



## **NOTEBOOKS OF ARMADILLA SCS**

**Hunger in the world - Policies to eliminate it.  
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It also carries out training and information activities on the topics of the 2030 agenda proposed by the United Nations, for the defense of human rights and for the achievement of the 17 goals for sustainable human development: <https://www.unric.org/it/agenda-2030>

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**In this Notebook we propose the problem that affects 820 million people in the world: hunger. And therefore the issue of food security and sovereignty.**

According to a recent FAO report the world is far from reaching most of the goals of the Sustainable Development Goals (OSS) related to hunger, to food safety and nutrition. Report that can be read in full in this site: <http://www.fao.org/state-of-food-security-nutrition/en/>

The report provides a sad scenario. For four years now, that is since it was signed the 2030 Agenda for Sustainable Development, regression is the norm, when it talks about ending hunger and making agriculture and natural resource management sustainable, either terrestrial or marine. Be out of the way when talking about reaching the fundamental pillars of the OSS, undoubtedly puts at risk the success of the whole 2030 Agenda and makes our overall objective less reachable: guaranteeing our planet and present and future generations a sustainable future from an economic, social and environmental point of view.

We also refer to the document; Agricultural Perspectives OECD-FAO 2018-2027, (<https://doi.org/10.1787>) and more specifically we report the special chapter on the Middle East and North Africa (MENA), Armadilla's priority area of intervention. MENA is one region in which conflicts and political instability amplify the problems related to food insecurity and malnutrition. Increasingly frequent, extreme weather events will have repercussions that will accentuate the need to overcome these challenges despite the shortage of water and land resources. We need to improve the resilience and sustainability of the food systems in times of conflict, to enhance the resources they are becoming increasingly fragile and scarce.

## **1.FAO report on food safety conditions**

**Over 820 million people still suffer from hunger.**

The number of hungry people in the world is increasing for the third consecutive year and it has returned to the levels recorded in the 2010-2011 period. Hand in hand, the percentage of hungry

people compared to the total population has slightly increased, rising from 10.6% of 2015 to 10.8% in 2018.

In 2018, around 820 million people did not have enough food, compared to the 811 million of the previous year: the increase was recorded for the third consecutive year. This highlights the magnitude of the challenge of achieving the Hunger Sustainable Development Goal, Zero by 2030, states the new edition of the State Security Annual Report Food and nutrition in the 2019 world published today.

The times of progress made to halve the number of stunted children and reduce the number of those with low birth weight are too slow, which - according to the report - still makes it more difficult to achieve the nutritional goals of the OSS 2.

At the same time, these challenges are compounded by overweight and obesity, which they continue to increase worldwide, particularly among school-age children and adults.

The chances of food insecurity are higher among women than men in all the continents, with the biggest gap in Latin America.

“Our interventions to address these worrying trends will have to be more decisive - not only in terms of scope, but also in terms of multisectoral collaboration”, they have urged in their joint preface the leaders of the United Nations Organization for Food and Agriculture (FAO) of the International Fund for Agricultural Development (IFAD), of the United Nations Children's Fund (UNICEF), of the Food Program World (WFP) and the World Health Organization (WHO).

Hunger is increasing in many countries where economic growth is lagging behind, in particular in middle-income countries and those mainly devoted to international trade of raw material. The United Nations annual report also found that the disparity of Income is on the rise in many of the countries where hunger is on the rise, making it even more difficult for the poor, the vulnerable or the marginalized to deal with crises and economic slowdowns.

“We must promote a structural and inclusive transformation in favor of the poor, focusing on people and putting communities at the center to reduce economic vulnerabilities and put us on the right track to end hunger, food insecurity and to all forms of malnutrition, United Nations leaders said.”

**In Africa the situation is extremely alarming because it has the highest rates of hunger in the world, which continue to increase slowly but steadily in almost all sub-regions and in particular in East Africa, where almost a third of the population (30.8%) is undernourished.** In addition to climate and conflicts, the increase is favored by the slowdown and from economic crises. Since 2011 almost half of the countries where the increase in hunger has occurred after economic crisis or stagnation were African.

