WATER AND WASTE POLICY IN FRANCE

by

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The policy on water and waste in France depends on the structure of the government, the interests involved, and the stakeholders in policy outcomes. The nature of the government in France is central and elite, making the rise of minority voices problematic. Nevertheless, the environmental movement is gaining momentum and creating pressure for effective water and waste policies. The main problem France faces in regard to water is the nitrate pollution. For waste, the siting of nuclear waste repositories and the recovery of materials to the landfills (recycling) are the most pressing issues.

Surprisingly, France has created two excellent policies involving the economic incentives that apply the "polluter-pays" system. The importance of a study of this nature is to analyze policies to find which are "exportable," that is, worth suggesting to another nation. Policy does not occur in a vacuum, especially in this era of easy communication and free-trade zones. The policies worth emulating in France are the system of water charges and landfill tax.

Though controversial, the results of an upcoming study involving the long-term observation of highly radioactive nuclear waste will also be interesting, and useful to all nations with nuclear-generating capacities.

Important concepts presented in this paper are stakeholders' influence in policy outcome, the "pusher, dragger" effect in international environmental politics, and the strong central state's influence in forming policy.

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CHAPTER 1
INTRODUCTION

GENERAL APPROACH

This thesis is an attempt to give its readers an introduction to French Environmental Policy. It is my hope that someone could read this paper and learn about how another country handles the very real environmental problems that governments must face today. No matter where we live, we must face two immediate concerns with the environment. One of these problems is finding and maintaining a clean water source and the other is where to put the waste we create.

Awareness of water and waste issues already impacts our everyday life. For instance, the French will use water sparingly, and Americans may recycle their soda cans. However, there are choices that the individual cannot easily make to ensure the ecological health of the earth.

By mediating the economy and industry, governments may exercise great control over the environment. Rogene Buccholz in Principles of Environmental Management: The Greening of Business, best explains the importance of public policy as an alternative of social responsibility. His broad definition of policy is the "course of action with respect to a problem... it refers to the collective nature of such action, and it does not claim public policy represents the interests of society as a whole. Enough interests have to be represented, however, so that the policy can be implemented effectively" (80). The definition of policy is changing in our shrinking world. Society as a whole is the global society.

Another complicating factor in creating effective policy is that we live in an international age. Businesses and governments are crossing political boundaries as

communication is improved. The impact of this improved communication is the realization of problems, markets, and political scandals that exist in other parts of the world. Already, developed nations are giving aid to lesser developed nations to ameliorate water and waste crises. By teaching a village to keep human waste out of rivers, the disease cholera can be eradicated. Governments can impact foreign nation's environments as well as their own.

As less developed nations continue along the path to industrialization, the water and waste problems will advance to the level more developed nations are facing. What answers will the "developed world" export? I feel it is important to shop around for environmental policies that work. This is why I feel it is important to study environmental policy of other developed nations outside the United States. The nations making up the G-7, or the most developed nations, will determine the environmental policy in lesser developed nations as a result of their aid and trade sanctions.

For example, in the recent Global Climate Convention at Kyoto, the G-7 urged India to cut back on its greenhouse gas emissions. India responded by urging the G-7 to pay for the technology. My question is, what if the US developed the plan for reductions of greenhouse gases, when in fact, France had the better domestic plan in place for reductions? What if the US sold India, at a reduced cost, scrubbers that were far surpassed in efficiency and economy by a scrubber manufactured in Germany? The answer is, the developing country will have a "solution" that would not really solve its environmental problems.

Governments everywhere must handle these situations or the citizens will feel the impacts. The goal of this senior thesis is to examine the ways that the French government is dealing with water and waste issues. By comparing different strategies, perhaps one day developed governments can share solutions to these dilemmas.

WHY FOCUS ON FRENCH ENVIRONMENTAL POLICY?

One can only hope that methods and management policies are examined from all over the world before one nation convinces another to solve problems in a certain way. The point is, comparing policies before exporting them to other nations could curtail misguided water and waste management for those nations receiving guidance and aid. One reason I chose to focus on France's water and waste policies is that, like the US, France devotes a large proportion of its GDP to foreign aid. "France is at the forefront in development aid and in aid to the countries in transition. In 1995, it was the largest donor in the G-7 in relative terms and the second largest in absolute terms. The environment is a major component of the aid it provides. Africa has played a key role in environmental protection in the recipient countries. Aid to countries of central and eastern Europe has also been significant" (OECD, 214).

Despite these considerable contributions, the French government is typically not seen as one that plans for the environment. The streets in France are littered, it derives more of its power from nuclear energy than other sources, it tested nuclear bombs over the South Pacific, and sank a Greenpeace ship from New Zealand (the *Rainbow Warrior* was investigating nuclear testing).

Admittedly, France's track record does not look good and you may wonder why one would study these policies. I am interested in studying environmental policy in France because I believe there is social interest in responsibility for the environment. The fact that there are some effective policies in place proves that public interest exists. By searching for the examples of poor environmental policy, and examples of policy worth emulating, I hope to find alternate solutions to environmental problems in France, as well as applications of policy in general.

Another fascinating aspect of French policy that led me to choose this topic is the influence of European free trade. Because the water and waste issues in France affect neighboring ecosystems, I could study policies that are as transboundary as rivers are. European environmental regulations could set the standard and the example that economic blocks all over the world could emulate. The French and European governments are both at work protecting the environment in France.

PERSONAL OBSERVATIONS

In the winter of 1997, I attended school in Avignon, a small city in the south of France. Before leaving the United States, I decided to take note of the state of the environment, the French perceptions of the environment, and the news of the environment on television. Immediately, I noticed that the streets were littered and there were no recycling facilities to be seen on the streets.

These initial observations made me believe that no interest existed to keep the environment clean. After a while, however, I could not dismiss *the cultural paradigm of efficiency*. Each evening on television I concentrated on translating car commercials that were selling the fact that "*votre vielle auto est moins efficace et plus pollutante*," or "your old car is less efficient and more polluting [than this new car here] ." All the cars I saw were tiny and efficient. Gas was expensive, and almost everyone walked to do errands. My host mother never owned a car, and did not seem to need one, because public transportation was easy to use and inexpensive.

Around the house, we were expected to take care not to waste water. It is very expensive in France. My shower/bath combo was to be brief, and ideally, just every other day. It is a sign of politeness to shut the door and turn off the light of every room to keep heat in and prevent heating or lighting an empty room, another example of cultural efficiency.

Watching the news each night on television for three months gave me the chance to see which environmental problems the media focused on. The state of potable drinking water was a big story. There had been droughts and shortages of water, and much of the water was unfit to drink from the tap, Evian bottles were everywhere. The heavily agricultural areas were also facing a nitrate-contaminated ground water supply.

In the Michelin Guide (a famous travel guide) to Provence, I found a section on the wetland area called La Camargue. There was a description of a plan that cleaned up the area to preserve the unique biodiversity of this estuary. There are flamingos and wild ponies and birds that can be found only there. But, there was also a heavy industrial center in the same area. An environmental group was able to protect this wetland. This helped me choose water as an area of focus for my thesis.

I did a report for my grammar class on the environment to express my disappointment in the lack of recycling for all the bottles of water I was drinking. I learned that my professor had a curbside recycling service. She assured me that recycling was important to the French, though terribly behind America in this regard. I had discovered my first French environmentalist. The wheels turned and questions lingered about the waste policy in France. What was the status of recycling, and what was happening to all the nuclear waste?

Other observations led me to believe that the French government was highly enthusiastic about its publicity campaign for nuclear power. Advertisements in conservative magazines exemplified the cleanliness of this kind of electricity production and the ads aligned the French national identity with this clean energy source. Furthermore, the ads touted the independence nuclear energy afforded the nation and the income it offered as an exported commodity to neighboring countries. The nuclear issue also promoted me to focus on waste policies.

My research question became: What environmental problems and policies for water and waste exist in France, how do they work, and who are the stakeholders in these

issues? I will organize the research in the following ways. First, I will give a framework for understanding French environmental policy. Misconceptions could result in giving the reader raw policy without the background needed to understand it. Then, I will present and analyze three current policies of water and waste. Through some comparison with the United States, and other countries in Europe, I hope to identify effective and ineffective policy. Then, by presenting the international issues of both water and waste policy, we can finally determine some lessons to better US environmental policy, and determine suggestions for French policy.

CHAPTER 2
POLITICAL STRUCTURE, CENTRALIZATION AND GEOGRAPHY

In this chapter I will explain the political structure of France. Then, I will cover the history of centralization, an important concept in French politics. Last, I will describe the geography of the nation to give the reader a picture of what type of environment France has to deal with. The intention of this chapter is to orient the reader before starting on the analysis of water and waste policies.

POLITICS IN FRANCE

To examine actual environmental policies, one must first study their political context. To conceptualize voting, the first task is to gain a functional understanding of France's political structure. The "institutional context" given for OECD Environmental Performance Reviews states,

> The French Republic is a parliamentary democracy. The legislative power lies within the elected members if the National Assembly and the Senate, while the executive power lies with the Head of State (the President of the Republic, elected on universal suffrage) and the Government, headed by the Prime Minister. Local government in metropolitan France comprises 22 *regions,* 96 *départements* and 36,433 municipalities (*communes*). *Regions* and *départements* are administered respectively by regional councils and general councils, in which the State is represented by regional *prefect* and *prefects.* (40)

Apart from the government structure, many electoral parties exist in France, spanning left to right. The common placement in the spectrum for the left is *Partie Communiste*, (composed of workers) and *Les Socialistes* (voters commonly include intellectuals, professionals and academics). These two parties are considered liberal, or even radical.

The middle of the spectrum includes the parties RPR and UDF, standing respectively for *Rassemblement pour la Republique* (commonly translated as Rally for the

Republic) and *Union Democratic Francais.* Jaques Chirac, the current President, is from the partie RPR. Voters for these parties often comprise business people and professionals. Two parties with environmental interest exist between RPR and UDF: *Les Verts* (the Greens) and *Generation Ecologie.* Each has its own history within the environmental movement. On the far right side of the spectrum there is the *Front National*, a nationalist and arguably fascist party. See fig. 1, appendix **I** for the spectrum of parties.

France is a parliamentary democracy, meaning that representatives from each region are sent to Paris to the National Assembly to vote. The head of government is the president who has considerably more power than the National Assembly. At any time, the president has the power to dismiss the assembly and call for reelections. In fact, this was the first act of the presidential administrations of both the current president, Jacques Chirac, and the late president François Mitterand. Neither the judiciary branch of government nor the legislative branch possesses the power to change central government policy, unlike the US "checks and balances" system.

Within this parliamentary democracy of France, administrative boundaries divide the country into regions and provinces, which are again divided into prefectures, comparable to our states and counties. Within prefectures are cities or municipalities. (see fig. 2, appendix I.) The prefecture is an administrative department similar to our counties. It is somewhat confusing because the word prefecture usually refers to the government of a *département,* rather than the geographic location. For example, the town *Avignon* , in the south of France, is in the*Vaucluse département,* which is governed by the *Prefecture* of *Vaucluse,* within the region of *Provence-Alpes-Côte D'Azur.*

On a map, however, you will find *Avignon* in the province of *Provence.* The *départements* are more commonly seen on maps because regions are clumped together, even though separate cultures can be found within one region. In *Provence,* for example, which is part of the region *Provence-Alpes-Côte D'Azure*, many distinct customs and even languages exist. Because the French government is fairly nationalistic, cultural distinctions

are rarely officially recognized. All official paperwork must be in French, although there are many languages spoken there.

Elections for municipal government officials are referred to as *Cantonal* elections, and from the cantonal elections departmental representatives are selected. In general, each county, or *canton,* has an influential town or city (municipality). From the pool of *départementale* officials, representatives for the *Conseil Géneral* are taken. Seats for the *Conseil Géneral* or General Assembly are allocated regionally. The *Conseil Génerale* represents the "intermediary tier of government between the region and the municipality" (Prendiville, Environmental Politics in France, 71).

If one were a French citizen from Avignon, one's representatives- elect would be as follows. There would be representatives for the canton *(Avignon)* and the *département (Vaucluse).* From the pool of officials at the departmental level throughout the region, (*Provence-Alps-Côte D'Azure*) the regional representatives for the General Assembly (*Conseil Génerale*) would be selected.

The most influential cantonal elections occur in the region of *Isle-de-France.* This region includes Paris and the surrounding suburbs. The *Conseil Génerale* meets in Paris, the government operates from Paris, and policy is very much centered around *Isle-de-France.*

THE ORIGINS OF THE CENTRAL STATE

One trait that characterizes French politics is centralization around Paris. According to Nelkin and Pollack, who wrote The Atom Besieged, "the French government is typified by a central, paternal air, despite a relatively high number of municipal councilors"(53). The citizens of France are well represented, but often lack influence in the outcome of central government policy. About 17 representatives exist for every 100 voters, about five

times the representation in the United States. Despite this large representative body, the government is still very remote and elite.

Governing is considered to be for, and centered around, Paris. All the fast-rail lines, called TGV, go to Paris. Someone who wanted to go directly from Provence to Burgundy would have to travel north (through Paris) then South-East to Burgundy, instead of being able to take a train due east. The significance of this is that the TGV is a central government -run operation. The rail is constructed by tax dollars, and many *provincial* people are inconvenienced by this centralization around Paris. (Any person who lives outside of Paris is said to be *provincial*, and popular Parisian culture considers it to be an insult.) All the representatives of all provinces live in Paris, and are possibly all acting as representatives for Paris, when the General Assembly meets. Unlike the US, which has a separate district for Washington D.C. (which is not a state), living in the capital greatly cuts off representatives from their regional interests.

