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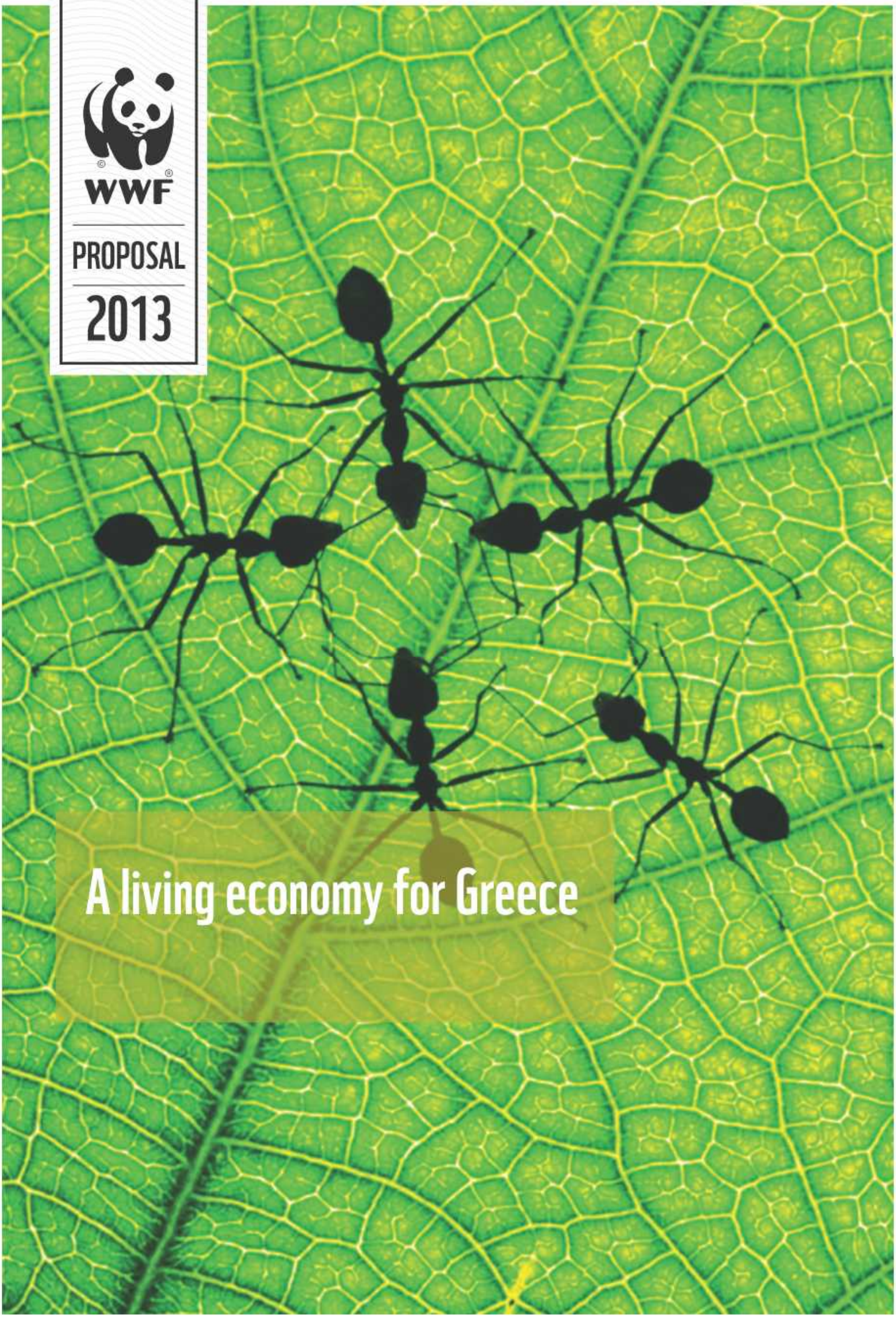
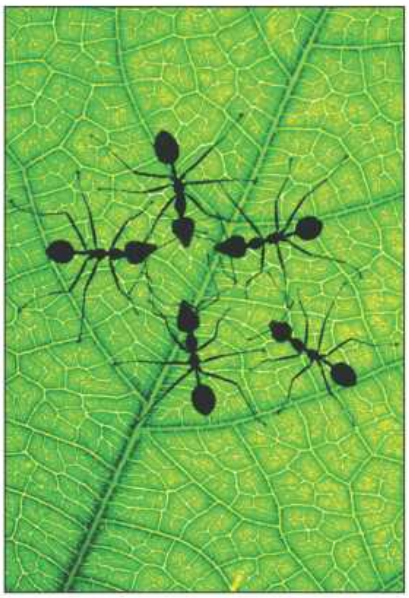


A living economy for Greece



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If you deconstruct Greece, you will in the end see an olive tree, a grapevine, and a boat. That is, with as much, you reconstruct her.

Odysseas Elytis (Nobel Prize in Literature, 1979), “Little Nautilus”

Contents

Prologue by WWF International President

Sustainability is about respecting nature, but also about respecting ourselves and the very foundations of our wellbeing and economic prosperity.

Building green economies is one of WWF's global strategic approaches to the pressing need for equitable development and economic activity that provide for sustainable livelihoods, within the finite boundaries of our one and only planet – so rich, so precious, and yet so fragile.

For decades, modern economies have been built on standards that ignore the natural basis of our production and consumption practices and lead to mounting deficits – both economic and ecological. We need to rethink the predominant development paradigm that has driven our natural capital, societies and economies to this global crisis. Now more than ever is the time to turn to truly sustainable models of green, living economies.

The Greek economy simply cannot ignore how dependent it is on its wonderful natural wealth: the rich biodiversity, beautiful landscapes, natural resources, abundant wind and sun are its main competitive advantages in today's globalized world.

As my friend and WWF's co-founder, Dr Luc Hoffmann, aptly describes, "Greece is a country of diversity. Zeus must have hit this area with his hammer, splashing a thousand islands into the sea and tearing the mainland into pieces, so that the coastline became as long as that of the entire African continent. This physical complexity is increased by the wide array of climates, ranging from almost subtropical to truly alpine conditions, as well as the variety of mountains, hills and plains, many of which are scattered with wetlands. It is no wonder that these conditions have produced an exceptionally rich living nature – in fact, the highest biodiversity known anywhere in Europe".

Since the beginning of the crisis in Europe, pressures on the environment have grown – impacting primarily the most troubled countries, like Greece. Although the situation in Greece may seem unique, the political response to the economic crisis has been similar to that in many other countries facing mounting sovereign debts around the world. Sadly, in the majority of cases, the sustainability agenda is sidelined for short-term gain.

But there is still time. While the Greek response to the crisis has already heavily impacted on the environment, now is the time for a new vision and truly sustainable reforms that may provide for a healthy economy of the future. It is WWF's firm belief that the crisis offers a unique opportunity for the elaboration of integrated national roadmaps to sustainability – not only for Greece, but for the whole world.

I hope WWF's green roadmap for Greece will indeed serve as a model for the new economic paradigm that the world so badly needs, helping to create living economies for people and the planet alike.

Yolanda Kakabadse
WWF International President

Prologue by WWF Greece

Every crisis signals the need for change. This difficult period of economic recession has made it painfully clear that we simply cannot return to the outdated development paradigm that brought us to the present socially and environmentally damaging crisis. For an environmental organization like WWF, with decades of experience and knowledge, it is obvious that the only truly sustainable solution to the crisis is inextricably linked to our own natural capital. The present report is our own contribution to the public debate that never really took place in this country on the type of future we all desire for Greece - our vision for a truly sustainable economy.

We formulated a roadmap that takes stock of present Greek reality but looks far beyond this: a fragile economy and state, but with tremendous potential for good governance, innovation and competitiveness. This is the vision we share with you today and ask of you to spend some of your time reviewing it, agreeing with us that we must raise the bar much higher for a decent future for Greece.

We have simple asks: unlimited transparency and accountability everywhere, clear legislation for all, good governance, social participation, a tourism sector that won't destroy the very product it depends on, that is nature, the revival of rural quality production that benefits the environment, an industry with a small ecological footprint, conservation of the natural treasures of the country.

We have difficult asks: combating environmental crime, zero tolerance to corruption that plagues society and destroys the environment, shifting to public investments and policies with a positive environmental impact, full implementation of the 'polluter pays' principle, disengagement from the development model that has brought us to the current crisis. We ask for recognition of the ecological basis of the Greek economy and condemnation of the position that nature is an obstacle to 'development'.

While we all hear how Greece needs a vision, the reality is that this has never been a part of the political agenda or a topic for public debate. All of us here at WWF Greece, bring to the table a sustainability panorama for Greece. We show that there is hope, there is potential for a sustainable economy and society, in harmony with nature.

Demetres Karavellas
Director, WWF Greece

THE CHALLENGE

From crisis to opportunity

Greece in crisis

In the dismal reality of the EU's deepening crisis, the natural environment is seen by troubled member states as an infinite resource to be tapped for quick economic recovery.

Following decades of massive spending and an unsustainable economic and development model, Europe's policy response is essentially a recipe for a much deeper and longer term environmental crisis.

Since May 2010, when the first bailout package for Greece was approved by the lending trio (Troika) composed of the EU, the International Monetary Fund (IMF) and the European Central Bank (ECB), the crisis continues to deepen across the EU, while pressures on the environment have mounted. Although attention has understandably focused on severe wage-cuts, pensions, social care and education, as well as on violent riots and mass strikes, an environmental crisis is also unfolding in Greece. To a large extent, the environmental rollback is the result of Greece's commitments in the context of the austerity and structural adjustment programme supervised by the Troika. To an equally large extent however, this loss of important environmental acquis is due to Government initiatives.

Despite the fact that certain fiscal indicators, such as the General Government Deficit, have indeed have in many states shown improvement as a result of austerity and fiscal consolidation measures, critical parameters of social welfare and natural capital conservation have rapidly deteriorated. This is clear evidence that in the dominant development paradigm, economic recovery is not intertwined with social and ecological sustainability.

As stated by WWF in the January 2012 letters to the EU and IMF,[1],

> «*It is WWF's strong belief that the crisis unfolding in Greece and the Eurozone countries more widely must be viewed as much more than merely a fiscal crisis. The crisis, in addition to being grounded in mismanagement of national finances, is a reflection of a deficient economic development model built on overconsumption and a steadily increasing ecological deficit and natural resource overexploitation. Until these contradictions in current economic development models are overcome, the measures being imposed on countries like Greece are little more than sticking plasters. Far from healing wounds, they are in fact exacerbating them while storing up longer-term environmental remediation costs.*»

The policy sectors that have so far undergone the most serious cuts in Greece are the following:

- legislation on environmental impact assessment,
- spatial planning and building regulations,
- forestry and coastal protection,
- the right of access to environmental information,
- the Green Fund, which was established in 2010 and has already collected over 1 billion EUR from environmental penalties, but its allowable environmental spending has been restricted to 2,5% of its assets annually;
- the 2010 national strategy and legislation for the transition to a clean energy future.

[1] Leape, J., Long, T., & Karavellas, D. Letter to Christine Lagarde, Director of the International Monetary Fund. WWF. Retrieved on April 13, 2013: http://awsassets.panda.org/downloads/c_lagarde_imf_6_jan_2012_final_1.pdf .
Also: Leape, J., Long, T., & Karavellas, D. Letter to Manuel Jose Barroso, President of the European Commission. WWF. Retrieved on April 13, 2013: http://awsassets.panda.org/downloads/j_m_barroso_ec_6_jan_2012_final.pdf .

Budget cuts and political indifference have caused the collapse of the national system of protected areas, whereas regulatory uncertainty and constant changes in pricing policies have brought the renewable energy industry to near extinction. Emphasis now is on "dirty" projects, such as hydrocarbon exploration and new coal fired power plants, widely advertised as Greece's black gold future, coal development and gold mining.

As reported in WWF's CrisisWatch monthly e-bulletin (http://www.wwf.gr/crisis-watch/), major environmental rollbacks and shortfalls in the EU since the beginning of the crisis have occurred primarily in the countries mostly affected by the crisis, i.e. Greece, Spain, Italy and Portugal. However, the EU is also favouring serious policy shortfalls, whereas Britain seems to be taking the long way back to environmental solitude, by questioning the competitiveness and development potential of EU policies on environment and fisheries and pursuing the repatriation of jurisdiction in these fields.

Spain and Italy are also experiencing serious environmental losses. Emphasis on drilling for hydrocarbons and other investments with a heavy ecological footprint, the collapse of renewable energy and green industry policies together with the loosening of environmental legislation are common symptoms of a panicky response to the crisis with policies lacking ambition and a sustainable vision.

A crisis is always a herald to the need for change! It is the firm belief of WWF Greece that the crisis offers a unique opportunity for the articulation of integrated national strategies for living and sustainable economies in Greece and in the entire EU.

Ecological basis for a living economy

Modern economies are based on standards that structurally ignore the natural basis of our productive and consumption practices. In its modern history, humanity has perceived the natural environment as a sub-system of economy and has treated ecosystems as endless sources of materials and waste disposal. However, the opposite is true: economy depends on nature.


© Ministry of Culture

The development paradigm that has been founded on the view that nature is simply a basket of resources and space has been proven wrong and unsustainable. Development needs to be redefined on the basic principles of ecological sustainability and social equity.

Nature offers visible, but also "invisible" to many people, services and resources. The most important of these ecosystem services are:

- *Provisioning*, i.e. products obtained from natural ecosystems, such as crops, water, wood, minerals, energy, biochemicals and pharmaceutical ingredients, food.
- *Regulating*, such as climate regulation, pollination, protection against floods, etc.
- *Supportive*, i.e. services that are vital for the conservation of life on earth, such as nutrient cycling and photosynthesis.

Cultural /spiritual, i.e. non material benefits, such as recreation, scientific knowledge, cultural and religious inspiration.

All ecosystem services depend on biodiversity.

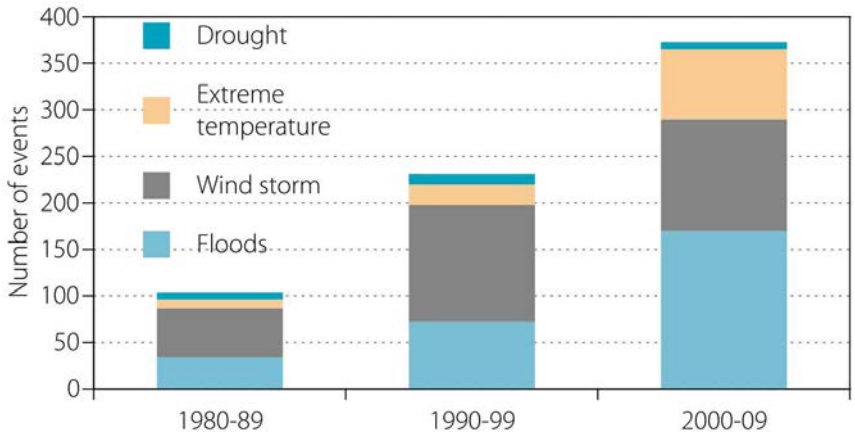
Healthy ecosystems are areas of dynamic development of life. The loss of a single species may have a serious impact on other species and even result in ecosystem collapse. Yet, the vital significance of nature on economies is overlooked by the current development paradigm.

The provisions of natural capital are not part of a specific market structure and therefore demand and supply for its goods and services do not reach equilibrium via an effective pricing mechanism. In this sense, natural capital remains essentially 'invisible' within the economic system. Many economists assert that the mismanagement of natural ecosystems and relative resources is largely the result of the aforementioned market failure. In Germany, the drainage of 900,000 hectares of peat lands and their conversion to croplands, generated greenhouse gas emissions equivalent to 20 million CO2 per annum. Damage caused by those emissions were estimated to be 140,000 €/hectare, however this estimation does not account for indirect damages related to the maintenance of the drainage infrastructure, the forgone capacity to withhold and cleanse water or the sequestration of nutrients. In any case, no estimation of the value of natural capital was included within the decision making process of that specific drainage project.

The total annual value of ecosystem goods and services is estimated to be at least 26 € trillion, which corresponds to approximately 1/3 of global GDP[2]. The total value of services provided solely by temperate and northern forests is estimated at 7 € million, of which the largest amount relates to non-market services, like for instance the maintenance of nutrient cycles (nitrogen, phosphorus and other substances with an estimated total value of 13 € trillion).

One of the typical indicators, which the European Union monitors and evaluates, is that of natural disasters attributed to climate change. As shown in the diagram below and inside respective reports, phenomena like storms, extreme temperatures, droughts and floods recorded in the EU-27 have significantly increased since the '80s.

Environmental Impact Indicators:
Natural disasters linked with climate change



Source: Database EMDAT (Emergency Events Database)
(http://ec.europa.eu/environment/policyreview.htm)

At the conference of the 2010 Biodiversity Convention in Japan, member-states agreed to incorporate the value of biodiversity in their national accounts by 2020. This target also has been included in the EU's Biodiversity Strategy. Greece is bound by both agreements.