**The largest number of undernourished people (over 500 million) live in Asia, mostly in Asia Southern. Together, Africa and Asia hold the largest share of all forms of malnutrition in the world, amounting to over nine out of ten rickety children and over nine children peris perished. In South Asia and sub-Saharan Africa, one child in three is affected from rickets.** In addition to the challenges of rickets and decay, they also live in Asia and Africa almost three quarters of all overweight children in the world, mostly due of the incorrect diet.

This year's report introduces a new indicator to measure insecurity feeding at different levels of severity and monitor progress towards OSS 2: prevalence of moderate or severe food insecurity. This indicator is based on data obtained directly from people through surveys on their access to food in the last 12 months, using the new scale of food insecurity (FIES). People exposed to moderate food insecurity face uncertainties about their ability to get food, and to survive, they have to reduce the quality and/or quantity of food they consume.

According to the report, over 2 billion people - especially in low and middle income countries - they do not have regular access to healthy, nutritious and sufficient food. However, irregularity is also a challenge for high-income countries, including 8% of the population in North America and Europe. This requires a profound transformation of food systems to provide diets healthy and sustainably produced to the growing world population.

### **Small agricultural producers**

Small producers - who represent the majority of farmers in many poor countries of the planet - they face disproportionate challenges in accessing factors of production and to services and, consequently, their revenues and their productivity are systematically lower than large manufacturers. In most countries, the proceeds of children food producers are less than half compared to those of large producers. There are also noticeable disparities in the productivity of small producers compared to large, and if, less pronounced than proceeds.

In the 2016-2017 period, irregularities in food prices affected over a third of landlocked countries (LLDC), one in four in Africa and Western Asia and one in five states in Central and South Asia. On the other hand, all regions have been affected by moderate and general increases in food prices.

On average, about 60% of local cattle breeds are at risk of extinction in the 70 countries with possession of information on the status of the risk situation. Specifically, throughout the world out of 7,155 local cattle breeds (i.e. breeds living in only one country), 1,940 are considered to be at risk of extinction, for example the fogera - Ethiopia cattle breed - or the goat gembrong, Balinese. This percentage could be even higher, as it does not data on the risk status of two thirds of the local cattle breeds are available, in particular in the Middle and Near East, in Africa and Asia.

The report also reports "missing progress in the conservation of genetic animal resources and notes that ongoing efforts to preserve these resources are inadequate." For example, less than 1% of the genetic material of local cattle breeds are available all over the world, which would allow us to recreate a breed in case of extinction. At the end of 2018 global deposits of plant genetic material stored in genetic banks in 99 countries and 17 regional and international centers amounted to 5.3 million samples - an increase of almost 3% compared to the previous year. This is mainly due to the transfer of existing materials to better storage facilities that comply with the standard indicators rather than new diversity gathered in the field.

Efforts to ensure crop diversity continue to be insufficient, warns the relationship, in particular for the wild ancestors of crops, of wild plants edible and neglected and underused species. They worry overfishing and the non-uniform implementation of international instruments for sustainable fishing .

## Fish resources

Today one third of the world's fish stocks are overfished, compared to only 10% in 1974. The report notes that despite some recent improvements in resource management and in the state of stocks in developed countries, the percentage of fish caught within levels biologically sustainable has significantly decreased in developing countries. Moreover, around 30% of countries still record a low or medium implementation of the main international instruments to combat illegal, unreported and non-declared fishing regulated and around 20% of countries register a low or medium implementation of main tools to promote small fishermen's access to resources, services and markets productivity.

## Water under stress

All continents are exposed to water stress. Most of the countries that have registered high water stress since 2000 are concentrated in North Africa, Western, Central and Southern Asia.

## Deforestation in tropical areas is worsening

**Between 2000 and 2015, mainly due to the conversion of forest areas into land agricultural, the world has lost an area of the size of Madagascar (587,000 sq km). The most of the loss was recorded in the tropical areas of Latin America, Africa Sub-Saharan Africa and Southeast Asia.** However, the process of deforestation has slowed down to global level in the period 2010-2015 and was partially offset by the increase of forest areas in Asia, North America and Europe.

