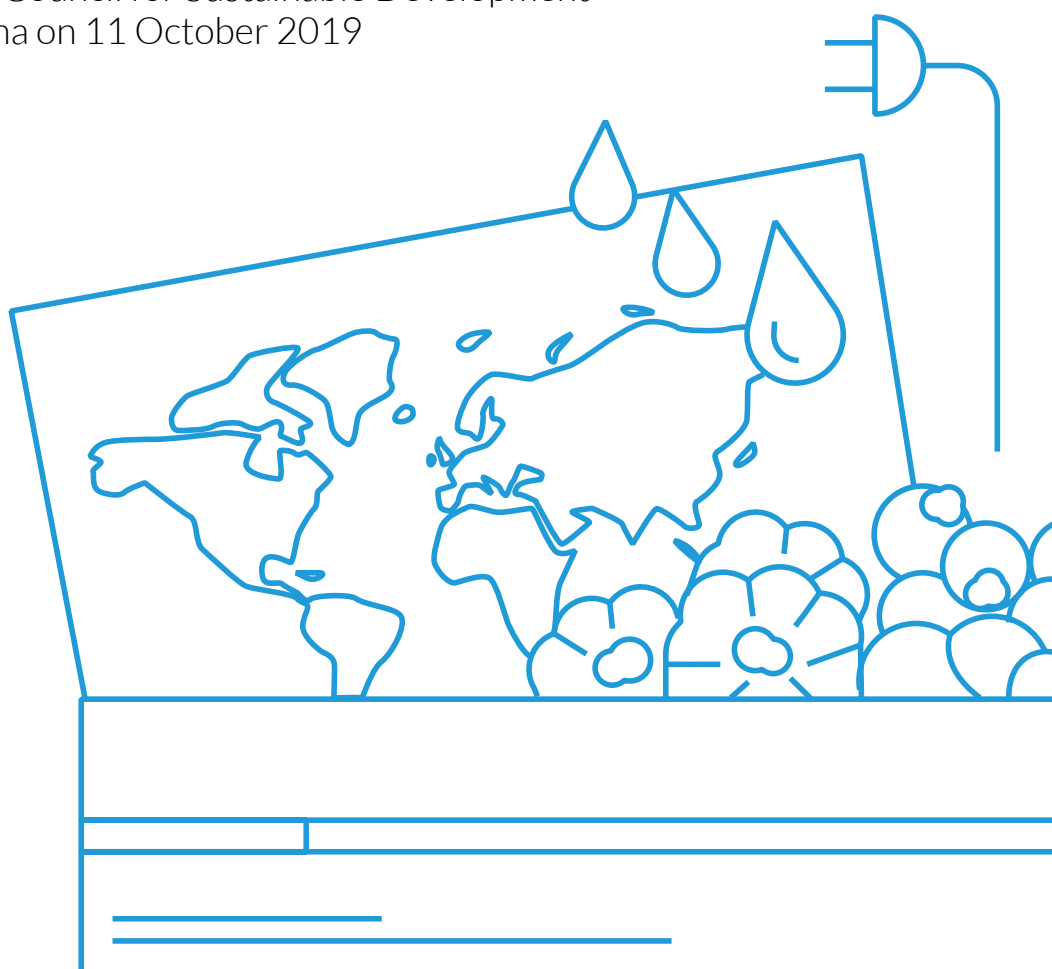


FEEDING ON FUTURE

International Conference on Sustainable Food Systems

Conference organised by the Public Diplomacy Council of Catalonia (Diplocat) and the Advisory Council for Sustainable Development (CADS) and held in Barcelona on 11 October 2019



International Conference on Sustainable Food Systems (2019: Barcelona, Catalonia):

Feeding on Future: International Conference on Sustainable Food Systems. - First edition.
- (Agora Diplocat; 2)
«Conference organized by the Public Diplomacy Council of Catalonia (Diplocat) and the
Advisory Council for Sustainable Development (CADS) held in Barcelona on 11 October
of 2019» . - Bibliography
I. Public Diplomacy Council of Catalonia II. Catalonia. Generalitat III. Title IV.
Collection: Agora of public diplomacy; 2
1. Food security - Government policy - Europe 2. Food - Industry and
trade - Government policy - Europe 3. Europe - Food policy
338.439.6.02:663/664(4)

This publication is co-edited by:



Public Diplomacy Council of Catalonia

✉ info@diplocat.cat

🖱 diplocat.cat

🐦 @Diplocat

📷 @cataloniapublicdiplomacy



Generalitat de Catalunya
Government of Catalonia

✉ cads@gencat.cat

🖱 cads.gencat.cat

🐦 @catsostenible

Rapporteurship: Espigall (Jordi Puig)

Graphic design: Giny Comunicació

First edition: December 2020

Legal deposit: B 14144-2020



Creative Commons 4.0 License.

See conditions at: <https://creativecommons.org/licenses/by-nc/4.0/>

Index

1. Foreword	4
Bernat Solé. Minister for Foreign Action, Institutional Relations and Transparency of the Government of Catalonia	
2. Introduction and addresses from institutions	5
Teresa Jordà. Minister of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia	
Laura Foraster. Secretary General of the Public Diplomacy Council of Catalonia (Diplocat)	
Joan Vallvé. Member of the Advisory Council for Sustainable Development (CADS)	
Alfred Bosch. Minister for Foreign Action, Institutional Relations and Transparency of the Government of Catalonia (2018-2020)	
3. Speeches	9
Introduction by de Chair	
IPCC Special Report on Climate Change and Land (SRCCL)	
Recipe for Change: an Agenda for a Climate-Smart and Healthy Food System for Europe	
Opportunities and Challenges for Research on Food and Nutrition Security and Agriculture in Europe	
Policies, Practices and the Transformative Potential of Sustainable Diets	
Civil Society's Contribution to the Development of a Comprehensive Food Policy in the EU	
4. Closing remarks	28
Carmel Mòdol. Director General of Food, Quality and the Agri-Food Industries at the Ministry of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia	
Annexe 1. Program	29
Annexe 2. Participants	30
References	36
The member entities of Diplocat	37



1. Foreword

Bernat Solé. Minister for Foreign Action, Institutional Relations and Transparency of the Government of Catalonia

Access to food is a human right, but granting sufficient food for everyone is still a challenge today. Before the COVID-19 pandemic broke out, estimations were that 135 million people worldwide suffered from acute hunger; the current global sanitary crisis and its social and economic aftermath might well duplicate this figure by end of 2020, as the United Nations have already been forewarning¹.

In Catalonia, the decrease of economic activity and the subsequent fall in the average income of families, especially amongst the most vulnerable, has come together with a rising demand from entities donating food to those who cannot afford it by their own means. The productive sector has suffered too from the shutdown of borders and the difficulty to hire workers on a temporary basis, as well as from changes on some distribution chains, which hampered their produce reaching consumers, in turn yielding particularly harmful consequences to producers when the goods were perishable.

The pandemic has underscored the fragility and vulnerabilities of our system and thus the need to enhance its resilience². We must learn the lessons it affords us and build a more inclusive and equitable society, one that can develop within the limits of the planet. The 2030 Agenda and the 17 Sustainable Development Goals (SDGs) signal the path toward that future.

«End hunger, achieve food security and improved nutrition and promote sustainable agriculture» is on itself one of the SDGs. The agri-food system, in addition to that of nutrition, plays a central role in our developing model. Indeed, several studies make of our food production and consumption system the crux to society's necessary transformation toward sustainability.

This is why in 2018 the Advisory Council for Sustainable Development (CADS for its initials in Catalan) released the *Feeding on Future* report, underlining the major contribution of the agri-food system to food security and general sustainability in our country. I highly recommend you read it —if you haven't so far.

Presently, and under the strain caused by a pandemic whose aftermath will surely change the way how societies self-organise, the European Commission just published the «Farm to Fork» Strategy, one of the chief initiatives of the European Green Deal. Policies that materialise the Paris Agreement and the 2030 Agenda are not only indispensable to respond to climate change and social inequalities; they also signal the path for social and economic recovery after the COVID-19 crisis, so they must be fostered and, whenever possible, sped up.

Willing to be an active agent within the international community, the Ministry for Foreign Action, Institutional Relations and Transparency, jointly with the Public Diplomacy Council of Catalonia (Diplocat) and CADS, organised an international conference on sustainability and the food system which was held on 11 October 2019 and enjoyed as venue the Art Nouveau Hospital of Sant Pau³. Five experts from all over Europe were invited to the «Feeding on Future» event to share their reflections and recommendations as to how best transition to a more sustainable, just society.

Both because the initiative was well-received and because of the relevance of the scientists' speeches, I have the pleasure of presenting a rapport in writing of the five experts' papers. At this precise moment in time, when the world is mostly a coiled tangle, the chance to listen to expert voices intent on finding a way to uncoil it is more welcome than ever. It is only through the communal pull that Catalonia will be transformed and that the world will be made into a better, more livable place⁴.

2. Introduction and addresses from institutions

Teresa Jordà. Minister of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia

On 25 September 2018, the Government of Catalonia approved the National Plan for the 2030 Agenda, with the aim of establishing commitments to act in furtherance of the 17 SDGs. As you are no doubt aware, these goals include worldwide ending of hunger, achievement of food security, and promotion of sustainable agriculture for year 2030.

The agri-food industry in Catalonia, by volume of trade, accounts for 16.28% of GDP. Moreover, in recent years we have witnessed a shift in population away from rural areas and towards urban centres. It is for these reasons that we must jointly develop a new food policy for the country. To this end, the Catalan Food Council (CCA) has been created, which is already operational and busy generating discussion and proposals. These will be set out in a National Agreement on Food Policy. The Agreement will serve as an instrument for organising food policy, with the primary aim of lending dignity to the agri-food industry and underlining the fundamental role played out by the counties in relation to the metropolitan area.

