

# Horizons

2030  
2050

Foresight Unit News

## CONTENTS

P.2 | ANALYSIS  
& DEBATE

**Biodiversity  
in the future**  
2030 visions?

P.15 | FORESIGHT  
SCANNING

> Biodiversity foresight  
> Spatial planning  
> Green economy  
> Lifestyles  
> Climate change

P.18 | NOTES

Publications/ Agenda/  
National and international  
meetings and conferences



“What realistic scenarios  
for **protecting  
biodiversity**  
between now and 2030?”

## Editorial

When they adopted the term “biodiversity” exactly twenty-five years ago, the scientists’ message was that **the challenge was not only protecting remarkable areas or species but facing up to a crisis, a complete overhaul of our relationship with nature** comparable in terms of scale to what led to the

disappearance of the dinosaurs 65 million years ago. Never in human history has the erosion of biodiversity been so rapid

than over the past fifty years. Today, two-thirds of ecosystems are exploited beyond their capacity. Since the end of the 1980s, much progress has been made in understanding the causes of this decline and identifying the considerable services provided to us free of charge by nature, which is indirectly the basis of at least 40% of economic activity. But the deadline fixed in 2010 to reverse past trends will not be respected and the fear is that climate change will accelerate the process. For France, like many other countries in the world, the two decades ahead will be therefore decisive. Between the biologists’ very long term and day-to-day actions, foresight has several important roles to play. First of all, making explicit and debating visions espoused by different actors. Secondly, connecting the forecasts made by scientists with anticipated changes in the economic, spatial planning, agriculture and energy. Finally, and most importantly, assessing opportunities and room for manoeuvre in the form of long term territorial policies to protect biodiversity, as realistically as possible in a context of economic difficulties.

**JACQUES THEYS**

Head of the Foresight Mission

## Questions/Answers to BERNARD CHEVASSUS-AU-LOUIS

**CGDD: What are the major challenges for biodiversity in France?**

**BC:** In my view, there are three major, interdependent challenges. The first is to switch from a biodiversity conservation policy based on protected areas to an overall and use policy. The second is to adapt a dynamic vision of biodiversity, which will evolve over time and in space rather than be fixed in a given state. The third is to promote an

ambitious ecological capital development strategy, rather than simply seeking to stop the erosion of biodiver-

sity. Indeed, I am convinced that this ecological capital will be a major sustainable development resource over the medium and long term.

**CGDD: How do you see the interaction between an economic approach and a territorial approach to biodiversity?**

**BC:** The economic approach presents two advantages: showing the often unsuspected importance of the “free” contribution of biodiversity to human wellbeing; identifying places and actors who produce these services and those who benefit from them at local, national and international levels. This approach can help outline a territorial project

which takes all these resources on board and creates dialogue between producing and consuming territories around ecological services.

**CGDD: What role do you see for foresight in these transitions?**

**BC:** Foresight allows us to tackle the long term question that economic analysis seems to ignore. Indeed, a simple update greatly reduces the pertinence of objectives fifty years ahead and beyond. And yet, the services of biodiversity in a given territory can only be used marginally today but be more important over the longer term, for example because of climate change or migratory flows.





## Biodiversity in the future: which visions for 2030?

**Heralded “Internal year of biodiversity” by the United Nations, 2010 should not just be a symbolic date.** Indeed, it marks the end of one cycle and the beginning of a new decade which will undoubtedly be decisive. In this third issue of Horizons 2030-2050, we thought it appropriate to shed light on this new phase by presenting a number of the contrasting visions which, in France or elsewhere in the world, may serve in the future as references for action. First of all, we should explain the hypothesis of a changing cycle.

### 2010, a pivotal year for biodiversity

**T**he end of a cycle... 2010 is the date by which most countries on the planet, ten years ago in Johannesburg<sup>1</sup>, committed to “reducing substantially the overall pace of erosion of biodiversity” and even, in the case of European countries<sup>2</sup>, to arresting degradation. It is also the target date of France’s national strategy adopted in 2004. More broadly, it will be an opportunity to take stock throughout the world after twenty years of the international convention which brought the notion of biodiversity into the public domain (Rio Summit, 1992).

#### ...but also the beginning of a decisive decade

As a key assessment date, 2010 will also be the beginning of a new stage which will undoubtedly be decisive for biodiversity protection at every level, from local to national to planetary. In October, the Nagoya conference<sup>3</sup> will be an opportunity to define new objectives globally. The same will apply in France and in Europe with the preparation of new medium term strategies. But beyond this very busy institutional agenda, 2010 will, also, open up a decade which, in the Franco-European context at least, will be rich in important “rendez-vous”: the hammering out of a new Common Agricultural Policy in



**“As a key assessment date, 2010 will also be the beginning of a new stage which will undoubtedly be decisive for biodiversity protection.”**

2013, the deadline for the first phase of the framework directive on water (2015), strategic orientations on renewable energy and the use of biomass, the definition of strategies for our adaption to climate change, and of course for France, the

implementation of measures decided within the Grenelle process. This is a whole new generation of challenges and opportunities which will have to be included in timetables currently being redefined.

## FRANCE'S PARTICULAR INVOLVEMENT

France is particularly concerned by the challenges and transformations ahead:

- **because its implication is strong on almost all decisive fronts for the future:**

agriculture, green energy, introduction of ecological infrastructures, protection of marine and coastline areas, nature in towns, climate change, international trade in species and genetic materials;

- **because it has substantial responsibilities in the area of biodiversity** – not only at European level, but, thanks to its overseas territories, also worldwide (see box below) illustrated by its recent inclusion in the list of mega-diversity countries<sup>4</sup>;

- **because, on account of its geography, it has always had special, undoubtedly**

- **more complex relationships than others, with its natural areas and territories:**

since it is neither the Netherlands, which are required by their population density to “manage nature like a garden”, nor the United States or Scandinavia, with their vast swathes of unoccupied land, France, needs to find its own solutions adapted to the country’s particular diversity, fragmentation and variety<sup>5</sup>. These particular responsibilities, against a backdrop of rapid and profound change, justify the initiative taken at the beginning of 2010 by the Sustainable Development Ministry to launch a foresight programme on biodiversity for all French territories<sup>6</sup>. The objective will not only be to identify major trends and transformations that will affect biodiversity by 2030, but also to open the debate around a whole set of

possible visions for public and private action in this area with, as a central challenge, the promotion of a much broader take-up of this notion beyond the restricted circle of already-convinced scientists and associations. ●

## France’s global, European and national responsibility faced with the challenge of biodiversity protection

### Global responsibility

The 12 French overseas territorial authorities (COMs) confer upon France a global responsibility for biodiversity protection. Nine of these territories, plus the Mediterranean, are included in the 34 biodiversity hotspots identified across the world. The wealth of biodiversity in these areas, often islands, accounts for 26 times more plants, 3.5 times more shellfish, 100 times more freshwater fish, and 60 times more endemic bird species than in metropolitan France. And their rhythm of extinction is 60 times greater. Through its presence in the three major oceans, France has the 2nd biggest maritime zone in the world, i.e. 11 million km<sup>2</sup>. With 58,000 km<sup>2</sup> of coral

reef and lagoons, France ranks 4th worldwide, with 10% of the world’s total. Depending on the region, estimates suggest that they are damaged to a level of between 10 and 80%. The “French Archipelago”, including French Polynesia, represents 20% of atolls on the planet. The area is subject to many global pressures linked to economic activities such as shipping and fishing and natural phenomena such as climate change.

### European responsibility

With less than 12% of the surface area of the continent, Metropolitan France 131 of the 216 habitat types of special interest under the Habitats Directive (CTE/DB, 2008) and 40% of European flora,

with a high proportion of endemic species, particularly in France’s Mediterranean and alpine areas. Three quarters of habitats are in an unfavourable state of conservation.

### Local responsibility

French land use is varied, meaning landscape diversity. Part of the diversity of its national ecosystems is covered by protection mechanisms which are localised in high potential biodiversity zones. National parks, natural regional parks, biotope orders and sensitive natural areas account for around one quarter of the surface area of metropolitan France. Between 2000 and 2006, the artificialisation of protected areas advanced apace.

“ France, more than others, needs to find its own solutions adapted to the country’s particular diversity, fragmentation and variety.”



