

FINANCIAL INSTRUMENTS OF FOREST POLICY IN PORTUGAL IN THE 80s AND 90s

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Abstract

This paper reviews the main programmes of financial incentives to forestry in Portugal through the 80s and 90s. First, these programmes are first put in perspective with respect to the trends in forest resources and forest policy since the middle of the XIXth century. Then, the main measures, beneficiaries and outputs are presented for each programme, together with an implementation analysis comparing the targets and outputs and giving plausible hypotheses to explain the implementation failures.

The main conclusions of the paper are a long run trend of increasing public financing to private forestry, with some problems whose solution has yet to be found: unsustainable sources of public funds, and rates of afforestation and reafforestation still insufficient to keep the forest industries competitive and to compensate for the damages caused each year by forest fires.

Keywords: Portuguese forests, (re)afforestation, financial incentives

1. Trends in forest resources since the middle of the XIXth century

When looking at Portuguese forests today it is important to bear in mind that they are mostly the result of a **triplication** in forest land since the middle of the XIXth century, interrupting centuries of deforestation due to multiple factors: clearing of forests for farming, overexploitation of timber resources for shipbuilding and charcoal production, burning of forests by shepherds, etc.

Until the 1950s there was simultaneous growth of forest and agricultural land. This was possible because of the large amount of uncultivated land fit for cultivation existing in the XIXth century due to a very long process of deforestation. With the intense rural emigration in the 1960s and 1970s agricultural land started to fall, while forests continued to expand. However, since the 70s, the growth in forest has not taken up all the abandoned farmland, the result being an increase in uncultivated land fit for cultivation after its secular fall.

Table 1
Land use in Continental Portugal since 1867

SPECIES	1867	1902	1910	1920	1929	1939	1950/56	1963/66	1968/78	1980/85	1995/98
1. FOREST AND OTHER WOODED LAND	1240000	1736938	1956500	2022491	2332000	2467000	2832268	2825700	2969120	3108200	3349327
<i>A) Forest land by tree-species dominance</i>											3201131
a) Conifers	210000	250000	430194	913689	1132000	1161000	1189524		1287600	1293040	1252300
- Maritime pine											976069
- Other conifers											
b) "Montados":	370000	712986	782653	868850	940000	1050000	1274490	1215400	1192480	1128700	1174390
- Cork oak	121000	325493	365995	413713	560000	690000	651406	636800	656580	664000	712813
- Holm oak	249000	387492	416658	455137	380000	360000	623084	578600	535900	464700	461577
c) Other oaks and chestnut	60000	173952	130986	173952	193000	188000	170000		99840	143200	171478
- Other oaks	n.d.	78165	47006	78165	108000	108000	94000		70550	112100	130899
- Chestnut	n.d.	95787	83980	95787	85000	80000	75000		29290	31100	40579
d) Eucalyptus	0	-----	-----	-----	8000	n.d.	113288	98900	213720	385800	672149
e) Other	600000	600000	612667	66000	59000	68000	84966		170040	198200	207045
<i>B) Other wooded land</i>	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.	n. a.	148196
2. AGRICULTURAL LAND	1886000		3111882	3229000	3282000	3380000	4762000		4205882	3902362	2972883
UNCULTIVATED LAND FIT FOR CULTIVATION	5462862	n. a.	3426618	3245671	2883162	2648000	885594		1279860	1419300	2054571
Productive, but uncultivated land (fallow, grazing, etc.)	2116000		1926000	1639000	1565000	1484000	395594	n. a.	n. a.	n. a.	n. a.
Other uncultivated land fit for cultivation	3346862		1503780	1606671	1318162	1164862	490000	n. a.	n. a.	n. a.	n. a.
3. LAND UNFIT FOR CULTIVATION	291000	374000	381700	382700	382700	384000	400000	n. a.	425000	450000	503081
4. TOTAL LAND AREA	8772520	8772520	8772520	8772520	8772520	8772520	8772520	8772520	8772520	8772520	8772520
5. INLAND WATERCOURSES	107342	107342	107342	107342	107342	107342	107342	107342	107342	107342	107342
6. TOTAL AREA	8879862	8879862	8879862	8879862	8879862	8879862	8879862	8879862	8879862	8879862	8879862
Forest coverage (1/4.)	14,1%	19,8%	22,3%	23,1%	26,6%	28,1%	32,3%	32,2%	33,8%	35,4%	38,2%

Sources: sources and methods of estimation explained in detail in Mendes (2001)

2. Afforestation: the main stated priority of forest policy since its beginning

The large amount of uncultivated land fit for cultivation and without a productive use existing in the middle of the XIXth century (38,2 % of the total land area) explains why afforestation was, by far, a major priority of the Forest Services which were making their beginnings by that time. However, since those days, there has been a wide gap between the wishes of forest policy makers and foresters and the actual implementation of forest policy. If we look at where the Forest Services started their activities what we see is that they were devoted almost entirely to the management of some state owned forests representing a very small part of the total forest land in the country.

By the end of the XIXth century and in the beginning of the XXth century forest policy and Forest Services priorities moved to another front also in the public domain, more precisely the afforestation of the 25600 ha of dunes along the coast which remains until today one of the most socially valuable projects carried out by those services.

The next front to which forest policy and Forest Services moved their priorities was the afforestation of the communal lands in Northern and Central Portugal. After some preparatory work, this afforestation finally started in the 1930s, after the political regime had taken a dictatorial turn. These political conditions have to be mentioned because this afforestation was often implemented in a authoritative way, against the traditional uses of those lands by the local communities. The major output of this programme

("Plano de Povoamento Florestal" - PPF) was the afforestation of 318000 ha from 1935 until 1972, mostly with maritime pine. The management of these forests on behalf of the local communities made up the essential of the Forest Services activities from the 1930s until the present days. The Forest Services had to give part of the proceeds from the communal forests to the local communities, but they were allowed to keep the rest, making these services a potentially self-funded public agency.

3. Where and who actually made most of the afforestation since the middle of the XIXth century?

The gap we mentioned before between the stated priorities of forest policy and Forest Services and their actual practice has to do with the fact that their three major fronts of intervention (public forests, afforestation of the dunes, and communal forests) are certainly a valuable part of the total forest land in the country, but are far from being the main one. Also they are certainly not the domains where took place most of the afforestation observed since the middle of the XIXth century. To see that, let us look in more detail to the trends in forest land use since then:

- conifers (basically maritime pine) rose from 210000 ha in 1867 to 1293040 ha in 1968/78 which cannot be driven essentially by the afforestation of 25600 ha of dunes and 318000 ha of communal lands, even if these 343600 ha were entirely made up of pine forests which is not true;
- cork oak and holm oak forests rose from 370000 ha in 1867 to 1174390 ha in 1995/98 which again, cannot be imputed essentially to the action of the Forest Services because these forests are mostly in the South, so far from the main domains of intervention of this agency;
- eucalyptus rose from a situation of almost non existence in the middle of the XIXth century to 672149 ha in 1995/98 which was due essentially to the direct investment of the pulp and paper companies and to the investment of non industrial private forest owners stimulated by the demand from those companies.