The Ministry of Agriculture, Livestock, Fisheries and Food has set up the Food Channel tool, which serves as the information arm of the CCA and provides data on the characteristics of food products, the condition of the food production sector in Catalonia, and any other food-related matters at the Catalan level. Reducing food waste is also a key challenge: in fact, Catalonia has committed to halving food waste by 2020 as compared to 2010 measures. In this respect, the Catalan Parliament has recently started the drafting of the Food Waste Reduction Act, which will set up a regulatory framework for the development of measures to combat food waste over the coming years⁵. Additionally, the Ministry of Agriculture, Livestock, Fisheries and Food has unveiled the first Guide to Implementing a Plan to Prevent and Reduce Food Waste and Loss, aimed at companies in the agri-food industry. However, in order to tackle this problem, a clear definition of the terms 'waste' and 'loss' must be provided.

Improving the sustainability of the food system is an objective that will not only bring improvements to the environment and to public health, but also help stabilise population living in rural areas and thereby provide more support to the country's primary sector. As such, it will be beneficial for the Catalan economy and for society and the rural environment as a whole.

We must keep working towards an understanding of 'gastronomy' as an expression of identity and culture. We must also defend the pleasure that is to be gained from food and the right to enjoy it, but with a new sense of responsibility, with a focus on local consumption and taking into account the environmental balance and the defence of biodiversity while granting at the same time an ethical commitment on the part of producers.

Finally, please allow me to add that as well as covering basic nutritional needs, food is related to other factors that are vital to our well-being, such as pleasure, gratification, fulfilment, culture, social relationships and a commitment to the land. Consequently, the food system has a major impact on both individual and collective happiness. We must be aware of this and act accordingly. I hope you enjoy the conference.

Laura Foraster. Secretary General of the Public Diplomacy Council of Catalonia (Diplocat)

Diplocat is a public-private consortium that builds on the legacy of the Patronat Catalunya Món and the Patronat Català Pro Europa. Created in 1982, and comprising 38 members, its aim is to connect Catalonia to the world and facilitate the exchange of people, ideas and projects. The consortium is diverse, with representatives from Catalonia's main public institutions, all of the country's public and private universities, business schools and academic institutions, and organisations from the business, sports and social affairs fields.

Diplocat engages in public diplomacy in accordance with the motto of the Strategic Plan, which was approved in July 2019: «International dialogue: Connect. Project. Empower». A key ingredient of this approach to connection is the desire to enable Catalonia to participate fully in major global discussions speaking with its own voice and contributing its own experience and knowledge. In the past, other similar international conferences were organised on subjects such as populism and xenophobia, Jeremy Rifkin's so-called Third Industrial Revolution, refugees and immigration, and the role of municipalities in public diplomacy, among others.

We promote these discussions because a crucial component —if not the most important one— in public diplomacy is the ability to listen to the audience we wish to address. It's not rare that subsequently, an adaptation must follow in how we relate to the world so that as many influential stakeholders as possible can be reached.

Catalonia wishes to add value to shared problems and work jointly with other international actors to generate a narrative and a common strategy to tackle global challenges. This is why spaces such as this exist, where all interested parts can meet and debate together.

The issue at stake today is sustainable food systems. The aim is to enable leading European experts in the field of food security and sustainability to present their analyses regarding food systems, the challenges posed by the current context of falling natural resources and planetary global change, and the proposed actions to overcome the plight worldwide. This is and surely will continue to be one of the major issues on the global political agenda for decades to come.



Joan Vallvé. Member of the Advisory Council for Sustainable Development (CADS)

CADS was created in 1998, shortly after the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992 and commonly referred to as the 'Earth Summit'. Since then, under the presidencies of Pere Duran Farell, Gabriel Ferraté and Ferran Rodés, CADS and its members have carried out a great deal of vital work.

CADS's work-line is both independent and comprehensive, with a focus on moving the Government of Catalonia and the Catalan society as a whole forward along the relentless path towards sustainability. Since its creation, CADS has promoted the dialogue between civil society, the academic world and the public administrations, and has provided advice to Government in all areas relating to sustainability. Numerous reports on key subjects have been put forward, such as on energy transition, on several demographic challenges, water management, the protection of biodiversity, the circular economy and the management of the coastal and maritime environments.

CADS also takes part in international initiatives and since 2015 has been holding the presidency of the European Environment and Sustainable Development Advisory Council (EEAC), which brings together 14 Advisory Councils on the environment and sustainability from national and regional governments throughout Europe. Such network enables the exchange of knowledge and the organisation of strategic debates across Europe.

Today's conference is the result of CADS's long-standing reflection over how best to improve the sustainability of the food system, as materialised in the *Feeding on Future* report. The report analyses the main challenges facing the system of food production and consumption and presents a number of strategic proposals with a view to ensuring—in both the mid- and the long-term—a food supply that is healthy, nutritious and sufficient for all.

Among other factors, the report analyses the current panorama of the production sector, the international trading of food, the documented trend throughout the last decade towards ingesting more calories, more meat and more processed products, and the financial difficulties met by some people in terms of obtaining adequate nutrition.

In view of the present circumstances, the report highlights the need to:

- Maintain the production capacity of the food system
- Make progress towards more sustainable production methods
- Strengthen resilience to global change
- Promote healthier diets that are in line with the Mediterranean tradition
- Reduce food waste
- Work to ensure that everyone has access to sufficient quantity and quality food

In order to implement the proposals suggested in the report, the cross-dimensional nature of measures and the cross-sectoral connections between measures must be borne in mind. The food production and distribution systems condition consumption patterns and therefore condition health too. However, education can also be a conditioning factor over eating habits (and therefore over health), as well as over the generation and management of waste and the potential growth of agricultural professions. These all have a key role to play in ensuring the sustainability of our food system. Consequently, a systemic

vision and engagement on the part of all stakeholders is vital if we are to tackle these challenges. That is the reason why CADS proposes the creation of an integrated food strategy and to move forward in the drafting and approval of the National Agreement on Food Policy that is being discussed and drawn up by the Ministry of Agriculture, Livestock, Fisheries and Food.

In recent months many political and academic reports have stressed the need to change the food production and consumption patterns in order to achieve global sustainability. In this context, when Diplocat prompted CADS to jointly organise an international conference, both were clear that at such a time it would be mandatory to address the food system's sustainability. So, there you have it.

Alfred Bosch. Minister for Foreign Action, Institutional Relations and Transparency of the Government of Catalonia (2018-2020)

Since the 1990s, acute poverty has been progressively cut to half all across the globe. And yet still today 10% of the world population (over 700 million) are suffering from that fatality. Estimations are that by 2050, the global population will have grown to 10 billion (a rise by 30% when compared to current figures). If population stabilises at that and predictions hold out as to purchasing power for the lower classes in today's developing countries, the demand for food is estimated to rise by 60%.

In this context, effective and urgent action is needed in plenty of policy areas: territorial planning, education for producers and consumers, public health, eradication of poverty, ecosystems management, etc. However, it must be underlined that sustainability at large includes every issue somehow related to social justice and equity: the democratic quality of institutions, attaining full gender equality, achieving a balance of sorts between the rural and the urban worlds, and many other issues as listed in the 2030 Agenda. In this regard, I would like to insist that, though it may look all too apparent, there is a close connection in the love for one's own land to the love of the planet and to the love we each proffer to one another. Environmental sustainability is but one aspect of that greater sustainability of the species as manifest in our mutual respect and our sheer coexistence on the planet side by side.

The 2030 Agenda was approved by the UN in 2015 and it has taken some years for the regions to develop the laws materialising it. On 25 September 2019, the Government of Catalonia approved the National Plan for the Implementation of the 2030 Agenda, already under work during the previous term, including over 900 commitments distributed across ministries which must be complied with.

Many of those influence directly our purchasing and eating habits, since the 17 SDGs in the 2030 Agenda aim at the transformation of our food system. In that respect, the CADS *Feeding on Future* report underlying this conference made a point of stressing the system's cross-dimensional nature. The five experts here today will delve on this further, contributing proposals and recommendations to move forward toward healthier and more sustainable food production and consumption patterns.

I hope the conference will be both profitable and enjoyable to all attendees.

3. Speeches

> Introduction by the Chair

Arnau Queralt i Bassa. Director of the Advisory Council for Sustainable Development (CADS) and Chair of the European Environment and Sustainable Development Advisory Councils Network (EEAC Network).

You may wonder why, when organising this international conference on the food industry, we chose to call it «Feeding on Future». The title evokes the fact that what we eat today will affect our future development as people, and that the decisions made (or no longer made) today on agri-food issues (in areas ranging from the strictly agricultural all the way through to urban planning and education) will have an enormous impact on the lives of future generations.

The food system plays a key role in helping societies advance towards more sustainable models of development. Indeed, there is a growing awareness of this worldwide. Numerous studies place food production and consumption at the core of this transformation, along with energy, the economy, social equality and biodiversity.

The 2030 Agenda for Sustainable Development devotes one of its SDG (specifically, the second of those) to the food system, with the aim of «ending hunger, achieving food security and improved nutrition, and promoting sustainable agriculture». These SDGs and their targets in the 2030 Agenda are, in the UN's own words, «integrated and indivisible», and also include the commitment to reduce food waste (SDG 12), reduce mortality from non-communicable diseases (SDG 3), adopt urgent measures to combat climate change and its effects (SDG 13), and build alliances that will allow these challenges to be tackled jointly (SDG 17), to cite just a few.

We must therefore adopt a systemic approach to the food system and develop integration-oriented proposals. This is precisely what has been done by the experts taking part in this conference today and whom we have the pleasure of welcoming to Barcelona. They all belong to specialist teams that have analysed the food system in its entirety and collated their reflections and recommendations in reports that have been made public so far, and which I highly recommend you read.



Marta G. Rivera-Ferré is an author and member of the Intergovernmental Panel on Climate Change (IPCC) and today she will present her latest special report on land and food security; Krijn Poppe will present the thoughts of the European Commission FOOD 2030 Group of Experts on a sustainable and healthy food system for Europe; Alberto Garrido will be talking on the latest report by the European Academies Science Advisory Council (EASAC), which identifies the opportunities and challenges for research in the field of food security; Eeva Furman, co-author of the 2019 United Nations Global Sustainable Development Report, will share her conclusions regarding the transformative potential of sustainable diets; and last but not least, Peter Schmidt, President of the Sustainable Development Observatory at the European Economic and Social Committee (EESC), will show how civil society can help develop an integrated European food policy.

