Collective scientific assessment

Directorate of collective scientific assessment, foresight and advanced studies (DEPE) INRAE
Directorate of scientific assessment and consultancy (MEC) IRD
November 2024

The French National Research Institute for Sustainable Development (IRD) and the French National Research Institute for agriculture, food and environment (INRAE) have developed collective scientific assessments since 2001 to strengthen the interface between science, policy and society. This tool provides the most up-to-date scientific knowledge available to stakeholders to support evidence-informed decision-making.

Collective scientific assessments are initiated by national or international public institutions (such as ministries, agencies, funding bodies, etc.) in connection with the implementation of public policy (e.g., regulatory adaptation, public health issues, etc.). These assessments offer a comprehensive synthesis of validated scientific knowledge, based on a critical analysis of the international scientific literature. They require a multidisciplinary approach, including in particular life and social sciences. A team of approximately 20 scientific experts, researchers, and professors–drawn not only from IRD and INRAE but also from other French and international public institutions–conducts these assessments.

The results of collective scientific assessments, overseen by the Institute and their partners, if any, are intended to inform decision-making and contribute to the public debate. They are presented during a final public seminar, which is open to the whole society. A distinctive feature of these assessments is their capacity to differentiate between established knowledge, unresolved questions, ongoing uncertainties, and areas where science remains contested and inconclusive.

Both IRD and INRAE have dedicated Assessment Units that steer, organize, and ensure the quality of all steps of the process: overall operations, recruitment of experts, leadership of the monitoring committee, and organization of meetings and the final seminar.

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Environment

Available from éditions Quae *On line* *Video*

In progress - Soil quality indicators

Study commissioned by INRAE GIS SOL, with funding from Ademe, OFB, and the Ministries of Agriculture and the Environment

With growing awareness of the contribution of soils to ecosystem services and the dangers associated with their degradation, scientists are proposing various conceptual frameworks for defining quality criteria and the indicators needed to assess them. These criteria can cover concepts such as fertility, threats, soil health, soil safety, functions and ecosystem services .... Which are most appropriate? Few studies have tested their application, or demonstrated their operationality in different contexts and for different soil uses (agricultural, forestry, urban, polluted soils...). Today, we lack a global vision of the needs and indicators of soil quality, and this study aims to provide an answer.

2022 - Impacts of plant protection products and biocontrol on biodiversity and ecosystem services

CSA produced as part of the Ecophyto2+ plan, in partnership with IFREMER

This project updates knowledge of the ecotoxicological impact of pesticides on non-target biodiversity by considering synthetic and natural pesticides, biocontrol products and organisms applied in agricultural ecosystems and in gardens, green spaces and infrastructures (JEVI). The analysis of contamination and impacts on living organisms covers the entire chain of dispersion of products in the environment, from the site of application to marine ecosystems. It also looks at quantifying the ecosystem services that depend on biodiversity affected by pesticides. Finally, the CSA sheds light on methods for assessing pesticides and monitoring their effects, and on remediation options for reducing or managing past contamination.

Summary Report, Condensed Report, Extended Report

2021 - Small-Scale fisheries in Haiti

CSA commissioned by the Haitian Ministry of Agriculture, Natural Resources and Rural Development (MARNDR), in partnership with the Inter-American Development Bank (IDB)

Subject in recent years to a number of natural disasters and political crises alike, the Republic of Haiti faces numerous developmental challenges, of which one of the foremost is food security. Small-scale fishery offers concrete, long-term solutions to this problem, notably through increasing the yields produced by small-scale fishery and aquaculture, improving the fishery products industry, and improving the sustainable management of fisheries resources. This publication provides the latest knowledge available on small-scale fishery from the perspective of the environment, fish species and fishery; aquaculture, ecological intensification and management; and the fishery products industry, from local level to the international context.

Summary Report, English synthesis, Extend Report

2017 - Artificialized land and land take; drivers, impacts and potential responses

CSA commissioned by the Ministries of the Environment and Agriculture, and ADEME, in partnership with IFSTTAR

Soil artificialization, the overall reduction in the proportion of land used for agricultural and forestry activities or for natural areas, is now recognized as a threat to Europe's soils. This project examines the difficulties involved in measuring the phenomenon, its impact on the physicochemical and biological characteristics of soils, and the nuisances (acoustic, thermal, hydrological, etc.) associated with waterproofed urban soils. It analyzes the economic and social determinants (housing demand, economic activity zones, infrastructures, etc.) of soil artificialization, and its impact on agriculture and the environment, in order to identify the levers of action likely to limit its development and negative effects.

Summary Report, Condensed Report, Extended Report

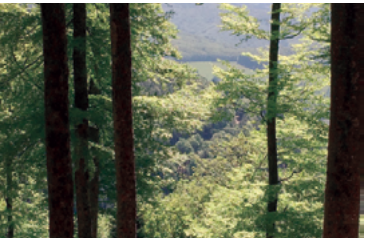
2017 - Eutrophication: causes, mechanisms, consequences and predictability

DEPE provided a methodological support to this expertise led by CNRS in partnership with Ifremer, Inra and Irstea

Eutrophication of aquatic environments is a complex phenomenon caused by excessive inputs of nutrients (nitrogen and phosphorus), leading to proliferation of plants whose decomposition then depletes the environment of oxygen, at the expense of fauna. These major ecosystem disruptions have numerous health, environmental and economic impacts. This assessment provides a critical overview of current knowledge, allowing a better understanding of these phenomena so as to manage them more effectively. In particular, the analysis highlights the need for a risk analysis framework that integrates hydro-biogeochemical transfers and transformations, climate hazards and the ecological vulnerability of receiving environments.