## What to do to reverse trends

The report proposes a series of indications aimed at reversing the worsening of these trends.

First of all, many of the problems mentioned would probably be less serious if there were sufficient investments in the agricultural sector (including fishing and forestry). The report notes however, public spending on agriculture is decreasing compared to its contribution to the Gross Domestic Product (GDP). Specifically, the Sub-Saharan Africa and Oceania (Australia and New Zealand excluded) recorded the lowest relative values of public investments in agriculture.

Promote productivity growth and strengthen resilience and capacity to adaptation of small food producers is also essential to reverse the growing hunger trend and reducing the number of people living in extreme conditions of poverty, the report stresses.

In many developing countries price irregularities have contributed to compromise access to people's food and their nutritional status. The problem could be managed improving information on prices and supply and demand for basic foods, allowing markets to operate more efficiently.

**Increase water productivity, improve irrigation systems in agriculture and reduce losses in urban distribution networks and in heating processes and Industrial cooling are among the main problems to be addressed in terms of stress water.**

To conclude, all countries must urgently make radical changes in the management and governance of fish resources. This would also have a positive economic response: overall, the restoration of

overexploited stocks could increase the fish production of 16.5 million tons and fishery turnover of 32 billion dollars per year.

### **Low rainfall affects food production**

The damage caused by cyclones and low rainfall in 2019 caused considerable insufficiencies in agricultural production in southern Africa, with a consequent sharp increase of cereal import needs. In Zimbabwe and Zambia, the crops are decreased for the second consecutive year, while neighboring states registered reduction of production caused by adverse weather conditions, including cyclones which hit Mozambique. In 2019 a significant worsening of the food insecurity is expected in Zimbabwe, exacerbated by strong spikes in basic food prices and by economic crisis. At the beginning of 2019 about 3 million people were already considered in a state of food insecurity.

The severe drought in East Africa has had a negative impact on the first season of collected, leading to the degradation of pastures. The report indicates that in 2019 the main dips in Cereal production compared to the previous year, in relative terms, are expected in Kenya, Somalia and Sudan, where below-average harvests are expected.

In Asia - in the Democratic People's Republic of Korea - production is planned wheat and barley below the 2018/19 average and fears for the main crops of 2019, which will be collected in October, due to reduced rainfall and poor availability of water for irrigation. According to the recent Rapid Security Assessment Mission FAO / WFP, over 10 million people, 40% of the total population, are still in a state of food insecurity and urgently need food assistance.

### **Chronic conflicts affect food security**

In the Near East, despite generally favorable weather conditions, ongoing conflicts in Syria and Yemen continue to seriously hamper the agricultural activities, reducing the availability of agricultural inputs and causing an increase in the number production costs.

In the period between December 2018 and January 2019, in Yemen around 15.9 million people - equal to 53% of the population - have been hit by a serious crisis of insecurity acute food (IPC 3 and higher phases).

Likewise, the desperate situation of food security in several African states, including the Central African Republic, the Democratic Republic of the Congo and South Sudan, is due to the persistence of conflicts and instability. In South Sudan, in particular, in the period of May-July 2019 the number of people in a state of serious food insecurity was estimated at almost 7 million - 60% of the population.

### **Positive forecasts for the 2019 crops in Latin America and Europe**

It is expected that in 2019 cereal production in Latin America and the Caribbean will reach the record level of 274 million tons. This increase mainly reflects the strong recovery of maize production in South America, largely due to the increase plantations and excellent harvests.

The production of wheat in 2019 is preparing for a recovery in the European Union, in the Russian Federation and Ukraine, mainly due to weather conditions favorable and to the increase of plantations. African swine fever threatens the means of livelihood and food security of millions of people.

The report includes an analysis on African swine fever (ASF) - an infectious disease that affects domestic pigs and wild boar - which is spreading in East and Southeast Asia, threatening the livelihoods and food security of millions of people who depend on pig farming. In mid-June, the disease was reported in 32 out of 34 districts administrative bodies in China and over 1.1 million pigs have died or been slaughtered. The illness it was also reported in Vietnam, Cambodia, Mongolia, in the People's Republic Democratic Republic of Korea and the Democratic People's Republic of Laos, affecting millions of pigs.