## A multi-faceted problem that is still only partially understood

Contrary to nature conservation which goes back centuries, the concept of biodiversity is very recent, barely a quarter-century old<sup>7</sup>. It is not surprising then that it suffers a certain lack of buy-in, in spite of two decades of significant scientific and political development in the immediate past. This lack of awareness is one of the reasons that explains the gap between experts' diagnostics and anticipation of facts and public and socio-economic actor perception. In a survey commissioned in 1998 by the Natural History Museum in New York – confirmed by recent polls in France and Europe (graph p. 5) – 60% of non-scientists questioned recognised that they had little or no awareness of the concept of biological diversity and less than half felt that in it was a major threat to mankind<sup>8</sup>. For scientists consulted at the time, “the rapid disappearance of species is” on the contrary “a more serious problem than global warming or global pollution”. This opinion is corroborated by some of the leading global specialists who, in several recent articles on the limits of our planet, state that expressed as an acceptable rate of extinction of species, those limits are now exceeded one or twofold<sup>9</sup>” (diagram p. 5). Not only does the perception of the

**“The notion of biodiversity is very recent, barely 25 years old. It is therefore not surprising that it suffers from a lack of buy-in, even though over the past two decades scientific and political development has moved the debate substantially forward.”**

challenge differ between specialists and non-specialists, but the notion itself may be interpreted in different ways. Whilst in public opinion biodiversity is often associated with threats to the most emblematic areas and species (Amazonian forest, African savannah, the white bear, the blue whale, etc), for the scientists and most engaged actors this is just one dimension of a broader issue which has become considerably more complex over the last twenty years.

### **AN INCREASINGLY ABUNDANT AND COMPLEXIFYING TOPIC**

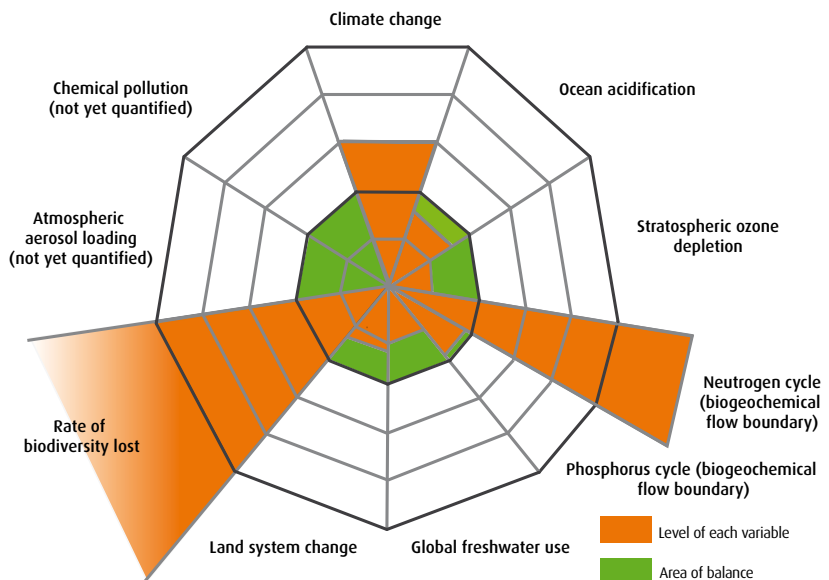
By extrapolating to the extreme, we could say that this partially-understood complexification has evolved in two different directions.

• First of all, **the way we understand nature and its functioning has become extraordinarily diversified and complexified**. Without questioning the foundations of conservation policies, the notion of biodiversity (from molecule to ecosystems<sup>10</sup>) has progressively federated a set of dimensions that until recently were only partially integrated: the diversity of species and ecosystems but also of genes; wildlife and managed or even man-made life (domestic species, genetic engineering); the scale of large biomes or regional areas but also the scale of micro-organisms (viruses and bacteria) or indeed the planet; common, ordinary, or outstanding nature. The notion of biodiversity has also introduced a dynamic dimension and a historical

depth which signals a change from the apparently more static perspective associated with protecting nature – replacing the idea of conservation of what exists in practical terms by the idea of variability, adaptability, resilience and genetic information<sup>11</sup>, in a resolutely long or even very long term perspective<sup>12</sup>. More fundamentally still, biodiversity has introduced the idea of “simultaneously taking an interest in the scale of dynamic interactions between all levels of organisation of living things, genetic variability, the specific assets of ecosystems and ecological diversity<sup>13</sup>” and therefore looking to genetic engineers, ecologists, systems engineers, palaeontologists, etc. In 2002, Robert Barbault saw this as “a major epistemological leap forward”.

- However, this is not the only change resulting from the emergence of the concept of biodiversity. After this first complexification linked to the dynamic of the scientific field came a second, perhaps even more decisive development, which involved **bringing nature within the economic and social sphere**. It is on this level that changes observed over the past twenty years have been the most visible, through three major stages:
  - 1992: the adoption by the Convention on Biological Diversity (CBD) of international regulations defining rights of access and ownership of genetic and ecological

## PLANETARY LIMITS widely exceeded in the case of biodiversity

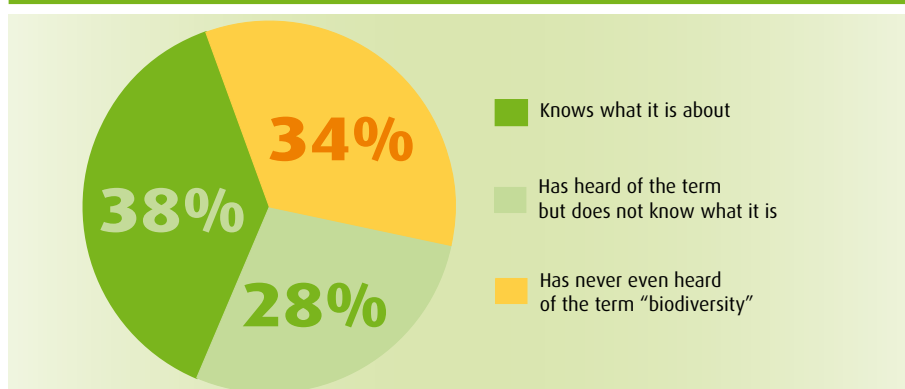


Source : Planetary Boundaries : Exploring the Safe Operating Space for Humanity, Johan Rockström et al, septembre 2009.

- resources;
- 2003-2005: the Millennium Ecosystem Assessment’s explanation of the notion of “ecosystem services<sup>14</sup>”;
  - more recently: systematic – albeit ambitious – efforts to make an economic assessment of these services as a prelude to new market mechanisms<sup>15</sup>.

The economy had forgotten that nature was a source of value and directly involved in a non-negligible part of →

## STILL AN UNFAMILIAR NOTION for Europeans



Source: EUROBAROMÈTRE, european Commission, march 2010

**Biodiversity foresight also means talking about the future of pharmacy, agriculture, urban development and energy.”**

→ productive activity: the figure of 40% is often quoted. Over the past decade, numerous analyses have said as much. They show, for example, that biological diversity can be correlated with the primary productivity of grasslands<sup>16</sup>, that the economic value of many sustainably exploited areas is generally greater than that of more “mining” based operations (graph below)<sup>17</sup> and that the value of services provided by ecosystems is close to half of global GDP (€23,500 billion) and that their depletion could represent more than 7% of GDP in 2050<sup>18</sup>. Here again, it is important to note that all these recent economic developments, on the basis of the notion of biodiversity, place us in a very different position than the level of knowledge allowed 20 or 30 years ago. It is not just about attributing value to remarkable natural areas, but constructing the foundations of an “oe-economy<sup>19</sup>” or a “bio-economy<sup>20</sup>” integrating the assessment of natural assets and production capacities. In other words, biodiversity foresight also means talking about the future of pharmacy, agriculture, urban planning and energy.

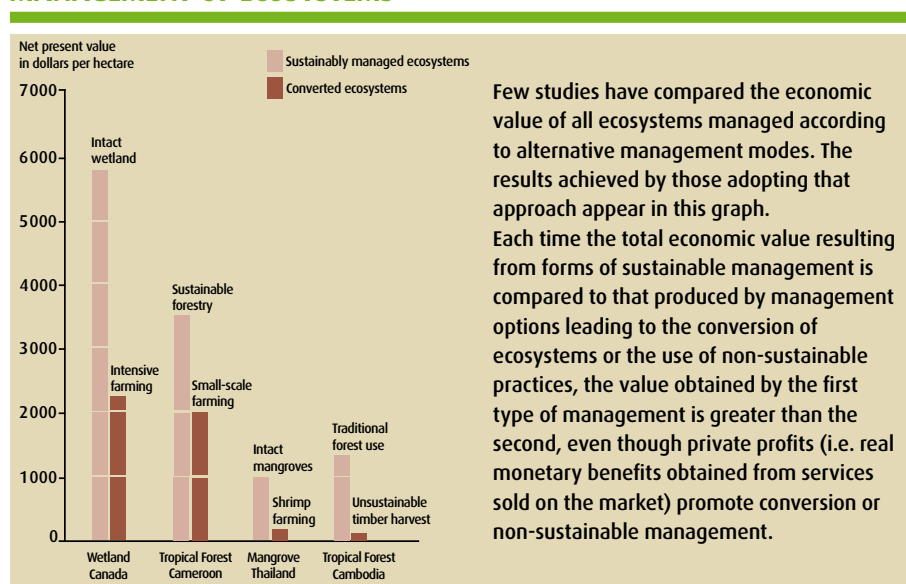
## AN OPENING WHICH RAISES PROBLEMS OF CHOICE

