



switchmed

Promoting Sustainable Consumption and Production in the Mediterranean

IDEAS, CHANGE,  
ECO DESIGN, ECO-INNOVATION,  
**GREEN ENTREPRENEURS,**  
EMPOWERMENT, STRATEGIC ALTERNATIVES,  
IMPACT, GRASSROOTS INITIATIVES, THINKING, **PASSION,**  
**START-UP,** INCLUSIVE BUSINESS SOLUTIONS,  
CO-CREATION, **SUSTAINABLE DEVELOPMENT,**  
**CHANGEMAKERS,** PLANNING,  
SUSTAINABLE LIFESTYLE, **TEAMWORK**

.....  
**Green**  
ENTREPRENEURSHIP  
INITIATIVES

SUSTAINABLE PUBLIC  
PROCUREMENT  
can make a  
difference

DISCOVER THE  
**BAT4MED project**  
the Best Available Techniques  
implemented in South  
Mediterranean

**OPPORTUNITIES,**  
STRATEGY, **ASSESSMENT,**  
**CIRCULAR ECONOMY, LIFE**  
**SUCCESS, SHARE, CYCLE**

.....  
**SYNERGY,**



.....  
Winter 2013-2014

SWITCH-Med  
Magazine



Regional Activity Centre for Sustainable Consumption and Production

**Director**

Enrique Villamore

**Editorial Board:**

SCP/RAC National Focal Points

**Editorial Staff:**

SCP/RAC Team

No use of this publication may be made for resale or for any other commercial purposes whatsoever without prior permission in writing from SCP/RAC

This publication was elaborated by SCP/RAC for the SWITCH-Med programme, as co-financing of the SWITCH-Med policy component.



**Regional Activity Centre for Sustainable Consumption and Production**

C/ Anglí 31, 3rd floor

08017 Barcelona (Catalonia) - Spain

Tel.: (+34) 93 553 87 90

Fax: (+34) 93 553 87 95

E-mail: [networking.switchmed@cprac.org](mailto:networking.switchmed@cprac.org)

<http://www.cprac.org>

<http://www.switchmed.eu>

Printed by Impresión Offset Derra S. L. c/Llull, 51 2º 4ª · 08005 Barcelona D. L.: B.



**SUMMARY**

<b>PRESENTATION</b> .....	3
<b>FEATURE ARTICLE</b>	
Sustainable Entrepreneurship: a mechanism of sustainable consumption and production towards a Green Economy .....	11
<b>GREEN ENTREPRENEURSHIP</b>	
Business Going Green.	
<i>A journey of corporate transformation towards environmental sustainability</i> .....	21
Biking in the Holy Land .....	27
The 1st Carbon Neutral Extra Virgin Olive Oil in the World & the 1st Water Footprint for Olive Oil products .....	30
SEKEM.	
A holistic initiative for sustainable development .....	36
Emprendeverde Network, a platform to foster entrepreneurship in the environmental sector .....	41
SEED: on the basis of a triple bottom line .....	45
<b>SUSTAINABLE PUBLIC PROCUREMENT</b>	
Buy green and make a difference! .....	48
The importance of promoting both the Demand and the Supply side of the market to successfully implement Sustainable Public Procurement in the Mediterranean .....	53
<b>SUSTAINABLE AGRICULTURE</b>	
Seminar on the valorisation of residues from the production of Olive Oil in Tunis ...	59
<b>SUSTAINABLE PRODUCTION</b>	
A method to implement BAT (Best Available Techniques) in South Mediterranean Countries: the experience of BAT4MED project .....	66
<b>CONTACT DETAILS</b> .....	74

This is an annual technical publication of the Regional Activity Centre for Sustainable Consumption and Production (SCP/RAC). | All articles are published in the original language of the author (English or French) and abstracts are also included in Spanish.. | Any institution dealing with industry and sustainability matters: CP Centers, professional associations, business federations, consultants, environment Authorities, etc. may collaborate in this publication by sending us an article in English or French. | Possible publication feedback from readers is welcome and if you consider that this publication could be improved or that there is any lack of precision, we would appreciate if you could notify us. | The contents of this publication do not necessarily reflect the views or the policies of the SCP/RAC, nor are they an official record. | This publication may be reproduced in whole or in part and in any form of educational and non-profit purposes without special permission of the SCP/RAC, provided acknowledgement of the source is made. SCP/RAC would appreciate receiving a copy of any publication that uses this material as a source.



# A Network of Green Entrepreneurs for a Sustainable Mediterranean

**Enrique de Villamore  
Martín**

Director

Regional Activity Centre for  
Sustainable Consumption  
and Production  
evillamore@scprac.org

**“We stand at a critical moment in Earth’s history, a time when humanity must choose its future [...] To move forward we must recognize that [...] we are one human family and one Earth community with a common destiny. We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations.”** **The Way Forward (Earth Charter)**

Yes, we find ourselves at a defining crossroad in time, maybe the greatest in the history of our species, at the end of an model, of a dream maybe. A dream that led us, sometimes unaware of the consequences, to spread and grow our material consumption patterns at will for a while. We simply thought that “only the sky was the limit”, as the so-called American dream promised. But everything comes to an end and it seems we are now reaching those limits, almost touching them with our fingers indeed. It is up to us and nobody else to either exceed them and head to a declining, unpredictable world, or else profoundly change our values and habits. The task ahead is Herculean but not impossible, not at all. The way out passes by leading change from change itself, by taking the initiative to improve own little worlds, each and every single one of us, in our jobs and daily lives. And to do it for and with others, including those who will come after us.

We see and feel it every day, everywhere: demonstrations and protests showing social unrest and dissatisfaction across world; unprecedented natural catastrophes, suffocating summers extending well into the autumn, extinction of species at an alarming rate (already called by many “the sixth massive extinction”), etc. A simple observation of our surroundings (at micro or macro level) quickly reveals the causes behind those well-known consequences. In the social realm: 80% of the world resources lie in the hands of 20% of the population (in the USA the top 1% of the population controls 42% of the financial capital), more than billion people live under the poverty line (70% of which are women) and quite as many do not have access to drinking water or sanitation systems. In Spain, we have painfully surpassed various socially tragical barriers the likes of 5 million people unemployed, 10 million poor or 43% of youth unemployment rate. In the environmental realm, we live in a world with more carbon dioxide in the atmosphere (391 ppm at the time of asking) than ever before in the previous 500,000 years (no *Homo Sapiens* has inhabited a world of this nature), species migrate from the equator to cooler latitudes at a rate of 20 cm/h, our cities top the recommended pollution levels dangerously often, etc., etc.

The symptoms are clear as is the diagnosis: we are confronting the pressing need to change the current socio-economic fabric, totally incapable of meeting the challenges of our days (social inequalities and environmental unbalances). In other words, we must foment entrepreneurship as the driver for changing directions. But a different breed of entrepreneurship this time around, away from the “patches” that have been put on over the last few years in an attempt to hold together the house of cards from the old model. The crisis we live in is not a mere “bump within an economic cycle”, but rather a systemic crisis, that of a relational model among our-

selves, human beings, with the biosphere and, as disagreeable as it is to accept, of our own values and personal lifestyles. The type of entrepreneurship that will take us to the exit door (and new beginning) must be different or else we will fall again in our very own trap. It must take its roots on the principles of sustainability and social responsibility, emerge from the heart of the human values and foster a leading-by-example type of action. A commitment to contribute from the first person of the singular and plural forms.

The path will not come easy, as the real obstacles responsible entrepreneurs encounter along their way are numerous both at the economic (uncertainty, insufficient financial support, regulations benefiting large corporations...); social (rejection from a certain part of society that inherently seeks life-long stability, a utopia in our days...); and environmental levels ("green investments" treated as secondary with the excuse of the crisis, "greenwashing"...).

In Spain, for instance, the percentage of entrepreneurs is still incredibly low (professionally speaking only and not, luckily, on a personal domain where we are still pretty socially active as our Latin blood still does its wonders), as a result of a non-existent education and promotion of the entrepreneurial spirit along the basic formative years. We need to turn this trend around and allow our youth to come out of the university, or equivalent background, filled with a joyful desire to undertake their own dreams in their own personal manner (innovation). And for that they are widely demanding a fitting education as well as behavioral models to look up to.

We need a society full of responsible entrepreneurs, of social and environmental heroes, of anonymous but wholly-committed citizens, all united under the same flag -Humanity's- and fighting for the same cause, ours. This philosophy, translated to the business world, implies an economy of micro-enterprises, of small but flexible teams, working collaboratively through networks, in search for the common good. Because we do not need to reproduce in ourselves, let alone in our organizations, the supposed need of "growth for growth" that the agonizing system so conventionally preaches for. We need a world at the distance of our arms, a world at a human-scale. Because the so-mentioned sustainability is in reality intrinsically linked to that little precious thing we all look for: the true happiness, the shared one. The one rooted on a simple life centered around what really matters: people and nature. Because the way is no other than ... undertaking for and with others ;-)

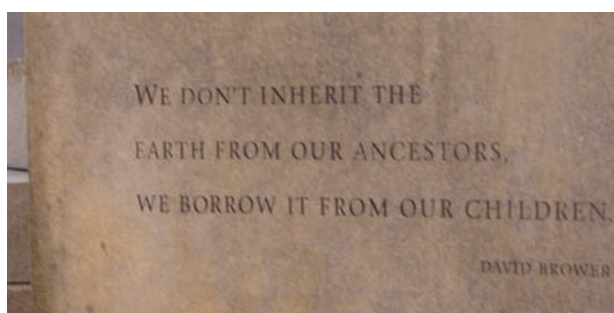
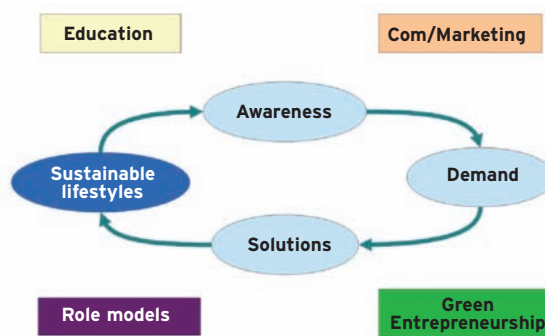


Figure 1-1. Inscription engraved at the UN Plaza, San Francisco (USA), reading an ancient Indian proverb: "We don't inherit the Earth from our ancestors, we borrow it from our children."

But no need to worry, our dear friend, solutions are already shaping up and a new society, grounded on mutual respect, solidarity and collaboration, is emerging from underneath. You just need to look closely enough and find/launch your own initiative to join the movement. From the **Regional Activity Centre for Sustainable Consumption and Production (SCP/RAC)**, an intergovernmental organization within the United Nations Environment Program (UNEP) umbrella and under the Barcelona and Stockholm conventions, we firmly support this vision and, we have committed ourselves to contributing to the cause within our realm of action -The Mediterranean Action Plan countries (MAP)- by envisioning, facilitating and promoting change towards a sustainable socio-economic model in the region.

Building on this view, the current world-wide line of thought, as displayed at the recent Earth Summit (Rio+20), recommends to focus on improving citizen lifestyles towards sustainability, just as it is our individual consumption and living patterns that drive and shape production and economic trends and, in turn, social and environmental balance. Consequently, in pursuit of the above mission, SCP/RAC's overarching goal is to contribute to the materialization and mainstreaming of sustainable lifestyles among the Mediterranean population. For that purpose, several mechanisms have been identified as the most effective, directly becoming our objectives:

- To facilitate a **multi-stakeholder co-creation** process aimed at defining sustainable lifestyles, locally in each MAP country.
- To boost **green entrepreneurship** as a seed to a regenerated business world, as well as a fairer and more democratic and cohesive society.
- To foment the use of **ecodesign** methodologies as a way to both re-think the environmental practices of businesses ("greening") and maximize the environmental value they create (environmental value creation).
- To promote **sustainable consumption patterns** (SCP) among civil society in order to generate markets for green businesses to flourish and to foster sustainable lifestyles in general.
- To **communicate and spread the word** on successful business cases (promoting green entrepreneurs), as well as encourage the use of the solutions developed (green products/services and sustainable consumption mechanisms), as essential building blocks to raise awareness and mainstream the sustainable lifestyles pursued.



**Figura 1-2.** The Circular Road to Sustainability. Cyclical diagram depicting an iterative process aiming at mainstreaming sustainable lifestyles: through awareness raising we can create a demand for sustainable solutions, to be designed by green entrepreneurs, that will pave the way for sustainable lifestyles, thus increasing overall awareness and closing the loop heading to a better world. Education, communication and marketing, green entrepreneurship and role models are all valuable tools at our disposal to effectively act upon the different stages of the process.

As a cross-sectoral action line covering all those objectives, SCP/RAC aims to create and strengthen a **Mediterranean network of green entrepreneurs**, in collaboration with our local partners in each of the MAP countries as well as a number of international collaborators. Several field studies conducted on the state of the art of green entrepreneurship in various MAP countries (Spain, Egypt, Italy, Tunisia, Montenegro and Lebanon so far, with the 21 of them to come) have shown that a network of "hubs" of and for green entrepreneurs, with both physical and virtual support, certainly represents a very effective building block to take this new breed of entrepreneurship to the next level in the Mediterranean, as a vehicle for a more sustainable future. In accordance, SCP/RAC is pushing for the co-creation, together with our stakeholders (local and international partners, green entrepreneurs, trainers, public administrations...), of a network where each point, or local hub, is able to offer, through a holistic view, the best-fitting package (adapted to specific local needs and conditions) of the following resources and services for local entrepreneurs:

1. **Physical spaces** (entrepreneurship centers), as well as virtual platforms (online communities), that favor collaborative work among entrepreneurs (co-working).
2. Links with **eco-communities** (citizens and civil society organizations) of potential customers and beneficiaries for the entrepreneurship projects.
3. **Networking** through events and activities that bring entrepreneurs together and facilitate the development of synergies among them.
4. **Exchange of good/bad practices** by sector and about green entrepreneurship in general.
5. **Training, advising and follow-up** on tools and methodologies (this guide) to undertake sustainable projects in a successful manner.
6. Access to **responsible sources of finance** the likes of ethical banks, socially responsible investors and business angels, sustainable funds, etc.