Biodiversity loss is one of the most significant and pressing environmental threats globally. According to the analysis conducted by WWF and the Global Footprint Network within the Living Planet Index that was based on data for about 2,688 species, the situation is clearly deteriorating, given that populations have declined by approximately 28% in the period between 1970-2008[3]. According to the Millennium Ecosystem Assessment (2005) current rates of species extinction are primarily the result of human activities and are 100 to 1000 times faster than in the past. Despite the fact that the relationship between biodiversity and ecosystem services cannot be adequately quantified in financial terms, it is very clear that

[2] Costanza, R., d'Arge, R, de Groot, R, Farber, S., Grasso, M., Hannon, B., et al, (1997). The value of the world's ecosystem services and natural capital. *Nature* 15 (387), pg. 253-260.
[3] WWF. 2012. *Living Planet Report: Biodiversity, Biocapacity and Better Choices*. Available at http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/

alteration in the quantity or quality of natural capital will impact on human well-being and the economy.

Important economic agents, like the insurance sector, closely monitor the impacts inflicted by the loss of ecosystem services. Munich Re, one of the largest reinsurance companies in the world, estimates that if the rate of natural disasters continues at current rates, their costs will have exceeded global GDP by 2060[4]. Those findings are further corroborated by the work of the research team of Nicholas Stern, which concluded that the cost of climate change may reach 20% of the global GDP, assuming humanity continues along the 'business-as-usual' model of overexploiting fossil fuels[5].

Munich Re also estimates that during the period 1980-2011, more than twenty thousand incidents of natural disasters caused the death of 2,275,000 people, climate change being the second most significant cause, after geological phenomena (earthquakes, tsunamis, etc). The total cost of damage was estimated at $ 3,5 trillion. The largest share of those costs resulted from the absence of insurance protection.

The transition towards a truly sustainable economy goes through ambitious, deep reforms in the current model. It is necessary to recognise and measure natural capital as the foundation of the economy, along with the opportunities it provides for the country's development and social well-being. Basic priorities are the following:

- Systematic and effective environmental conservation, in order to safeguard the priceless natural capital and its ability to provide goods and services on which economies and human well-being heavily depends. Investing on the maintenance and restoration of nature is not simply a matter of ethics, but also concerns resource efficiency, which generates "natural savings".
- Mapping the goods and services provided by Greek ecosystems and estimation of their true value.
- Formulating effective systems of political and corporate governance, enhanced by mechanisms, policies and procedures which ensure that the value of biodiversity and ecosystem services is accounted for within the decision-making process and the overall production-process.
- Incorporating the need to protect natural capital and its life-supporting provisions in all sectors and aspects of the economy.
- Institutionalising economic incentives and mechanisms that will support investment on natural capital and will yield economic returns from protecting biodiversity, within a broader scope of economic development. For example, an annual investment of 6 € million on the European "Natura 2000" network, can generate income as high as 300 € million[6].
- Promoting economically and ecologically sound business practices that sustain and enhance natural capital, with emphasis on research & development.
- Promoting consumption and daily-life patterns that will sustainably utilise nature's provisions.

A living economy for Greece?

The shadow of the global crisis shed light on the weaknesses of the fragile *modus operandi* of the dominant development paradigm, within which the crippled Greek economy is called to recover.

[4] Neidlein, Hans-Christoph and Walser, Manfred. (2005). *Natur ist Mehr-Wert. Ökonomische Argumente zum Schutz der Natur*. Bundesamt für Naturschutz -BfN-, Bonn (Herausgeber). Available at: http://www.bfn.de/fileadmin/MDB/documents/skript154.pdf

[5] Stern, N. (2006). *The Economics of Climate Change.* Retrieved from: http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/stern_review_report.htm.

[6] European Commission. (2013). The Economic Benefits of the Natura 2000 Network. Available at http://ec.europa.eu/environment/nature/natura2000/financing/docs/ENV-12-018_LR_Final1.pdf

In the present proposal, WWF Greece aims to illuminate all the particular aspects of the Greek crisis, along with the environmental dimensions that lead to a future, deeper ecological crisis.

At the economic stage, many countries, including Greece, continue to sink deeper in the crisis, with significant fiscal deficits and economic stagnation. Recovery and the creation of new jobs continues to be sought through obsolete economic tools, on the basis of attracting all types of investments, anywhere, without the necessary social and environmental filters.

Greece however is called to face primarily its deep, idiosyncratic structural problems caused by an inefficient economic model of introvert consumption, which is funded with loans and a myopically planned real economy completely based on an ineffective governance system. This model is unsustainable, in economic terms.

At the social level, the unequal distribution of economic wealth, which is largely produced at the expense of natural capital, equals extreme poverty for a large percentage of the world's human population and excessive wealth for a small part. In practice the spectacular improvement in living standards that has been recorded in recent decades does not influence 2/7 of the global population, currently living on just 1.5 € per day[7]. At the same time, just 5% of the global economic product corresponds to the poorest 40% of the global population, whereas 75% is property of 20% of the population[8]. On a planet that is not limited by national boundaries, the impacts of climate change, caused primarily by the economically powerful and largely affecting the poor, proves that the current development paradigm does not promote wellbeing and cannot be sustainable, in social terms.

© Sylloge Nummorum Graecorum

Ancient Greek coin depicting a sea turtle (circa 475-455 B.C)

At the ecological level, anthropogenic climate change and the constant loss of natural capital, i.e. the web of ecosystems services and biological diversity that constitutes the basis of economic activity and social wellbeing, seriously undermines the planet's resilience and capacity for regeneration. With a soaring global ecological footprint, which exceeds by 52% the planet's capacity to replenish its natural resources, it is evident that the current development paradigm is not sustainable, in ecological terms.

WWF believes that these two crises are deep and interconnected, and should therefore be addressed jointly, without being limited within myopic and fragmented policies. An ecologically viable and socially equitable economy requires ambitious reforms.

Greece's natural treasury

The Greek economy is largely dependent upon its nature:

* Over 23,000 species of land and freshwater animals, of which 3,956 are endemics.
* 3,500 marine species.
* 115 species of mammals (1 endemic), 442 species of birds, 64 species of reptiles (9 endemic), 22 species of amphibians (3 endemic), 154 species of freshwater fish (83 endemic), 476 species of marine fish, 680 species of terrestrial molluscs.
* Over 5,800 species of flora, 936 of which are endemic. Many Greek plant species have special economic value: the mastic gum, oregano, indigenous salad herbs, mountain tea and mushrooms, to name just a few.
* At least 100 local animal breeds, such as the Prespa Dwarf Cattle, the Zakynthian Sheep or the Tinos pig.

[7] http://www.worldbank.org/en/topic/poverty/overview
[8] 2007 Human Development Report (HDR), United Nations Development Program, November 27, 2007.

* More than 250 mountains of altitudes higher than 1,000 metres.
* Approximately 3,612,992 hectares of forest cover, which can support an ecologically beneficial and economically viable timber industry.
* 10 wetlands of international importance (protected under the Ramsar Convention), 239 Sites of Community Importance (protected under the EU's Habitats Directive), 163 Special Protection Areas (protected under the EU's Wild Birds Directive) and 14 National Parks.
* Over 670 small wetlands on Greek islands, covering an area of more than 45 km^2.
* Over 2,800 islands, only 227 of which are inhabited.
* The Prespa Lakes host the largest population of the Dalmatian Pelican on earth and offers valuable land for emblematic agricultural products, such as the Prespa beans.
* Sekania beach on Zakynthos hosts the largest number of sea turtle nests in the Mediterranean, an endangered species which is the basic attraction of an island packed with hunderds of thousands of tourists every summer.
* The forest of Dadia in Evros offers vital habitat to 36 out of the 38 species of diurnal raptors that inhabit the European Union and is the basis for a local economy that depends on nature tourism.

Greece's seas and islands are part of WWF's Mediterranean ecoregion, many forest ecosystems are part of the Mediterranean Forests, Woodlands and Scrub ecoregion and most freshwater ecosystems are included under the Balkan Rivers and Streams ecoregion, all of which have been identified by WWF International as four of the globe's 200 priority ecoregions.

The sustainable use and management of this unique natural wealth constitutes a development lever on its own.

Greece's ecological footprint

The development paradigm that Greece has been following in its post-WWII history has been inconsistent with the opportunities offered by the country's natural wealth.

According to data presented in European Commission reports[9], Greece's record on various environmental indicators is below the EU-27 average.

In the field of environmental legislation, Greece's lag over time nurtures corruption, environmental crime and widespread legal uncertainty[10]. It is also worth noting that the final household consumption over GDP has been one of the highest in the EU-27: in 2009, last year before the crisis, it reached 72.53% of GDP, with an average of 57.56%[11] for the Eurozone.

Despite the fact that the national ecological footprint is not measured in Greece, the country's poor track record is partly recorded by iGrowGreen, the EU's analytic tool.

[9] European Commission. (2012, 31 October). Annual Environment Policy Review. In *Environment*. Retrieved on 16 June 2013, from http://ec.europa.eu/environment/policyreview.htm.
[10] A comprehensive analysis of the environmental legislation's implementation from 2005 up to date is provided via annual reports issued by WWF Greece: Environmental Legislation Observatory (2007) retrieved in June 17th 2013 from http://politics.wwf.gr/index.php?option=com_content&task=view&id=450&Itemid=412.
[11] World Bank. (2013). Household final consumption expenditure, etc. (% of GDP) . *Data.* Retrieved August 6, 2013 from http://data.worldbank.org/indicator/NE.CON.PETC.ZS/countries?display=default

Obstacles in a living economy
• High environmental footprint (e.g. pollution, often illegal waste management, uncontrolled use of natural resources, high carbon economy) tables. • Insufficient institutional, legislative and regulatory environmental framework, which is constantly undermined by the worsening quality of law making. • Low conformity with the national and the EU's environmental legal, which results in high levels of environmental crime and the unique phenomenon of institutional delinquency, i.e. the non-conformity of the public sector with the laws of the state. • Silent social acceptance and *de facto* political rewarding of environmental lawlessness. • Ineffective environmental inspection and delay in the award of environmental justice. • Negligible volume of public and private environmental investments and generally pretextual assessment of the environmental impacts of development activities. • Low absorption of EU cohesion and structural funds, with questionable quality and results of the environmental projects that are finally implemented. • Low percentage of green jobs. • Low levels of research and development in green innovation.

The following table is indicative of Greece's poor track record in the crucial field of environmental law implementation.

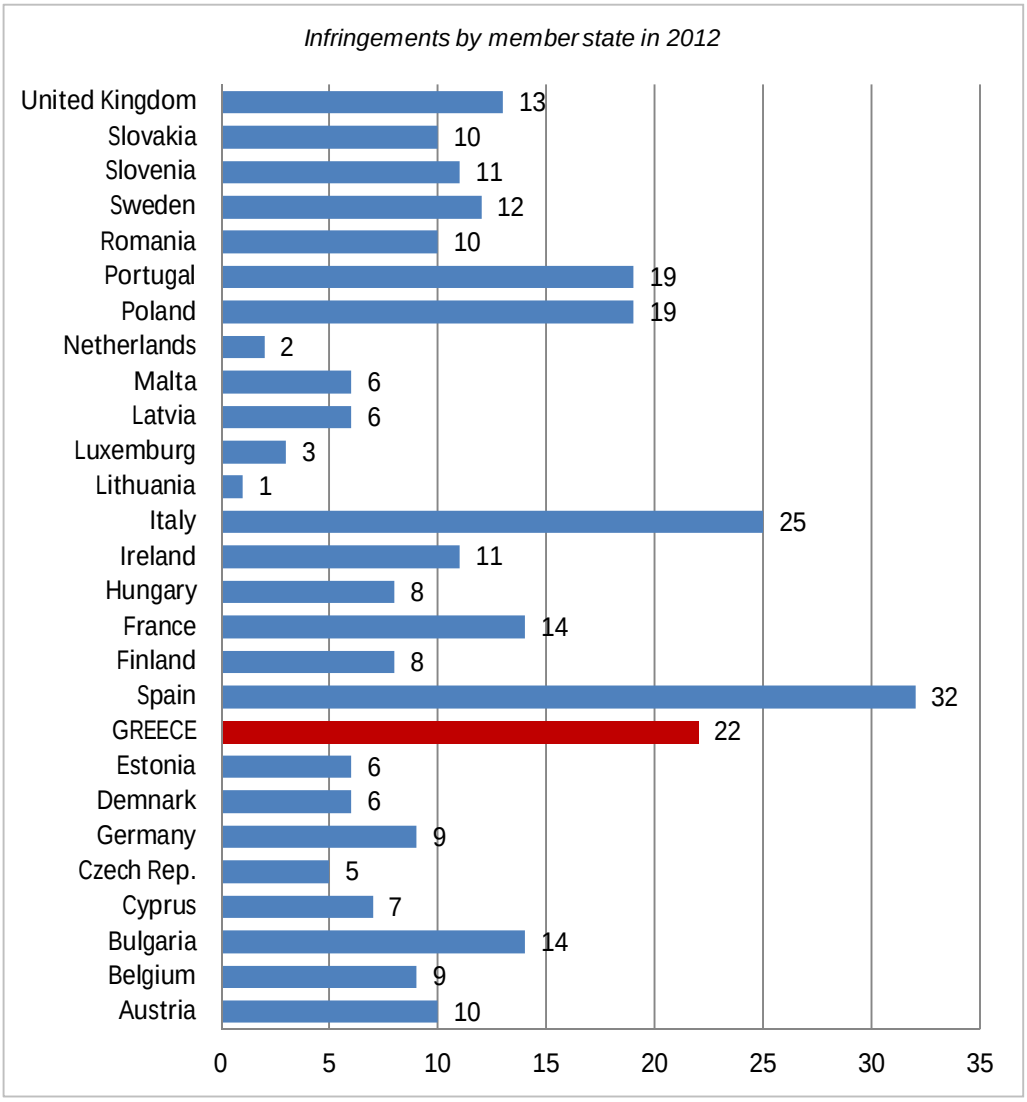


Table 1 – Open cases of EU environmental law infringements
Source: European Commission, 2013[12].

Indicative of Greece's ecological footprint are also the following comparative tables in important sectors, such as the consumption of resources / GDP and groundwater extraction / total available water resources. Five performance indicators were selected as most critical[13]. These numbers do not quantify the ecological footprint, but provide a picture of the country's record with respect to the indicators.

[12] European Commission. (2013, 12 April). Legal Enforcement-Statistics on environmental infringements. In Environment. Retrieved on 16 June 2013, from http://ec.europa.eu/environment/legal/law/statistics.htm.
[13] The EU's iGrowGreen model provides a quantitative assessment of each country's performance in two respects: a) the level of environmental pressure (level) and b) the trend of that pressure (change). Rankings begin with good performances (positive) and unfold downwards (negative). Those figures do not actually quantify the environmental footprint but provide an ordinal rank of each country's score in each performance indicator.

Table 2: Domestic material consumption per GDP (2000-2009)

	Member state	Performance
1	Netherlands	6,21
2	Luxemburg	6,15
3	Malta	6,08
4	United Kingdom	5,56
5	France	4,05
6	Italy	3,53
7	Germany	2,97
8	Belgium	2,61
9	Denmark	2,33
10	Sweden	2,19
11	Spain	1,22
12	Austria	0,63
13	GREECE	-0,47
14	Slovenia	-4,45
15	Finland	-4,92
16	Hungary	-6,06
17	Portugal	-6,91
18	Ireland	-7,62
19	Czech Republic	-9,40
20	Slovakia	-10,26
21	Lithuania	-10,91
22	Cyprus	-11,44
23	Poland	-17,17
24	Estonia	-26,66
25	Bulgaria	-30,00
26	Romania	-30,00

Table 3: Ground *water* extraction as percentage of total available *water* resources (2000-2009)

	Member state	Performance
1	Romania	10.7285
2	Finland	9.9383
3	Sweden	9.7802
4	Lithuania	8.7371
5	Slovakia	8.1049
6	Bulgaria	7.5043
7	Malta	6.1134
9	Netherlands	-3.1483
10	Estonia	-5.8036
11	Denmark	-7.6054
12	Belgium	-9.8181
13	GREECE	-19.5540
14	Cyprus	-20.0282

Table 4: Greenhouse gas emissions per GDP (2000 – 2010)

	EU member state	Performance
1	Sweden	8.1506
2	France	5.3416
3	Denmark	5.2980
4	United Kingdom	4.8486
5	Austria	4.4838
6	Italy	3.5069
7	Luxemburg	3.1787
8	Spain	2.8359
9	Ireland	2.7609
10	Netherlands	2.6214
11	Germany	2.1785
12	Belgium	1.6872
13	Portugal	0.5333
14	Finland	0.3232
15	Malta	-3.1137
16	GREECE	-4.4120
17	Slovenia	-4.9459
18	Cyprus	-7.6702
19	Hungary	-9.6061
20	Lithuania	-15.0576
21	Slovakia	-15.3637
22	Latvia	-15.8079
23	Czech Republic	-22.0212
24	Poland	-26.3814
25	Romania	-27.6851
26	Bulgaria	-30.0000
27	Estonia	-30.0000

Aims of the reforms for a living economy

- Natural capital conservation and sustainable management.
- Reduction of the national ecological footprint to one planet levels.
- Economic reform with an ecological, social and financial outlook.
- Development of ecologically sustainable entrepreneurial activity.
- Improvement of livelihoods for all.

A sustainable or “green” economy is not about the development of environmentally friendly economic activities as supplements to the current model. It is imperative to stress at this point that the aim of WWF Greece’s proposal is the articulation of a new development paradigm, which is based on the integrated and comprehensive ecological reform at all levels. In practice, this will result in phasing out significant economic activities that have a disproportionately high footprint and can be replaced by sustainable production methods, products and services.