Condensed Report, Extended Report

2017 - What role can French forests and forest-based industries play in mitigating climate change?



Advanced study commissioned by the French Ministry of Agriculture, in partnership with IGN

The forestry sector is considered strategic for limiting climate change, thanks to its capacity to store carbon in ecosystems and wood products, and to the substitution effects of fossil fuels or competing materials that emit higher levels of GHG. The aim of the study is to assess the GHG emission mitigation potential of the French forestry-wood sector up to 2050. It includes an analysis of the academic literature, as well as a comparison of the effects of three contrasting forest management scenarios, based on numerical simulations. This part of the study uses three models to simulate, respectively, the growth of forest stands, the impact of changes in climatic conditions on this development, and the economic effects of the behavior of agents in the sector.

Summary Report, Extended Report

2017 - Land use change and environmental assessment

Advanced study commissioned by the French Environment and Energy Management Agency (Ademe) and the French Ministry of Agriculture

The aim of this advanced study is to carry out an inventory and critical review of the available scientific literature on the effects of different reorientations (agricultural, forestry, food, energy, land use) on land use change and the induced environmental impacts (on climate, soil, water...). In order to synthesize the information, the scientific corpus gathered was subjected to three analyses: a global textual analysis to identify and map the documented land use changes and impacts, a systematic review on the sub-corpus of reorientations towards non-food uses of biomass, and a meta-analysis on the only articles quantifying greenhouse gas emissions linked to bioenergy production.

Summary Report, Condensed Report

2017 - ScénEnvi: Visions of the future and the environment Major categories of scenarios resulting from an analysis of international foresight studies relating to the environment

Advanced study commissioned by the Alliance nationale de recherche pour l'environnement (AllEnvi), carried out by AllEnvi's Transversal Foresight Group, with the involvement of DEPE (project management and coordination).

In order to contribute to scientific programming in the environmental sciences, a study of major future visions of the state of the environment was undertaken. More than 300 recent international forecasts (less than 15 years old) for the 2030, 2050 and 2100 horizons were analysed, revealing the predominance of governance and economics in the construction of scenarios. This approach has led to the construction of 11 scenario families grouping together the various trends and factors of change. These families are themselves structured into three groups: decline, no environmental priority and environmental priority. While the first two generate sometimes severe environmental degradation, the third leads to rather encouraging results.

Summary Report, Extended Report

2016 - Cumulative impact of water reservoirs on the aquatic environment

CSA commissioned by the French Ministry of the Environment and with the support of Onema, led by Irstea in partnership with Inra, with DEPE providing methodological support

In France, the number of small reservoirs has multiplied. The creation of new structures now requires a prior study of cumulative impacts on a watershed scale. This study underlines the weakness of existing knowledge and methods for assessing these cumulative impacts. It nevertheless proposes a typology of structures based on their mode of supply, and reviews the functional characteristics of these reservoirs and their consequences on the water flow regime, transfers of sediments, nutrients and contaminants, and the ecological functioning of aquatic environments. This basis is used to draw up a methodological framework, to be discussed with managers and design offices in the operational phase following the CSA.

Summary Report, Condensed Report, Extended Report

2016 - Roles, impacts (environmental, economic and social) and services of European livestock production

CSA commissioned by the Ministries of the Environment and Agriculture, and ADEME

Livestock farming is the subject of numerous socio-technical controversies, notably because of the environmental damage it causes, at both global and local levels. The aim of this CSA is to take stock of scientific knowledge on the positive and negative impacts and the different roles attributed to European livestock farming. It addresses the multiple effects on the environment and climate, the inputs and resources mobilized, employment, sectors and markets, and certain social and cultural issues relating to the production and consumption of animal products. A more detailed analysis of contrasting types of territory (sparsely grazed with high animal density, predominantly grassland livestock farming, crop-livestock cohabitation) identifies "bouquets of services", combinations of (dis-)services rendered by different livestock farming systems.

Summary Report, Condensed Report, Extended Report

2014 - Development of Lake Chad: Current Situation and Possible Outcomes

CSA commissioned by The Lake Chad Basin Commission

Will Lake Chad dry up? The future of Lake Chad is at the centre of regional and international political concerns. This ancient geosymbol, stirs up strong questions about the environment, water, climate, and development of the lake. What then would be the consequences for the 13 million humans within a radius of 300 km who depend upon it? Overall, public discourses on the future of Lake Chad, most often alarmist, are sources of great confusion and maintain a muddled image of the situation. However, an accurate understanding of the realities is necessary for building a shared vision of the future and adopting a strategy to make it possible to meet the lake's sustainable development challenges. This report led to a series of useful recommendations for political decision-makers, on environmental sustainability, food security, and job security.