This and no other is our task and hand at SCP/RAC and, on its regard, we would like to encourage all of you interested to contact us and hopefully we will embark together on this beautiful journey along our dear Mediterranean, direction the Green Land.



## Un réseau d'entrepreneurs verts pour une Méditerranée durable

Enrique de Villamore Martín

Directeur

Centre d'Activités Régionales pour la Consommation et la Production Durables

«**N**ous nous trouvons à un moment déterminant de l'histoire de la Terre, le moment où l'humanité doit décider de son avenir [...] Pour évoluer, nous devons reconnaître que [...] nous formons une seule humanité et une seule communauté sur Terre partageant une destinée commune. Nous devons unir nos efforts pour donner naissance à une société mondiale durable, fondée sur le respect de la nature, les droits universels de l'être humain, la justice économique et une culture de la paix. Dans ce but, il est impératif que nous, les peuples de la Terre, déclarions notre responsabilité les uns envers les autres, envers la communauté de vie ainsi qu'envers les générations futures.» *The Way Forward (Charte de la Terre)*

Oui, nous nous trouvons à un carrefour déterminant dans le temps, sans doute le plus important de l'histoire de notre espèce, à la fin d'un modèle, d'un rêve peut-être. Un rêve qui nous a conduit, parfois inconscients des conséquences, à diffuser et à accroître nos habitudes de consommation sans limite pendant un certain temps. Nous avons simplement pensé avoir «le ciel pour seule limite», selon l'adage du rêve américain. Mais tout vient à sa fin et il semble que nous atteignons maintenant les limites de ce modèle, en les touchant presque du doigt. C'est à nous et à personne d'autre de prendre la décision de dépasser ces limites pour nous diriger vers un monde imprévisible sur le déclin ou bien de changer profondément nos valeurs et nos habitudes. La tâche à accomplir est titanesque, mais pas impossible, pas du tout. La sortie passe par le changement qui amène le changement, en prenant l'initiative, chacun et chacune d'entre nous, d'améliorer nos propres petits mondes dans notre travail et dans la vie quotidienne ; et de le faire pour et avec les autres, en incluant ceux qui viendront après nous.

Nous le voyons et l'éprouvons tous les jours, partout : des manifestations et des protestations montrant des troubles sociaux et le mécontentement à travers le monde, des catastrophes naturelles sans précédent, des étés extrêmement chauds qui se prolongent en automne, l'extinction d'espèces à un rythme alarmant (phénomène déjà appelé par beaucoup «la sixième extinction massive»), etc. Une simple observation de notre environnement (au niveau micro ou macro) révèle rapidement les causes qui se cachent derrière ces conséquences bien connues. Dans le domaine social : 80 % des ressources mondiales se trouvent entre les mains de 20 % de la population (aux États-Unis 1 % de la population contrôle 42 % du capital financier), plus d'un milliard de personnes vivent sous le seuil de pauvreté (dont 70 % sont des femmes) et elles sont tout aussi nombreuses à ne pas avoir accès à l'eau potable ou à l'assainissement. En Espagne, nous avons malheureusement dépassé divers seuils socialement dramatiques tels que les 5 millions de chômeurs, les 10 millions de pauvres ou un taux de chômage des jeunes de 43 %. Dans le domaine de l'environnement, nous vivons dans un monde avec plus de dioxyde de carbone dans l'atmosphère (391 ppm) que jamais auparavant en 500 000 ans (jamais l'*Homo Sapiens* n'a habité un monde de ce genre), des espèces migrent de l'équateur à des latitudes plus froides à une vitesse de 20 cm/h, souvent nos villes dépassent dangereusement les niveaux de pollution recommandés, etc.

## Una red de ecoemprendería por un Mediterráneo sostenible

Enrique de Villamore Martín

Director

Centro de Actividad Regional para el Consumo y la Producción Sostenible

«**E**stamos en un momento crítico de la historia de la Tierra en el cual la humanidad debe elegir su futuro. [...] Para seguir adelante debemos reconocer que [...] somos una sola familia humana y una sola comunidad terrestre con un destino común. Debemos unirnos para crear una sociedad global sostenible fundada en el respeto hacia la naturaleza, los derechos humanos universales, la justicia económica y una cultura de paz. En torno a este fin, es imperativo que nosotros, los pueblos de la Tierra, declaremos nuestra responsabilidad unos hacia otros, hacia la gran comunidad de la vida y hacia las generaciones futuras.» *El Camino hacia delante. (La Carta de la Tierra)*

Sí, nos encontramos en una encrucijada, quizás la mayor en la historia de nuestra especie, al final de un modelo, de un sueño quizá. Un sueño que nos lleva, a veces inconscientes de las consecuencias, a expandir y aumentar nuestros patrones de consumo de materiales a nuestro antojo por un tiempo. Simplemente pensamos que "únicamente el cielo era el límite", como prometía el denominado sueño americano. Pero todo acaba y parece que estamos alcanzando dichos límites, casi podemos tocarlos. Depende de nosotros y de nadie más que los excedamos y nos dirijamos hacia un mundo decadente e impredecible, o cambiemos profundamente nuestros valores y hábitos. Las tareas son hercúleas pero no imposibles. El camino pasa por liderar el cambio desde el mismo cambio, tomando la iniciativa para mejorar nuestros pequeños mundos, cada uno y todos nosotros, en nuestros trabajos y vidas diarias. Y hacerlo por y con otros, incluyendo aquellos que vendrán tras nosotros.

Podemos ver y sentir cada día en todas partes: manifestaciones y protestas mostrando malestar e insatisfacción social en todo el mundo; catástrofes naturales sin precedentes, veranos sofocantes, que se extienden hasta bien entrado el otoño, extinción de especies de forma alarmante (ya se llama por muchos como "la sexta extinción masiva"), etc. Una simple mirada a nuestros alrededores (a nivel micro y macro) revela rápidamente las causas detrás de las conocidas consecuencias. En el ámbito social: el 80% de los recursos mundiales se encuentran en el 20% de la población (en Estados Unidos el 1% de la población controla el 42% del capital financiero), más de un billón de gente vive bajo la línea de pobreza (70% de los cuales son mujeres) y muchos no tiene acceso a agua potable o sistemas de saneamiento. En España, hemos sobrepasado lamentablemente varias barreras sociales como 5 millones de desempleados, 10 millones de pobres o 43% de tasa de desempleo juvenil. En relación al medio ambiente, vivimos en un mundo con más dióxido de carbono en la atmósfera (391 parte por millón en el momento de la encuesta) que en cualquier período desde hace más de 500.000 años (cuando el *homo sapiens* no habitaba el mundo, las especies migraban del ecuador a latitudes más frías a una tasa de 20 cm/h), nuestras ciudades se acercan a los niveles máximos de contaminación recomendada, etc.

Les symptômes sont clairs, comme l'est le diagnostic : nous sommes confrontés à l'impérieuse nécessité de changer le tissu socio-économique actuel, totalement incapable de relever les défis de nos jours (les inégalités sociales et les déséquilibres de l'environnement). En d'autres termes, il faut fomentier l'esprit d'entreprise en tant que pilote pour changer de direction. Mais un type d'entrepreneuriat différent cette fois-ci, loin des «emplâtres» mis en place au cours des dernières années pour tenter de tenir ensemble le château de cartes de l'ancien modèle. La crise que nous vivons n'est pas une simple «bosse au sein d'un cycle économique», mais plutôt une crise systémique, celle d'un modèle relationnel entre nous, êtres humains, avec la biosphère et, aussi difficile que ce soit à accepter, de nos propres valeurs et modes de vie personnels. Le type d'entrepreneuriat qui nous mènera vers la sortie (et à un nouveau départ) doit être différent, sinon nous retomberons dans notre propre piège. Il doit prendre ses racines sur les principes de la responsabilité sociale et de la durabilité, émerger du cœur des valeurs humaines et favoriser une action du type «diriger par l'exemple» : un engagement à contribuer de manière individuelle et collective.

Le cheminement ne sera pas aisé, car les obstacles réels que les entrepreneurs responsables rencontrent sur leur chemin sont nombreux, aussi bien sur le plan économique (incertitude, soutien financier insuffisant, réglementation favorisant les grandes entreprises...) et social (rejet d'une certaine partie de la société qui, intrinsèquement, vise la stabilité à vie, une utopie de nos jours...), qu'au niveau environnemental (les «investissements verts» traités comme secondaires avec l'excuse de la crise, le «greenwashing»...).

En Espagne, par exemple, le pourcentage d'entrepreneurs est encore incroyablement bas (sur le plan professionnel et non, heureusement, sur le plan personnel où nous sommes encore très actifs socialement puisque notre sang latin fait toujours des merveilles), conséquence de la non-existence de l'enseignement et de la promotion de l'esprit d'entreprise au cours des années de formation de base. Nous devons inverser cette tendance et permettre à nos jeunes de sortir de l'université, ou de toute formation équivalente, rempli d'un désir enthousiaste d'entreprendre leurs propres rêves de manière personnelle (innovation). Et pour cela, ils sont largement demandeurs d'un enseignement adapté et de modèle de comportement dont s'inspirer.

Nous avons besoin d'une société pleine d'entrepreneurs responsables, des héros sociaux et environnementaux, des citoyens anonymes, mais entièrement dévoués, tous unis sous le même drapeau, celui de l'Humanité et luttant pour la même cause, la nôtre. Cette philosophie, traduite au monde des affaires, implique une économie de micro-entreprises, de petites équipes, souples, collaborant dans le cadre de réseaux, à la recherche du bien commun. Parce que nous n'avons pas besoin de reproduire en nous-mêmes, et encore moins dans nos organisations, la prétendue nécessité de «croissance pour la croissance» que le système agonisant prêche de manière si conventionnelle. Nous avons besoin d'un monde à la distance de nos bras, un monde à l'échelle humaine. Parce que la durabilité est en réalité intrinsèquement liée à cette petite chose précieuse que nous recherchons : le vrai bonheur, le bonheur partagé. Le bonheur enraciné dans une vie simple centrée sur ce qui compte vraiment : les gens et la nature. Parce que la voie n'est autre que l'engagement pour et avec les autres ;-)

Mais ne vous inquiétez pas, cher ami, des solutions sont déjà annoncées et une nouvelle société fondée sur le respect, la solidarité et la collaboration mutuelle émerge progressivement. Vous avez juste besoin de regarder d'assez près et de trouver/lancer votre propre initiative pour rejoindre le mouvement. Au sein du Centre d'Activités Régionales pour la Production Propre (CAR/CPD), une organisation intergouverne-

Los síntomas son tan claros como el diagnóstico: nos enfrentamos a la necesidad urgente de cambiar la situación socio-económica actual, totalmente incapaz de responder a los desafíos de nuestros días (las desigualdades sociales y los desequilibrios ambientales). En otras palabras, hay que fomentiar el espíritu empresarial como motor de cambio. Sin embargo, se necesita en esta ocasión una raza diferente de empresarios, lejos de los "parches" que se han puesto durante los últimos años en un intento de mantener unida la casa de naipes del antiguo modelo. La crisis que vivimos no es un mero "bache dentro de un ciclo económico", sino más bien una crisis sistémica, la de un modelo relacional entre nosotros, los seres humanos, con la biosfera y, aunque sea difícil de aceptar, de nuestros propios valores y estilos de vida personales. El tipo de empresarios que nos llevará hasta la puerta de salida (y nuevo comienzo) deben ser diferentes o de lo contrario caeremos de nuevo en nuestra propia trampa. Debe tener sus raíces en los principios de sostenibilidad y responsabilidad social, emerger desde el corazón de los valores humanos y fomentar acciones que prediquen con el ejemplo. Un compromiso para contribuir desde la primera persona de las formas en singular y plural.

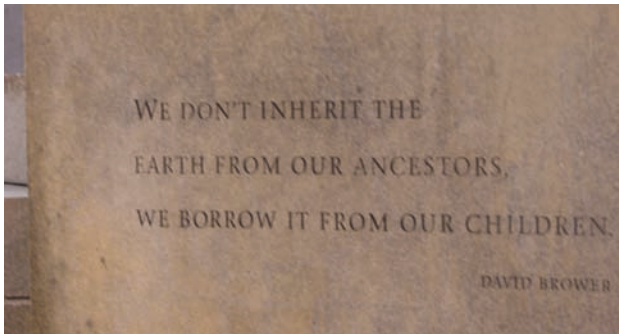
El camino no será fácil, ya que los verdaderos obstáculos que los empresarios responsables se encontrarán son numerosos, tanto en lo económico (incertidumbre, falta de apoyo financiero, normativa que beneficia a las grandes empresas...); social (rechazo de cierta parte de la sociedad que busca estabilidad, una utopía en nuestros días...); y ambiental ("inversiones verdes" consideradas como algo secundario con la excusa de la crisis, "enverdecimiento o lavado verde"...)

En España, por ejemplo, el porcentaje de empresarios sigue siendo muy bajo (profesionalmente hablando y, por suerte, no en un terreno personal donde somos todavía muy activos socialmente, nuestra sangre latina hace todavía maravillas), como resultado de una educación y promoción del espíritu empresarial inexistente a lo largo de los años de formación básica. Necesitamos convertir esta tendencia y permitir a nuestros jóvenes que salen de la universidad, o formación equivalente, llenos de deseos realizar sus sueños a su manera (innovación). Y para ello, ellos demandan una educación a medida así como modelos de conducta a seguir.