Basic assumptions

1. The proposed set of living economy reforms will not solve Greece's debt problem. It will however set the basis for sustainable economic restructuring.
2. No policy for the stimulation of economic activity can solve the national debt crisis, which will need to be addressed in the framework of political negotiations.
3. WWF Greece develops this roadmap as basis for the much needed public dialogue that has not yet occurred.
4. This proposal is the result of a working group composed primarily of WWF scientific staff and experts in various fields who voluntarily offered their input.

   Due to financial restrictions, it was not possible to proceed with more detailed analyses in fields that have not been included in WWF Greece's agenda therefore, it does not include proposals for all economically important sectors.

POLITEIA FOR SUSTAINABILITY

Horizontal reforms

Governance

Greece's post-war history is penetrated by the absence of a robust, enduring and effective environmental governance system. The consequence of this is the widespread environmental crime and disregard for environmental law, which unfolds under a veil of silent social and audaciously overt political acceptance.

From the level of government politics and public administration, all the way through to the public consultation and decision-making mechanisms, the system of institutions and structures of political planning and administration is very far from the coherent, participatory, transparent and efficient governance model that is necessary for the development of a living economy.

The living and sustainable economy is transparent, participatory and socially accountable.

Beyond the historical lack of political will for the development and implementation of integrated environmental and economic policies, the main shortcomings of the current Greek model are:

- Intransparency → corruption→ clientelism: Covered in a shroud of intransparency, the Greek governance system favours corruption and remains entrapped in the influence of each government.
- Political asymmetry: Dependence of environmental law and policy implementation on the will of each government, often in violation of the Hellenic Constitution and EU legislation.
- Lack of coordination and administrative inefficiency.
- Knowledge gap: Lack of important knowledge resources, such as the Cadastre and land maps, which allows for mistakes and corruption in decision making.
- Legal labyrinth: Complex and unclear legislation on important policies with economic interest, such as the siting of renewable energy infrastructures and land planning.
- Inspection weakness, due to the lack of political independence and the understaffing of the environmental inspection authorities. This problem is further accentuated by the knowledge gaps that deprive authorities of important tools for the identification of law infringements.
- Democratic deficit, due to the absence of standing structures and processes for social and scientific consultation.

Transparency, knowledge, participation, accountability

The living, sustainable economy described by WWF Greece is transparent, participatory and socially accountable. The governance system that will serve as hatchery for the development of the living economy:

* respects the laws and court decisions,
* is simple, coherent and clearly structured,
* accounts publicly on the ecological and social sustainability of the economy, on the basis of indicators monitored in the framework of regular national reports,
* promotes international cooperation and active participation in green policy formulation, as proof of a state that acts as a responsible and good international citizen,
* formulates the framework of markets and production, through continuous stakeholder participation and consultation,
* formulates policies with unambiguous and equitable rules and excludes any favourable treatment of individuals, corporations or social and political groups.

The living economy is open and welcomes as stakeholders not only the state institutions or selected persons and entities, but also provides all clear with roles and duties for respective environmental accountability.

The key stakeholders in a living economy are:

a) The *Parliament*, as the legislative body of elected people's representatives and guardian of the mandate for democratic governance, always according to the Hellenic Constitution and the international and EU law.

b) The *Government and central public administration*, as guardians of the environmental public interest, executive planner of coherent policies and laws and regulator of resource use and markets.

c) The *local administration* as guarantor of sustainable local economic activity, local nature and resource conservation and environmental legality.

d) *Justice and independent authorities*, as non-partisan guardians of legality and protection of the environmental *acquis*.

e) The EU and supranational organisations, since environmental policies are to a large extent dependent upon international agreements.

f) *Civil society*, as a dynamic and informed environmental guardian, seeker of transparency in all functions of the public and private sectors, shaper of markets on the side of demand, bearer of new ideas and entrepreneur through social enterprises.

g) The *private sector*, as producer and bearer of sustainable business innovation, responsible social partner and political co-developer through collective entities and transparent consultation structures.

The areas for necessary intervention and coordination are the following:

- *POLITICAL COMMITMENT*: Inter-party political commitment for environmental footprint reduction strategy integration into all policies, as well as for the unwavering implementation of environmental law.

- *PARTICIPATION*: Formulation of a framework of structures for the broad participation of an informed society in the policy and law making process. The establishment of new participatory structures, such as opinion referenda and citizens initiatives, especially during the phase of policy formulation, needs to be seriously considered.

It is also necessary to strengthen public participation in crucial but deficient existing procedures, such as the consultation for all major legislative and policy formulation initiatives. This would require permanent consultation platforms, equitable opportunities and reasonable time available for these processes, and inclusion of the "zero" option: the widespread practice of consultations on decisions that have already been determined is a parody that needs to be abandoned. The basis for fair and productive consultation is the provision of all available data and the *ex-ante* clear statement of the real political stakes.

- *EFFICIENT AND TRANSPARENT ADMINISTRATION*: The public administration needs to serve as the guardian of the good effective environmental law and policy implementation and enforcement. Ending the dependence of public administration from party politics, in order to facilitate the homogeneous and politically impartial implementation of policies and laws, is an absolute priority. The reduction in the number and levels of political leadership positions in the ministries is necessary, in order to achieve a certain point of political independence in public administration. In this framework, the restriction of political leadership to the level of deputy minister and the appointment of general secretaries for a five-year term by a multi-party parliamentary commission, needs to be seriously considered.

Of equal priority is the formulation of an integrated e-governance system, which will serve all levels of public administration and will allow the reduction of bureaucratic workload for citizens and businesses, as well as the traceability of all relevant administrative decisions. Especially with regard to environmental law, e-governance is vital for transparency and proper implementation.

Absolute transparency should become an institutional obligation for all stakeholders in a living economy, including the private sector.

- *KNOWLEDGE*: The production of critical knowledge tools for citizens and the public administration, such as land maps, the national biodiversity inventory, the mapping of Natura 2000 habitats and species, needs to proceed as a matter of national priority. The knowledge provided by these tools is fundamental in facilitating transparent and accountable decision making. The improvement of the environmental and natural resource knowledge basis is of equal significance to the civic society, since it corroborates the scientific basis of existing or new policies, in whose formulation it is called to participate.

The establishment of all necessary knowledge tools is also vital for the acceleration of environmental permitting procedures, which however also needs to be transparent: unhindered internet access to basic environmental and spatial information also needs to be guaranteed.

Emphasis needs to be placed on producing the following decision-making tools, which today constitute a killer gap of knowledge for both the public administration and Greek society at large:

* *Geospatial data*: (a) forest maps, which are already two decades off schedule and need to be completed without further haste, (b) Natura 2000 mapping, (c) mapping of high productivity agricultural lands, (d) geological and hydrographic maps, (e) mapping of high industrial accident risk installations, according to the EU's Seveso Directive and (f) mapping of areas most vulnerable to the impacts of climate change.
* *Urban and spatial information*: (a) General urban plans (mapping of boundaries and regulations), (b) residential areas (mapping of boundaries and regulations), (c) regional and sectoral spatial plans and (d) maps of archeological areas.
* *Development information*, such as the regional development plans and programmes.
* *Environmental management*: (a) Natura 2000 management plans, which need to be concluded without further haste, (b) water basin management plans, according to the EU's Water Framework Directive, which need to be promptly concluded, (c) species management plans, as stipulated in the 2011 national Law on Biodiversity, and (d) all data produced in the framework of environmental monitoring programs.
* *Monitoring of administrative activity*: (a) registers of permits for high footprint activities, such as water use and waste management and (b) studies drawn up in the framework of administrative activity (EIAs, other environmental assessments and reports, etc.).
* *Open environmental research data,* relating at least to those supported by public funding.

- *CONTROL*: The formulation of a comprehensive and efficient environmental inspection system is essential in combating environmental crime and achieving proactive compliance.

In this context, the time has come for the strengthening of the Hellenic Environmental Inspectorate by granting it with the necessary political independence from party politics. It is imperative to seek its administrative elevation to the level of an independent authority, which will also be empowered with sanction imposition powers and a coordinating role in the environmental inspections system (which also includes regional and police authorities). Guidelines for responsible business practices and proactive compliance also need to be produced by the new authority.

- *JUSTICE*: Legal certainty being a vital precondition for the development of sustainable economies, basically via consistent codification, the phasing out of clientilist practices, the

incorporation of environmental principles across the legislative spectrum, as well as the open and justified consultation process.

Good and smart law making is undoubtedly a mutually beneficial element both for the conservation of natural capital as well as for a robust business development.

Legal certainty for all
WWF Greece has long argued that natural capital conservation and the healthy development of business activity are intricately dependent on legal certainty and clarity. In order to achieve this, the following steps are necessary: * environmental integration in the entire legal corpus, * continuous and comprehensive legal codification and simplification, * abolition of the practice of "tailor-made" regulations, * organisation of permanent consultation structures, * integrated assessment of the anticipated impact of all legislative initiatives, * organised and easy access to the entire legal corpus and case law, * reduction of the administrative burden resulting from all regulations.

Economic and development policy

Economic affluence is a necessary, yet not sufficient condition, for social development and well-being. Besides economics, there are two other essential dimensions, the social and environmental, , none of which is reflected in the methodologies and metrics used by macroeconomic accounting frameworks, at both the national and international levels.

Given that the environment is not reflected on macroeconomic indicators, natural capital remains to a large extent the "invisible" base of the economy. Taxation policies also lack essential environmental parameters, primarily the "polluter pays" principle, as they also lack the strategic principle of shifting the tax burden from labor and capital, towards pollution and excessive resource-use.

All related necessary reforms, therefore, pertain to the following issues:

- macroeconomic indicators
- taxation and fiscal policy
- policy and legal frameworks for investments

and

- the new programmatic period for the Cohesion Policy 2014-2020

Macroeconomic indicators

The basic GDP indicator and its annual rate of change is a deficient indicator, as it accounts only for the quantitative level and growth-rate of the economy, without including any methodological adjustment for environmental externalities and the exploitation of natural resources through the economic process. Hence, the environment is being treated as an invisible externality, i.e. as a cost not reflected on the national account. Moreover, GDP does not provide any information regarding the degree of equity with which resources and economic output are distributed, nor does it account for the per capita environmental footprint.

Conventional economic indicators, therefore, are deficient and parochial with regards to the magnitude of current social and environmental challenges, imposed by current and past economic systems and practices.

Crafting new indicators within a living economy framework is neither a theoretical exercise, nor a vague, long-term visionary goal. The European Union and other international bodies have processed and monitor specific indicators related to the green transformation of economies.

The European Commission's "iGrowGreen" methodological framework deserves special mention, since it offers of the only systematic model of quantitative and qualitative assessment. It combines numerous indicators in order to examine linkages between environmental policies, economic performance and the degree of shifting towards a greener, more competitive economy, at both the European and national levels.

The following indicators could be initially used, as a measure of "ecological-economic transformation" in the case of Greece:

- Environmental taxes in proportion to total taxes and to total social expenditures.
- Absorption of EU funds and respective environmental investments.
- Revenue from carbon taxes and breadth of the specific tax-base (sectors, number of businesses).
- Turnover of the waste management and processing sector as % to GDP.
- Breaching of environmental legislation – volume and type of environmental violations and respective fines.
- Per capita consumption of raw materials and total raw materials consumption with respect to GDP.
- Per capita volume of solid waste disposal.
- Total and per capita pumping of surface and ground water per economic sector (primary production, industry, etc.).
- Expanse of organic farming, compared to total expanse of conventional crops.
- Investment in biodiversity protection programmes.
- Greenhouse gasses and energy consumption per unit of GDP.
- Percentage of green jobs with respect to the total number of jobs and respective rate of change.

In order to redefine and recalibrate macroeconomic indicators, first the economic value of natural capital needs to be evaluated, along with the cost of the economy's environmental externalities. This should take place as a broader, collective effort launched by governments, the private sector and international regimes (UN, IMF, The World Bank, etc.), in order for international principles and mutually compatible methodologies to be developed and implemented. These principles will jointly account for the essential triple-bottom-line "environment-society-economy".

The basic indicator that needs to be primarily redefined is the Gross National Product (GDP), both total and per capita, in order to account for natural capital depletion and resource use, as well as environmental degradation. In this manner a holistic account of economic sustainability will be possible, beyond the current myopic principle of 'economic growth' accounts provided in strictly monetary terms.

What is needed, therefore, is an actual paradigm shift of the way humanity and national governments in particular measure wellbeing, through the adoption of a more comprehensive methodology that will incorporate all factors affecting directly and indirectly social development and environmental robustness.

Tax reform

Tax and fiscal reforms are essential steps on the way to decoupling economic activity from environmental overshoot.

A comprehensive green taxation system must not increase the overall level of taxation, but shift tax burdens from labor and capital towards the ecological footprint.

The goal of a broader tax reform with a clear environmental orientation should not only be fiscally consolidated, but also ecologically healthy and socially equitable. In principle, a sound green tax reform combines increased taxation of energy consumption, natural-resource depletion and environmental degradation with a corresponding tax-relief of labor and capital, the latter being essential in order to restart the economy and boost employment. As defined by the EU strategy "Europe 2020", "government revenue is equally important and emphasis must be given to the qualitative aspects of the revenue/tax system. In case taxation needs to be increased, this must be coupled – to the largest feasible extent – by a parallel effort to make taxation schemes more "labour-friendly". For example, increases in labour taxes, as happened during the past with a negative impact on jobs, must be avoided. Member-states must shift tax burdens from labour and increase environmental taxes, as part of a broader "green" taxation system."[14]

A sustainable tax system

A sustainable tax system must be:

- Fair and proportional.
- Transparent and clear, in order not to allow for multiple, often contradicting interpretations, or incoherent implementation.
- Stable and not constantly revised.
- Based on clear, scientific data on the economic value of the natural capital and the cost of externalities, in order to avoid the occurrence of "invisible" environmental costs.
- Labour friendly, in order to enhance employment and shift burden on natural-resource use and environmental depletion.
- Orientated towards generating societal benefits.
- Encouraging towards responsible, sustainable entrepreneurship.
- Simple with respect to revenue-collecting processes and supported by strong monitoring mechanisms that prevent and timely detect tax evasion.

Under the principle that taxes constitute the price citizens are called to pay in order to live in a civilized society, the ultimate goal should be the attainment of a just, law-abiding, civic society, funded through taxes. Therefore, a comprehensive tax reform must become part of a broader effort that will boost a productive, competitive and environmentally sustainable economy and promote societal equity and fair distribution of the economic output.

It is imperative to emphasise that the imposition of environmental taxes must not increase the overall tax burden, especially in a countries like Greece that are going through severe economic contraction. In that case, increasing the overall level of taxation would be unreasonable and practically would cause even more dire consequences to an already overstretched economy.

[14] European Commission. (2010). Europe 2020 – Strategy for a smart, sustainable and inclusive growth. Commission declaration. COM (2010) 2020 final. Brussels, 2010.

One of the essential elements of an effective environmental taxation policy is the degree to which it brings about environmental and social compensation. Each environmental tax should reflect the environmental cost of the respective taxed activity, instead of being another conventional tool for increasing government revenues. It is also imperative that environmental taxes should be returned to the environment, via green investment, clean-up projects, etc., as and to society via specific social policies that will be founded on meritocratic criteria.

Within a fair and proportional tax system, the implementation of a Financial Transaction Tax (FTT) much needed, even more so when taking into account that the cost of the on-going economic crisis should be dispersed across economic agents. The financial sector cannot be excluded from that principle, given that it has received considerable support from tax payers.

The volume of financial transactions is vast and therefore the design of an FTT should take place with great caution, in order to ensure revenues from highly speculative transactions and at the same time transform this revenue to environmental and social expenditures. The "polluter pays" principle can be put at work here, since loan and investment portfolios of the finance sector usually inflict material environmental impacts.

It is noteworthy that on February 2013, a consultation process was initiated in order to launch a common FTT for 11 member-states of the EU, Greece being one of them, within the framework of "enhanced cooperation" as per article 20 of the EU Convention. Almost all member-states appear to be willing to use inflows from the FTT as part of general government revenues, with the exclusion of France, which has publicly committed to distribute 10% of revenues in international aid and climate-change related projects.

Investment policy

Through numerous investment and/or development acts, Greece has been enhancing -throughout the years- any type of entrepreneurship, even on non-existent, deficient and generally doubtful criteria of economic viability, competitiveness and innovation, weak monitoring controls and practically without any solid environmental aspect integrated in the implementation process.

As stated succinctly by the Ministry of Development and Competitiveness, "*in summarising the main characteristics of private investment and development policies in general, up to date, we could say that these have been characterised by "unclear" rules, absence of expenditure controls, devaluation of public funds, clientelist regulations in favor of specific sectors, managerial deficiencies, unrealistic and infeasible targets, and limited benefits for citizens and business, labour, as well as for social convergence and cohesion.*"[15]

Government support of green entrepreneurship should be incorporated within a broader development policy of structural reforms, and must be founded on the following principles:

1. Strategic goals:

- Balanced growth, with targeted support and implementation of business plans per administrative region, in parity with each region's comparative advantages and natural capital.
- Employment increase, with emphasis on "green" jobs.
- Increase of the economy's competitiveness.
- Boosting of innovation in sectors of high-quality output, high added-value and low ecological footprint.
- Decoupling of the productive economy from government subsidies and funding.

