy) ranged between 2,006.2 million Bs (290.7 million \$us) and 2,510.2 million Bs (363.8 million \$us).

This means that “only”²⁸ in the 2021/2022 agricultural campaign, the soybean sector benefited in the production stage, with amounts of money ranging between \$161.5 million and \$202.1 million.

Use of diesel in the internal transportation of soybeans

The transportation of soybeans also benefits from the diesel subsidy, since the product is transported internally and also externally (exports).

The non-availability of official data and records on soybean transport vehicles and their tonnage capacity, from soybean production sites to processing and storage centers, inhibit a detailed analysis. However, there are various sources and statements from the transporters and producers themselves, which allow an approximate calculation of the use of diesel in the transportation of soybeans.

According to the MDRyT, soybeans in the 2021/2022 season were produced and cultivated in several municipalities of Santa Cruz covering an area of 1,414,417 hectares; being that 98.68%²⁹ of the total of that cultivated area is located in the municipalities of San Julián, Cuatro Cañadas, San Pedro and others described in the following table; covering a total distance from these production centers to the marketing and transformation centers of 2,383 km.

If we consider that on a flat surface like in the east of the country, a 26 Tm truck (single axle) uses 1.09 liters of diesel per kilometer traveled³⁰, over a distance of 2,383 km, 328,363 trips (trucks) will be needed. to transport the 3,284,097 MT of soybeans produced. This is in the supposed case that all transport trucks use diesel and only 26 tons, but it is known that they also transport soybeans in trucks that use gasoline and also of greater tonnage. However, the exercise is not very far from the statements of the general manager of ANAPO, when he refers to soybean production in the Integrated North region only.

²⁸ The diesel subsidy dates back more than 20 years, so the soybean sector has – in its production stage only – a great benefit from the Bolivian State.

²⁹ The balance of the soybean cultivated area covers municipalities where between 6 hectares and less than 1,800 hectares are cultivated.

³⁰ According to interviews with various soybean transporters, a 26 Tm truck (single axle) uses greater force in a climbing ratio (% of average slope counting the climbing sections), for example on the Cochabamba-La Paz highway, therefore that your need for diesel is on average 1.2 Lt/km; On the other hand, on a flat surface, it uses less force (inside Santa Cruz or on the La Paz-Arica highway), so its need for diesel on average is 1.09 Lt/Km. The ratio is higher for trucks with higher tonnage, such as double-axle trucks of 28 tons. For this analysis and to facilitate calculations, only the example of the single axle truck (26 Tm) will be used.

"In summer, an average of at least 5,000 trucks make more than 120,000 trips from the soybean fields of the integrated North of Santa Cruz to the markets and grain processing centers."

Jaime Hurtado, Gerente General ANAPO
(El Deber 04/20/2021)

But in specific terms, to transport soybeans, from production centers to markets and processing centers, ¿how much diesel do these trips use?

The installed soybean milling capacity (10 processing plants) is located mainly in Santa Cruz de la Sierra³¹, so it is appropriate to calculate the distance from the production centers to the processing centers, to determine the fuel used.

Table No. 9
Use of diesel used in the internal transportation of soybeans (2021/2022)

Main Municipalities	Distance to SCZ city (Km)	Number of Liters of diesel used by a truck (26 Tm) x km	Production of soybeans produced and transported (Tm)	Diesel used to transport soybeans (Lts)
San Julián	148	161,3	1.034.756	6.419.467
Cuatro Cañadas	88	96	462.052	1.706.038
San Pedro	140	152	401.408	2.346.693
Pailón	53	58	378.189	843.652
Santa Rosa del Sarah	124	135	199.305	1.034.853
Okinawa I	87	95.3	137.886	503.814
El Puente	244	266	137.203	1.403.692
San José Chiquitos	273	297	121.911	1.392.599
Warnes	36	39	37.490	40.614
Charagua	270	294.3	31.839	34.704
Yapacaní	135	147.15	23.757	25.895
Cotoca	40	43.6	20.602	22.456
La guardia	23	25.07	17.545	19.124
Mineros	101	110	11.088	12.076
San Ignacio de Velasco	470	512	9.052	9.861
Portachuelo	78	85	6.437	7.015
Gral Saavedra	73	79.5	5.101	5.555

³¹ With the exception of the Gravetal (Puerto Quijarro) and Itaka (Villamontes) plants, which have a grinding capacity that only represents 19% of the total (Rosario Stock Exchange. <https://www.bcr.com.ar/es/markets/research-and-development/weekly-news/weekly-news/state-of-1>)

TOTAL	2.383	3.035.621	15.828.108
% of the department's total		92.43%	
Total subsidized diesel cost (Bs)		3.72x15.828.108=	58.880.561,7
Real diesel price cost (Bs)		8.37x 15.828.108=	132.481.264
Real diesel price cost 2021/2022		73.600.703 Bs	(10.666.768,5 \$us)

Source. Built based on data from MDRyT (https://siip.produccion.gob.bo/repSIIP2/formulario_mdryt2.php)

From the previous table, it is concluded that to transport soybean production in the year 2022/2023 from the different production sites to the processing centers, 15,828,108 Lts of diesel were used, which signify a cost of more than 58.8 million Bs and a subsidy of 73,600,703 Bs (10,666,768.5 \$us).

The use of diesel for transportation in soybean exports

According to the SIIP of the MDPEP, the volume of soybean exports in the year 2022/2023 was 3,539,434 MT (value \$2,220 million).

Most of the soybeans exported through the Pacific leave through the port of Arica, whose transportation from Santa Cruz to that port is by land, in trucks that use diesel.

The distance between Santa Cruz and the Port of Arica is 1,351 km, for which a 26 Tm truck uses, due to the various layouts, 1,523 liters of diesel.

So, to transport the 3.5 million MT, 136,132 trips (of 26 MT each) were needed. That, in terms of the total diesel used, meant 207,329,153 liters, and in terms of the subsidized cost it meant 771,265,539 Bs. In real costs (without subsidy) it meant 1,735,347,463 Bs. That is, the Bolivian State subsidizes the transportation of soy exports with 964,081,924 Bs (139,722,018 Sus), as shown in table No. 10.

Table No. 10
Use of diesel used for the external transportation of soybeans (2021/2022)

Measures	Distance (Km)				Total soybeans exported 2022 (Tm)	Total Diesel used (lt)	Total trucks/ Trips used
	SCZ - CBB	CB - LP	LP - Arica	Total			
1 26 MT truck	481	370	500	1.351			1
Km							
Diésel Liters	529	444	550	1.523			1
					3.539.434	1.523x3.539.434/26 = 207.329.153	3.539.434/26 = 136.132
1 Subsidized Lt/diesel price						3,72 Bs/Lt	
2 cost of diesel used						3,72x207.329.153= 771.265.539,1	

3	Real price of diesel (Bs)	8,37 Bs/Lt
4	Actual cost of diesel used.	8,37x207.329.153= 1.735.347.463
5	Total Subsidy (4-2)	964.081.924 Bs (139.722.018 Sus)

Source. Built based on SIIP data (<https://siip.produccion.gob.bo/>)

Total diesel used by soybeans

In summary, the total diesel used by soybean producers and exporters varies between 462,852,541 Lts (if they use single-axle machinery of 80 Lt/Ha in their production) or 582,700,181 Lt (if they use 120 Lt/Ha machinery). Lt/Ha)³²; quantities that coincide with official data, as shown in the graph on the commercialization of diesel at the national level.

Table No. 11
Summary of diesel utilization, costs and subsidies for soy production and exports (2022/2023)

If they use 80 Lt/Ha machinery	Diésel Lts	Cost (Bs)	Real Cost (Bs)	Subsidy (Bs)	
In the planting (80 Lt).	120.426.080				
In the harvest	119.269.200				
Total	239.695.280	891.666.442	2.006.249.494	1.114.583.052	
If they use machinery 120lt/ha					
In the planting (120 Lt)	180.639.120				
In the harvest	119.269.200				
Total	299.908.320	1.115.658.950	2.510.232.638		1.394.573.688
Internal Transportation	15.828.108	58.880.561,7	132.481.264	73.600.703	73.600.703
Transport Exports	207.329.153	771.265.539	1.735.347.463	964.081.924	964.081.924
Total (Bs)				2.152.265.679	2.432.256.315

Source. Built based on data from previous tables

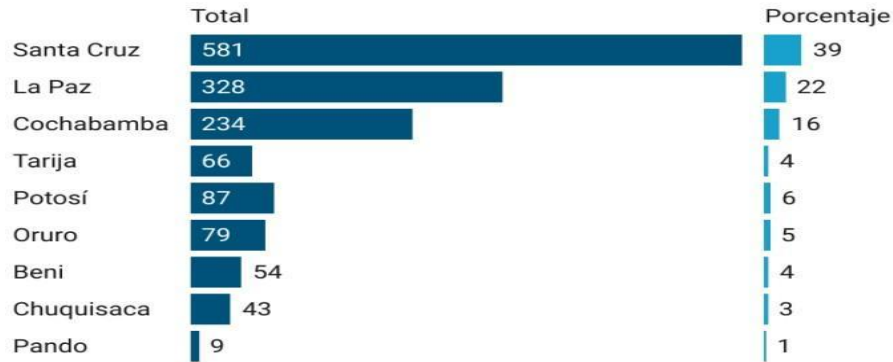
Regarding costs, table 11 shows that the total subsidy for soybean exports for the 2022/2023 period varies between 2,152,265,679 Bs and 2,432,256,315 Bs; that is, between 311,922,562 \$us and 352,500,915 \$us.

³² Although according to specialists, the biggest difference in diesel consumption for crops on one hectare is not in the "type of machinery", but in the sowing system: direct sowing without tillage uses less (it can even be less than 80 lt/ha), sowing with tillage and seed bed preparation uses more (it can be up to more than 120 lt/ha) (Friedrich T. (b) 2023)

Gráfico No. 3

Comercialización de diésel a nivel nacional

Enero - Agosto 2022
(expresado en millones de litros y porcentaje)



Created with Datawrapper

3.3.3. The effects of the diesel subsidy

There are a series of effects of the diesel subsidy for export products, among which the following stand out.

a) Generates deforestation.

One of the main effects of the diesel subsidy is the expansion of the agricultural frontier to increase the area of crops through deforestation.

Farmers, in 2021, were responsible for 380,249 hectares of lost forest³³ and in 2022, 429,000 hectares. This deforestation occurs exclusively in the municipalities where soybeans and other products are mainly grown for the production of beef³⁴ (livestock pastures or for the production of crops intended for feeding cattle, poultry or pigs).