As we will see later on, most of this investment in eucalyptus plantations has not benefited from public incentives. So what are today the main three segments of Portuguese forests owe most of their growth since the middle of the XIXth century, not so much to public interventions, but to other factors and actors. Among these factors certainly processes of natural regeneration might have played an important role, but we should not forget the actions of non industrial private forest owners' (NIPFOs). In fact, according to data referring to 1995, this type of owners are responsible for 76,6% of the forest land, pulp and paper companies manage 7,7 %, and only the 2,2% of state owned forests and part of the 13,4% of communal forests are left for the direct intervention of the Forest Services.

There are large tracts of the history of this afforestation in private lands that are still unwritten. To do it is beyond the scope of this paper¹.

¹ One of us made a start in this direction for the cork oak forests (Mendes, 2001).

Table 2
Forest lands by types of management and tree species in 1995 (1000 ha)

	Total		Conifers		Broadleaves							
	Area	%	Area	%	Eucalyptus		Cork Oak		Other		Total	
					Area	%	Area	%	Area	%	Area	%
State forests	72	2,2	60	5,6	0	0,0	0	0,0	15	2,0	15	0,7
Communal forests	430	13,4	410	37,9	0	0,0	0	0,0	20	2,7	20	0,9
NIPF	2453	76,6	581	53,7	482	71,7	687	96,4	700	95,2	1869	88,2
Forest industries	246	7,7	30	2,8	190	28,3	26	3,6	0	0,0	216	10,2
TOTAL	3201	100,0	1081	100,0	672	100,0	713	100,0	735	100,0	2120	100,0

Sources: INE (1997), DGF (1991, 2001), completed with data collected from the pulp and paper industry and some own estimates.

Table 3
Forest holdings size distribution in 1995 (%)

Regions		Forest holdings class sizes (ha)							Total
		0-4	5-9	10-19	20-49	50-99	100 and more		
Northwest	N.º holdings	89,7	6,4	2,2	1,2	0,2	0,3	100,0	
	Forest area	34,4	13,6	9,0	10,2	4,1	28,7	100,0	
Northeast	N.º holdings	90,6	6,6	2,2	0,4	0,1	0,1	100,0	
	Forest area	53,7	19,9	13,2	5,4	3,4	4,4	100,0	
Central West	N.º holdings	91,5	5,8	1,7	0,8	0,1	0,1	100,0	
	Forest area	53,1	18,4	10,7	10,8	2,4	4,6	100,0	
Central East	N.º holdings	73,1	14,3	7,3	3,9	0,7	0,7	100,0	
	Forest area	18,1	13,8	14,1	15,3	5,9	32,8	100,0	
Ribatejo Oeste	N.º holdings	84,8	6,5	3,6	2,5	1,1	1,5	100,0	
	Forest area	8,3	3,8	4,1	6,6	6,7	70,5	100,0	
Alentejo	N.º holdings	23,8	12,0	15,6	14,9	11,3	22,4	100,0	
	Forest area	0,5	0,9	2,5	5,4	9,2	81,5	100,0	
Algarve	N.º holdings	58,9	14,2	11,6	9,5	3,5	2,3	100,0	
	Forest area	7,5	7,5	12,5	23,2	17,9	31,4	100,0	
Continental Portugal	N.º holdings	85	8	3	2	1	1	100,0	
	Forest area	15	7	7	9	7	55	100,0	

Source: INE (1997)

4. Afforestation remains the main stated priority of forest policy

Whatever might have been the relative roles of forest policy and private initiative in the triplication of forest land since the middle of the XIXth century, afforestation remains today, as it was at that time, the main stated priority of forest policy, both for public policy makers and for private stakeholders. Several reasons contribute to these attitudes:

a) forest land and forest production are still far from having reached the maximum of their economic and ecologic potential:

- further growth in forest area up to 5280000 hectares (60,2 % of the land area) is possible through afforestation of 1068000 ha of marginal agricultural lands non suitable for farming and about 863000 ha of other lands with forest potential (Banco Português de Investimento *et al.* 1996);

- substantial productivity gains (around 20 % more in annual increments of *Pinus pinaster* and *Eucalyptus globulus*) resulting from improved forest management and use of better plants (Banco Português de Investimento *et al.*, 1996);

b) afforestation and reforestation through the 1970s, 80s and 90s supported by public incentives lagged far behind the area of deforestation due to forest fires (the former was only 54 % of the latter) and have not taken up most of the land released from agriculture due to farm outmigration

(agricultural land fell by 1233000 ha during this period while forest and other wooded land increased only by 380207 ha);

c) timber and cork production are lagging behind the demand from the forest industries leading to increases in the real prices paid for these products by the industries, since mid 1995.

Table 4
Areas of forest fires, afforestation and reafforestation
in Continental Portugal since 1968 (ha)

Year	Burnt area				Afforestation & reforestation	
	Forest		Scrubs	TOTAL	annual	cumulated
	annual	cumulated				
1966/80					181272	181272
1968/80	354487	354487	162562	517049		
1981	63649	418136	26148	89797	17920	199192
1982	27436	445572	12121	39557	19785	218977
1983	32427	477999	16953	49380	18742	237719
1984	26580	504579	26133	52713	20829	258548
1985	79440	584019	66815	146255	18278	276826
1986	58612	642631	40910	99522	24882	301708
1987	49848	692479	26420	76268	22936	324644
1988	8628	701107	13807	22435	21183	345827
1989	62165	763272	64070	126235	17410	363237
1990	79549	842821	57703	137252	20888	384125
1991	125488	968309	56998	182486	17575	401700
1992	39701	1008010	17311	57012	21803	423503
1993	23839	1031849	26124	49963	17193	440696
1994	13487	1045336	63836	77323	34390	475086
1995	87554	1132890	82014	169566	69546	544632
1996	30497	1163387	58059	88556	23472	568104
1997	11466	1174853	19068	30524	39588	607692
1998	57393	1232246	100975	158368	34691	642383
1999	31052	1263298	39561	70613	38294	680677
2000	68646	1331944	90958	159604		