2. Defining priority sectors: investment laws being a key tool of boosting investment must focus on sectors that are commercially extrovert and of low environmental impact. Those sectors and

[15] Ministry of Regional Development and Competitiveness (April 2011). "New investment law: a response to the crisis – development in practice" (in Greek).

respective strategic guidelines are depicted in a subsequent chapter of this report (see respective chapters on "Industry", "Tourism" and "Energy"). It must be emphasised that the enhancement of those sectors at the regional level, like for instance thematic tourism in regions with respective comparative advantages, should become a strategic priority on the development agenda.

A rational and fairly convincing approach of a living economy framework must be necessarily based on specific, restrictive environmental criteria forming an integral part of the public funding process. The establishment of environmental prerequisites might prohibit government expenditures on specific high-impact sectors. This shift can be compensated by the enhancement and growth of greener sectors with high environmental, social and economic value.

New programmatic period of the Common Support Framework 2014-2020

In practice, EU funds during the period 1994–2006 and the National Strategic Reference Framework (NSRF) 2007-2013 were used as funding tools for environmentally and economically unsustainable growth trajectories.

Specifically, the NSRF 2007-2013 was characterized by

- Chaotic bureaucracy and delays in the approval of mature projects.
- Deficient functioning and operation of monitoring committees that evolved into "decorative" entities responsible for providing information to stakeholders on programme implementation.
- Extremely low absorption of funds directed to environmental protection.
- Negligible positive impact on the already dismal implementation of environmental legislation, especially regarding critical environmental legislation, like the habitats directive (92/43 EEC), and the framework directives for water (2000/60/EK) and waste.
- No positive impact on the knowledge gaps and the need for decision making tolls and methodologies for effective administration and management, such as the forest maps, biodiversity and ecosystem registers, as well the mapping of urban and rural boundaries.

European funding as basis for ecologically and socially equitable development

The new programmatic period (2014-2020) coincides with a very critical period for Greece and it is thus imperative to set a sound basis for the prudent and efficient use of EU funding in order to attain long-term, sustainable growth. If Greece persists in the sole aim of absorbing funds, and planning does not become an integral part of a national reform policy, the country will have missed another unique opportunity to recover sustainably.

Greece must actively participate in the effort to implement the Strategic Framework "Europe 2020". Hence, it is necessary not to devote funds for isolated, fragmented environmental interventions, but within an integrated framework that will set the foundations for a living economy. A critical *ex-ante* conditionality which will be part of the new partnership agreement stipulates *"[f]ull implementation of the EU environmental acquis. In particular, need to develop a roadmap for the effective implementation and respect of the EU environmental "acquis" in the areas of water, waste water and solid waste*".[16]

Environment and physical space

Starting from the fundamental postulation that the environment and biodiversity constitute the basis of every economy's natural capital, integrated environmental and spatial planning is an imperative for the sustainable management of this wealth.

[16] European Commission (November 2012). "Position of the EU's services regarding the development of the programmatic and partnership agreement in Greece for the period 2014-2020".

A proper introduction to this chapter is the following part of the conclusions reached by WWF Greece in the framework of a project mapping the changes in land use covers in Greece, during the period 1987-2007 [17]:

Since the beginning of the 90's, the development policies of Greece have been tied to the hunt for EU funds absorption and the adoption of EU regional and agricultural policies, almost without any effort for national specialisation, which often led to the distortion of their initial objectives. The basic aim was to close the gaps and support pre-existing development trends, instead of pursuing a genuine reorientation of the country's development paradigm.

The results of this situation are nowadays more clearly perceptible and intricately connected with the broader discussion about environmental and spatial conservation and management. Urbanisation, which progressed rapidly after WWII and the civil war, was systematically pursued during the post-war and post-dictatorship era. It also remained an acquired trend until our days, creating asphyxiating local pressures on land and environment, excessively increasing the transportation load and causing a series of secondary impacts on the rural environment. The most important among these impacts is the absence of social support for the sustainable management of local resources and, consequently, their deficient management and opportunistic, often unsustainable, use on the basis of urban demand. Finally, rural space becomes a field for the harvesting of short-term economic benefits [...]

The above general thoughts reflect on many economic sectors, highlighting both the problems and the short-term orientation of the "development" approaches: depletion of local tourism resources through the never ending building activity on coasts and islands, the exploitation of mineral resources without adequate care for the restoration of the area, the scattered spatial development of industries and major commercial uses, [...] are some of the most characteristic features of a country that operates "as if there is no tomorrow".

Two of the most characteristic examples of the environmental and economic irrationality that dominated the recent history of Greece are the 2004 Athens Olympic Games[18] and the diversion of the Acheloos River, which the national budget still pays, despite the repeated court rulings and the refusal of the EU to fund its construction[19]. Yet, the utmost example of irrational land and economic policies is the extensive phenomenon of illegal land and building development.

[17] Liarikos, K., Maragou. P., & Papayiannis, Th. (eds.). (2012). *Greece then and now: Intertemporal mapping of land covers, 1987-2007* (p.p.. 348-349). Athens: WWF Greece. In Greek.
[18] WWF Greece (July 2014). Environmental Assessment of the 2004 Olympic Games. Retrieved from http://politics.wwf.gr/images/stories/political/positions/wwf_assessmentolympics.pdf
[19] WWF Greece et al. (December 2011). "The diversion of Acheloos is a black hole" (common position) Retrieved from http://www.wwf.gr/index.php?option=com_content&view=article&id=841:-l-r------&catid=70:2008-09-16-12-10-46&Itemid=90.

Illegal land uses and buildings: an environmental and economic crime

The largest and most widespread environmental wound, which also discourages healthy entrepreneurial activity, is illegal building and poor land use development.

The silent public acceptance of the attitude "let's build a small house in the woods", has transformed an obvious lawlessness into an established social right. As a result, the legislator has for decades provocatively disregarded the problem and practically ignores the law. This in turn seriously undermines the conservation status of Greece's natural capital and reduces the country's appeal to serious investments.

In a joint statement of 2007, WWF Greece, the National Technical University of Athens, the Hellenic Federation of Industry, the Technical Chamber of Greece and the Central Union of Municipalities affirmed that:

"*A consequence of the absence of central spatial planning is the fragmented siting of infrastructures and activities. Hence, development policies do not take into account the carrying capacity of space and the adequacy of natural resources. In parallel, all efforts by the State for strategic planning at the level of sectoral policies are practically cancelled, since the resulting conflicts ultimately set aside the very objectives of planning.*"[20]

The flood of recent legislative measures for the "settling" of hundreds of thousands of illegal constructions and land uses in every part of Greece, even within protected areas, does not simply undermine the environmental and spatial acquis. It also puts into question the real aims of the legislator – "elected representative of the People" (art. 1 of the Constitution), since these new legal measures deprive the State of valuable income from the financial penalties provided by the previously existing Forestry and Urban Law. The right of administrative authorities to impose and collect these legally sanctioned financial penalties is now cancelled, in view of the short-term "quick and dirty" financial gains anticipated by the much reduced new rates[21].

For example, an illegally constructed house of 200 sq.m. in an off-town plan forested land, with a zone price of 750 €/m^2, would be subject to a financial penalty of *300,000 €* and an annual maintenance penalty of *150,000* €. According to the Forestry Code in force until 2011, that building would never be legalised and should be demolished by the owner. According to the new legal measures, the same building would be legalised at a penalty of just 22,500 €. The new penalties are subject to successive reductions through successive laws, since the majority of illegal building owners have not applied for legalisation, on the conviction that the law will never be enforced on their property.

Major problems in the Greek spatial and environmental planning system are:

- the scattered in the legal corpus tailor-made legal provisions which allows certain investments, at the expense of others, with politically immoral conditions,
- the unclear and complex terms of land use and nature conservation and the legal uncertainty of the legislation introducing special conservation measures,
- the absence of knowledge resources (land use mapping, databases, internet applications), which are essential in understanding the rules and laws for development and nature conservation.

A fundamental condition for the development of a living and sustainable economy is that the spatial and nature conservation policies are science based and clearly defined.

From the level of spatial planning all the way down to the organisation of the nature conservation and protected areas system, healthy economic activity demands the legal certainty and

[20] WWF Greece et al (2005) Spatial planning for a balanced and sustainable development of the country.
[21] WWF Greece. (2011). Illegal buildings in Attika's forests – A recording of the decision for the removal of illegal buildings. Phase A: Data from the Forest Service of East Attika, Athens: Kalevra, N., Kordopatis, P., Marangou, P. and Nantsou, T.

development opportunities offered by the clear rules of an integrated and transparent land planning and natural capital management system.

Basic priorities for the achievement of ecologically, economically and socially sound spatial and environmental planning are the following:

- Legally valid, consistent and widely comprehensible land planning and protected area decrees.
- Strengthening of the National Protected Areas System and the respective management authorities with clear responsibilities for wardening and habitat management, which is vital for sustainable development at the local level.
- Revision of the spatial plans, aiming at the cohesive, legally certain, socially equitable and at a clear allocation of economic activities and robust environmental and natural-resource conservation.
- Integration in land and urban planning of the ecological footprint as a concept, together with policies and measures for its management and monitoring.

Society

In a country, such as Greece, with a characteristic lack of social responsibility and participation in politics and the commons, insufficient level of self-organisation and civil society networking and manifest social absence from all levels of entrepreneurship, social awareness and participation needs to be viewed as a vital priority for all.

A starting point of hope is the dynamic and creative social awareness that has slowly but steadily been emerging through the crisis. Despite the fact that for the time being social self-organisation activities are negligible in economic size, the creation of informal collective initiatives or formally constituted groups of solidarity and social economy provides a positive vitality to Greek society, which has often been characterised as politically passive and selectively reactionary. This is indicative of an increasing social trend for positive alternatives to the recipe of austerity and social poverty that is promoted as an alternate solution to the crisis.

Equally important is the increasing environmental awareness and mobilisation of citizens groups, primarily regarding investments in particular areas. The increasing level of knowledge-based intervention by those groups is noteworthy and also indicative of the social penetration of environmental knowledge.

Civil society

During periods of crisis, the role of the organised civil society is vital in safeguarding common goods and rights. Particularly the role of non-governmental organisations (NGOs) is that of environmental guardian, in their capacity as:

- active fellow policy makers, through permanent and official consultation structures and procedures, on the basis of up to date ecological knowledge and opinion on the challenges of development,
- transparency and social accountability watchdogs in all public and private sector functions, also demanding the immediate and efficient crackdown on corruption[22],
- guardian of the environmental acquis and its proper implementation,
- "translator" of important scientific developments into knowledge for all and basis for collective action and political change,

[22] Until the 50's, "corruption" was perceived as the illegal behavior related to the abuse of public power. Recognising that these attitudes stem from the abuse of power in general and do not pertain solely to the government sector, we adopt the definition provided by Transparency International: "Corruption is the abuse of entrusted power for private gain". (http://www.transparency.org/cpi2011/in_detail#myAnchor3).

- generator of new ideas,
- advocate for social concerns and trends,
- market makers, on the demand side,
- entrepreneur, through social enterprises focusing on social welfare and public utility activities (such as energy, quality local products, social services).

During the past three decades, Greece has seen the development of important work by tens of environmental groups that have greatly contributed to the provision of robust, science based knowledge on crucial issues, such as biodiversity conservation and climate change. They have also fought important battles in "hot" fields of environmental policy, effective conservation of valuable natural treasures and sustainable response to environmental crises.

Especially as regards to the part of civil society which operates in the broad spectrum of the non-governmental organizations (NGOs), the challenge for complete operational and financial transparency and public accountability is unquestionable. As WWF Greece has repeatedly stated, NGOs do not constitute anyone's private property; they belong to their mission and vision in their field of action. Hence, by definition, NGOs work for the common good and their starting point cannot serve personal aims that do not offer beneficial service to society or exclude certain groups of people on social, religious or racial grounds. Also by definition, NGOs should be publicly accountable for their activities and the management of their resources.

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"WWF Greece warns: Canvassing causes impotence"

Social economy

The development of solidary economic networks and enterprises deserves special attention.

A rich multitude of new social schemes have in recent years sprouted in Greece: social enterprises, barter and free schemes, social gardens, to name only a few. Many such initiatives had developed years before the crisis, but remained isolated models for replication.

The value of social economy is not restricted to providing a response to the economic crisis or substituting a state that steadily retracts from the social milieu, but rather as a response to an economic model that promotes entrepreneurial activity as strictly profit making, often through ambiguous and ecologically unsustainable practices. Social economy offers services and goods of vital significance and excellent quality at good prices, or even at no monetary price, but with the added value towards society.

As long as prosperity is inadequately measured, in terms of consumption capacity (see chapter on macroeconomic indicators), the investments in public goods and the conservation of natural capital will never rank high on the political agenda. The creation of networks that allow public participation in the sustainable use of natural resources, the exchange of labour or the development of recreation outlets, strengthens cooperation and synergies in achieving the common good and a healthy natural capital. Initiatives like the protection and management of public spaces and the creation of urban recreation parks, food and agricultural material banks or clothing recycling networks:

- highlight the daily connection of natural capital with the quality of life and urban livelihoods,
- promote a non-monetary sense of fulfillment and independence from the addiction to overconsumption,
- set the foundations for a participatory and connected society,
- offer incentives for green and economically advantageous choices,
- contribute significantly to footprint reduction of our wasteful livelihoods.

Reforms for a living social economy

Necessary institutional and political reforms to stimulate social economy are the following:

* Extension of the institutionally regulated definition of social economy, so as to cover fields of entrepreneurial activity which are now monopolised by the private sector, such as energy and waste management and often result in costly serices.
* Introduction of an institutional formula for the establishment of barter schemes as voluntary and non-profit.
* Immediate reinstatement of the tax incentives for social enterprises.
* Immediate re-establishment and commencement of operation of the Social Economy Fund, which was abolished in early 2013, before it even commenced its operation. Its aim should be to provide start-up funding to social enterprises, on the basis of clear and equitable rules of sustainable and transparent operation and public accountability.
* Redirection of European Central Bank resources towards the support of social enterprises in all of its priority areas: SMEs, regional development, climate action, urban and natural environment, innovation, trans-European networks, transport, energy.

An important lever for the development of social economy is self-organisation, primarily through:

* Establishment of thematic or local connections, with common action planning and key demands framework.
* Networking of particularly the barter and free exchange networks through open-code software.
* Collaboration with the local administration on synergistic action planning.
* Synergies with academic institutions and local administration on modern methods of organisation and innovative business ideas, but also in establishing non-profit social economy “hatcheries”.

Nowadays, the creation of networks and social initiatives is an act of bravery and is generally treated by the state like a “foreign body” and by society at large like an “exotic fruit”. Most of the existing social economy initiatives are geographically restricted, rely on short distances and are based on personal relations of trust. However, many smart new schemes have the potential to grow into larger social enterprises that can reach broader audiences.

Bearing in mind the hardship facing the state in fulfilling its social welfare role, the importance of social economy and social schemes is now even greater. Yet the available institutional tools have been either inactive or abolished.

In a political system that does not favour a strong social economy, the call for a framework of incentives needs to become a key social demand.

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LIVING ECONOMY

Environment and natural resources are the ecological treasury for a living and truly sustainable real economy.

SUSTAINABLE REAL ECONOMY

Sectoral reforms

PRIMARY PRODUCTION

Primary production (agriculture, livestock farming, forestry and fisheries) accounts for 13% of Greece's labour force and produces 3.3-4% of the national Gross Value Added (GVA) annually[23], a percentage much larger than the EU-15 average. Agriculture constitutes the most significant activity, since it contributes with 62% to the sector's GVA and 80% of its labour force[24]. It also plays a vital role in the conservation and management status of the country's natural environment and the development of its tourism product.

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The problem

Main concern is the weak link between the relatively more developed sectors, i.e. agriculture, livestock and fisheries (including aquaculture), with the conservation and management of natural resources. Although the benefits provided by the natural capital remain largely untapped, the impact of production on the environment, primarily in areas of intensive production, remains high.

From a macroscopic viewpoint, the current state of primary production creates a number of serious issues, which need to be addressed in the context of an integrated and sustainable reform policy.

The distorted system of subsidies has led to the concentration of agricultural activity in intensive farming and its encroachment over natural space. It has also caused the abandonment of high nature value farming practices[25] and the loss of valuable landscapes and important local seeds and livestock breeds.

[23] European Commission. (2013, March). "Agricultural Policy Perspectives. Member States factsheets. March 2013. Greece." Brussels.
[24] McKinsey & Company, Athens Office. (March 2011). Greece 10 Years Ahead: defining Greece's new growth model and strategy.
[25] Liarikos, K., Maragou. P., & Papayiannis, Th. (eds.). (2012). *Greece then and now: Intertemporal mapping of land covers, 1987-2007* (p.p. 348-349). Athens: WWF Greece.

Over-intensive farming, unsustainable practices and the uncontrolled use of chemicals have led to extensive degradation of natural resources, to the extent that the very sustainability of production itself is undermined:

- Over-intensive agriculture and livestock breeding are the main human induced factors of soil degradation and exposure of large productive lands to the threat of desertification[26].
- The excessive use of agrochemicals has led to serious pollution in many areas, such as Axios and Messapia.
- Irrational input of agrochemicals seriously undermines product quality[27].

Especially regarding fisheries, tackling overfishing and the reduction of fish stocks is top priority for the sustainability of the sector.

Focusing on fisheries, a sector that has not received the necessary political attention, the problem of overfishing and the reduction of fish stocks requires urgent action and needs to be treated as top political priority.

In addition, a series of negative factors and special characteristics (small plots, low levels of standardisation, poor local organisation, etc) result in reduced profits for producers, increased exposure to market pressures and intermediaries, and weaknesses in adopting best available and sustainable practices.