One of the main factors of the epidemic, as the report indicates, is the craft structure of the pig sector in this subregion. This prevents the implementation of biosafety standards, an important control measure that can help to stop the spread of the disease. Interregional trade in pork products, which they can be contaminated, it has further contributed to the high incidence of the same. As a result animal health experts believe that the disease will inevitably spread over the next few months.

This raises concerns about the livelihood and food security of the vulnerable subsistence farmers, as they lack the skills and economic resources to protect their farms. These countries have already reported that animal losses have caused reductions in farmers' incomes.

The decline in pork production and the depletion of frozen stocks should involves the spike in prices, putting food security under strain of the most vulnerable populations.

The 41 countries that still need external food assistance are: Afghanistan, Bangladesh, Burkina Faso, Burundi, Cape Verde, Cameroon, Central African Republic, Chad, Congo, Democratic People's Republic of Korea, Democratic Republic of the Congo, Djibouti, Eritrea, Eswatini (formerly Swaziland), Ethiopia, Guinea, Haiti, Iraq, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Niger, Nigeria, Pakistan, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Arab Republic of Syria, Uganda, Venezuela, Yemen, Zimbabwe.

Consider the annual report on agricultural prospects for the period 2019-2028 of the Organization for Economic Cooperation and Development (OECD) of the United Nations Food and Agriculture Organization (FAO) and how the international cooperation must contribute to the achievement of the second objective of the 2030 Agenda: Eliminate hunger in the entire planet.

The report provides an assessment of the prospects for agricultural and fisheries commodity markets at national, regional and global level for the next 10 years.

In particular, the report shows that the global demand for agricultural products is destined to grow by 15%, while faster growth in agricultural productivity is expected, which will ensure that the prices of the main raw materials remain unchanged or below the levels current.

In addition, higher yields and greater production intensity were expected mainly thanks to technological innovation, which will lead to greater production without determining a change in the area of use of agricultural land at a global level.

The report also predicted that greenhouse gas emissions in the next decade in the agricultural sector will grow less than in the last 10 years and below what was expected, the growth rate of production, which indicates the decrease in carbon intensity.

Nevertheless, many uncertainties have also been highlighted for the next decade, especially in relation to the role of nutrition, urbanization, emissions and trade.

For example, they will jeopardize the upheavals caused by tensions in the agricultural and commercial sector, the spread of animal and plant diseases, antimicrobial growing resistance and increasingly extreme weather events.

Furthermore, they represent the evolution of food preferences in light of health problems is also problematic and sustainability and global countermeasures for obesity.

## **2. FAO OECD Report - Middle East and North Africa**

The prospects and challenges of the agricultural sector in the Middle East and North Africa (MENA) include the countries and areas of North Africa and the FAO Near East: Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Authorities Palestinian, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates (UAE) and Yemen.

A dominant concern in the MENA region is its high and growing dependence from international markets for the main basic food products, as the land arable and water resources become increasingly scarce. The policies pursued in the region support the production and consumption of cereals, with the result that 65% of the cultivated lands are used for the cultivation of water-intensive cereals, in particular the wheat, which represents a large proportion of the intake of calories. Projections for the region MENA predicts slow growth in food consumption, gradual changes in the diet a favor of a greater consumption of products of animal origin, a continuous use of water an unsustainable rhythms and a continuous and growing dependence on world markets. An approach of alternative food security would be to redirect policies towards the rural development, poverty reduction and support for horticultural production, more profitable. Such a strategic change would favor a more varied and healthy diet, but would require developing the capacity of farmers who grow vegetables at higher value added to minimize risks.