After their presentations there will follow an open discussion during which speakers will be on hand to answer any questions and queries from the audience. No doubt this will also be highly informative and enlightening.

Many thanks to all our guests for joining us and thanks also to everyone attending this conference. Together we can move towards a food system that is not only fairer and healthier, but which will also allow us to keep human development within the capacities of our planet.

> IPCC Special Report on Climate Change and Land (SRCCL)

Marta Rivera-Ferré. Head of the Chair in Agroecology and Food Systems for Social Transformation at the University of Vic (UVic) and lead author of the Rural Areas (fifth assessment report) and Food Security (SRCCL) chapters at the International Panel for Climate Change (IPCC).

Year 2019 witnessed the publication of *Climate Change and Land: an IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*. The International Panel for Climate Change (IPCC) has three working groups: Group 1, focusing on the biological and physical bases of climate change; Group 2, focusing on impacts, adaptation and vulnerability; and Group 3, focusing on emissions and mitigation. Every five to seven years, each group publishes a report with the aim of providing an update on their particular field in line with the latest information and accrued knowledge. From time to time, the IPCC also produces special reports on specific issues. During the current period, which corresponds to the sixth assessment report, special reports have been commissioned on three subjects: global warming of +1.5° C; land and food security; and the oceans and cryosphere under a changing climate.

Special reports are particularly important as they bring experts from the three groups together around a single theme. In the case of the report that concerns us today, the central theme is land. This approach makes it possible to study the issue at stake from an interdisciplinary perspective and conduct a joint analysis of the options for adaptation and mitigation, and in turn identify those most efficient (i. e. measures that will allow simultaneously mitigation of and adaptation to climate change).

The special report on land is of particular interest as, since 2014, with the publication of the fifth assessment report, experts in the management of forests, agriculture and the environment have highlighted the need to conduct a study on soil and food security as related to climate change. Since 2015, the agriculture and food industries have acquired even greater importance among the IPCC's fields of study. Additionally, for the first time in an international agreement (specifically, the Paris Agreement), food security emerged as a crucial issue. More than 7,000 publications were reviewed during the preparation of the report and over 28,000 comments were received, which the IPCC responded to entirely over the course of three external revision processes.

One of the report's main conclusions is that although the agricultural sector is a net emitter of greenhouse gases (GHG), adequate knowledge and good practices in soil management could make it into a carbon sink.

The transformations to be implemented with a view to achieving this cannot, however, be based solely on the natural sciences, agronomy and animal husbandry: they must also incorporate criteria related to social justice and equality in order to pave the way for sustainable production systems. Along with soil degradation and desertification, food security is a central issue in the report, in light of the fact that nearly 50% of the world's ice-free soil is used for food production. Consequently, when designing and developing strategies for the agri-food industry we must bear in mind that food production has a greater capacity than any other factor to influence soil erosion and degradation, given that 37% of ice-free soil is used for pasture and 12% for crops. Moreover, 25% of soil has been degraded by human activity, while 45% is located in arid regions that are home to some two billion inhabitants.

Additionally, in order to develop sound strategies that will help reduce emissions as well as generate potential adaptations to climate change, food security must be addressed not only from the perspective of production, but also seeing to the processing, transportation and storage of food. In other words, it must be addressed from the perspective of the food system as a whole.

The report states that at present, 50% of the global population is undernourished or is granted no food security. Some 815 million people go hungry every day, 700 million people suffer from obesity, and 2 billion have an insufficiently nutritious diet. At the same time, 1.9 billion people are overweight. The objective is to feed the entire population in a healthy way that is also —as highlighted for the first time in this report— environmentally sustainable.

The report studies the relationship between soil and climate change from two perspectives:

a) Emissions derived from the agricultural and food sector

Agriculture and land-use change account for 23% of GHG emissions. If we include the food industry in its entirety, counting in post-production processes and transportation, this figure rises to 37%. With regard to vegetable farming, certain crops that yield widely consumed products bring about a dramatic change in soil use (specifically deforestation) and therefore generate a large amount of emissions. Consequently, in every country, both individual consumption and consumption policies are determining factors for global agricultural emissions associated with deforestation. The report also highlights methane (CH₄) emissions, associated with rice-growing and ruminant production, and nitrous oxide (N₂O) emissions, mainly associated with the use of fertilisers.

Livestock farming has an extremely large impact in numerous ways. The report highlights that in many areas around the world (including Europe) overconsumption of protein of animal origin is common. A healthier and more sustainable diet would not mean giving up such protein, but it would require we consume it in moderation. Meat provides certain nutrients that are difficult to obtain from other sources, particularly vitamin B₁₂, and incorporating animals into the food production process is also necessary in order to ensure sustainable management of soil and land through extensive livestock farming. In any case, there clearly is a need to reduce the consumption of products of animal origin in certain regions of the world.

Intensive livestock farming generates a large amount of CO₂ emissions by changing the use of the soil to grow animal feed. It also generates N₂O through the use of the manure and fertilisers necessary for feed production. By way of example, oil palm and soy account for 3.8% of CO₂ emissions associated with livestock farming. Although the major changes in soil use due to soy cultivation take place chiefly in South America, in the current food system most of this soy is used to produce feed: this feed is then used

to produce meat that is sold around the world, including Catalonia. Food production for animal feed, mostly in the form of fodder, accounts for 41% of total emissions from livestock farming. Some 44% of emissions from livestock farming take the form of CH₄, mostly from ruminants.

In order to plan the transformation of the food sector we must understand how different types of GHG behave. CO₂ is the benchmark and has a global warming potential (GWP) of 1 and an atmospheric residence time of over 100 years. N₂O has a GWP of 265-298 and an atmospheric residence time of over 100 years. Of itself, CH₄ has an atmospheric residence time of just 10 years and a GWP of 28-36. It is the emission that is most closely linked to livestock farming, including extensive farming.

This is why the nutrition transition in the latest decades (i. e. rising consumption of meat, sugars and processed foods in the developed world and in urban areas around the globe) is greatly to the detriment of sustainability and food quality. The report contends that if Europe halved its consumption of meat, it would free up 23% of its soil for other uses and reduce GHG (mainly CH₄ and N₂O) by 30%. It also underlines that food waste and loss accounts for 8-10% of GHG emissions and emissions associated with post-production processes (chiefly transportation and storage), which account for 5-10%.

b) Impact of climate change on agriculture and the food industries

The report studies the effects of climate change on the four main aspects involved in food security: availability, access, use and stability.



Availability

This is the most closely related to production. The report states that, resulting from climate change, there has been a worldwide reduction in crop yields. Although there are some differences across regions and crops (rising cucumber yields have been recorded in the Czech Republic, for example), climate change has made growing conditions harsher on the whole, especially in the Mediterranean region.



Access

Price is all-determining and it often depends on climate-related factors in large production areas located in far-off regions. For example, increasing prices of wheat in 2008 caused by a drought in Russia led to dramatic instability in far-off countries and, what's more, to social upheaval (e. g. the Arab Spring). A major increase in the price of basic foodstuffs also served as the backdrop to the downfall of the government in Haiti.



Use

The report points out that food quality is associated with water quality, which allows food to be washed and cooked safely. In turn, water quality is greatly affected by the droughts and floods caused by climate change. Moreover, it has also been shown that the nutrient content of wheat diminishes with higher concentrations of CO₂. With specific regard to wheat, studies have spotted a reduction in the overall content of proteins and zinc, while similar physiological effects could also become a frequent feature in other agricultural products we consume. This would, in turn, affect our use of food.



Stability

I. e. maintaining the foregoing aspects over time.

In terms of measures and recommendations to best tackle the situation described, the report proposes a series of strategies and assesses how each of them would contribute to the processes of mitigation, adaptation, desertification, soil degradation and food security, with the aim of identifying which are the most efficient and which would have the most integrated, cross-cutting impact. The following have been chosen in accordance with the scientific literature, and are divided into three categories:

- **Options based on land use** (e. g. increasing agricultural diversification or productivity, reducing deforestation, reducing soil erosion and salinization).
- **Options based on the value chain** (e. g. introducing dietary changes, reducing food waste, improving energy efficiency within food systems).
- **Options based on risk management** (e. g. urban planning, diversification of lifestyles).

Having studied this series of proposals, the report concludes that the fittest strategies (i. e. those that address more than one challenge simultaneously, whether it be mitigation, adaptation, food security, degradation or desertification) are not mostly the ones based on technological innovation but the ones related to management, such as keeping organic material in the soil in order to prevent erosion. This would be one of the most beneficial measures, as it would remove CO₂ from the atmosphere while reducing evapotranspiration and the need for irrigation. As such, it would contribute to mitigation of and adaptation to climate change and at the same time boost food security and help to combat soil degradation. To implement this strategy, the traditional farming expertise of every region should be taken into account and be put to use in order to rework the current systems of production, thereby taking advantage of modern scientific knowledge without the need for major additional technological innovation.

Furthermore, these strategies stress the importance of diversity, in terms of both agrobiodiversity in relation to food production and diversity with regard to diet, gender, and the need to change the way in which food systems are governed.

In this respect, all of the strategies imply the participation of stakeholders from a variety of fields, and it is therefore vital that we develop programmes and policies that: a) involve and coordinate the public administrations at different levels, b) are multi-sectoral in nature, and c) involve not only the primary sector but also the public health and education sectors. Only thus can the necessary changes in the food production and distribution sector be made real.

A particularly important concept is that of food environment, which includes all of the factors that determine which food products people purchase (e. g. price, accessibility, etc.). Policies carry a great deal of weight in determining the nature of the food environment, and therefore have a major impact modeling consumption habits within society. As a result, certain institutions can make a strong and positive impact on food security and climate change. The example of the so-called ‘food deserts’ is evidence that the policies that regulate the food industry play a key role in determining the nature of the food environment. Food deserts are very common in the United States and consist of whole neighbourhoods (the vast majority located in poorer areas) where it is almost impossible to find establishments selling fresh produce and, conversely, much easier to find fast-food establishments such as McDonald’s. What’s more, the few fresh products available are often more expensive than the hamburgers. As a result, people with fewer resources are unable to access healthy, high-quality food and are left with inadequate diets. In turn, these are the people suffering most from the obesity pandemic.