Activity in a number of marginal sectors that could potentially produce important development benefits and products of great added value lag behind and are practiced with antiquated methods and low levels of organisation. The cases of forestry, aromatic plant and non-timber forest product collection (for example mushrooms, resin and acorns) are indeed characteristic.

Another issue of concern is the particularly low level of integration among primary sectors (e.g. between agriculture and livestock farming), and among primary production and other sectors (such as tourism). Sectoral synergies could result in significant resource-use efficiency, add to product value and create short market chains, thus also reducing the ecological footprint of the sector.

The absence of spatial planning of activities needs to be emphatically addressed, as well. Apart from the above mentioned problems, this also causes social tensions and local conflicts (as for example in many cases relating to aquaculture investments in touristic areas).

Local animal breeds and plant varieties offer a potential competitive advantage for quality and high ecological value products.

The above issues are just a few of the negative consequences resulting from the well-entrenched weakness of the Greek state to develop an integrated and effective rural development policy. Indeed, all national policies for the primary sector have always focused, almost exclusively, on the availability of natural resources (land redistribution, wetland drainage, irrigation networks). Gradually, during the '80s, state intervention was restricted to the implementation of the Common Agricultural Policy, with negligible specialisation in parity with the special characteristics of the Greek countryside. As a result, excessive concentration in certain areas and intensification of production was favoured, which led to the abandonment of rural areas and valuable farming methods and to the corrosion of the social base of primary production.

A few important initiatives which promoted sustainable and innovative practices should also be noted. Primarily through certain LEADER programmes, but also in the framework of private

[26] According to a vote passed by the European Parliament (Madrid, 3-14 September, 2007), "desertification takes place mainly due to exhaustive cultivation, overgrazing, bad watering practices and deforestation –these activities stem from bad land management, which, in turn, is due to socioeconomic conditions of farmers. According to studies, investing in sound land management practices would be beneficial".

[27] Indicatively: Kiousis, G. (December 2009). "Poison" for our exports – High fertilizer concentrations are being detected in our products and they are being returned to us. *Eleftherotypia*. Retrieved from http://www.enet.gr/?i=news.el.article&id=111658

business initiatives, these efforts led to the production of high quality products. Yet these positive initiatives remained isolated and did not influence the overall outlook of the primary sector.

Although, in principle, the four main primary sectors are treated separately, the weaknesses and fields that require intervention are to a large extent identical, because of their geographical concurrence and the fact that they employ more or less the same people.

Directions

1. KNOWLEDGE: Completion of the necessary knowledge and decision making tools (forest maps, cadastre, oil cultivation register, marine and terrestrial habitats, high nature value farming areas etc), which are necessary for the planning and organisation of primary production.

2. PLAN: Integrated planning based on inter-sectoral development plans should focus on:

* Sustainable spatial planning of activities, in order to defuse the pressures on local resources, ease the conflicts with local communities and achieve the right combination of productive activities with natural capital conservation and management needs.

* The competitive advantages, through the best use of local breeds and varieties and marketing their special gastronomic and environmental characteristics, standardisation and certification of local products and promotion of small-scale production.

3. MANAGEMENT: Management of inputs, residues and waste, with the aim of improving product quality, reducing costs and tapping new sources of profit.

4. SUPPORT: Reform of the subsidies system, in order to support processes and areas that add clear competitive advantages or environmental benefits and discourage the opportunistic involvement with production. Despite the fact that the structure of subsidies is to a large extent given through “historic data”, the CAP and rural development measures offer opportunities for sustainable diversification of the support policies.

5. CERTIFICATION: Product labeling and productive method certification strengthenσ competitive advantages and needσ to be encouraged. The main types of certification focus on the following:

* *Integrated management*, which certifies the implementation of sustainable agricultural practices and monitors the product through the entire processing-marketing chain. Sustainable forestry (FSC, PEFC) and fisheries (MSC) are important certification tools for integrated and ecologically sustainable management. The implementation of internationally accepted sustainability certification tools in aquaculture should also be promoted as a matter of priority.
* *Organic farming*, which certifies the implementation of strict ecological standards in agriculture, livestock farming and aquaculture, including processing.
* *Special labeling*, which certifies particular qualities, gastronomic or geographical, thus capitalising on specific consumer receptions. In this context, it is important to focus on the development of a certification system for protected area products.

6. CONNECTION: The connection between activities and sectors requires robust political planning, in order to achieve economies of scale and increase the economic and ecological sustainability of holdings, ease the pressures on natural resources and strengthen the marketability of final products. Priorities in this direction are the following:

* Multi-purpose utilisation of space and resources, through measures such as the combination of livestock farming and tree plantations, the point development renewable energy infrastructures in farmlands in ways that do not undermine their character, grazing in forested lands under specific plans that also serve sustainable forest management purposes.
* Inter-sectoral connection: emphasis needs to be placed on farming and tourism, with the dual aim of offering high quality services and local products, while creating short local supply chains between producers and tourism enterprises.
* Multi-purpose utilisation of infrastructures and labour force, aiming at the systematisation of multiple employment and income stability, particularly in vulnerable groups (youth, women) and population groups depending on seasonal employment.

7. VOCATIONAL TRAINING: Although the primary sector plays an undoubtedly crucial role in national economy, the human capital employed is rather weak and requires support. The following interventions are vital:

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* Human capital development and continuing support, with emphasis in business planning and development, best practices in quality management.
* Strengthening of decision making structures, through the training of administrative personnel, development of local and central consultation and decision support schemes.
* Support to local producers groups in knowledge exchange and development of collective holdings, such as animal farms, standardisation and processing cooperatives and collective infrastructures for efficient waste management (e.g. fuel production from olive mill wastewater).

Apart from the aforementioned priorities, a series of other interventions are also needed:

* Realistic and effective planning for the implementation of the agri-environmental measures during the next CAP period.
* Revision of the specifications of forestry management plans, which will include all forest products, and implementation in at least five pilot areas.
* Pilot implementation of fisheries improvement practices and certification in at least five medium-scale fishing fleets.
* Immediate establishment of five fishery reserves (i.e. areas closed to fishing activities), with the aim of allowing the natural recovery of fish stocks and also of developing mild recreation activities, such as diving tourism.
* Establishment of a framework for the support of producer groups with activities for the development of innovative products and implementation of environmental and quality management systems.
* Setting up of a certification scheme for protected area products.
* Further development of seed banks and creation of a national register for local breeds and varieties. Linking of the use of local genetic material with the financial support system.
* Establishment of framework for local agreements between producers and tourism businesses and connection with support measures.
* Implementation of three, at first phase, integrated management plans for livestock farming, which include ecological measures for grazing management, establishment of livestock parks linking livestock farming with agricultural activity and development of social schemes for labeling, processing and marketing.

Especially with regard to marine fisheries, the top priority is the implementation of urgent measures for the recovery of fish stocks. In the light of recent research and scientific publications highlighting the reduction of fish stocks in many parts of the Mediterranean, particularly Greece and Turkey[28], the establishment of fishery reserves is an imperative. Indeed, taking into consideration that specific commercially important species, such as the anchovy, the red mullet and obviously the Bluefin Tuna and swordfish are listed by the European Environment Agency as "outside safe biological limits"[29], these measures are urgent. Fishery reserves, i.e. marine

[28] Indicatively: Sala, E., Ballesteros, E., Dendrinos, P., et al. (2012, 29 February). The Structure of Mediterranean Rocky Reef Ecosystems across Environmental and Human Gradients, and Conservation Implications. *PLoS ONE* 7(2): e32742. Retrieved from http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0032742. Also, Piroddi C., Bearzi G., Christensen V. (2010, July 10th). Effects of local fisheries and ocean productivity on the northeastern Ionian Sea ecosystem. Ecological Modelling. Retrieved from: http://www.sciencedirect.com/science/article/pii/S0304380010001365

[29] European Environment Agency. (2012, November). State of commercial fish stocks in Mediterranean Sea . In *Maps and graphs*. Retrieved from http://www.eea.europa.eu/data-and-maps/figures/state-of-commercial-fish-stocks-in-mediterranean-sea-up-to.

protected areas where all types of fishing are totally prohibited, constitute the appropriate method for the natural recovery of depleted fish stocks. To date, no fishery reserves have been established in Greece, despite the fact that the legal framework is in place.

Focus: Forestry

The productive sector of forestry, which includes wood and non-timber forest products and ecosystem services, has great development potential, with a mutually beneficial manner for both forest ecosystems and the economy.

Forest ecosystems cover almost 50% of the Greek territory and extend to an area of approximately 6.5 million hectares, of which 75% is public property. According to data published by the Forestry Service[30], "*in 2010, the Public Forests of the country produced 738,806,48 sq.m. of all types of timber:*

Technical timber: 198,949.07 sq.m.
Industrial timber: 71,363.23 sq.m.
Fuel wood: 468,494.18 sq.m."

The problem

During the past three decades, Greek forestry has been undergoing a process of continuous regression, which is difficult to assess due to the lack of comprehensive data. Concerning timber products, existing data suggest reduced primary production.

In part, this trend is due to the more general contempt for forestry due to changes in lifestyles, but also as a result of low levels of awareness about the true value of the forest and its potential economic and ecological benefits. Even the annual reports published by the Forestry Service do not include economic data on forest primary production. This results in a fictitious outlook of the sector, which presents a negative balance of returns on investments by 11 to 2[31]. However, the economic reality is totally different.

Taking into account that the funding for forestry does not exceed 0.35% of the annual National Budget, which totals an exceedingly small amount for the management of 52% of the national territory, the available data reveal an interesting picture: the broader forestry sector employs about 21,719 persons, 9,710 of whom work in the secondary sector of timber product processing. Another 12,570 employment positions are part-time or seasonal, which increases the total number of employment positions to 34,289. At this point, it needs to be stressed that the forestry service personnel has been reduced by 37% during the past decade, which further undermines the capacity for sustainable forest management.

The drop in timber production is not the result of a reduction in timber reserves, since according to the few available data, reserves seem to be increasing[32]. The timber capital of Greece's productive forests is 158 million sq.m. and the average annual increase is in the order of 5 million sq.m.[33] The average production of raw timber has been reduced by almost half during the last decade, compared to the period 1990-1999 and now equals 372,000 sq.m./year. In total, the average timber production of all types during the decade 2000-2010 is 1.6 million sq.m./year, far below the mean annual increase in reserves.

[30] Ministry of the Environment, Energy and Climate Change. (2009). Activity reports of forestry services. Chapter "Forests". Retrieved in June 11, 2013, from http://www.ypeka.gr/Default.aspx?tabid=588&language=el-GR.
[31] Karakosta, Ch. (ed) (2012). Forestry Services Activity Report 2010. Athens, 2012. Special Forest Secretariat, General Admnistration of Forest Development and Protection, Forest Resources Administration. Athens, 2012.
[32] Georgiadis, N. (2002). Criteria and Indicators of Certification and Sustainable Management of the Mainalo Forests. LIFE+ Program: NAT/GR/006481.NAGREF, ARCADIA. Athens. Pg. 167.
[33] Amorgianiotis, G. (2011) Economy and Forestry. Presentation delivered at the workshop "Greek Forestry: a big advantage for the Greek economy". WWF Greece et al. Athens, May 2011

The accumulation of vast quantities of unused wood in Greek forests does not only result in loss of income, but also causes a series of problems to the forest ecosystems, such as excessive density, ageing of tree stands, loss of forest openings, changes in structure, availability and suitability of forest habitats and increase of risks from wildfires and extreme weather events.

It has been estimated that forest ecosystems contain unutilised quantities of wood which amount to 27-54 €/hectare, whereas the net value resulting from low added value timber production amounts to just 19 €/hectare (in 2010 prices)[34].

Although declining, forest primary production is a promising and dynamic sector that can offer important economic benefits and ecological services to Greek forests.

Opportunity and aim

The economic crisis has affected most the majority of activities in the primary sector and has undermined the development of promising sectors, such as forestry, which provides important benefits both evnironmental and economic. As mentioned earlier, the opportunities from the sustainable use and management of Greek forests are:

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* *Ecological*: Forestry activities which are based, on duly approved forest management plans cleanse and rejuvenate the ecosystem and, through the presence of humans depending on the forests, offer protection from wildfires and other environmental calamities.

* *Economic*: Forestry being an economic activity with significant economic potential, offers opportunities for the production of high quality products and services which can give strong competitive advantages in the international market.

Forest products can be separated in the following categories:

Measurable and marketable products:

* Raw timber
* Fuel and industrial timber (including biomass)
* Resin
* Charcoal
* Leaf mold
* Aromatic and pharmaceutical plants
* Mushrooms
* Honey
* Humus
* Seeds

Ecosystem services (whose value has not been assessed in Greece). The most important ecosystem services are:

[34] Papaspyropoulos, K. G. (2011). Forest ecosystems as a factor of mitigating the economic crisis. Presentation delivered at the workshop "Greek Forestry: a big advantage for the Greek economy". WWF Greece et al. Athens, May 2011

* Biodiversity conservation
* Tourism / recreation
* CO_2 retention and production of O_2
* Retention of solid pollutants
* Soil enrichment and protection against erosion
* Flood control and aquifer enrichment
* Improvement of the quality of life, especially near settlements and urban areas.

In economic and environmental terms, the most important immaterial service offered by forests is CO_2 storage. According to the FAO[35], in 2010 Greek forests contained 79 million metric tons of carbon and it is estimated that the mean annual carbon storage by Greek forests is approximately 4 tons/hectare[36]. Irrespectively of the market price of CO_2 in the coming years, forest ecosystems will continue to offer significant storage services.

Another important ecosystem service offered by forests is the protective and filtering function in the water cycle. Apart from the well-established contribution to soil protection from erosion and floods, the economic benefits stemming from the contribution of forests in protecting water resources has been estimated at about 125 and 47 €/hectare, during the summer and winter periods accordingly[37].

Recreation and tourism constitute another product which has not been properly developed, in combination with the necessary awareness on the need for respect and conservation of forest ecosystems. In countries that have developed forest recreation systems, such as France and Italy, it has been estimated that the economic benefits is about 27 to 154 €/forest hectare[38].

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[35] FAO (2010). Global Forest Resources Assessment 2010. Food and Agriculture Organization of the United Nations, Rome. Retrieved from http://www.fao.org/docrep/013/i1757e/i1757e.pdf
[36] See Papaspyropoulos, as above.
[37] Papaspyropoulos, K.G. (2009) Is there a green economy without forest ecosystems? Presentation delivered at the workshop "Forest Protection as National Priority". Green Party, September 2009, Athens.
[38] See Papaspyropoulos (2011).

Policy guidelines

A basic precondition for the resolution of the problems undermining Greek forestry is its strategic prioritisation as an important economic activity that can contribute substantially to forest conservation, offer valuable funds to forestry management and offer new jobs and valuable sources of income.

Focus: Aquaculture

The production of ecologically sustainable and nutritionally safe aquaculture products can and ought to become the objective of an integrated reform plan for the entire primary sector.

Reforms for sustainable forestry
The necessary institutional and political reforms for the development of an ecologically and economically sustainable forestry activity are the following: * Renewal of the standards for all forest management plans, based on a multi-purpose management approach, with ecological, social and economic objectives. * Implementation of forest management plans, with necessary support for the Forest Service. * Integrated economic assessment of the ecosystem services (immaterial products) offered by Greece's forest ecosystems, including their value with carbon market prices. The results of this assessment should be included in the forest management plans and in all separate studies for each forest unit. * Systematic promotion of non-timber forest products: organisation and support for their production and incentives for innovative and extrovert marketing, with emphasis on exports. * Mechanisation of the timber removal process with methods that do not have an impact on the forest. * Improved recording, assessment and reporting system on production and management, at the regional level and presentation on the basis of economic indicators and data. * Completion of the forest maps and the forest cadastre, in order to acquire a clear picture of the areas where forest primary activities can be developed. * Linking of forestry with other productive sectors, such as agriculture, livestock farming and tourism. This is vital in order to achieve best results in conservation, resource efficiency and income generation, particularly in economically weak areas. * Linking of the secondary sector (timber industry) with forest management, on the basis of duly approved forest management plans. * Compilation of annual sector catalogue, presenting all the forest products sought by the industry, on the basis of respective budgets in order to achieve effective linkages between market needs and primary production. * Sustainable forest management certification in all productive forests. * Re-examination and promotion, under clear ecological terms, of indigenous fast-growing forest species plantations, on suitable marginal lands, with the aim of timber and non-timber production (industrial timber, pellets, biomass, nuts, aromatic and pharmaceutical plants, etc.).

According to data from the Ministry of Agricultural Development and Food, the total annual aquaculture production skyrocketed from 320 tons in 1986 to 102,497 in 2005. The lion's share is taken up by the farming of bream and sea bass.

The problem

According to the Ministry of Agricultural Development and Food, the main problems faced by the aquaculture sector are the following:

- Constant drop in market prices and profit margin for specific farmed species (particularly bream).
- Lack of certification and branding.
- Competition in the use of the coast with other economic activities, such as tourism and marine fisheries, which renders sustainable spatial planning and inter-sectoral synergistic planning a *sine qua non* for the sustainability of the sector.
- Impacts on water quality (the ministry restricts this reference to inland water bodies, but pollution problems are of concern in the marine environment as well). Pollution concerns arise from the poor implementation of environmental legislation, but also from the use of chemical substances (antifouling agents) and antibiotics, as well as from waste leakages (such nutrients from food remains) which can cause eutrophication conditions and reduced oxygen intake.