Source: DGF for burnt area; tables 6 and 7 for afforestation and reforestation

Table 5
Volume and price indices of the Final Forest Product

Years	Final Forest Product		GDP deflator (basis 1995)	(2)/(3)
	Volume index	Implicit price index		
	1	2	3	4
1980	100	100	11,8	8,47
1981	73,39	124,21	13,9	8,94
1982	75,59	134,53	16,8	8,01
1983	80,07	145,54	20,9	6,96
1984	88,55	175,42	26,1	6,72
1985	91,15	228,83	31,8	7,20
1986	92,68	248,95	43,8	5,68
1987	95,29	288,14	48,2	5,98
1988	92,43	326,31	53,6	6,09
1989	114,83	325,45	60,1	5,42
1990	101,82	408,22	67,6	6,04
1991	100,69	368,69	75,8	4,86
1992	93,07	347,23	83,9	4,14
1993	86,92	414,51	89,8	4,62
1994	78,05	513,71	95,2	5,40
1995	87,70	478,64	100,0	4,79
1996	83,51	567,41	103,1	5,50
1997	74,39	638,62	105,9	6,03
1998	84,50	733,61	110,2	6,66
1999	78,11	873,23	113,7	7,68

Sources:

(1) and (2): own estimation (Mendes, 2001);

(3): 1970-1998: Fondo Monetario Internacional (2000), *Estadísticas Financieras Internacionales: Anuario*; 1999: Banco de Portugal (2000), *Relatório do Conselho de Administração*.

5. The main programmes of financial incentives to private forestry in the 80s and 90s

As we said before, the main front of forest policy in Portugal since the 1930s, that is, the afforestation of communal lands in the Northern and Central regions, was coming to an end in 1974, when the dictatorial regime finished its days. While this engagement in communal forests was declining, the Forest Services made some moves towards the support of private forestry with the creation of the Forestry Development Fund ("*Fundo de Fomento Florestal*" - FFF), a public forest service initiated in 1966 for that purpose. The action of this agency, however, was not enough to respond to the needs of the forest industries, especially the pulp and paper industry. This led the forest policy makers to the first major programme of public intervention in private forestry since the Forest Services creation in the XIXth century. That was the so called "**Portuguese Forest Project**" (PFP) funded by the World Bank which was implemented from 1981 to 1988.

After this came a new external source of funds open to the funding of forest programmes, more precisely the EEC pre-accession funds. It was with this money that the next major programme of public intervention in private forestry was funded. That was the so called "**Forest Action Programme**" (PAF, in the Portuguese initials) which was implemented from 1987 to 1995.

The third generation of public interventions in private forestry came when Portugal was already a full member of the EU, eligible for support from the structural funds and other EU financial means. It was with this money that were funded the two main forest programmes which were in action from 1994 to 1999:

- the "**Forest Development Plan**" (PDF, in the Portuguese initials);
- **Regulation (EEC) 2080/92**, this one continuing beyond 1999.

The area of (re)afforestation and stand improvements financed by these programmes are presented in Tables 6 and 7 taken from the contribution of one of us (A. Mendes) to the CESE report (CESE, 1996), updated with more recent data.

Table 6
(Re)afforestation and stand improvements
financed by public programmes until 1981 (hectares)

Years	Total area	PPF		Forest Services	
		Dunes	Communal forests		FFF
until 38	38 318	17 345	20 973		0
Total 39/65	249 348	8 255	241 093		0
1966/80	181 272	0	55 828	10 627	114 817
Total	468 938	25 600	317 894	10 627	114 817

Source: DGF

Table 7
(Re)afforestation and stand improvements

financed by public incentive schemes since 1981 (hectares)

Years	TOTAL		FFF	PFP		PAF		Reg. 797/85		Reg. 2080/92**		PDF**		
	Affor. & Reaffor.	Stand impr.		Forest Services	PORTUCEL	Affor.	Stand impr.	Affor.	Stand impr.	Affor.	Stand impr.	Affor.	Stand impr.	Reaffor.
1981	17920	0	8979	1441	7500*									
1982	19785	0	2837	9448	7500*									
1983	18742	0	301	10941	7500*									
1984	20829	0		13329	7500*									
1985	18278	0		10778	7500*									
1986	24882	0		17382	7500*									
1987	22936	13435		7390	7500*	8046	13435							
1988	21183	30719		1199	7500*	12484	30719							
1989	17410	52156				17410	52156							
1990	20888	41511				20888	41511							
1991	17575	20254				15320	19644	2255	610					
1992	21803	24197				16906	21948	4897	2249					
1993	17193	12306				11312	9995	5881	2311					
1994	34390	72640				6054	11480			20171,3	1993,9	4199,62	24776,18	3965,11
1995	69546	130118				5138	7106			40318,6	2279,3	13652,06	51186,57	10437,8
1996	23472	37100								18981,3	985,1	2889,17	12642,52	1601,42
1997	39588	69357								30087,1	577,8	6150,02	29190,29	3351,37
1998	34691	65877								24861,7	293,9	4324,71	30892,07	5504,4
1999	38294	52819								30599,6	720,3	2040,68	13804,5	5653,75
TOTAL	499405	622489	12117	71908	60000	113558	207994	13033	5170	165019,6	6850,3	33256,26	162492,1	30513,85

Sources: data collected from DGF and IFADAP

* annual average

** projects approved for funding; included those that were cancelled later

6. The Portuguese Forest Project

6.1. Context and procedural characteristics of the forest policy process

The Portuguese Forest Project (PFP) was prepared in a time when the country was coming out from the peaceful revolution of 1974 which had overthrown a long lasting dictatorial regime. On the economic side, this political change combined with the 1974 "oil chock" brought about serious macroeconomic problems, namely large and increasing government budget and current account deficits from 1974 to 1980 which lead to a stabilization programme supported by an agreement signed with the International Monetary Fund. This helped to reverse the worsening in the macroeconomic situation, but, in 1982-84, the same type of problems happened again which lead to another stabilization programme supported by the International Monetary Fund covering the period from October 1983 to February 1985.

In the first years after the Revolution the decades of right wing economic interventionism were replaced by left wing **interventionism**. When the PFP was prepared and implemented the traces of this traditions were still very string in the economy and in the public administration.

Another outcome of the 1974 Revolution was the occupation of the large farms in Southern Portugal by landless farm workers which took the cork oak forests away from the control of their former owners for some time until they got their land back in the 80s.

