



France

Industrial and Ecological Renaissance

Yes

No

1 Is this a specific bioeconomy strategy?

X

2 If No, what are the key points? How are they being addressed within the bioeconomy?

France has not so far defined a specific research and policy strategy relating to the bioeconomy. The term “bioeconomy” is rarely used in France. Instead the biobased economy is discussed in the context of the green economy (économie verte) or industrial ecology (écologie industrielle) and lately also the circular economy (économie circulaire). The Ministry for Ecology, Sustainable Development and Energy defined 18 sectors as being strategic industrial sectors of the green economy. The following of these can be assigned to the bioeconomy: biofuels, energy from biomass, “green” chemistry, production of biobased

materials (especially bioplastics), CO₂ separation, storage and utilization, water treatment and environmental engineering.

Basically, two distinct approaches to the bioeconomy can be identified in France: firstly, promoting cutting-edge technologies and, secondly, motivating ecologic transformation. Thus, important areas of a bioeconomy policy are addressed in autonomous strategies, for example the Strategic Agenda for Research, Technology Transfer and Innovation (France Europe 2020), the plan for industrial renaissance (“The new face of

industry in France”), the biodiversity strategy and the national plan for adapting to climate change.

In the interests of policy coherence, a proposal for a comprehensive national strategy on ecological transition of the country (“Stratégie nationale de transition écologique vers un développement durable”, SNTEDD) was published in the 1st quarter of 2014, with the aim of ensuring sustainable development. The driving idea is to achieve ecological transition by means of an industrial transition based on scientific and technological innovations, accompanied by a comprehensive societal transition based on a shared vision and commonly practised sustainable patterns of consumption.

The proposed strategy defines nine overarching areas and identifies 34 political priorities for inducing ecological transition. The main areas focus on developing sustainable and crisis-resistant landscapes, implementing life-cycle management, reducing the unequal distribution of ecological, social and spatial resources, developing new economic models and financial instruments, supporting trade and industry in becoming more ecological, on the development of knowledge for ecological changes, on education and raising awareness about ecological changes and finally on mobilizing key stakeholders on all levels to do so on a European and international level.

3 Who is the author of the strategy?

On the government side, the Ministry for Ecology, Sustainable Development and Energy as well as the Ministries for Research and Agriculture are responsible for developing strategies for promoting cutting-edge technology and ecological transi-

tion. The proposed SNTEDD was proposed by the Ministry for Ecology, Sustainable Development and Energy and underwent a public consultation process in spring 2014.

4 What measures are used to promote the strategy?

The government’s research and innovation agenda supports important sectors of the bioeconomy, such as industrial biotechnology or renewable energies. State bodies, in particular INRA (National Institute for Agricultural Research), Adème (Agency for Renewable Resources) and the national research institute CNRS fund research projects and participate in consortia. International cooperation in research projects, with the Benelux countries, Italy, Germany and lately also the USA, Canada and Brazil as partners, is politically wanted and supported.

The “Future Investments” funding programme set up by the government plays a key role in promoting cutting-edge technologies for the bioeconomy. Over a period of ten years, around EUR 1.5 billion are being spent on infrastructure, research and training in the area of biotechnology, agricultural

science, bioinformatics and nanobiotechnology, as part of the “Health and Biotechnologies” programme. Demonstration and test facilities for green chemistry and bioenergy are covered by the programme “Energy and Life-Cycle Management”, with around EUR 1.35 billion of funding. Key areas are the use of algae (“GreenStar”), biorefineries (“Pivert”) and sustainable chemistry (“Ifmas”). The innovation programme also provides around EUR 1 billion of funding for centres of excellence for non-fossil energy (IEED).

In France, research and industry collaborations have been organized on a regional basis since 2005, within the framework of competitiveness clusters (“pôles de compétitivité”) and this is also true of the bioeconomy sector (e.g., “union des pôles de la chimie verte du végétal”, “France Green Plastics”). The central themes

of these clusters are bioenergy, ecological industrial processes, plantbased chemistry, agriculture, as well as the production and utilization of biological marine resources. Agricultural waste and forests, in particular, play a fundamental role as a source of renewable energy for the future.

As part of the industrial regeneration policy measures ("The new face of industry"), a plan has been developed for promoting green chemistry and biofuels. Since the second half of 2014, policy is accompanying and supporting existing industry projects in this area by improving the framework conditions. Barriers to investment will be identified and appropriate solutions proposed. The plan aims at the leverage of EUR 3 billion of extra added value, 5,000 jobs and EUR 2 billion of additional private investment. Such industrial regeneration plans have also been developed for other bioeconomy related sectors, such as food innovations, recycling and green materials as well as the wood construction industry.

As regards the commercialization of bioeconomic innovations and the development of markets, the government recently adopted a new plan for sustainable public procurement in order to promote the use of ecological products. Furthermore, France uses new approaches regarding standards and labels for market development, for example a label for biobased buildings ("batiment biosourcé") and a standard for sustainable investment funds for generating more private venture capital (IRS).