The strong central government has its roots in pre-Revolutionary times. The French revolution in 1789 was created by gross inequality between the ruling aristocracy and the poor peasants. To ensure good government, one camp of revolutionaries, the *Jacobins* (the major force in the French revolution), believed there was a need for a strong central government. The opposing faction, the *Girondins*, believed centralization could be dangerous to the well-being of the republic. As it turned out, the *Jacobin* tradition lasted. This belief in the strong central government characterizes French politics on both the left and right sides of the political spectrum. According to Brendan Prendiville, in Environmental Politics in France,

> Republicanism in French political culture is a tradition which both the left and right wings lay claim to. The mainstream left, in particular, has always seen the State apparatus as the means to 'put society the right way up', to paraphrase Marx's opinion of Hegelian dialectics. The State was the instrument to be used in the necessary social change once it arrived in power and could finish the job the Jacobins started. It is the tradition from which the initial victory over the Girondins, sees society in terms of a monolithic block at the top of which stands the necessarily strong executive power. (85)

These central ties were strengthened by the "strong man" in Napoleon's empire. The strong central figure was also present within the Fourth Republic with Charles de Gualle. De Gualle, a W.W.I war hero, was the President who began the planning to become energy independent with nuclear plants (Prendiville, Environmental Politics in France 31). The typical French citizen considers the *patri* (country and family and nation) to be somewhat embodied in the President. The national anthem the *Marsailles* begins with the words "*allons enfants de la patri,*" which means "let us walk, the children of the nation-family." A French citizen's relationship with the government is through a relationship with the President, where the POresident is like the father of a nuclear family. During the 1958 Algerian War, a famous poem/folk song, *Le Deserteur* by Boris Vian, was written in the form of a letter to the President Charles de Gaulle. (Dear *Monsieur le President*, I don't want to go to war...) Today, this relationship thrives. Messages of protest are often directed at the President. Anti-nuclear posters demonstrate this. (See fig. 3-5, appendix I.)

It follows then, that the presidential elections are the most important aspect of French political culture. Without sending a candidate to election, no political party will be taken seriously. Both environmentalist groups, *Les Verts* and *Generation Ecologie,* have tried and failed to gain the presidency.

Because of this relationship with the central government, and ancient laws, French citizens do not have especially strong ties to associations. Napoleanic civil code prohibited the formation of groups over 20 without special authorization, and it was not until 1901 that the right of association was recognized. Examples of associations in the US are unions and interests groups like the Sierra Club. (see fig. 6, appendix I.) Unlike the United States, whose interest groups form huge lobbying powers, French associations exert virtually no political pressure.

THE PHYSICAL ENVIRONMENT IN FRANCE

BASIC GEOGRAPHIC ORIENTATION

France covers 500,000 square kilometers, making it the largest country in the European Union. Other territories belonging to France are located in Antarctica and in the Indian and Pacific Oceans. France also exerts a large influence (political and financial) in its former colonies in the Caribbean and Africa. As one of the largest countries in the EU, France has extensive coastlines. There are long coasts along the North Sea and the Channel, as well as the Mediterranean Sea and the Atlantic Ocean, comprising a length of 5,500 kilometers. The area that France claims as its own within the oceans and seas (or its maritime domain) covers 11 million square kilometers.

Because of its large size and geographical orientation, France is the only European nation with four distinct and beautiful biogeographic areas. The biogeographic areas are Continental, Atlantic, Mediterranean, and Alpine (mountain ranges include the Alps, Pyrnees and the Jura). France has abundant natural resources and is, therefore, responsible for preservation of many plant and animal species (OECD Environmental Performance Reviews: France, 35).

As far as water and waste are concerned, there is a possibility for many biogeographic areas to be spoiled by improper disposal and allocation. Some areas are especially vulnerable, such as the Camargue, the largest wetland in France which is situated on the Mediterranean coast of Provence. Some of the Camargue (about 13%) has been set aside for a nature reserve for animals such as the flamingo and Camargue ponies. Unfortunately, there is also an oil refinery in the Camargue.

Besides wetlands, the forest and woodlands cover 15.2 million hectares comprising about 28% of the land surface area. They are located primarily in the middle, east and south of the country. Dry and arid weather along with famous winds, such as *le Mistral*

(wind was so prevalent in everyday life that they were given names and are blamed for various physical ailments) in the south of France, make fires a threat to forest in the Mediterranean uplands and the Landes area of the south west.

Another important aspect of France's environment is its rivers. In general, there are great water resources there, including surface and groundwater. There are five major rivers, the Loire, Rhône, Seine, Garrones and Rhine (in order of decreasing size). The Rhine, although small, has been an important river in international environmental politics, as it borders Germany, France and Switzerland. It is heavily polluted and has been a point of contention for the downstream nations.

Because of the abundant water supplies, agriculture is an important sector of the French economy. About 4.3% of the GDP and 4.8% of employment is agrarian (OECD, 38). This fact accounts for the nitrate problem in the water supply and is a major environmental concern. Foreign trade is another important sector of the economy.

> Other European Union countries account for almost two-thirds of the French trade. The balance of trade, which has been unfavorable in the 80's, has steadily improved in the past few years and in 1995 France had a trade surplus of almost FF. 100 billion. High-ranking export and equivalent sectors in the balance of payments include agriculture, transport, aerospace, telecommunications, tourism and services, more generally. High-import categories include fuel and manufactured goods. (OECD, 38)

Basic things about the French economy that are important to remember follow. One is that the French franc (abbreviated FF.) is roughly equivalent to $5 US. Unemployment is now creeping towards 15% (Lhaïk, 35). This issue has now become the number one concern for most French politicians.

France's population is about 58 million and most of these people live in urban areas. About 74% of the population lives in 16% of the territory (OECD, 37). Most of the population, or about four out of five citizens, lives in medium-sized towns or rural areas. For a map of municipal France, see fig. 7, appendix I.

CHAPTER 3
HISTORY AND BACKGROUND: THE FRENCH ENVIRONMENTAL MOVEMENT AND PROBLEMS WITH WATER AND WASTE

Chapter 3 will be devoted to the rise of the environmental movement in France. The nuclear issue was a catalyst for the creation of environmental policies and also sheds light on the highly centralized nature of the government. The central nature of government was an obstacle to the protest against nuclear energy and the era brought both failures and successes to the environmental movement.

The continuing struggle for environmental policy is a struggle between *stakeholders*, another important concept. The stakeholder is an individual or group who wants policy to turn out in a certain way. For instance, the lumber industry in Oregon did not want the environmentalists' logging plan to go through in the recent controversy over the spotted owl. Both the environmentalists and loggers are stakeholders. This chapter concludes with the environmental problems that the environmentalists and the Ministry of the Environment face today.

THE FAILURE OF THE ACTIVISTS: THE ANTI-NUCLEAR MOVEMENT

The first awareness of water pollution occurred in the 1950s, and consciousness of limited resources rose throughout the 1960s and 70s. In 1968, Paul Ehrlich wrote the best-selling book, Population Bomb, and exclaimed "the battle to feed all of humanity is over. In the 1970s the world will undergo famines- hundreds of millions of people will starve to death." Bill McKibben commented on Ehrlich's words, "It all seemed so certain, so firmly in keeping with a world soon to be darkened by the first oil crisis" (59). The impact wave

of the Ehrlich book, as well as that of the oil crisis, hit France, but the definitive creation of the environmental movement coincided with the building of nuclear reactor plants.

Citizens grouped together to oppose a policy they disagreed with. Although the French protest and strike regularly, they are not traditionally in associations. Nelkins and Pollak explain the shunning of associations and the surprising rise of environmental groups in The Atom Besieged:

> The recent proliferation of environmental groups in France is all the more surprising in light of the prevailing skepticism about citizen participation. Sociologists explain this ambivalence in terms of *l'horreur du face a face*, a tendency to avoid relationships [associations] that could lead to interpersonal conflict or loss of freedom. Perhaps more important is the limited confidence that group action can effectively influence a remote central government. The political reality of centralization and the weakness of local government discourage the formation of pressure groups. (121)

Despite these anti-association cultural conditions, the environmental movement was slowly gaining momentum in France.

The heretofore extremist environmental movement was not organized until the anti-nuclear protests began in the 1960s. (Prendiville, Environmental Politics in France, 8). As mentioned before, Charles de Gualle designed France's atomic program after three consecutive and devastating wars (W.W.I, W.W.II and the Algerian War). The idea was to become energy independent, but the plan was obviously linked with the military. Afterall, the French had suffered terribly in W.W.II until the Americans bombed Hiroshima and ended the war. Nuclear capacity made this independence possible.

When the program began, an elite scientific group, along with the government, formed EDF (*Electricité de France*) and *CEA (Commissariat à l'Energie Atomique*). These two organizations began the planning and construction of nuclear reactors. Even before the construction of nuclear power reactors, some of the public was not happy. In 1962, Jean Pignero created APRI (*Association pour la Protection contre les Rayonnements Ionisants*) which was basically was against mandatory X-raying.

But, when construction of plants began, a broad group of people became involved with the anti-nuclear movement. The movement found support in the scientific community as well. In 1970, a group called GSIEN (*Groups de Scientifiques pour l'Information sur l'Energie Nucléaire*) was formed. These scientists were concerned with the technical risks and the lack of democratic consultation before the siting of reactors. GSIEN included the ex-director of CEA, Leo Kowaski, and an economist for EDF, Luis Puiseaux. This was alarming because they were formerly from the elite planning groups, the two bureaucracies behind the nuclear take-off.

Protests continued throughout the 1970s. The peaceful showing at the Bugey plant in Ain was 15,000 strong. Huge nuclear protests, like Bugey, brought environmentalists into the limelight. Bugey was a large and peaceful protest and was followed by a large and disorderly protest in 1976. An important link in the government's nuclear chain was the Super-Phénix plant in Malville. Brendan Prendiville, in Environmental Policy in France, calls the Super-Phénix "the jewel in the crown of France's nuclear program, which was to guarantee its energy independence for decades to come" (15).

Before the ominous protest began, police were warned that the intentions of the extreme leftist participants, the Maoists and Trotskyists, were less than peaceful. The armed protesters made up a small portion of the overall group but violence was the ultimate result. The huge protest resulted in one death and about one hundred injuries. Although dissent was strong, the nuclear dream became a reality at Malville. Two important developments arose from the incident. One was that the environmental movement split from the extreme left and the division between the Trotskyists/Maoists/Anarchists, a division, that still exists today grew. The second important result was the creation of the political party, *Les Verts* (the Greens). Interestingly enough, the *Super Phénix* at Malville is closing, as of a 1998 decision by Prime Minister Lionel Jospin to discontinue its use for "economic reasons" (http://www.info-france-usa.org/).

The uproar over the construction of plants without public consultation continued to be an explosive issue in the election of 1976. The Greens put their own candidate to the test that year in the presidential elections. Brice Lalonde ran for the office, but after disappointing results, he dropped out of the race and publicly supported Mitterand in the election. After his "mutiny" from the Green ship, Lalonde cut political ties with *Les Verts*. He was subsequently appointed as State Secretary for the Environment when his former running mate, François Mitterand, was elected. Because of the political volatility of the nuclear protests, Mitterand stopped the construction of the proposed plant at Plogoff soon after being sworn into the office. This was the only successful protest of the nuclear constructions. Many feel that the decision was an election time stunt to appease the environmentalists, but nonetheless, it was successful.

This success was only possible when the executive decision was handed down by Mitterand. It is interesting to note the other failures of the anti-nuclear movement, as it sheds more light on the centralized nature of French government. The failure of the demonstrations against nuclear power is discussed in depth in The Atom Besieged. One contention the authors make is that the centralized nature of the government prevented grassroots from making any noticeable changes in the unpopular policy. Minority voices are not easily heard in this nation.

Also, as Prendiville stated, the court system has no authority over the executive decision making process, so the few cases tried had little impact on policy. (See fig. 8, appendix I.) Because of the central and elite nature of the program, there is also little information available to activists to use against the program. Nelkins and Pollak point out that atomic energy was the symbol of that age. Possession of nuclear energy proved to be a symbol of power and strength in peacetime, and in war.

Another reason Prendiville in Environmental Politics in France believes caused the failure of the protests, is the environmentalists' ineffectual use of potentially explosive issues. The one that really stands out is the nuclear testing over the Bikini Atoll and the

sinking of a Greenpeace ship, the*Rainbow Warrior*, in the South Pacific. Other political analysts directly criticize the Greens for not taking action within the EU parliament against the nuclear testing in the South Pacific. (Bomberg, 43).

Arguably, the failure of the protest against nuclear energy occurred because the environmentalists as stakeholders did not have as much *interest* in the outcome of the policy. (The concept of interest, with regard to water and waste policy, will be more thoroughly discussed later.) The momentum of the nuclear age was perhaps too strong to hold back because the stakeholders were the powerful players in government, along with EDF and CEA. Even today, the environmentalists rally around this issue without much consideration from the central government.

STAKEHOLDERS

One might question if the environmentalists are stakeholders in the policy issues surrounding water and waste. In some cases, with water and waste, the environmentalists have been visible, if not stakeholders. Stakeholders are those groups or individuals who have an interest vested in the outcome of a particular policy. They are important to identify because it helps one recognize the motives behind policy making and helps one examine the interests involved in particular polices on waste and water. Consider this example:

When two barrels of nuclear waste were found off the northern coast of France in early September 1997 by Greenpeace, the Environment Minister Dominique Voynet spoke to reporters and investigated the leakage (International News, Sept 14, 1997). Another newspaper, the Daily Telegraph, reported further that bathers and fisherman were banned from the area. Health officials said the waste was "highly radioactive." The level of 155 million bequerels of tritium was within the legal standards of France, but not within those of the UK and EU (Sept 14, 1997).

This brings up an important point about stakeholders. In this situation, the stakeholders are the environmentalists (Greenpeace), the fishers and bathers, and the polluters (the government). This is a fairly comprehensive list, but it is important to consider that the industry in France responsible for pollution could be a nationalized industry, one operated by the government. The French government, at times, is a big polluter, just as the US government can be a big polluter here. On the other hand, some water and waste pollution can be prevented by nationalized industry. For instance in France, the transport sector is highly nationalized and efficient, saving waterways from highway runoff pollution and reducing carbon dioxide emissions.