Summary Report, English synthesis, Extend Repor

2012 - Reducing nitrogen flows from livestock production

CSA commissioned by the French Ministries of Agriculture and the Environment

At a time when livestock farming is increasingly being blamed for the pollution it generates, this appraisal involves inventorying, characterizing and quantifying the nitrogen flows that enter livestock farming systems (purchases of mineral fertilizers, livestock feed, etc.), circulate within them (between soils, crops and animals) and leave them (exported products, leaks into the environment). These leakages, which constitute nutrient losses for agriculture, represent pollution: of water by nitrate, of air by ammonia (whose volatilization has long been underestimated) and nitrous oxide (a powerful GHG). The CSA quantifies these flows for different farming systems, and examines the factors and technical options that increase or could, on the contrary, reduce pollutant emissions, at farm and regional level.

Summary Report, Condensed Report, Extended Report

2008 - Agriculture and Biodiversity Enhancing synergies

ESCo commissioned by the French Ministries of Agriculture and the Environment

At a time when slowing down the loss of biodiversity and enhancing the value of the ecosystem services provided by biodiversity have become political objectives, this project takes stock of what we know about the relationship between the "natural" biodiversity of agrosystems and agriculture. It examines the impact on various biodiversity components of the intensification and specialization of production systems, associated with the massive use of mineral fertilizers and synthetic pesticides, and the "simplification" of agricultural landscapes. It also assesses the possible contributions of biodiversity to agricultural production processes (yield and product quality, soil fertility, crop pest control, pollination), and examines ways of better integrating biodiversity into agriculture, as well as tools for public action.

Summary Report, Condensed Report, Extended Report

2007 - The Niger River's Future

CSA conducted by the Institute of Rural Economy of Mali (IER) and The French National Research Institute for Sustai¬nable Development (IRD) with the support of the European Development Fund (EDF), the International Union for Conservation of Nature (IUCN), the German Agency for International Cooperation (GTZ), and the French Embassy in Mali

Niger river is truly the main source of life for Western Africa, more specifically for the republic of Mali. In the country, management of the river is a key topic, as one can find at the same time, remarkable traditional production systems associated to the floods which supply hundreds of thousands of people – but also great projects which promise modern installations, hydroelectrical and hydro-agricultural systems. Different recommendations are made, aiming on one hand to clarify institutional frames and policy options, and on the other hand to reinforce management and decision-making tools.

Summary Report, English synthesis, Extend Report

2006 - Invasive species in the New Caledonian Archipelago

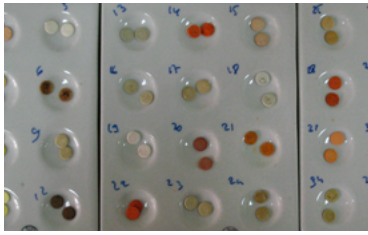
CSA commissioned by the Government and the three Provinces of New Caledonia and the New Caledonian Agronomic Institute (IAC)

The introduction of new species poses a major threat to New Caledonia's biodiversity, widely known for its exceptional quality and high rate of endemism. It is therefore important to protect New Caledonia's rich but vulnerable ecosystem form invasive species, which are one of the main causes of biodiversity. This report provides a state-of-the art of the prevention, early detection, rapid response, eradication, containment and control of invasive species and the necessary elements for designing a biosecurity system that will be effective and relevant to the New Caledonian archipelago.

Summary Report, English synthesis, Extend Report

2006 - Natural Substance in French Polynesia

ICSA commissioned by the French Polynesian Government Research Delegation



French Polynesia possesses a wide diversity of marine and terrestrial species, largely because the territory consists of many scattered islands. However, the potential has not so far been exploited to any great extent, and has not even been fully catalogued. This collective scientific assessment was designed to discover the extent of the potential, pinpoint substances with economic potential and indicate priority directions for research. It also includes analysis of the socio-economic, legal and technical conditions for the utilization.

Summary Report, English synthesis, Extend Report

2005 - Pesticides, Agriculture and the Environment
Reducing the use of pesticides and limiting their environmental impacts

ESCo commissioned by the French Ministries of Agriculture and the Environment, in partnership with Irstea

French agriculture, which is a major consumer of crop protection products, is facing the challenge of questioning their use, due to risks to human health and the environment. The project takes stock of available knowledge on the agricultural use of pesticides, their impact on ecosystems, techniques for limiting their dispersion and transfer into the environment, the limits of "reasoned" use in simplified cropping systems that generate high health risks for plants, alternative crop protection methods and strategies, and the public policy tools that can be mobilized to reduce the use of pesticides and agriculture's dependence on these products.

Summary Report, Condensed Report, Extended Report

2002 - Mitigation of the greenhouse effect. Increasing carbon stocks in French agricultural soils?

ESCo commissioned by the French Ministry for the Environment

In accordance with the implementation of the Kyoto Protocol, the Ministry was considering whether to include organic carbon storage in agricultural and forest soils in the national greenhouse gas (GHG) balance. The project takes stock of the importance, variability and dynamics of this storage, for different agricultural or forestry land uses, and for various cropping practices likely to increase soil carbon storage. It examines the difficulties of proving this CO_2 sequestration in soils, the economic policy tools that can be mobilized to promote favorable land-use changes, and the benefits of integrating them into a broader agri-environmental policy.

Summary Report, Condensed Report, Extended Report

Agricultural systems

Available from éditions Quae *On line* *Video*

2022 - Environmental sustainability of farming systems

Advanced study carried out as part of the OECD's TempAg network (The international sustainable temperate agriculture network), involving European researchers.