» Main conclusions and recommendations

- Although the agricultural sector is a net emitter of GHG, adequate soil management practices could make it into a carbon sink.
- Around 50% of the world’s ice-free soil is used for food production (37% for pasture and animal feed, and 12% for crops): consequently, food production practices have the greatest capacity to make an impact on soil erosion and degradation.

- At present, 50% of the global population is undernourished or is granted no food security. Some 815 million people go hungry every day, 1.9 billion people are overweight (of which 700 million are obese), and 2 billion people have an insufficiently nutritious diet.
- Agriculture and land-use change account for 23% of GHG emissions. If we include the food industry in its entirety, counting in post-production processes and transportation, this figure rises to 37%.
- A healthier and more sustainable diet does not mean giving up meat: rather, it means consuming meat in moderation, in light of both its nutritional contribution to our diet and the fact that extensive livestock farming is necessary for the sustainable management of soil and land.
- Intensive livestock farming generates a large amount of CO₂ emissions by changing the use of the soil to grow animal feed. It also generates N₂O as through the use of the manure and fertilisers necessary for feed production. Additionally, the production of this feed accounts for more than 40% of the total emissions from livestock farming. Some 44% of emissions from livestock farming take the form of CH₄, mostly from ruminants.
- In order to plan the transformation of the food industries we need to understand how different types of GHG behave. CO₂ is the benchmark and has a global warming potential (GWP) of 1 and an atmospheric residence time of over 100 years. N₂O has a GWP of almost 300 and an atmospheric residence time of over 100 years. On itself, CH₄ has an atmospheric residence time of just 10 years and a GWP of 28-36. It is the emission that is most closely linked to livestock farming, including extensive farming.
- If Europe halved its consumption of meat, it would free up 23% of its soil for other uses and reduce GHG (mainly CH₄ and N₂O) by 30%.
- It is therefore vital to develop programmes and policies that: a) involve and coordinate the public administrations at different levels, b) are multi-sectoral in nature, and c) involve not only the primary sector but also the public health and education sectors. Only thus can the necessary changes in the food production and distribution industries be made real, thereby creating a food environment that promotes a healthy and sustainable diet and healthy, sustainable food consumption habits.

➤ Recipe for Change: an Agenda for a Climate-Smart and Healthy Food System for Europe

Krijn Poppe. Chair of the European Commission FOOD 2030 Group of Experts and Member of the Dutch Council for the Environment and Infrastructure (Rli).

The report *Recipe for Change: an Agenda for a Climate-Smart and Sustainable Food System for a Healthy Europe* was written by the FOOD 2030 Group of Experts, which consists of 12 independent experts invited by the Directorate-General of Research and Innovation at the European Commission. The mission of this Group of Experts was to assess the work done in recent years and explore future orientations for the new Horizon Programme, consecutive to the current Horizon 2020, on research and innovation regarding the food sector.

The food system is a complex network that involves producers, consumers, processing and transport industries, policy-makers and other agents. At the global level, the weakest actors of this system are farmers and consumers. On the one hand, farmers face the facts that technological development and economic globalisation have caused dramatic structural changes in the sector (the average size of farms

is ever-increasing) and that food production has environmental costs that need to be internalized. On the other hand, at the consumer end, several public health issues have come to the front, such as obesity or diabetes, and so has the need to introduce changes to the diet in order to alleviate climate change and other environmental impacts of the current food production system.

Is it a coincidence that the weakest actors in the system are the ones that bear the most strain? The Expert Group concludes that the current food system lacks transformative capacity to bring the system to a more sustainable situation. There is a strong economic competition between the different agents, and the smaller ones cannot afford risky innovations. The Group calls upon the European Parliament and the European Commission to invest in the transformation of the food system because it will have, in due time, a large return on investment itself.

Farmers are caught between the food processing sector and the input industries (fertiliser providers and other suppliers). In food production practices, circular principles must be applied (waste reduction, resource efficiency, closing the phosphorus cycle). Animal products should be reduced (in particular, the pig and the poultry sectors must be made more sustainable), and plant-based products should be promoted in order to improve soil management, increase biodiversity and reduce the use of chemicals.

Consumers are massively influenced and nudged by the retail and food processing sectors. Although consumers may appear free to buy whatever products they choose, their decisions are heavily dependent on what is offered on the shops and how so. The health sector is increasingly affecting consumer decisions as the impacts of the diet on health are better understood by the general public. Finally, consumer behaviour is also affected by the increase of population living in cities, where factors such as the design of public spaces and commercial areas or the presence of markets have a large impact on the diet. Therefore, the consumer side of the system would benefit from peri-urban multifunctional farms, shorter supply chains and healthier consuming environments.

To address these needs, the *Recipe for Change* report suggests three mission-type approaches. Missions reflect a societal agenda toward a goal and they should generally fulfil the following criteria:

- Bold and inspirational ideas with a high societal relevance
- Clear direction and time-bound targets
- Ambitious but realistic actions
- Cross-disciplinary, cross-sectorial and cross-actor innovation
- Multiple bottom-up solutions

Ultimately, missions are political decisions and they do not prescribe a specific technology or solution (precision agriculture is very useful but it is not a mission).

The three missions proposed to break down the challenge of a climate-smart, healthy food system for Europe contain 17 focus areas:

Mission A:

Improve dietary patterns and lifestyles for a 50% reduction in the incidence of non-communicable diseases by 2030 and at the same time reduce the environmental impact of food consumption. This mission involves several agents (retail and trade, food industries, cities, health sector, consumers and scientists) and it includes five areas of cross-sector, bottom-up programmes:

1. Halting obesity
2. Healthy ageing
3. Sustainable food
4. Improved food processing
5. Personalised nutrition

Mission B:

Create a resource-smart food system with 50% lower GHG emissions by 2030. This does not only involve technology and management at the production level, but also requires consumers to buy different products. The mission involves again a diversity of agents (farming, fishing, input industry, food processors, regional authorities, NGOs, scientists and consumers) and proposes seven additional intervention areas:

6. Territorial systems
7. Diversified systems (reduction of the size of fields and monoculture)
8. Low-impact animal systems
9. Smart soil use (especially in relation to water use)
10. Reduce the impact of packaging (food security, plastic waste, etc.)
11. Double aquatic production
12. Reduce food waste and losses by 50%

Mission C:

Bring trust and inclusive governance really into the picture for a resilient food system. As highlighted in the previous presentation, developing a stable, safe food system involves social innovation and governance on top of technical issues. An additional five specific work-lines are put forward, although this mission is very much dependent on how the food system is organised:

13. Increase consumer trust
14. Upgrade innovation capability
15. Strengthen the role of citizens
16. Link cities and remote areas (since most votes and tax income come from cities, governments often tend to invest more in urban areas, which results in rural areas lagging behind in terms of services and economic opportunities)
17. Improve international cooperation

Finally, the report provides a set of recommendations to the European Union, the European Commission and all regional and local stakeholders. Member states and regions are encouraged to develop their own mission-driven programmes, select among the 17 topics the areas requiring the most urgent attention in their regions and heed on them toward the grand challenge. Likewise, the report makes recommendations for companies (in food processing, retail, input industries, ICT, health, and finance sectors), farmers, SMEs and start-ups in the food system, citizens, civil society and NGOs.

» Conclusions and main recommendations

- The food system is a complex network that involves producers, consumers, processing and transport industries, policy-makers and other agents. At the global level, the weakest actors of this system are farmers and consumers.

- The current food system lacks transformative capacity to bring the system to a more sustainable situation. In the strong economic competition between the different actors, the smaller agents cannot afford risky innovations.
- The primary challenge for the EU is the development of a climate-smart, healthy and sustainable food system. Toward that goal, the report puts forward three missions with 17 focus areas.
- Member states and regions are encouraged to develop their own mission-driven programmes, select among the 17 topics the areas that are a priority in their regions, and implement them to advance toward the grand challenge common to us all.

> Opportunities and Challenges for Research on Food and Nutrition Security and Agriculture in Europe

Alberto Garrido. Chair in Agricultural Policy and Economy, Vice-President for Quality and Efficiency at the Polytechnic University of Madrid (UPM for its initials in Spanish) and Member of the Working Group on Food and Nutrition Security and Agriculture at the European Academies Science Advisory Council (EASAC).

The report *Opportunities and Challenges for Research on Food and Nutrition Security and Agriculture in Europe* was published in 2017 by the EASAC within the framework of an international project launched by the Inter-Academy Partnership (IAP), a consortium of science academies from all over the world.

At least two published reports presented at this conference tackle similar questions to those explored by the EASAC, and they all reach similar conclusions. One of the fundamental premises they all share is the impossibility of tackling the issue of food security fragmentarily. We are faced with a complex, multi-sectoral system that has deep interdependencies, and it must be treated as such.

The EASAC report sets out six specific challenges:



1. Demographic transformation

There is a consensus among demographers that the population will stabilise at around 11 billion inhabitants by year 2100. Changes are also expected with regard to individual income: although 60% of the global population currently live on less than eight dollars per day, by 2040 experts predict that 60% of the population will have risen above that threshold. These developments mean that the nutritional options of a large part of the population are likely to change, and that demand for food will gradually increase.



2. There are at large three types of food-related problems: malnutrition and hunger, dietary inadequacies, and obesity and overweight

Although 20% of EU citizens report they cannot afford meat, fish or their vegetarian equivalent every other day, obesity rates for males and females continue to rise in all member states. Interestingly, for females there is a correlation between overweight and educational background: as level of education rises, overweight decreases. However, there is no such correlation for males. Although we know the causes for obesity, we do not know how to address or combat them. Paradoxically, hunger and malnutrition exist in our society alongside obesity and overweight.



3. Transformation of food systems

Setting the price of basic products and developing sales strategies are extremely complex and dynamic processes. The research conducted into the markets and the economy always lags behind the innovations triggered by the distribution companies. Under the current system, although consumers have a great deal of freedom and choice regarding the products they buy, the large intermediaries have the greatest amount of influence over which products are offered at the stores and particularly over pricing. We know today that they model the desires and habits of consumers, and not always to the consumers' benefit in terms of health or the health of their children and charges.