Finally it is worth mentioning another outcome of the 1974 which was the nationalisation of many private companies, including some pulp and paper companies which were consolidated in one group called PORTUCEL.

Concerning the Forest Services, except for some changes in the personnel at the top ranks of the agency, their basic structure inherited from the old political regime was not changed. For 20 years after the 1974 Revolution, they remained a centrally managed and specialised directorate general in the Ministry of Agriculture, controlled by professional foresters who knew each other well, since they all came from the single school of forestry existing in the country until the late 1970s. The regional and the local levels were hierarchically dependent on the Director General the Forests and their geographic organisation was structured in view of the management of the public and communal forests. After the golden days of the afforestation of the commons, the Forest Services in the 70s and 80s were suffering from an ageing of human and material resources in many parts of their structure. This fact together with the profile of the personnel of these services described before might have contributed for some institutional inertia to which we will come back later.

With this type of Forest Services, and in a situation where the pulp and paper companies were the most organised stakeholder in the forest sector, the NIPFOs were lacking collective organisation and the environmental groups were still weak, it is no surprise that the forest policy process had the following characteristics²:

- **technocratic and central agency driven process;**
- **without participatory and intersectoral coordination mechanisms;**
- with some **corporatist leaning** towards the needs of the pulp and paper companies.

It is also no surprise that such type of policy process had as an **output** a programme with the following characteristics:

- **fixed targets;**
- strong reliance on instruments appealing to **direct public interventionism;**
- **weak reliance on the private sector** (except the pulp and paper company) for implementation.

6.2. Forest policy outputs: measures funded and beneficiaries

The major objective of this programme was to overcome a projected shortfall in timber supply to the **export oriented** pine-based and pulp and paper industries through the establishment of commercial forest plantations of conifers and eucalyptus, especially in Northern and Central Portugal where there was more under-utilised potential for these species. So the programme did not cover the cork oak forests in the South (Alentejo) which, by that time, were still mostly in the hands of farm workers' co-operatives resulting from the occupations of the large farms after the 1974 Revolution.

Planned and implemented in a period of the Portuguese political history marked by strong **public interventionism** in the economy, this programme,

² For a theoretical perspective on this and other types of approaches to policy planning see Mendes (2000c).

like the previous ones, is still one where the state played a **direct** role in afforestation. More precisely the main direct agents in the implementation of this programme were two **state controlled agencies**: the Forest Services and the nationalised pulp and paper company (PORTUCEL).

The **Forest Services** assumed the direct responsibility for preparing and implementing the afforestation projects in two types of lands:

- a) in the **public and communal lands** under the management of those services;
- b) in the **lands of NIPFOs** willing to accept afforestation under the following conditions:
 - all the technical responsibility and almost all the funding of the investment costs were on the shoulders of the Forest Services;
 - the landowners had to commit themselves to keep their lands in this kind of use and manage the new plantations appropriately;
 - the public funding of the investment costs was a **loan** which had to be paid back by the forest owner with 40 % of the revenues from the fellings of the new plantations when they come to age, until the total amortisation of the loan, for no more than 60 years.

The programme also provided a **loan** to PORTUCEL for afforestation of the lands already owned by company, or in new lands bought or leased in for this purpose.

There were also funds available to support the creation of **cooperatives of private forest owners** and for the organisation of a **public forest extension service** within the structure of the Forest Services. We should remember that since their creation in the XIXth century, these services lived most of their life focused on the management of public or communal forests leaving without enough technical support the three fourths the forest lands in the hands of NIPFOs.

6.3. Forest policy outcomes: implementation analysis

Comparing with previous programmes, the PFP represents an **increase in the annual average of afforestation** supported by public intervention:

- from 1939 until 1965 the average was 9235 ha per year;
- from 1966 until 1980 the average was 12085 ha per year;
- with PFP the average rose to 16489 ha.

Table 8
Targets and outcomes of the Portuguese Forest Project

	Targets	Outcomes
<u>Time horizon</u>	1980/85	1981/88
Afforestation (ha)		
1. By the Forest Services		
- total area	90000	71908
- conifers	60500	50026
- eucalyptus	16000	8429
- other broadleaves	13500	7886
- natural regeneration	-	5586

2. By PORTUCEL (pulp and paper company)		
- total area	60000	60000
- conifers	30500	n. a.
- eucalyptus	29500	n. a.
Creation of a forest extension service	X	nothing was done
Credit for co-operatives of forest owners	X	nothing was done

Let us compare now the outcomes of PFP with the targets initially set for the programme. The targets for PORTUCEL were fully accomplished. Concerning the Forest Services, there were **large implementation failures**:

- afforestation: from the 90000 ha the Forest Services were supposed to plant, only 71908 ha were established, even after extending the project horizon for three years;
- creation of a forest extension service: nothing was accomplished;
- support for the creation of co-operatives of forest owners: nothing was accomplished.

Table 9
Distribution by region and ownership category
of the afforestation funded by PFP

Regions	Communal forests			Private forests			Total	
	Number of projects	Area		Number of projects	Area		ha	%
		ha	%		ha	%		
Northwest	129	21 778	27,9	197	6 297	12,2	28 075	21,6
Northeast	212	38 442	49,3	63	4 153	8,1	42 595	32,8
North	341	60 220	77,3	260	10 450	20,2	70 670	54,5
Central West	124	12 488	16,0	191	4 993	9,6	17 481	13,5
Central East	34	4 954	6,4	147	14 965	28,9	19 919	15,4
Ribatejo-Oeste	1	270	0,4	155	9 503	18,3	9 773	7,5
Alentejo	0	0	0,0	281	10 455	20,2	10 455	8,1
Algarve	0	0	0,0	15	1 451	2,8	1 451	1,1
TOTAL	500	77 932	100,0	1 049	51 817	100,0	129 749	100,0

Source: Louro (1988)

The data available are not detailed enough to identify in which type of ownership category was the intervention of the Forest Services more important. However, based on the data in tables 8 and 9, it seems a plausible hypothesis that most of the afforestation done by the Forest Services was on the commons of Northern and Central Portugal and not on the lands of NIPFOs. The afforestation in this kind of lands was done mostly by PORTUCEL either by leasing in or by buying lands from these owners.

If this hypothesis is true, as far as the action of the Forest Services is concerned, the PFP was not a radical change in afforestation policy compared to the policy implemented since the 1930s. It was actually an **incremental change** in the continuation of the afforestation of communal lands by the Forest Services, with a new source of funds (World Bank loan instead of state budget). This means that the Forest Services stayed mostly in their familiar places (communal lands), and did not make substantial moves towards the NIPFOs either by relying on their private initiative and providing them financial incentives for afforestation, or by providing

indirect measures such as extension services and capacity building (co-operatives).