The proposed SNTEED specifies numerous ongoing political measures for promoting ecological transition, the majority of these measures being legislative initiatives. Examples are: measures for making agriculture more ecological (Grenelle law), plant management (law on biodiversity or EcoPhyto Plan), a ban on plastic bags (law on the future of agriculture, food and forestry) and the raising of green taxes to the average EU level.

5 Is there a time limit on the initiatives?

Most of the listed policy strategies and plans cover the period up to 2020 or even 2050.

6 Are there any identifiable key funding areas within the bioeconomic value chain?

Energy production from renewable resources, making chemical and plastics processing more ecological and the transition to the circular economy play

a key role. Recently, bioeconomic R&D is becoming more important as a means for innovating the economic system.

7 What are the implicit effects/side-effects of the strategy?

Generally, green innovations should make the country more competitive, stimulate growth and generate jobs, as well as reducing dependence on energy imports. However, France also sees the bioeconomy as a contribution towards ecological transition, in

order to combat climate change, hold the loss of biodiversity, of dwindling natural resources and the multiplication of health risks due to environmental damage.

As a side-effect of the industrial projects («économie verte», “new face of the industry”), conscious effort is being put into manufacturing biobased products with enhanced properties, in particular

in the chemical value chain. New potential is also being exploited to benefit agriculture and rural development.



8 Are any quantitative targets specified?

The proposed SNTEDD strategy specifies key quantitative targets for each area, arising from the policy strategies or legislation in question, for example, doubling the acreage used for organic farming by 2017 and halving pesticide use by 2018. As regards energy consumption, the stated target is a 30% reduction in the consumption of fossil fuels by 2030 and halving energy consumption by 2050.

Green taxes are to be increased to the average EU level. The use of renewable raw materials in the chemical industry is to increase from 8% to 15% by 2017.

The industrial renaissance plans set clear objectives as to the creation of value-added and jobs.

Tab. 4: Important Measures for Promoting the Bioeconomy in France

Key Points	Policy Measures	Concrete Implementation	Budget in Euro	Timetable	Sources
a) Promoting innovation	Basic research and applied research	Establishing interdisciplinary INRA meta-programmes in the areas of food, ecology and agriculture	30% of the INRA budget	2010–2020	INRA website
		“Future investments”: promoting research, education and innovation with special programmes on biotechnology plus bioenergy and green chemistry. Centres of excellence in the area of non-fossil energy (IEED)	2–3 billion	2010–2020	http://www.gouvernement.fr/investissements-d-avenir-cgi
	Pilot projects and demonstration plants	Biorefineries: e.g. IAR Pomacle-Bazancourt, Bio HUB, Axelone, Pivert, ARD-BRI, Biobutterfly			Report on the strategic sectors of the “économie verte” (2013)
		Bioplastics: e.g. Plastipolis, Xylofutur, Pôle Fibre Grand Est, PEP			
		Biotechnology: e.g. Toulouse White Biotech			
b) Infrastructure	Cross-cutting technology	“France Genotoul”: network with 5 competence centres (GeT) and more than 140 research teams in the areas of genome sequencing, high-throughput analyses, bioinformatics			http://get.genotoul.fr
c) Commercialization	Private innovation capital	Three official labels for sustainable investment funds (ISR) are used in France. Life insurance companies and pension funds may invest in such funds.			White Paper on financing ecological transition (2013)
d) Demand-side instruments:	Tax relief on sustainable investments	Improvements in the tax deduction provisions for investments in sustainable energy		2014	White Paper on financing ecological transition (2013)
	Public procurement	Extended national action plan for sustainable public procurement: energy efficiency, bio-based products and life-cycle analyses		2014 - 2020	Plan national d'action pour les achats publics durables (PNAAPD)
	Labels	Label for buildings made from renewable resources (Batiment biosourcé)		2012	http://www.certivea.fr/certifications/label-batiment-biosource

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e) Policy framework conditions	Plans for industrial renaissance	Analysis of barriers to investment and to industrial transition in 34 areas, e.g. green chemistry, biofuels, wood construction, food systems		2014–2020	The new face of industry (2014)
	Participation and political representation	Eco-industry committee for closer cooperation between green economy and policy makers		since 2008	COSEI (Comité stratégique des éco-industries)
	Green taxes	Taxes on CO ₂ emitting propellants and fossil fuels are being progressively increased.			Comité pour la fiscalité écologique (website)
		Tax exemption for biofuels is gradually being phased out over 3 years.			
	Laws and regulations	Examples: Ban on plastic bags with the exception of compostable plastics. Approval of natural pesticides and plant health measures. Ban on aerial spraying of pesticides.		2014	Legislative initiative for biodiversity. Law on the future of agriculture, food and forestry (2014)