This advanced study follows on from an initial assessment by the *TempAg* network of three types of environmental indicator: life cycle assessment, ecosystem services assessment and *yield gap* analysis (between quantity produced and production capacity per hectare). The aim of the project is to build a unified conceptual framework for the environmental assessment of agricultural systems, from the farm to the national scale, combining these three types of indicators. The target application is the environmental assessment of the European Union's agricultural policies. The analysis is based on a documented example of the evolution of agricultural practices: the generalization of nitrate trap intermediate crops.

Extended Report

2022 - Use of plant diversity to protect crops and control pests

CSA commissioned by of the Ministries of Agriculture, Environment and Research, as part of the Ecophyto2+ plan

The simplification of farming systems in the past has led too both wild and cultivated plant diversity. Yet scientific knowledge acquired over the last 20 years shows that this diversity is a pillar of agroecology and an important lever for regulating crop pests (insect pests, weeds, fungal diseases, viruses, etc.). In the current context, marked by the need to drastically reduce the use of synthetic pesticides, the CSA analyses the potential offered by a wide range of plant diversification practices to protect crops: planting hedgerows, using varietal mixtures, intercropping, agroforestry, lengthening crop rotations, integrating more semi-natural vegetation into the landscape… It also examines the technical, social and economic factors, as well as the political and regulatory factors likely to encourage or, on the contrary, hinder the implementation of this plant diversification by farmers.

Summary Report, Condensed Report, Extended Report

2020 - The role of European agriculture in world trade by 2050

Study commissioned by Pluriagri, a think tank for the field crop sector

Following on from the advanced study devoted to the food system in the North Africa / Middle East region (2015), this study looks at the evolution of European agriculture's place in the world and economic performance up to 2050, in a context marked by climate issues and the challenges of global food security. An analysis of the scientific literature provides information on possible changes in European cropping systems under climate change. Their effects on the use/resource balances of agricultural products in each of the world's regions are simulated to 2050 using the GlobAgri balance model, developed as part of the Agrimonde-Terra foresight project (Inra-Cirad).world's regions is simulated until 2050 using the GlobAgri material balance model developed as part of the Agrimonde Terra foresight study (INRA-Cirad).

Summary Report, Condensed Report, Extended Report

2019 - 4Carbon storage in French soils. What is the potential in terms of the 4 by 1000 objective, and at what cost?

Advanced study commissioned by the French Environment and Energy Management Agency (Ademe) and the French Ministry of Agriculture.

The "4 ‰ soil for food security and climate" initiative aims to increase the carbon stock in all the world's soils by one four-thousandth each year in order to offset anthropogenic CO_2 emissions. The study aims to assess the potential for additional carbon storage in French agricultural and forest soils, with reference to this 4‰ objective. It is based on a review of scientific knowledge on the subject, and on an estimate, through simulations across the whole territory, of the effects of a range of land uses and agricultural practices aimed at increasing soil carbon content without increasing direct and indirect GHG emissions. These results, together with an estimate of the cost to the farmer of implementing these different practices, make it possible to assess the technical and economic potential of storage on a regional and national scale.

Summary Report, Condensed Report, Extended Report

2018 - Can we farm organically without the use of copper?

CSA commissioned by INRA's "Sustainable crop health management" metaprogram and the Institut Technique de l'Agriculture Biologique (ITAB)

At a time when organic agriculture (OA) producers are faced with increasing regulatory restrictions on the fungicidal use of copper, it is essential to take stock of alternative solutions (substitute biocidal products, biocontrol agents, genetic crop resistance, agronomic techniques, etc.). Many studies have been carried out experimenting with these alternative methods, but there has been no critical synthesis of knowledge on the subject. The need to combine methods is illustrated in 3 cases: apple scab and mildew on vines and potatoes. While this is a crucial issue for organic farming, which cannot use synthetic fungicides, it is also of interest to more "conventional" growers, who are being asked to reduce their use of pesticides.

Summary Report, Condensed Report, Extended Report

2017 - Assessment of ecosystem services provided by agricultural ecosystems

Advanced study conducted as part of the EFESE program run by the French Ministry of the Environment, and the Inra-EcoServ metaprogram

The EFESE (French Evaluation of Ecosystems and Ecosystem Services) project aims to develop tools for evaluating and mapping ecosystem services (ES), so that they can be integrated into the development of national and local public policies. The aim of the study is to propose an analytical framework adapted to agricultural ecosystems: clarification of concepts, inventory and classification of ES rendered to farmers and society, description of the mechanisms and determinants of ES, definition of criteria and methodologies (indicators, data) for biophysical evaluation and mapping, avenues for economic evaluation... It also presents the first results of the implementation of this analytical framework on a set of 18 services.

Summary Report, Condensed Report, Extended Report)

2017 - Animal Consciousness

CSA commissioned by the Animal Health and Welfare Unit of the European Food Safety Authority (EFSA)

Current knowledge, summarized in this report, shows that animals possess a wide range of cognitive abilities associated with behaviors of varying degrees of complexity. The forms of consciousness studied in humans imply distinct cognitive capacities found in certain animals. Can we postulate that these animals have forms of consciousness equivalent to those of humans, without necessarily being identical? The study of the levels and content of consciousness in animals is becoming an important scientific issue, given the complexity of the subject and the controversies it is bound to generate. The scientific achievements in this field are an invitation to revisit moral considerations concerning the relationships that humans have with animals (and particularly with domestic animals).