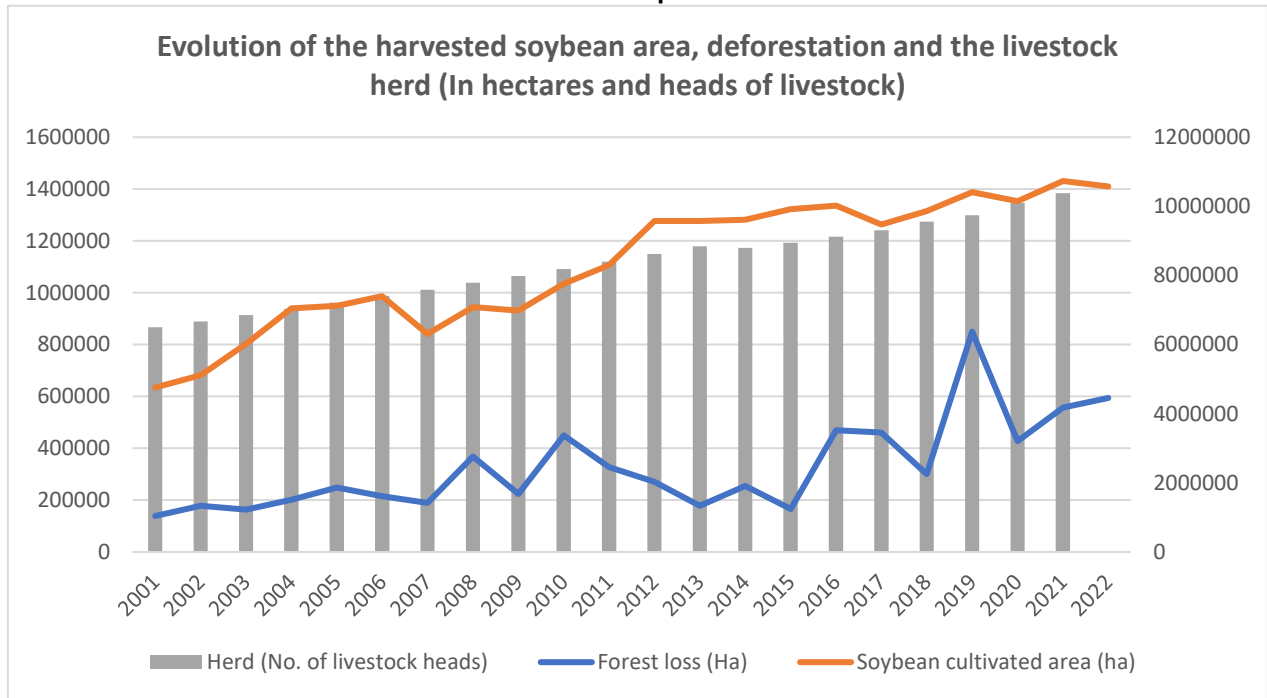
“Livestock farming is the main activity carried out in deforested and converted areas, and in 2021, it occupied 48% of these areas. The remaining 37% is destined for agricultural production (mainly soybeans)” (Nómadas Magazine, 05/2023).

So, livestock farming is another activity that intensifies deforestation, with intense growth in its livestock herd in the areas of Santa Cruz and Beni, as seen in the following graph.

³³ To which we must add 259,002 hectares of non-forested ecosystems; which together (639,251 Has) represent 33.4% of the total deforested in the last 4 years (Nómadas Magazine 05/2023)

³⁴ New export star product in recent years due to its high demand from countries like China, Russia and others that have raised international prices

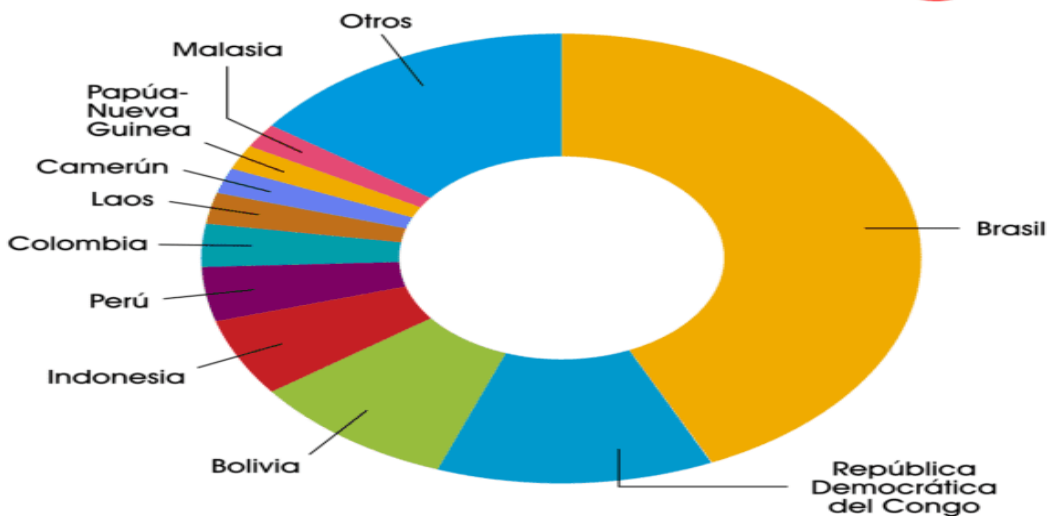
Gráfico No. 4



Therefore, a very close relationship can be seen between the growth of livestock farming, soy production and deforestation.

By 2022, deforestation continues, with Bolivia being the third country in the world (after Brazil and the Democratic Republic of the Congo) in forest loss by area according to data from the “Tree Cover Loss” report from the University of Maryland (Global Forest Watch from the World Resources Institute (WRI)).

Países con la mayor pérdida de bosques por área en 2022



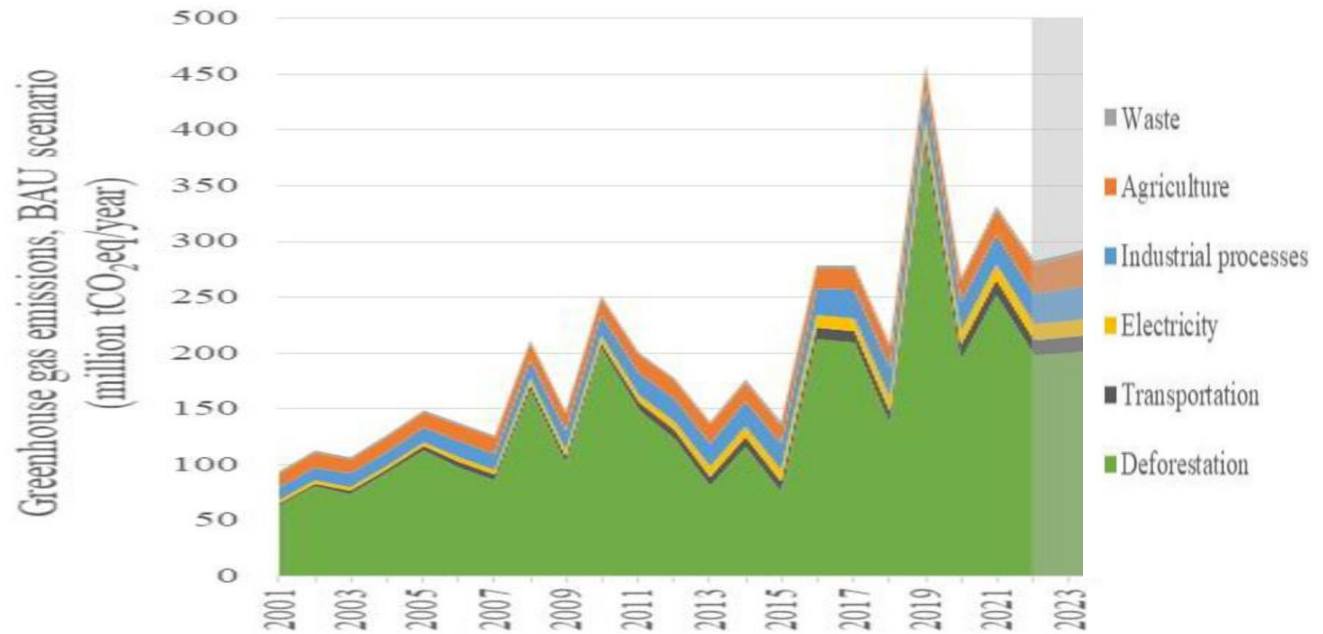
Fuente: Instituto de Recursos Mundiales (WRI)

Deforestation, in turn, generates a series of other consequences, among which the following stand out:

- Intensification of greenhouse gas emissions.

According to a specialized study (Andersen, Gonzales, et al) deforestation is the main source of greenhouse gas emissions, followed later by agriculture, industrial processes, electricity and finally waste.

Graph No. 5
Bolivia-Greenhouse gas emissions
(million tons CO2 per year and origin)



As seen in the graph, deforestation, together with agriculture, are responsible for more than 82% of Greenhouse Gases (GHG) in 2021 and 90% in 2019 (86% deforestation, 4% agriculture).

- Ecological disasters

Deforestation has a direct impact on the water regime, reducing transpiration and condensation for local rainfall and causing no water retention. Due to these circumstances, the Cáceres lagoon (located in Puerto Suarez, 640 km from the city of Santa Cruz), dried up completely and the fish were exterminated (Periodico 11/06/2023 Página Siete)... there is a change in the regional microclimate . It is hotter and therefore there is a greater process of evaporation and expulsion of moisture (from the soil)... Another of the processes that has afflicted the lagoon, for several years, is the sedimentation and dragging of material (eroded from exposed and tilled soils)... deforestation in the area that feeds the lagoon generates a greater amount of material from drag that increases the sedimentation of the lagoon and its affluents.” (Balcázar, responsible for Socio-Environmental Monitoring at PROBIOMA 11/06/2023 Page Seven).