4. Competition for land and water

Agriculture takes up 40% of the land and 70% of the water consumed by humans, while we derive just 2% of our calories and 15% of our protein from the sea. It should also be noted that 80% of the world's waste water is returned to surface water bodies without being treated, which means that, worldwide, there are 1.8 billion people whose only sources of water are contaminated with faecal bacteria. In the EU, estimations indicate that by 2027 95% of surface water bodies will be in a good ecological and chemical condition. However, this will only have been achieved after three decades of sustained effort, following the approval of the Water Framework Directive in 2000. Reflecting on this brings home the sheer magnitude of the challenge of cleaning up the world's surface water bodies, including those in countries without the capacity to make major investments in environment and public health issues. Pollution and exhaustion of rivers and other water bodies is a global threat, made even worse by climate change and inadequate public policies.



5. GHG emissions and agricultural energy needs

Some 60% of GHG emissions generated by agriculture are directly or indirectly related to livestock farming, although methane emissions by rice-growing should not be overlooked. Reversing this situation poses a major challenge. Consumption of animal protein is difficult to replace in the short term, and it is by no means clear that animal protein substitution is altogether desirable. The global production system demands a great amount of energy and generates 14% of GHG emissions. Systemic transformations are required in order to reduce both of these, and the three reports presented at this conference draw the same conclusions in terms of focus and approach.



6. Globalisation and instability of food markets

Environmentally speaking and food quality-wise, it would be preferable for everyone to consume food produced locally. However, in today's world, it is global trade that ensures the provision of food for most of humanity, and this trend continues to consolidate. In economic terms, the volume of agricultural exports around the world doubled between 2005 and 2017, and figures are ever-increasing. We should not underestimate this, so we must regulate the international market adequately in order to lower the risk for the most vulnerable and prevent speculation, which causes extreme volatility in the markets.

Global data says this much: throughout the world, everything that is consumed has been produced at an earlier stage, and everything that has been produced is later consumed. For example, over the last 20 years the production of corn has increased on the whole, as has the demand; however, in some specific years the production outweighed the demand and the produce was stored for the following year, during which production continued high or outdid the mark of the previous year. Ultimately, it is difficult to ascertain whether the production was adjusted to meet the demand, or whether the demand was adjusted to meet the rising production. The French presidency of the G7 saw to the creation of a price-monitoring system with the aim of preventing extreme price rises such as those

occurred in 2008, known as the [Agricultural Market Information System \(AMIS\)](#) and managed by the FAO. Since 2012 there has been a downward-trend and stagnation in the price of widely used agricultural products such as cereals, and it is uncertain whether episodes of price volatility —such as those of a decade ago— will recur in time.

The EASAC report presents a series of conclusions and recommendations:

- A food system is needed that guarantees access to a diet that is healthy and environmentally sustainable for all. That said, access by itself does not necessarily mean to leave with the consumer the responsibility to acquire the goods that make such a diet possible. We must fight counter-productive incentives and clarify the meaning of the terms *sustainable diet* and *sustainable production*, explore the individual response to diet and bridge the contradictions between the recommendations of COP21 regarding meat production and the general recommendations as to healthy nutrition.
- We must conduct deeper research into the connections between food, water and other ecosystem services, and we must make use of bioengineering to design systems with a higher photosynthetic capacity. For example, steps are being taken —and not necessarily via genetic engineering— to enable certain C3 plants (such as corn and sugar cane) to work like C4 plants, thereby making their photosynthesis more efficient. These improvements have an extraordinary potential to produce more nutrients with fewer resources.
- It is also vital that we quantify the soil's capacity to retain carbon so it thus becomes a sink for GHG, and that we develop soil cultivation and preservation strategies that boost this capacity.
- Consumers must be informed through labelling of the ecological footprint (in terms of carbon and water) of the goods they purchase and of their own consumption habits. However, the major companies are reluctant to this practice: they would prefer to underline improvements made so far rather than any negative impacts that cannot as yet be prevented.
- Reduce food waste. Although we have an increasingly better understanding of the ways in which food is wasted or lost, both in the homes and along the value chain there is still room for improvement in this respect.

The report also makes a number of observations regarding necessary changes to the Common Agricultural Policy (CAP):

- a)** Some 57% of Europe's farmers are over 55, and since 2005 the trend has been for the number of farms to diminish and for the average size of farms to grow. This is largely due to the higher incomes available in urban areas, where salaries are higher and more stable: as a result, cities are absorbing the rural population. Taking into account the trend in the number of farms in the EU over recent years, while this conference has been taking place approximately 100 farmers have closed their businesses and ceased to grow crops or raise livestock. We are not clear which is the most desirable or affordable type of agriculture for the EU, but one thing is for sure: farms will continue to close over the coming years.
- b)** The EU agricultural direct payment system is inefficient, unfair, not necessarily sustainable, and needs to be reformed. The greening the CAP initiative of years 2014-2020 has not worked out as expected.

A new CAP must rise to the challenge of granting food security, ensuring sound protection for the environment and promoting the type of innovation that is required.



To wrap up, I would like to make a personal observation that is not included in the report: it is vital that we place particular emphasis on childhood education and know how to identify wrong or confusing messages relating to pseudo-scientific information which nowadays spreads far and fast via the media and the Internet. The majority of this misinformation has no real basis or lacks nuance; an example is the growing urban bias against agriculture.

» Main conclusions and recommendations

- Ensuring access to a healthy and environmentally sustainable diet for all does not guarantee that consumers will choose to acquire the products that make such a diet possible. We must fight counter-productive incentives and bridge the contradictions between the recommendations of COP21 regarding meat production and the general recommendations as to healthy nutrition.
- We must continue to research the connections between food, water and other ecosystem services, and (in particular) we must make use of bioengineering to design systems that are more efficient through a higher photosynthetic capacity if we do not wish to exhaust more land and encroach upon the planet's natural spaces.
- Consumers must be informed through labelling of the ecological footprint (in terms of carbon and water) of the products they purchase, despite the reluctance of the large companies producing and processing foodstuffs.
- The CAP must be changed in order to combat two trends that are particularly worrying for the sustainability of the food system: the ageing demography of farmers (57% of whom are over 55), and the falling numbers of farms, whose average size is ever-increasing.
- A new CAP must rise to the challenge of granting food security, ensuring sound protection for the environment and promoting the type of innovation that is required.

➤ Policies, Practices and the Transformative Potential of Sustainable Diets

Eeva Furman. Director of the Environmental Policy Centre at the Finnish Environment Institute and Chair of Finland's Sustainable Development Expert Panel.

An interesting aspect of the historical period in which we are living is how we refer to the relationship between the social system, with its soon 9 billion people across the world, and the natural system, with its diminishing resources. This presentation summarizes the experience of the Finnish Expert Group on Sustainable Development, and is divided in four sections.

1. Sustainability and its driving forces

The past decade has known some success in eradicating hunger, and so prosperity has been increasing in all regions over the world. However, this increased wealth is rarely distributed in equitable ways, and it tends to land on a specific elite in every country. In many areas, the role of food has changed: from a source of nutrition to a source of pleasure and a sign of status.

Undoing the globalisation of the food system is difficult because it has happened so fast in the last 20 years that the rules of the game have not been set, and both producers and consumers are very sensitive to international trade disruptions. Because of its rapid, poorly understood and unsupervised development, the globalised food system has dramatic environmental impacts. Humans and their domesticated animals are nowadays 97% of the world's vertebrate species, vertebrate wildlife being about 3%. Before the advent of agriculture, thousands of years ago, vertebrate wildlife was over 99% of the biomass of the world's vertebrate species.

The industrialisation of food production brought about increased well-being to some people, but it also contributed rising inequalities, biodiversity loss, higher contribution to climate change and a growing amount of waste. Addressing social inequalities is not only a matter of ethics, but rather a sustainability issue, given that economies with poor wealth-distribution mechanisms are not sustainable in the long term, as several authors have pointed out in recent years.

2. Transformation and how to use interactions

The United Nations has agreed on a sustainable development agenda for a just and safe world: the 2030 Agenda for Sustainable Development.

It is important to realise that if the aim is environmental sustainability, social equity is a prerequisite, and conversely, achieving social equity requires working for environmental sustainability. The interactions between these two fields need to be well understood so that potential problems may be foreseen. In some instances, win-win solutions are not possible, and understanding win-lose situations in advance may allow for a better implementation of changes in the food system through taking all stakeholders into account.

The world is something that we all need to build together. We are all causing the problems together, and therefore we need everyone to climb on board to find new ways to organise our lives and societies. However, there are different types of agendas toward sustainable development. It must be recognised that there may be different losers depending on the chosen alternative (they may be the elite or other groups), and this causes increasing friction in the path toward sustainability. Therefore, actions must be taken without delay, but most importantly, they must be taken in a just way.

The United Nations promoted the scientific report *The Future is Now!*, published in 2019, of which the speaker was a co-author. This report concludes, as other speakers have highlighted from their own work

fields, that systemic approaches are needed rather than strategies focusing on individual problems from a single area of expertise. Specifically, the report suggests six key areas of transformation:

- Human well-being and capabilities
- Sustainable and just economies, including production and consumption
- Sustainable food systems and healthy nutrition
- Energy decarbonisation with universal access
- Sustainable urban and peri-urban development
- Securing global environmental commons

Although food and nutrition are listed as the third point, all six items above are somehow connected to the food system.

To address any of these areas, the role of four levers is needed:

- Governance
- Economy and finance
- Individual and collective action
- Science and technology

The responsibility to find and implement measures toward sustainability does not belong mainly to any of these actors, but to all of them equally. Context-dependent combinations of these levers create integrative pathways to transformation.

3. Approaches to transformation toward sustainable diets

There are two axes that need to be transformed, both of which have opposing poles that influence each other, and they must be transformed simultaneously: the Production - Consumption axis, and the Behavioural change - Systems change axis.

Meat over-consumption is a real issue both environmentally and in terms of recommended diets. Strategies such as nudging can be used to modify behaviour and consumption; for example, placing healthy food in more attractive, visible places at supermarkets can bias choice toward the products to be promoted. However, nudging has proved unable to affect routines if the person is placed in a different situation.