Keeping in mind the background and history of the environmental movement and its stakeholders will provide more comprehensive understanding of the upcoming policy examples. For now, however, I would like to examine the Ministry of the Environment in France.

A SUCCESS OF THE ACTIVISTS: THE MINISTRY OF THE ENVIRONMENT

Despite the failure of environmentalists to capitalize on the aforementioned events, they have had some successes. One result of the anti-nuclear era was the creation of *Les Verts* and, subsequently, *Generation Ecologie* (which was created by the former Green and first Minister of the Environment, Brice Lalonde). The creation of a second environmental party could have worked against the movement as a whole by dividing it. This was the sentiment of a prominent German Green, Petra Kelly. She believed that Mitterand built up a second environmental party (*Generation Ecologie*) to destroy the first. In my opinion, *Generation Ecologie* benefited the movement as a whole by providing a more moderate platform from which to combat environmental ills. Gaining political support for the environment is hard, especially if the public perception of *Les Verts* is (as I will explain soon) a peculiar one.

Although Lalonde lost the faith of many die-hard Greens by splitting from the group, his personal impact on the environment (as well as the new ministries) is impressive. The list of accomplishments includes the Montreal Protocol (bans ozone layer destroying cloroflourocarbons), the 1992 Law on Water, and other significant environmental leaps (Prendiville, 54). The Ministry of the Environment, created in 1971, has responsibility over policy for water and air management, nature and waste (OECD, 40). The chart in appendix I delineates the duties of this ministry. If it had to be compared to any US agency, I would liken it to the EPA.
(See fig. 9, appendix I and contrast to the EPA Structure fig. 10 appendix I.)

LES VERTS

The history of the environmental movement is one that is tied intimately to the anti-nuclear movement. Individuals banded together to protest the plants and although the efforts to stop the construction of power plants failed, the movement left behind an ecological political legacy, the parties *Les Verts* and *Generation Ecologie*. *Les Verts* have not successfully placed a national representative but *Generation Ecologie* has. In general, *Generation Ecologie* is considered more "middle of the road," politically. They won one seat in the region, *Nord-pas de Calais* (Holliday, 490). The groups must try for the presidency to have any clout and both groups have unsuccessfully campaigned for it. The magic number, as Prendiville calls it in Environmental Politics in France, in French politics, is 5% (53). If a party earns 5% of the vote it is reimbursed for campaign expenses and in general, taken more seriously. The percentages of both parties have hovered just under 5% in past elections. Their shares of the votes were large enough that the other parties have tried to form alliances with the environmentalists.

An interesting aspect of *Les Verts*, however, is that they do not want to align with any other party nor do they want to place themselves on the spectrum. They have also

shown a "shocking" amount of inter-organizational democracy. As a consequence, they are not taken very seriously in this culture, which comes from the *Jacobin* (strong central decision making) tradition. If a *Vert* is elected, the elected councilor will have a co-chair. After a designated amount of time (usually halfway through the term), one party member will step down and let his or her co-chair take over.

Another aspect that makes *Les Verts* unique is their commitment to gender neutral speaking time. The group employs the "Zipper technique." Men and women alternate speaking one after another to even out the floor time to account for the disproportion. This is highly unusual in France, as men are more prominent in its politics (Prendiville, Environmental Politics in France, 77). The unconventional meetings have been somewhat detrimental to the party's image. Outsiders criticize that too much internal democracy is an obstacle to efficiency.

ENVIRONMENTALISTS IN FRANCE

French environmentalists are a different group than the Anglo-environmentalists but some of their priorities are the same. Few are vegetarians (See fig. 11, appendix I.), they are relatively well off and well educated, they are more closely aligned to the left politically, and their priorities rank in the following order: Defense of the physical environment (44%), social transformation (39%), aid to developing countries (22%), and alternatives to nuclear energy (20%).

Now that we know how the environmental movement began and who they are, we should examine the aspects of the French environment that need consideration.

PROBLEMS FRANCE FACES IN REGARD TO WASTE

The definition for waste, adopted by French legislation in 1975 is "any residue from a manufacturing or transformation process or direct use [of a substance], any substance, material, product, or more generally any article that its owner has abandoned or intends to abandon" (OECD, 91). There are three main types of waste dealt with by the Ministry of the Environment. These are municipal, industrial, and hazardous. There are also special qualifications for hospital and radioactive waste, 90% of which is short -lived.

Municipal waste has doubled in quantity in the last 30 years accounting for 30 million tonnes a year necessitating the creation of new landfills. A very small amount of municipal waste (3%) is recycled. In agricultural waste, however, almost two-thirds of the 400 million tonnes of waste produced (mainly from livestock) is reused, by spreading on fields and by the cosmetic and pharmaceutical industries (OECD, 92).

France is also struggling to recycle or "valorise" its wastes, especially packaging wastes. Since Maastricht, the treaty that furthered the European Union into a common market, new laws in other nations are affecting France's disposal practices. The Danish bottle bill is a good example. In Denmark, there is a deposit and return law for beverage containers manufactured in Denmark, even if they are sold elsewhere in the EU. France must now return the waste packaging for recycling (Smith, 31). This is just one example of the new environmental pressures placed on France in the new age of Europe.
(See fig.12, appendix I.)

PROBLEMS FRANCE FACES IN REGARD TO WATER

France, as an agrarian nation, has a great need for water resources. Luckily, water is plentiful. Annual rainfall is about 450 billion cubic meters, which is not evenly distributed. In the 1980s and 1990s extensive drought occurred. The geography of France is such that the Atlantic river basins are at times completely under water for weeks, and the coast of the Mediterranean can be struck hard by flash floods.

A large proportion of rivers is privately owned rather than state owned (110,000 km vs. 12,000 km). There are many large river aquifers and several groundwater reserves, located in sedimentary basins. Wetlands, as mentioned before, are important and are disappearing rapidly. More than half of the major wetlands in France have been lost or have deteriorated significantly in the past 30 years (OECD, 53).

Perhaps because of its abundance, the rate of water withdrawal in France is higher per capita than in other European nations. In all, the population withdraws 41 billion cubic meters of which 15% is household, 10% for industry, 63% for power plant cooling, and 12% for agriculture. Nuclear reactors use huge quantities of water to cool the fuel rods. Sixty-three percent is a very large percentage of total per capita quantity. Actually, if the water used in power plant cooling weren't figured in, the rate would not be the highest in the EU.

In the south of France, the majority of withdrawals from natural sources are used for irrigation, and as a result, many rivers are drying up in this region. Most drinking water comes from groundwater sources. One source that is used in Vaucluse (Fountaine de Vaucluse) is rumored to have no bottom.

Because of heavy use of fertilizer, eutrophication (the addition of nutrients in a body of water that produces detrimental algal growth) is a problem, especially in small rivers. One-third of the nation's water has been classified as in danger of eutrophication,

and almost half of the major lakes and reservoirs now suffer from it. Pesticides have poisoned several drinking water withdrawal sites. In one study, it was found that over 1 million people may have water supplies that did not meet pesticide standards, and 6 million people may have received drinking water that exceeded nitrate standards (OECD, 61). These problems are most pressing in Brittany, and other intensive farming regions in northern and central France.

On the brighter side, dissolved solids and oxygen-demanding contaminant amounts have decreased in recent years. A marked improvement has been made in the quality of bathing and fishing waters on the coast. (See fig. 13, appendix I.)

Now that the reader has seen the problems France faces in water and waste I will proceed to the case studies of water and waste policy, respectively.

CHAPTER 4
SELECTED WATER POLICIES

The next two chapters will form the body of my thesis: the water and waste policies in France. Each section will be organized in the following way. First, a description of the structure and management of the problems will be outlined. Then, domestic policy (two model policies are included, the system of water charges and the landfill tax) will be examined. Next, the focus will shift to an international policy and its place within the European Community. Key issues in policy analysis will be "the interest-based explanation in international environmental politics." This concept, created by Sprinz, Detlef, and Vaahatoranta, attempts to categorize the interest, or stake, by delineating it as a "pusher," or "dragger." A party is a "pusher" if the environmental vulnerability is high and the abatement cost is low and a "dragger" if risk is low and cost is high.

I take the concept further by including the "pusher- dragger" status for all stakeholders, not just governments and environmental regimes.

WATER MANAGEMENT

Water pollution was the first recognized ecological problem in France, and since 1964, legislation has been in place to deal with these dilemmas. At the top level, the Ministry of the Environment is the principal coordinator of water policy, executed through the agencies called*Service de l'Eau* (service of the water) and the *Service de l'Envirronement Industrial* (service of environmental industry). The Ministry of Health is responsible for drinking water.

The Water Law of 1964 introduced the official policy for dealing with water quality objectives, and management strategies for each stretch of river. Facets of the law include powers to fix technical specifications for water for each type of use, and to set time frames

for the improvements. A circular (or addition) to this law in 1971, and again in 1978, proposed that maps be drawn for each basin and that standards and qualities be set for each type of water use. In other words, if the water were to be used for drinking, certain amounts of pollutants would be allowed, and if the water is used in industrial settings, another standard would be used.

In 1973, it was established that all discharges of water be authorized. A procedure *(Installations Classées)* was also created for the authorization of industrial plant discharges that could be potentially harmful to the public. The discharges from these plants are authorized by the *Service de l'Eau* according to standards that consider technological and economic feasibility.

At the more local level of *département*, actual decisions are made on authorizations, and quality objectives and enforcement of standards is carried out. The *Préfet, (*also called the *Commissaire de la République*, who is actually an official of the central government), has the final word over the services of all the Ministries involved at the *départemental* and *regional* level, while the ministries are responsible for advising these decisions. The departments that contribute to this process are the *Direction Départementale de l'Agriculture (DDA), Direction Départementale de l'Eqipment (DDE), Direction Départementale de l'Action Sanitaire et Sociale (DDASS), and Direction de l'Industrie de la Recherche (DRIR).*

There are also six *Agences Financières de Bassin,* which cover one or more river basins. The job the *Agences Financières de Bassin* perform is financing investments for pollution reduction, levying charges, and overseeing/coordinating mapmaking of quality objectives. Although the *Agences* seem like a good idea, in practice, the management is complicated because the drawing of maps has required inter-departmental comparison, so only a small part of France has actually been mapped (Haigh, 10). The other complication is that, according to Haigh,

> there are two regimes for controlling discharges from *Installations Classées*. They are subjected to emission standards set nationally on the basis of what is technically

> possible [the same is true for US policy with BATS or, Best Available Technology Standard] but should also respect quality objectives determined locally in maps of water quality. The officials responsible for quality (from the DDA) are not the same as those who determine the nationally recommended emission standards (from DRIR). In practice, the national emission standards are regarded as more important and often prevail over the quality objectives. (10)

The DDA (agricultural sector of the water management scheme) officials are responsible for water quality standards. They often relax the standards and rely on the emissions standards from the DRIR. The problem is that agriculture is the largest polluter of water and its officials are the most lax in quality enforcement. It seems like a conflict of interest to have industry set the limits on emissions.

Economically, the Agencies of Water operate independently of central government funding. In OECD Environmental Performance Reviews: France, "the agencies can require users to pay withdrawal and pollution charges and are required to use the revenue to help finance measure aimed at reducing water pollution and developing water resources" (62). The economic incentives for conservation of water are some of the best polices in "Green Budgeting." The System of Water Charges in France is the first policy case study I will examine.

DOMESTIC WATER POLICIES: THE SYSTEM OF WATER CHARGES

One of the best policies, in regard to economic incentives, exists in France. The ISO, or International Standards Organization, has cited the system of water charges in France as a good use of the polluter pays principle. The ISO is an organization that sets standards for international trade. A good example is the compact disc. All CD players and CDs need to have the same size hole in the center for your stereo to work. Regardless of whether your CD player was made in Japan or the United Kingdom, the CD you bought from the store will fit into the stereo because there are standards that manufacturers must adhere to. The ISO sets standards for everything from the size of nuts and bolts to

acceptable levels of nitrates. The exciting thing about ISO is the standardization of good environmental policies, like this one in France.

The System of Water Charges, established in the sixties, charges for use and pollution of water. This acts offset the cost of financial aid for treatment facilities. It is based on the polluter pays principle, and its success is widely accepted (IISD, 30). The Water Act of 1964 (law number 64/1245) built the framework for the system, and in 1966 a decree (law number 66/700) was added that states "charges may be levied on public or private groups or individuals if they:

- Contribute to the deterioration of water quality
- Extract water for use from natural sources
- Alter a river basin's aquatic environment" (IISD, 30).

Another component includes a subsidy that pays for measures taken to improve or safeguard the water supply. Thiscompensation system called "subsidy for waste water treatment," offsets the costs for those who treat the water before discharging it into the system. The economic incentive encourages polluters to avoid the costly deterioration of water quality. More details of the policy follow:

> The total sum if the water charges to be levied and collected by each river basin agency is set out in a 'pluri-annual program' geared toward developing water resources and reducing pollution. The program establishes all expenditures to be met by each agency within a fixed time frame, that is, for the duration of the intervention program. The amount is fixed according to the expenditure required by each river basin agency to achieve the priority objectives and targets set for the period in question. The water charges can be divided into two groups-pollution and use charges. Pollution charges are levied each year on the basis of the average daily quantity of pollution generated during the month of maximum discharge. Several pollutants are taken into account in assessing domestic and industrial water pollution levels, including suspended solids, oxidizable substances and nitrogen. For industrial establishments the pollution generated is either measured or estimated at a flat rate. (Organizations generating more than would normally be generated by 400 average inhabitants.) Pollution charges for domestic and assimilated waste are added to the price of water calculated in each urban or rural district. (http://iisd1.iisd/greenbud/france.html)

Instead of issuing permits for pollution and use, as is done in the United States by the DEQ (Department of Environmental Quality), the French system charges per volume of

use at a flat rate. As far as pollution goes, the *Agence de Bassin* would figure out how much is being polluted and then charge the industry or individual for the amount. The polluters then have the option of reducing their costs by a) not producing as much waste, or b) treating their discharge before eliminating it into the water system. The polluter pays system is very effective because it both rewards and encourages good behavior. The success of this system has been widely accepted. For more detailed results, see fig. 1-2, appendix II.