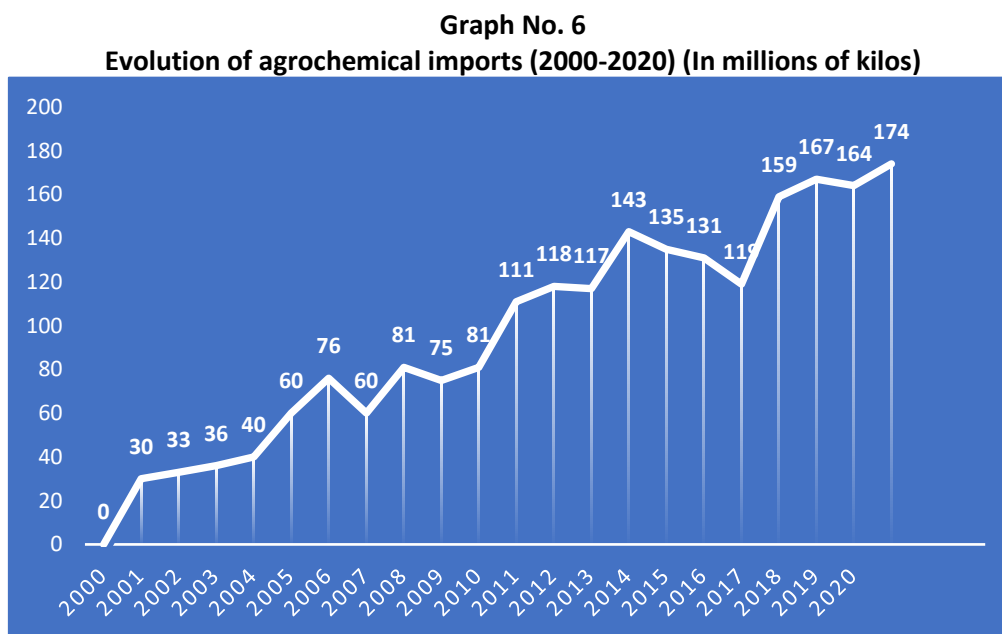
- Invisible environmental cost

“Birds from depredated areas of the Amazon, for example, migrate to areas with greater cover and feed on fruits and other products from areas with greater floral/forest cover, affecting up to 30% of the production of wild fruits. Of the Productive Units” (Arandia M./CIPCA 2023)

b) Intensifies and expands the use of agrochemicals

In the eastern agricultural sector, direct subsidies of more than 2.7 billion Bs/year for diesel used in agriculture are driving the excessive use of agrochemicals (fertilizers, herbicides, insecticides, fungicides and others) that contaminate lakes and groundwater, rivers. They accumulate in soils and generate waste in food, kill biodiversity (flora, fauna, insects), contaminate and damage the environment and human health, among others.

In 2000, 30,000 MT (30,000,000 Kgs) of agrochemicals were imported, while in 2020 174,000 MT were imported, which means that the use of agrochemicals increased 5.8 times more. This also means that in 2000, an average of about 16 kg/Ha was used, while in 2020, 45 Kg/Ha were used.



“Aerial fumigation in crop fields (Puerto Banegas, municipality of San Julian-Santa Cruz), unleashed a disaster in beekeeping. A dozen producers lost one hundred percent of 450 hives and 200 nuclei that were going to produce a harvest of 15 tons of honey. 27 million pollinating bees died from pesticides” (Página Siete 04/06/2021)

Of the total agrochemicals used in South America in 2020, which reached 770,393 Tm (Atlas of Pesticides 2023), 174,000 Tm were used in Bolivia, which means 22.59% of the total agrochemicals used in South America.

The use of chemical fertilizers and pesticides is mainly concentrated in the department of Santa Cruz (90%), especially for the production of soybeans and sugar cane, corn, rice; However, there is also indiscriminate use in the highlands and valleys (Cochabamba, Tarija), for the production of potatoes, quinoa, and cereals; in the vineyards, among others (CAO 2022).

It also highlights that “more than 70% of the agrochemical products used in Bolivia are classified as highly dangerous” (Source. Pesticide Atlas 2023), with an absolute lack of control in the market³⁵, without any regulation or care in their use, including marketing internationally prohibit agrochemicals.

Recapping

- While there is more subsidy for diesel used by soybeans (2,193 million Bs in 2019 and 2,374 million Bs in 2021); more imports of agrochemicals (164,000 Tm in 2019 and 179,000 Tm in 2021), more forest loss (428,000 Ha in 2020 and 594,000 Ha in 2022); while the productive yields of transgenic soybeans remain stagnant³⁶, which means that the production of transgenic soybeans is not a business for the country.

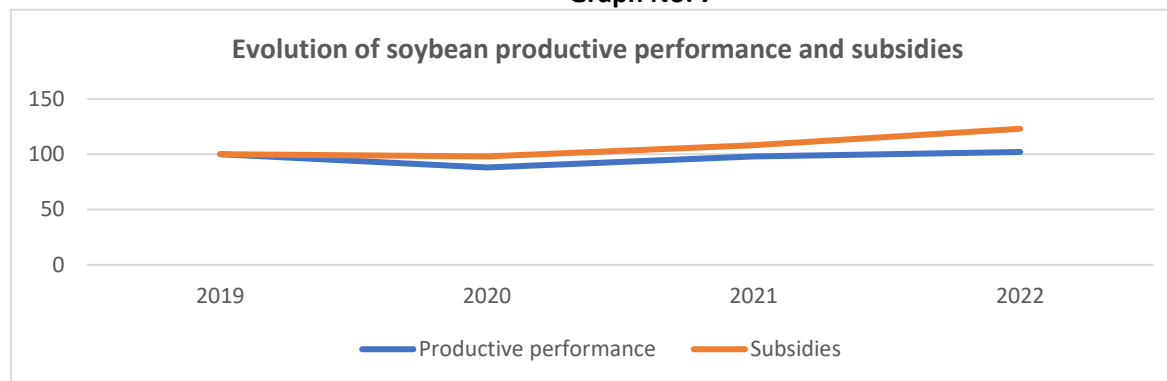
Table No. 12
Soybean productive performance, subsidies, agrochemical imports
and forest loss (2019-2022)

Years	Soybean productive yield (Tm/Ha)	Subsidies for used diesel x soybeans (Millions of Bs)	Agrochemical imports (Tm)	Forest Loss (Has)
2019	2.37	2.193	164.000	850.000
2020	2.09	2.158	174.000	428.000
2021	2.32	2.374	179.000	557.000
2022	2.40	Between 2.152 and 2.432	179.000 (e)	594.000

(e) estimated

Fuente. Built based on <https://siip.produccion.gob.bo/> and tables 5, 11 and graph 3

Graph No. 7



- This subsidy not only generates economic losses to the national economy, and a growing debt (external debt), but also contributes to an unequal distribution of resources (poor populations do not benefit from the subsidy like the soybean export sectors... and miners, ranchers and others).

- Likewise, it generates a great economic differentiation between the rural sector of the highlands and valleys, and the rural sector of the east, mainly Santa Cruz.

³⁵ Which was encouraged by DS 4702 (of April 20, 2022) that liberated the customs tariff (0% tariff tax) for all agrochemicals (insecticides, fungicides, herbicides, etc.) until 12/31/2022.

³⁶ Also highlighting that these are the lowest yields – for years – with reference to other soybean producing countries. For example, in 2021, while in Bolivia 2.32 Tm/Ha were achieved, in Brazil 3.52 Tm/Ha; in Argentina 3.09 Tm/Ha and in Paraguay 2.40 Tm/Ha (<https://FAOSTATIC>)

- High deforestation, especially due to the expansion of the agricultural frontier (clearing, burning of the Amazon...) is not only carried out to expand export crops (soybeans, sugar cane, sunflower...) but is also carried out for expansion of livestock (with products such as corn, sorghum, beans, exported livestock feed).
- It also generates major environmental problems whose costs will be borne by future generations.
- Government subsidies on soy diesel (and other export products) exacerbate climate change and cause toxic air pollution, inequality, inefficiency.
- These supports (subsidies) represent costs for the population and the entire country, derived from pollution, greenhouse gas emissions, road congestion (due to stoppages and blockages of transporters) and the destruction of nature. which, ultimately, results from these subsidies.
- The logic of the model is clear, then: more soybean crops → plus agrochemicals → more exports → more forest loss.

2.4. SUBSIDIES IN SUMMARY FOR AGRICULTURAL PRODUCTS

Several of the support policies (subsidies) are executed through EMAPA, but some have gained greater momentum in recent months from the PDES 2021-2025 (“Towards Industrialization with Import Substitution”) and also due to the conflict Russia-Ukraine³⁷; although the largest subsidies date back more than a decade (diesel case, for example).

As already appointed, there are a series of activities and services linked directly and indirectly to agricultural production, which receive subsidies - also known as domestic aid - such as seeds, agrochemicals, fertilizers, mechanization, irrigation water, technical assistance, also to through general services (energy, gas) and financial services (credits); support for marketing, transportation, health, quality control and even risk management and environmental care.

The following table classifies the above, as it relates to the last 4 years, emphasizing specific supports for products such as wheat and soybeans.

Table No. 13
Subsidies according to type (Bs)

Subsidy according to type	2019	2020	2021	2022	2023	Total	Products
Food EMAPA	224.385	1.730.164	3.052.230	4.806.106	7.698.333	17.511.218	Wheat (According to SD 3939)
Insurance (INSA Agrario) (1)	1.300.500	41.336.333	55.715.980	64.917.651	95.115.084	258.385.548	
Seeds (EEPS) (2)	1.223.846	6.088.051	8.524.052	10.960.051	1.218.000	38.976.000	
Total	2,748,731	49,154,548	67,292,262	80,683,808	114,993,417	314.872.766	
				166.503.579			According to PGE (2023) According to EMAPA
Fuels (Diesel)(*)	2.193.454.145	2.158.071.717	2.374.758.160	2.432.256.315			Soy
Financial services, credits, export tax release, RAU, machinery import tax release (SD 4539), etc.	No data	No data	No data	No data	(72% of the loans from the 1st floor of the BDP, at 0.5%/annual) (for the rest of		

³⁷ When internally an attempt was made to create speculation and hide basic products to increase prices.

				the products, interest rates between 6-12% annually)				
Financial services	n. d.	n. d.	n. d.	n. d.	n. d.		Rest of products agricultural	
To the gather (Inputs for dairy cattle, pigs, poultry, eggs, etc.).				55.634.565 Bs (chala rice, corn grain. Wheat is not considered).				
To the commercialization (of inputs for dairy cattle, pigs, poultry, eggs, etc.)				189,202,249 Bs (Rice and sub products; and Hard yellow corn. Wheat is not considered)				
To general services (for food processing: Electricity, gas, gasoline)	A part of the PGE subsidies are allocated to basic services; differentiating between sectors (rural/urban; residential, industrial, etc.) making it difficult to calculate the subsidy to food processing industries (small and large)							
To the agrochemicals	n. d.	n. d.	n. d.	n..d.	n. d.			
Seeds for products in general (through EEPS)	n. d.	n. d.	n. d.	n. d.	n. d.			
Fertilizers (via EEPAF)	n. d.	n. d.	n. d.	n. d.	n. d.			
Extension services (through EMAPA: Technical assistance, monitoring of crops, seeds,agrochemicals)				To producers of rice, corn, wheat, quinoa, and fish. EMAPA does not specify amounts or financing. Assisted 10,041 producers				
Strengthening productive organizations (training producers in good agricultural practices; and strengthening producer organizations)				Delivery of light vehicles, portable laboratories, drones (soil monitoring); agricultural machinery soil preparation. EMAPA does not specify amounts or financing.				
Irrigation	n. d.	n. d.	n. d.	n. d.	n. d.			
Mechanization (3)				(SD 4539) 0 % machine agricultural import				
Quality control (QA)	n. d.	n. d.	n. d.	n. d.	n. d.			
Risk management	n. d.	n. d.	n. d.	n. d.	n. d.			
Environment	n. d.	n. d.	n. d.	n. d.	n. d.			
Transport of general agricultural products (markets, processing centers)	A part of the PGE subsidies is allocated to transportation (diesel, gasoline), making it impossible to specifically calculate support for the transportation of agricultural products in all regions of the country.							
INIAF	n. d.	n. d.	n. d.	n. d.	n. d.			
SENASAG	n. d.	n. d.	n. d.	n. d.	Vaccination against avian flu-poultry farms (4)(5)			
Investment projects (currently being executed), which will require subsidies for their operation.								