The figures cited bear witness to the change of scale which the emergence of the notion of biodiversity has created. But this extension raises at least as many challenges to as direct justifications for greater protection of nature. Representing the complexity of living things – with their overlapping nature – or rebuilding the foundation of a nature economy is easier said than done. The multiplication of dimensions that need to be taken into account is, at the same time, a source of ambiguity, controversy and a whole range of unanswered questions<sup>21</sup>. Do species or ecosystems need to be prioritised? In situ or ex situ conservation? Remarkable nature at international level or ordinary nature? Economic or non-economic functions of biodiversity? Genetic engineers’ perspective is not necessarily the same as that of experts in ecology and there is no automatic convergence between the

objectives of protection and those of optimal management of natural assets<sup>22</sup>. But more importantly, the question is whether the notion of biodiversity, which by considerably broadening the scope of scientific and economic dimensions of the protection of nature, has finally won over a large part of the public. It is in the light of these questions that **the issue of the relationship with territories and, more specifically still, the role of territorial foresight** is raised. Whilst the key challenge is genetic erosion or species at planetary level, we could easily imagine very broad non-territorialised biodiversity foresight focused on a number of remarkable areas and on a number of major upstream determinates (extraction of resources, urbanisation, agriculture, climate, imported species.) A sustainable development foresight on the other hand, with a vision that is as realistic and adoptable as possible of the practical interactions between human activities and services provided by nature (including landscapes), the territorial dimension therefore becomes first choice. It is also a much more information-demanding approach because it means taking an

interest “not only in the variability of living organisms but also their abundance, their systemic interrelationships and their spatial distribution”<sup>23</sup>. And yet this data is still unfortunately very incomplete, in particular at its most useful level, that of the major territories, regions and countries. ●

## ECONOMIC VALUE DIFFERENTIALS FOR THE BENEFIT OF THE SUSTAINABLE MANAGEMENT OF ECOSYSTEMS



Few studies have compared the economic value of all ecosystems managed according to alternative management modes. The results achieved by those adopting that approach appear in this graph. Each time the total economic value resulting from forms of sustainable management is compared to that produced by management options leading to the conversion of ecosystems or the use of non-sustainable practices, the value obtained by the first type of management is greater than the second, even though private profits (i.e. real monetary benefits obtained from services sold on the market) promote conversion or non-sustainable management.

Source: Secretariat of the Biological Diversity Convention (2006) *Global perspectives and biological diversity*, second edition, Montreal.

# Major trends and new challenges for 2030

**B**eyond an awareness of the services provided by nature, the past ten years, and particularly the Millennium Ecosystem Assessment, has allowed us to make considerable progress in understanding trends affecting biodiversity. But, paradoxically, these trends are better understood and modelised at a global level (major biomes and planet) than at a national level such as for France. Clearly, the majority of factors which, tomorrow, will help explain the development of biodiversity in France, are shared with many others. But in order to have as clear an image as possible of the challenges which are faced by biodiversity management by 2030 and

development is a further depletion of biodiversity of 7-10% at least (see box p. 8), with some scientists talking about the risk of the disappearance of a further one million species as a result of global warming<sup>27</sup>.

## FIVE MAJOR EVOLUTIONARY FACTORS

In all countries, but to differing degrees, the same five factors can be identified as the source of these changes:

- changes in land use (deforestation, urbanisation, infrastructures);
- over-exploitation of resources;
- local and diffuse pollution;
- introduction of invasive exotic species;
- climate change.

**“By 2050, some scientists are talking about the risk of the disappearance of a further one million species as a result of global warming.”**

the territories, it is important to add specific characteristics linked in particular to the major political choices to be made by then in terms of agriculture, energy or spatial planning.

## MAJOR TRENDS

Several historical and foresight analyses on the evolution of biodiversity at **global level**<sup>24</sup>, converge around the following key messages:

- since the industrial era, we have entered a multi-secular phase of reduction of terrestrial biodiversity which has already led to the disappearance of around 30% of that biodiversity<sup>25</sup>;
- this erosion trend has clearly gathered pace over the past fifty years<sup>26</sup>;
- the objective fixed for 2010 to halt this depletion or at least slow its pace will not be achieved;
- and that by 2050, the most likely

Although everybody agrees that changes in land use have historically been the most decisive, controversy still exists as to which direct and indirect factors will be the most important in the future: the development of agriculture (see box p. 8) or infrastructures and climate, as indicated in the OECD assessment of 2008<sup>28</sup>.

**The same evolutionary profiles and the same pressures or risk factors apply to France**, with recurrent problems linked to the transformation of habitats and the pollution growth (pesticides in particular), growing concerns about invasive exotic species, but undoubtedly more moderate extraction of resources than elsewhere (except in fisheries). The deep transformations in rural areas that France experienced after 1950 (transfer of ownership, intensive farming, fragmentation, drying of wetlands, →

## Figures

**50%**  
The proportion of wetlands which have disappeared in France over the past century

**6,888**  
The number of additional species threatened with extinction globally which have been added to the IUCN red list in the last ten years, i.e. a 60% rise since 2000

**€153 billion**  
The economic value of services rendered by bees for the pollination of crops, i.e. the equivalent of 10% of global food production

**36%**  
The percentage of species of mammals threatened with extinction in France

→ reduction of green spaces) will continue to have major impact, as already observed between 1989 and 2008, with a reduction of almost 30% in common bird populations in farming areas. The pace of consumption of agricultural and natural land by urbanisation and construction of infrastructures should continue at a similar level as today, at 60,000 hectares per year, or in other words a country every 10 years. Over the past decade the issue of invasive exotic species has emerged, in particular in overseas territories, and given recent trends (+ 50% over 4 years), we can assume that this phenomenon will continue.

In spite of the predicted extension of protected areas<sup>29</sup> and the development of much more reasoned farming and

greater consideration of ecology in spatial planning, the major trend in France, is a going on erosion of biodiversity, less than in the past but will still present. As in some areas the situation is not at its best in terms of protection – in particular in the western part of the country and in certain overseas territories (see map p. 9) – and due to its ecological richness, there is a risk that France continues to appear on the list of ten States in the world which are home to the most threatened species<sup>30</sup>.

**NEW CHALLENGES TO TAKE ON BOARD BY 2030**

On top of the recurrent changes just discussed, there are also uncertainties linked to the emergence of new problems – like climate change – or to the choices

that have been made or will be made in the future in key biodiversity areas such as agriculture, energy and infrastructure...

Without anticipating future foresight work, **it is already possible to enumerate ten trends or branching points which may have a major positive or negative impact on biodiversity towards 2030:**

- the capacity to manage pressures linked to concentration in the most ecologically rich zones (South-East, coastline) of a growing proportion of the metropolitan French population<sup>31</sup> ;
- the degree and speed of anticipation of the consequences of global warming;
- the way the challenges of prevention of climate change and biodiversity are handled in the management of renewable energies: impact on forests of the high

**1700-2050: THREE AND A HALF CENTURIES OF EVOLUTION in global biodiversity**

At the request of the Secretariat of the Convention on Biological Diversity (CBD), the Dutch environment agency performed a retrospective and foresight study in 2006 on

the evolution of biodiversity at planetary level and in the major regions worldwide. The two graphs below offer a brief summary of the results:

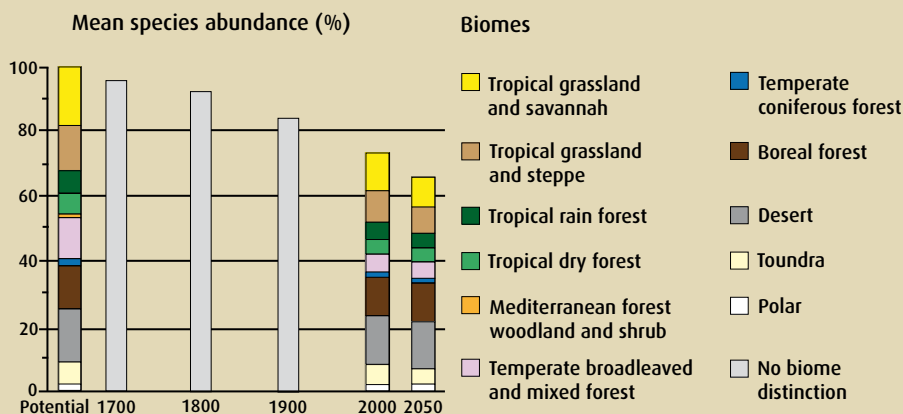
- The first, stretching over three-

and-a-half centuries of planetary evolution, shows a near-40% decline in the number of species over the period (30% in 2000);

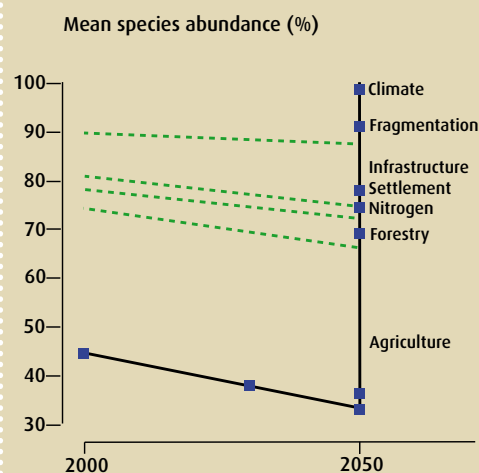
- The second, which concerns just Europe, focuses on foresight

towards 2050. It illustrates the importance of agriculture as a major factor of changing biological diversity, followed by infrastructure and urbanisation.