Still as an hypothesis, we propose two contributing factors to explain these implementation failures:

- **institutional inertia** in the Forest Services making difficult the reconversion from decades of direct state interventionism to a posture of facilitating the private initiative;
- **substantial differences**, from the point of view of the NIPFOs, **between the incentives** provided by the type of afforestation under the responsibility of the Forest Services and the one under the responsibility of PORTUCEL.

Institutional inertia seems a plausible hypothesis given the fact that the Forest Services, since their beginnings in the XIXth century, focused most of their activity on the public and communal forests. Most of the foresters working in those services at the time this programme was conceived and implemented were educated in that type of activity. Also in many segments of the Forest Services, there was an ageing of the human and material resources preventing a more active posture to reach out to the large and dispersed mass of NIPFOs. This type of factor is an example of "**path dependence**" and "**lock in**" effects in policy making and implementation: policies are not independent from their "initial conditions".

The main differences we see in the types of incentives for the NIPFOs embodied in the afforestation done by the Forest Services and by PORTUCEL are the following:

- a) by opting in for a Forest Services project, a NIPFO not only does not receive any cash, but also might have to spend some money to pay part of the forest investment costs which is not the case if he sells or leases out his land to PORTUCEL;
- b) by opting in for a Forest Services project, a NIPFO puts himself under the burden of a debt that him or his successors have to pay back, which is not the case if he sells or leases out his land to PORTUCEL;
- c) by opting for a Forest Services project, a NIPFO locks in his land in one type of use which has the following inconveniences:
 - it is a use of very long duration;
 - the potential benefit may not go to the current land owner (he might be dead when the plantations come to age);
 - it is subject to high risks (many of the plantations were with maritime pine, a species very vulnerable to forest fire) beyond the control of the land owner;
 - in order to catch the benefits from the forest investment the owner has to incur in forest management costs which are high and not supported by public incentives;
 - by locking in his land to this type of use, the land owner might forego potentially more profitable alternative uses (urbanisation, for example);
- d) if the forest owner prefers to put his land under a long term lease to PORTUCEL the land use is also frozen for a long time, but, at least here, he

gets the compensation of an annual cash rent, with no cost of maintenance of his property.

So with this type of **incentive structure**, it is not a surprise to see the NIFPOs behaving in the following manner:

- for many of them it was **not individually rational** to opt in for the programme, that is, they were better off staying out given the type of reasons we mentioned before;
- for those who opted in, there were many cases where they **didn't behave in a manner compatible** with the targets of the programme by not fully complying with the duties attached to this option.

We still lack a good empirical study about what remains today of these Forest Services afforestation projects in private lands, but we know about many stories of failures on those that were implemented (destruction by fire, lack of proper maintenance, etc.) and we hear complaints from these forest owners about their disfavoured position compared to the situation of those who opted for the programmes that came after the PFP.

7. The Forest Action Programme

7.1. Context and procedural characteristics of the forest policy process

The Forest Action Programme (PAF) came in a different political and social environment than the PFP:

- the country was going to become a member of the EEC in 1986 and therefore was eligible for financial support from the structural funds even before that date, through the pre-accession funds;
- while the industrial demands behind the PFP were still very important, new demands were emerging in the Portuguese society, namely the **environmentalist pressure** against fast growing species and the rise of **land use planning regulations** where the municipalities became major stakeholders, with an agenda not always compatible with the interests of forest owners and forest industries;
- as the problem of forest fires was getting worse and environmental awareness was rising, the type of projects supported by the PFP, that is, afforestation based on monospecific plantations almost exclusively oriented for timber production, was getting more and more criticisms;
- the **large farms in the South** were in the process of being returned to their former owners who, in many cases, were willing to make improvements in their cork oak forests which were left aside in the PFP;
- in this changing environment more attention was called for afforestation with **broadleaves** (fast growing species excluded) and for **stand improvement**;
- on the political and economic fronts, **direct state interventionism was definitely regressing** with privatizations of nationalized companies and a growing appeal to the initiative of the private sector.

In a context of mounting criticisms to the past action of the Forest Services, new social demands to the forest sector on the rise, and a changing economic and political environment more prone to the private initiative,

those with responsibilities in the Forest Services were not able to carry on institutional changes capable of adjusting successfully to this new situation.

During the period through which this programme was prepared and implemented there was no major institutional change in the Forest Services which remained the major public agency for forest policy planning and implementation. The main change was the liquidation of Forest Products Institute (Instituto dos Produtos Florestais - IPF) which had resulted from the consolidation of public agencies existing before the 1974 revolution for the state regulation of the domestic and foreign trade of forest products. This institute was funded by a tax paid by the forest industries suppressed, in a obscure way, during the negotiations of the 1988 state budget in the parliament, due to lobbying of some of these industries. With the extinction of this institute was lost, without proper substitute, what had been, for some decades, the better source of statistical and economic data on the Portuguese forest sector. This loss still waits to be fixed.

Loosing confidence on their own capacities and loosing sight of their public responsibilities in building capacity for the development of the initiative of NIPFOs, the Forest Services turned from a posture of "technocratic and direct interventionism" to one of "**incentive-based regulation**" (Mendes, 2000c) with provision of attractive subsidies paid with EEC cheap money, and **reliance on the private sector (NIPFOs and forest contractors) for implementation**. This policy turn raises the issue of the **transaction costs** faced by the NIPFOs when applying for these public incentives. These costs are different among these owners. The Forest Services could have had an active role in lowering these costs especially with those NIPFOs for whom they were relatively higher. As we will see, the Forest Services were very passive in this matter.

7.2. Forest policy outputs: measures funded and beneficiaries

Looking back at the implementation failures of their own direct interventionism in a recent past, the Forest Services switched almost 180° and decided to entrust most of their hopes in the private initiative of forest contractors and forest owners. To do so they thought they had a powerful instrument which was the cheap money coming in from the EEC. So they formatted a programme which introduced major changes compared to the PFP:

- instead of loans to be repaid with the revenue from fellings, the financial incentives to forest owners turned to be **grants** varying between 30 and 100 % of the total investment cost;
- the favourable treatment given to **eucalyptus** plantations in the PFP suffered drastic reductions and finally was suppressed, which was accompanied with new regulations restricting these plantations;
- the most favourable treatment turned to **other broadleaves**, including the cork oak forests, with some attempts to promote **multiple use** forestry (grazing and agro-forestry, etc.);

- **stand improvement** which was almost left out from the PFP, became a major target for financial incentives to forestry.