Bioinputs (Sedem) liquid fertilizers and organic fertilizers Processing/transformation					Plant in Pampa Grande (6) Grains, cereals, potatoes, fish, soy by-products, (in SCZ, CBB, Beni Rurrenabaque, Lake Titicaca).		
Storage/gather					Cereals, potatoes (TRJ, SCZ, LP)		

(*) The methodology used to calculate subsidies between 2019 and 2021 is the same as that used in 2022, described in tables 9, 10 and 11, with the data for each year.

(1) Agricultural insurance premium subsidy for wheat cultivation

(2) Purchase of raw materials such as seed grain up to 44% based on the EMAPA price

(3) To mitigate the environmental impact and contribute to energy savings, and the modernization of the vehicle fleet, DS 4539 (07/07/2021) of "tax incentives for the purchase of agricultural machinery with 0% taxes" was established.

(4) El deber 04 13 2023

(5) Government creates Trust of 22 million Bs (SD 4962) to support poultry farmers for avian flu-soft loans (El Deber 06 17 2023)

(6) Plant in Pampa Grande that will demand 66 million Bs from FINPRO (El Deber 05 28 2023)

Source. Built based on DS 4539; EMAPA (Accountability Report)

From the previous table regarding the availability of financial resources, it is concluded that, in the case of wheat, SD 3939 has been in force since 2019 regarding the promotion of wheat production through various institutions, with an amount of 314.3 million Bs (45,633,734 \$us) to be executed in 5 years.

There is no information on these resources executed annually by each of the institutions designated by the SD. However, the information available from the Ministry of Productive Development and Plural Economy (Public Accountability Fiscal 2022) establishes that the subsidy for wheat through the "battle bread" reached 1,591,398.68 Bs (23,063.747 \$us) in 2022³⁸ (see table No.7).

This data is approximate to the information provided in the PGE (Ministry of Economy and Public Finance) which establishes that the wheat subsidy for 2022 is 168,000,000 Bs (24,347,826 \$us). Likewise, previous EMAPA data show that in 2022; 7,415,865 Bs were allocated to wheat in gathering and 158,346,694 Bs in marketing; more the subsidy to promote wheat (741,020 Bs), making a total of 166,503,579 Bs (24,130,953 \$us).

Regarding soybeans (the main product of agro-exports), there are no statistical data on the diversity of support that this product receives (the amounts of credit at low interest rates, the release of export taxes, the non-payment of taxes of land under the coverage of the UAR, the release of imports for agricultural machinery, subsidies for gas and electric energy, among others) and that would allow a more exact monetary calculation to be made.

The only data available is related to subsidies for diesel used in agricultural machinery and also in the transportation of the product (from production centers to processing and export centers), which in 2022 arrived at the quantity of 2,432,256,315 Bs (352,500,915 \$us).

With regard to other agricultural products (Inputs and food), there is no statistical information that describes the financial amounts of support (electric energy, gas, diesel) for each of the aspects linked to the production, transformation, transportation of the products; agricultural and livestock products.

The only information available is that provided by EMAPA, which due to the latest sociopolitical events that the country is going through³⁹, EMAPA now plays a more leading and important role than any other institution; whether in collection, marketing, production support, price control, direct sale of products, and others.

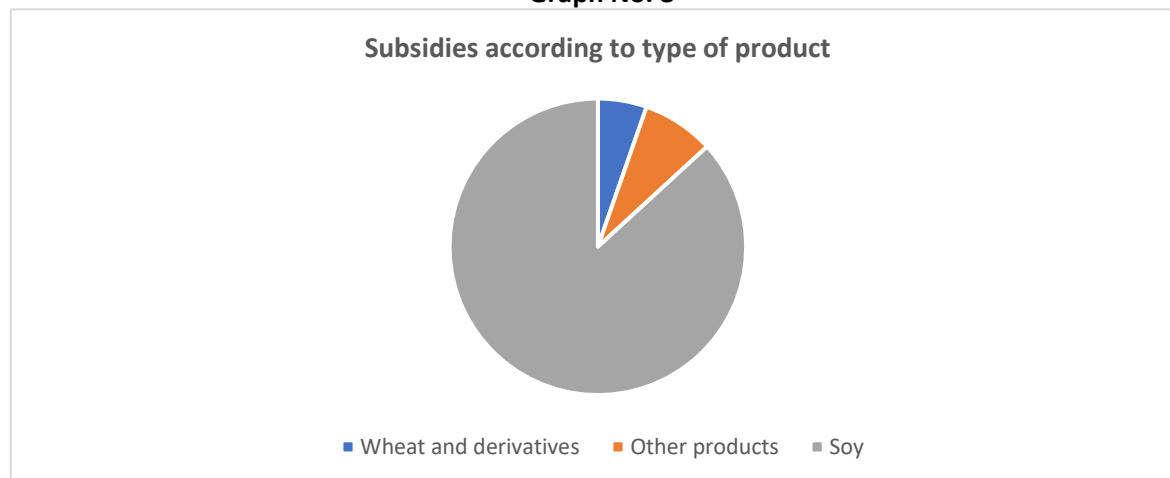
³⁸ Although it appears as the year 2023, in the report presented by the institution, at the beginning of the year 2023.

³⁹ The Russia-Ukraine conflict that caused the price of certain products to increase internationally; and internal attempts to hide and speculate on prices of basic foods and inputs for livestock feeding.

The information provided in financial terms shows that in 2022, EMAPA subsidized 244,836,814 Bs (35,483,596 \$us), an amount that is surely higher if the other supports are considered (extension services and strengthening of productive organizations, for example).

In summary, subsidies in 2022 attain in the case of wheat (and derivatives) 166,503,579 Bs (24,130,953 \$us); in the case of other products at 244,836,814 Bs (35,483,596 \$us), and in the case of soybeans at 2,432,256,315 Bs (352,500,915 \$us).

Graph No. 8



According to the analysis carried out, the subsidies are different depending on the food and product groups:

In 2022, support for export products (in this case, soybeans) is 16 times greater than support for wheat (an essential product in the population's diet) and 11 times greater than support for basic inputs. That is, support for a single export product (soybeans) is 6.58 times greater than support for all foods (rice, corn, wheat, etc.).

It also highlights that the support provided to the different groups of products is not equitable in terms of financial subsidies, in terms of taxes, credits and others. There is marked subsidized support for soybeans, which in more than 80% of its production is destined for exports.

As the previous table shows, the subsidy for diesel used by soybeans in 2019 was 2,193,454,145 Bs (317,891,905 \$us); In 2021 it increases to 2,374,758,160 Bs (344,167,849 \$us) and in 2022 to 2,432,256,315 Bs (352,500,915 \$us). That is, in the last 4 years, the State supported soy production through diesel subsidy, with 1,327,324,687 \$us (9,158,540,337 Bs).

And how much do these subsidies (soy diesel) represent, compared to the total subsidies?

Relating the data in tables 2 and 12, it stands out that in 2019 soy subsidies represent 45.96% of total subsidies. In 2020 these subsidies decrease to represent 36.91%, but in 2021 they increase again to reach 69.94%. In 2022, subsidies on soybeans represented 53.24% of total subsidies... while, in the same year, subsidies on all basic foods represent only 0.67% of total subsidies!

Another important fact to highlight is that diesel subsidies - which use soybeans - with respect to total diesel subsidies represent 80.4% in 2019; 54.2% in 2020, and in 2022 they represent 340.92%, meaning that the subsidies in that year exceeded what was initially programmed by 3.4 times. ¿Is this deficit that is generated in 2022 the reason why the subsidies scheduled for diesel in 2023 increase 5.9 times in value compared to what was scheduled for 2022? (of 794.6 million Bs to 4,705 million Bs).

It should also be noted that, in the period studied, subsidies represent between 8.97% (2019) and 10.27% (2022) of the Gross Agricultural Value (GAV); between 11.47% and 13.83% of the GAV-NIAP; and between 41.14% and 39.88% of the GAV-IAP in the 4 years mentioned.

While the GAV-IAP increases between 2019 and 2022 by 127.4%; The subsidy increases by 123%, which shows the correlation (dependence) of the GAV-IAP of soybeans towards the subsidy. The more the GVA of Industrialized Agricultural Products (IAP) increases, the more it requires subsidies.

Table No. 14
National Gross Added Value and Agricultural Gross Value Added (2019-2022)
(At current prices-Thousands of Bolivians)

	2019	2020	2021	2022
1 National Gross Value Added (NGVA)	236.378.809	215.611.571	238.900.007	255.865.265
2 Agricultural Gross Value Added (AGVA)	24.445.172	24.702.389	24.969.879	26.374.890
(Growth rate 2019-2022)	(100)	(101.05)	(102.14)	(107.89)
3 AGVA of Non-Industrial Agricultural Products (AGVA-NIAP)	19.114.243	19.284.550	18.867.778	19.582.882
(Growth rate 2019-2022)	(100)	(100.8)	(0.98)	(102.4)
4 AGVA of VAB de Industrialized Agricultural Products (AGVA-IAP)	5.330.929	5.417.859	6.102.101	6.792.008
(Growth rate 2019-2022)	(100)	(101.6)	(114.4)	(127.4)
5 Subsidies for diesel used by soybeans	2.193.454	2.158.071	2.374.758	2.432.256
(Growth rate 2019-2022)	(100)	(0.98)	(108.26)	(110.88)
6 Subsidy relationship / AGVA (5/2)	8.97 %	8.73 %	9.51 %	9.22 %
Subsidy relationship/AGVA-NIAP (5/3)	11.47 %	11.19 %	11.19 %	12.42 %
Subsidy relationship/AGVA-IAP (5/4)	41.14 %	39.83 %	38.91 %	35.81 %

Source. Table constructed based on data from the INE (<https://www.ine.gob.bo/index.php/estadisticas-economicas/pib-y-cuentas-nacionales/producto-interno-bruto-anual/valor-agregado-bruto-according-to-economic-activity/>) and previous tables

Finally, it should be mentioned that subsidies for diesel used by soybeans amounted to 5.96% of GDP in 2019; 6.67% in 2020; 6.9% in 2021 and 7.61% in 2022.