**The erosion of biodiversity at a world level (biomes)\* 1700 – 2050**



**Drivers of change by 2050 at the european level\*\* (BAU)**



Sources: \*Braal & Ten Brink, 2008. \*\*«Cross-roads of Planet Earth's Life Exploring means to meet the 2010 biodiversity», Target Study performed for the Global Biodiversity Outlook 2, 2006.



## HIGH PROTECTION OF NATURAL AREAS AT EUROPEAN LEVEL: less coverage in France



Share of protected areas\* in % of total area 2004

- up to 10
- 11 to 20
- 21 to 30
- 31 to 40
- 41 and more
- no data

Number of sites

- up to 25
- 26 to 100
- 101 to 250
- 251 and more

Note:

Protected areas according to:

- ▶ national designations according to the definitions of the International Union of Conservation of Nature and Natural Resources (IUCN): Strict Nature Reserve, Wilderness Area, National Park, Natural Monument, Habitat/Species Management Area, Protected Landscape/Seascape, Managed Resource Protected Area.
- ▶ international conventions and programmes : Barcelona convention, Birds Directive, Biogenetic Reserve, European Diploma Type A, B, C, Helsinki Convention, Man and Biosphere Programme (MAB) of the UNESCO, Wetlands of international importance (Ramsar), World Heritage Convention.

Source: UNEP-WMC World database on protected Area; BBR on calculations.

demand for energy wood, localisation of wind farms and hydro-electricity generation facilities, options in terms of development of bio-fuels (first and second generation);

- the choices which will be made in 2013 for the Common Agricultural Policy and their consistency with the decisions taken during the Environment Grenelle<sup>32</sup> (in particular the 50% reduction in the use of pesticides by 2018): a new balance between the first and second pillars of this policy, support or not for organic farming or bio-fuels, abandonment or not of milk quotas, fallow land rules, Europe's attitude to the WTO<sup>33</sup>;
- taking biodiversity into account in the implementation of the future infrastructure master plan which is part of the recent Grenelle law (2,500

kilometres of railway lines by 2025...) and the way it interacts with the "green and blue plan" (Trame verte et bleue), which is currently being implemented;

- the way nature is integrated restored or "recreated" in sustainable or post-carbon cities models in the future;
- the future role of rural areas – and rural and nature tourism – in spatial planning over the next twenty years or as part of European regional initiatives;
- the decisions that will be taken on the development of biotechnologies and the bio-economy (green chemistry...);
- the level of achievement and possibly renegotiation or updating of the framework European directive on water, whose objective is to return to good ecological quality of waterways by 2015;
- the implementation of the "recent Grenelle of the sea" and the balance



**Without anticipating future foresight work, it is already possible to enumerate ten trends or branching points which may have a major positive or negative impact on biodiversity towards 2030."**



→ which will be found – in metropolitan France and France’s overseas territories – between the exploitation of new marine resources (energy, materials) and greater protection (creation of new marine parks, protection of coral reefs, replenishing fish stocks, implementation of the marine environment strategy framework directive).

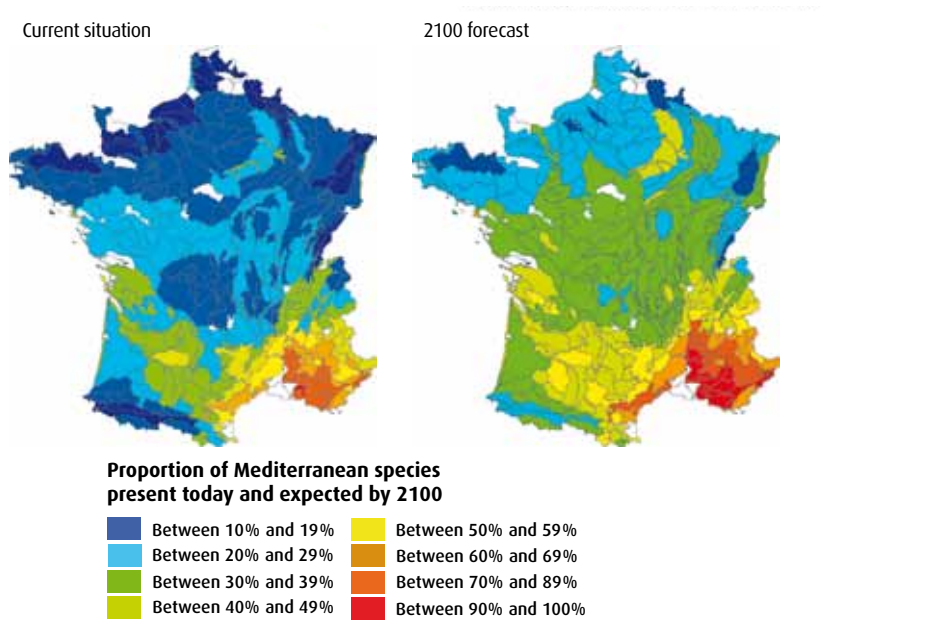
- the chances or possible threats resulting from the expected development of biotechnologies and the bio-economy;
- the degree of integration of biodiversity targets in sectorial policies and the implementation of the new national biodiversity strategy;
- the impacts of climate change and future energy transition.

As we see, the list of uncertainties, new opportunities and threats which could affect biodiversity by 2030 is long. From this information, **four transversal challenges are to be considered:**

- the consequences for biodiversity of increasing competition for resources of forests, sea and soil (both as space and as humus);

Whilst, by the end of the century, this latter factor will certainly be crucial, the scientists are only just beginning their assessment of its consequences on future biodiversity (see maps below) and the required adaptation strategies remain to be developed. ●

## THE POTENTIAL IMPACT OF CLIMATE CHANGE ON THE DISTRIBUTION OF FOREST SPECIES (2000-2100): expected trends for the spatial distribution of these species between 2000 and 2100



Sources:  
Interministerial ONERC Report, September 2009 (according to Badeau, comm. pers.)  
Roman Arnot Report, "Préparer les forêts au changement climatique", 2007  
Modelised maps – ARPEGE 2100

# Six contrasting visions of future action

**W**hilst today there is fairly broad convergence on the state of biodiversity and the reasons for its erosion, the debate on what should be done as a priority to protect it still remains open. These differing visions appear with particular clarity in the numerous scenarios that have recently been developed on the theme of biodiversity – and in particular in those proposed in 2005 by the Millennium Ecosystem Assessment (news in brief p. 15). In the extreme, what distinguishes these scenarios or normative action conceptions is, on the one hand, their **geographical and territorial dimension** – with more or less territorialised visions at different levels – and, on the other, their **degree of sectorial integration** – with priority given to conservation actions or the desire to adopt a more integrated perspective. **By cross-referencing these two dimensions, we obtain six contrasting visions of public action**