A dominant concern in the MENA region is its high and growing dependence from international markets for the main basic food products. This concern led to the adoption of a series of policies that appear to be manifestly inadequate compared to the resources of the region. For example, while the MENA region is one of the regions of the world that is most scarce of arable land and water, it has the lowest water tariffs in the world and heavily subsidizes water consumption with around 2% of its GDP. As a result, the productivity of water use is only half the world average. In region, crop rotation is also difficult to reconcile with resource shortages water. While fruits and vegetables consume less water and provide greater economic profits per drop, around 60% of the land is used to grow high-intensity cereals water, although most countries in the region have a comparative advantage in the export of fruit and vegetables. One of the main reasons for the

apparent inconsistency between public policies and water scarcity is a vision of food security that aims to reduce dependence on imports, particularly with regard to cereals. At the same time, many countries subsidize the consumption of basic food products, which together with the increase in income it contributes to the excessive consumption of starches and sugars, causing dietary and health problems such as obesity.

**The MENA region is a difficult environment for agriculture. The soil and water are scarce and both unirrigated and irrigated land suffers from continuous degradation caused by erosion wind and water and unsustainable agricultural practices.** In most countries, farming companies are rather small and therefore subject to the challenges faced by children farmers around the world. It is also expected that in the future the region will become warmer and dry due to climate change.

**Only a small part of the land in the region is arable**

**The agricultural area (arable land and pastures) represents only one third of the area total land area of the MENA region, and arable land (crops), only 5%. The rest of the territory consists of urban areas and arid areas. Due to the dry climate, around 40% of the cultivated area of the region needs to be irrigated. Only 4% of the land of the region is considered highly or adequately suited to the cultivation of cereals irrigated with rainwater and 55% is not suitable.**

In addition to the lack of arable land, land currently used for agriculture is severely degraded to the point that, according to estimates, their productivity has been reduced by up to 30-35% compared to productivity potential. Soil degradation in rainwater systems is caused by wind and erosion of water, while in irrigation systems the same agricultural practices are responsible for salinity and soil sodicity.

It is estimated that three quarters of the 30 million hectares of cultivated land with rain-fed irrigation of the region are degraded. Recent studies have estimated the economic cost of land degradation in the region at \$9 billion a year (between 2% and 7% of individual countries' GDP). In the region, losses related to salinity alone are estimated at \$1 billion a year, equal to 1,600-2,750 dollars per hectare of land affected.

### **Water policy and the use of water in agriculture are increasingly unsustainable**

It is difficult to overestimate the importance of the water issue in the MENA region. Together with conflicts, is the most serious threat caused by man, which hangs over the future of the region. The problem is not limited to scarcity, but to the unsustainable long-term extraction of water superficial and underground, which leads to the exhaustion of underground aquifers from which strongly depends on the Middle East. Out of 20 countries considered, 13 have withdrawn more water sweet as it could be obtained from renewable sources. The unsustainable extraction is favored by the policies pursued and by a poor management of water resources. The region has the lowest water rates in the world, subsidizes water consumption (about 2% of GDP) and has a total water productivity of only half the world average.

Most countries in the MENA region do not generally reach the threshold accepted of 1,000 m<sup>3</sup> per capita of renewable water resources.

Agriculture is the main consumer of water in every country. Also, improve the management of water resources in agriculture is essential to stop soil degradation and to adapt to climate change. The impact of climate change on Production conditions vary within the region. Climate change in the MENA region only exacerbates the risks of agriculture in an area of the world already excessively dry. Countries in the MENA region are subject to frequent droughts and must cope with future water shortages due to unsustainable use of groundwater. Furthermore, the average temperatures of the last century have increased by 0.5°C and precipitation in recent decades they have decreased by up