It also highlights, that subsidies for diesel used by soybeans between 2021 and 2022 have had a growth of 2.44% while the National GDP has had a growth of 3.48% (<https://datosmacro.expansion.com/pib/bolivia>).

CHAPTER III

SUBSIDIES IN GENERAL

In general terms, food subsidies in recent years - years of the pandemic, the Ukraine-Russia conflict, the deepening of climate events, the international economic crisis - have not decreased, rather they have increased. They have gone from 2,691.2 million Bs in 2019 to 3,665.8 million Bs in 2022.

But inside this increase, those who benefit the most from the subsidies are export products since in 2019 they reached 2,193.4 million Bs; In 2021 they have an increase of 8.2% (2,374.7 Million Bs) and in 2022 they reach 2,432.2 million Bs (increase of 10.88%). Despite this permanent increase in absolute numbers; In relative terms, they present a decreasing trend since from representing 81.50% of total subsidies in 2019, they represent 72.68% in 2020 and 66.34% in 2022.

This percentage decrease is mainly due to the increase in subsidies for food consumed by vulnerable populations since in 2020⁴⁰, these represent 18.61%, 24.09% in 2021 and 22.46% in 2022.

Subsidies for basic consumption foods (gather and marketing) show a downward trend since, from representing 12.23% of the total in 2019, they represent only 5.10% in 2021. In 2022 there is a strong increase in this support since in relative terms it represents 11.20% of the total subsidized; and in absolute terms, the subsidy is greater than in 2019, especially due to the series of actions that the government implements, especially due to the speculation trys generated by the Russia-Ukraine conflict as described in previous sections.

In summary, in 2022, of the total food subsidies, the subsidy for soybeans represents 2/3 of the total (66.34%) while subsidies for basic consumer foods represent 11.20% and consumer foods of vulnerable populations, 22.46%.

Table No. 15
Subsidies on products/food (Bs)

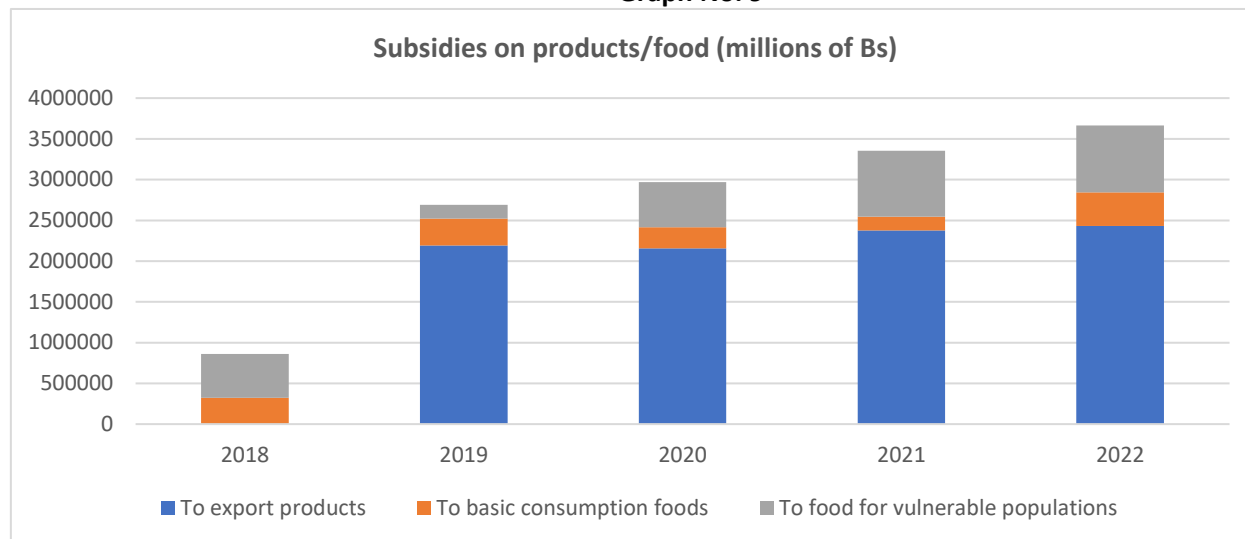
Years	To export products (Soybeans)	To the foods of basic consumption (gather and commercialization)	To food consumption vulnerable populations	Total
2018/19	n.d.	322.858.894	538.258.366	861.117.260
2019/20	2.193.454.000 (81.50 %)	329.150.022 (12.23 %)	168.675.501(*) (6.27 %)	2.691.279.523 (100 %)
2020/21	2.158.071.000 (72.68 %)	258.079.081 (8.69%)	552.807.207 (18.61)	2.968.957.288 (100 %)
2021/22	2.374.758.000 (70.80 %)	171.116.987 (5.10%)	808.000.000 (24.09 %)	3.353.874.987 (100 %)
2022/23	2.432.256.315 (66.34 %)	410.599.373 (11.20 %)	823.000.000 (22.46 %)	3.665.855.688 (100 %)

(*) Reduced subsidies due to the pandemic

⁴⁰ In 2019 support is low due to the pandemic.

Subsidies to food consumers have become not only an instrument to improve nutrition but also to improve education, to improve the participation of women mothers; for better nutritional education inside homes and also for better adaptation to climate changes.

Graph No. 9



How many people do these subsidies benefit? Each year, these subsidies benefit more than 350,000 in prenatal and breastfeeding subsidies; and more than 280,000 in the universal prenatal subsidy for life, to which we must add about 70,000 people (older adults) for the “Carmelo” nutritional reinforcement. Regarding the number of beneficiaries of the School Food Bonus, each year the beneficiary schoolchildren are more than 2,200,000, nationwide.

In summary, food subsidies for vulnerable people benefit more than 2,900,000 people each year; and most importantly, there is improvement in health and nutrition aspects.

On the other hand, while millions of bolivianos are used to subsidize the diesel used for soy exports, the exporters become one of the main actors⁴¹ in the expansion of the agricultural frontier, deforestation, burning (of the Amazon); from the overuse of agrochemicals; of the degradation of the territory; ...that is, they are responsible for the droughts and floods that contribute to global warming.

Likewise, subsidies for soybean agro-exports, how many families do they benefit? And what is the cost to the rest of the country of these soybean subsidies?

According to the INE, there are 20 soy exporting companies in Bolivia, mainly transnational companies such as Cargill and Gravel; and also SAO-SA(<https://www.google.com/search?q=empresas+exportadoras+de+soya+en+bolivia>)

⁴¹ Together with ranchers and other agro-exporters such as sugar cane producers, who indiscriminately expand the agricultural frontier. “...the (cane) sector is going through difficult days due to...the impediment to the renewal of the almost 30,000 hectares out of the productive cycle and (due to the impediment) to the expansion of the sugarcane agricultural frontier.”..... In September In 2018, when Bolivia’s foray into the era of biofuels was announced, the challenge was to exceed 320,000 hectares in seven years. Two years after meeting this goal, the sugarcane agricultural frontier in Santa Cruz is only around 160.00 hectares.” Oscar Alberto Arnéz, president of the National Confederation of Sugar Cane Producers of Bolivia, El Deber 06 18 2023).

CHAPTER IV

BRIEF CONCLUSIONS

. Monetary and in-kind transfers—such as food stamps or access to free services—help vulnerable groups of the population cushion the impacts of crises; and above all to reduce poverty and raise the nutritional food level.

. Subsidies for basic inputs and gather/marketing constitute strong support for the budget of the economy of the general population.

. Subsidies on export products (soy and beef among others) that exceed 2,432,000,000 Bs in 2022, lead to excessive and uncontrolled use of agrochemicals that deteriorate soil and water, killing biodiversity⁴². These subsidies represent 6% of GDP in 2019 and 7.6% in 2022. Likewise, while subsidies increase 14.11% between 2021-2022; GDP grows only 3.48% in the same years. This shows that inefficiency, inequality and lack of sustainability are being subsidized.

. The true cost of harmful actions related to subsidies for agriculture and hydrocarbons (gasoline, diesel) is not fully measured, as only direct expenses are counted. Implicit subsidies must also be included. These represent the effects on people's health and on the country as a whole, such as environmental pollution, greenhouse gas emissions. Likewise, they cause the agricultural frontier to expand through burning and deforestation. They are responsible for 594,000 hectares of forest loss in 2022 and 2,429,000 hectares in the last 4 years. On the contrary, its productive yields are stagnant (Soybeans).

. The reuse of these subsidies must help the transition towards a more sustainable, more equitable and not so damaging to the environment food systems development model, which can generate health, jobs, more healthy food, better nutrition, and food sovereignty.

. This subsidy reform must be favorable to the populations with less resources, the vulnerable populations, the rural populations of the highlands, valleys and the Indigenous Peoples of the Amazon and the Chaco where the greatest poverty is located.

. In times of lack of dollars, tight budget, growing external debt, decrease in International Reserves, increase in socioeconomic inequalities and aggravate environmental degradation; Public policies must prioritize a comprehensive reform of subsidies, continue to protect the food consumption of vulnerable populations and redirect subsidies to increase the productive yields of basic foods, and take care of the environment and our productive resources

⁴² With productive yields (soybeans) stagnant and the lowest of the ALT soybean producing countries

CHAPTER V

PUBLIC POLICY PROPOSALS

I. (RE)USE SUBSIDIES AWARDED TO EXPORT AGRICULTURE TO IMPROVE THE PRODUCTION OF BASIC FOODS, NUTRITION, HEALTH AND THE ENVIRONMENT

To what extent could a realignment of subsidies provide significant benefits in making healthy, nutrient-rich diets available to all, particularly those poor and vulnerable populations?