POLLUTER PAYS: A SMART WAY TO CHARGE

Unlike the French system, the US uses fines rather than the polluter pays system. Punitive systems are ineffective because at first, the average citizen pays for the water. Then, in theory, the DEQ charges the excess amount from the polluter. As Susan Buck says, "By defining pollution control as punitive, allowing certain amounts of pollutants to be released, and then punishing any excess, the federal government provides corporate America little incentive to develop waste reduction policies or look for alternate production methods" (31). The problem is that a "tragedy of the commons" situation is set up by letting the polluters take so much initially, and then by threatening them with a fine after the fact. It is in the polluters' best economic interest to overuse the resource, and pollute unchecked, in order to maximize production, as they are willing to risk a fine. The situation is worsened because the DEQ rarely issues fines.

A NATIONAL WATER POLICY THAT BECAME AN INTERNATIONAL PRIORITY: THE MEDITERRANEAN ACTION PLAN

Before the Single European Act in 1987, the ideas of the Mediterranean Action Plan were already in place in France. The government recognized that the deterioration of the bathing waters had become severe, and took measures to make them sanitary. Later,

the entire international Mediterranean coast participated in an effort to clean up the Mediterranean. The Mediterranean Action Plan (sometimes called the Med Plan or, MAP) was created to coordinate efforts between nations to achieve swimmable waters. The French laws were strengthened by the MAP.

The MAP is an interesting policy to study because one can see the before and after effects of free-trade. With the common market in Europe becoming a reality, many analysts worry that the influence of corporations may increase in the free-trade climate. Free trade often incites criticism from environmental activists. Implicit in a free trade scenario is the "leveling of the playing field." Tariffs and trade restrictions are often eliminated to create fairness. In the original Treaty of Rome that began the EC in 1948, prevention of barriers to trade was forbidden. Article 30 states: "Quantitative restrictions on imports and all measures having equivalent effects shall...be prohibited between the member states." Article 36 makes an exception for "prohibitions or restrictions on imports justified on grounds of health and life of humans, animals and plants" (Smith, 13). With this provision it is not necessary that environmental regulations decrease with a decrease in trade restrictions.

Growth within the European market has risen significantly. Chris Bull asserts that since 1958, and the signing of original treaties, trade within the EC has grown from 36% to 59% of total EC trade (2). The environmental problem arises when one participating nation has higher standards of efficiency and pollution than another member nation. One questions whether environmental regulations are likely to stand when those corporations operating in nations with less stringent environmental standards may have a comparative price advantage.

In 1951, the European Coal and Steel Company (ECSC) was established for the purpose of combining 6 countries' coal and steel production under a single authority (Bull, 3). This lead to the operating version of the Treaty of Rome. In 1987, European nations signed the Single European Act (SEA), which created a more democratic community and

introduced cooperation between member states. Before this point, not much regulation could occur because legislation had to be passed on a unanimous basis. The SEA laid the groundwork for the European Economic Community and the unified European market integration that exist today (Bull, 3). The Maastricht treaty, signed November 1993, is one result of the coordination efforts of the EC after the SEA was signed. Maastricht proposed a common currency and even fewer restrictions on trade.

Given that the EC has roots in big business leads meto believe there is more corporate influence in EC free-trade. My research, though, suggested that individual corporate interest has decreased in the European Union. Other analysts, such as Peter Ludlow, believe that the climate of the EC during the 70s and 80s was characterized by the "increasingly central role of the European Monetary System in European integration and the emergence of a powerful coalition between European Big Business and the community institutions in favor of the single market and related policies" (60). I then examined the Mediterranean Action Plan with a question in mind: did corporations have more influence on environmental regulation after Europe became a common market (after the SEA)?

The stakeholders in the Med. Plan had a large influence in the outcome of the policy. It is important to consider the interests of those in power at the time of policy making to better understand what is happening. Sprinz, Detlef, and Vaahatoranta's interest- based explanation for international environmental policy uses the following model to explain the outcomes of certain regimes. There is always a pusher, a dragger, an intermediary (or fence-sitter), and a bystander. The position a country would take depends on the environmental vulnerability and the abatement costs involved with a new policy.

	Environmental Vulnerability High	Environmental Vulnerability Low
Abatement Cost High	Pusher	Fence-sitter
Abatement Cost Low	Intermediary	Dragger

It makes sense that France would have an existing plan to clean up the Mediterranean because the tourism industry depends on clean bathing waters. Tourism in the coastal zones in 1997 generated 8% of France's GDP (OECD, 179). This industry creates over 785,000 direct jobs and 135 billion FF. for the region, according to OECD.

Peter Haas considered that the economic stake that France had in the coastal region may have pushed the Med. Plan. He cites that France, with "42% of the Mediterranean GNP...and a high proportion of regional trade,"(8) was the hegemonic power behind the Med. Plan. Perhaps the economically important tourism and shellfish industries were influential, causing France to be the power, or pusher, behind the Med. Plan.

Part of the theory behind free-trade is to let one area produce what it can produce most efficiently, and then transport the goods to another sector in the market (specialization). This often intensifies production and use. But, in the case of the tourism industry in the French Mediterranean, interest exists to keep the bathing waters clean. In this case, free-trade benefited this particular environment. (Tourism's impact on the environment is another issue outside the scope of this paper, but it should also be considered.)

After the SEA in 1987, the Mediterranean Action Plan regulations were an even greater priority in France. Regulations on the pollution of the Mediterranean have increased. France supported a renewed Mediterranean Action Plan (MAP) for 1992-96 and encouraged high priority in adopting measures laid out in the plan. In MAP-2, signed in 1995, France suggested that, along with Italy, it set conservatory areas aside. In the Barcelona convention of 1996, the objectives were reviewed. France also supports programs for the Mediterranean of the FAO, UNESCO, UNEP, and the World Bank (OECD, 201). Partly because of the EC directives of 1991 regarding the discharge of waste-water in coastal areas, the Mediterranean environment has actually improved (OECD, 187).

In most cases, the environmental ministries' authority over pollution control in Mediterranean countries was not challenged by industrial groups or commerce ministries. Multinational corporations potentially affected by the Med. Plan were slow to recognize its implications, and only weakly entered the process, after most of the agreements had been concluded.

"In 1981, the *Centre Europeen des Silicons*, representing the European Silicon industry, asked UNEP to remove organosilicons from the list of substances that permits must be obtained from national authorities before they can be discharged into the Mediterranean, but their request was denied... (however) in many countries, such as Algeria, Greece and Egypt, true enforcement responsibility is split between the commerce ministry and the environmental ministry" (Haas, 392). Thus the corporations, such as the aforementioned silicon industry, had little influence on the regulation of the environment. One could argue, though, that the tourism industry was a stakeholder and that it influenced the Med Plan's inception.

In the case of the Med Plan, the stakeholder of the tourism industry is clear. It is possible France became a "pusher" for the Med Plan because clean bathing waters were vital to the tourism industry. Although some polluting industries' interests were ignored (like the silicon industry), the stakeholder interests of the tourism industry may have influenced the outcome of the policy.

The next case study shows a stakeholder (agriculture) whose interest goes against the environment.

AN INTERNATIONAL WATER POLICY: THE EC NITRATE DIRECTIVES

The nitrate concentrations in the channel off the coast of Normandy have been rising steadily since 1985 (OECD, 177). The Sofia declaration of 1987 was an

international agreement on the target for reduction of nitrate pollution. France agreed to try and reduce nitrates pollution by 50%, but so far it has only cut back by 7-10%. The rising rate of nitrate pollution corresponds with the rising rate of inter-regional trade after the SEA in 1987. Perhaps the intensified agricultural market had something to do with this rise of nitrate pollution.

An argument for free-trade is that specialization of production can occur. For example, a country with ideal conditions for agriculture, like France, can specialize in growing fruits, vegetables, and grains, and another country, like Germany, can specialize in car manufacturing which they are already set up for. Specialization can lead to problems as well, such as over-intensive agricultural production. The concern of over-intensifying production is that limited resources will be burdened disproportionately with their capacity. One case study of this is with the pollution of the water supply in France by fertilizer and pesticide runoff.

In this case, the restrictions on trade after the 1987 mark were more intense. In order to trade within itself, Europe actually protected the market, so the import of agricultural products became less common. Robert Repetto claims:

> The argument that environmental protection has been neglected should not be interpreted as an attack on the outward-looking development model. Continued inward looking, trade-restricting development policies might have produced equally serious environmental problems along with significantly lower living standards...Trade restrictions in the OECD countries have adverse environmental and economic consequences. (4)

In the case of France's agricultural runoff before 1987, the discharge was worse because of its nationalist agricultural protectionism. Repetto continues on this subject to say,

> Trade restrictions imposed by the OECD also damage their own environments, while decreasing incomes domestically and abroad. Agricultural protectionism in Europe, the United States and Japan leads to more intensified farming in these regions than is environmentally or economically justified... Driven by economic incentives, farmers adopt more chemical-intensive monocultures that lead to more soil erosion and chemical runoff...Within OECD countries, agricultural protectionism cost consumers and taxpayers a round $150 billion, annually. (4)

In France this example is clear. Before 1987, France was primarily an agricultural nation. Once the market was open, economic interest for intense agriculture lessened in proportion to the change of GDP After 1993, introductions of an EC regulation to ration fertilizer (EC Nitrate Directive) helped ameliorate the runoff problem. Farming still provides about 4.3% of GDP. The proportion of pesticide use decreased only in relation the economy, which picked up substantially between 1985 and 1997. The total amount of fertilizer used has decreased in recent years (OECD, 140). (See fig, 3, 4 in appendix II)

Nevertheless, the problem still exists. France is in a region designated under the EU nitrate directive. The EEC directive often strengthens laws for the environment through suggestion. The very definition of directive explains this:

> According to Article 189 of the treaty of Rome a directive is not, unlike a Regulation, directly applicable in the Member State but merely specifies the result to be achieved leaving 'to the national authorities the choice of form and methods'. The commission therefore does not exercise control over the control and methods: what matters is the result-even if in some respects certain Directives are so precise that they leave member States little latitude... The Community imposes four different kinds of obligations on the Member States.
>
> - the need to adapt national legislation
> - the need to put these rules in practice
> - the need to ensure that the quality of the environment meets the standards... set out in the directive
> - ...[the need to communicate concerns to the Commission] to exercise control over the other three obligations. (Haigh, 81)

Compliance with the Sofia declaration has been hard for France to achieve. Why? Getting back to the Sprinz, Detlef, and Vaahatoranta explanation for interest, the abatement cost is high, and the "dragger" corporations of agriculture share a good slice of France's GDP pie. According to OECD, the economy in France is increasingly dependent on the export market. Almost two-thirds of its trading partners are members of the EU. A large share of its exports are agricultural, and nitrate and pesticide use is listed as one of France's top environmental issues (OECD, 38).

CHAPTER 5
SELECTED WASTE POLICIES

WASTE MANAGEMENT

In 1975, the initiation of a comprehensive framework legislation on waste management occurred. Like the 1964, Law on Water, the Law on Waste Disposal and Recovery of Materials established another polluter-pays based policy. The producer is responsible for the cost of disposing waste that is not hazardous to public health or the environment. Waste is managed under the authority of officials who request a detailed description of the waste and the manner of its disposal.

Created in 1976, the Law on Classified Facilities, covers the standards for treatment of specially categorized wastes and establishes the procedures for its treatment. Landfills receiving industrial waste are known as *Installations Classées*. In 1992, in part because of the EC Waste Directive Goals, the objectives of waste policy in France were altered to prioritize the following:

- reduction and recovery of waste, through recycling or valorisation
- prevention and reduction of the generation of hazardous waste especially within the manufacturing realm
- examination of the logistical efficiency of waste transport using the "proximity principle"
- distribution of information to the public on health effects of waste generation and disposal (Haigh, 63).

Policies are handled on three levels.

- First, at the national level, the Minister of the Environment creates a plan and ensures compliance for disposal practices of hazardous wastes. For implementing policy and handling radioactive waste, the Ministry of the Environment relies on and funds the DRIR (*Directions Regionales de l'Industrie et de la Recherche*) and ANRED (*Agence Nationale pour la Recuperation et l'Elimination des Dechets).* These agencies then fund recycling and treatments facilities.
- At the second level, regional officials plan for industrial waste. A circular in 1981 suggested that the *Commissaires de la Republique* of the regions form working groups to organize the disposal of industrial waste, but since the mandate was not obligatory, only 13 regions of the 22 have created them (Haigh, 63).
- On the third level, *départements* organize and are responsible for municipal (household) waste collection and treatment. The *Agences de Bassin* also have a role in waste management because they finance water treatment.

ROOM FOR IMPROVEMENT IN DOMESTIC POLICY: VALORISATION

The Law on Waste in 1992 called for an increase in recycling and recovery of resources entering landfills in response to the EC Directive on Waste. The recovery measures taken before 1992 primarily focused on reduction of industrial and hazardous waste, but the reform prioritizes preventing waste at its source. A few successes have occurred with efforts at "valorisation" (recycling).

Waste oil, since 1989, has been recycled into lubricants and fuel. The system for disposal is paid for by a tax on new and recycled oil sold in France. Firms that recycle oil are subsidized by the tax and can accept up to 200 liters at one time with no charge for the recycling. ADEME is the agency responsible for paying the collection firms and disposing

of some oil. In 1992-1995, 383 million FF. were paid out for valorisations of 725,000 tonnes of waste oil. Seventy-three percent of oil in 1995 was subject to valorisation. Of this, 43% was recycled, and the rest was burned as fuel in cement plants (OECD, 95).