Summary Report, Extended Report

2014 - Use of fertilising waste materials in agriculture and forestry

CSA commissioned by the French Ministries of Agriculture and the Environment, in partnership with CNRS and Irstea

The European regulations governing the spreading of fertilizing materials of waste origin (Mafor) on agricultural and forestry soils are evolving. Given this context, which calls for an updated and shared scientific analysis, the report examines the current agricultural use of Mafor in France, its agronomic benefits (fertilization and soil conditioning) and the environmental and health risks associated with spreading (risk of nitrogen leakage, contribution of chemical contaminants, spread of pathogens). It considers ways of optimizing these uses of Mafor, involving the collection of "primary" materials, the treatments applied, the techniques and practical conditions of spreading, transfers between regions, etc.

Summary Report, Condensed Report, Extended Report

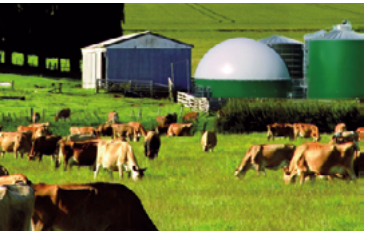
2013 - Crop diversification

Advanced study commissioned by the French Ministries of Agriculture and the Environment

Despite its many agronomic and economic benefits, crop diversification is making little progress in France. The aim of this advanced study is to identify, at farm and industry level, the obstacles to this diversification, and the levers that can be mobilized, by public authorities in particular, to encourage it. The study of a dozen cases of "minor" species (protein peas for animal feed, oilseed flax, hemp, etc.), representative of the diversity of situations, highlights the obstacles at every stage of the value chain: at production level, where genetic selection, crop protection solutions and technical references are insufficient; at market outlet level, where markets are dominated by competition from "major species"; and at coordination level between the economic players in the value chain...

Summary Report, Condensed Report, Extended Report

2013 - Reducing greenhouse gas emissions from the French agricultural sector



Advanced study commissioned by the French Environment and Energy Management Agency (Ademe) and the French Ministry of the Environment.

In France, agriculture accounts for around 20% of total greenhouse gas emissions. The aim of this advanced study is to identify ten technical actions that could improve the GHG balance of agriculture, without any major changes to systems or production levels. The agricultural techniques selected, which concern various sectors, aim to reduce N_2O emissions (by adapting fertilization) or CH_4 emissions (by modifying ruminant feed or manure management), increase carbon storage in soils and biomass (by developing intermediate crops, hedges, agroforestry...), to save fossil fuels... The project assesses their potential for reducing GHG emissions and their cost of implementation by 2030, and carries out a comparative analysis of their efficiency (cost-effectiveness ratio).

Summary Report, Condensed Report, Extended Report

2012 - Reducing nitrate leaching through the use of intermediate crops

Advanced Study commissioned by the French Ministries of the Environment and Agriculture

Most of the nitrate in surface and groundwater is due to excess nitrogen fertilization, as well as natural nitrate production through mineralization of soil organic matter. By introducing a nitrate trapping intermediate crop (CIPAN) between two successive crops, the residual mineral nitrogen in the soil can be captured before it drains from the soil, thus reducing nitrogen leakage; this cover also provides other ecosystem services. To prepare the 5th Nitrates action program (2013), the ministries concerned wanted to have a state of knowledge on this management of intercropping periods. This advanced study analyzes the academic literature, and supplements it with numerical simulations of the development of the cover and its capacity to reduce nitrate leakage, which make it possible to test the effectiveness of CIPAN in various pedoclimatic and agricultural conditions.

Summary Report, Condensed Report, Extended Report

2011 - Herbicide-tolerant plant varieties

CSA commissioned by of the Ministries of the Environment and Agriculture, in partnership with CNRS

VTHs, varieties made genetically tolerant to herbicides, are presented primarily as a technical response to the challenges of weed control, but also as a means of reducing the quantities of herbicides used. The arrival in France of non-transgenic VTHs raises the question of their compatibility with current environmental objectives, notably the reduction of pesticides and the preservation of biodiversity. The CSA examines the medium and long-term effects and risks of VTH cultivation, in agronomic terms (loss of efficacy due to weed flora adaptation, indirect effects on rotation choices, etc.), environmental terms (impacts on biodiversity) and socio-economic terms (acceptability of the innovation, etc.), and identifies a number of points to watch in order to support the deployment of VTH.

Summary Report, Condensed Report, Extended Report

2010 - Écophyto R&D
Ways to reduce the use of pesticides?

Advanced study commissioned by the French Ministries of the Environment and Agriculture

Complementary to the 2005 "Pesticides" CSA, this advanced study mobilizes academic scientific and field experts, notably from the agricultural development sector. The aim is to collectively identify, for France's main crops, pesticide-saving crop management techniques that have been validated in practice. The project takes stock of agronomic options for reducing pesticide use, and estimates the potential impact of their implementation at national level. It also proposes a mechanism for the production, management and dissemination of experimental references on pesticide-efficient cropping systems, for the Ecophyto 2018 program decided following the Grenelle environmental summit.