Necesitamos una sociedad llena de empresarios responsables, de héroes sociales y ambientales, de ciudadanos anónimos pero comprometidos, todos unidos bajo la misma bandera - la humanidad- y luchando por la misma causa, la nuestra. Esta filosofía, trasladada al mundo de los negocios, implica una economía de micro empresas, de equipos pequeños pero flexibles, trabajando en colaboración a través de redes, en busca de un bien común. Porque no es necesario reproducir en nosotros mismos, y mucho menos en nuestras organizaciones, la supuesta necesidad de "crecer por crecer" que predica el sistema agonizante actual. Necesitamos un mundo cercano, al alcance de nuestras manos, un mundo a escala humana. Porque la llamada sostenibilidad está intrínsecamente vinculada a una pequeña cosa que todos buscamos: la verdadera felicidad, la compartida. Aquella que está enraizada en una vida simple centrada en lo que importa realmente: las personas y la naturaleza. Porque el camino nos es otro que... el compromiso para y con los demás ;-)

Pero no hay que preocuparse, querido amigo, las soluciones ya están tomando forma y una nueva sociedad, basada en el respeto, solidaridad y colaboración, está surgiendo. Sólo necesitas mirar de cerca y encontrarás/lanzarás tu propia iniciativa para unirse al movimiento. Desde el Centro de Actividad Regional para la Producción Limpia (CAR/CPS), una organización intergubernamental dentro del Programa





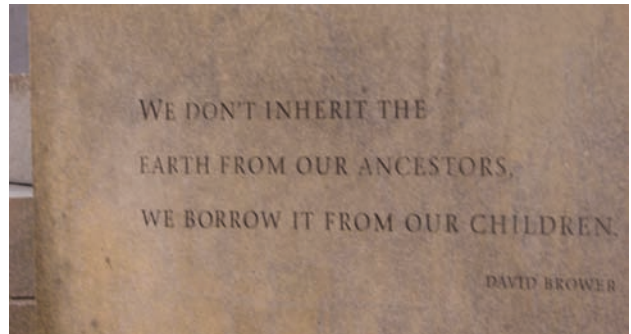
**Figure 1-1.** Inscription gravée sur la Place des Nations Unies, San Francisco (États-Unis), reprenant un vieux proverbe indien : «Nous n'héritons pas la Terre de nos ancêtres, nous l'empruntons à nos enfants.»

mentale au sein du Programme des Nations Unies pour l'Environnement (PNUE) et sous l'égide des conventions de Barcelone et de Stockholm, nous soutenons fermement cette vision et nous nous sommes engagés pour cette cause dans notre domaine d'action : les pays du Plan d'Action pour la Méditerranée (PAM) en faisant en sorte de visualiser, de faciliter et de promouvoir le changement vers un modèle socio-économique durable dans la région.

S'appuyant sur ce point de vue, la ligne de pensée actuelle dans le monde entier, telle que présentée lors du récent Sommet de la Terre (Rio +20), recommande de se concentrer sur l'amélioration des modes de vie des citoyens vers la durabilité, puisque ce sont notre consommation individuelle et notre mode de vie qui dirigent et façonnent la production et les tendances économiques et, donc, l'équilibre social et environnemental. Par conséquent, dans la poursuite de la mission ci-dessus, l'objectif primordial du CAR/CPD est de contribuer à la concrétisation et à l'intégration des modes de vie durables au sein de la population méditerranéenne. Pour ce faire, plusieurs mécanismes ont été identifiés comme les plus efficaces et sont devenus nos objectifs :

- Faciliter un **processus de création en commun multipartite** visant à définir, localement dans chaque pays du PAM, des modes de vie durables.
- Stimuler l'**entrepreneuriat vert** comme une semence pour un monde d'affaires régénéré ainsi qu'une société plus juste et plus démocratique et solidaire.
- Fomentar l'utilisation de méthodologies **d'éco-conception** comme un moyen de repenser les pratiques environnementales des entreprises («verdissement») et d'optimiser la valeur environnementale qu'ils créent (création de valeur environnementale).
- Promouvoir des **modes de consommation et la Production (SCP)** dans la société civile en vue de créer des marchés pour les entreprises vertes et de développer et promouvoir des modes de vie durables en général.
- **Communiquer et diffuser l'information** des cas d'entreprises ayant réussi (promotion des entrepreneurs verts) et encourager l'utilisation des solutions développées (produits/services et mécanismes de consommation durables), en tant qu'éléments essentiels à la prise de conscience et pour intégrer les modes de vie durables recherchés.

Comme une ligne d'action intersectorielle couvrant l'ensemble de ces objectifs, le CAR/CPD vise à créer et renforcer un réseau **méditerranéen d'entrepreneurs verts**, en collaboration avec nos partenaires locaux dans chacun des pays du PAM et des collaborateurs internationaux. Plusieurs études de terrain menées sur l'entrepreneuriat vert dans divers pays du PAM (Espagne, Égypte, Italie, Tunisie, le Monténégro et le Liban jusqu'à présent,



**Figure 1-1.** Inscripción grabada en la Plaza de Naciones Unidas, San Francisco (USA), que recoge un antiguo proverbio indio: "No heredamos la tierra de nuestros ancestros, la tomamos prestada de nuestros hijos"

de Naciones Unidas para el Medio Ambiente (PNUMA) y bajo los Convenios de Barcelona y Estocolmo, apoyamos firmemente esta visión y, nos comprometemos a contribuir a la causa dentro de nuestro campo de acción - Plan de Acción para el Mediterráneo (PAM) - previendo, facilitando y promoviendo el cambio hacia un modelo socio-económico sostenible en la región.

Partiendo de este punto de vista, la actual corriente mundial de ideas, como se muestra en la reciente Cumbre de la Tierra (Río+20), recomienda centrarse en mejorar los estilos de vida de los ciudadanos hacia la sostenibilidad, nuestro consumo individual y patrones de vida que impulsan y conforman la producción y las tendencias económicas y, a su vez, el equilibrio social y medioambiental. Por lo tanto, en la consecución de la misión anterior, el objetivo general del CAR/CPS es contribuir a la materialización y la incorporación de modos de vida sostenibles en la población mediterránea. A tal efecto, se han identificado varios mecanismos, como los más efectivos, convirtiéndose directamente en nuestros objetivos:

- Facilitar un **proceso de co-creación en la que participen** todas las partes interesadas para definir estilos de vida sostenibles, localmente en cada país del PAM.
- Impulsar la **ecoemprededuría** como la semilla que permita regenerar el mundo empresarial, así como una sociedad más justa, más democrática y cohesionada.
- Fomentar el uso de metodologías **de ecodiseño** como una forma tanto de repensar las prácticas ambientales en los negocios ("ecologización") y maximizar el valor ambiental que éstos generan (creación de valor ambiental).
- Promover **patrones de consumo sostenibles (PCS)** de la sociedad civil con el fin de generar mercados en los que las empresas verdes puedan prosperar y para fomentar estilos de vida sostenibles en general.
- **Comunicar y difundir ejemplos** de casos de negocios exitosos (promoción de ecoempresarios), así como fomentar el uso de las soluciones desarrolladas (productos/servicios verdes y mecanismos sostenibles de consumo), como elementos esenciales para dar a conocer e incorporar los estilos de vida sostenibles que se persigue.

Como línea de acción intersectorial cubriendo todos los objetivos, el CAR/CPS tiene como objetivo crear y fortalecer una **red mediterránea de ecoemprededores**, en colaboración con nuestros socios locales en cada uno de los países del PAM, así como una serie de colaboradores internacionales. Se han realizado varios estudios de campo sobre el estado del arte de la iniciativa empresarial verde en los diferentes países del PAM (España, Egipto, Italia,

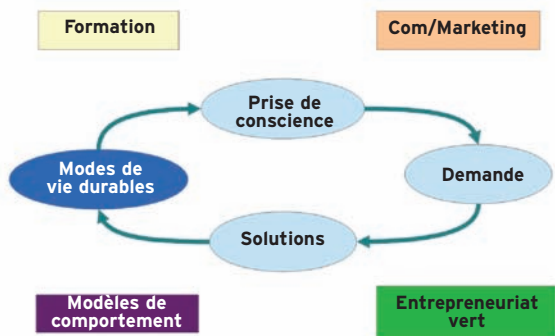


Figure 1-2. La route circulaire de la durabilité. Schéma cyclique représentant un processus itératif visant à intégrer les modes de vie durables: par la sensibilisation, nous pouvons créer une demande pour des solutions durables, qui seront conçues par des entrepreneurs verts, qui ouvriront la voie à des modes de vie durables, augmentant ainsi la prise de conscience générale et en bouclant la boucle en direction d'un monde meilleur. Modèles d'éducation, de communication et de marketing, l'entrepreneuriat vert et les modèles de comportement sont autant d'outils précieux à notre disposition pour agir efficacement au cours des différentes étapes du processus.

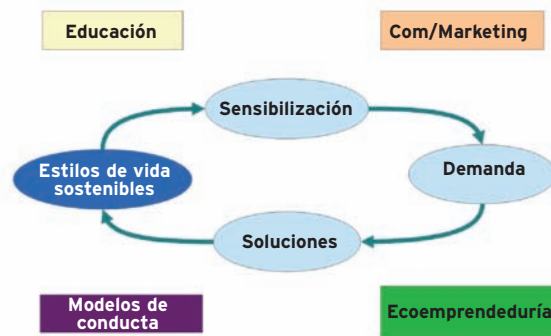


Figura 1-2. El Círculo hacia la sostenibilidad. Esquema cíclico que representa un proceso iterativo destinado a la incorporación de estilos de vida sostenibles: a través de la sensibilización, podemos crear una demanda de soluciones sostenibles, que será diseñado por los ecoempresarios, que allanar el camino para estilos de vida sostenibles, lo que aumenta la conciencia y cierra el ciclo que lleva a un mundo mejor. Los modelos de educación, comunicación y marketing, el espíritu empresarial y modelos verdes son valiosas herramientas a nuestra disposición para actuar con eficacia en las diferentes etapas del proceso.

avec 21 d'entre eux à venir) ont montré qu'un réseau de «pôles» de et pour les entrepreneurs verts, avec un soutien à la fois physique et virtuel, représente certainement un élément de base très efficace pour mener ce nouvel esprit d'entreprise au niveau suivant en Méditerranée, tel un moteur pour un avenir plus durable. Conformément à ceci, le SCAR/CPD, en collaboration avec les parties prenantes (partenaires locaux et internationaux, des entrepreneurs verts, formateurs, administrations publiques...), pousse à la création d'un réseau où chaque point ou pôle local serait en mesure d'offrir, grâce à une vision globale, un ensemble adapté (correspondant aux conditions et besoins locaux spécifiques) de ressources et de services pour les entrepreneurs locaux :

1. Des **espaces physiques** (centres d'entrepreneuriat) ainsi que des plates-formes virtuelles (communautés en ligne) qui favorisent la collaboration entre les entrepreneurs (travail en commun).
2. Liens avec les **éco-communautés** (les citoyens et les organisations de la société civile), des clients potentiels et des bénéficiaires pour les projets d'entrepreneuriat.
3. **Réseaux de contacts** à travers des événements et des activités qui rassemblent les entrepreneurs et facilitent le développement des synergies entre eux.
4. **Échange de bonnes/mauvaises pratiques** par secteur et sur l'entrepreneuriat vert en général.
5. **Formation, conseil et suivi** sur les outils et méthodologies (ce guide) pour entreprendre des projets de développement durable de manière efficace.
6. L'accès à des **sources de financement responsables** comme des banques éthiques, des investisseurs socialement responsables et des «business angels», des fonds durables, etc.

Ceci et rien d'autre est notre tâche au sein du CAR/CPD et, à cet égard, nous aimerions vous encourager tous à nous contacter et nous espérons pouvoir entreprendre ensemble ce beau voyage le long de notre chère Méditerranée, en direction du Pays Vert. ■

Túnez, Montenegro et el Líbano hasta el momento, y 21 pendientes) han demostrado que una red de "centros" de y para los ecoemprededores, con el apoyo tanto físico como virtual, sin duda representa un elemento muy eficaz para aprovechar esta nueva clase de espíritu empresarial al siguiente nivel en el Mediterráneo, como un vehículo para un futuro más sostenible. De acuerdo con ello, el SCAR/CPS está presionando para la co-creación, junto con las partes interesadas (socios locales e internacionales, ecoempresarios, instructores, administraciones públicas...), de una red en la que cada punto o centro local, es capaz de ofrecer, a través de una visión integral, el paquete que mejor se ajusta (adaptado a las necesidades locales específicas y condiciones) de los siguientes recursos y servicios para los empresarios locales:

1. Los **espacios físicos** (centros de iniciativa empresarial), así como **plataformas virtuales** (comunidades en línea), que **favorecen el trabajo en colaboración** entre los empresarios (*cooperación*).
2. Vínculos con **eco-comunidades** (ciudadanos y organizaciones de la sociedad civil) de los clientes potenciales y los beneficiarios de los proyectos empresariales.
3. **Creación de redes** a través de eventos y actividades que unen a los empresarios y facilita el desarrollo de sinergias entre ellas.
4. **Intercambio de buenas/malas prácticas** por sector y sobre ecoemprededuría en general.
5. **Formación, asesoramiento y seguimiento** de las herramientas y metodologías (esta guía) para llevar a cabo proyectos sostenibles de una manera exitosa.
6. El acceso a fuentes responsables de la financiación de la talla de los bancos éticos, los inversores socialmente responsables y los inversores informales (*business angels*), fondos sostenibles, etc.