Although I did not observe paper recycling in France, 13 million French citizens have access to paper recycling facilities due to an agreement in 1988 of the Association of French Mayors and Industry. About 43% of potential paper waste is recycled, mainly by industrial recovery. The amount of waste paper recycled has increased, but it is still well below the available capacity. Compared to America, France recycles more glass and paper per capita of apparent consumption. (See fig.5, appendix II.)

I believe the difference in recycling rates lies in Frances system to encourage industry to recycle. While Americans, especially Eugenians, may recycle more at the household level, the French recycle by getting at the source of waste, where it is more efficient to valorise.

Glass recycling containers (bottle banks) are located in 3,000 municipalities, serving 50 million inhabitants. The rate of glass recycling is about 50%, and there are 16 glass mills to melt down and reuse the glass. Interestingly enough, the wine industry helped achieve this high rate of glass recycling . ADELPHE is a company established by the wine industries, authorized by a 1992 decree on packaging waste, that helps install new glass bottle banks.

Plastic, on the other hand, is recycled only at the rate of 8%. Only recently, through a EU directive on waste packaging, was plastic categorized by the ECO-EMBELLAGES label. The aim of this policy is to recover 5% of the waste generated. In each EU country the symbol may look different (it's a leaf in France), but it marks a recyclable or environmentally friendly product. The label adds less than a penny to the cost of the product, and the money generated is used to develop recycling facilities. So far, 131 million FF. have been generated by the labeling system.

A DOMESTIC POLICY THAT WORKS: THE LANDFILL TAX

Between 1960 and 1990 there was a 50% increase in household waste production. Illegal dumping was much too common, with over 6,000 sites reported. Waste treatment facilities were at their maximum capacity, and the public was not willing to consider wasting land on new or expanded landfill sites. By the last part of the 80s, the system had become noticeably over-burdened, and a new Act (no. 92-646), passed in 1992, added the economic instrument to waste management by introducing a tax on waste admitted into the landfills.

The goal was to make the French waste management system self-financing. The reform included a plan to streamline the management involved, "making it more efficient by increasing the waste recovery and fiscal self-sufficiency of the Administrating Institution: ADME" (IISD, 1).

The tax exists at all levels of the collection, treatment, and disposal process. Any legal entity that operates a household or an assimilated landfill site, regardless of whether or not they have authorization for it, must pay the tax. As long as the site is not used exclusively for internal or private use, the tax applies. Landfill sites that are controlled by companies that stock their own waste are exempt, as are recycling, refuse return, and sorting centers. The site operator charges the customers, and is responsible for paying the tax.

All site operators must pay the tax. Thus, the 500 authorized landfills, as well as the 6,000 illegal landfills, pay the tax. Seventeen and a half million tonnes of waste is taxed including 0.7 million tonnes of inert Class I industrial waste, 8 million tonnes of industrial waste in Class II sites and about 9 million tonnes of household waste. The tax is 20 FF. per tonne of waste entering the site, and the tonnage is recorded by the operators.

A minimum charge of 5,000 FF. per site per year is charged. To break even then, a site must collect 250 tonnes of waste each year. This discourages illegal dumping because, unless it is a legitimate landfill, with regular intakes of garbage, the operator will receive a 5,000 FF. tax, which is almost like a fine (IISD, 1).

To provide economic incentive for dumping within the region, there is a 50% increase in tax for *déchets* (waste) disposed outside the area covered by the assimilated waste disposal plan. Thus, if a person were thinking of building outside the plan for garbage pick-up, he would be discouraged by the high tax for disposal. Either the developer would make sure less waste was produced, or make sure the building plan was within a reasonable distance from the landfill. In a subtle way, this also reduces urban sprawl and development of open spaces. Ultimately, the garbage pickup will be easier and more cost-efficient by preventing outlying pickup areas.

The ADEME collects the tax and funnels it back into funds that pay for its costs. It also funds research for better treatment facilities and innovative technology. The four main objectives for the funds are:

- financial aid to develop innovative technology for household and assimilated waste treatment
- financial aid to install waste treatment facilities, especially those which employ innovative technology
- financial aid to local authorities on whose territory a new treatment plant for household and assimilated waste is built; and
- financial aid for upgrading public landfill sites and restoring contaminated sites (IISD, 2).

Self-financing is a terrific goal for a public policy. As compared to the Superfund legislation in the United States, the taxpayers in France are not paying more than their share for the contaminated sites in their regions. The majority of the waste is industrially generated, and in France, costs of cleaning up "brownfields," or industrially contaminated soils, are covered by the tax. One class of waste, however, is conspicuously missing from the tax: nuclear wastes. (For more detailed results of the landfill tax, see fig. 6, appendix II.)

A CONTROVERSIAL DOMESTIC POLICY: NUCLEAR WASTE

Nuclear energy is almost always the first thing that comes to mind when a person thinks of France's environmental policy. France derives 39.2% of its energy supply from nuclear energy as compared to America's 0.8% nuclear energy supply. The question of where to store the waste has been a huge controversy in France and world wide. France exports 72.7 tWh of nuclear energy abroad (http://www.info-france-usa.org/).

Officially, the National Agency for Radioactive Waste Management (ANDRA) collects, sorts, packages, and stores 90% of the radioactive waste generated (OECD, 99). The remaining 10% of radioactive waste that remains active for 71 days or less (often from radioactive hospital waste) is sorted, stored, and then incinerated with non-toxic wastes. Storing long-lived radioactive waste requires ideal geological circumstances and the criteria are extremely stringent. No sites have been selected in France, partially because a 1991 law established procedures for site identification and feasibility studies. "The law requires deep geological laboratories to be installed before a site can be used for long-term storage" (OECD, 99). The 1991 Law on Waste includes provisions to study transmutation, or the incineration of waste, to reduce its radioactivity (Ecoiffier). The debate over suitable disposal of nuclear waste is still continuing today.

The present Minister of the Environment, Dominique Voynet, does not agree with plans for underground research labs. She and the Ministry of the Environment are lobbying to stockpile highly radioactive waste on the surface. They argue that because "of its temperature, the waste cannot be stockpiled too deeply (300-600 meters) underground for 30 years. Hence, the urgent need for the present, is the research on stockpiling in the surface" (Ecoiffier). Voynet feels the storage sites and research sites for highly radioactive waste need to be reversible (Crie).

The locations of the labs have not been announced, nor have the "details and packaging and nature of the parcels of waste" (Crie). The divulgence of this politically volatile information will be withheld until after the regional elections. It is rumored that the locations will be in Gard and Vien. At the price of 3-6 million FF. apiece, they are costly alternatives to permanent storage. The Prime Minister, Lionel Jospin and Voynet have had to make concessions.

Voynet has tried to create transparency laws for the nuclear industry to free information regarding disposal procedures to the public. The proposed law is being modified through the joint efforts of the Ministry of the Environment and the Ministry of Industry "whose affairs are poles apart" (Crie, 3 Feb 1998). Consequently, the outlook for reform is not likely. In exchange for the ministry's compromise in the opening of *Phénix* at Gard for studying re-processing, Voynet's budget for research and subsidies of renewable energies was doubled (an increase of 500 million FF. per year starting in 1999). Once again, the environmentalists are using the nuclear issue to organize around.

Simply put, the storage of waste is problematic and dangerous. Consequently, the waste is handled and stored by a separate bureaucracy, ANDRA, and is often re-processed at plants like La Hague and now, the *Phénix* at Gard. Nuclear waste is transported to the re-processing plants and some fuel is recovered, though a debate rages about the usefulness of reprocessed fuel for anything other than weapons making. Other countries, such as Japan, ship their waste to France for re-processing. The usable fuel is returned but, unfortunately, it seems that some of the waste remains in France.

NUCLEAR WASTE DUMPING: AN INTERNATIONAL PROBLEM

Recently, Greenpeace divers found barrels of nuclear waste at the bottom of the English Channel near the re-processing plant in La Hague. The French officials declared that the radiation levels met French health standards and were not a hazard, but bathers and

fisherman were temporarily banned from the area. Interestingly, the less stringent French health standards or maximimum allowable amounts existing in the environment for radiation are well above European or United Kingdom standards. In the future, EC directives could set international radioactivity standards that France would have to achieve.

Obviously, the waste is being stored somewhere, because 5.1 tonnes if it is produced annually (OECD, 216). This number is lowered because of reprocessing. For example Canada, which derives 12.1% of its energy supply from nuclear energy, generates more waste than France, by 7.4 tonnes per year (OECD, 216). (The UK also generated more nuclear waste than France). Information regarding the storage and location of dump sites is largely unavailable.

Finding waste, however, proves its existence. Greenpeace observed a French barge carrying nuclear waste heading back to Japan because Japan does not have their own re-processing plants.

> A shipment of 60 containers of highly radioactive nuclear waste bound from France to Japan aboard *Pacific Swan* is believed to be nearing the Marshall Islands. Tom Clements, spokesperson from the Greenpeace organization in Washington, says the nuclear cargo is both the largest of its kind ever shipped and the first to pass through the Panama Canal making the passage Feb 6. The *Pacific Swan* is scheduled to arrive in Japan early next month where the nuclear waste will be off loaded for storage on the main island of Honshu. The waste, a product of the reprocessing of spent nuclear fuel has no commercial value but can be used in manufacturing of nuclear weapons (Clements). (Melbourne Radio)

Because the waste is moving around and turning up, seemingly at random, legislation has been made to deal with the international issues of nuclear energy. The international nature of nuclear waste issues (France was downwind of Chernobyl) has prompted several important pieces of legislation that are in force in France. In 1986, the Vienna conventions of the early notification of a nuclear accident were established as well as the assistance in the case of a nuclear accident or radiological emergency. Also, the Basal Convention, signed in 1989, is now force in France. This important piece of international law controls the transboundary movements of hazardous wastes and its disposal. Although in force and ratified, treaties can mean little more than the paper they are

written on if they are not complied with. Another example of international waste law is the EEC directive that we will now examine.

INTERNATIONAL WASTE POLICY: EEC WASTE FRAMEWORK DIRECTIVE

The European Commission set up laws to create similar standards within the European Union and to encourage planning at the regional level. According to Haigh, France has not met these standards and implementation was four years late. Considerable improvements have been made in toxic waste handling, even without the directive, though it made the identification form which accompanies transported obligatory. Interestingly, the definitions of toxic are in dispute in France and the Netherlands. Success has been vague for this directive. (There are many specifics and some, like the oil-waste recycling directive, have been strictly adhered to, while others have not been complied with.) In some arenas, however, the success of EEC directives is clear (68).

The ECO-EMBELLAGES EC directive has had an impact on France's policy by augmenting the existing laws on recycling. It generates even more money for recycling and raises awareness of the consumer. More significantly, though, it creates responsibility for packaging throughout the European Union. Consider the Danish bottle bill case.

The beverage importers of Danish beverages unsuccessfully challenged a Danish law mandating that certain beverages be sold only in returnable containers. The Court of Justice "upheld a Danish law that obliged manufacturers and importers to establish a deposit and return system for empty containers. Denmark could impose an across the board ban on non-returnable bottles because such a measure 'is an indispensable element of a system intended to ensure the reuse of the containers'" (Smith, 14).

Thus before 1987 in Denmark, there were high environmental regulations, low numbers of corporations trading and highly restricted trade, and less harm to the environment. After the SEA, one would expect the environmental regulation to take a back seat to free-trade, but the opposite is true. The environmental regulations did increase and

the trade-restrictive, returnable-bottle law was upheld by the courts. Article 36 of the Treaty of Rome does allow for prohibitions of trade for protection of health or life of humans, animals or plants. The environment was not harmed by a more open market in this case, in fact, one could argue it was helped by free trade.

Another theory behind the bottle bill case can be based on the Sprinz, Detlef and Vaahatoranta model explanation of international environmental policy (77-105). By considering who had the largest environmental stake, and the lowest abatement costs one can measure the stakeholders' interests in the bottle bill program.

Denmark was the "pusher" because they had the highest environmental vulnerability (the tiny nation has no room for landfills), and it had the least cost involved with remediation. It wouldn't cost Danish beverage makers to return the waste; the costs were relevant only for the importers. The Danes wanted to keep environmental regulations and the restrictions cost them nothing. France was the "dragger" because of the high abatement costs. Even though France is a stronger power in the EC, (4th strongest economy) Denmark won the case.

Some EC policies have been ignored, while several of the EC directives have taken hold strongly in France. The success of the oil recycling and ECO-EMBELLAGES has been instrumental in helping France clean up its environment. Domestically, water and waste policies have been strengthened by the EEC directives in most of the cases I examined.

The EEC directives are leading the way for integrated pollution control (Irwin, 3). Integrated pollution control is a new model for environmental management, based on a broad consideration of environmental problems, and recognition of cross-media pollution. The idea of preventing water pollution by improving waste disposal practices and air pollution standards is an integrated approach to problems (Irwin, 5).

The EEC directives are making valiant steps toward a better model for management by planning regionally, linking economic and ecological systems, and "preventing pollution

problems, rather than transferring them to another part of the environment" (Irwin, 7). The EU has created more than a common market; it has created high common standards for the environment.

CHAPTER 6

LESSONS AND SUGGESTIONS FOR THE US AND FRANCE

Policy does not occur in vacuum. The policies on water and waste in France can impact the quality of water in a neighboring country. Just as pollution and problems with the environment are transboundary, so are policies. France's noncompliance with the EEC's drinking water quality directives impacts the water quality of rivers like the Rhine, which in turn impacts the water quality of the Swiss Rhine.

Even the water policies in the US affect the French. Internationally, policy is important because of the increase in importing and exporting. A recent example of this is with the Californian Proposition 65. This law is part of the Safe Drinking Water and Toxic Enforcement Act of 1986. The policy prohibits discharges of birth-defect causing or cancer-causing chemicals into drinking water sources. A warning is required when a threat of exposure is imminent from commercial products, workplaces or environmental releases. Fines, of up to $2,000 US per person exposed, are used to deter violations.