Summary Report, Condensed Report, Extended Report, Stakeholders' reports

2009 - Animal pain
Identifying, understanding and limiting pain in farm animals

CSA commissioned by the Ministries of Agriculture and Research

The issue of pain has been identified as central to the debate on human-animal relations, and this project clarifies the concepts and analytical methods used to understand pain in farm animals. It places the issue in its historical and philosophical context, and interviews specialists in human pain to better understand the specific nature of animal pain, and its components (nociception, emotion and consciousness). The CSA examines the lesional, physiological, behavioural and zootechnical indices of pain, identifies and characterizes painful situations linked to pathologies, rearing or slaughtering conditions and practices, and then considers solutions for eliminating, attenuating or at least relieving such pain.

Summary Report, Condensed Report, Extended Report

2006 - Drought and agriculture
Reducing the vulnerability of agriculture to an increasing risk of water shortage

ESCo commissioned by the French Ministry of Agriculture

The recurrence of episodes of drought, which could increase as a result of climate change, is forcing public authorities to question the capacity of agricultural systems to adapt. This report looks at the relationship between drought and agriculture from two angles: the impact of agriculture on water resources, and the sensitivity of cropping and production systems to water scarcity. It explores possible ways of adapting at plant, crop and system level, assesses the room for maneuver and the limits of these adaptations, and analyzes the organization of water governance in which agriculture is one player among others.

Summary Report, Condensed Report, Extended Report

2005 - Organic agriculture in Martinique

CSA commissioned by the General Council of Martinique

With a large output of bananas and some sugar cane for rum, Martinique still largely earns its living form the major tropical exports. What hopes can Martinique place in developing organic farming as a way of confronting the competition from neighbouring countries with low labor cost and the uncertain future of European union support? To answer this question, researchers specializing in tropical agriculture and in organic farming joined forces to examine the conditions for developing organic farming, certified or otherwise, in Martinique.

Summary Report, English synthesis, Extend Report

Food and nutrition

Available from éditions Quae *On line* *Video*

In progress - Environmental labelling. The impact of label food production methods on biodiversity

Advanced study commissioned by Ademe and the Ministries of Agriculture and the Environment, in partnership with Ifremer

Environmental labelling of food products aims to provide consumers with information on the environmental characteristics of products offered on the market. To date, Life Cycle Assessment (LCA) seems to be the most suitable and operational method for obtaining environmental indicators for food products. However, it is not sufficient to understand the impacts of food consumption on biodiversity. The study focuses on labelled products, and examines the scientific knowledge available concerning the effects on biodiversity of the production practices specified in the production specifications. Some 15 labels for agricultural and fishery products are analysed.

In progress - Plastics used in agriculture and food: uses, properties and impacts according to their composition

CSA commissioned by ADEME and the Ministries of Agriculture and the Environment, involving European experts

Thanks to their many interesting physical and chemical properties and their low cost, plastics have been increasingly used since the 1950s. The agricultural and food sector accounts for almost half of the plastics used in France. As these materials have little or no degradability, and are therefore very persistent in the environment, plastic waste accumulates in the environment, even concentrating along trophic chains. The project takes stock of available knowledge on: the uses of plastics in agriculture and food; the properties required for these uses and their development prospects; the characterization of plastics properties according to their composition and during their life cycle; their impacts on continental ecosystems, and their health effects. It analyzes how trade-offs between expected properties can be taken into account in an eco-design approach, in compliance with health standards, and within the framework of European regulations on the use of plastics.

2020 - Quality of food of animal origin in relation to production and processing conditions

CSA commissioned by the French Ministry of Agriculture and Food, and FranceAgriMer

At a time when the consumption of these products is challenged for environmental, human health and ethical reasons, this report examines the various dimensions and determinants of their quality. The consumption of foods of animal origin is being called into question for environmental, human health and ethical reasons. The CSA examines the various dimensions and determinants of quality, broken down into seven properties - organoleptic, nutritional, health, commercial, technological, usage and image - and analyzed for meat, milk, eggs and fish flesh, consumed fresh or processed. This quality is built up, but can also deteriorate, at every stage: animal breeding, slaughter and product processing. Particular attention is paid to products with an official label of quality and origin, as well as to the health effects of consuming food of animal origin.

Summary Report, Condensed Report, Extended Report

2020 - Food and nutrition in the French overseas departments and regions

CSA commissioned by the Directorate General of Health of the French Ministry of Health

The nutritional situation and food consumption habits of the inhabitants of the French overseas, territories pose very specific socio-economic and public health-related challenges. Apart from having to deal with a prevalence of overweight, obesity and diabetes more significant than that of the French mainland, these territories are also undergoing both rapid and profound demographic, nutritional and food-related transformations leading to changes in lifestyle which could result in insufficient physical activity as well as uneven food consumption. The scope of the overview includes Guadeloupe, French Guiana, Martinique, Mayotte and La Réunion and the objective is to provide a picture of the differences and similarities between the various territories based on available data.

Summary Report, English synthesis, Extend Report

2016 - Reducing food losses and waste in an increasingly urbanised world

DEPE provided methodological support for this advanced study, which was decided on and carried out by Inra's Food-Bioeconomy Scientific Division, with methodological support from DEPE and the involvement of European experts

The aim is to identify and analyse the levers for limiting food waste in urban environments, and promoting the development of "zero waste, zero waste" food systems. The study identifies 9 levers for action (economic, regulatory and technological tools, urban planning rules, training, etc.) to optimize food use, reduce waste and recycle bio-waste. It explores the differentiated implementation of these levers of action in 3 scenarios of urban contexts (metropolization, networks of medium-sized towns, or towns in retreat), and finally points out the need to ensure coherence between actions, notably between measures aimed at reducing loss and waste and product safety requirements.