Experimenting together will be another necessary approach where the person is part of innovating new routines to his or her food behaviour. A compromise must be found between the introduction of improvements and pragmatism, and all actors involved must participate in building the solution. Some solutions may be found after tinkering with a problem, by trying out small changes and fine-tuning according to the feedback obtained from all those involved.

Finally, system transformation must be observable through facts. Developing new products and campaigns, as well as normative and economic mechanisms, may help to introduce important changes. The ideal combinations of actions must be assessed considering that they should be effective and feasible and that they may have positive or deleterious effects on various aspects of the food system (for example, some changes may not be especially beneficial to the environment but they are fundamental in terms of human health).

4. Cases on making a change

In Finland, school dining-rooms are very important to society and the government grants free warm meals to all schoolchildren for nine years. These public-sponsored meals must be nutritionally balanced and also environmentally friendly, posing a challenge to school kitchens because recipes with more vegetables and less meat are in general less attractive to children. The children as well as the catering services were brought into a research project to innovate tasty vegetarian meals which were also healthy and within the available budget of schools.

To investigate ways to achieve a diet that can be considered desirable both nutritionally and environmentally, a diet-modifying project was developed at the cafeteria of the speaker's Institute with the aim of reducing the CO₂ footprint of the food choices of workers at this environmental research institution. Initially, some of the dishes daily available were labelled as 'environmentally friendly', and vegetarian options were placed as first and more visible choices. Very little improvement was observed this way. Subsequent exchange of opinions among the groups involved (canteen users, cooks and researchers) revealed that male users were demotivated by light vegetable soups and needed adequate alternatives to meat. The introduction of Finnish fish and more consistent vegan dishes resulted in a gradual reduction of the CO₂ footprint of the average diet at the institute's canteen over the following years. A long-term commitment with sustainability was crucial to achieve these improvements, both for kitchen workers and canteen users. This experience provides an example in which nudging was initially insufficient, and subsequent tinkering with the problem led to other solutions that had not been earlier considered.

The Nature-Step project is an undergoing initiative conducted at nine pre-primary education schools aiming at improving health through contact with nature, for instance by planting, harvesting and eating fruits and vegetables, participating in outdoor activities or playing with soil and water streams. This project unites the principles of quality nutrition, exposure to healthy microbes and sustainability of our way of living.

Finally, the goals of the Just Food project are understanding the impacts that transforming the food system has on social justice and producing knowledge to effectively transition to a more environmentally friendly food system in a just way. This Finnish research project started recently and it involves ministries, producers, food processors and distributors, and consumers. While no results are yet available, it is working very well and, expectedly, identifying and solving problems of social justice is likely to ease considerably the implementation of environmental sustainability measures.

This presentation ends with three take-home tips: use levers as a combination; remember that the food system is a part of social systems as a whole and inequalities have to be looked all the way through to be able to manage trade-offs; and be creative and come up with something exciting and new.

» Conclusions and main recommendations

- To reach environmental sustainability, social equity will be required and conversely, achieving social equity requires environmental sustainability. The interactions between these two fields need to be well understood when addressing the transformation of the food system to reveal trade-offs and co-benefits.
- There are different types of agendas toward sustainable development, which may have different potential outcomes in terms of winners and losers. This causes increasing friction in the path toward sustainability, underscoring the importance of social justice.
- Six key areas of transformation can be defined (human well-being, sustainable and just economies, sustainable and healthy nutrition, energy decarbonisation, sustainable urban and peri-urban

development, and securing global environmental commons), and four levers are required to introduce changes in these areas (governance, economy and finance, individual and collective action, and science and technology). Context-dependent combinations of these levers create integrative pathways to transformation. These four levers must be used in an integrated way and tailored to each country or region.

- There are two axes that need to be transformed, each with opposing poles, that must be transformed simultaneously: the Production - Consumption axis, and the Behavioural change - Systems change axis.
- Some solutions may be found after tinkering with a problem by trying out small changes and fine-tuning according to the results obtained.

> Civil Society's Contribution to the Development of a Comprehensive Food Policy in the EU

Peter Schmidt. President of the Sustainable Development Observatory at the European Economic and Social Committee (EESC).

When listening to the analyses and proposals that have been highlighted at today's conference one concludes that we know almost everything and that we need to change the system. When we talk about sustainable development itself and sustainable food systems, we know that we have to change. But the question is whether these are recent realisations, or rather whether most of these ideas were already present in old reports by the UN and other sound international agents. Is the whole topic of sustainability that complex that we are still in the phase of getting the crack of it? No, it is all about interests, it is not that we do not know what needs to be done.

The market is often presented as the reason why wages cannot be raised or the farmers' working conditions improved, but is this attribution of cause correct? Addressing the issue of farmers' and food workers' income is crucial, because many of the smaller producers most affected by economic competition have been family businesses for generations and it is a sizable body of knowledge and understanding that could be lost. So it would be more accurate to state that the market can generate enough wealth to afford adequate wages to all stakeholders, only wealth is not properly distributed.

The competitive model is at the root of the problem. On the one hand, it is well known that farmers have difficulties obtaining enough money in exchange for their products. The Common Agricultural Policy (CAP) spends approximately 60 billion euro per year to mitigate this situation, but facts indicate that the measure is not fit for the purpose. On the other hand, when considering the entire supply chain, there are food processors involved plus the retail and transport sectors, most of which are dependent on large multinationals. The profits of these transnational corporations that mediate the food trade are around 20% of the turnover of total sales, and even smaller companies have benefits close to 15% or higher. Consequently, these companies have an amazing bargaining capacity. For example, in Germany there are four large retailers that control 90% of the food products on the market, determining the prices and how the products are arranged on store shelves. Therefore, these companies are highly responsible for the products that are made available to consumers. Addressing this problem is crucial to attain sustainability of the food system and as long as we do not solve the distribution system in the food supply chain there's no success to be obtained. There follow some proposals toward that goal:

We must address this to the policy-makers, but achieving so is particularly difficult. The EESC has access to the European Commission because it is a consultative body made up of three groups



(employers, trade unions, and ‘Diversity Europe’) (sic) who have the chance to step in along the policy-making process. But, according to the Transparency Register, 75% of the contacts of the Commission have to do with business, while only 25% of contacts are for all other organisations (agriculture, trade unionists, NGOs, health agencies, etc.). This is why the political framework of Europe is said to be based on business and competition. To a certain extent that is misleading and creates contradictions. Consumers are expected to buy local and organic and reduce waste, and many citizens are starting to do that, as shown by several indicators. However, if this is attempted at a community level (municipalities or regions), it is made impossible by competition laws. For most economic activities, tenders must be organised, with all kinds of companies from all over Europe entitled to enter; yet the system cannot be transformed. That is why, though most school kitchens need apples, it is rarely possible for schoolchildren to consume apples grown close by. More often, the laws of offer and demand of the competitive model will make apples from a distant country more economically competitive. This is not due to inevitable bureaucracy, but rather to a system built to keep the pressure restricted to farmers and workers. So as long as we do not bring the pressure onto policy-makers or out onto the streets, the system will remain just its old self.

At the moment, the demands for change from the younger generations are likely to be the main driver for transformation, rather than NGOs, trade unions or environmental agencies from public administrations. Social justice issues in the food system underlie multiple revolts and demonstrations, such as the Yellow Vest movement in France, in which the rise of fuel price was just the tipping point that sparked the protests. The EESC has produced a wide variety of opinions (such as [«Civil society's contribution to the development of a Comprehensive Food Policy in Europe»](#) or [«Promoting healthy and sustainable diets»](#) to provide an orientation both for producers and processors) based on science, which afford clear conclusions and recommendations about sustainability issues of the food system. Even business representatives agree to what these reports suggest. Therefore, we are now beyond the phase of describing and analysing the situation. Immediate action is needed and the pressure from

the youth must prompt all stakeholders to work together and focus on this just transformation toward a sustainable food system.

The fact that policy, rather than total wealth, is the reason why small producers are driven out of the game can be understood through another example. Compared to the speaker's own memories from the 1960s and 70s in his native region in Germany, all public services such as schools, hospitals and police stations are nowadays more centralized in larger towns and cities. This is usually explained by arguing that there is not enough money to maintain a decentralized network. However, European countries are nowadays generating more wealth than ever in history. Where does the money go to? States have transferred many of their responsibilities to the private sector, and plenty of the large multinationals that are obtaining massive profits do not even pay taxes in the countries where they are trading. This issue must inevitably be addressed if a just transition toward sustainability is to be implemented.

In addition to its impact on economic inequalities, the competitive model has also led to a dramatic loss of variety on food. For instance, a few types of tomato cultivars, most convenient to the economic system, have replaced the great multiplicity of tomato strains, with different shapes and colours, that used to be produced in Mediterranean countries.

What can be done to effectively transition to a more sustainable and just system? The EESC has suggested several solutions:

- Food Policy Councils should be created at European, member-state and regional levels; EU policy-makers are crucial because most issues regarding food and economic competitiveness are ultimately dependent on EU laws. The European Commission is now producing the working programme for the next five years and, therefore, there currently opens up an opportunity window to implement some changes. All concerned citizens, professionals and politicians should raise these issues to EU officials from their institutions and demand some change.
- A Vice-Presidency devoted to Food should be created to work on comprehensive food policy.
- Establish an expert group for the development of Sustainable Dietary Guidelines that consider all the cultural differences involved in nutrition. The right way to produce sustainable food must be tailored to regions as to maintain the variety of food cultures that Europe enjoys today.
- Fostering the contact between consumers and producers may be a useful approach, as experiences in Paris and Copenhagen have shown. For example, technology nowadays enables a direct relationship between an orange orchard owner in the Mediterranean and a consumer from northern Europe, who commits to buying the entire production of one specific tree. The latter gets the product when it is ripe and pays for it the price that oranges cost at the store, while the former receives a much better reward because there are no food-chain distributors involved in the transaction.

» Conclusions and main recommendations

- The market can generate enough wealth to distribute adequate wages and economic reward to all stakeholders in the food system; however, wealth is not properly distributed due to the working competitive model.
- The system appears to be designed to keep the burden of economic competitiveness and environmental sustainability solely on farmers and workers. Pressure must be brought onto policy-makers and out on the streets to force the system to change.