The law has become a model for other states and generates international interest as well. In Europe and Japan, California regulations affect exports and "can inspire toxics-wary consumers to demand similar protections at home. 'When California sneezes, Europe gets a cold,' a representative of an Israeli pesticide manufacturer (whose proposition 65-regulated product is used on French grapes) cautioned at a recent Proposition 65 hearing" (Lovett, Nov 30 1997).

There are two lessons to be learned here. One is that in an age of fast and convenient international communication and business, policies will be known outside of their jurisdiction. The policies can also affect trade with international partners. The simple lesson is the more regulation the better. In Europe the directives seemed to increase the legislation and the standards of environment in the member states. I would like to see this

happen with other free-trade zones like NAFTA. One could speculate, however, (this theory is similar to the equilibrium theory of free trade) that the shrinking world market is eventually going to create overlapping regulations. I don't think this can happen unless there is a central regulation of trade, like what is going on in Europe.

The second lesson to be learned from the federal and international interest in Proposition 65 is that centralization could be a threat to the environment. Just as the case of the anti-nuclear movement, the unfeeling distant central government was not responsive to those who opposed the plants. In the US, which is more federalist than France, one state policy can influence the other state's policy readily. The French system is so centralized that inter-regional policy influence is not as likely.

Over-centralization, like the French government, could also threaten the environmental success of Europe. A recent Berlin newspaper reads,

> There is suspense at the EU Commission. In a recently published strategy document, the EU Commission examines ways to improve the implementation if EU environmental regulations in member countries. It is becoming increasingly difficult for us as an individual authority to monitor the observance of EU environmental regulations in all the states and very few EU countries have had a law allowing comprehensive action for environmental organizations. (Albin)

One corporation (or even an individual region) has no practical means of influencing the ever-growing bureaucracy surrounding the EC. This could impede the influence an individual entity has over governing. In fact, Peter Ludlow believes policies regarding the environment or consumer protection could be subject to the "process of centralization" (75). This centralization makes access to the court and other enforcing agencies even more difficult. In other words, France's problem with centralization may repeat its history within the EU bureaucracy.

Policies like the Mediterranean Action Plan are working because the member nations accept that pollution is not held within political lines. International cooperation in waster and waste issues has been a good point in France's policy. Many significant treaties have been signed.

Economically, the French water and waste policies are sound. The costs of pollution are passed on to those who produce it, especially in the system of water charges and also in the landfill tax. Their resources are priced more realistically. The average cost for a gallon of gas in France (about $1US per liter) is well above our heavily subsidized gas price in the US. Tax represents 82.2% of the pump price for the French, and is the most heavily taxed gas of the OECD countries.

What is important here is the appropriate pricing for a limited resource. According to Garret Hardin, the way to discourage a tragedy of the commons, or over-use of a common resource, is to price the good high enough (as qtd by Conca, Ch 3). The true cost of water is reflected in domestic water prices in France. Water charges have doubled since 1992 (OECD, 62). Taxes on gas, as well as water, are necessary for conservation, even if politically unpopular. The polluter-pays principle is in practice in France and is a strong point of their policy. I believe the United States could better apply this in our domestic policy.

The French policy that really stands out as not environmentally sound is the nuclear policy. It does, however, allow for a reduced rate of consumption of fossil fuels and Dominique Voynet has been able to use the issue as a bargaining chip to boost the funding of renewable energy sources. By continuing to fund nuclear energy, the government has less money is available for cleaner energy sources. As Rogene Buccholz states, "One problem with nuclear power is that the past 40 years it has absorbed the preponderance of government energy investments and has diverted attention from more attractive options. Nuclear power has become increasingly expensive and accident prone in the last decade" (404).

The energy itself is clean, but the siting of waste repositories will forever remain a problem. The perceived risks of nuclear power are indeed higher than actual risks (a person is exposed to more radiation in an airplane than in the streets of Chernobyl (Baldwin)) but the use of nuclear energy is still quite risky. The industry uses huge

amounts of water to cool the reactors, and is in that way, resource-intensive. It is also, politically, an elitists' program, and on those grounds I object. On an international level, Japan, and all other countries buying and using the reprocessing technologies in France, are ultimately going to be responsible for the waste. There is a lot of long-lived waste being produced. It will be interesting to see how Europe deals with this issue.

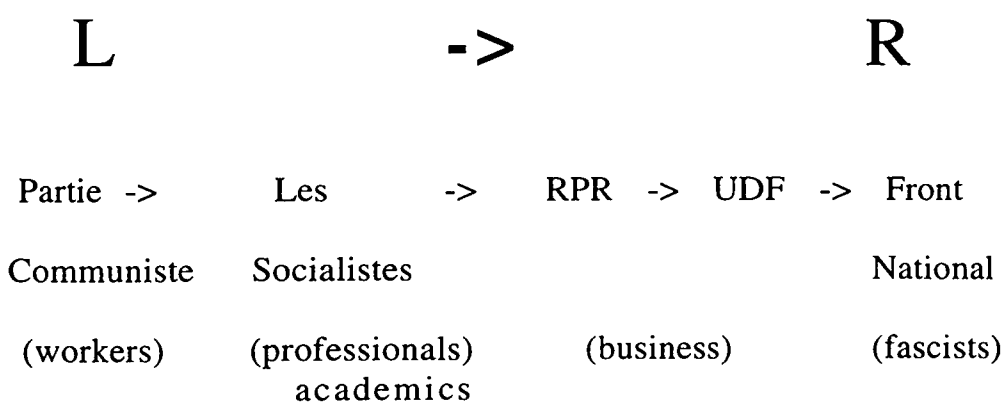
In the post-Maastricht era, France will under go many changes. With the common currency (the Euro), ultra-nationalist groups, and high unemployment in France, this is going to be a volatile time. The environmental movement has come a long way in France, but has a long way to go.

Appendix I:

Useful Background Tables

Figure 1

The French Political Spectrum



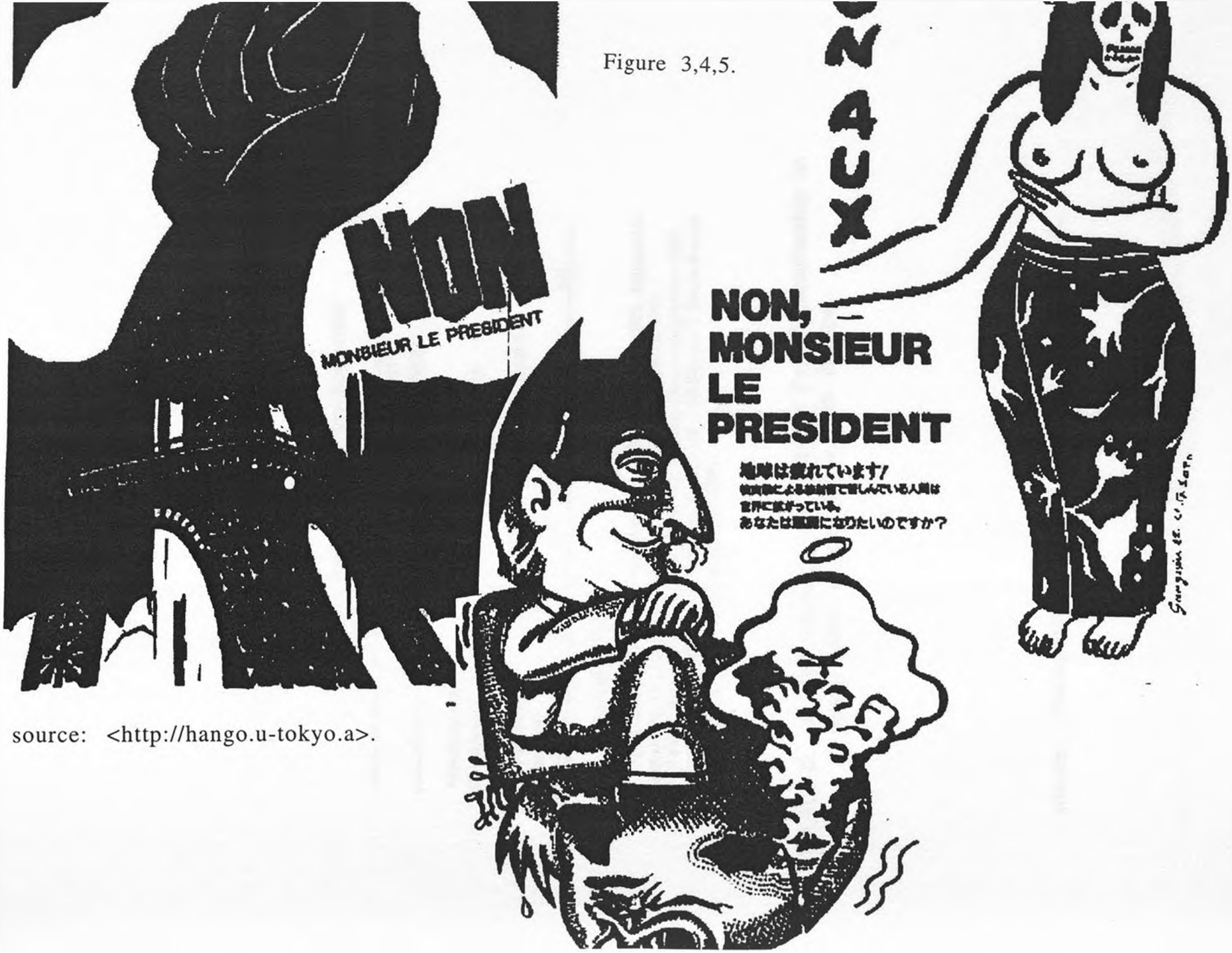
source: Pallister.

Figure 2

FIGURE 2. The administrative borders in France.

source: Prendiville. Environmental Politics in France.

Figure 3,4,5.



source: <http://hango.u-tokyo.a>.

FIGURE 3,4,5. Nuclear protest posters show the centralized nature of the government. Notice how they are addressed to the presidents,

Figure 6

European Associations for Environmental Protection

	BN[a] Germany	AT[b] France	FNE[c] France	RSPB[d] G.-B.
Membership (thousands)	77	1.6	25	850
Turnover (thousands)	6 450 DM[e]	320 Fr	3 600 Fr	£27 800
Subsidies (Percent)	7	48	60	nil

[a] AT: *Amis de la Terre*.

[b] BN: *Bund Naturschutz*.

[c] FNE: *France Nature Environnement*. The FNE is the ex-FFSPN. Figures for membership vary considerably. We have based ours on Chibret 1991.

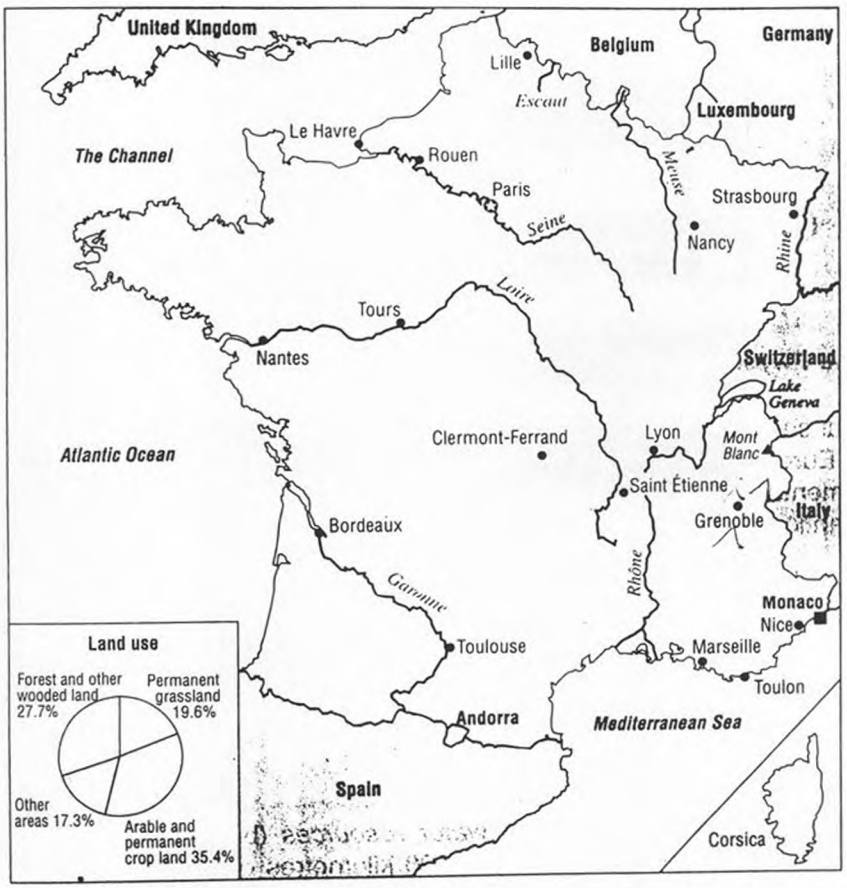
[d] RPSB: Royal Society for the Protection of Birds. Data of September 1992.

[e] DM = Deutschmark, Fr = French Francs. 1$ = 5.8 Francs, 1 Deutschmark = 3.4 Francs, £1 = 8.7 Francs (December 1993).

FIGURE 6. A table showing the rarity of French membership in associations as compared with Europe.

source: Prendiville, Environmental Politics in France.