**in the area of biodiversity, as the illustration below shows.**

## NOAH'S ARK

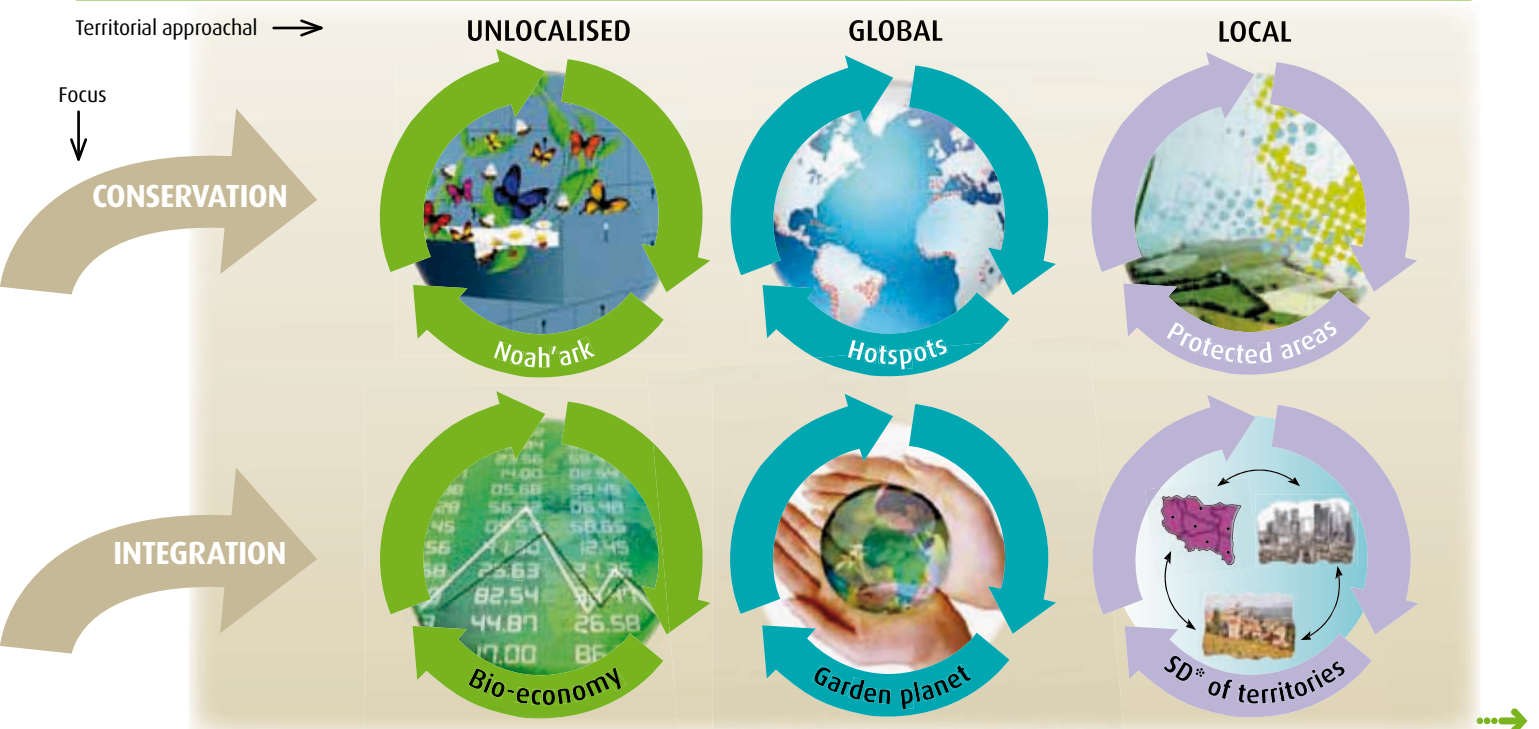
In the first vision, entitled "Noah's Ark" the objective is to guarantee the conservation of the global genetic heritage of species and possibly a range of ecosystems over a very long period by systematic coordinated ex situ safeguard measures. Banks of specialised genes will be set up in a network covering the whole of the planet, such as the Global Seed Vault in Svalbard to the north of Norway. Ecosystems can also be reproduced in artificial gardens, confined in bubbles where species and environments function in a closed circuit (cf: Biosphere 2 experiment in the Arizona desert in the middle of the 1980s). This scenario, which requires a highly centralised global architecture, sophisticated inventory and storage processes and very open access to genetic resources, quite naturally has the advantages and disadvantages of a

freezing existing reserves in their current state: reducing vulnerability to external uncertainties but at the same time slowing or halting development dynamics.

## A PRIORITY FOR BIODIVERSITY HOTSPOTS

Hotspots refer to 34 regions of the world which are characterised both by their exceptional number of endemic species (found nowhere else) and an exceptional level of threat. With the inclusion of high biodiversity safeguard zones, five intact, abundant eco-regions (Amazonia, the Congo Basin, etc.), two thirds of species of plants and half the species of endemic vertebrates are represented, plus 56% of mammal species and 78% of bird species under "critical threat of extinction"<sup>34</sup>. In a perspective of maximum return on investment from protection, this second vision seeks to concentrate conservation efforts on these areas. In France, this would mean putting the Mediterranean region, New Caledonia, Polynesia, Reunion

### SIX CONTRASTING VISIONS OF FUTURE ACTION IN THE BIODIVERSITY FIELD



→ **“ How, in the same bio-economy, can two spatially and temporally different approaches be accommodated, for conservation and the exploitation of benefits drawn from nature?”**

Island and Guyana at the top of the list. Assuming the sign-up of local populations and fair compensation and cost-sharing systems, this targeting of global priority territories has the disadvantage of any containment policy: demobilisation outside the areas concerned and in the end a level of efficiency which is limited by their interdependence with the outside world.

**THE PROTECTED AREA NETWORK**

The third vision, which is also centred on conservation, is based on the extension of traditional nature protection policies and adds the notion of ecological network and infrastructures. Per country or even region per region, the idea is to maintain high ecology potential areas in all their diversity and organise their networking and continuity through corridors promoting exchange. The bulk of European or French policy is to be found in this vision, with the objective of extending protected areas by 20%, developing high levels of protection (including numerous marine area projects) and, further to the Environment Grenelle, the implementation of France’s “green and blue plan” which will ensure the necessary continuities. All of this will go hand-in-hand with financing, compensation and fair cost and profit distribution mechanisms., The limits described in the previous vision apply, albeit on a lesser scale.

**TRANSITION TO A BIO-ECONOMY**

The fourth vision entitled “Transition towards a bio-economy” unlike the previous one, is based on the hope that creating a real economy based on nature, extended to services which are currently free of charge, can be a basis for effective regulation of biodiversity. It relies on two approaches

which need to be effectively combined:

- the development and sustainable management of multiple activities based on a biological resource foundation: agriculture, fisheries, aquaculture, green chemistry, bio-fuels, bio-energy, pharmacy... We believe that in Europe these activities represent €1,500 billion per year and 22 million people<sup>35</sup>;
  - the optimisation of functions and services provided free of charge by nature and the integration of these values into production costs or prices with a view to creating new markets: recently valued at €23,500 billion per year<sup>36</sup>!
- In both cases, the combination of a better definition of property rights and economic instruments (taxes, legal markets, compensation systems) is crucial both for internalising external costs and structuring supply and demand for these new services, similar to what already exists in the US, where companies and farmers who deplete wetlands must purchase environmental credits from specialised banks to compensate for the damage they have caused<sup>37</sup>. Apart from the practical difficulties of implementation (controversy over assessments, unwillingness to pay, uncertain economic models, etc.), this fourth vision asks a tricky question for the long term management of biodiversity: how, in the same bio-economy, can two spatially and temporally different approaches be accommodated, for conservation and the exploitation of benefits drawn from nature?

**THE GARDEN PLANET**

Managing the planet as a garden is the objective of the fifth vision. It is based on two components:

- a cultural change: switching from a predator-consumer attitude to one of care and gardener-of-nature;
- wide use of engineering, design of ecological systems and the most advanced techniques in this area: sophisticated observation systems, genetic engineering, ecological engineering, green and eco-efficient technologies, vegetalized urban planning, organic farming, industrial ecology etc.

Developed from the Millennium Ecosystem Assessment’s “Techno-garden” scenario, this fifth vision combines a planetary perspective (the image of a spaceship) and the desire to optimise the relationship between human activities and nature, within each territory, such as that achieved in very densely populated countries like Holland. In a very forward-looking attitude, it has the advantage of showing that biodiversity can be a formidable driving force for innovation in all areas, from flood regulation to architecture... But we also see risks: the need for heavy, complex investment, which is inaccessible to the poorest countries and territories, or indeed the less densely populated ones, and the possible side-effects of progressive artificialisation and the trend toward and exclusively technical control of nature.

**SUSTAINABLE DEVELOPMENT OF TERRITORIES**

The sixth and last vision proposes making the management of biodiversity part of a process of territorial sustainable development and intelligent management of natural assets. Many elements referred to earlier are included here, with two fundamental differences:

- the choice of the territorial level and the desire to adapt actions to the particularities of each area, without exclusivity;
- the desire to approach biodiversity at a multidimensional level – including ecological, economic, social and cultural components – without putting unbalanced emphasis on one or the other and permanently securing its upstream integration into sector-based policies:

land and spatial planning and economic development policies but also those governing quality-of-life for inhabitants and reducing ecological inequalities.

Another particularity of this final approach, which is both its strength and weakness, is to put the issues of use of nature, public access and participative governance centre-stage, making it a common interest issue and not only the domain of specialists. The advantage here is the anchoring of the management of biodiversity into the practices and decisions of all stakeholders. The disadvantage is that it makes it highly dependent upon the expectations and priorities of each territory.

## FORESIGHT, AS A USEFUL DEBATING TOOL

Even though these are caricatures, the six visions enumerated do show that there are very different perceptions of what it is possible in terms of biodiversity management, each of which has very strong internal consistency, often driven by specific actors. In this context, foresight study may be a very useful aid to promoting debate and therefore explaining choices but also helping assess, vision by vision, the barriers, opportunities or foreseeable impacts of the different strategy alternatives. These are the two major purposes of the exercise recently launched by the French ministry of sustainable development. ●

## Footnotes

### PAGES 2-3

- 1 Global summit on sustainable development.
- 2 During the Gothenburg conference of 2001.
- 3 Meeting of the 10th Conference of the Parties of the International Biodiversity Convention.
- 4 In order to qualify as a mega-diversity country, it must be home to at least 1% (3,000) of some 300,000 species of endemic vascular plants that exist in the world. In 1997, 17 countries appeared on this list, and France was added later. Source: *Regards sur la Terre*, Les Presses de Sciences Po, 2008.
- 5 Source: Jacques Theys, *Un nouveau principe d'action pour l'aménagement du territoire: le développement durable et la confusion des bons sentiments*. Note CPVS No. 13, January 2009.
- 6 See agenda below.