Based on a report by McKinsey[39] (2011), although the sector's gross added value (GVA) is not very high (€400 million in 2010), aquaculture continues to grow by approximately 3% annually and 80% of the production is exported. Greece produces almost half of the global farmed quantities of bream and sea bass. The report highlights international competition and the absence of a national strategy and the absence of efficient networking and banding as the main restrictive factors for the economic prospects of the sector[40].

The objectives of a reform for living aquaculture are the following:

* Ecological restructuring of the sector, whose current impact on the marine environment is incalculable.
* Production of ecologically sustainable and nutritionally valuable products.
* Economic revitalisation of the sector, with emphasis on innovative practices, certification and the achievement of economies of scale, which will increase competitiveness.

The main strategic directions are:

1. SPATIAL PLANNING: Minimum distance from the coast of at least 1 nautical mile and 500 m. between production facilities. Prohibition of the creation of new facilities in reproductive fields, feeding grounds and nurseries (siting of aquaculture farms is already prohibited over Posidonia meadows and fishing grounds). Removal of dense concentrations of farms from the coast, particularly from closed bays and resettlement in open marine areas, depending on local conditions. This measure has been implemented in Cyprus and Turkey for environmental purposes, since it is considered environmentally less harmful, but also for economic reasons, given the intensive use of the coastal zone.

2. OPERATION: Emphasis on organic and integrated aquaculture and mandatory fallowing.

3. INPUTS: Use of certified feeds, waste recycling, ecological water and waste management and energy saving.

4. CERTIFICATION: Implementation of integrated and organic certification standards, based on systems such as the Aquaculture Stewardship Council (ASC) and the GlobalGAP.

The certification of processes and the adoption of the best available environmental practices do not only produce environmental benefits, but also create a strong potential competitive advantage since, in combination with the proper branding, it adds value to the products. In this manner, the aquaculture sector can diversify its product list, open up to new target markets and of course reduce its environmental footprint.

[39] McKinsey & Company, Athens Office. "Greece 10 Years Ahead: defining Greece's new growth model and strategy" September 2011.
[40] Marketing, certifications, protected destination of origin (PDO) products, etc.

Given the absence of standards for the Mediterranean species farmed in Greece, the following practices are proposed, apart from the existing certification schemes:

* Absolute transparency in relation to the content of feeds used in the farms.
* Sustainable feed contents, certified by internationally acclaimed organisations, such as International Fishmeal and the Fish Oil Organisation.
* Maximum use of fish feeds and fish oils.
* Measures for the maximum avoidance of fish escapes to the marine environment, on the basis of relevant management plans.
* Management plans for health issues, such as fish epidemics, and waste disposal.
* Implementation of social criteria.
* Siting of farms outside the boundaries of important marine biodiversity areas.

SECONDARY PRODUCTION

This chapter presents the basic directions for sustainable reforms in secondary production, i.e. industrial and manufacturing activity.

The problem

Global industry is characterised by a high environmental footprint of its operational processes: energy intensity, atmospheric emissions and large amounts of waste, often toxic.

In Greece, the secondary sector is dominated by small and medium sized enterprises (SMEs) and is characterised by[41]:

- Scattered spatial distribution, primarily in extra-urban areas, where "atypical" concentrations are often formed. These off-plan industrial areas lack basic amenities and organised networks and infrastructures, which results in an incalculable environmental footprint. This dispersed and unplanned industrial development model does not allow for the necessary synergistic approaches in the management of byproducts and waste, thus also increasing both the operational costs and the impacts on the environment. It is indicative that from a total of 200,000 industrial enterprises, only about 2,500 operate within the 48 existing industrial areas.
- Lack of sectoral interfaces, which would result in economies of scale and resource efficiency.
- High land prices in spatially planned industrial parks, as opposed to the remarkably low prices in off- plan lands, which renders unattractive the establishment of enterprises in industrial parks.
- Emphasis on low-cost and low added value products, which results in non-competitive levels of quality and innovation.
- Lack of applied research and development mechanisms, hence operational and production innovation, which is also due to the considerable dissociation of the Greek educational system from the needs of a modern, real economy.
- Legal uncertainty, which reasonably creates an unfavourable climate for investments. This uncertainty results primarily from the constant changes in the legal framework, the increasing complexity and lack of legal clarity, bureaucracy, the unstable and labyrinthical tax system, along with the extensive corruption that prevents the blossoming of healthy entrepreneurial activity.

Opportunity and aim

The declining trend of industrial activity during the past decades leaves no doubt that the crisis needs to be addressed as Greece's opportunity to craft a vision and a national policy for sustainable industrial activity, along the following principles:

* AUTONOMY: Reduced dependence from raw materials and fossil fuels through the recycling, reuse and efficient use of resources and intermediate materials.
* INNOVATION: Promotion of applied research on innovation and production of high quality and competitive products.
* CERTAINTY: Management of the institutional and legal risks caused by environmental violations subject to serious sanctions.
* CLEANLINESS: Reduced emissions overall environmental footprint.
* EFFICIENCY: Efficient use of natural resources.

[41] Useful analyses of the characteristics and problems of the Greek manufacturing sector can be found in the introductory note of the Joint Ministerial Decision draft regarding spatial planning for the industrial sector (Ministry of the Environment, Spatial Planning and Public Works, 2007) and inside report "Green economy, social cohesion and employment" (INE-GSEE, 2011)

* STABILITY: Increased resilience of the real economy against unpredictable fluctuations in the prices of raw materials.

Obstacles

The development of sustainable industrial activity in Greece is seriously hampered by obstacles that have already been described in previous sections, but need to be addressed urgently, since they undermine the country's potential to shift towards a living real economy.

The main obstacles are:

- Administrative deficiency.
- Lack of infrastructures and networks.
- Absence of economic incentives.
- Market distortions (e.g. support to "dirty" industries and impunity for heavy polluters, which increases the costs for clean industries).
- Lack of market liquidity.
- Insufficient culture of corporate responsibility.

Environmentally sustainable industrial activity

Green or sustainable industry includes all the productive activities that substitute fossil fuels with renewable energy sources, promote energy efficiency (eco-building materials hybrid automobiles, clean transport infrastructures), resource efficient productive processes (organic farming, clean technologies, recycling and sustainable management of waste), natural resource conservation and greening of public urban spaces.

The basic principles of sustainable industrial activity include:

* Life cycle analysis: Adoption of an integrated approach to the direct (operations) and indirect (products, supply chain/suppliers, consumption) footprint of the enterprise, at both the monitoring and management levels. The methodology of life cycle analysis covers the entire footprint, from raw material to production and consumer usage, all the way down to the final disposal of the product.

* Biomimicry: The term stems from the Greek words *bios*, meaning "life" and *mimesis*, meaning imitation. Biomimicry is the umbrella process that imitates the living processes, models and systems of nature. It includes reuse and recycling of the outputs of productive processes and is based on the detailed study of nature's ways, in order to apply them to productive processes.

* Maximum efficiency in the management of inputs and outputs: Focus on the use of secondary materials (e.g. demolition and urban waste) as inputs in other productive processes.

* Low emissions: Low to zero greenhouse gas and other atmospheric pollutant emissions.

* Best Available Techniques – BATs: New, zero footprint technologies, which however require further research.

* Integrated environmental management: Adoption of best available systems of production, environmental management and footprint reduction in the supply, production and marketing chain.

* Green and good quality products.

* Respect for human and labour rights.

Indicative incentives for the promotion of sustainable industrial activity are:

* The greening of all organised industrial areas into and the licensing of new industrial sites upon strict environmental conditionality.
* Rail and/or short shipping connection between industrial areas, on the basis of central planning.
* Promotion as a matter of priority of green investment plans within the banking sector, via the shifting of loan and portfolio policies towards sustainable entrepreneurship and environmental projects in general.
* Reorientation, modernisation and linking of the educational system with the productive opportunities and needs.

Industrial enterprises are called to commit to the following policies:

* Adoption of a strategic triple bottom line business model, aiming at the integration of environmental protection, with social benefits and responsible profitability.
* Absolute transparency and accountability, through the publication of regular environmental reports, which will be based on specific and internationally accepted standards (e.g. Global Reporting Initiative) and will be certified by external auditors.
* Voluntary submission of all available data for annual inspection by the Hellenic Environmental Inspectorate of their compliance with environmental legislation.
* Systematic stakeholder engagement.
* Continuous quest for new footprint reduction methods and business models.

Reforms for living industrial activity

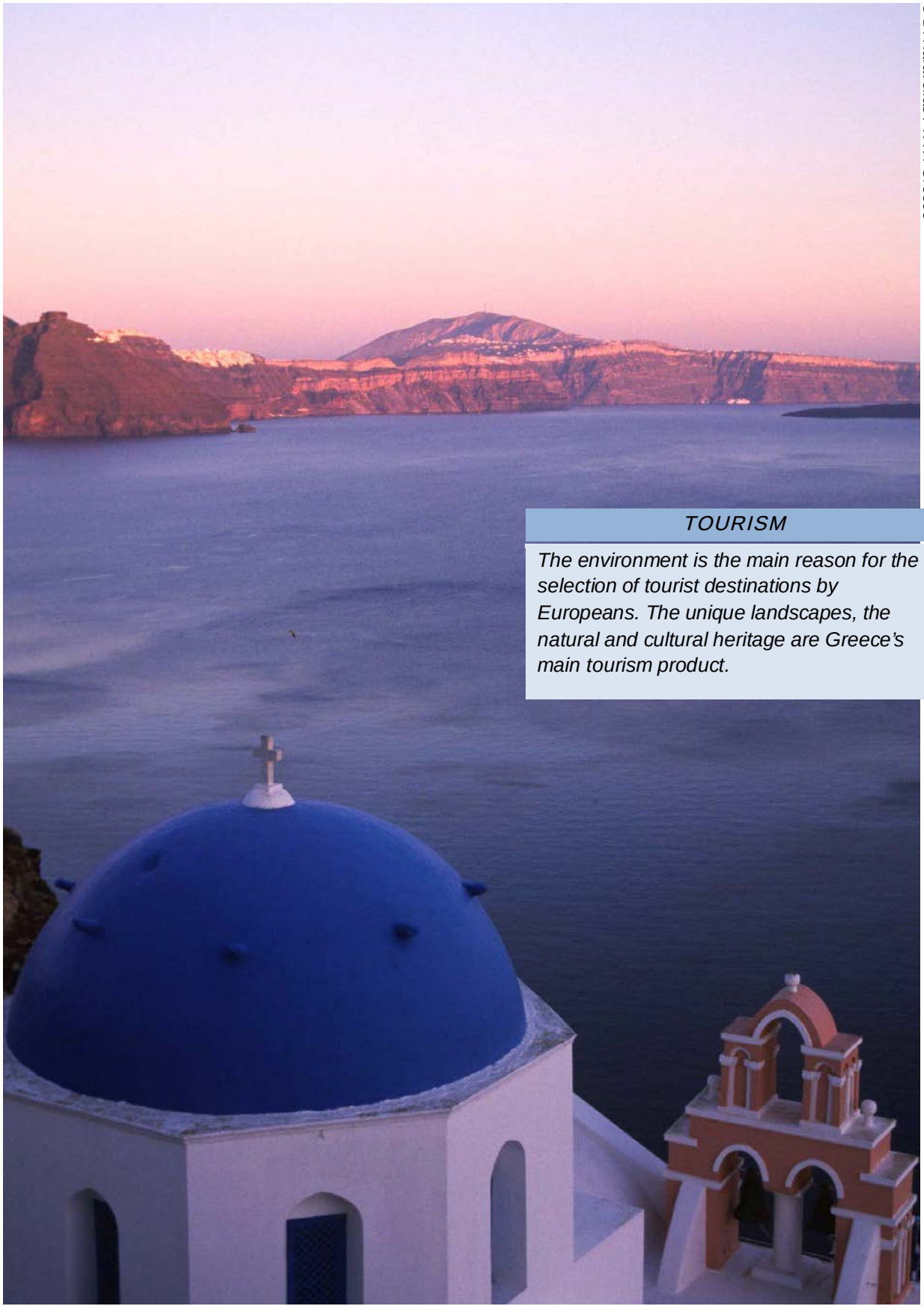
1. GOOD SITING: In the case of Greece, it is a long overdue imperative to abolish the right for off-plan siting of new industrial plants. Taking into account that the current urban planning includes 450 established areas of industrial uses and 48 organised business parks, which however are largely underexploited, all the conditions are in place for the abolition of the anachronistic provisions for off-plan industrial siting.

2. INCENTIVES: With the aim of relocating the operational industrial units into organised industrial sites and the orientation of businesses towards sustainable practices, the main tools are the national investments law (see relevant chapter) and the relevant provisions of the new programming period 2015-2020. Supporting the attractiveness of organised industrial areas, with emphasis on the completion of all necessary infrastructures, is top priority.

Whereas the relocation of existing enterprises within organised industrial areas is a funding priority under the new programming period and is covered by EU co-financing, political emphasis needs to be placed on the orientation of national investment policies towards this direction. Specifically, it is recommended that the incumbent Investment Law is revised in order to provide funding support only to those ecologically sustainable industrial investments that will be located within organised industrial sites.

3. INSPECTIONS: The intensification of inspections on all operating industrial plants is an absolute priority, particularly within informal and off-plan industrial areas. Especially as it is clear that many plants lack the necessary environmental management infrastructures, the need for increased inspections aiming at improving the level of environmental conformity and restoration is vital.

4. GOOD PRACTICES: Taking into account that the current administrative systems focus on law conformity measures, it is important to proceed with the enrichment of the desired strong and efficient inspection system with a framework for preventive conformity and improvement of the environmental performance of businesses. This framework needs to include means of coherent and authoritative information on best available practices, reward and publication tools for good performance, as well as law conformity codes.



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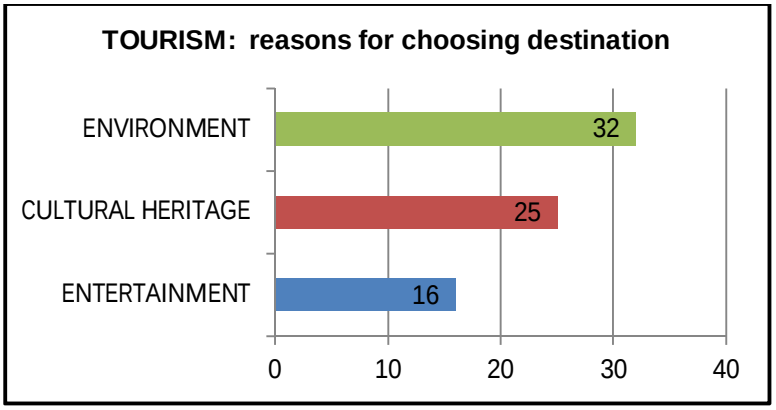
TOURISM

The environment is the main reason for the selection of tourist destinations by Europeans. The unique landscapes, the natural and cultural heritage are Greece's main tourism product.

TOURISM

Tourism, being a particularly dynamic economic sector, contributes 15% to the global GDP and accounts for 5% and 7% of employment. Notwithstanding the economic crisis, the UN's World Tourism Organisation foresees a global average increase in international tourism arrivals of 4% until 2020.

In the European Union, the natural environment is the main reason for choosing a tourism destination.



Source: Flash Eurobarometer 291 on the attitudes of Europeans relating to tourism.
All respondents, % EU-27[42]

In Greece, tourism is the most dynamic and extrovert economic sector and contributes an annual 16% to the national GDP. During the past four decades, the growth of the tourism sector has skyrocketed, reaching 14,918,177 foreign tourist arrivals in 2002 from 462,857 in 1961, which equals an almost 30X increase. According to the WTO, in 2007 Greece welcomed 18,754,593 tourists, ranking 15th globally.

Domestic tourism, according to Eurostat, has undergone two successive reductions in the order of 20% in 2010 and 2011. This percentage is expected to grow to 30% in 2012, and is the result of the economic recession. According to recent survey, only 45% of Greek households can afford one travel per year, which lasts 7-10 days and usually takes place during the summer. A 46% of domestic Greek tourists choose to spend their stay with friends and relatives, whereas 19% stay in summer homes. Incoming tourism has become the most important contributor to the national GDP, since it accounts for 70% of overnight stays[43].

From an employment viewpoint, the tourism industry offered 758 thousand jobs in 2011, a percentage which has remained stable since 2000. Another economically important aspect is that fixed capital investments in tourism account for 13,7% of the total[44].

The problem and the opportunity

An analysis of the characteristics of Greek tourism, briefly highlights the following:

1. Mass tourism organised by tour operators.
2. "Three S" tourism: sea, sun, sand.
3. Intense seasonality and concentration along the coastal zone.
4. Large, but incalculable ecological footprint.
5. Problematic cost/quality relation.

[42] European Commission. (2010). 2009 Environment Policy Review. Staff working paper SEC(2010) 975 final. Retrieved in June 2013 from: http://ec.europa.eu/environment/policyreview.htm.
[43] SETE. (2010). A Proposal for a new development model. Tourism as a protagonist in Greece's economic and social development. Retrieved from http://www.greektourism2020.gr
[44] Lalas, D., et al. (2011). «Green Economy, Social Cohesion and Employment, Final Report» Retrieved from : http://www.inegsee.gr/sitefiles/studies/GreenEconomy_FinalReport.pdf

A more detailed analysis of the problems undermining the sustainability of Greek tourism also highlights the significant opportunities arising from a green shift.