Esta es nuestra tarea en el CAR/CPS y, en este sentido, nos gustaría animar a todos los que estén interesados en contactar con nosotros y esperamos que nos embarcemos juntos en este hermoso recorrido por nuestro querido Mediterráneo, en dirección a la Tierra Verde. ■

# Sustainable Entrepreneurship: a mechanism of sustainable consumption and production towards a Green Economy

**Georgina Guillen**

Consultant Secretariat

UNEP / Wuppertal Institute  
Collaborating Centre on  
Sustainable Consumption and  
Production

Hagenauer Strasse 30  
42107 Wuppertal, Germany  
Tel.: +49 202 4595810  
Fax: +49 202 4595831  
ginnie.guillen@scp-centre.org  
www.scp-centre.org

## Summary

**M**ore than a challenge, the initiatives to address the issues related to sustainable consumption and production present a unique opportunity for leveraging innovation, creativity and stakeholder engagement worldwide. Through strategic partnerships, networking activities, knowledge building and mainstreaming, innovation and diffusion, the UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP) aims to contribute to the global efforts towards sustainable livelihoods. Encompassing research with hands-on approach, the CSCP focuses its activities on Sustainable Entrepreneurship, Sustainable Lifestyles and Sustainable Products, interrelated areas that represent a niche for social innovation to flourish and enable the means to develop a thriving green economy.

## Keywords

*Sustainable Consumption and Production, Sustainable Entrepreneurship, Sustainable Lifestyles, Social Innovation, Creativity, Education, Green Economy.*

## Sustainable Consumption and Production - from intentions to actions

When the importance of consumption and production patterns was raised on the agenda of the World Summit on Sustainable Development in 2002, the intention to engage all societal actors in efforts towards identifying practices and opportunities within existing conditions of consumption and production also opened the door to cooperation for innovation and improvement of livelihoods worldwide.

The UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP) was born with the intention of providing scientific support to activities on the field of Sustainable Consumption and Production (SCP) undertaken by the UNEP and other organizations worldwide. Its approach comprises: multi-stakeholder engagement, development of tools, methodologies and instruments and advancing communication and dissemination of SCP activities. With a life cycle thinking, interactive and creative solutions, the CSCP uses the latest scientific papers, technological developments and global trends monitoring to identify, develop and improve sustainability methodologies and tools that foster innovation for prosperous and sustainable solutions to today's global challenges and ultimately leading to a Green Economy.

The overarching nature of consumption and production patterns and social dynamics, allow the CSCP and its partners to build capacity for a better future, establish new infrastructures to support sustainable innovations and encourage bottom-up participative models; through its intersectoral approach, the CSCP en-

*courages and supports cross-pollination of expertise and knowledge from governments, businesses, civil society and academia, thus, the programs and projects hereby highlighted demonstrate how integrating environmental, social, economic and cultural concerns into decision-making and common solution creation, is possible.*

*In order to generate and share information, contribute to knowledge and engage societal stakeholders in active dialogue and action, the CSCP focuses its activities on three strategic areas: Lifestyles, Entrepreneurship and Products. These areas are inclusive and mutually reinforcing, hence, it is possible to leverage on the synergies between production and consumption practices identified during the planning and execution of the programmes and projects the CSCP organises or partakes on.*

### **Sustainable Entrepreneurship towards Sustainable Lifestyles**

*The concept of sustainable lifestyles refers to patterns of behaviour shaped by personal needs, desires, motivations and social interactions, conditioned by environmental and socio-economic contexts that aim at improving well-being and health of present and future generations. Innovation lies within the process of shifting lifestyles because this process implies to rethink current systems that are driving unsustainable trends of ecological concern and unequal human development. There is significant potential in the development of social innovations that will help people to adopt more sustainable lifestyles, and thus, bridge the gaps between current unsustainable production/consumption-as-usual trajectories and the visions for sustainable futures that recent research has mapped out.*

*While technological innovations and efficiencies in industrial production must play a significant role for improving current living conditions, vast changes will also be required to individual consumption and lifestyles to make them more sustainable. Entrepreneurs, policy-makers, civil society organisations, innovators, inventors and intrapreneurs who dare to address these gaps in the market and in society with their creativity and foresight need to find a space where their agendas can meet and facilitate the emergence of collaborative efforts. Beyond creating statements, the determination to lead sustainable lifestyles requires an active approach with constant improvement, measurement and commitment from all stakeholders involved.*

*Creativity, innovation, partnerships, knowledge creation and dissemination are milestones to all the activities the CSCP develops, below are presented three of the flagship programmes that are exemplifying the development and impact of SCP activities.*

### **Sustainable Entrepreneurship: from the idea to the business model - the SMART Start-up Training Programme**

*Designed and developed as a project for the Marrakech Taskforce on Sustainable Lifestyles, led by the Swedish government, the CSCP's "SMART Start-up" training programme had the objectives of building knowledge on Sustainable Entrepreneurship and supporting the development of innovations through new, competitive business models for engaging individual actions with other actors of society.*

The training programme addresses more than creativity for innovation and entrepreneurship on a general level, it dwells on honing personal skills, motivation and empowerment while constructing bridges between stakeholders that pursue and support sustainable, entrepreneurial ventures. Because of its nature, the SMART Start-up training programme can be tailored to boost innovation within a particular industry, such as the current experience with ICT. With its original and flexible approach that integrates traditional educational structures, hands-on methodologies and interactive workshops, the SMART Start-up training programme provides tools, concepts, methodologies and means to support individual efforts towards leading sustainable lifestyles.

Since its creation in 2008, the SMART Start-up training programme has been motivating young people in Africa and Europe to seek out and develop innovative, entrepreneurial solutions to unsustainable circumstances, share knowledge, inspire and empower other individuals in their communities. In 2011, the SMART Start-up - ICT training programme took place in Africa and started to expand its reach to Asia and South America.

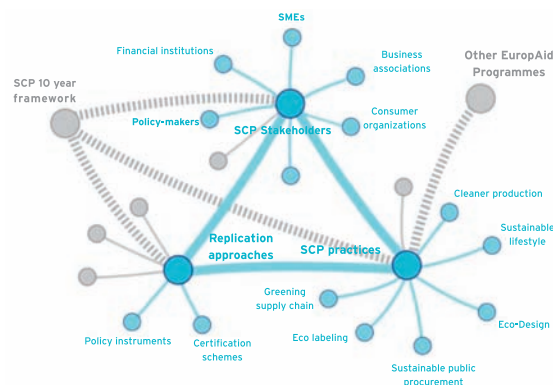
As the activities on Sustainable Entrepreneurship gain relevance on the national and international agendas, the CSCP continues exploring the “low-hanging fruits” belonging to the realm of entrepreneurship, therefore activities on intrapreneurship, networking, knowledge creation and dissemination have already been envisioned and started.

Building up on the experience gained, constant feedback for improvement, interaction and involvement of stakeholders, the CSCP launched the Sustainable Entrepreneurship Network Facility, currently available at <http://cscpnet.ning.com>

Further information regarding Sustainable Entrepreneurship and the SMART Start-up training programme can be found at: [www.sustain-entrepreneurship.org](http://www.sustain-entrepreneurship.org)

**Sustainable Entrepreneurship: From production to the improvement of lifestyles through SME's involvement - the SWITCH-Asia Network Facility**

Commissioned by the European Union's EuropeAid, the SWITCH-Asia Programme aims to promote SCP outside of Europe and focuses on promoting sustainable products, processes, services and consumption patterns in Asia. Ultimately, this programme seeks to reduce the environmental and social costs of production and consumption, enable replication of best practices across Asian countries and support the shift in policy-making processes towards sustainability.



*Set up with the objective of maximising the impact of the SWITCH-Asia Programme and its granted projects through knowledge sharing, dissemination of information and networking, the SWITCH-Asia Network Facility has been connecting SMEs across 15 countries in Asia, promoting SCP practices through 30 programmes with strong impact along the product chain and target also governments and consumers.*

*The majority of the projects emphasize on cleaner production and sustainable product design, however, other important issues such as environmental management systems, supply chain management, waste management and corporate social responsibility are also within the scope of the participating SMEs.*

*Since its creation in 2008, the Network Facility allows the review and design of replication approaches, mainly on the side of policy instruments and certification schemes, promotes practices and patterns of sustainable consumption and production, and enables a wide array of stakeholders to engage in the creation and promotion of Sustainable Entrepreneurship.*

*For more information please visit: <http://www.switch-asia.eu/>*

## **The Way Forward**

### **SPREAD - Sustainable Lifestyles paving the road towards future livelihoods**

*Reinforcing practices on Sustainable Entrepreneurship convey the development and implementation of measures and multi-partnering consortiums that support steering the research and activities impacting the change of lifestyles. Developed under the frame of the 7<sup>th</sup> Research Framework Programme of the European Commission (EU FP7), the SPREAD Sustainable Lifestyles 2050 is a joint effort of 10 pan-European organisations that pursue the development of a vision for future lifestyle models to better understand the dynamics that shape different lifestyles and can ignite the dissemination of practices and ways of living more sustainably.*

*On the mainstream of the research, the themes of sustainable living, consuming, moving, health, welfare, equity, ageing, entrepreneurship and policymaking will be addressed through the creation of future scenarios that portray social innovation, behavioural change and backcasting towards the development of action strategies for multi-sectoral stakeholders. Through dialogue and collaborative working schemes, SPREAD Sustainable Lifestyles 2050 addresses the means to shift current unsustainable behaviours by seizing opportunities for social and entrepreneurial innovation.*

**The Future on Sustainable Lifestyles and Entrepreneurship - Forum for Action on Sustainability, Entrepreneurship and Innovation**, the un-conference organized by the CSCP and the SPREAD consortium, marked the official launch of the SPREAD 2050 platform. The interactive 2-day agenda was developed on the milestones of: *Inspiration and Discovery on the individual level and ideation, co-creation and action planning to identify, plan and engage in the activities towards a common future. Besides innovative hosting techniques, high-profile keynote speeches, dynamic workshops and proactive networking, the dual lifestyles/entrepreneurship agenda was reinforced by the "Market Place" the demonstration centre, where innovative, sustainable enterprises and organizations had the opportunity to introduce their products and services.*

*For a better overview of the forum please visit: <http://www.future-lifestyles-entrepreneurship.org/index.html>. The SPREAD Sustainable Lifestyles 2050 community is available at: [www.sustainable-lifestyles.eu/community](http://www.sustainable-lifestyles.eu/community)*

*Social innovations, understood as the means to developing solutions and new forms of organization and interaction to tackle social issues, become real when alliances for sustainable entrepreneurship arise, and, in through systemic, all-encompassing processes, allow inclusion, participation and, ultimately, a social shift to sustainable livelihoods.*

*Each of the programs, projects and activities hitherto briefly described, highlight the nature of multi-stakeholder partnerships that nurture social innovation and support paving the road towards activating a Green Economy. Governments, organized civil society, businesses of all sorts and sizes and individuals alike should engage in processes that enable rethinking our current living patterns and their contribution to our un-sustainability and acting to shift them. ■*

## L'entrepreneuriat durable : un mécanisme de consommation et de production durables vers une économie verte

Georgina Guillen

### Résumé

Plus qu'un défi, les initiatives visant à régler les problèmes liés à la consommation et à la production durables offrent une occasion unique de tirer parti de l'innovation, de la créativité et de l'engagement des parties prenantes du monde entier. À travers des partenariats stratégiques, la création de réseaux de contacts, le renforcement des connaissances et l'intégration, l'innovation et la diffusion, le PNUE/Institut Wuppertal, Centre de Collaboration sur la Consommation et la Production Durables (CSCP, en anglais) a pour objectif de contribuer aux efforts mondiaux dédiés aux moyens de subsistance durables. En envisageant la recherche avec une approche pratique, le CSCP concentre ses activités sur l'entrepreneuriat durable, les modes de vie durables et les produits durables ; des secteurs interdépendants qui représentent un créneau pour le développement de l'innovation sociale et favorisent les moyens utiles pour développer une économie verte prospère.

### Mots-Clés

Consommation et production durables, entrepreneuriat durable, modes de vie durables, innovation sociale, créativité, éducation, économie verte.

### Consommation et production durables - Des intentions aux actes

Lorsque l'importance des modes de consommation et de production a été soulevée à l'ordre du jour du Sommet Mondial sur le Développement Durable en 2002, l'intention d'engager tous les acteurs de la société dans les efforts permettant d'identifier des pratiques et des opportunités dans les conditions actuelles de consommation et de production a également ouvert la porte à la coopération pour l'innovation et l'amélioration des moyens de subsistance à travers le monde.

Le PNUE/Wuppertal Institute, Centre de Collaboration sur la Consommation et la Production Durables (CSCP, en anglais) est né avec l'intention de fournir un appui scientifique aux activités menées par le PNUE et d'autres organisations à travers le monde dans le domaine de la consommation et de la production durables (SCP, en anglais). Son approche comprend : l'engagement multilatéral des parties prenantes, le développement d'outils, de méthodologies et d'instruments ainsi que la communication et la diffusion des activités de SCP. Avec une pensée en termes de cycle de vie ainsi que des solutions interactives et créatives, le CSCP utilise les derniers documents scientifiques, les développements technologiques et le suivi des tendances globales, pour identifier, développer et améliorer des méthodologies et des outils pour la durabilité qui encouragent l'innovation pour créer des solutions prospères et durables aux défis mondiaux d'aujourd'hui et conduisent finalement à une Économie Verte.

La nature globale de la consommation, des modes de production et de la dynamique sociale permet à la CSCP et à ses partenaires d'acquérir des capacités pour un avenir meilleur, d'établir de nou-

## Empresariado sostenible: un mecanismo de consumo y producción sostenible hacia una economía verde

Georgina Guillen

### Resumen

Más que un reto, las iniciativas para hacer frente a los problemas relacionados con el consumo y la producción sostenibles presentan una oportunidad única para impulsar la innovación, la creatividad y la participación de todos los interesados en todo el mundo. A través de alianzas estratégicas, actividades de creación de redes, la creación e integración del conocimiento, la innovación y la difusión, el centro colaborador PNUMA/Instituto Wuppertal sobre Consumo y Producción Sostenibles (CSCP) tiene por objeto contribuir a los esfuerzos mundiales para medios de vida sostenibles. Abarcando investigación con enfoque práctico, el CSCP centra sus actividades en la emprendeduría sostenible, estilos de vidas y productos sostenibles, áreas interrelacionadas que representan un nicho para la innovación social que permitirá el florecimiento y el desarrollo de los medios para desarrollar una economía verde floreciente.