With this type of incentives, the pulp and paper companies and other stakeholders interested in expanding eucalyptus plantations could not count any more on public financial incentives. With the pulp and paper companies almost out from the benefit of this programme, we didn't see the other two main segments of the Portuguese forest industries (wood based and cork industries) to come in. So the main stakeholders of this programme in the private sector were the **NIPFOs** and the **forest contractors**.

The Forest Services remained as an agent directly eligible for public funds, in case they presented projects for **public or communal forests**, these being the type of projects with the most favourable incentives provided by this programme.

So compared with previous programmes, the major innovation in terms of stakeholders brought about by this programme was the development of a **private business of forest contractors**. We still lack an empirical study about the implementation of PAF, but from what we could observe so far on this matter, it is a plausible hypothesis that this network of contractors played a major role in stimulating and assisting the NIFPOs who applied for the public incentives provided by PAF.

Again, like in the PFP, there were funds available in the PAF for the organisation of forest extension services which could have had an important role in lowering the transactions costs faced by the NIPFOs when applying for these incentives. This would have contributed to raise the number of the NIPFOs interested in the programme. However, as we will see in a short while, such role was not played by the Forest Services and might have been played mostly by the forest contractors.

7.3. Forest policy outcomes: implementation analysis

To the credit of PAF, compared with the PFP, is the fact the annual average of afforestation and stand improvement supported by public financial incentives **more than doubled**, rising from 16489 ha to 36068 ha. Stronger reliance on the private sector for implementation in a country where 76,6 % of the forest are in the hands of NIPFOs, together with a more attractive profile of financial incentives might have been important factors contributing to this policy outcome.

This positive note should not deviate our attention from **large implementation failures** in all the main components of this programme:

- for a target of 400000 ha of afforestation, only 113561 ha were planted;
- for a target of 400000 ha of stand improvement, only 211054 ha were improved;
- for a target of 100000 ha of grazing lands in forests nothing was accomplished;

- nothing was done to set up a forest extension services and to organize associations of forest owners, as was initially planned.

We will come back to the plausible reasons for these failures. For the moment let us look at the outcomes of the programme.

Table 10
Targets and outcomes of PAF

Time horizon	Targets	Outcomes
	1987/94	1987/95
Afforestation (ha)	400 000	113 561
Improvement of existing stands (ha)	400 000	211 054
Establishment of grazing areas (ha)	100 000	0
Forest roads (km)	7 700	6 690
Divisional roads (km)	3 400	2 903
Dams	400	1 053
Forest extension services	X	nothing was done
Total cost of the programme in 1000 escudos	62 939 400	32 553 020
- Private projects		22 214 235
- Public projects		10 338 785

Source: DGF

Table 11
Distribution by region and ownership category
of the total investment funded by PAF

Regions	Public projects			Private projects		
	Number of projects	1000 escudos	%	Number of projects	1000 escudos	%
Northwest	88	2 335 368	31,6	183	1 228 478	7,1
Northeast	120	1 977 833	26,7	166	3 761 323	21,6
North	208	4 313 201	58,3	349	4 989 801	28,9
Central West	125	1 657 909	22,4	181	1 115 790	6,4
Central East	24	623 791	8,4	215	3 460 266	19,9
Ribatejo Oeste	26	340 268	4,6	303	1 876 481	10,8
Alentejo	20	249 756	3,4	437	3 046 302	17,5
Algarve	5	214 978	2,9	246	2 909 979	16,7
TOTAL	408	7 399 903	100,0	1 731	17 398 619	100,0

Source: IFADAP

Looking first at the types of beneficiaries, 70,2 % of the total investment supported by PAF was for private forestry. From the remaining 29,8 %, more than half was for public projects in the North which were almost entirely in communal lands. These projects, however, represented only 17,4 % of the total investment supported by PAF which is much lower than what happened in the PFP. So with PAF, the direct engagement of the Forest Services in communal forests was regressing. Also in most of the projects in private forests supported by PAF there was neither the direct intervention of the Forest Services, nor the direct investment of the forest industries (pulp and paper or other). So it is here that comes in our hypothesis about the major role played by forest contractors, since most of the NIPFOs are not large enough to plan and implement forest projects on their own.

Looking now in more detail to what types of NIPFOs might have been more active in opting in for this programme, the data available are insufficient to give a clear answer, since only indirect evidence is provided on this subject. These data are about the distributions by regions and by tree species of the

areas of new or improved forests supported by the programme. What these distributions show us compared to the PFP is the following:

- while with PFP 54,5 % of the plantings were in the North, with PAF the percentage of the North in afforestation and stand improvement fell to 21,3 %;
- the Central region also lost ground;
- the region which was on the rise was Alentejo;
- this regional shift is consistent with what happened in the tree species distribution, where the maritime pine (the dominant species in Northern and Central Portugal) fell from 49,9% in the PFP to 33,9% in the PAF, and cork oak (the dominant tree in Alentejo) rose from 1,4% in the PFP to 36,0% in the PAF.

Table 12
Regional distribution of the plantings and stand improvements funded by PFP and PAF

Regions	PFP		PAF					
	ha	%	Afforestation		Stand improvement		Total	
			ha	%	ha	%	há	%
North	70 670	54,5	40 443	35,6	28 671	13,6	69 114	21,3
Centre	37 400	28,8	29 137	25,7	33 395	15,8	62 532	19,3
Lisbon & Tejo Valley	9 773	7,5	13 137	11,6	43 823	20,8	56 960	17,6
Alentejo	10 455	8,1	13 861	12,2	88 395	41,9	102 256	31,5
Algarve	1 451	1,1	16 984	15,0	16 720	7,9	33 704	10,4
TOTAL	129 749	100,0	113 561	100,0	211 054	100,0	324 615	100,0

Source: Instituto Florestal

Table 13
Tree species composition of the plantings and stand improvements funded by PFP and PAF

Species	PFP		PAF					
	ha	%	Afforestation		Stand improvement		Total	
			ha	%	ha	%	ha	%
Maritime pine	65 083	49,9	46 938	41,3	63 180	29,9	110 118	33,9
Eucalyptus	37 929	28,8	10 375	9,1	5 107	2,4	15 482	4,8
Cork oak	1 809	1,4	22 307	19,6	94 534	44,8	116 841	36,0
Others	27 087	20,5	33 941	29,9	48 233	22,9	82 174	25,3
TOTAL	131 908	100,0	113 561	100,0	211 054	100,0	324 615	100,0

Source: Instituto Florestal

These data are enough to state, as a plausible hypothesis, that with PAF, there was a major shift in the beneficiaries of the public incentives compared to the PFP, the forest owners in Alentejo gaining ground and the forest owners in Northern and Central Portugal losing their dominant position in this matter. In terms of species, cork oak and other long rotation broadleaves emerged as the main beneficiaries of public support instead of eucalyptus and maritime pine. This is an expected outcome, given the profile of private forest ownership distribution (small scale forestry predominant in Northern and Central Portugal; large scale agro-forestry predominant in Alentejo), the lack of collective organisation of NIPFOs in the regions of small scale forestry and the total inaction of the Forest Services during the PFP and the PAF to promote this kind of capacity building, in spite of the funds available for this purpose.