- *The 3S model*

Excessive dependence on mass tourism, which focuses on the seasonally and locally restricted abundance of sea, sun and sand. This model however is reaching its limits, both in terms of carrying capacity of available destinations and in terms of quality.

- *Tourism monoculture in coastal and island areas.*

The intensely seasonal tourism model has significant impacts on employment and social cohesion, especially in areas lacking other economic activities.

- *Excessive supply of accommodation.*

Accommodation capacity in Greece reaches 182 million overnight stays, whereas the actual overnight stays in the "good" year of 2007 reached 64 million. In other words, the capacity surplus is about 184%. Greece is characterised by oversupply conditions, since it ranks 4th in available beds in relation to its population.

- *Oligopsonistic structure of tourist demand.*

Despite the recent trend for independent transport of tourists to selected destinations, the largest share of visitor transport is controlled by a limited number of tour operators. This fact, in combination with the small size of the enterprises results in weak negotiation capacity, which in turn causes immense pressures on prices and tourism policies. One noteworthy example is the demand of major tour operators from small and medium sized accommodation enterprises to include swimming pools, in destinations that suffer from freshwater scarcity. This type of tourism is characterised by intense seasonality and concentration in specific destinations, which are accessible by charter flights.

- *Low penetration and utilisation of new technologies*

The weakness of the tourism sector to utilise new communication and media technologies, undermines the very potential for effective promotion of Greece's competitive advantages,

- *Low penetration of innovations and networking in tourism SMEs.*

Greece ranks 97th in internet use and 63rd in the number of internet users in the tourism sector. In practice, this means that Greece does not address directly the new generation of tourists and travelers, which generally prefer quality services and unique tourism experiencea.

- *Significant environmental footprint.*

The environmental pressures caused by tourism can be categorised as follows:

(a) Permanent, which are caused by infrastructure. These constructions change land uses, 'urbanising' natural areas and degrading important landscapes.

(b) Seasonal, which occur during the operation of tourism enterprises. These impacts include primarily energy and water consumption, waste generation and noise. The most pressing impacts are exerted on coastal destinations, but inland areas have also been subjected to considerable degradation.

The major environmental problems are caused by the unplanned sprouting of tourism infrastructures in extra-urban areas. Illegal land development and constructions account for a large share of the available tourism infrastructures and occur primarily in areas of exceptional ecological significance, even within the boundaries of national parks.

The degradation of important landscapes, such as the area around the Palace of Knossos in Crete, marine pollution, water resource depletion in coastal and island areas and the increased generation of waste that is not sustainably and safely managed, are serious stresses that require an urgent and sustainable response. Exceeding the carrying capacity of popular tourism

destinations is an easily discernible problem that undermines the very product of tourism activity, i.e. the visitor's experience.

At this point, one needs to point out that the notion of 'carrying capacity' is multi-dimensional and dynamic. Although it has been interpreted in many different ways, all sources now agree that different categories of carrying capacity exist, which cover ecological, economic, social or psychological aspects. The definition of a "magic number', an ideal number of tourists that can visit a place without causing harm is almost impossible and probably even useless[45]. emphasis needs to be placed on visitor management, as to minimise their impact on the environment and resources and maximise benefits for the destination itself. Carrying capacity refers to the limits of each area, whose violation causes problems and finally undermines the natural capital on which most investments are based.

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- *Short life cycle of the tourism product*

Greek tourism is in crisis. The boom of the 3S tourism model coincided with the increase in consumer capacity. The growth of mass tourism, which resulted in a rapid increase of the environmental footprint on specific destinations, is now slowing down and Greece is one of the countries experiencing this trend.

The characteristics of the 3S tourism product cause a series of problems that undermine the capacity of Greek tourism to withstand international competition and limit its potential to offer balanced development across the country, since its activity is restricted to a few, primarily coastal areas. It also fails to protect Greece's top tourism product: nature. Therefore, for environmental, social and economic reasons, Greece needs to take a sustainable turn on its tourism model.

[45] WWF Greece. (2002). Conference on carrying capacity and visitor management within protected areas. Athens: 31 May – 1st June 2002. In Greek.

Priorities for sustainability in the tourism sector

Greek tourism should achieve the highest possible economic benefit in combination with the highest possible level of natural capital conservation and sustainable management.

Specifically, sustainable tourism needs to

* Constitute a dynamic part of Greek economy, without degrading the capital it is based on, i.e. Greece's natural and cultural heritage.
* Comply with sustainability guidelines, such as the ones stipulated by the Global Sustainable Tourism Council.
* Promote measures for ecological footprint minimisation.
* Contribute actively to the conservation of the natural and human environment.
* Strengthen the local economy and society.
* Employ best available and innovative practices in sustainable tourism (including methods for planning and visitor management within the limits of local carrying capacity).
* Develop within a framework of parallel rural development policies and a multi-thematic strategic vision for each region. This is vital in order to avoid tourism monoculture which renders the destinations vulnerable to demand seasonality and fluctuations.
* Enrich its products through a national and local support strategy for thematic and low footprint tourism such as sailing, agri and recreation tourism).
* Receive support through a financial support regime for investments that fulfill environmental sustainability and aesthetic criteria, promote the cultural and natural heritage, guarantee the personal involvement of the investor in the enterprise, take place in traditional or abandoned villages and / or attain environmental management certifications.
* Unfold on the basis of analyses on the carrying capacity of the area and the quality of the experience and services offered to visitors. All parameters analysed in these studies need to be taken seriously into account during spatial and development planning in these areas.

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ENERGY

The energy sector covers both the production and the consumption of electric and thermal power. In this context, the necessary intervention focuses on the greening of sectors with the biggest carbon footprint and significant cost-effective transformation potential.

© Bruno Arnold / WWF-Canon

The problem

Greece's electricity mix is dominated by lignite, which holds a share of almost 50%, accounting for 41% of national greenhouse gas emissions produced by the Public Power Corporation[46]. The lignite model is characterised by intensive resource use (a total of 60 million tons of lignite are extracted annually, whereas annual water demand reaches $110*10^6$ m^3, only for the Western Macedonia energy centre). An additional problem is the over-concentration of power capacity in only two areas of the country, in tandem with the old age of thermoelectric stations.

On the other end of the equation, final energy consumption increased by 2.4% between 1990-2007, the transport and building sectors ranking first. The recent reduction is primarily due to the economic crisis and not a result of effective implementation of energy efficiency measures[47].

Other factors contributing to the Greek energy model are the old distribution network, the inefficient interconnections and the delays in constructing the necessary infrastructures.

The weaknesses of the Greek energy system are reflected in the emissions of CO_2 from the buildings sector, which are almost double than the EU average (105 $kgCO_2/m^2$ whereas the EU average is 54 $kgCO_2$ $/m^2$)[48]. The consequences of inaction, in combination with the economic recession, were are painfully evident in the inability of a large part of the population to cover basic needs for heating[49]. Energy poverty was particularly obvious in urban centres, especially during the winter of 2012, when the shift of households to low cost fuel wood and other materials that were burnt in open fireplaces and stoves resulted in intense smog episodes.

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[46] WWF Greece. (2008). A low carbon vision for Greece in 2050. Athens, October 2008 . Available at: http://www.ecofys.com/files/files/report_wwf_low_carbon_vision_greece_2050.pdf

[47] Ministry of Environment, Energy and Climate Change. (2013). «2nd National Energy Efficiency Action Plan 2008-2016 under Directive 2006/32/EC». Athens: September 2011. Available at: http://ec.europa.eu/energy/efficiency/end-use_en.htm

[48] http://www.bpie.eu/documents/BPIE/LR_%20CbC_study.pdf

[I] According to data from the Hellenic Statistical Service, in 2010, almost 20% of the population stated their inability to cover basic heating needs.

The opportunity and the aim

The policy framework for a sustainable Greek energy sector have already been set, within the context of the EU's energy and climate change law and policies.

Specifically, the objectives of Greece's national energy policy state that until 2020 the share of renewables in final energy consumption will reach 20%, compared to 1990. National objectives have also been set for energy efficiency (9% savings by 2016 and 15% until 2020).

In order to avert the worst impacts of climate change, WWF has stated that a 40% global reduction of emissions by 2020 and 95% until 2050 is imperative, aiming at zero emissions in the electricity sector. The roadmap is outlined in WWF's «Energy report: 100% renewable energy by 2050»[50]. In the case of Greece, WWF Greece published the report «Low carbon vision for Greece in 2050»[51], which proves that a reduction of 93% in electricity generation is feasible by 2050 (compared to 1990 levels).

Breaking the myths

Owing to a combination of factors, the main being poor information, the growth of clean energy has been associated with a series of adverse circumstances, such as the increase in energy cost, the decline in the competitiveness of industry, and job loss. Whereas it is true that Greece, together with all other EU member states, is called in times of crisis to respond to the demanding transition to a low emissions economy, the real costs of this phase are much lower than many people believe and depend on the timely implementation of the necessary measures.

Clean energy has oftentimes been blamed for the rising costs of electricity. It is therefore important to state that in the past decade, a period of low share of renewables in the energy mix and zero economic burden from emissions trading for the Public Power Corporation (PPC), household energy bills increased by 73%[52]. According to the statements of the PPC during that period, the reason was the increase in the prices of liquid fuels and natural gas, the introduction of special taxes on natural gas, heavy fuel oil, diesel, as well as on electricity consumption, the increasing cost of social utility services and energy imports. It is therefore clear that Greek consumers have for decades been paying the cost of the country's dependence on fossil fuels, which, needless to state, continues to burden household bills[53]. On the other hand, the green electricity levy paid by consumers, the so called ETMEAR (Special Tariff for the Reduction of Aerial Pollutants) has indeed significantly increased in recent years,[54] yet it accounts for a very small percentage of the final household electricity bill (in an average consumption of 2.000KWh, the total household bill is 295 €, taxes excluded, whereas the special tariff is 19 €). In addition, despite its title, only 40% of the income of the special tariff ends up in support for renewables, the remaining being allocated to electricity suppliers[55].

The loss of competitiveness by Greek industry has also been related to climate policies, particularly those influencing energy costs. In reality however, industry in Greece enjoys a number of privileges: it is characteristic that the prices of electricity for high voltage customers remained 'frozen' for the period 2008-2012, whereas historically the ETMEAR is borne by household consumers and not the energy intensive industry[56]. Indeed, industry benefits from the ceiling to the ETMEAR tariff which the Regulatory Authority for Energy (RAE) imposed in 2010 on the duties of industrial consumers. In relation to the participation of Greek industries in the EU's emissions trading system (ETS), only eight were obliged to buy emissions rights (in a total of 120, which were part of the mechanism in 2008-2011). Furthermore, as shown in a 2013 report by

[50] WWF International. (2011). The Energy Report. Gland. Available at: http://wwf.panda.org/what_we_do/footprint/climate_carbon_energy/energy_solutions/renewable_energy/sustainable_energy_report/
[51] WWF Greece. (2008). A low carbon vision for Greece in 2050. Athens, October 2008. In Greek.
[52] According to Eurostat, household rates increased from 0,0564 to 0,0975 €/KWh (2001-2010).
[53] Indicatively, only for 2012 the PPC paid 940 and 444 million euros for liquid fuels and natural gas purchases.
[54] From 0,45 to 9,53 €/MWh during 2002-2013.
[55] Foundation for Economic and Industrial Research, Press Release: study by the FEIR for the large scale penetration of RES in the electricity generation mix. In Greek.
[56] In 2010 household consumers contributed to the ETMEAR by 35% while energy intensive industry by only 6,3%, while today households pay 9,53 €/MWh and industrial consumers 3,55 €/MWh. Updated ETMEAR tariffs announced on 10.01.2013 include a 22% reduction for high voltage consumers.

WWF Greece and Sandbag, certain sectors of the processing industry have obtained unexpected economic benefits, as a result of the structural distortions of the ETS, which were partly highlighted during the recession. Many enterprises have also secured post-2020 protection from the implementation of the ETS[57].

At the same time, the real costs of the use of fossil fuels remain unknown. In November 2012, the RAE issued a tender for the cost accounting of the entire chain of operations of the PPC (mines, production, distribution). This study will not include the externalities however, i.e. the real costs which consumers are called to pay: health problems, soil and water resource contamination, relocation of settlements from mine fields and the cost of concessions of lignite resources– it wasn't until 2012 that the PPC was ordered for the first time to pay for the exploitation of lignite through a special tariff.

Clean energy does not only provide environmental benefits. It can also attract important investments and boost job creation. One example is the solar power sector, which currently employs more than 20,000 professionals. In a 2010 report produced jointly with the Athens University of Economics and Business, WWF Greece estimated that the creation of 215,000 new jobs is possible by 2020 in the field of energy efficiency, whereas another 30,000 new jobs can be created in the renewable energy sector[58]. The European Commission appears to be on the same page, estimating a 5 million jobs across the EU on these same sectors by 2020[59]. The European Trade Union Confederation also published important estimates, which state the potential for 2.6 million jobs by 2030, only in the building sector[60].

The driving force, in the coming years, for the development of the above mentioned green energy sectors, particularly the renewables, will primarily be the reduction in technology costs and, to a lesser extent, policy support.

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[57] WWF Greece and Sandbag (2013), Carbon Fatcat Companies in Greece Athens, February 2013. Available at http://www.sandbag.org.uk/site_media/pdfs/reports/Carbon_Fatcat_Companies_in_Greece.pdf

[58] WWF Greece & Athens University of Economics and Business . (2010). *Green measures in Greece: benefit / cost analysis of implementing specific actions to promote renewable and energy saving*. Available at: http://www.wwf.gr/index.php?option=com_content&view=article&id=702%3A2010-07-07-10-19-43&Itemid=90

[59] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0173:FIN:EL:PDF

[60] European Trade Union Confederation (ETUC). "Climate change, the new industrial policies and ways out of the crisis".Available at: http://www.europarl.europa.eu/meetdocs/2009_2014/documents/empl/dv/empl_etuc_study_/empl_etuc_study_en.pdf

The obstacles

The main problems undermining the development of renewables in Greece have already been analysed in a February 2013 position document[61] and can be summarised as follows.

- Spineless national policy, characterised by constant rollbacks.
- Problematic practices by investors and the administration, with particular concerns arising from the disregard for important ecological values of proposed windfarm sites at the stage of the EIA.
- Growing social disdain for renewables on environmental grounds, which however is often accompanied with pretextual tensions over particular projects.

Other factors that need to be taken into account are the delays and problems in the implementation of EU policies. The European Commission reported a series of problems in the deployment of renewable energy infrastructures, such as the increased investment risk resulting from administrative obstacles and the slow progress in infrastructure and grid works[62].

In relation to energy efficiency, the main obstacle to the implementation of the necessary investments concerns the limited access to the necessary capital, especially in the buildings sector.

The absence of a robust market for energy efficiency, hence the non-involvement of the private sector, the lack of actual data on the characteristics of the energy consuming sectors, the low level of awareness by the stakeholders directly on the economic, as well as the environmental benefits, the poor framework of incentives are also important obstacles that need to be addressed. Another noteworthy shortcoming, at the level of EU policy, is the absence of mandatory energy efficiency targets for member states.

Similar obstacles are faced by all the pillars that will support the green reform of the energy sector, the most important being the demand for high initial investment, which will have a long term return. Indicatively, the necessary energy network infrastructures for the next decade in Greece will cost 0.3 billion EUR, whereas the promotion of energy efficiency in the transport sector will require investments in the order of 250 million EUR[63]. Similar investments will be required at the EU level.

Policy guidelines

The priorities for action, towards a low carbon energy system, result from the reading of the weaknesses of the current energy model, which were analysed in the previous section. These are:

1. RENEWABLE ENERGY SOURCES: Increased share of renewables in the national energy mix and maintenance of fossil fuel units in cold stand-by status. Covering the total demand for electricity with clean energy will contribute to the country's energy security and autonomy, as well as to the decentralisation of energy generation. Emphasis also needs to be placed on *all* relevant technologies, particularly those able to cover base loads, and to the development of community based schemes.

2. ENERGY EFFICIENCY: Reduction of energy demand and increase in energy efficiency, which will also result in reduced implementation costs for all other clean energy priorities. Emphasis needs to be placed on those sectors with significant improvement or social benefit potential such as transport and buildings. The achievement of these measures presupposes the recognition of the added value offered to many economic sectors, such as the reduced operational cost for the industry and the increased value of energy efficient buildings. At a later stage, it will be necessary to shift focus towards the efficient utilisation of other resources too (water, raw materials, etc).

[61] WWF Greece (2013), Renewables in Greece, policy paper , Athens: January 2013. Available at: http://www.wwf.gr/images/pdfs/Renewables-position-paper-January-2013.pdf
[62] European Commission, Renewable energy progress report, Brussels: March 2013. Available at: http://ec.europa.eu/energy/renewables/reports/doc/com_2013_0175_res_en.pdf
[63] WWF Greece. (2008). A low carbon vision for Greece in 2050. Athens, October 2008 . Available at: http://www.ecofys.com/files/files/report_wwf_low_carbon_vision_greece_2050.pdf

3. ELECTRIFICATION: Expansion of the use of electricity to other final energy uses, such as transport and micro-cogeneration. The parallel implementation of energy efficiency measures will definitely limit the impacts expected from the increased demand during peak hours.