### PAGES 4-5

- 7 Generally, we can trace the start of nature protection policies back to the creation of the National Yellowstone Park in 1872. In France, after the creation of the Camargue Reserve in 1928, the laws of 1960 and 1976 were major milestones. The notion of biodiversity first appeared in the middle of the 1980s. (W.G. Rosen).
- 8 Source: J. Warrick, 1998, *Mass Extinction Underway, Majority of Biologists Say*, *The Washington Post*, 21 April. Survey cited by S. Aulong, I. Endelenbruch and C. Figueires in an article published in 2005 in the *Institut d'Economie Publique's* review under the heading: *Un tour d'horizon des critères d'évaluation de la diversité biologique*.
- 9 For biodiversity, the acceptable limit for the planet was fixed at ten extinctions per million species per year, i.e. ten times the rate considered natural. This acceptable rate is now exceeded between 10 and 100-fold. Source: Johan Rockström et al, *Planetary Boundaries: exploring the safe operating space for humanity*.

Ecology and society, org/vol14(2), 2009.

- 10 The definition of biodiversity given by the CBD in 1992 is that generally used: "Biodiversity is defined as the plurality of living organisms of any origin including, amongst others, terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are a part; this includes diversity within species (genetic diversity) and between species, as well as that of ecosystems".
- 11 According to J. Blondel, "Genetic information that each elementary unit of biodiversity contains is the ultimate ratio of biological diversity." Source: J. BLONDEL, *Biodiversité et sciences de la nature*, CNRS Editions, p. 23-36.
- 12 The specialists see the history of biodiversity going back 600 million years and the first extinction of species 440 million years. We are currently at the sixth. See Gilles Bœuf: *Quel avenir pour la biodiversité?* in *Un monde meilleur pour tous*, Odile Jacob, 2008.

13 Source: Robert Barbault, *Les grands enjeux de l'interdisciplinarité dans les recherches en biodiversité*, in *Biodiversité, quels enjeux de société?*, proceedings of the IFB days, 2002.

14 The Millennium Assessment proposes a typology in four major service types: the supply of resources (water, fisheries, energy...), regulation (climate, pollination, water purification...), support services (major geochemical cycles, formation of soil, production of oxygen...) and finally cultural services (recreational and aesthetic contributions, etc.). Source: *Millennium Ecosystem Assessment, Ecosystem and Human Well Being: Synthesis*, Island Press, 2005.

15 Source: OECD (2004), *Manual for the creation of biodiversity markets: the main challenges*.

### PAGES 6-7

16 Amongst the abundant recent literature on the biodiversity economy, particular note should be taken of the report published in 2009 by the CAS under the supervision of B. Chevassus:

## Footnotes

*L'approche économique de la biodiversité et des services liés aux écosystèmes.*

**17** This is what comes out of the European Biodeth (Biodiversity and Ecological Processes in Terrestrial Herbaceous ecosystems) programme. Source: M. Coreau, proceedings of the IFB days of 2003, who estimates that a 50% decrease in biodiversity can result in a reduction of 20% in the primary production of prairies.

**18** Source: Sukhdev Report (TEEB) on the cost of the loss of biodiversity, commissioned by the European Union in May 2008, www.teebweb.org

**19** Reference to Pierre Calame's book, *Essai sur l'économie*, éditions Charles Léopold Mayer, February 2009.

**20** The recent OECD report published on this theme: *The bio-economy to 2030*, OECD, 2009.

**21** All these issues are raised by Gilles Boeuf, in a summary report published in 2008 by Odile Jacob, *Un monde meilleur pour tous*, under the heading *Quel avenir pour la biodiversité?*

**22** See the controversy that developed in the US during the

1880s concerning forests, between the defenders of conservation, partisans of a better use of these forests (Gilford Pinchot), and partisans of preservation (John Muir) and partisans of maintaining the wild state. Source: Franck-Dominique Vivien.

**23** Source: Georgina Macé, International Biodiversity, Science and Governance Conference, Paris 24-28 January 2005.

**24** Sources: Scenarios and models for exploring future trends of biodiversity and ecosystem services changes, IEEP, for the European Commission, September 2009.

**25** Concerning marine biodiversity, figures available to us are still rather worrying. Eg: the proportion of over-fished stocks increased from almost zero to more than 60% over a period of fifty years (1950-2000)!

**26** To the extent that today 36% of species studied by the IUCN are under threat throughout the world, including 1 mammal in 5, 1 amphibian in 3 and 70% of plants.

**27** The indicator used to calculate this figure is that developed by the Dutch environmental assessment agency, the MSA (Mean Species Abundance). The hypothesis of the disappearance of one million species

due to climate change appeared in an article published in 2004 in *Nature* by Thomas et al (424, 145-148), with a range of extinction of between 15 and 37%.

**28** Source: Bakkes and Bosch, *Background report to the OECD environmental outlook to 2030*, MNP for the OECD, 2008.

### PAGES 8-9

**29** With the objective, established by the Environment Grenelle of doubling areas subject to high protection (today's level is 1.3%).

**30** France, because of its ecological diversity, ranks 8th worldwide and 4th in Europe of the most threatened countries. In metropolitan France, 19% of reptiles, 21% of amphibians, 26% of birds and 9% of mammals are seriously threatened with extinction.

**31** With, for example, the prospect of a 3.5 million increase in the coastal population by 2030.

**32** 50% reduction in the use of pesticides by 2018; allocation of 20% of useful farming land to organic farming.

**33** On the possible impacts of different scenarios of modification of CAP after 2013, a useful reference

is the recent work of the INRA entitled: *Prospective agriculture 2013, résultats et enseignements principaux par scénarios*, 2008.

### PAGE 11

**34** Source: *Regards sur la Terre, 2013, résultats et enseignements principaux par scénarios*, 2008, in a book dedicated to biodiversity.

### PAGE 12

**35** Estimate taken from the European Commission report in preparation for the Nagoya conference: *The future of the protection of biodiversity in the EU?*, January 2010.

**36** Source: Sukhdev Report, mentioned in note 21.

**37** Since the beginning of the 1980s, the US have put in place a series of biodiversity markets now valued at in excess of \$3 billion, one of which concerns wetlands (Wetland Bank). Source: Worldwatch Institute, 2008, State of the World Report.

## The "biodiversity and land use 2030 programme"

The "Biodiversity 2030 programme", launched at the beginning of 2010, is part of the debate on the review of the national biodiversity strategy.

The originality of this foresight programme is that it combines

### THREE OBJECTIVES:

- to as broad an audience as possible and to the actors concerned, to propose as clear a vision as possible of the future challenges faced by biodiversity in metropolitan France and its overseas territories;
- provide elements allowing the Sustainable Development Ministry and other partners to design their long term biodiversity strategies and better take biodiversity into account in their sector-specific policies;
- better integrate the theme of biodiversity into territorial foresight approaches.

The programme is organised around **FOUR MAIN APPROACHES:**

- a foresight working group, led by the Foresight Mission in collaboration with the directorate-general of spatial planning, housing and nature, barriers;
- a research programme structured around opportunities and hurdles for transition: analysis of actors' strategies, lead time for implementing public actions, quantified and spatialised scripting of the expected changes of biodiversity;
- a broadening of the approach to include overseas territories;
- a symposium organising the debate between all the actors involved in this field.

It should be completed by the end of 2011 with the publication of a report proposing long term actions.



**@ BIODIVERSITY FORESIGHT** Writing: Annabelle Berger

## FOUR REFERENCE SCENARIOS ON THE FUTURE OF GLOBAL BIODIVERSITY: THE MILLENNIUM ECOSYSTEM ASSESSMENT (MEA)

Still today, most of the debate on global biodiversity is marked by a conceptual revolution brought on by the Millennium Ecosystem Assessment from 2001 to 2005, under the auspices of the United Nations. 1,350 experts from 95 countries sought to answer five main questions over that period of four years: how have ecosystems and the services they produce evolved over past decades? What are the reasons for these changes? How have they affected man's living conditions? What scenarios could be imagined for the future? And, finally, what options are available in order to have better protection at every level? The resulting analyses paved the way for a major epistemological step forward in our understanding of nature's gifts, in the explanation of direct or indirect factors affecting the erosion of biodiversity but also in terms of foresight with the development of global reference scenarios.