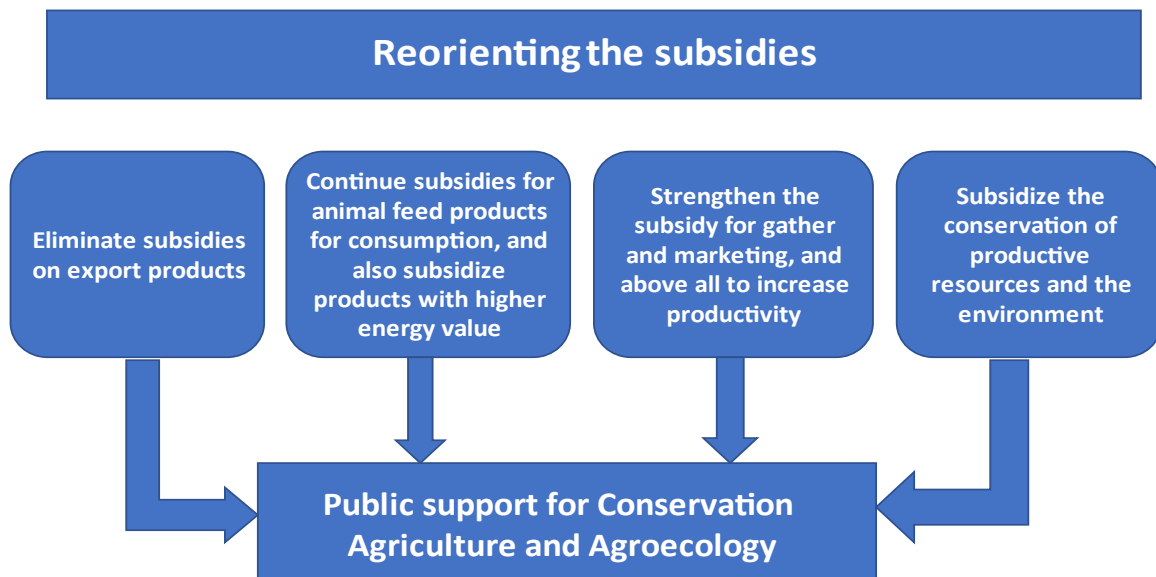
At the same time, ¿can subsidies play an important role in driving toward a sustainable food system by helping to repair the country's diverse socioeconomic and environmental systems?

Reorienting the subsidy will inevitably generate resistance from some sectors (and their economic interests) and possible social conflicts. For this reason, the reorientation must be implemented in stages and thus avoid major socio-political and price disruptions. Suspend certain subsidies and redirect them to other sectors, in a public, transparent manner, thus avoiding the risk of powerful interest groups trying to derail these reforms, which is almost always the case.

Then, considering the urgent economic situation that the country is going through, a reorientation is proposed for the agricultural products sector, considering its close relationship with basic foods, nutrition, health and the environment.

This proposal considers 4 aspects: i) stopping subsidies on export products and agricultural inputs; ii) maintain and expand subsidies for basic food products; iii) maintain the subsidy for gather and marketing, but above all to increase productivity by redirecting subsidies to establish quality extension services; and iv) expand and strengthen the conservation of the environment, natural resources, and biodiversity through an increase in payments for environmental services by the State or private investments but strictly controlled with internationally accepted protocols.

This reorientation of subsidies aimed at environmental services must be directed towards the implementation of a Strategy to Support Agriculture and Food based on Conservation Agriculture (CA) and Agroecology.



1. Eliminate subsidies on export products due to their negative effect on the environment, productive resources and external debt

Subsidies on export products must be eliminated due to the negative effects they have on the environment and productive resources, in terms of the expansion of the agricultural frontier, deforestation, intensive use of agrochemicals and damage to the biodiversity, as shown in previous sections. Likewise, subsidizing exports under these conditions means an economic deficit for the State and an increase in external debt.

By eliminating subsidies on diesel used for export products (soybeans, sugar cane...), agribusinessmen who are soybean producers and at the same time owners of processing plants and exporters, will try to raise the prices of the products processed in the domestic market (oil, sugar...), arguing that their production costs increased.

In that case, the State has three options; i) must apply the EMAPA policy of controlling limit prices to the consumer of processed products, ii) and/or apply a subsidy policy to the plant that processes the products; for example, to sugar cane processing plants or soybean oil refining plants, as is the case with bread; and iii) subsidize the consumer according to income level, benefiting only populations with limited economic resources.

In this way, support will continue for the price of the product intended for the internal consumption of the population; this cost will not be burdened on the popular economy nor will it be given an opportunity to increase prices and inflation. Thus, the State will recover hundreds of thousands of bolivianos every year that must be used to subsidize products with the highest energy value; to increase the productive yield of agricultural products, and above all subsidize the conservation of productive resources and the environment; and also, to strengthen International Reserves and/or reduce external debt.

2. Continue subsidies for animal feed products for national consumption, and also subsidize foods with higher energy value.

Subsidies on animal and human food products (corn for pork and chicken, wheat flour for bread, eggs, milk and others) indicated in tables 6 and 7, are correct measures that benefit the economy of the general population.

If we add to this the measures applied by the government to control inflation, the occultation of products, the direct sale of food products at established prices, restrictions on exports when there is a food deficit in the domestic market, etc.; it can be fixed that they are appropriate policies for the family economy and that they should continue to be implemented; placing emphasis and greater control on product contraband, both to prevent food that we produce from entering and to prevent subsidized food from leaving.

These subsidized food products are frequent in the consumption of the population (in the food basket), however, from a nutritional point of view, consumption should be expanded to other products, with high energy value and essential in the diet, such as legumes, fruits, vegetables, dairy products, cereals, meats/fish. This diversity of foods makes for an adequate diet, improving nutrition, reducing malnutrition and overweight/obesity, current characteristics of part of the Bolivian population.

Among the products with high energy value that should be subsidized are quinoa, fruits⁴³ and legumes such as peanuts, lentils and beans, not only because of their high calorie and protein content but also because of their low price in energy terms (See table No. 1 in Annex).

So productive diversification must be supported, but in terms of “prizes” to producers who increase the productive performance of the indicated products and not to those who expand the cultivated area to increase production. Prizes that may consist of a better purchase price for their products or providing them with agroecological inputs that support increased production (It is not proposed to reward inefficiency, but rather a permanent productive increase, and for that the specialized government institutions must carry out continuous

⁴³ Fruits, of which we have a great variety and diversity in the country, do not have any support and are a fundamental component in the basic food groups of the human person. Only in some school food rations, depending on the location, some fruits are distributed.

monitoring. to producers individually, and support them in the techniques of Conservation Agriculture and Agroecology, as described later in the section referring to productive increases).

Finally, a question must be asked for the delineation of future public policies, and it is related to wheat (and wheat flour), which although it is a fundamental product in the consumption basket of the general population (through of the consumption of bread, spaghetti, pasta, etc.), the majority of the wheat consumed is of foreign origin. Therefore, subsidies on imported wheat make it possible to increase its availability and reduce the price of this product and its derivatives (wheat flour). But aren't these low prices indirectly discouraging the production of other foods necessary for a healthy diet? Aren't wheat imports debilitation our food system and peasant economies? Don't they intensify the country's food dependency?

3. Strengthen the subsidy for gather and marketing, and above all to increase productivity

Subsidies for gather and marketing must continue because the current marketing system is characterized by a series of intermediaries that increase the sales price of inputs and food; because there is no adequate and continuous transportation system from the production locations to the markets⁴⁴; because production costs are not covered by sales prices (which is why the State must make advance purchases). Also, because the market is managed – in various circumstances – by speculative capital that accumulate and hides products according to international prices or according to social conflicts (shortcoming markets and consumers, then introducing the products to the market, with high prices); to which is also added the excessive desire (mercantilism) for profit of merchants to expand their influence.

As long as these circumstances and obstacles remain, the intervention of the State with these Policies (and EMAPA) is appropriate, protecting the family food budget; as demonstrated by the previous analyzes and tables 6 and 7.

But all these actions and others more developed by Public Policies are insufficient as long as actions are not carried out to increase the productive performance of the products.

The productive yields of all products produced in the country have been, for several years, the lowest in Latin America (at least in neighboring countries). As shown in table No. 2 of the Annex, in the case of rice, for example, the national average yield for the year 2022 (3.08 Tm/Ha) is 2.44 times less than in Peru. In the case of potatoes, the productive yield was 6.6 Tm/ha, that is, 4.5 times less than that achieved in Argentina (30 Tm/Ha); 2.7 times less than in Brazil (29 Tm/ha) and 2.5 times less than in Peru (16.5 Tm/ha). In the case of tomato, the differences are even higher since the yield in Bolivia was 16.2 Tm/ha while in Brazil it was 81 Tm/ha (5 times more). Even in the case of quinoa, the productive yield continues to be lower than in Peru where a yield is achieved 4.8 times (in Ecuador, the productive yield was 1.5 Tm/Ha in 2022, that is, 2.6 times more than in Bolivia).

In the interior of the country, the productive yields of all products are also very low and disparate, not only between regions but within them. For example, in the North of the department of La Paz, in the municipality of Combaya, the productive yield is 2.06 Tm/Ha, and, In the municipality of Sorata, adjacently, the productive yield is 6.4 Tm/Ha. The same thing happens with all other products (see IDEA/GADLP 2018), and if it is related to departmental averages, large disparities are found. Productive yields are very low, and there is an increasing decrease in these. And.. what are the causes for this?

⁴⁴ Producers do not have any market information (prices, quantities demanded, silos, management training, etc.) nor support from municipal governments or projects for the transfer of products to markets, among others.

According to the Ministry of Rural Development, productive yields of basic products were not increased because "...in a period of 34 years it was not possible (in more than 10 crops) to increase yields, they even decreased...mainly due to soil depletion (due to physical, chemical and biological factors of the soil) that produce low soil fertility; the lack of irrigation water and/or inefficient use of irrigation;...and also due to lack of pest and disease control, inadequate agronomic management of the crop...and above all the low capacity of the soils to provide the necessary nutrients for growth of the plants... sufficient quantities of nutrients are not being replaced into the soil to replace the extraction by the crops and (the loss of nutrients due to erosion and leaching and everything) this has an impact on the yield of the crops and the increase of the production". (MDRyT/VDRA2017)

4. Subsidize the conservation and recovery of productive resources and the environment.

4.1. Stop the government project to produce biodiesel

The government has already started the construction of two biodiesel plants (Senkata and Palmasola) based on the production of vegetables products (corn, soybeans, sugar cane, morococo) in Santa Cruz and in the North of La Paz, in order to replace fuel imports (Página Siete 06/03/2023).

These biodiesel plants based on vegetables products will imply enormous environmental damage, increasing deforestation in Santa Cruz, and encouraging deforestation in the North of La Paz, where the natural and productive conditions are not suitable for it. ("The Government will build a biodiesel plant in Senkata. El Alto will be supplied with "La Paz soybeans" El deber 03/6/2023)

As several studies, Municipal Development Plans and Development Strategies of the Government of La Paz point out, the Valles Norte (VN) region of La Paz, "is characterized by great forest wealth and a diversity of soils. In several municipalities, the predominant use is not suitable for crops, other soils are subject to permanent limitations and in others they can be cultivated regularly, as long as Conservation Agriculture is applied.... The agricultural sector presents an overuse of land comparable to mining since the use of agricultural land is 3.29 times more (adequate) than its potential.... " having to apply conservation and sustainability practices, among several others" (in this regard, see consolidated report of the economic and productive area of the northern valleys region of the department of peace GADLP/IDEA-2018).