### Palabras clave

Producción y consumo sostenible, emprendedores sostenibles, estilos de vida sostenible, innovación social, creatividad, educación, economía verde.

### Producción y Consumo Sostenible - de las intenciones a las acciones

Cuando la importancia de los patrones de consumo y producción se planteó en la agenda de la Cumbre Mundial sobre el Desarrollo Sostenible celebrada en 2002, la intención de involucrar a todos los actores de la sociedad en los esfuerzos hacia la identificación de prácticas y oportunidades en las condiciones actuales de consumo y producción también abrió la puerta a la cooperación para la innovación y la mejora de los medios de subsistencia en todo el mundo.

El Centro Colaborador PNUMA/Instituto Wuppertal sobre Consumo y Producción Sostenibles (CSCP) nació con la intención de proporcionar apoyo científico a las actividades relacionadas con el Consumo y Producción Sostenibles (PCS) emprendida por el PNUMA y otras organizaciones en todo el mundo. Su enfoque incluye: la participación de múltiples partes interesadas, el desarrollo de herramientas, metodologías e instrumentos de comunicación, promoción y difusión de las actividades en producción y consumo sostenible. Partiendo de la idea de ciclo de vida, las soluciones interactivas y creativas, el CSCP utiliza los últimos trabajos científicos, los desarrollos tecnológicos y las tendencias mundiales de control para identificar, desarrollar metodologías y mejorar la sostenibilidad y las herramientas que fomentan la innovación de soluciones prósperas y sostenibles para los desafíos globales de hoy en día y conducen, en última instancia, a una economía verde.

La naturaleza de los patrones de consumo y producción y la dinámica social permiten que el CSCP y sus socios desarrollen la capacidad de un futuro mejor, crear nuevas infraestructuras para



velles infrastructures pour soutenir les innovations durables et d'encourager des modèles participatifs de bas en haut. Grâce à son approche intersectorielle, le CSCP encourage et soutient la dissémination croisée de l'expertise et des connaissances des gouvernements, des entreprises, de la société civile et du monde universitaire. Par conséquent, les programmes et les projets ici présentés montrent comment il est possible d'intégrer les préoccupations environnementales, sociales, économiques et culturelles dans la prise de décisions et la création d'une solution commune.

Afin de générer et de partager des informations, de contribuer aux connaissances et d'engager les parties prenantes de la société dans un dialogue actif et dans l'action, le CSCP concentre ses activités sur trois domaines stratégiques : les modes de vie, l'esprit d'entreprise et les produits. Ces domaines s'intègrent et se renforcent les uns les autres. Il est, par conséquent, possible de tirer parti des synergies entre les pratiques de production et de consommation identifiées lors de la planification et de l'exécution des programmes et projets que le CSCP organise ou auxquels il participe.

### L'Entrepreneuriat Durable vers des Modes de Vie Durables

Le concept de modes de vie durables se réfère à des modèles de comportement modelés par les besoins personnels, les désirs, les motivations et les interactions sociales et conditionnés par des contextes environnementaux et socio-économiques qui visent à améliorer le bien-être et la santé des générations actuelles et futures. L'innovation réside dans le processus de transformation des modes de vie car ce processus implique de repenser les systèmes actuels qui sont le moteur des tendances non durables en matière écologique et du développement humain inégalitaire. Il existe un potentiel important dans le développement d'innovations sociales qui vont aider les gens à adopter des modes de vie plus durables et établir ainsi un pont entre les trajectoires actuelles non durables des modes de production/consommation habituels et les visions d'un avenir durable que la recherche récente a dessinées.

Bien que les innovations technologiques et l'efficacité de la production industrielle jouent un rôle important dans l'amélioration des conditions de vie actuelles, de grands changements dans la consommation individuelle et les modes de vie seront également nécessaires afin de les rendre plus durables. Les entrepreneurs, les décideurs politiques, les organisations de la société civile, les innovateurs, les inventeurs et les intrapreneurs qui osent aborder ces lacunes du marché et de la société avec leur créativité et prévoyance, ont besoin de trouver un espace où leurs agendas peuvent se rencontrer pour faciliter l'émergence d'efforts de collaboration. Au-delà de déclarations publiques, la détermination à mener des modes de vie durables nécessite une approche active avec des améliorations, des évaluations et un engagement constants de tous les acteurs impliqués.

La créativité, l'innovation, les partenariats, la création et la diffusion de connaissances sont des jalons importants à toutes les activités que le CSCP développe. Ci-dessous sont présentés les trois programmes phares qui illustrent le développement et l'impact des activités du SCP.

### L'Entrepreneuriat Durable : de l'idée au modèle d'entreprise - Le Programme de formation «SMART Start-up»

Conçu et développé comme un projet pour le Groupe de travail de Marrakech sur les Modes de Vie Durables, mené par le gouvernement suédois, le Programme de Formation du CSCP «SMART Start-up» a pour objectifs de renforcer les connaissances sur l'Entrepreneuriat Durable et de soutenir le développement d'innovations grâce à de nouveaux modèles d'entreprise compétitifs pour engager des actions individuelles avec les autres acteurs de la société.

apoyar las innovaciones sostenibles y fomentar modelos participativos siguiendo el enfoque abajo hacia arriba; a través de su enfoque intersectorial, el CSCP alienta y apoya la polinización cruzada de experiencia y conocimiento de los gobiernos, las empresas, la sociedad civil y el mundo académico, por lo tanto, los programas y proyectos aquí destacados demostraron cómo la integración de las preocupaciones ambientales, sociales, económicas y culturales en la toma de decisiones y la creación de una solución común, es posible.

Con el fin de generar y compartir información, contribuir al conocimiento y la participación de los interesados en un diálogo activo y realización de acciones, el CSCP centra sus actividades en tres áreas estratégicas: Estilos de vida, Iniciativas empresariales y Productos. Estas áreas son inclusivas y se refuerzan mutuamente, por lo tanto, es posible aprovechar las sinergias entre la producción y las prácticas de consumo identificados durante la planificación y ejecución de los programas y proyectos organizados o en los que participa el CSCP.

### Empresariado sostenible hacia estilos de vida sostenibles.

El concepto de estilos de vida sostenibles se refiere a los patrones de conducta determinados por las necesidades personales, deseos, motivaciones e interacciones sociales, condicionados por contextos ambientales y socio-económicos que apuntan a mejorar el bienestar y la salud de las generaciones presentes y futuras. La innovación radica en el proceso de cambio de los estilos de vida ya que este proceso implica repensar los sistemas actuales que impulsan las tendencias insostenibles de preocupación ecológica y el desarrollo humano desigual. Existe un potencial significativo en el desarrollo de innovaciones sociales que ayudarán a las personas a adoptar estilos de vida más sostenibles, y por lo tanto, a reducir las brechas entre la producción actual insostenible/trayectorias de consumo habituales, y las aspiraciones de un futuro sostenible trazadas conforme a las investigaciones recientes.

Mientras que la eficiencia y las innovaciones tecnológicas deben desempeñar un papel importante en la producción industrial para mejorar las condiciones de vida actuales, también se requerirán grandes cambios en el consumo individual y los estilos de vida para hacerlos más sostenibles. Los empresarios, los políticos, las organizaciones de la sociedad civil, innovadores, inventores y emprendedores, que se atreven a abordar estas brechas en el mercado y en la sociedad con su creatividad y visión de futuro, necesitan encontrar un espacio en el que sus programas puedan encontrar y facilitar la aparición de esfuerzos de colaboración. Más allá de la creación de declaraciones, la determinación de llevar estilos de vida sostenibles requiere un enfoque activo con la mejora continua, la medición y el compromiso de todos los actores involucrados.

La creatividad, la innovación, las colaboraciones, la creación y la difusión del conocimiento son hitos para todas las actividades desarrolladas por el CSCP, a continuación se presentan tres de los programas emblemáticos que ejemplifican el desarrollo e impacto de las actividades del PCS.

### Empresariado Sostenible: desde la idea hasta el modelo de negocio - puesta en marcha del Programa de Formación SMART

Diseñado y desarrollado como un proyecto para el Grupo de Trabajo de Marrakech sobre Estilos de Vida Sostenibles, liderado por el gobierno sueco, el programa de formación "Smart Start-up" del CSCP tiene como objetivo la construcción de conocimiento sobre la emprendeduría sostenible y el apoyo del desarrollo de innovaciones a través de nuevos modelos de negocio competitivos para involucrar a las acciones individuales con otros actores de la sociedad.

Le programme de formation aborde bien plus de sujets que la créativité pour l'innovation et l'entrepreneuriat de manière générale. Il insiste sur l'apprentissage des compétences personnelles, la motivation et la responsabilisation, tout en construisant des ponts entre les différents acteurs qui poursuivent et soutiennent les initiatives entrepreneuriales durables. Compte-tenu de sa nature, le programme de formation «SMART Start-up» peut être adapté pour stimuler l'innovation dans un secteur particulier, comme c'est le cas avec l'ICT. Avec son approche originale et flexible qui intègre les structures traditionnelles de l'éducation, les méthodologies pratiques et les ateliers interactifs, le programme de formation «SMART Start-up» fournit des outils, des concepts, des méthodes et des moyens pour soutenir les efforts individuels menant à des modes de vie durables.

Depuis sa création en 2008, le programme de formation «SMART Start-up» a motivé des jeunes en Afrique et en Europe à rechercher et à développer des solutions entrepreneuriales innovantes dans des circonstances non durables, à partager les connaissances, à inspirer d'autres personnes dans leurs communautés et à leur donner les moyens de prendre des décisions. En 2011, le Programme de Formation aux TIC «SMART Start-up» a eu lieu en Afrique et a commencé à étendre sa portée à l'Asie et l'Amérique du Sud.

Au fur et à mesure que les activités relatives à l'Eco-Entrepreneuriat gagnent en pertinence sur les agendas nationaux et internationaux, le CSCP continue à explorer les «fruits mûrs» appartenant au domaine de l'entrepreneuriat. De ce fait, des activités sur l'intrapreneuriat, le travail en réseau, la création de connaissances et la diffusion ont déjà été envisagées et ont déjà débuté.

Construit sur l'expérience acquise, le retour constant d'informations pour l'amélioration, l'interaction et la participation des parties prenantes, le CSCP a lancé le Réseau pour l'Eco-Entrepreneuriat actuellement disponible à l'adresse : <http://cscpnet.ning.com>

Des informations complémentaires concernant l'entrepreneuriat durable et le programme de formation «SMART Start-up» sont disponibles à l'adresse : [www.sustain-entrepreneurship.org](http://www.sustain-entrepreneurship.org)

### **L'Entrepreneuriat Durable : de la production à l'amélioration des modes de vie grâce à la participation de PME - Le Réseau SWITCH-Asie**

Missionné par le programme EuropeAid de l'Union européenne, le Programme SWITCH-Asie vise à promouvoir les SCP en dehors de l'Europe et met l'accent sur la promotion des produits, des processus, des services et des modes de consommation durables en Asie. En fin de compte, ce programme vise à réduire les coûts sociaux et environnementaux de la production et de la consommation, à activer la reproduction des meilleures pratiques entre les pays asiatiques et à soutenir la transformation des processus de prise de décisions vers la durabilité.

Mis en place avec l'objectif de maximiser l'impact du programme SWITCH-Asie et de ses projets subventionnés par le biais du partage des connaissances, la diffusion de l'information et le travail en réseau, le Réseau SWITCH-Asie a mis en relation les PME dans 15 pays d'Asie, en promouvant des pratiques de SCP grâce aux 30 programmes qui ont un impact fort sur la chaîne de production et sont également orientés vers les gouvernements et les consommateurs.

La plupart des projets mettent l'accent sur une production moins polluante et une conception de produits durable, cependant, d'autres questions importantes telles que les systèmes de gestion environnementale, la gestion de la chaîne d'approvisionnement, la gestion des déchets et la responsabilité sociale des entreprises sont également du champ d'application des PME participantes.

El programa de formación más que dirigirse a la creatividad para la innovación y el espíritu empresarial de manera general, busca perfeccionar las habilidades personales, la motivación y la capacitación mientras se construyen puentes entre los actores que buscan y apoyan iniciativas empresariales sostenibles. Debido a su naturaleza, el programa de formación Smart Start-up puede adaptarse para impulsar la innovación dentro de una industria en particular, como es la experiencia actual con las tecnologías de información y comunicación. Con su enfoque original y flexible que integra las estructuras educativas tradicionales, con metodologías prácticas y los talleres interactivos, el programa de formación SMART Start-up ofrece herramientas, conceptos, metodologías y medios para apoyar los esfuerzos individuales hacia modos de vida sostenibles.

Desde su creación en 2008, el programa de formación Smart Start-up ha motivado a los jóvenes de África y Europa a buscar y desarrollar soluciones innovadoras y empresariales a circunstancias insostenibles, compartir conocimientos, inspirar y capacitar a otras personas en sus comunidades. En 2011, el Programa de formación Smart Start-up, programa de formación en TIC, se llevó a cabo en África y comenzó a expandirse a Asia y América del Sur.

Dado que las actividades de empresariado sostenible ganan relevancia en las agendas nacionales e internacionales, el CSCP continúa explorando los resultados pertenecientes al ámbito de la iniciativa empresarial, por lo tanto, las actividades sobre empresariado, trabajo en red, la creación y difusión de conocimientos ya se han previsto e iniciado.