Figure 7

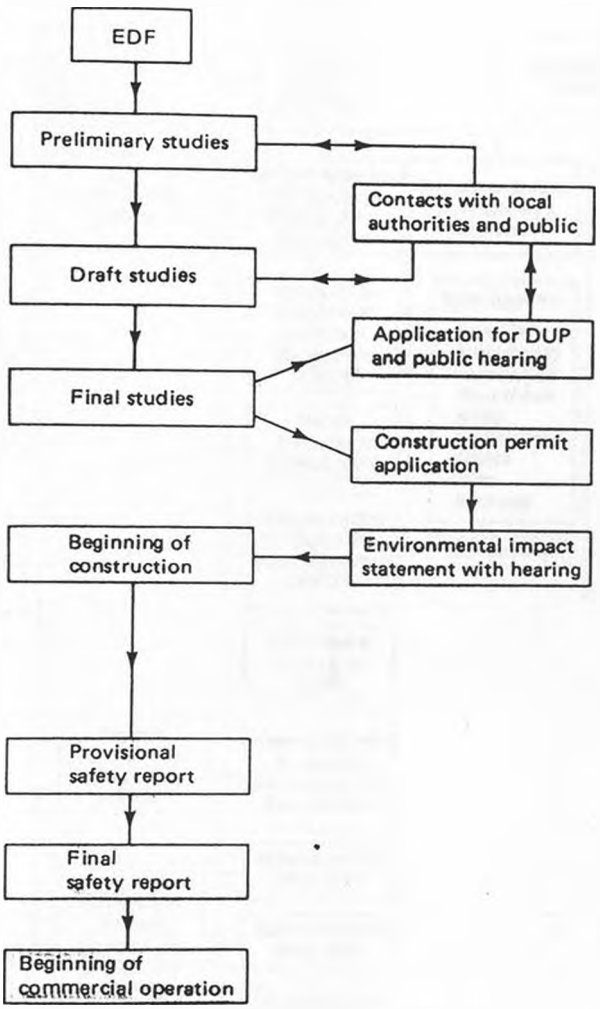


	Population (inh.)	Area (km²)	Density (inh./km²)	Date
Overseas départements				
Guadeloupe	387 600	1 702	227	1990
Martinique	359 600	1 100	327	1990
Réunion	597 800	2 510	238	1990
French Guiana	114 700	83 500	1	1990
Overseas territories				
Mayotte	94 400	374	252	1991
St. Pierre and Miquelon	6 300	242	26	1990
New Caledonia	164 200	19 058	9	1989
French Polynesia	188 800	3 256	58	1988
Wallis and Futuna	13 700	255	54	1990
Total DOM-TOM	1 927 100	111 997	17	
Metropolitan France	58 018 000	551 500	105	01/1995

FIGURE 7. A map of France.

source: OECD Environmental Performance Reviews: France.

Figure 8

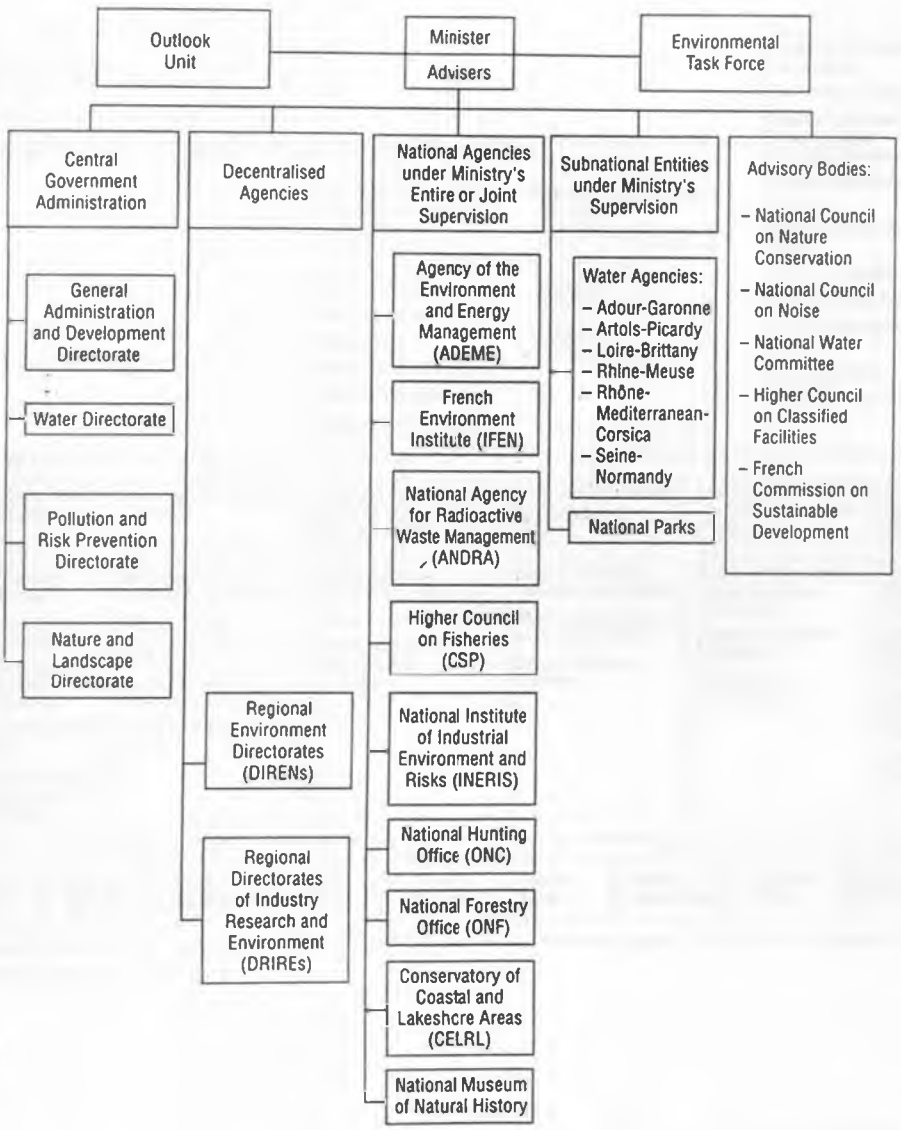


French siting process and licensing procedures (Source: Adapted from Michael Golay et. al., *Comparative Analysis of U.S. and French Nuclear Power Plant Siting and Construction Regulatory Policies,* Energy Laboratory report MIT-EL 77-044-WP, December 1977)

FIGURE 8. A schematic diagram of the centralized decision making process for nuclear energy.

source: Nelkins and Pollak. The Atom Besieged.

Figure 9

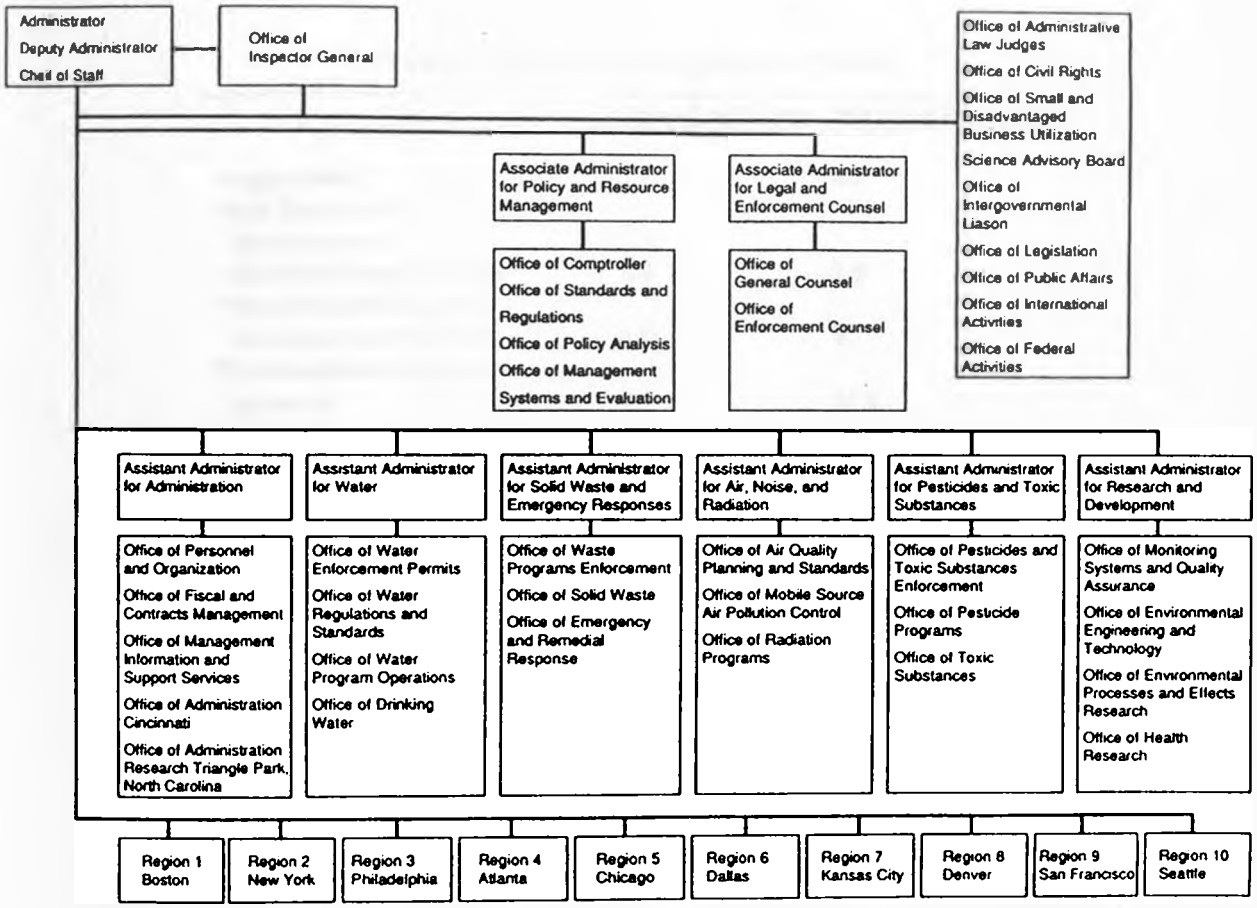


Source: Ministry of the Environment.

FIGURE 9. The organization of the French Ministry of the Environment.

source: OECD, Environmental Performance Reviews: France.

Figure 10



Source: Environmental Protection Agency, *Your Guide to the U.S. Environmental Protection Agency*, OPA212 (Washington, DC: Environmental Protection Agency, 1982), pp. 4-5

FIGURE 10. The organization of the US Environmental Protection Agency.

source: Buccholz, Principles of Environmental Management.

Figure 11

Socioprofessional Categories in France

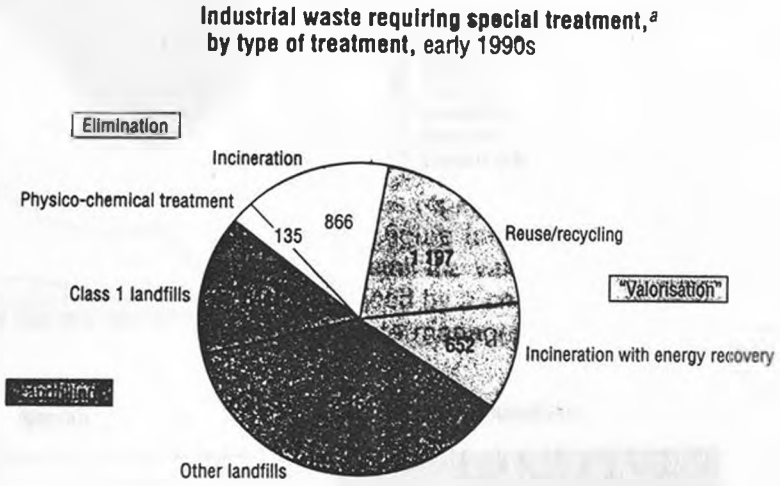
	Total Population	Working Population
*Agriculture	2.7	6.3
*Self-Employed/ Shopkeepers/ Small Business Owners	3.4	7.8
*Professional/Education (secondary and higher)	3.5	8
*Intermediate/Education (primary)	7.3	16.9
*Employees	11.5	26.6
*Manual Working Class	14.3	32.9
*Retired	13.7	
*Not in Work	43.6	
*Unemployed never having worked		1.5
TOTAL	100	100

Source: INSEE 1990: *Tableaux de l'économie française,* Paris. Figures are percentages.

FIGURE 11. Statistics about French environmentalists.

source: Prendiville. Environmental Politics in France.

Figure 12

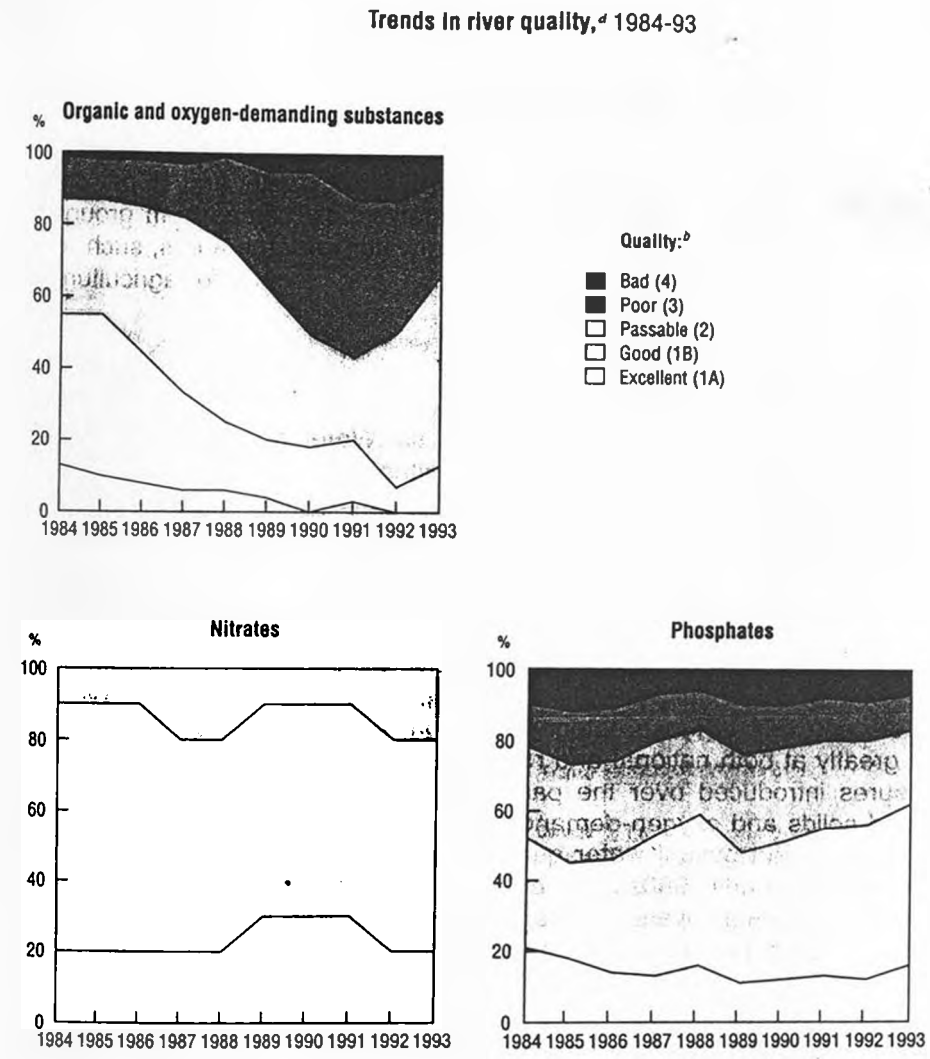


a) 1 000 tonnes; metropolitan France.
Source: Ministry of the Environment; ADEME.