This should not be taken as a criticism to the NIPFOs in Alentejo who did their best to apply for the public incentives available in the PAF. It is simply an attempt to explain why things happen the way they did. Also the revival of the cork oak forests in Alentejo is certainly an welcome result of this programme after almost fifty years of stagnation and even degradation of what is still the forest product where Portugal has the leading position in the world, but where shortness in supply is creating increasing problems to the industry.

Let us move now to the analysis of the large implementation failures which happened in this programme. Still as hypotheses that should be submitted to empirical testing, we propose the following list of factors for those failures:

- **optimism in target setting;**
- **institutional inertia** on the side of the Forest Services;
- **absence of what had been so far the main private direct investor** in forestry (the pulp and paper companies);
- **government budget constraints.**

Concerning the first factor in the list, it is an obvious one if we consider the following facts:

- the recent experience with the PFP was an average of 16489 ha of afforestation per year;
- for the PAF the target was set at 100000 ha of afforestation and stand improvement per year;
- on the top of these unrealistic targets, given the recent experience in the country in this matter, was also the fact that in the PAF compared to the PFP, the major and best organised private investor in forestry (pulp and paper industry) was practically out.

A great deal of this unrealistic optimism can still be imputed to a **technocratic approach** to policy planning which was the dominant characteristic of the policy process leading to the PFP. As explained by one of us in another paper (Mendes, 2000c), this type of approach does not care very much about the **implementability constraints** (individual rationality and incentive compatibility constraints) faced by public policy in private economies.

We talked already before about the institutional inertia on the side of the Forest Services, but we want to add some further remarks on this topic:

- so large mistakes in target setting as the ones we have just mentioned are a sign of serious weaknesses in the policy planning capabilities of the Forest Services;
- in a time where the political and economic winds were turning to the side of private business, the Forest Services overestimated the attractiveness of the new financial incentives and the initiative of NIPFOs;
- the Forest Services also easily forgot or were unable to carry on their responsibilities in the implementation of indirect measures to support the collective organisation of NIPFOs.

Coming now to the last factor in the list, it is often credited as having been the main reason for the implementation failures which happened in the PAF, forgetting the role of the other factors that we have just mentioned. The government financial constraints contributed to the implementation failures because they prevented the country from supplying all the public money needed to match the EEC funds available. If this is true, it is probably also true that with weak forest policy planning and implementation structures, there was not enough strength on the side of the forest institutions to claim for the money needed to match all the EEC funds that were available.

8. Regulation (EEC) 2080/92 and the Forest Development Plan

8.1. Forest policy outputs: measures funded and beneficiaries

Regulation (EEC) 2080/92 is a EU policy measure not specific to Portugal. It supports the afforestation of agricultural lands with the initial purpose of reducing farm surpluses. The PDF, on the other hand, was a programme specific to Portugal, financed by the EU structural funds within the Common Support Framework for the period 1994/99.

One feature common to these two programmes is the fact that they pursued the orientation started with PAF towards a stronger reliance on the private sector for implementation and the provision of financial incentives taking the form of **grants**.

With Reg. 2080/92 cork oak in the south is getting much more support than in previous afforestation programmes. Reg. 2080/92 also introduced a very attractive financial incentive which did not exist before: a prime to compensate the loss of agricultural income for 20 years.

This PDF supported the following types of actions:

- afforestation;
- stand improvement and reforestation, including the forests damaged by fires less than 5 years ago;
- maintenance costs of the plantations for 5 years after the first restocking;
- installation and amelioration of forest nurseries;
- selection and production of good quality seeds and seedlings;
- construction and amelioration of forest roads and water reservoirs;
- multiple use of forest lands (grazing, apiculture, gaming, aromatic and medicinal plants, etc.).

This programme also had the following features:

- it favoured grouped projects consisting of, at least, 5 contiguous, forest holdings;
- it did not support plantations with fast growing species.

PDF pursued the orientations initiated with PAF, taking new steps further:

- financial support for forest nurseries;
- stronger support for multiple use of forest lands;
- financial support for maintenance costs for 5 years after the first restocking;

- tighter restrictions for eucalyptus plantations and other fast growing species;
- more incentives for other broadleaves.

8.2. Forest policy outcomes: implementation analysis

Starting with a positive tone, taking PDF together with Regulation 2080/92 and comparing with PAF, the annual average of afforestation and stand improvement supported by public incentives **rose from 36068 ha to 60905 ha**. Adding to this, we should say that by the end of the Second Common Support Framework, there was an overbooking of applications which could not be funded by the PDF and had to wait almost two years for the Third Common Support Framework started in 2001. In one hand, this overbooking denotes the implementation problems that can arise when public incentives rely so heavily in external sources of funds. On the other hand, this denotes an increasing capacity on the side of the NIPFOs and forest contractors to organise themselves in order to carry on forest investment and management plans, if public funds are available to support their own effort.

Concerning this **capacity building in private forestry**, there is an important event to point out about what happened in the 90s, even though the space is now too short to make a more extended analysis of this fact. We are referring to the emergence of the **forest owners' associations**. In 1977 there were 19 associations of this kind. In 1998 the number rose to 67 and by the end of 1999 there were 110. Their start up benefited from some EU co-funded programmes included in the Second Common Support Framework:

- financial support for most of the investment and operating costs was provided by one programme aimed at agricultural organizations, but not specifically tailored to forest owners' associations;
- convergence of NIPFOs to membership in these kind of associations was stimulated by the PDF and Regulation 2080/92 because forest owners need technical advice to apply for these programmes.

With few exceptions, these associations did not yet come to an age at which they can make a substantial difference in forest management in their territories. So, for now, what is safe to say is that they represent an important qualitative change in the right direction: in a country where 76,6% of the forest land is the hands of NIPFOs the majority of whom own small holdings, substantial improvements in forest management need some form of collective organisation like this.