Desarrollándose sobre la experiencia adquirida, la retroalimentación constante para la mejora, la interacción y la participación de los interesados, el CSCP puso en marcha el Centro de Red de Empresarios Sostenibles, actualmente disponible en <http://cscpnet.ning.com>

Para más información sobre ecoemprendeduría y el programa de formación SMART Start-up se puede encontrar en: [www.sustain-entrepreneurship.org](http://www.sustain-entrepreneurship.org)

### **La Emprendeduría Sostenible: desde la producción a la mejora de los estilos de vida a través de la implicación de las PYMES - Centro de la Red SWITCH-Asie**

Por encargo de la Unión Europea dentro del programa EuropeAid, el programa SWITCH-Asie tiene como objetivo promover el consumo y producción sostenible fuera de Europa y se centra en la promoción de productos sostenibles, procesos, servicios y modelos de consumo en Asia. En última instancia, este programa busca reducir los costes ambientales y sociales de la producción y el consumo, posibilitar la replica de las mejores prácticas entre los países asiáticos y apoyar el cambio en los procesos de formulación de políticas hacia la sostenibilidad.

Puesto en marcha con el objetivo de maximizar el impacto del programa SWITCH-Asie y sus proyectos concedidos a través de intercambio de conocimientos, la difusión de información y la creación de redes, el Centro de la Red SWITCH-Asie ha estado conectando a las PYME a través de 15 países de Asia, a través de la promoción de prácticas de CPS 30 a través de programas con un fuerte impacto a lo largo de la cadena de producción y destinado también a los gobiernos y los consumidores.

La mayoría de los proyectos hacen hincapié en la producción más limpia y el diseño de producto sostenible. Sin embargo, otras cuestiones importantes, tales como los sistemas de gestión ambiental, gestión de la cadena de suministro, gestión de residuos y la responsabilidad social corporativa de las empresas están dentro del alcance de la participación de las PYME.

Depuis sa création en 2008, le Réseau permet la révision et l'élaboration d'approches de réplication, principalement du côté des instruments politiques et de programmes de certification, la promotion de pratiques et de modes de consommation et de production durables et permet à un large éventail de parties prenantes de s'engager dans la création et la promotion de l'Entrepreneuriat Durable.

Pour plus d'informations, veuillez consulter le site: <http://www.switch-asia.eu/>

### La Voie à suivre

#### SPREAD - Modes de vie durables ouvrant la voie vers des moyens d'existence futurs

Le renforcement des pratiques d'Eco-entrepreneuriat amène l'élaboration et la mise en œuvre de mesures et de consortiums multi-partenaires qui coordonnent la recherche et les activités qui ont un impact sur le changement des modes de vie. Développé dans le cadre du 7<sup>ème</sup> Programme-cadre de recherche de la Commission européenne (EU 7<sup>ème</sup> PC), le SPREAD Modes de vie durables 2050 est un effort conjoint des 10 organisations paneuropéennes qui travaillent au développement d'une vision des modes de vie futures afin de mieux comprendre les dynamiques qui génèrent des modes de vie différents et de pouvoir initier la diffusion de pratiques et de modes de vie plus durables.

Au cœur des recherches, les thèmes de la vie durable, la consommation, les déplacements, la santé, le bien-être, l'équité, le vieillissement, l'entrepreneuriat et l'élaboration des politiques seront abordés lors de la création de scénarios futurs qui présentent l'innovation sociale, le changement de comportement et le backcasting vers le développement de stratégies d'action pour les parties prenantes multisectorielles. Avec le dialogue et les régimes de travail en collaboration, SPREAD Modes de vie durables 2050 traite des moyens pour transformer les comportements non durables actuels en saisissant les occasions d'innovation sociale et de l'esprit d'entreprise.

L'avenir des modes de vie durables et l'entrepreneuriat - Forum d'action sur le développement durable, l'entrepreneuriat et l'innovation ; la conférence des Nations Unies organisée par le CSCP et le consortium SPREAD a marqué le lancement officiel de la plate-forme SPREAD 2050. L'agenda interactif de 2 jours a été développé autour des sujets suivants : l'Inspiration et la Découverte sur le plan individuel et des idées, la co-création et la planification des actions à identifier, la planification et l'engagement aux activités en vue d'un avenir commun. En plus des techniques innovantes d'hébergement, des discours inauguraux de grande envergure, des ateliers dynamiques et de travail proactif en réseau, l'agenda double, modes de vie/entrepreneuriat, a été renforcé par le «Market Place», un centre de démonstration où des entreprises et des organisations innovantes et durables ont eu l'occasion de présenter leurs produits et services.

Pour une meilleure vue d'ensemble du forum, consultez le site : <http://www.future-lifestyles-entrepreneurship.org/index.html>. La communauté SPREAD Modes de vie durables 2050 est disponible à l'adresse : [www.sustainable-lifestyles.eu/community](http://www.sustainable-lifestyles.eu/community)

Les innovations sociales, considérées comme le moyen de développer des solutions et de nouvelles formes d'organisation et d'interaction pour combattre des problèmes sociaux deviennent réalité lorsque des alliances pour l'entrepreneuriat durable se forment et, au travers de processus systémiques globaux, permettent l'inclusion, la participation et, donc, la transformation sociale vers des moyens de subsistance durables.

Desde su creación en 2008, el Centro de la Red permite la revisión y diseño de métodos de replicación, principalmente en el sector de los instrumentos políticos y sistemas de certificación, promueve las prácticas y patrones de consumo y producción sostenibles, y permite que una amplia gama de interesados participen en la creación y promoción de empresas sostenibles.

Para más información, acceder a: <http://www.switch-asia.eu/>

### El camino hacia adelante

#### SPREAD - Estilos de Vida Sostenibles allanando el camino hacia los futuros medios de vida

Reforzar prácticas empresariales sostenibles implica el desarrollo e implementación de medidas y consorcios con múltiples socios que apoyan la investigación y actividades con un impacto sobre los cambios de estilos de vida. Desarrollado bajo el Séptimo Programa Marco de Investigación de la Comisión Europea (EU FP7), el programa SPREAD Estilos de vida sostenibles 2050 (SPREAD Sustainable Lifestyles 2050) es un esfuerzo conjunto de 10 organizaciones PAN-Europeas que persiguen el desarrollo de una visión para futuros modelos de estilo de vida para comprender mejor la dinámica que da forma a los diferentes estilos y puede iniciar la difusión de prácticas y formas de vida más sostenible.

Sobre la integración de la investigación, los temas de la vida sostenible, consumo, movimiento, salud, bienestar, equidad, envejecimiento, empresariado y formulación de políticas se abordarán a través de la creación de escenarios futuros que retratan la innovación social, el cambio de comportamiento y proyección retrospectiva hacia el desarrollo de estrategias de acción para los grupos interesados de múltiples sectores. A través del diálogo y de esquemas de colaboración en el trabajo, la plataforma SPREAD Estilos de vida sostenibles 2050 pone los medios para cambiar comportamientos insostenibles actuales, aprovechando las oportunidades para la innovación social y empresarial.

El Futuro sobre Estilos de Vida Sostenibles y Empresariado - Foro de Acción de Sostenibilidad, Empresariado e Innovación, la conferencia de Naciones Unidas organizada por el CSCP y el consorcio SPREAD, marcó el lanzamiento oficial de la plataforma SPREAD 2050. La agenda interactiva de 2 días se desarrolló sobre los siguientes hitos: la inspiración y el descubrimiento en el nivel individual y la conceptualización, la co-création y la planificación de acciones para identificar, planificar y participar en las actividades hacia un futuro común. Además de las técnicas hosting innovadores, los discursos de alto perfil, talleres dinámicos y red proactiva, los estilos de vida dual/agenda empresarial se vieron reforzados por el centro de demostración "Market Place" donde las empresas innovadoras, sostenibles y organizaciones tienen la oportunidad de presentar sus productos y servicios.

Para una mejor visión general del foro por favor visite: <http://www.future-lifestyles-entrepreneurship.org/index.html>. La plataforma SPREAD Sustainable Lifestyles 2050 community está disponible en [www.sustainable-lifestyles.eu/community](http://www.sustainable-lifestyles.eu/community)

Las innovaciones sociales, entendidas como los medios para el desarrollo de soluciones y nuevas formas de organización e interacción para hacer frente a los problemas sociales, se hacen realidad cuando las alianzas para el emprendimiento sostenible surgen y, a través de procesos sistémicos que abarcan todo, permitan la inclusión, la participación y, en definitiva, un cambio social para los medios de vida sostenible.

Chacun des programmes, projets et activités brièvement décrits jusqu'ici met en évidence la nature des partenariats multi-acteurs qui nourrissent l'innovation sociale et ouvrent la route vers l'activation d'une Économie Verte. Les gouvernements, la société civile organisée, les entreprises de toutes sortes et de toutes tailles ainsi que les individus doivent s'engager dans des processus permettant de repenser nos modes de vie actuels et leur contribution à notre non-durabilité et d'agir pour les changer. ■

Cada uno de los programas, proyectos y actividades brevemente descritos hasta ahora, resaltan el carácter de asociación de las múltiples partes interesadas que fomentan la innovación social y ofrecen apoyo para allanar el camino hacia la activación de una economía verde. Los gobiernos, la sociedad civil organizada, los negocios de todo tipo y tamaño y los individuos deben participar en los procesos que permiten repensar nuestros patrones actuales de vida y su contribución a nuestra insostenibilidad y actuar para cambiar. ■



## Business Going Green: A journey of corporate transformation towards environmental sustainability

### Jérémie Fosse

President, *eco-union.org*  
Researcher, *Esade Business School*,  
c/Roser, 95  
08004 Barcelona - Spain  
Tel: +34 629 694 001  
jeremie.fosse@esade.edu  
jeremie.fosse@eco-union.org

### Daniel Arenas

Professor, *Esade Business School*,  
Av. Pedralbes, 60-62  
08034 Barcelona - Spain  
Tel : +34 93 280 61 62  
daniel.arenas@esade.edu,

### Emily Huc

Entrepreneur and  
independent researcher  
31 A Chesterton Road  
W106ET London  
Tel: +44 750 319 00 95  
emilyhuc@hotmail.com

**O**ur society is currently facing an unprecedented series of crises –financial, economic, industrial and environmental crises– as a consequence of an unsustainable development model based on the mismanagement of precious and scarce social, human and natural resources. However, crises often generate a number of opportunities. Companies with vision and leadership have the opportunity to transform their business models and work towards a more sustainable future based on natural resources efficiencies, the development of innovative green products and services and the empowerment of eco-conscious actors in the value chain. This paper explores how this strategic change happens and what are the drivers and opportunities behind it.

**Keywords:** Corporate sustainability, change management, Green business, eco-innovation, open collaboration, organizational culture.

### Le virage vert des entreprises: Un voyage de transformation de l'entreprise vers la durabilité environnementale

A l'heure actuelle, notre société fait face à une série de crises sans précédent (crises financière, économique, industrielle et environnementale), conséquence d'un modèle de développement non durable fondé sur une mauvaise gestion des ressources sociales, humaines et naturelles pourtant précieuses et limitées. Toutefois, les crises génèrent souvent un certain nombre d'opportunités. Les entreprises ayant la vision et le leadership ont la possibilité de transformer leurs modèles d'activité et de travail vers un avenir plus durable, fondé sur l'efficacité des ressources naturelles, le développement de produits verts innovants et le renforcement du pouvoir des acteurs éco-conscients de la chaîne de valeur. Cet article explore comment ce changement stratégique se produit et quels sont les facteurs et les possibilités associés.

### El giro hacia la empresa verde: Un viaje de transformación de las empresas hacia la sostenibilidad ambiental

Nuestra sociedad se enfrenta actualmente a una serie sin precedente de crisis - crisis financiera, económica, industrial y ambiental - como consecuencia de un modelo de desarrollo insostenible basado en la mala gestión de los recursos sociales, humanos y naturales preciosos y escasos. Sin embargo, las crisis suelen generar una serie de oportunidades. Las empresas con visión y liderazgo tienen la oportunidad de transformar sus modelos de negocio y trabajar hacia un futuro más sostenible basado en la eficiencia de los recursos naturales, el desarrollo de innovadores productos y servicios ecológicos y la potenciación de los actores eco-conscientes de la cadena de valor. Este trabajo explora cómo ocurre este cambio estratégico y cuáles son los factores y las oportunidades detrás de él.

**Methodology:** In this theoretical and field research at international scale, we have examined four companies of different sizes and from various sectors which are leading this strategic shift towards environmental sustainability, and which are inspiring others to follow their example.

**Findings:** We conclude that incorporating environmental sustainability within a business model is a non-linear journey which involves three interrelated phases. First, a dynamic, positive and wide-spread cultural and organizational change, involving all the levels in the company from the CEO to the line workers. Secondly, a transparent and long term collaboration with strategic external stakeholders, such as key suppliers, NGOs and customers. Finally, the deployment of eco-innovative corporate policies through the whole value chain to reduce environmental footprints and booster the development of new green products and services.

**Value:** This research aims to contribute to a better understanding the drivers of corporate environmental sustainability so that businesses can more efficiently implement the change management process.

**Full study:** Institute for Social Innovation, Esade Business School  
[www.innovacionsocial.esade.edu](http://www.innovacionsocial.esade.edu)

## 1. Learning from leading companies

Our society is currently facing an unprecedented series of crises in modern history –financial, economic, industrial and environmental crises—as a

consequence of an unsustainable development model based on the mismanagement of our scarce social and natural resources . However, like in the natural ecosystems, crises offer opportunities for evolution.

In this theoretic and empirical research at international scale, we have studied the literature of change management and corporate sustainability, from which we constructed a framework for organizational transformation towards green business. We then examined different companies that are leading this strategic change to confirm the validity of our model and illustrate the different stages of the transformation process:

- **Desso**, an European carpet manufacturer applying the circular economy based on Cradle to Cradle philosophy, in its new range of products and services.
- **Acciona**, a Spanish construction company, shifting from its old traditional civil work and real estate activities towards new eco-infrastructure, water and renewable energy.
- **Scandic**, a Scandinavian hotel chain, using an academic framework called The Natural Step to integrate environment into its vision, operation and marketing strategy.
- **Havas**, a global advertising and communication agency integrating the new environmental awareness of the consumers into the brand value of its corporate customers.