The MEA scenarios are not forecasts. They simulate global long term prospects with a more limited objective of exploring unforeseeable

changes and key change moments. As the diagram below summarises, two families of spatial and temporal uncertainties explain this form of structuring: on the one hand, different scales of governance (at a planetary or regional level) and, on the other, level of caution in actions (reactive or proactive).

Four scenarios have come out of this:

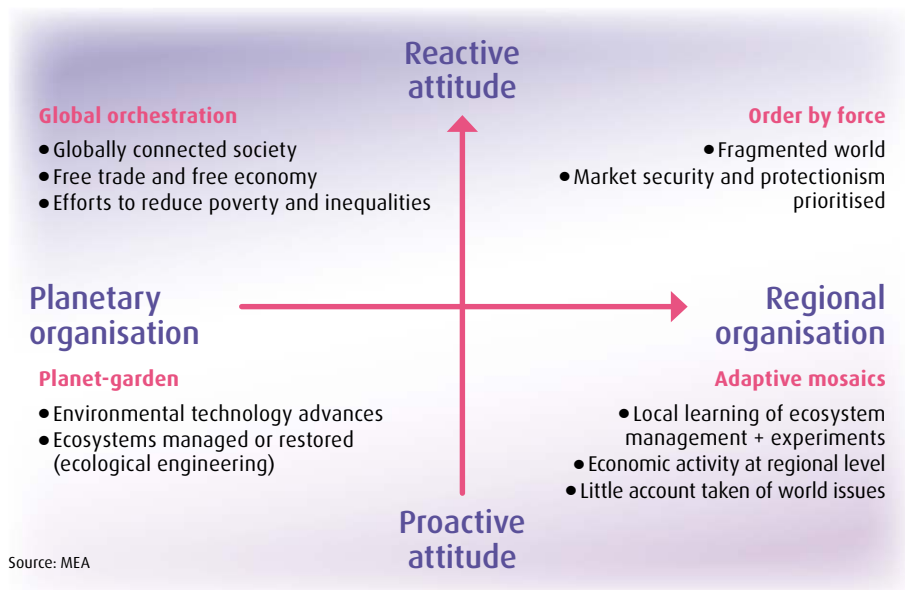
- **the first, "Order by force"**, est marqué par le protectionnisme et la régionalisation des échanges, limitant ainsi le commerce des espèces face à la montée de l'insécurité mondiale. Les marchés se développent localement pour privilégier l'accès aux ressources naturelles. La stratification de la société favorise ainsi le développement économique des zones à fort potentiel écologique dans les pays en voie de développement, par exemple, sans considération du report de la charge environnementale. L'érosion de la biodiversité est la plus élevée des quatre scénarios ;

- **the second, "Global orchestration"**, imagine une société entièrement connectée dont les moteurs sont le commerce international et la libéralisation économique. Avec la croissance économique la plus élevée des quatre scénarios, les axes prioritaires sont la réduction des inégalités humaines et sociales. L'érosion de la biodiversité continue, quant à elle, de progresser fortement en raison d'un désintérêt pour la diversité locale des écosystèmes et de l'attitude exclusivement réactive face à l'accroissement de la fréquence des catastrophes climatiques ;

- **the third, "Adaptive mosaic"**, explores the consequences of a decline in the legitimacy of internal institutions further to the possible failure of the Kyoto process. Markets and policies are regionalised, thereby allowing a role for local governance which facilitates the integration of interactions between biodiversity and wellbeing within socio-ecosystems. Society reinforces its proactive vision of the management of ecosystems with lower biodiversity losses. From 2050, the introduction of global governance will become urgent faced with the accelerating frequency of environmental disasters ;

- **the fourth, "Techno-garden"**, promotes ecological engineering in an entirely connected world. The lead time between decisions and solutions of ecological disruptions is reduced by greater flexibility. Economic growth is rapid, high and driven by the existence of a true ecosystem service market. Natural capitalism drives green urban management and dynamic organic farming. However, ease of access to resources increases ecosystem vulnerability.

### THE FOUR MEA SCENARIOS



Source: MEA

@ SPATIAL PLANNING Writing: Jacques Theys

## WILL THE UK RUN OUT OF SPACE BY 2050?



**Considering space and the ecosystems it supports as an asset that needs to be accommodated and managed over the long term globally:** this is the angle taken by the new foresight study recently published by the British Foresight Unit under the heading

Land Use Futures, making the most of land in the 21st century. Over the next forty years, available space in the UK will be the subject of much demand for housing, infrastructure and agricultural production, but also for new forms of land-use, plus a very sharp rise in the use of services provided by nature: carbon storage, development of renewable energies, protection of water resources, flood management, creation of ecological infrastructure, growing leisure markets, etc. It is expected that these competing demands will create numerous conflicts and tensions which will be added to already existing problems resulting in particular from the growing gap between the price of agricultural land and that of urban develop-

ment land (today the ratio is 1 : 700) and the increasing cost of access to first homes in relation to annual incomes (a ratio of 2.5 to 1, in the 1970s-1990s and 4.5 to 1 in 2008). The impact on natural capital will also be substantial in a context marked by climate change and the study's originality is that, beyond the traditional land analysis, it takes all of this into account. The three scenarios proposed for the development of green technologies (Leading the way), optimisation of nature's assets (Valued services) and the sale of land to international investors in a context of agricultural delocalisation (Competition rules) most importantly show that major changes in the use of land may occur over the next 40 years. A key message is

that space is a rare collective asset which now needs to be managed globally, which necessarily means a modification of governance systems and a profound change in the way these values are used in decision-making processes.

**SOURCE: Government Office for Science, Foresight Unit, *Land use futures: making the most of land in the 21st century, 2010.***

@ GREEN ECONOMY Writing: Jacques Theys

## WHO IS WINNING THE RACE FOR RENEWABLE ENERGIES?

Most G20 States have, over the past five years, committed to active, clean and renewable energy policies with investments on average increasing 50% over the period. The Pew Center, on the basis of data collected by the Bloomberg Group, published an initial comparison at the end of March and, State by State, analysed 2009 investments, installed capacity and progression since 2005. For the first time, China took a leading role in the world in this area of investment by putting in nearly \$35 billion in 2009, or nearly twice the investment of the United States which came in second (\$18.6 billion). Thereafter came Great

Britain (\$11.2) and Spain (\$10.2). According to this study, France, which began investing at a later date, was only 8th for installed capacity and 11th for investment but did distinguish itself with a very high rate of progression of installed capacity over the past five years, beaten only by Korea, China and Australia. In these investments, a variable component, estimated at between 25 and 75% according to the technologies, corresponds to jobs created. In the US. Concern was recently expressed at the fact that 70% of systems and industrial components required for the development of clean energies were imported, having a substantial impact on the trade ba-



lance deficit. It is significant that in California almost half of the solar market (46%) is today occupied by Chinese companies.

**SOURCE: The Pew Charitable Trust, *Who's winning the clean energy race?*, March 2010.**



## SUSTAINABLE DESIGN IN DAY-TO-DAY LIFE

What would life be like in a sustainable society? François Jégou and Ezio Manzini, two professors at the Politecnico de Milan design faculty (Italy), have co-produced a collection of scenarios under the heading Sustainable Everyday Project, which sketches out our reduced impact on the environment and regeneration of the social fabric around us. Efficient mobility, localised working, natural local food sources, integration of children and ages, direct links between town and country, the “multi-local” town may be a place for social innovations which may “if we promote their growth and spread, renew our life model in favour of a more citizenry-based and more sustainable society”. Thus, design eases the difficult transition from the sui generis object with a somewhat superfluous image to an ecologically and socially useful object helping us to imagine the lifestyles of the future. The tools that the

designer has at his disposal to achieve this are illustrated scenarios which allow him to project the possible outcomes more easily:

- **moodboards** images that visualise an ambiance, an emotion, and the environment of a project;
- **photostories** tell the story of a project in pictures;
- **objects** such as maps which are used as a support for discussion with users;
- and finally the construction of solutions, in terms of objects, information, environment and services.

Based on the participation of connected citizens (contributive society), this approach also features in the UNEP’s Creative Communities for Sustainable Lifestyles pro-

gramme for China, Brazil and Africa, all emerging economies. But it also relies on the capacity of industry to seize upon the most promising initiatives in the field of sustainable development...

SOURCE : <http://sustainable-everyday.net/scenarios/?page id=26>



## A REGIONAL FIRST: BRITTANY ADDRESSES ADAPTATION TO CLIMATE CHANGE

The recent publication by Brittany’s economic and social council of a report entitled *Pouvoir et démocratie en Bretagne à l’épreuve du changement climatique (Power and democracy in Brittany facing the test of climate change)* marks a dual event. Firstly, because it is the first time that a territorial authority has addressed the question of climate from the point of adaptation and not attenuation. Secondly, because almost the whole document is structured around a central question – again is original in its form – concerning the democratic challenge faced by regional leaders when addressing this problem.