Summary Report, Extended Report

2015 - North African and Middle East food systems through to 2050: towards a greater dependence on agricultural imports

Advanced study carried out jointly by INRA and the PluriAgri think tank.

The aim is to provide food for thought for public policies and the strategies of private and public operators in this part of the world. The study carries out a retrospective analysis of the region's agricultural and food system (production, consumption and trade), then examines several possible trajectories up to 2050, using a series of simulations that take into account both the expected consequences of climate change and the effects of factors such as technical progress, greater control of irrigation, contrasting changes in diets, as well as differentiated demographic or economic dynamics. This work uses the GlobAgri model of balances between agricultural resources and food uses, created for the Agrimonde-Terra foresight project.

Summary Report, Condensed Report, Extended Report

2010 - Dietary behaviour and practices Determinants, actions and outcomes?

CSA commissioned by the French Ministry of Agriculture

For several years, public policies have been striving to change dietary behavior in a way that is beneficial to health, but their effects remain limited. In order to influence consumers' food choices, we need to know what determines them. This collective scientific assessment mobilizes various disciplines (nutritional epidemiology, physiology of food intake regulation, food science, psychology, sociology of norms and representations, economics, etc.) to understand the construction of food preferences, the low impact of nutritional information campaigns, the benefits of influencing the food supply (availability and composition of products) and combining several levers of action to encourage the adoption of diets more in line with nutritional recommendations.

Summary Report, Condensed Report, Extended Report

2007 - Fruit and vegetables in the diet Issues and determinants of consumption

CSA commissioned by the French Ministry of Agriculture

Despite information campaigns promoting the "5-a-day" French consumption of fruit and vegetables, intake of these products is showing little increase, and remains below the nutritional recommendations. The fruit and vegetable market represents a major economic challenge. The CSA takes stock of assessments of the health benefits of fruit and vegetable consumption, and then examines the impact of different production techniques (varieties, cultivation practices), preservation and processing on their nutritional characteristics. The socio-demographic, economic and sensory determinants of consumption are also assessed, as are the tools available for public action to improve supply.socio-demographic, economic and organoleptic determinants of consumption are also assessed, as well as the mechanisms for public action to improve supply.

Summary Report, Condensed Report, Extended Report

Human health

Available from éditions Quae *On line* *Video*

2021 - Plant-based substance in Côte d'Ivoire, Potential and Sustainable Development

CSA commissioned by the Ivorian Ministry of Higher Education and Scientific Research (MESRS)

The abundance, uniqueness and diversity of plant-based species in Côte d'Ivoire has enabled the Ivorian people to amass a large and varied amount of knowledge related to plant-derived substances, including notably with regard to medical-, cosmetic-, aromatic- and nutritional use. However, for a number of decades now Ivorian biodiversity has seen a steady degradation, with its forest canopy increasingly under threat. This has resulted in the sustainable exploitation of Ivorian natural resources, and such benefits as may be derived from them by the Ivorian people, being compromised. The assessment deals with non-wood-based plants and products derived from them, the aim being to produce an up-to-date inventory of the subject matter and to identify strategies for their sustainable exploitation.

Summary Report, English synthesis, Extend Report

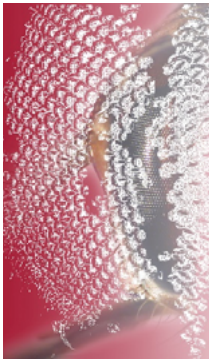
2009 - Disease vector control in France

CSA commissioned by five French Ministries – Health, research, Agriculture and Environment and the Ministry of the Interior

The strong resurgence of insect-vector transmitted diseases over recent years has become a major public health concern, in both human and veterinary spheres. Vector control has the objective of bringing down to a minimum the risks of endemization or epidemization, reducing pathogen transmission by vectors and managing epidemics in a clearly formulated strategic framework. This collective scientific assessment highlights the essential changes and developments that should be brought to this sensitive filed and sets recommendations for a revision of control policies. Challenges and strategies are becoming more complex with ongoing global-scale changes (to climate, environment and societies) that strongly influence vector systems.

Summary Report, English synthesis, Extend Report

2006 - Trachoma control in sub-Saharan Africa



CSA commissioned by the Malian Health Ministry and the African Institute of Tropical Ophthalmology in Bamako (Iota)

Trachoma, the disease of the "eyelashes which turn inward" is the second cause of blindness in the world. What are the causes of this disease? How can the success of preventative and curative actions already undertaken be evaluated? What is the situation in the fight against this infection and what lessons can be drawn? This collective scientific assessment conducted by more than a dozen researchers, describes the situation in the fight against this blinding conjunctivitis of infections origin. By evaluating the strategies already deployed – particularly the WHO SAFE strategy – it seeks to define the conditions and prospects for its eradication

Summary Report, English synthesis, Extend Report

2003 - Dengue in Martinique, Guadeloupe and French Guinea

CSA commissioned by General Council of the Department of Martinique, General Council of the Department of Guadeloupe, General Council of the Department of French Guyana and the Directorate General for Health

Dengue, or dengue fever, is the most widespread vector-borne disease on the planet and is spreading rapidly in all the world's hot regions. The spread of its haemorrhagic forms, which can be fatal, is particularly worrying, especially as without a vaccine or annex treatment, the only way to halt the disease is to control the mosquito that carries it. The report highlights, that alongside the mosquito control, networking and the need to persuade the population to take themselves the essential work of eradicating pools, puddles and receptacles are essential for surveillance and medical care of dengue.