## 2. Enabling wide, deep and strong cultural change

As mentioned above, environmental sustainability implies a new conception of business models, very distant from the mainstream and traditional industrial paradigm. This model moves away from a take/make/waste approach to a more circular and regenerative production system . This



new framework needs to be reflected throughout the organisation to create new ways of functioning. As such, people need to create innovative ways of working, suitable to the specificities of the organisation. Combining our initial model of cultural change and the study of Scandic, Desso, Havas and Acciona, four ways to transform organisational culture can be highlighted as particularly relevant.

- **Design a positive and ambitious vision.**

Coming from a situation of crisis, Desso chose to use the 'Cradle to Cradle' philosophy and methodology to support its vision. Scandic chose to design its vision of sustainability in collaboration with its employees. Engaging all its staff from the beginning of the process made them aware of the challenges at stake as well as the opportunities that the new direction represented. In contrast, both Havas and Acciona developed their green vision as a pro-active strategy to anticipate the disruptive change perceived for their sector (the rise in consumers' environmental expectations for Havas and the economic crisis for Acciona).

- **Engage and empower employees.**

The four companies have created specific materials to engage and empower their employees with respect to change processes. Acciona created best practice manuals, online courses and measurement software. Scandic developed a large training event at the launch of the strategy followed by automatic orientation programmes for new employees and ongoing training for others. Havas is developing a three-step plan aimed at engaging, training and mentoring its employees. Desso measures team performance in relation with Cradle to Cradle objectives.

“Environmental sustainability implies a new conception of business models, very distant from the mainstream and traditional industrial paradigm.”

- **Secure the leader's endorsement**  
Acciona, Desso and Havas' CEOs have all used their charisma and personal power to foster the integration of environmental sustainability in their companies' strategies. They actually took personal risks as substantial shareholders in the companies they lead. This is the definitive proof of their profound and irreversible commitment to sustainability in the eyes of the other shareholders, staff and society.

- **Maintain new values throughout the organizational structure.**

At Scandic, change agents (called "sustainability champions" internally) are key to maintaining the momentum and mainstreaming environmental actions across the organisation. Desso, Havas and Acciona have also changed their operational structures to integrate environmental issues deeply within their organisational charts. At Acciona the quality, environment and R&D departments have merged under Innovation and Sustainability Vice-Presidency with wider and more strategic responsibilities.

### **3. Collaborating openly with strategic stakeholders**

As explained previously, the breadth of the environmental challenge suggests that a company's or an individual's isolated efforts, even if important and praiseworthy, will not have an impact by themselves. Environmental sustainability calls for collaborative action. Four directions could be given to this collaboration: Influencing the whole supply chain, networking with external stakeholders (NGOs, scholars and scientists), Communicating with customers; and developing sectorial initiatives.

- **Influence the whole supply chain**  
Both Scandic and Desso have used their bargaining power to encourage

“The breadth of the environmental challenge suggests that a company’s or an individual’s isolated efforts, even if important and praiseworthy, will not have an impact by themselves.”

engagement from their suppliers. They have had to end certain relations with some of their suppliers but they have gained renewed commitment from most of those who originally endorsed their new policies. Scandic’s experience emphasises that the supply chain can potentially limit a company’s achievements, but, if procurement policies are well designed, the supply chain can also represent a key source of new opportunities.

- **Network with NGOs, scholars and scientists.**

Scandic and Desso have both worked in extremely close collaboration with organisations specialised in accompanying businesses through the change process towards environmental sustainability. Working with ‘The Natural Step’ helped the Scandinavian hotel chain to understand the global environmental challenges and to design a new strategy taking these challenges into account. For Desso, the close partnership with ‘Cradle to Cradle’ framed the carpet manufacturer’s new identity. Meanwhile, Acciona set up an independent expert committee with local and regional environmental NGOs that is reviewing publicly its sustainability report to benchmark and raise its environmental and social standards.

- **Communicate and engage with customers.**

Investing in communications evidently provides the twofold advantage of lobbying for wider societal change

whilst, at the same time, improving the company’s image. Acciona understood the potential of this strategy and invested heavily in a mainstream communications campaign on TV, internet and streets ads. Similarly, Desso devoted a great deal of efforts to inform about the ‘Cradle to Cradle’ context to its customers, running training sessions and inviting them to academics conferences. Havas used the Sustainable Futures study to present at all its customers worldwide its new focus on sustainability. Finally Scandic hotel is directly communicating with the customers through micro website and flyers at hotel facilities.

- **Develop sectorial collaborative initiatives.**

Through a sectorial platform of national hotel chains, Scandic continuously lobby building owners to raise the environmental performance of the infrastructure. Havas is engaging leading brands in the communication sector to understand collectively the awareness of the consumers towards sustainability. Acciona participates in different business working groups of the World Business Council for Sustainable Development (WBCSD) dedicated to environmental issues such as energy and climate change. Desso partners with fellow companies which have adopted the ‘Cradle to Cradle’ methodology to combine their communications efforts to raise social awareness (see figure below).

#### **4. Reengineering operations and processes through eco-innovation**

The journey towards sustainability needs to be comprehensive and considered in a strategic way to be fully transformative<sup>vi</sup>. The four companies studied have not necessarily followed the same exact steps but they have all





Figure: Desso collaborative network (source: Desso Website, 2010)

gone beyond implementing token initiatives to enact deeper changes in their activity structures through four main mechanisms.

- **Secure quick wins to engage the organization.**

Planning for quick wins is widely acknowledged as a major success factor in change processes<sup>vii</sup>. In change processes towards environmental sustainability, these measures are also called “low hanging fruits.” This refers to actions which, for example, improve raw materials management and energy efficiency relatively easily and rapidly. Havas has implemented a carbon footprint strategy as a first step to engage its employees and provide concrete data with which to engage them. Desso has created a two-phase plan which consists of eliminating expensive pollutants in the first stage and better efficiency of its basic operations.

- **Measure your progress and quantify your targets.**

Measurement is central and helps focus efforts on the weakest areas. Scandic, Acciona and Desso have all implemented measurement schemes. Key Environmental Indicators such as energy efficiency, water use, waste produced, etc. are normally pub-

“Planning for quick wins is widely acknowledged as a major success factor in change processes.”

lished in the respective companies’ sustainability reports along with their medium and long-term goals. The series of actions and steps taken by Scandic hotels to reduce their environmental footprint has clearly taken them in the right direction.

- **Redesign the supply and value chain.**

The application of the “Cradle to Cradle” protocol, eco-designs and zero waste objectives in Desso are all illustrations of systems change. Scandic has secured eco-friendly labels (Swan, EU flower) and Acciona is ISO 14001 certified. Environmental certifications help to rationalise the internal policy, implement benchmarking strategies and commit the whole company to a common goal.

- **Use eco-innovation to reposition the company.**

Acciona has developed new markets and effectively changed the core of its activities, a shift which has been consolidated mainly through business acquisitions. Desso promotes sustainability as a way to reposition the business after a change of management. Scandic uses environmental sustainability values to create a coherent culture which can engage both customers and employees. Havas is committed to helping its clients understand and leverage the opportunities from more sustainable practices, thereby improving its strategic positioning.

## 5. Final conclusion and recommendations

This study is supporting the view that incorporating environmental sustainability within a business is a **non-linear and continuous journey** which involves deep, organic and systemic change within the organization through three main drivers:

## Guidelines for greening your business (source: the authors)

### A- Promote cultural change - Embed environmental sustainability into the company's DNA

1. Design a disruptive, positive and ambitious vision.
2. Engage and empower employees and partners.
3. Secure the leader and top executive's endorsement and commitment.
4. Maintain new values alive throughout the organizational structure.

### B- Be open and collaborative - Partner with strategic stakeholders

1. Use your bargaining power to influence the supply chain.
2. Invest in communications with the consumer base.
3. Partner with external consulting organizations.
4. Lobby other key business partners.

### C- Eco-innovate - Integrate environment into operations and products

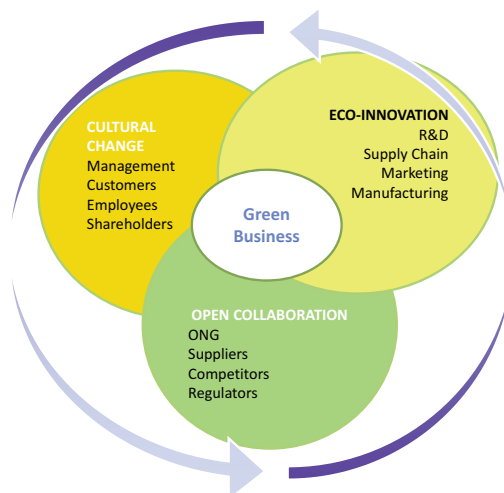
1. Use strategic eco-innovative projects to reposition the company.
2. Promote the change through green certifications.
3. Secure quick wins as a first step towards systemic change.
4. Measure your progress and quantify your targets.

- **Cultural Change:** Fostering a dynamic, positive and widespread organisational change, involving all the levels in the organisation,
- **Open Collaboration:** Collaborating with strategic external stakeholders such as NGOs, experts and policy makers to inspire wider, faster and deeper change, and
- **Eco-innovation:** Rethinking operational processes through the whole value chain to reduce environmental footprints and increase innovation in green products and services,

## References

1. P. Senge, "The necessary Revolution" (London: Nicholas Brealey Publishing, 2008).
2. S.T. Hart, "Beyond greening: Strategies for a sustainable world" (Boston: Harvard Business Review, Harvard Business School Press, 1997)
3. M. Braungart and W. Mc Donough, "Cradle to cradle, remaking the way we make things" (London: Vintage books, 2009).
4. K.-H. Robert, "Tools and concepts for sustainable development, how do they relate to a general framework for sustainable development, and to each other?," *Journal of Cleaner Production* (2000).
5. A. Lovins, H. Lovins, P. Hawken, "Natural capitalism: Creating the Next Industrial Revolution" (Back Bay Book, 1999).
6. A. Werbach, "Strategy for Sustainability: A Business Manifesto" (Boston: Harvard Business Press, 2009).
7. R. Nidumolu, C.K. Prahalad, M.R. Rangaswami, "Why sustainability is now the key driver of innovation", *Harvard Business Review* (2009):
8. J.P. Kotter, "Leading Change" (Boston: Harvard Business School Press, 1996). ■

These three aspects are reflected in Figure below:



Green Business transformation framework (source: the authors)



## Biking in the Holy Land

Amir Rockman  
Bike Jerusalem

Keren ha-yesod 2,  
Mevasert Zion  
90805 PO.B 332  
Tel: 972 52 3201273  
amir@bikejerusalem.com  
www.bikejerusalem.com

Since the borders and names of Israel and Palestine have changed a few times in history, for the sake of this article, I will refer to the *Holy Land* as Israel including the Palestinian Territories, and Israel as the sovereign state, not including Gaza and the West Bank.

EcoBike is a young company based in Tel Aviv, Israel. It is owned by two cyclists, who, together with a handful of well-trained guides, are dedicated to changing the face of the Israeli tourist industry. More and more people around the world are turning to cycling as their preferred mode of travel, for various different reasons. Beyond the exercise, and the joy of being outdoors, and reducing one's carbon footprint, cycling through a new place gives one the opportunity to turn, what would be otherwise a drive from one site to the next, into the main attraction.

**Keywords:** bike, cycling, tourism, young company, green business, city tours, sustainable tourism, bike tours.

### À Vélo en Terre Sainte

Étant donné que les frontières et les noms d'Israël et de la Palestine ont changé plusieurs fois dans l'histoire, aux fins de cet article, je me référerai à la *Terre Sainte* comme Israël en incluant les Territoires Palestiniens, et à *Israël* comme l'état souverain, sans compter la bande de Gaza et de la Cisjordanie.

Ecobike est une jeune société établie à Tel Aviv, Israël. Elle est détenue par deux cyclistes, qui, avec une poignée de guides bien formés, tentent de changer le visage de l'industrie du tourisme israélien. De plus en plus de personnes à travers le monde se tournent vers le vélo comme leur mode de transport privilégié pour différentes raisons. Au-delà de l'exercice, de la joie d'être à l'extérieur et de la réduction de l'empreinte carbone, faire du vélo dans un nouvel endroit nous donne l'occasion de transformer ce qui ne serait autrement qu'un simple déplacement d'un site à l'autre en attraction principale.

**Mots clés :** vélo, cyclisme, tourisme, jeune entreprise, green business, visites de la ville, tourisme durable

### Ciclismo en Tierra Santa

Dado que las fronteras y los nombres de Israel y Palestina han cambiado un par de veces en la historia, en este artículo, me referiré a la Tierra Santa como Israel, incluyendo los Territorios Palestinos e Israel como estado soberano, sin incluir Gaza y Cisjordania.

Ecobike es una empresa joven con sede en Tel Aviv, Israel. Es propiedad de dos ciclistas, quienes, junto con un puñado de guías bien entrenados, están dedicados a cambiar el rostro de la industria turística israelí. Cada vez más personas en todo el mundo están recurriendo a la bicicleta como su modo preferido de viaje, por diversas razones: más allá del ejercicio, la alegría de estar al aire libre y minimizar su huella de carbono, pedalear por un lugar nuevo le da a uno la oportunidad de convertir en la principal atracción lo que de otra manera sería conducir de un lugar a otro.

**Palabras clave:** bicicleta, ciclismo, turismo, empresa joven, negocio verde, tours por la ciudad, turismo sostenible, excursiones en bicicleta.