Faced with the consequences which could result from climate change and the possibility of more rapid global warming than forecast, four scenarios are proposed which combine several possible modes of intervention and interaction between local, national and international actors:

- **in the first, “A pilot for the planet”**, regulation is primarily international and leads to an authoritarian distribution of restrictions, such as allocation of quotas of climate refugees coming from both inside and outside France to the region;
- **in the second, “The climatizing State”**, it is the States, standing in for a defaulting global governance, which equip themselves with remote monitoring tools (assessments, indicators, standards, specifications) leaving the local authorities with a simple role of relay;

• **the third scenario, “They’ll cross that bridge when they come to it”**, imagines a situation in which no coordination body manages to take control and where there is chaotic confusion between powers, with competition and permanent conflict between institutions and interest groups;

• **and finally, “Working together against all-comers”**, refers on the contrary to a joint regulation hypothesis which gives a major role to local democracy and civil society. It is not necessarily the ideal scenario because it risks an excess of localism and short-term outlook of a problem which necessarily concerns successive generations.

As a precautionary measure, the report does not end with specific recommendations and actions but a list of ten questions which should be of interest to all regions and local authorities seeking to engage with active climate change adaptation policies.

SOURCE : [www.cesr-bretagne.fr](http://www.cesr-bretagne.fr)

By **2030**  
almost **20%**  
of the Brittany coastline will  
be exposed to the risk of  
marine submersion

# The Foresight Unit



## Its Publications

### Research reports

—  
**FUTURIBLES/MISSION PROSPECTIVE (POSSIBLE FUTURES/FORESIGHT MISSION)**

*Science and technology foresight : four French case studies.*

collected essays by Hugues de Jouvenel, Jacques Theys and Sébastien Maujean, with a foreword from Paraskevas Caracostas, january 2010

.....

**JULIEN LANGÉ, ACT-CONSULTANTS**

*Les réseaux de la "ville post-carbone" à l'échelle européenne et mondiale.*

march 2010

.....

**JACQUES CHEVALIER, CYRIA EMELIANOFF, ELSA MOR**

*Les villes face à la transition énergétique : quelles politiques locales ?*

ESO-Le Mans, université du Maine, volume 1, may 2010

.....

**STÉPHANE CHEVRIER (MANA), GÉRARD DARRIS ET VALÉRIE GAUTHIER (CERUR),**

*Habitat post-carbone. Scénarios de "back-casting" sur la "décarbonisation" du parc de logements existants.*

may 2010

.....

### Articles and books

—  
**JACQUES THEYS,**  
*Le développement durable, la seconde étape.*

in coordination with Christian du Tertre, Félix Rauschmayer  
Éditions de l'Aube, march 2010

.....

**JACQUES THEYS**  
*Trois conceptions irréductibles de l'environnement.*

in *Écologies urbaines* under the supervision of Olivier Coutard and Jean-Pierre Lévy, Villes collections, Anthropos and Economica, 2010

.....

Coming soon \_\_\_\_\_

**CLAUDE SPOHR** (under the supervision of)  
*Dictionnaire des phénomènes liés au changement climatique et de leurs impacts sur le littoral métropolitain*

Ministry of Sustainable Development, Météo-France, BRGM, Ifremer, CETMEF, IDDRI, october 2010

.....



## Agenda

### Past events

#### 11 june

Sustainable Development Ministry, Grande Arche, Paris - La Défense

→ **8th RESEARCHER-ACTOR SEMINAR ON THE POST-CARBON TOWN**  
"Adaptation of towns to climate change"

#### 17-18 june

Sustainable Development Ministry / Cemagref / Onema, Antony.

→ **FORESIGHT MEETINGS**  
"Where is France on water foresight in 2010?"

#### 25 june

Sustainable Development Ministry, Paris.

→ **FORESIGHT GROUP**  
"Sustainable territories 2030"

#### 1 july

Sustainable Development Ministry, Paris.

→ **FORESIGHT GROUP**  
"Biodiversity foresight"

#### 6 september

Sustainable Development Ministry, Paris

→ **FORESIGHT GROUP**  
"SUSTAINABLE TERRITORIES 2030",  
Environment and climate change

### Future dates

#### 7 october

Sustainable Development Ministry, Paris

→ **FORESIGHT GROUP**  
"Biodiversity foresight"

#### 8 october

Science Po, Paris

→ **LIFESTYLES FORESIGHT,**  
4th PROMOV workshop

# Foresight elsewhere



## Publications

**PATRICK BLANDIN**

*Biodiversité. L'avenir du vivant*

Paris, Albin Michel, 2010

.....

**CAHIERS FRANÇAIS,**

*L'économie verte*

La Documentation française

n°355, 2010

.....

**CEPS (CENTER FOR EUROPEAN POLICY STUDIES)**

*Future impacts of Climate Change across Europe.*

WD no. 324, 2010

www.ceps.eu

.....

**AMÉLIE DARLEY, GWÉNAËLLE ZUNINO**

*Petit détour par les utopies d'aujourd'hui*

in *Envies de ville, les Cahiers de l'IAU*, no. 149, décembre 2008

.....

**NETHERLANDS ENVIRONMENTAL ASSESSMENT AGENCY**

*Growing within limits.*

*A Report to the Global assembly 2009 of the Club of Rome.*

2009

www.clubofrome.at

.....

**PIERRE JACQUET, RAJENDRA K. PACHAURI, LAURENCE TUBIANA**

*Villes : changer de trajectoire*

in *Regards sur la terre 2010. L'annuel du développement durable*, Presses de Sciences Po, 2010

.....

**PRICE WATERHOUSE COOPERS**

*Transportation and logistics 2030 : how will supply chains evolve in an energy constrained, low carbon world ?*

2010

www.pwc.com

.....

**THE FUTURES ACADEMY**

**DIB, DUBLIN INSTITUTE OF TECHNOLOGY**

*Built environment Foresight 2030 : the sustainable development imperative*

2009

www.thefuturesacademy.ie

.....

**UN HABITAT**

*State of the World Cities 2008/2009 : Harmonious Cities*



## International meetings and conference

### Past events

#### 7-8 JUNE

**European Parliament, Brussels (Belgium)**

⇒ FINAL EFONET CONFERENCE (European network on energy foresight)

#### 9-10-11 JUNE

**Willemschaftszentrum, Berlin (Germany)**

⇒ 18th GERPISA SYMPOSIUM, The greening of the global automobile industry during the crisis

www.gerpisa.org

#### 15-16 JUNE

**Vienne (Austria)**

⇒ 1st MEETING OF THE EUROPEAN FORESIGHT PLATFORM, DG Research and AIT, Institut culturel français

#### 22-25 AUGUST

**Oldenbourg et Brême (Germany)**

⇒ 11th BIENNIAL CONFERENCE OF THE INTERNATIONAL SOCIETY ON THE ECOLOGICAL ECONOMY, Advancing sustainability in a time of crisis

#### 10-11 SEPTEMBER

**Paris**

⇒ 3rd INTERNATIONAL CONFERENCE ON MIGRATIONS AND DEVELOPMENT École d'économie de Paris, Agence française de développement, World Bank

www.parisschoolofeconomics.eu

### Future events

#### 10-12 NOVEMBER

**Wageningen University (Holland)**

⇒ SCALING AND GOVERNANCE CONFERENCE 2010, Choices of scale for the management of complex systems?

www.scalinggovernance.wur.nl

#### 16-20 NOVEMBER

**Bruxelles (Belgique)**

⇒ EUROPEAN PLATFORM FOR BIODIVERSITY RESEARCH STRATEGY (EPBRs), POSITIVE VISIONS FOR BIODIVERSITY What kind of world would we want to hand on to our children? What research do we need to reach it?

www.epbrs.org

## For more informations :

- Mission-Prospective.Ddd2@developpement-durable.gouv.fr  
01 40 81 34 91
- www.developpement-durable.gouv.fr  
Section sustainable development



**Issue:** September 2010

**Responsible Editor:** Michèle Pappalardo

**Editor-in-Chief:** Jacques Theys

**Editorial Coordinator:** Nathalie Etahiri

**Graphic design and production:** MEEDDM/SG/DICOM/DIE/F. Chevallier

**Photography:** MEEDDM/R. Barré, A. Bouissou, L. Mignaux - Fotolia/Morganimation, Stas Perov, Walter Silvestrini

**Printing:** MEEDDM/SG/SPSSI/ATL2/Reprographic workshop

**ISSN :** current

**Legal deposit:** September 2009

**Reference:** DICOM/CGDD/LET/09032\_GB



Ministère de l'Écologie, de l'Énergie,  
du Développement durable et de la Mer,  
en charge des Technologies vertes  
et des Négociations sur le climat

Commissariat général au Développement durable  
Délégation au Développement durable

244, boulevard Saint-Germain - 75007 Paris

Tél. : 33 (0)1 40 81 34 91 / Fax. 33 (0)1 40 81 35 61