Searching now for the profiles of the main beneficiaries of PDF and Regulation 2080/92, we come to similar hypotheses as for PAF. More exactly, PDF and Regulation 2080/92 reinforced the policy shift initiated with PAF with much less support for eucalyptus and maritime pine plantations, and much more support for cork oak and other long rotation broadleaves. This shift had the same regional effects as the ones we

mentioned about the PAF, that is, the Northern and Central regions lost ground in the public support compared to Alentejo.

Table 14
Regional distribution of the investment funded by PAF, PDF
and Reg. 2080/92

Regions	PAF		PDF*		Reg. 2080/92	
	1000 esc.	%	1000 esc.	%	1000 esc.	%
Northwest	5 102 294	15,6	3 493 807	12,5	509 349	1,5
Northeast	7 342 143	22,6	3 182 961	11,3	7 856 600	23,3
North	12 444 437	38,2	6 676 768	23,8	8 365 949	24,8
Central West	3 664 463	11,3	3 388 810	12,1	201 395	0,6
Central East	5 102 701	15,7	5 899 183	21,0	3 888 479	11,5
Ribatejo Oeste	3 004 529	9,2	5 146 932	18,3	2 063 833	6,1
Alentejo	4 349 086	13,4	4 176 548	14,9	14 582 730	43,3
Algarve	3 987 802	12,3	2 766 117	9,9	4 583 771	13,6
TOTAL	32 553 020	100,0	28 054 358	100,0	33 686 157	100,0

Sources: data collected from Instituto Florestal and IFADAP

* excludes the projects cancelled until 15/11/2001; includes all types of projects financed by PDF (afforestation, reafforestation, stand improvement, nurseries, forest research and planning)

Table 15
Tree species composition of the plantings and stand improvements
funded by PAF, PDF and Reg. 2080/92

Tree species	PAF		PDF*		Reg. 2080***	
	ha	%	ha	%	ha	%
Maritime pine	46 938	41,3	97 970**	43,3	5 539	3,5
Pinus pinea	n.a.	n.a.	12 855	5,7	29 474	18,7
Eucalyptus	10 375	9,1	4 972	2,2	282	0,2
Cork oak	22 307	19,6	81 682**	36,1	65 596	41,6
Holm oak	n.a.	n.a.	6 950	3,1	26 061	16,5
Chestnut	4 625	4,1	2 875	1,2	8 130	5,2
Carob	n.a.	n.a.	309	0,1	2 141	1,3
Others	29 316	25,8	18 649	8,2	20 366	12,9
TOTAL	113 561	100,0	226 262	100,0	157 589	100,0

Sources: data collected from Instituto Florestal and IFADAP

* refers to all the projects approved for funding, including those that later have been cancelled

** includes monospecific and mixed stands

*** refers to the projects approved until 31/8/99.

Table 16
Area of the projects funded by Reg. 2080/92

Regions	Arable land afforested		Stand improvement	
	ha	%	ha	%
Northwest	1719,54	1,0	62,56	0,9
Northeast	31375,2	19,0	321,1	4,7
Central West	955,6	0,6	12,9	0,2
Central East	21378,4	13,0	642,8	9,4
Ribatejo Oeste	10190,9	6,2	3074,7	44,9
Alentejo	76997,2	46,7	2480,0	36,2
Algarve	22402,7	13,6	256,2	3,7
TOTAL	165019,6	100,0	6850,3	100,0

Source: data collected from IFADAP

Table 17
Area of the projects financed by PDF*

Regions	Afforestation	Reafforestation of burnt forests	Reafforestation of other land	Stand improvement
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	ha	%	ha	%	ha	%	ha	%
Northwest	661	14,9	3112	17,3	754	6,5	10340	6,5
Northeast	344	7,7	1052	5,9	339	2,9	6612	4,1
Central West	672	15,1	3576	19,9	1067	9,2	21598	13,5
Central East	732	16,5	6509	36,2	2688	23,3	27752	17,4
Ribatejo Oeste	717	16,1	3093	17,2	3619	31,4	37389	23,4
Alentejo	758	17,1	267	1,5	2865	24,8	43628	27,3
Algarve	562	12,6	352	2,0	210	1,8	12386	7,8
TOTAL	4445	100,0	17969	100,0	11541	100,0	159605	100,0

Source: data collected from IFADAP

* does not include the projects cancelled until 15/11/2001

9. Final remarks

As final remarks about all these programmes, we would like to point out the following facts:

- looking at **public support** to afforestation and stand improvement in Portugal in the long run, we see that it has **increased** throughout the XXth century (9235 ha per year from 1939 to 1965, 12085 ha per year from 1966 to 1980, 16489 ha per year with PFP, 36068 ha per year with PDF and 60905 ha per year with PDF and Regulation 2080/92);

- besides this quantitative trends, there is also a qualitative change in the right direction with an increasing focus in the improvement of **private forestry** which represents the large majority of Portuguese forests;

- these trends, however, **have not been enough** to compensate for the damage caused every year by forest fires (680677 ha of afforestation and reafforestation from 1966 to 1999 against 1263298 ha of forests burnt between 1968 and 1999) and for supplying the forest industries at levels they claim to be necessary to maintain and improve their competitiveness.

The last remark is about one thing that the programmes covered in this paper have in common: all of them relied very heavily on **external sources of funds** matched by public domestic funds subject to the annual bargaining about the government budget. This implies that financial incentives to forestry have been very **vulnerable** to external negotiations and internal political bargaining. It also implies that public financial incentives to forestry in Portugal have not been based, up to now, on **sustainable** sources of funds: loans from the World Bank could not continue forever and transfers of structural funds to Portugal will not continue forever at their current levels. Since, with very few exceptions, private investment in forestry will not happen without generous public support, the main challenge that lies ahead for the Portuguese forest sector, forest industries included³, is to build up sustainable sources of funds for that kind of support which means, among other things, funds less reliant on external sources. This looks like an enormous challenge given the current problems in Portuguese public finances which call for less and not for more public expenditure. So if this challenge is to be seriously faced, a solution should be found without adding to the deficit in the government budget⁴.

³ Increasing short supply of industrial forest products (roundwood, pulpwood and cork) is a problem affecting the competitiveness of the forest industries.

⁴ One of us, in several occasions (Mendes, 1997, 1998, 2000a, 2000b), has already contributed to the necessary discussion of this type of solutions, but the debate has not yet

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gained its momentum, in a context where the structural funds from the EU are still flowing to the country.

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