- Most issues regarding food and economic competitiveness are ultimately dependent on EU laws.
- We are now beyond the phase of describing and analysing the situation. Immediate action is needed and the pressure must prompt all stakeholders to work together and focus on this just transformation toward a sustainable food system.
- Fostering contact between consumers and producers may be a useful approach to reduce the amount of intermediate food-chain distributors.

4. Closing remarks

Carmel Mòdol. Director General of Food, Quality and the Agri-Food Industries at the Ministry of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia

At the root of the food system there is one big issue on which Mr. Schmidt just elaborated and which triggered some final debate today: the food system is a matter of public interest. That is precisely why it cannot be left solely at the hands of the big corporations, since their interests do not generally lie with sustainability, health or food supply but rather with benefits and trading exploitation. We confront the difficult bind that, despite the crucial contribution of the food systems and of reasonable patterns of land exploitation to the public's general well-being, smaller farms are mostly unviable on account of the laws of offer and demand. Under the current food system, such laws are shifted so that the big distributors end up controlling the price at the source, given that most producers are pressed to sell out because their fresh produce is perishable and highly vulnerable to the passage of time. Yet the big distributors have the upper hand in that they buy only if they wish to.

Reversing this imbalance in the food chain will only be possible through legislation. This explains the high expectations from EU policies, without which legislation lacks direction. Catalonia is trying out a new model in which all stakeholders are granted a say (producers, researchers, processors, traders, consumers, restaurateurs, etc.) by means of the new approach afforded by the Catalan Strategic Food Plan (PEAC for its initials in Catalan). This has been thought out to offer policy orientation as well as to confer a democratic avenue for bottom-up technical participation. The Ministry of Agriculture, Livestock, Fisheries and Food has even been considering the possibility of submitting a ground-breaking Bill on food policy which, even if rejected under EU law during Parliamentary proceedings, might sparkle international debate or drive to political action in other regions.

Events like this conference today build on intellectual prowess and are treasurable in that they assemble common interests and a shared readiness to action. The conference managed to couple the scientific approach with a determined purpose to make a better world and the acknowledgment that it is our ever-decreasing resources what makes us most efficient in our joint struggle.

Many thanks to all attendees.



Annexe 1. Program

FEEDING ON FUTURE

International Conference on Sustainable Food Systems

Barcelona, 11 October 2019

Sant Pau Art Nouveau Site. Pau Gil Room – C/ de St. Antoni Maria Claret, 167, Barcelona

PROGRAM

#SustainableFood #MengemFutur

- 9.30h **Welcome & opening remarks**
- **Ms Teresa Jordà**, Minister of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia.
 - **Ms Laura Foraster**, Secretary General of the Public Diplomacy Council of Catalonia.
 - **Mr Joan Vallvé**, member of the Advisory Council for Sustainable Development.
 - **Mr Alfred Bosch**, Minister for Foreign Action, Institutional Relations and Transparency of the Government of Catalonia.
- 10.00h **Climate change and land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems**
- **Professor Marta G. Rivera-Ferré**. Director of the Chair on Agroecology and Food Systems for social transformation at the University of Vic and lead author of Rural Areas (AR5) and Food security (SRCCL) chapters of the IPCC.
- Recipe for change: an agenda for a climate smart and sustainable food system for a healthy Europe**
- **Dr KJ (Krijn) Poppe**. Chair of the Independent EC FOOD 2030 Expert Group and Member of the Dutch Council for the Environment and Infrastructure (Rli).
- 11.00h **Break**
- 11.30h **Opportunities and Challenges for Research on Food and Nutrition Security and Agriculture in Europe**
- **Dr Alberto Garrido**. Professor of Agricultural Economics and Policy, Vice-Rector for Quality and Efficiency at the Universidad Politécnica de Madrid and member of the European Academies Science Advisory Council (EASAC) Food and Nutrition Security and Agriculture Working Group.
- Politics, practices and the transformative potential of sustainable diets**
- **Professor Eeva Furman**. Director of the Environmental Policy Centre of the Finnish Environment Institute and Chair of Finland's Sustainable Development Expert Panel.
- Civil society's contribution to the development of a comprehensive food policy in the EU**
- **Mr Peter Schmidt**. President of the EESC Sustainable Development Observatory, European Economic and Social Committee (EESC).
- 13.00h **Roundtable discussion**
- Moderated by **Mr Arnau Queralt**, Director of the Advisory Council for Sustainable Development of Catalonia (CADS) and Chair of the European Environment and Sustainable Development Advisory Councils (EEAC) network.
- 14.00h **Closing remarks**
- **Mr Arnau Queralt**. Director of the Advisory Council for Sustainable Development of Catalonia.
 - **Mr Carmel Mòdol**. Director General of Food, Quality and Agri-Food. Ministry of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia.

Annexe 2. Participants



> ALFRED BOSCH

MINISTER FOR FOREIGN ACTION, INSTITUTIONAL RELATIONS AND
TRANSPARENCY OF THE CATALAN GOVERNMENT (2018-2020)

Alfred Bosch was Minister for Foreign Action, Institutional Relations and Transparency from 2018 to 2020. Prior to this, he was member at the Spanish Congress of Deputies and president of the ERC parliamentary group to the Spanish Congress of Deputies. In the field of civic and political activism, he was spokesperson for the Barcelona Decides consultation, founding member of the Secretariat of the ANC and Board member at Òmnium Cultural -which are the most important non-profit entities in the promotion of Catalan language and culture-. Previously, he was deeply involved in the organisation of the 1992 Barcelona Olympic Games, being head of dissemination and Secretary General of the Operative Committee of the Games.



> LAURA FORASTER

SECRETARY GENERAL OF THE PUBLIC DIPLOMACY COUNCIL OF CATALONIA -
DIPLOCAT

Laura Foraster i Lloret (Barcelona, 1976) holds a degree in Economics and Business Administration by the University Pompeu Fabra (UPF), a degree in Humanities by the Open University of Catalonia (UOC) and an MA in European Studies by the KU Leuven. She also has specific education in Public Diplomacy and in Election Observation Missions. Prior to her current position as Secretary General of Diplocat, she was Executive Director of the entity until its temporary closure in April 2018.

Foraster has been Chief of Cabinet of the Minister for Innovation, Universities and Enterprise and of the Minister for Trade, Tourism and Consumer Affairs of the Government of Catalonia during two consecutive legislative terms, where she was responsible for the management of the Minister's Cabinet, the political assistance to the Minister and for European Union and international issues.

Her previous professional experience includes Parliamentary Assistant to Catalan Members of the European Parliament in Brussels and Strasbourg, following Foreign Affairs, Human Rights, Common Foreign and Security Policy Committee and the Constitutional Affairs Committee. In Brussels, she also worked for the European Commission, the Committee of the Regions and the Catalan Government Delegation to the EU.



> **EEVA FURMAN**

DIRECTOR OF THE ENVIRONMENT POLICY CENTRE, FINNISH ENVIRONMENT INSTITUTE

Professor Eeva Furman is Director of the Environment Policy Centre, Finnish Environment Institute, Chair of Finland's Sustainable Development Expert Panel and member of the IGS who wrote the UN's 2019 Global Sustainable Development Report. She leads national and international research projects such as the food-related sustainability project *Politics, practices and the transformative potential of sustainable diets, Poprasus*. Her projects and positions of trust are in the fields of governance of sustainable development & systems transformation, biodiversity & health, ecosystem services & forests and nature-based solutions & urbanisation.



> **ALBERTO GARRIDO**

PROFESSOR OF AGRICULTURAL AND NATURAL RESOURCE ECONOMICS, POLYTECHNIC UNIVERSITY OF MADRID

Professor of Agricultural and Natural Resource Economics and Vice-Rector of Quality and Efficiency at the Polytechnic University of Madrid (UPM). He has a Bachelor Degree (with MSc recognition) in Agricultural Engineering (1989); an MA in Agricultural and Natural Resource Economics by the University of California, Davis (1992) and a PhD in Agricultural Economics by the UPM (1996).

His 25 years of research experience include projects, consultancy documents, supervised theses and publications about: Risk management in agriculture and agricultural insurance/ Water resource economics and policy/ Drought analysis and policies / Climate change and agricultural risks / Poverty, both at micro- and macro-economic level/ Agricultural policy / Food and agricultural markets' volatility / Agricultural and food consumption sustainability / Farming systems' resilience / Food consumption, diets and food security, both at household and national scales.

He has published 20 monographs and 83 peer-reviewed journal articles, and 93 book chapters and other papers. His h-index is 20 (Scopus), Google Scholar citations 4100 (2045, since 2013), h-index: 29 (21, since 2013), and supervised 23 doctoral theses.

He has been the principal investigator of more than 50 research projects, including several international competitive ones for IFAD, the European Commission, PepsiCo, the European Parliament, the FAO, the World Bank, the OECD, EASAC and various other public and private institutions, having earned more than € 3.5 mill. in research grants. He has worked professionally in Chile, Colombia, Ecuador, Ethiopia, France, Nicaragua, Panama, Portugal, Suriname, the Netherlands, the UK, the USA, and Vietnam.



> MARTA G. RIVERA-FERRÉ

DIRECTOR OF THE CHAIR ON AGROECOLOGY AND FOOD SYSTEMS FOR SOCIAL TRANSFORMATION AT THE UNIVERSITY OF VIC

Marta G. Rivera-Ferré, Bachelor in Veterinary Science by the University of Córdoba; MSc in Animal Nutrition by the University of Aberdeen; PhD in Veterinary Sciences by the University of Córdoba and PhD in Sociology by the Autonomous University of Barcelona. She is a Research-Professor at the University of Vic-Central University of Catalonia, Director of the Chair on Agroecology and Food Systems, and Honorary Researcher at the University of Coventry. She coordinates the research line «Sustainable communities, social innovations and territories» within the group «Societies, policies and inclusive communities».