Summary Report, English synthesis, Extend Report

2001 - Major works and vector-borne diseases in Cameroon

CSA commissioned by the Ministry of Scientific and Technical Research in collaboration with the Ministry of Public Health of Cameroon

At the start of the 21st century, malaria remains the leading cause of mortality and morbidity in Cameroon, as in all sub-Saharan African countries. This joint scientific report provides a comprehensive review of the literature on the impact of development projects and major urban developments on malaria endemicity and other water-related vector-borne diseases.

Summary Report, English synthesis, Extend Report

2001 - Mercury in the Amazon: the role of human and the environment, health risks

CSA commissioned by the Prefecture of French Guiana and the Ministry of the Environment

This first CSA takes stock of the scientific knowledge on the worrying presence of mercury in the Amazon, and its effects on the environment and health. It explores the two specific modes of human contamination by mercury: the exposure of gold workers (gold miners or refiners) to mercury vapors released during gold ore enrichment and ingot purification operations; the exposure of the population to a derivative of mercury, methylmercury, mainly through the consumption of contaminated fish.

This work puts forward a certain number of recommendations, including the establishment of an Amazonian monitoring observatory, the creation of a structure to supervise gold panning, and the widespread use of protective equipment against vapors of mercury. Various technical measures intended to reduce the impact of mercury in the environment, better dissemination of basic information on the risks involved, the adoption of dietary habits preventing regular exposure to methylmercury, and an improvement of health monitoring.

Summary Report, French synthesis & Extend Report

Societies

Available from Éditions Quae *On line* *Video*

In progress - Women in higher education and research in Chad

CSA commissioned by the Chadian Ministry of Higher Education and Scientific Research (MESRS) with support from the French Embassy, includes 36 recommendations on the promotion of gender equality in higher education and research in Chad

The recent political life in Chad has been marked by reforms aimed at promoting the rights of women and girls, but significant challenges remain. Women are still underrepresented in political and public field, and despite progress in the Education sector, inequalities persist, particularly in Higher Education and Research (HER). This collective scientific assessment provide an historical perspective on the institutionalization of gender in public policies in Chad, as well as an in-depth analysis of statistical data related to girls' education and the role of female teachers and researchers in the academic world.

2013 - The right to a reasonable time frame before the Court of Cassation in Egypt

CSA commissioned by the Egyptian Court of Cassation with support of the French Embassy

Close ties have connected French and Egyptian law for over two centuries. The legal reasoning and the organization of the judiciary remain very similar in both countries. They both establish that the judiciary, in a state governed by the rule of law, is obligated to guarantee its citizens the right to a fair trial within a reasonable time frame. This right, recognized by international human rights instruments, has been enshrined in successive Egyptian constitutions. However, for many years, the Court of Cassation in Egypt seems to have been unable to uphold the right to be tried within a reasonable time. Improving these time frames involves procedural aspects, filtering mechanisms, as well as questions related to the organization of work and the effective dissemination of case law, which raises broader concerns about the regulatory capacities of the judicial system..

Summary Report, English synthesis, Extend Report

2003 - Scientific diasporas

CSA commissioned by the French Ministry for Europe and Foreign Affairs

Developing countries have witnessed a Northward 'brain drain" of national talent. It is a trend that hampers the training of a country's managers and the constitution of national scientific elite, and is worrying in terms of development. However, a potential counter-trend has emerged as expatriate communities, through their informal inputs, assist, advise and inform researchers and institutes in thein home countries. Should the authorities in expatriate's homme countries and host countries support these informal, spontaneous initiatives, if so how, and what result are to be expected?

Summary Report, English synthesis, Extend Report

Georesources

Available from Éditions Quae *On line* *Video*

2016 - Deep-sea mineral resources in French Polynesia

CSA commissioned by the French government and French Polynesia

French Polynesia has an enormous exclusive economic zone, half of the vast French maritime area which is the second largest in the world. Substantial issues surround the conservation of the oceans and sustainable exploitation of marine resources. In an international context marked by increased demand for mineral commodities and the "scramble to the sea" that defines the new frontiers of territorial expansion, French Polynesia's deep-sea mineral resources are attracting growing interest. The review, which was carried out by multidisciplinary panel of experts, makes a series of recommendations that will assist policy makers in future efforts to develop knowledge, technologies and governance.

Summary Report, English synthesis, Extend Report

2010 - Energy in the development of New Caledonia

CSA commissioned by the Government of New Caledonia and the Environment and Energy Management Agency (ADEME) via the Territorial Energy Management Committee (CTME)

Against the backdrop of increasingly scarce fossil fuel resources and climate change, New Caledonia which is not currently subject to the Kyoto protocol must respond to environmental concerns, and find ways and means of becoming less energy-dependent. During the course of 2009, a board of experts examined energy management, new energy production and storage technologies, ways of reducing greenhouse gas emissions, the geopolitical position concerning energy and climate and regional cooperation along with energy and climate management in New Caledonia.

Summary Report, English synthesis, Extend Report

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