4. STORAGE: Development of energy storage means in buildings, vehicles, heating systems, but also on a larger scale.

5. MANAGEMENT: Flexibility and demand management will need to be developed, in order to transfer the demand according to renewable energy resources availability and to reduce peak loads. Through the appropriate price formation, it is possible to influence consumption patterns both for industrial and household users[64]. The successful employment of such mechanisms will require good knowledge of consumer profiles, which can be acquired through the widespread use of smart meters.

6. INFRASTRUCTURES: The achievement of the needed targets for clean energy presupposes the network modernisation, which would be required, anyway, to a lesser of greater extent[65]. At this point, it is necessary to stress the need for the state to retain its fundamental role as central manager and inspector of the energy system and grids, in order to safeguard the unhindered promotion of the necessary infrastructures and the coherent and synergistic approach to the development of networks.

[64] The British project «Customer-Led Network Revolution » has clearly shown the willingness of consumers to change their everyday energy use habits, in exchange for lower energy costs.
[65] European Commission. (2013), Green paper: A 2030 framework for climate and energy policies, Brussels, March 2030

FINANCE SECTOR

The finance sector plays a crucial role in the overall economic functioning, since it constitutes the circulatory system of modern economies and largely determines the volume of household and corporate savings, along with their redirection regarding credit extension and investment expenditures.

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In the aftermath of the economic crisis triggered by the financial meltdown during 2007 and 2008 in the US and the subsequent European sovereign debt crisis, the Greek finance sector is called to recover and operate in conditions of dire economic contraction and despite the fact that the global economy marginally rebounded in 2012. In the same time, the Greek finance sector needs to meet all challenges imposed by a globalised, highly competitive financial environment, within which barriers to financial capital transaction have been by-and-large removed.

Since the finance sector largely determines the volume and qualitative traits of private investment, its role in boosting environmental investment and therefore leveraging a shift to a 'greener' economy, can only be decisive.

A high-level examination of the financial sector's problematic dimension, suggests that the current business model is largely detached from the environmental and social base of the economies, while its returns are decoupled from the well-being of large social groups and environmental protection. This is corroborated by the constantly growing inequality gap and the on-going environmental crisis globally. A financial sector that is part of this dismal equation, cannot be viable in the long-run.

Regarding the environmental sustainability of modern banking and finance, the problem can be summed up as follows:

- Low participation of environmental projects in investment portfolios, mainly of commercial and investment banks (e.g. renewable energy and waste management projects, etc).
- Low volumes of environmental lending to households and businesses (loans for energy conservation in buildings, green start-ups, etc). Like investment portfolios, lending portfolios do not correspond to the lot of environmental challenges of our times. As for recessionary Greece, the problem is not only limited to the lack of environmental lending but is much broader: the Greek banking sector lacks liquidity and thus requires constant and sufficient recapitalising, in order to restore balance sheets and reestablish lending channels towards the real economy.

- Lack of environmental criteria within lending processes: this pertains to both green and conventional activities. Environmental criteria for the approval of a business loan (e.g. ISO 14001 certification or preparation of a sustainability report) are necessary in order for the finance sector to become an essential environmental catalyst for change of the whole economy.
- Deficient and inadequate accounting and monitoring of the environmental impact of bank portfolios. Despite the fact that environmental sustainability has entered the agenda of Greek banks, respective practices are still at a minimal level. For example, the World Bank's branch responsible for credit extension to the private sector is not aware of the environmental and social impacts of approximately 50% of its portfolio[66]. Similar findings arise from the EMDI assessment framework [Environmental Management and Disclosure Index] conducted on a periodic basis by WWF Greece, which evaluates the environmental transparency of major Greek entities and includes all systemic financial institutions of the Greek economy. The assessment suggests that financial institutions in Greece do not sufficiently address environmental and sustainability issues of their loan and investment portfolios, despite the fact that in recent years they have improved on that front.
- Quick, short-run profits, which imply the over exploitation of natural resources and environmental degradation, are more luring for financial institutions, than the long-term sustainable investments that encompass nature conservation and sustainable use of resources, while at the same time account for the social dimension of the production process and equitable distribution of the economic output. This clear obstacle towards sustainable financing is enhanced by a well-entrenched network of vested interests, in both the private and public sectors, which distort market functioning via monopolistic and oligopolistic structures. This scheme works against the interests of consumers and does not promote the shifting of the economic model to a sustainable trajectory, precisely for the aforementioned purpose of reaping short-run profits. The finance sector, like all other economic agents, need to overcome this myopic business model and emphasize on future profits, as much as on current ones.
- The aforesaid dichotomy between sustainable and polluting investments is clearly demonstrated in the investment strategy of German banking group KfW, which maintains a significant portfolio of investments on energy conservation and renewable energy projects, largely within German borders[67]. Outside German, the KfW Group insists in investing on conventional projects, such as coal fired power plants. For example, the KfW Group, despite its many promising alternative energy-producing models, is planning to invest 200€ million for the construction of "Ptolemaida 5", the aforesaid coal-based plant[68]. This project accounts neither for the issue of climate change, nor for the local community, which lives in an area already largely burdened by energy producing activities that go back in time.
- Institutional investor can and must cooperate with the government and private sectors, within a broader framework of global environmental governance, in order to gradually phase-out this environmental burden to sustainable levels.

Tackling environmental externalities entails a set of approaches and measures on behalf of institutional investors. Indicatively:

1. Evaluation of the environmental dimension and degree of dependence between investment schemes and natural capital.
2. Creation of shared platforms of consultation, cooperation and synergies in order to enable negotiations of material issues related to public investments.
3. Cooperation with the government sector and all regulatory authorities to promote policies that will enable the internalisation of the environmental cost of investment and establish a clear framework of sustainable investments.
4. Demand the creation of an effective monitoring and disclosure mechanism, related to how investors perceive and treat the environmental risks of their portfolios.

[66] CAO Audit of International Finance Corporation (World Bank) Report, 2012
http://www.cao-ombudsman.org/newsroom/index.html
[67] Carrington, Damian. "How a Green Investment Bank really works". The Guardian 24 May 2012
http://www.guardian.co.uk/environment/damian-carrington-blog/2012/may/24/green-investment-bank-energy-efficiency
[68] Petz, Kathrin. "Coal financing – what the KfW prefers to keep under wraps" Urgewald, August 2012

5. Encourage rating agencies and other entities conducting financial analysis, to include parameters of environmental cost in their methodological toolkits.
6. Provide active support to the research related to the linkages among corporate externalities, ecosystem goods and services, corporate financial risk and returns on investment.

In the case of Greece, it would be of exceptional interest to explore the potential of designing a joint investment mechanism-fund, potentially co-financed by public, European and private funds. Its mission would be to accumulate investment capital and channel it to environmental R&D and innovation, as well as to the implementation of small and large-scale projects that will link environmental conservation with sound business practices. Emphasis should be given on sectors of the economy in which Greece displays a clear competitive advantage in terms of potential and/or current practice.

Regarding the insurance sector, there are numerous climate change impacts that are fairly obvious. The most significant opportunities for this sector will stem from the recalibration of insurance premiums as per the climate-related risks, as well as from the need to market new insurance products related to adaptation and mitigation. Carbon-markets provide additional opportunities to insurance companies, which are preparing to meet the new challenges at the international level. More and more analyses related to the financial impact of climate change on the insurance sector are being published, while at the same time companies are systematically developing analytical tools that assess potential losses from climate change, for a broad range of clients. The Greek insurance sector seems to be lagging behind in this area, on both endogenous and exogenous reasons.

WWF Greece, calls for a medium/long-run recalibration of the country's finance sector, with the aim to jointly address the environmental, social and financial sustainability of this fundamental sector of the economy.

The ultimate goal is the shift to a finance sector that will sufficiently encompass lending and investment tools, in order to support environmental innovation (R&D), best environmental practices, as well as projects of conservation and restoration of the natural capital.

The enhancement of the monitoring and regulatory role of the Bank of Greece and the European Central Bank, in order to disseminate directions for sustainable finance, is also a necessary precondition for the support of a living economy. In addition, public subsidies to polluting activities need to be phased out, in parallel with the provision of incentives for environment-friendly practices within focal sectors of the Greek economy (energy, primary sector, tourism). Furthermore, new sectors must be enhanced, which will introduce business models related to environmental protection and the sustainable distribution of the economic output.

The potential role of the banks in fundamentally changing a parochial, counter-productive economic model is not just complementary, but catalysing.

An indicative list of sustainable investment tools is the following[69]:

* Green equity mutual funds (energy, waste management, water conservation, alternative chemicals and materials engineering, among others)
* Angel investing: networking of high net-worth individuals in order to redirect investments towards clean-tech sectors, technologies and practices in general.
* Equity funds with an environmental objective/scope, e.g. investment in climate related projects (energy conservation, infrastructures, etc).
* Equity crowd-funding: creation of networking platforms of small investors and distribution of the accumulated capital in environmental projects, mainly to SMEs.
* Green corporate bonds: these are addressed to high net worth individual and institutional investors and involve low risk return on investment. There are also respective financial products for smaller scale investors.

[69] WWF International. (2012). *Financial Vehicles: Driving private investment in climate innovations*. Network Discussion Paper. Retrieved from http://www.wwf.se/source.php?id=1521188.

* Creation of sustainable banks with a dedicated strategic focus on profiting via environmental and socially sustainable activities.
* Microfinancing: pertains to credit extension to individuals of low creditworthiness, as well as to the promotion of micro insurance contracts (e.g. insurance of small plots of land against damage inflicted by natural phenomena).

Sustainable Finance Case-Studies

Credit Agricole (France), the world's 6th largest bank, actively incorporates sustainability principles in its loan and investment activities, based on the strategic pillar "environment-society-governance" (ESG- Environment, Social and Corporate Governance). Based on this policy, the Bank has completely phased-out investments on oil sands exploitation and off-shore oil-drilling in the Arctic, among others.
For more click here: http://www.credit-agricole.com/en/Financing-the-real-economy

Triodos Bank (Netherlands) was founded in 1980 and launched its activities with the guiding principle of "ethical banking". Having spread its activity to five European countries, Triodos Bank currently has 100.000 depositors and extends credit/invests to/on businesses that have an established social and/or ecological profile. It is considered to be a leader as regards the transparency of its portfolio, since it publicly provides the volume and type of its loans. The Bank had total assets equal to 10$ billion, at the beginning of 2012.

For more click here: http://www.triodos.com.

GREEN STARTUP

NEW IDEAS FOR GREEN ENTERPRENEURSHIP

Although Greece enjoys competitive advantages and natural resources, the country seriously lags on innovation and effective frameworks that enable the blossoming of new ideas. Starting from the central political level and traversing through the perplexed structures of the public administration and the systems of institutional incentives and subsidies, down to the very educational system, the conclusion is the same: the mainstream political framework leads to stagnation and the rehash of old ideas in new packaging.

One should not ignore of course the bright and promising examples of successful and extrovert business initiatives, which especially in the field of green innovation exhibit impressive resilience to the crisis. These however are primarily the result of personal vision and perseverance, rather than the outcomes of policies and incentives that encourage and foster new, innovative ideas.

WWF Greece's proposal aims precisely at providing the framework for all necessary reforms that will pass the development baton to environmentally beneficial new business ideas, able to restart Greece's productive, real economy.

This chapter sketches five frameworks for the development of green entrepreneurship in the sectors of energy, tourism, industry and primary production within protected areas.

«Common clean energy» - Community renewable energy schemes

The development of renewable energy infrastructures through community schemes, can offer important environmental, social and economic benefits.

The legal form of these community schemes may be one of the following:

* Cooperative.
* Social enterprise (enrichment of the existing legal framework is necessary).
* Société anonyme, whose stockholder base will be comprised community members.

Active public participation that is not restricted to the consultation stage, but extends to the level of management of renewable energies can offer multiple benefits: through participatory schemes, it is possible to promote environmentally valuable technologies and practices, which can also generate profits for local communities. The deployment of community initiatives will be vital in dissolving the veil of myths and distrust that clouds real benefits and the need for 100% clean energy. Participatory schemes can also be starting points for the discouragement of large scale private-sector projects bearing serious environmental impacts, the creation of new jobs, control over profiteering at the expense of vital technologies, as well as easing the pressure exerted on the public administration by extra-institutional entities.

The current framework for the development of renewable energies is rather discouraging for most entrepreneurial initiatives, let alone those schemes that lack the necessary capital support, such as the ones that are community based.

International and other EU member state experience shows that income generated from community based renewable energy schemes can support:

* loan and community debt repayment,
* equipment maintenance and replacement,
* coverage of operational costs and stimulation of employment at the local level,
* funding for new community investments in renewable energies,
* sharing of possible dividends among shareholders,
* support of public benefit infrastructures and utilities, such as energy efficiency interventions in buildings, or the funding of drinking water conservation measures.
* the establishment of a local fund or other investment scheme that can offer support to environmental projects in the community.

«Recycled» tourist villages

Dozens of abandoned villages are scattered all over Greece, primarily in areas of notable landscape and historic value. Many in mountainous areas, others on islands, these silent settlements need to liven up through touristic uses, with the maximum possible fidelity to their historic character and lowest possible footprint on the environment.

The touristic utilisation of currently abandoned villages,

* constitutes a low footprint innovative investment, since it is based on existing buildings and "builds on" history and valuable local narratives,
* makes best use of the tourism potential of depopulated areas, such as Mount Grammos, parts of Crete and many Cycladic islands, which are often geographically connected with areas of great ecological significance,
* enlivens historic memory, which is an attractive asset and a strong competitive advantage for Greece, and transforms it into a green product that can attract market attention,
* can develop into a network of "recycled touristic villages", through a connecting narrative and joint communications planning.

WWF Greece believes that the attribution of touristic use to abandoned villages needs to constitute the focal national policy for tourism, with support via all necessary political and institutional interventions:

1. MAPPING: Recording and mapping of abandoned villages, including their conservation and property status across the country.
2. LAND OWNERSHIP: Given the often complex property regime in many parts of the country, the establishment of a simplified and equitable property acquisition or rental regime needs to be put in place, which will reflect the true present value of the property.
3. SPATIAL PLANNING: Amendment of the Spatial Plan for Tourism, in order to place clear emphasis on the utilisation of abandoned villages and the reuse of existing buildings and infrastructures, instead of promoting tourism investments on undeveloped land.
4. SUPPORT: Priority ranking of the relevant investment plans in state aid programmes.
5. INTERFACE: Planning of an interface network connecting new tourist villages with each other and with their adjacent protected areas and landscapes.
6. LOCALITY: Linking of the new villages with local life.
7. COMMUNICATION: Planning of a communications campaign by the Ministry of Tourism, aiming at the promotion of recycled touristic villages as "areas of cohabitation between nature and historic memory".

Green business & industry parks

Green business and industry parks refer to spatially defined and organised sites of low footprint synergistic development of entrepreneurial and industrial activity.

© Getty Images

Green enterprise parks are not merely hosts of isolated low footprint enterprises or green productivity units. They are based on the principles of synergistic footprint and resource management[70].

The main characteristics of these parks are the following:

* Siting primarily in brownfields.
* Integrated planning for spatial management and footprint monitoring and reduction.
* Synergies for the risk-free and ecologically safe management of byproducts and waste.
* Smart networking (transport and electronic) and information sharing, which facilitates the flow of energy and materials.
* 100% clean powered.
* Bioclimatic architectural design and construction of all buildings and free spaces.
* Ecological water management.
* Production of low ecological footprint products.
* Transparent accountability, with regular publication of performance reports based on specific indicators.
* Ties with the local society.

[70] Regional Council of Etelä-Savo. Eco-industrial parks. A background report for the eco-industrial park project at Rantasalmi. (2006). Publications of Regional Council of Etelä-Savo 71:2006. Available at: http://www.medmeid.eu/wp-content/uploads/2011/04/ECO-INDUSTRIAL-PARKS_Rantasalmi.pdf

«Earth networks» - protected area products

Protected areas cover almost 35% of the Greek territory. These treasuries of natural wealth host important primary activities and yield some excellent quality products, with limited market capacity. The recognition and labeling of «protected area products», which would also certify their production with socially equitable methods that respect ecological values of each area would offer an important incentive for living local economies. Especially in times of increasing concern over food safety and awareness about the environmental dimensions of food, these schemes would offer good quality and low footprint products to a broader consumer base. The certification of good production practices also provides producers with the opportunity to integrate in the final product the true value of environmental services offered by protected areas. Given the exclusion of intermediaries from the supply chain, the reflection of ecosystem services in the final price of the product is not expected to result in expensive commodities.

In the framework of the One Europe More Nature programme, WWF and the Society for the Protection of Prespa jointly run the "Prespa Park Products" pilot initiative.

Start-up support for Earth Networks needs to be included within funding priorities of the Community Support Framework programme period 2014-2020.

The areas of possible action for the "Earth networks" would be:

* SUPPORT TO PRODUCERS: Technical support to producers for the implementation of best available practices and ecological standards.
* CERTIFICATION: Certification of origin and compliance with specified ecological standards of GMO-free and nutritionally safe production. With regard to organic products, the labeling will certify the origin.
* MARKETING: Network for the promotion and marketing of certified and labeled products.

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1961

WWF is founded in Switzerland.

100

WWF is active in 6 continents and over 100 countries.

1991

WWF office opens in Athens.

300

In Greece, we have implemented over 300 actions.

80%

of WWF Greece's actions are included in WWF's global priorities

5.000.000

More than 5,000,000 supporters globally-over 13,000 supporters in Greece.

1995

1995: WWF Greece's financial management is certified annually by independent auditors – all data are published in our annual report and website.

WWF

Why we are here.
To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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