With more than 90 publications, she has a multidisciplinary profile in the analysis of the society and environment interactions within agri-food systems and has performed research stays at the Rowett Research Institute in the UK, Alterra Research Institute and the University of Wageningen in the Netherlands, the Autonomous University of Barcelona and the Center for Agri-Food Research and Development (CREDA-UPC-IRTA). She has a particular interest in the potential of local traditional agri-food knowledge in adaptation to climate change, food security and food sovereignty, as well as in the analysis of the role of women from a feminist standpoint in agri-food research. She is also interested in the way different mental models and discourses co-exist in agricultural research and management. She has participated as lead author in the UN-lead assessments the International Assessment of Agricultural Knowledge Science and Technology for Development (IAASTD), and the Intergovernmental Panel of Climate Change (IPCC), chapters Rural Areas (AR5, 2010-2014) and Food Security (SRCCL, 2017-2019).



> TERESA JORDÀ

MINISTER OF AGRICULTURE, LIVESTOCK, FISHERIES AND FOOD OF THE GOVERNMENT OF CATALONIA

Teresa Jordà Roura was born in Ripoll on 19 June 1972. She holds a bachelor's degree in Modern and Contemporary History by the Autonomous University of Barcelona (UAB). She was Mayor of Ripoll between 2003 and 2011. She worked in municipal politics for 19 years, until 2017 when she left the Town Council. She has been a deputy in the Congress of Deputies since 2011, for three terms in a row (2011, 2015 and 2016), during which time she acted as spokesperson for the Development Commission and as second secretary for the Equality Commission, among other roles. In June 2018 she took on the role of Minister of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia. She has also worked for the Federation of Municipalities of Catalonia contributing to cultural policies and working on municipal issues for the Catalan Employment

Service (SOC). She has been Vice-President at the Eduard Soler Foundation and President at the Guifré Foundation.



> **CARMEL MÒDOL**

GENERAL DIRECTOR OF FOOD, QUALITY AND AGRI-FOOD INDUSTRIES

General Director of Food, Quality and Agri-Food Industries of the Ministry of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia. He has worked at different international companies in the agricultural sector (1986-2000) and has created a company dedicated to the production and marketing of fresh fruits (1996-2017).

From 2003 to 2012 he has been Member of the Parliament of Catalonia and ERC (Esquerra Republicana de Catalunya) spokesman to the Control Committee of the Catalan Broadcast Corporation and to the Commission of Agriculture. During his period as MP he has also been the rapporteur of several laws, and Vice-President of the Commission of Agriculture, Livestock and Fisheries of the Parliament from 2006 to 2010.

He has been Deputy Vice-Chancellor of academic affairs of the Technical University of Catalonia, Secretary at the President Josep Irla Foundation, member of the Commission of the School of Agri-Food and Forestry Science and Engineering (Lleida), of the Commission of Evaluation and Selection of Professors and Researchers at the Technical University of Catalonia, of the Board of Trustees of the University of Lleida, the Inter-University Council of Catalonia as well as the Board of Governors of the University of Lleida.



> **KRIJN J. POPPE**

MEMBER OF THE DUTCH COUNCIL FOR THE ENVIRONMENT AND INFRASTRUCTURE

Krijn J. Poppe (1955) is a business economist working in the research management of Wageningen Economic Research, located in The Hague, the Netherlands. As chief policy analyst he helps decision makers in policy and business to understand and act upon trends in agri & food based on science. He is involved in several large, multidisciplinary research projects for the EU. He chaired a group of experts for DG RTD to design missions for the FP9 Horizon Europe research program on food and agri. Current research interests focus on agricultural and food policy issues, ICT, research infrastructures and the agricultural knowledge and innovation system. He is much in demand as a speaker on the future of farming and food.

In addition, Krijn Poppe works one day a week as member of the Council for the Environment and Infrastructure, a strategic advisory body to the Dutch government. From 2009 – 2011 he worked part-time as Chief Science Officer at the Dutch Ministry of Economic Affairs, Agriculture and Innovation. Krijn J. Poppe is a Fellow of the European Association of Agricultural Economists and was for 12 years (1999-2011) their Secretary-General. He is Honorary

Secretary-Treasurer of the EAAEP Foundation (which publishes the ERAE) and chairs the Steering Group of the journal *EuroChoices*. He is a board member of the organic control authority SKAL and an advisor for the provinces of South-Holland and Flevoland.



> **ARNAU QUERALT**

DIRECTOR OF THE ADVISORY COUNCIL FOR SUSTAINABLE DEVELOPMENT OF CATALONIA

B.A in Environmental Sciences by the Autonomous University of Barcelona. Master in Public Management by ESADE, the Autonomous University of Barcelona and the Pompeu Fabra University. He holds a Diploma in European Studies from the Diplomatic School of the Spanish Ministry for Foreign Affairs.

Director of the Advisory Council for Sustainable Development of Catalonia since October 2011. Chair of the European Environment and Sustainable Development Advisory Councils (EEAC) network from January 2015 and co-chair of its WG Sustainable Development. On behalf of the EEAC, he has been observer to the European Commission High Level Multi-Stakeholder Platform on the implementation of the Sustainable Development Goals in the EU and member of the Group of Experts on Sustainable Development Goals and Higher Education of the Global University Network for Innovation (GUNi).

Member of the Union for the Mediterranean Climate Change Expert Group and member of the Steering Committee of the network of Mediterranean Experts on Climate and Environmental Change (MedECC). Member of the Climate Change Task Force of the Conference of Peripheral Maritime Regions (CPRM). Member of the Interministerial Commissions on Climate Change and Ecodesign at the Government of Catalonia. Member of the Assembly of European Regions Task Force on SDGs.



> **JOAN VALLVÉ**

MEMBER OF THE ADVISORY COUNCIL FOR SUSTAINABLE DEVELOPMENT OF CATALONIA

Joan Vallvé-Ribera, born in Barcelona in 1940, holds a PhD in industrial engineering by the Barcelona School of Industrial Engineering - Technical University of Catalonia.

From 1989 to 1992 he was Minister of Agriculture, Livestock and Fisheries of the Government of Catalonia and before that, Director General of Interdepartmental Affairs from 1984 to 1989. Joan Vallvé held some other relevant positions in the Catalan Government: he was appointed Commissioner for Foreign Affairs (1992-1994) and Secretary for Families (2002-2002).

He was a member of the European Parliament from 1994 to 1999 and from 2002 to 2004. He was also President of the Association of European Border

Regions from 1996 to 2004, President of the Association of Industrial Engineers of Catalonia from 2006 to 2007, and Dean of the College of Industrial Engineers of Catalonia from 2008 to 2013. Joan Vallvé was member of the Advisory Council for Sustainable Development of Catalonia between 2013 and 2019.



> **PETER SCHMIDT**

PRESIDENT OF THE EESC SUSTAINABLE DEVELOPMENT OBSERVATORY, EUROPEAN ECONOMIC AND SOCIAL COMMITTEE

Born in 1962, Peter Schmidt's first occupation was that of cheesemaker. Later on he was a regional officer of the NGG trade union (Food and Catering Union, affiliated to the DGB) for 27 years, in charge of dairy industries and bakeries. Since 2014 he has been a member of the European Economic and Social Committee (EESC)'s Group II (Workers).

From 2015 to March 2018, he was the President of the EESC's Permanent Study Group on Sustainable Food Systems. Since April 2018, he has been the President of the EESC's Sustainable Development Observatory and one of the three EESC members steering the work of the European Circular Economy Stakeholder Platform, a joint initiative by the EESC and the European Commission.

References

- [1] «Risk of hunger pandemic as COVID-19 set to almost double acute hunger by end of 2020»: <https://www.wfp.org/news/covid-19-will-double-number-people-facing-food-crises-unless-swift-action-taken>
- [2] CADS (2020). Opinion on how to manage the new reality after the COVID-19: «One pandemic, numerous lessons and 17 goals that we must not put in lockdown». Available on line at: <http://cads.gencat.cat/web/.content/opinio/articles/cads-statement-on-covid-19.pdf>.
- [3] The footage of the event is available on line at: <https://diplocat.cat/ca/activitats/10/diplocat-i-el-cads-organitzen-una-jornada-internacional-sobre-sistemes-alimentaris-sostenibles>.
- [4] Aluding to the report *L'Agenda 2030: transformar Catalunya, millorar el món*, by CADS: <http://cads.gencat.cat/ca/informes/informes-per-anys/2016/lagenda-2030-transformar-catalunya-millorar-el-mon/>.
- [5] Law 3/2020 of 11 March, on prevention of food waste and loss, approved by the Catalan Parliament in the parliamentary session of 4 March 2020.

The member entities of Diplocat

» Public institutions and municipal entities

- Government of Catalonia
- Barcelona City Council
- Tarragona City Council
- Girona City Council
- Lleida City Council
- Vielha e Mijaran City Council
- Barcelona Provincial Council
- Tarragona Provincial Council
- Girona Provincial Council
- Lleida Provincial Council
- Conselh Generau d'Aran
- Catalan Association of Municipalities and Counties
- Federation of Municipalities of Catalonia

» Entities of the business sector

- General Council of the Official Chambers of Commerce, Industry and Navigation of Catalonia
- Entrepreneurs Association Foment del Treball Nacional
- Association of Micro-, Small-and Medium-Sized Enterprises of Catalonia (PIMEC)
- Confederation of Cooperatives of Catalonia
- Multi-Sector Business Association (AMEC)
- Private Foundation of Entrepreneurs (FemCAT)

» Entities of the social, trade union and sports sector

- The Group of Entities of the Voluntary Sector of Catalonia
- Trade union Unió General de Treballadors de Catalunya (UGT)
- Trade union Comissions Obreres de Catalunya (CCOO)
- Football Club Barcelona

» Universities, business schools and academic institutions

- University of Barcelona (UB)
- Autonomous University of Barcelona (UAB)
- Technical University of Catalonia (UPC)
- Pompeu Fabra University (UPF)
- University of Lleida (UdL)
- University of Girona (UdG)
- Rovira i Virgili University (URV)
- Ramon Llull University (URL)
- Open University of Catalonia (UOC)
- University of Vic - Central University of Catalonia (UVic-UCC)
- International University of Catalonia (UIC)
- Abat Oliba CEU University (UAO CEU)
- Barcelona Institute of International Studies (IBEI)
- EADA Business School
- Barcelona Graduate School of Economics (Barcelona GSE)