Due to the above, this biodiesel project in the North of La Paz is not only negative for the environment but will also be economically counterproductive, since the government will have to invest not only in the construction of the Plant in Senkata (US\$40 million in the 2 plants), but also spend on the (subsidized) diesel used in the machinery for clearing/deforestation; to prepare the land, to plant/harvest the plant products (soybeans, sugar cane), and then to transport them to the Senkata plant. "Considering the low yields of soybeans in Bolivia, it is very questionable whether the energy yield of the biodiesel produced is greater than the energy value of the fuel used in the production chain and in the production of inputs for it" (Friedrich T. (b) 2023).

If we add to these calculations the value of the deforested land (in terms of lost biodiversity, forests, lost crops, animals, etc.), the balance will be negative. However, the authorities' vision is different: "Savings will be generated for the country in fuel imports.... This year we hope to start producing the first barrels of biodiesel. "We want to replace fossil diesel with an environmentally friendly one, to reduce emissions" (Armin Dorgathen. Interim Executive President of YPFB Página Siete 04/30/2023). However, this statement does not answer the question of the number of barrels of diesel that will be used to produce biodiesel.

4.2. Stop and regulate the use of pesticides

It has been shown that the use of pesticides is closely linked to export products, especially the close use of pesticides with transgenic soybeans (since its legalization in 2005) resistant to glyphosate (40-30-2).

The agrochemical market is free, especially in Santa Cruz, where different trademarks of agrochemicals are offered (many of them interdict internationally due to their high level of toxicity), with a lack of control of the containers already used; lack of instruction and training for their use; absolute absence of regulations and provisions for use, without control or monitoring by the authorities and due supervision.

CPE regulations are ignored; and also, the different laws (on the Environment; on the Productive Revolution; on Mother Earth) and the various resolutions of SENASAG and even the different International Conventions that Bolivia signed (Rotterdam; Basel; Stockholm) where it commits to the environmental conservation; sustainable development; the protection of human health.

Due to the above and in view of the growing uncontrolled use of agrochemicals, Rules must be established that provide for the creation of a Single Registry of agrochemicals where every natural or legal person, public or private, that carries out import, export or marketing activities must register; instructing the issuance of authorizations (written consent provided by the Ministry of the Environment) in which a series of guarantees are certified, such as the adoption of measures for the protection of land, water, human health and the environment.

The immediate and absolute elimination of the use of agrochemicals in agriculture will be difficult, so it is proposed, in addition to the previous provisions, to limit their use by Law, in addition to the registration and control of agrochemical products and their sale, "... .legislations must be introduced regarding the equipment for its application (its efficiency and safety); to the service conditions of the equipment in use and the qualification of the operators who use and apply the products, in the same way as to the legislation in force, for example in Europe, which also forms the basis for the importation of food products to Latin America. . As a medium and long-term objective, the Conservation Agriculture model must be encouraged/subsidized, which also facilitates the transition to organic agriculture without any use of agrochemicals" (Friedrich T. (b) 2023).

4.3. Damage to the environment is neither visible nor accounted for. Replacement and maintenance costs must be established.

In the analysis of the production costs of basic food products as well as those of export, the costs of replenishment of natural resources and wildlife (fortification/replenishment of land⁴⁵, depletion of water sources, burning of forests) are not taken into account. There is also no question of stopping the destruction of soil, air and water pollution, stopping Greenhouse Gas (GHG) emissions or the loss of biodiversity.

The current system of production of agricultural products for export (soy, meat...) in current conditions damaging the soil with inadequate tillage and machinery; expanding the agricultural frontier (with the burning of the chaqueos and the Chiquitanía fire) and not stopping pollution from agrochemicals, it is profitable and lucrative for exporting agrobusinessmen since it generates cheap products/inputs due to subsidies (which later are exported); but this is unsustainable at the national level.

Therefore, we must stop this form of exploitation of natural resources, establish a new agricultural system of conservation and regeneration; and establish socioeconomic indicators and measurements to determine the degree to which different agricultural and livestock systems contribute to Climate Change, to the loss of productive diversity, to deforestation, to the loss of biodiversity... The series of regulations and laws established to defend natural resources must be put into effect, establishing drastic sanctions and penalizing the actors who destroy, replenishing resources and paying environmental costs; restoring the damage caused to natural capital, the environment, and biodiversity. Currently, the opposite is done for subsidies!

4.4. Other support modalities for the replenishment of natural resources and environmental conservation

In the country, a few years ago and through a multiplicity of actors, different analyzes and studies have been carried out on the problem of conservation of natural resources and the environment, and its emphasis on food security and sovereignty; posing recommendations through various Development Plans and Strategies⁴⁶.

Among the main recommendations are:

⁴⁵ According to the Ministry of Environment and Water (2017); In 2017, 35% of the soils in Bolivia were degraded, which has increased even more in recent years, with fires, deforestation and the intensive increase in the use of agrochemicals.

⁴⁶ In extensive proposals in the National Strategy for the Development of Sustainable Family Agriculture in Bolivia (2020), FAO-MDRyT

. Rehabilitate degraded lands and parcels by eliminating tillage; using natural fertilizers and coverage, and the incorporation of organic/green matter (maintenance of crop residues, worm castings, rice and peanut shells, among others).

. Protect vulnerable areas, forest and mountain surfaces (increasing the diversity of trees/plants/fruit trees) to maintain environmental functions. Increase the forest area through tree plantations on agricultural and livestock lands to improve the microclimate, biodiversity and the peasant economy.

. Establish sustainable soil management through the establishment of agroforestry systems (agrosilvopasture and Conservation Agriculture, zero tillage + permanent coverage + rotation/diversification) in crops in the Amazon, Valleys, Altiplano and Chaco. (Integrated management in soil nutrition for its conservation).

. Promote the rescue of seed/crop varieties (that have resistance to biotic and abiotic factors incorporated into their genetic stock - pests, diseases, frost, etc.) under controlled conditions, which in turn will allow for better adaptation to Climate Change.

. Develop, strengthen and promote the use of collection systems for non-woods forest resources (fruit trees + Amazonian fruits) and woods.

. Train Residents (Indigenous Peoples) in the sustainable gather of resources; with adequate technical instruction for the exploitation of these resources and sustainable exploitation.

. Support (subsidies) and provide monetary incentives (prizes) to the families of Indigenous Peoples and traditional communities so that they themselves are responsible for protecting and conserving the forest, their environment (taking care of the plantations + the forest species/fruit trees/plants + small livestock raising + agricultural diversification); and completely avoid open burning of biomass.

. Guarantee fair prices for peasant farmers, recognizing their production costs (and replacement of productive resources such as land and water) in the sales prices of their products.

. Support the populations located in the east (Amazon, Chiquitanía, Chaco, Valles Norte de La Paz among others...) emphasizing their diet based on the fruits of the plantations (azai, copoazu...) to support/strengthen the health of these systems food.

The implementation of this series of recommendations in public policies will strengthen the bioeconomy of the Chiquitanía, the Altiplano and Valleys, the Amazon, the Chaco (due to the great wealth of biodiversity products of the biome) and thus the VABA and the National GDP, and create decent jobs and higher incomes. It will be cheaper and more profitable than the expansion of soybeans, livestock, the expansion of the agricultural frontier, and the indiscriminate and intensive use of agrochemicals.

II. TOWARDS A NEW MODEL OF AGRI-FOOD DEVELOPMENT BASED ON CONSERVATION AGRICULTURE AND AGROECOLOGY.

The underlying problem of the analysis raised in this research is that the Bolivian food system is poorly configured and responds more than anything to an Export Promotion Program - which overreached, resulting in an extractivist system and which benefits a few individuals and companies – before Food Security and National Food Sovereignty⁴⁷.

⁴⁷ The model of Nutritional Food Security (NFS) and Food Sovereignty (FS) is already proposed through proposals from different organizations of peasant producers (National Strategy for the Development of Sustainable Family Agriculture in Bolivia, FAO-MDRyT 2020), NGOs/Foundations of Development; and even different Plans, projects of International Cooperation; and Development Strategies, among others.

For this configuration of support for exports, a series of public policies are used (soft credits, subsidies for hydrocarbons, tax exemptions and others) that have a series of negative repercussions on the environment, productive resources, the increase in external debt, food dependency, among others⁴⁸.

In the analysis carried out, only the public policies of subsidies for agricultural and food products were emphasized, so alternatives to the use of this variable⁴⁹ are proposed, alternatives that should lead to a new model of agri-food development based on Farming Agriculture Conservation and Agroecology.

However, the general analysis on other aspects must be expanded and deepened, such as the perverse effects on the functioning of the food market and the socioeconomic impacts of agroecology⁵⁰.

And this new development model must lead to the priority objective of achieving greater National Food Sovereignty that will allow better Food Security.

Tools to attain greater Food Sovereignty and Food Security

The absolute priority is the achievement of greater Food Sovereignty because the country has a variety of extensive and valuable natural resources in the Altiplano, Valleys, and Tropics, with diverse agricultural production systems that allow the production of all types of foods, which would allow achieving a greater internal self-sufficiency, greater autonomy and less vulnerability.

To these factors we must add that the peasant agricultural sector plays a fundamental role in the country because it shelters an important group of the population that is an important subject and determinant of national development, because it still produces the majority of the food and nutrients consumed by the population. Population; because it produces raw materials for industry and because it represents the majority of the workforce.

The performance of greater food sovereignty will allow us to replace food imports that have grown disproportionately in recent years, and to export products of high nutritional value (healthy and clean) in which the country has comparative advantages in the global context, and not the massive products that expand the agricultural frontier, intensify the use of agrochemicals, deforest and burn the Amazon.

To achieve the above, the creation of a new agri-food development model based on Conservation Agriculture and Agroecology is proposed⁵¹, a model that transcends temporary governments, private and business interests, regional interests, and price situations. international, among others, and that it constitutes a State Policy to which all national and international actors are subject.

1. Guidelines for Conservation Agriculture (CA).

Conservation Agriculture is characterized by three basic interlaces principles: minimal soil disturbance on a continuous basis; permanent organic soil cover; and the diversification of species cultivated in sequence or association.

⁴⁸ It also has negative repercussions on other producers of basic foods since soy, for example, having so many advantages, constitutes disloyal competition to other products, so the producer decides to change his crop for one that generates more income. And that is what is happening in various municipalities of Santa Cruz, where the expansion of soybean cultivation has displaced other crops such as fruits, vegetables and others.

⁴⁹ Being aware that there are other (complementary) variables that must be analyzed and restructured to support the transformation of the agri-food system, such as the land issue (grabbing, land trafficking), the water issue; and also, the financial system and the growing socioeconomic inequality, among others that concern the food system.