FIGURE 12. The amount of industrial waste being treated before entering landfills.

source: OECD, Environmental Performance Reviews: France.

Figure 13



a) Data from 147 monitoring stations by category in metropolitan France.
b) Limit values of quality categories (mg/l):

1A: DO > 7, BOD5 < 3, COD < 20, NH4 < 0.1; P < 0.1, PO4 < 0.2; NO3 < 5;
1B: DO > 5, BOD5 < 5, COD < 25, NH4 < 0.5; P < 0.3, PO4 < 0.5; NO3 < 25;
2: DO > 3, BOD5 < 10, COD < 40, NH4 < 2; P < 0.6, PO4 < 1; NO3 < 50;
3: DO > 1, BOD5 < 25, COD < 80, NH4 < 8; P < 1, PO4 < 2; NO3 < 80;
4: DO < 1, BOD5 > 25, COD > 80, NH4 > 8; P > 1, PO4 > 2; NO3 > 80;

Source: IFEN.

FIGURE 13. The reduction of dissolved solid in France's water supply.

Appendix II:

Useful Tables for Water and Waste Policies

Figure 1

Water Agency charges, 1995

	Pollutant discharges[a]					Withdrawals discharges	
	BOD/COD (FF/kg)	SS[b] (FF/kg)	N[c] (FF/kg)	P[d] (FF/kg)	Toxicity[e] (FF/kg)	Withdr.[f] (FF/m³)	Cons.[g] (FF/m³)
Adour-Garonne	314	186	287	296	6 023	0.007-0.04	0.15
Artois-Picardy	160	320	182	859	5 963	0.01-0.13	0.28
Loire-Brittany	196	108	262	940	7 872	0.02	0.22
Rhine-Meuse	263	132	180	286	4 699	0.01-0.02	0.11
Rhône-Mediterranean-Corsica	375	125	187	468	6 244	0.01-0.07	0.13
Seine-Normandy	350	151	350	300	7 361	0.05-0.15	0.25

a) Excluding geographic balancing and collection coefficients.
b) Suspended solids.
c) Organic nitrogen and ammonium.
d) Phosphorus.
e) Inhibitors (Daphnia tests).
f) Amount withdrawn (different charges for surface and groundwater withdrawal).
g) Consumptive use (not returned to natural environment).
Source: IFEN.

FIGURE 1. The rates for domestic water charges in France.

Figure 2

Investments[a] receiving assistance from Water Agencies, 1992-96

(million FF)

	Adour-Garonne	Artois-Picardy	Loire-Brittany	Rhine-Meuse	Rhône-Mediterranean-Corsica	Seine-Normandy	Total
Municipal water treatment plants	5 125	4 472	7 500	4 160	9 189	21 290	51 736
Industrial pollution control	1 700	1 110	1 970	1 100	3 570	4 050	13 500
Agricultural pollution control and irrigation management	310	245	930	280	311	287	2 363
Drinking water safety	1 000	377	2 750	1 330	3 560	4 796	13 813
Water resource and groundwater improvement	2 200	80	2 110	220	2 156	1 033	7 799
Restoration and protection of the natural environment	250	224	300	200	689	558	2 221
Total	**10 585**	**6 508**	**15 560**	**7 290**	**19 475**	**32 014**	**91 432**

a) Of the total investments of FF 91.4 billion, financial assistance from the Water Agencies accounted for FF 40 billion, financed by revenue from pollution and withdrawal charges.
Source: IFEN.

FIGURE 2. Funds raised by the system of water charges.

source: OECD, Environmental Performance Reviews: France.

Figure 3

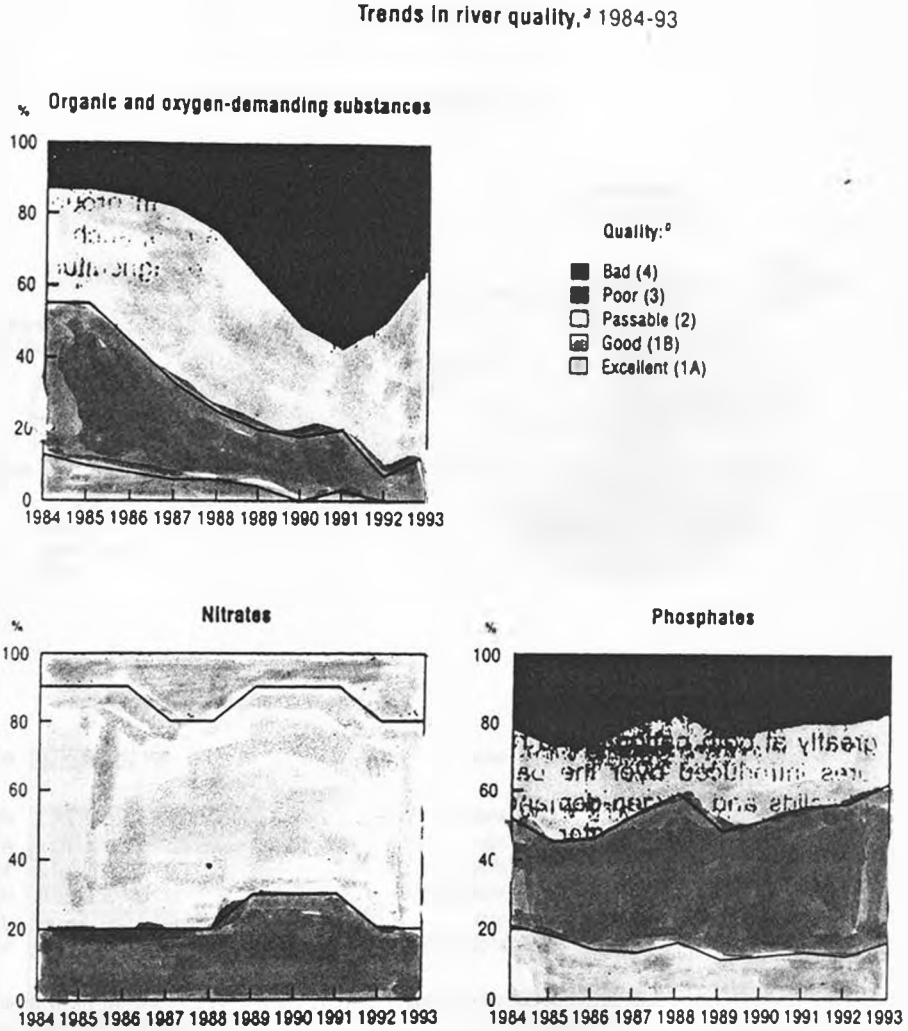
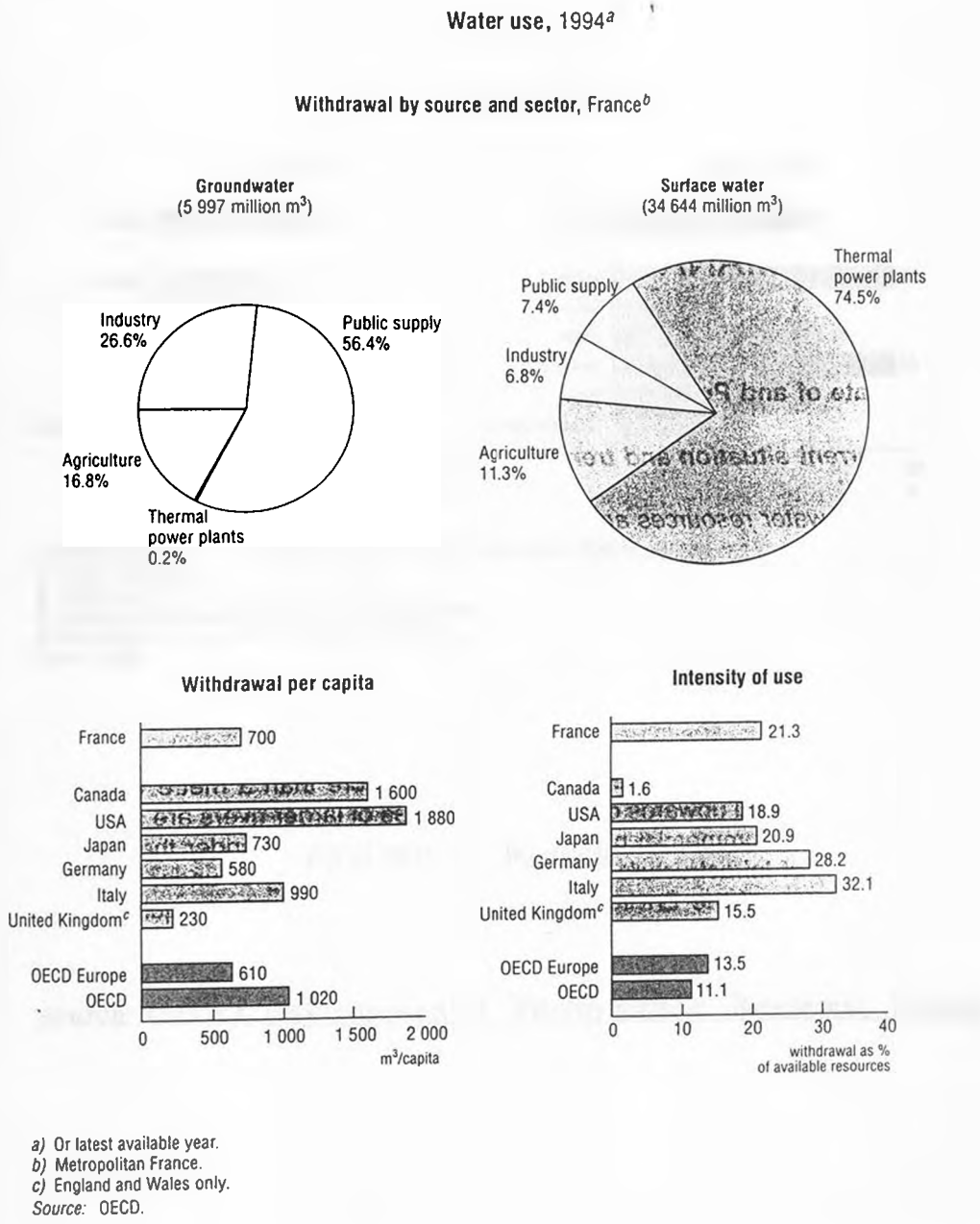


FIGURE 3. Nitrate levels in France's rivers.

source: OECD, Environmental Performance Reviews: France.

Figure 4

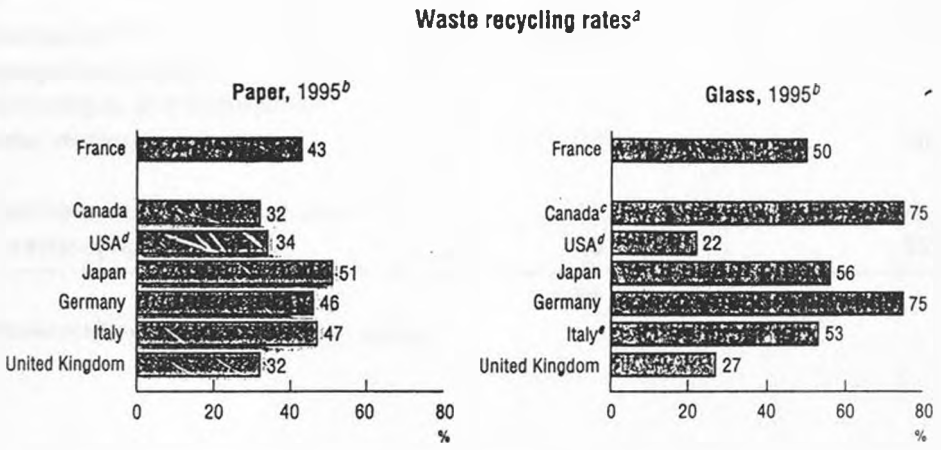


a) Or latest available year.
b) Metropolitan France.
c) England and Wales only.
Source: OECD.

FIGURE 4. Water use as demonstrated by withdrawal by source and sector.

source: OECD, Environmental Performance Reviews: France.

Figure 5



a) Tonnes recycled as % of apparent consumption (domestic production + imports - exports).
b) Or latest available year.
c) Includes reuse of refillable money-back bottles.
d) Recycling rates are based on amounts of waste generated.
e) % of national production of glass containers for liquids.
Source: OECD.

FIGURE 5. Recycling rates.

source: OECD, Environmental Performance Reviews: France.

Figure 6

Type of Aid	Millions of FF	%
R & D	42	22.4
Site remediation	10	5.3
Aid for local authorities (5 FF/t)	4	2.1
Aid for waste management projects (technologies and accessories: plans, studies, training)	132	70.2
including:		
– harmless industrial waste/rubble	27	14.3
– municipal waste	105	55.9
Total	188	

Estimated distribution of MFWM funds for 1993 (Source: ADEME)

FIGURE 6. Aid generated by the landfill tax in France.

source: IISD, Making Budgets Green.

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