to 10% in some parts of North Africa and Sudan. Forecasts on climate change predict that the entire region will become more hot and dry in the future, with a particularly marked reduction in rainfall in the western part of the region. Higher temperatures and reduced rainfall will speed up the lowering of the surface water level and the drought will become more frequent. The average yields of pluvial crops, already low, will decrease and will be more variables. By the end of the century, the total agricultural production of the region could decrease up to 21% compared to 2000. As a whole, agricultural production systems they will become increasingly dry and lack water resources, non-irrigated systems will be those most at risk. However, some areas could benefit from higher temperatures, which prolong the vegetative periods and increase the productivity of crops in crops. Yemen, for example, where it rains in summer, an increase in average temperatures of 2°C it could extend the growing period by about six weeks. Moreover, they are expected in some areas increase in rainfall that could improve yields, but also make increase the frequency of floods. These trends have already been observed in Oman, Saudi Arabia and Yemen. The common denominator of climate change will be a general temperature increase in this region, with different effects on precipitation in various countries. However, the effects of climate change on agriculture should vary according to agricultural production systems. In some cases, farmers can react to changes by adapting. In other cases, it may become impossible to practice agriculture and the inhabitants of rural areas will have to change activity or move the food safety situation. The families are in a situation of food security when they have access all year to the amount and variety of safe foods to where their members need to lead an active and healthy life. The changes in the food safety, therefore, are mainly determined by events or factors that reduce the ability of families to access safe food. Among these, the main ones are the income, the functioning of food markets that guarantee the availability of food and food state public services that guarantee food safety.

**Conflicts are the element that compromises the balance of these three factors in the region and that divide it into two sub-regions distinguished from the point of view of food safety: Countries in conflict and countries in peace.**

The indicator of the prevalence of malnutrition makes it possible to estimate the percentage of the population who lives in conditions of absolute lack of food. The prevalence of malnutrition is defined as the probability that an individual taken at random in the reference population consumes less than his caloric needs to lead an active and healthy life. In principle, the Countries with a prevalence of malnutrition of less than 5% are considered relatively safe from the food point of view. The non-conflict countries of the region are, in fact, relatively safe from the food point of view. According to the indicator, in 2014-2016, the conflicting countries in the MENA region were less safe from the food point of view compared to the average level of the least developed countries (LDCs).

**Considering that 28.2% of the population of countries in conflict was in a state of absolute food poverty and that only 24.4% of the population of lesser countries developed was in such a situation of insecurity.** Although we can expect a high level of food insecurity in the countries in conflict, undernourishment prevalence data should be interpreted with caution. They are a good indicator of hunger in periods when income or consumption distribution is relatively constant, but when the distribution records sharp variations, they are no longer a reliable indicator. It is indeed probable that it underestimates the actual prevalence of malnutrition in times of conflict, because the parameters relating to disparities in food consumption used for calculate it derive from data taken from the national surveys on families, which in the periods of conflict are not available or accurate.

Regardless of these considerations, what is certain is that the prevalence level of malnutrition measured in the countries in conflict was more than three times higher than that of other countries of the MENA region from 1999-2001 and is gradually increasing compared to other countries in the region since 2003. This trend in the countries in conflict is consistent with the the fact that the

prevalence of malnutrition is partially determined by conflicts, but it is also clear that they also had relatively high levels of food insecurity before the onset of the conflict.

#### Risks and uncertainties

Medium-term forecasts for the Middle East and North Africa region are subject to risks and uncertainties related to internal and external issues. The conflicts have serious consequences on food consumption and agricultural production. Other uncertainties concern, for example, nutritional concerns or volatile raw oil prices. These aspects are analyzed below to illustrate their potential impact on forecasts.

### **Fight against malnutrition**

Some parts of the MENA region face what is called the triple burden of: overeating or obesity, and malnutrition.

Although slowly, malnutrition is decreasing, at least where there are no conflicts. However, the data of the last two nutritional indicators are increasing, and governments are reflecting on the measures that would allow to fight against the problem of malnutrition.

The United Nations report "Arab Horizon 2030 & quot; has undertaken a scenario analysis for examining a radical change in the diets of the Arab region (which corresponds broadly) measure to the MENA region as defined here, but excludes Iran). Facing the problem of diet has repercussions on dependence on foreign markets for basic food products. The so-called "Healthy Diet Scenario" was built and which evaluated the impacts of a better diet on national and international markets. Using the OECD-FAO Aglink model Cosimo, a scenario has been simulated in which it is assumed that the food models are compliant with the recommendations of the FAO and the WHO for a & quot; healthy diet & quot; of 2,200 kilocalories per day, to be achieved through a 50% reduction in the availability of cereals for food consumption, a doubling of meat and egg consumption, one triplication of dairy products and a reduction in sugar and oil consumption vegetable. Assuming a factor of rejection of 30% implicit in the basic estimate of caloric availability, these changes lead to a decrease in availability total caloric from 3,100 kcal per day to 2,860 kcal per day.