⁵⁰ There are critiques of organic or agroecological agriculture that must be considered, such as that it is loaded with clichés; and that it is not considered a generalized solution because the market does not demand it and there are not sufficient production levels either. In this way, a situation has been created in which there are interest groups for organic agriculture (which has slow growth in the market) but there are also the interests of the agrochemical industries, which are the majority, and whose interests they are satisfied by a larger market, which in turn is completely uncontrolled and growing as the statistics in the previous sections show.

⁵¹ Which in turn will open up other sources of income for the country, such as high-level ecological tourism, for which Bolivia still has better conditions than many other countries.

The science that accompanies CA suggests that tillage causes soil degradation⁵², and if deforestation (cutting down trees, burning) is added to that, there is no sustainability. It also states that “undisturbed soils create soil, eliminate erosion, reverse degradation, establish the spatial structure with soil life (roots, fauna) and facilitate adaptation to rain through better infiltration (less flooding – without terraces and dams), also facilitates adaptation to drought: more organic matter in the soil means more water available to plants, deeper roots reach water also in times of drought, and soil cover results in less water loss” (Friedrich T. 2023).

On the other hand, the CA highlights the importance of forests since they drive the water cycle and precipitation increases due to transpiration and emission of condensation nuclei. Forests are “water creators” due to their infiltration capacity. “But this capacity does not depend on the trees, but on the structure of the no-till soil.”

This CA model is already implemented in more than 100 countries around the world with a growing number of restored soil surfaces now reaching almost 20% of the total annual crop area in the world. In Bolivia, this practice was also implemented almost 30 years ago in 2000 hectares with positive results for the producer's economy and the environment. While all the first areas were in the department of Santa Cruz, CA has recently been applied in quinoa production systems, in the highlands, with good results. However, due to the lack of state support, especially in agricultural extension (training), the experience did not spread.

CA is the basis without which sustainable intensification is not achieved, but it must be complemented by other good practices (which are already implemented in various parts of the country), such as agroforestry systems, agrosilvopastoral systems; the integration of livestock farming into crop systems, livestock farming with controlled and intensive pasture, and finally, the elimination of all use of agrochemicals to the maximum possible extent, ending in organic and agroecological agriculture.

2. Guidelines for Agroecology.

There are various actors at the national level who have been proposing agroecology for some years, with efficient and positive results. However, it is a practice undervalued by public policies, not addressed nationally or with political and economic support.

The agroecological practice⁵³ that has been implemented in the country for some years now has very positive results for the environment, sustainability and increased production:

- . The productive yields achieved are higher than the departmental average: for example, in potatoes we achieved 4 times more than the average yield in Tarija; 14 times more in chard; 15 times more in radishes, 5 times more in tomatoes and 4 times more in onions (IICCA 2014).

- . The productive yield of potatoes, in 2021/22, according to the INE is 6.65 Tm/ha at the national level: ranging between 4.08 Tm/ha (Oruro) and 9.93 Tm/ha (Santa Cruz). CIPCA, in several regions of the La Paz highlands, has experimented with potato production with agroecological management and has obtained productive yields of 18 Tm/ha (CIPCA 2023).

- On the La Piedra property in the municipality of Samaipata, a yield of 52.6 tons per hectare was achieved with the Desiree potato variety. ...after five years of having implemented an integrated management and control strategy of good agricultural practices, for example, fumigating with potassium foliar fertilizer and sprinkler irrigation systems... (El Deber 08/01/2020)

In the arena of analysis and debates, it is proposed that agroecology is not only a technical issue, but rather involves participation, traditional local knowledge, distribution and socialization of knowledge. They also highlight that it is a necessary life system for the sustainability of the ways of life of rural populations since it recognizes the peasant and indigenous peoples, their multifunctionality and pluriactivity.

⁵² Since it loses coverage and protection, it reduces biodiversity, it loses connected macro pores and with this infiltration capacity of the water that washes the soil; so, there is leakage and leaching of water (Friedrich T. 2023)

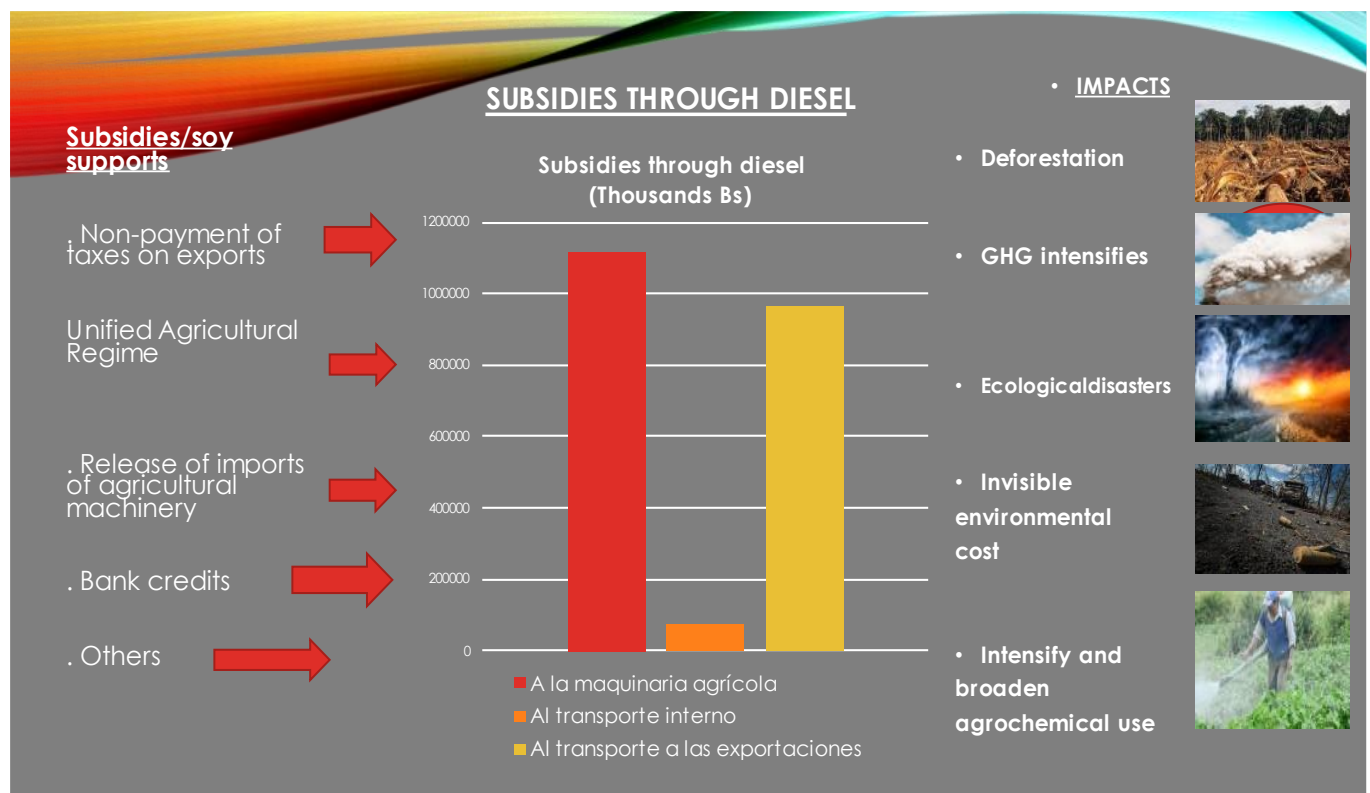
⁵³ For example, the IICCA emphasizes reforestation with native species; construction of infiltration ditches; creation of seed banks; production of solid and liquid fertilizers; control of pests and diseases, support for agricultural production combined with livestock and fish farming; foliar biofertilizers; drip irrigation systems, and others (www.iiccatarija.com).

Agroecology is inserted in the framework of the Human Right to Food and is the pillar of Food Sovereignty. Likewise, it proposes eliminating the dependence on agrochemicals to which Bolivia feels subjected, thus allowing for the improvement and protection of human health, the environment and biodiversity.

As highlighted in the two previous approaches, the soil is the most important and vulnerable element of the food system, so its care and strengthening are essential for the sustainability of the entire national productive apparatus. It also highlights that there are several common principles that guide CA and Agroecology, such as, for example: fortify and strengthen the soil (permanent organic cover); integrated productive diversification; do not burn; not using agrochemicals but rather natural control; not irrigate by flooding but rather technical irrigation, maintaining aerobic conditions in the soil. CA and Agroecology are not alternative systems but complementary and need to be implemented together to achieve sustainability in its three dimensions.

In summary, a transition of subsidies for Conservation Agriculture and Agroecological Agriculture is proposed, which are models that do not damage life, land, water, do not kill biodiversity or damage people's health... and will strengthen security food and food sovereignty.

With political decision, prevision, planning, coordination, the reuse of subsidies can provide more resources for the rural agricultural populations and Indigenous Peoples of the Altiplano, Valleys, Chaco, Chiquitanía and Amazonia, a better quality of life and guarantee a better productive future - also for the environment - but implementing this redirection will not be an easy task due to the great economic interests rooted in the export agroindustry, in its policies and in the other barriers they pose.



ANNEXES

Table No. 1 Energy value according to type of products

	Chicken	Wheat flour	Rice	Quinoa	Lentils	Beans	Peanuts
Price 1 Kg/Bs	18.75	6,00	7,45	14,00	19,80	19,80	17,60
each 100 grs							
Calories	170	352	387	306	350	337	576
Proteíns	30	9,50	7,0	14	21	20	33
Fats	10	1,20	0,9	5,5	2,0	0,8	44
Price	1.87	0,60	0.74	1,40	1.98	1.98	1.76

Source. Prepared with data from tables 6 and 7; and market

Table No. 2 Productive yields of the main foods according to countries (2013-2022) (Tm/Ha)

Productos	Año	Argentina	Bolivia	Brasil	Perú
Rice	2013	6,7	2,6	5,0	7,7
	2018	6,9	3,1	6,3	8,1
	2022	6.7	3.08	7.5	7.53
Onions	2013	27,0	8,8	26,8	39,2
	2018	26,3	11,6	31,9	39,8
	2022	25	15.5	29	36
Corn	2013	6,6	2,1	5,2	3,2
	2018	6,0	2,7	5,1	3,4
	2022	7.9	3,0	5.4	3.0
Potato	2013	30,7	5,6	27,7	14,4
	2018	32,3	6,4	31,1	15,8
	2022	30,0	6.6	18.3	16,5
Tomato	2013	38,7	10,3	66,8	43,9
	2018	39,4	13,4	71,9	46,0
	2022	50,0	16,2	81,0	42.1
wheat	2013	2,6	1,1	2,7	1,4
	2018	3,1	1,5	2,6	1,5

	2022	2,7	1,6	3,0	1,2
Quinoa	2013	-	0,4	-	1,1
	2015	-	0,6	-	1,5
	2022		0,56		2,7

Source. FAOSTAT

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