The effect on internal production was simulated starting from the hypothesis of an expansion uncontrolled supply in the region. In this scenario of healthy eating, the meat production in the Arab region would pass, by 2030, from 2 to 13 million tons. By 2030 the production of dairy products (liquid milk equivalent) will go from 5 to 25 million tons. As part of the healthy diet grain consumption would decrease considerably, but overall demand for cereals increase. The sharp increase in the livestock sector and the consequent use of cereals for domestic food would give impetus to this increase. The application for Grain feed would grow six times faster in the scenario of a healthy diet compared to the reference scenario. The Arab region would not be able to increase the its production of feed at the same rate, so that it would be forced to increase its own imports. As a result, the rate of self-sufficiency for cereals would be lower in the scenario of a healthy diet compared to the reference one.

Such a substantial change in the average diet would have a positive impact on the state nutritional value of the average consumer in the Arab region, but would not reduce dependence of the region from foreign markets, as it would be necessary to import fodder cereals or, alternatively, products of animal origin.

#### Impact on food security prospects in the region

According to recent estimates for 2014-16, the prevalence of malnutrition in the region is particularly high in Sudan (25.6%), Iraq (27.8%) and Yemen (28.8%), while there are no data for Syria. Forecasts for increased availability of calories and proteins, based on the hypothesis of an economic

development and a stable income distribution, they should lead to a decrease in the prevalence of malnutrition over time, in particular in less developed countries.

## Conclusions

The Perspectives for the MENA region predict few changes in the relevant policies of agriculture, natural resources and economic growth. According to their conclusions, the supply and trade of food products will follow a trajectory similar to that observed in the past: slow growth in food consumption, gradual changes in the diet to include increased consumption of animal products, water consumption at unsustainable rates and the continuing and growing dependence on world markets. The main difference compared to past trends would be increased meat production, milk, corn and oilseeds associated with increased consumption of animal protein. While the increase in the production of maize and milk represents a recovery in light of the scarce results of the last decade, the increase in meat production is based on the hypothesis that a better economic environment will lead to an increase in investments and consequent productivity increases in the region. It is expected that these increases will limit, but will not reverse the increases in the region's dependence on imports.

The current agricultural policies of the region put the accent on the support of the prices of the wheat, reinforced by import protection measures. These interventions aim at limiting dependence on cereal imports. At the same time, measures in favor of consumers mainly consist in subsidizing basic food products and they are considered as social protection mechanisms. The results of these measures are reflected in the composition of the cultivated areas, 60% of which is used for the cultivation of cereals, greedy of water.

An alternative approach to food security and agricultural policies would be the emphasis on rural development and support for the production of horticultural products of the highest value in small farms, with the support of a more solid dissemination system technique. This approach is based on the belief that the food safety level of a country depends more on the elimination of poverty than on self-sufficiency in grain production. Fruit and vegetables consume less water and provide better profitability by volume of water, and many countries in the region have an advantage comparative in the production of these foods.

These high value-added crops and breeding products could increase the farmers income, improve nutrition and use water more so parsimonious, but require a higher level of agronomic and market knowledge exports and have higher levels of risk. A review of the policies of food security, whose priority is the elimination of poverty rather than the achievement of self-sufficiency, would focus the attention of policy makers on rural development and strengthening the capacity of farmers to reduce to a the minimum risks, while at the same time increasing crops with high added value.

From a nutritional point of view, diets in the MENA region will remain very rich in cereals, and in particular wheat. The share of vegetable oil and sugar, as well as of meat, fish and dairy products will grow, albeit slowly. Unless conflicts don't increase, malnutrition should gradually decrease with increasing levels average food consumption. However, the evolution of diets should also contribute to increase the rates of obesity with the consequences we know about health. Currently support structures for grain consumers limits the necessary diversification of diets food and should be modified to solve growing health problems.