## Tourism in Israel

The history of travel to the Holy Land is begins at least as far back as the Middle Ages. Places like Jerusalem, Nazareth, Bethlehem, the Jordan River, to mention a few, have attracted pilgrims and travelers as far back as the 4<sup>th</sup> and 5<sup>th</sup> century. Free travel to the holy sites was one of the premises for the Crusades of the Catholic world against the Muslim world starting at 1099 AD. It is safe to say that a tourism industry was established, at the end of the 19<sup>th</sup> century, when the Ottomans ruled here. Improvement in transportation, thanks to German Templers and some others involved, gave a boost to the trade and the first tour operators started to appear. As always here in the Middle East, it was probably not a well planned and strategically devised beginning, but rather a more informal arrangement of an enterprising fellow who could get you on your way from the port in Jaffa, to a Hostel or Inn for a few days of touring of Jerusalem. If you had the time and money, you could also travel to the Galilee to see where Jesus lived as a boy or even to the far ports of Lebanon. Mark Twain took such a tour and wrote a great book about it; he, for one, was not impressed by the service. The State of Israel has focused on Tourism since even before there was a State, during the pre-state days of the British Mandate. The Zionist Movement established a Tour Guide association which issued licenses, in an attempt to maintain high standards for guides. Since the 1930's, the hotel industry has been in constant flux but new hotels were and are constantly being built by Jews and Arabs. Religious sites were always the key attraction, but over the years, with improved, roads, trains and airports, (thanks to the British and Solel Boneh), travel became easier and the flow of visitors grew. Along side the classic religious

The State of Israel has focused on Tourism since even before there was a State, during the pre-state days of the British Mandate.

locations, other forgotten Churches became much more accessible, and also the growing Jewish state, Tel Aviv and the Kibbutz was a destination for a new kind of tourist. The Dead Sea also attracted more and more visitors, starting before the 1948 war, and increasing drastically after the six day war. Tourism, when the political situation was good, was always a low, but steady income to the state. The past few years have seen the largest growth in Tourism with over 3 million visitors last year, as opposed to an annual average of 1.5million, five or ten years ago. Tourism in Israel today has many faces: religious, general interest, backpackers, family, cruise ships, Jewish Travel are only part of a list of what is probably the largest. Tel Aviv does attract a notable amount of nightlife travelers, as well as more and more cycling tours and adventure travelers.

## Cycling in Israel

According to a last Survey buy "Or Yarak" (an NGO dealing with road safety), there are around 1 million people in Israel that bike twice a month or more (pop. 7.5 million). I would say commuter biking and Road Biking (in that order) make up for 95% of cyclists in the country. The advantages that Israel has as far is cycling are dry weather, short driving distances, hundreds of points of interest throughout the country and an enormous variety of climate and geographical conditions. Road Cyclists do need to be careful about selecting routes, some roads are quieter than others, but scenic and safe roads do exist. Jerusalem and Tel Aviv both have very good options for safe travel in the city, but you do need to be an experienced cyclist, or have someone show you around, to know the best routes. Jerusalem, as a modern City, was never really planned, and it is evi-

“Jerusalem, as a modern City, was never really planned, and it is evident to anyone looking at the city map, but this is a cyclist paradise if you know your way.”

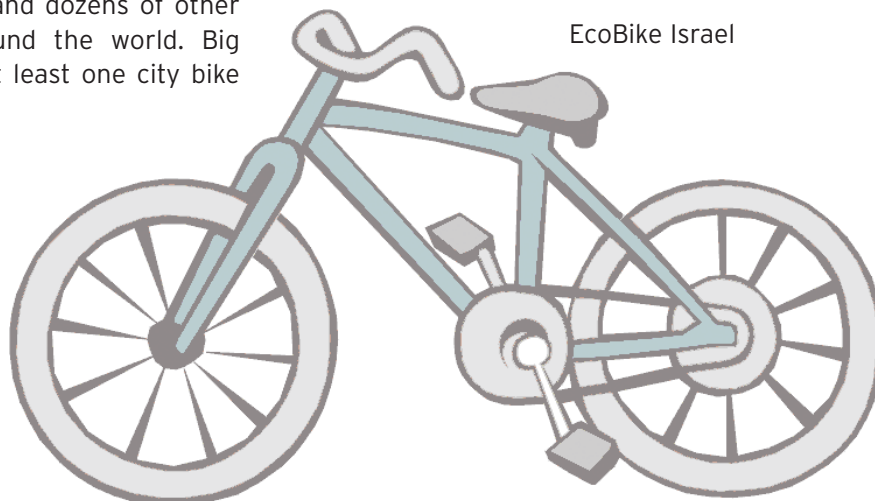
dent to anyone looking at the city map, but this is a cyclist paradise if you know your way. A Jerusalem Cyclist can find herself on a side walk, a street, a church parking lot, a bike lane, a foot path, a school and an historic courtyard all within 10 minute ride. Tel Aviv on the other hand, has a general layout. There is a much more organized bike path system in the city. The city has been promoting cycling over the last few years, and tens of thousands bike daily through the city. Lately the city has started a public bike rental system, and the progress is evident. Both Road Biking and MTB have large markets, and several publications focused on a growing group, that tends to be Men of the upper middle class. Most of the outgoing Israeli Bike Tours are MTB.

## **Bike Tours worldwide**

Cycle-Tourism is new to Israel, but does exist in the Unites States, Western Europe and dozens of other destinations around the world. Big cities will have at least one city bike

tour provider locally owned in most cases. As far as road bike tours, the largest operators are US based, but there are many large and small operators around the globe. Some destinations, such as France, Italy or California offer a wide range of different providers and prices. There is a general accepted standard for fully supported and self-supported tours. The fully supported groups are usually very small compared to a bus tour, and tend to be more exclusive as far as hotel rates, dinning and personal service. The carbon foot print of a bike tour is somewhat lower from a standard bus tour, but the human factor is much more “Organic”. Cycling allows you blend in to the place you are traveling through, and be generally more accepted by the locals anywhere. As far as the city tours, there is a huge difference in the impact on the city between a bike tour and a bus tour. This also helps to turn cities and countryside alike, into a more bike friendly world. ■

EcoBike Israel



## The 1<sup>st</sup> Carbon Neutral Extra Virgin Olive Oil in the World & the 1<sup>st</sup> Water Footprint for Olive Oil products



Aris  
Kefalogiannis  
C.E.O., Gaea  
Products S.A.  
Athens, Greece

171, Syngrou Av.  
17121, Athens, Greece  
Tel: +30 210 9330595  
arisk@gaea.gr

Climate change is a reality that demands a higher level of responsibility from all of us. Gaea, recognizing the severity of this issue, has tried to minimize its impact on the climate by offsetting the carbon emissions (CO<sub>2</sub>) of its olive oil products in cooperation with the Swiss organization "myclimate". In doing so, our Gaea olive oils became carbon neutral, i.e. they have no negative impact on the environment. At the same time, our olive oils became the first carbon neutral consumer products in Greece and the first carbon neutral extra virgin olive oils worldwide.

**Keywords:** carbon neutral, olive oil, environment, offset, CO<sub>2</sub>, carbon neutral, myclimate, award, green projects.

### La 1<sup>ère</sup> Huile d'Olive Extra Vierge neutre en carbone au monde et la 1<sup>ère</sup> Empreinte hydrique pour les produits d'Huile d'Olive

Le changement climatique est une réalité qui exige de chacun d'entre nous un niveau de responsabilité plus élevé. Reconnaisant la gravité de ce problème, Gaea a tenté de minimiser son impact sur le climat en compensant les émissions de carbone (CO<sub>2</sub>) de ses produits d'huile d'olive en collaboration avec l'organisation suisse « myclimate ». Les huiles d'olive de Gaea sont ainsi devenues neutres en carbone, c'est-à-dire qu'elles n'ont pas d'impact négatif sur l'environnement. Ce faisant, nos huiles d'olive sont devenues les premiers produits de consommation neutres en carbone en Grèce et les premières huiles d'olive extra vierges neutres en carbone dans le monde entier.

**Mots clés :** bilan neutre en carbone, huile d'olive, l'environnement, neutraliser, CO<sub>2</sub>, myclimate, prix, projets verts.

### El primer aceite de oliva virgen extra emisor neutral de carbono en el mundo y la primera huella hídrica de los productos de aceite de oliva

El cambio climático es una realidad que exige de todos nosotros un mayor nivel de responsabilidad. Gaea, reconociendo la gravedad de este problema, ha tratado de minimizar su impacto sobre el clima mediante la compensación de las emisiones de carbono (CO<sub>2</sub>) de sus productos de aceite de oliva en colaboración con la organización suiza "myclimate". De este modo, sus aceites de oliva Gaea se convirtieron en aceite "carbono neutral", es decir, no tienen un impacto negativo en el medio ambiente.

**Palabras clave:** neutro en carbono, aceite de oliva, medio ambiente, compensación, CO<sub>2</sub>, myclimate, premio, proyectos verdes.

## Vision, Mission and Strategy

Gaea was founded in 1995 upon the realization that Greek agricultural food products, despite their inherent high quality and good taste, were absent from the international markets.

*Vision.* To be the absolute leader of the category of Mediterranean Greek cuisine/meze in the international fine foods arena, and to be synonymous with quality traditional, authentic and innovative Greek specialty food products.

*Mission.* To provide the essential ingredients and products for promoting internationally Greek meze as the authentic Greek Mediterranean lifestyle and cultural culinary experience.

*Company Strategy.* To promote and sell in international markets and Greece a range of authentic Greek Mediterranean products consisting of both innovative value added recipes and traditional ingredients/commodities that can be produced efficiently and with high quality at Gaea's facilities.

## What Is Carbon Offsetting?

Offsetting carbon or other greenhouse gases refers to the funding of climate protection projects by an individual or a company in order to compensate for the carbon emissions it produces as a result from its operations and/or products.

## How Did We Calculate Olive Oil's Carbon Emissions?

Gaea cooperated with "myclimate" and the Centre for Sustainability and Excellence (the Greek representative of myclimate) in order to calculate the carbon emissions that are produced throughout the lifecycle of olive oil – literally from the field to the shelves. This includes the cultivation of the olives, transportation and pressing of the olives, production of packaging materials, bottling the olive oil, and final distribution to Gaea's retail net-

work. The emissions from these individual life-cycle phases were added up in order to calculate the total CO<sub>2</sub> emissions per kg of olive oil (Appendix 1). The result was 4.07 kg of CO<sub>2</sub> per 1 kg of olive oil.

Gaea cooperated with "myclimate" and the Centre for Sustainability and Excellence (the Greek representative of myclimate) in order to calculate the carbon emissions that are produced throughout the lifecycle of olive oil

Although this may sound like a lot, olive oil cultivation and production is in fact one of the least harmful activities for the environment when it comes to production of agricultural products or food stuffs. For example, for the production of 1 kg of tomatoes, 35 kg of CO<sub>2</sub> are emitted in the atmosphere!

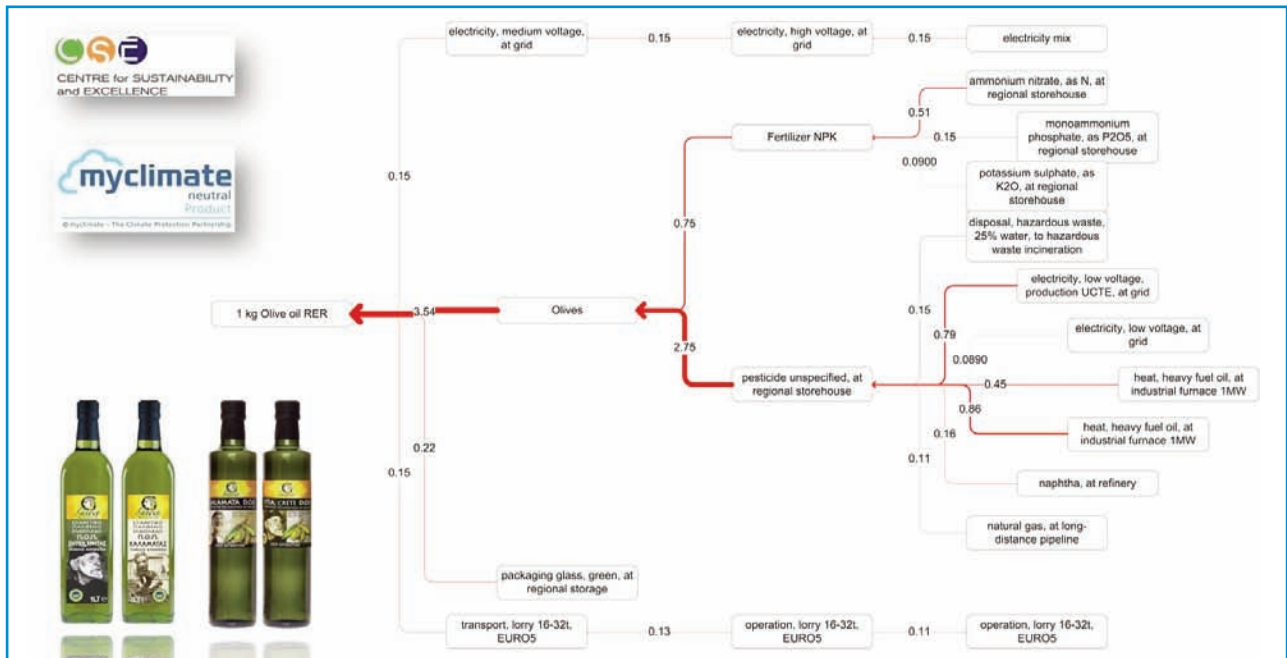
## Carbon Neutral Organic Olive Oil!

GAEA worked recently on the new calculations regarding the CO<sub>2</sub> emissions for our organic extra virgin olive oil which is now also certified as carbon neutral by "myclimate". Due to the absence of pesticides in the organic cultivation the result for the organic olive oil is 1.71kg CO<sub>2</sub>/1kg.

## Carbon Neutral Olives!

GAEA also calculated the CO<sub>2</sub> emissions of its olives (jars & snack packs) so as to certify them as well as carbon neutral.

The whole procedure was the same as for the olive oils but the final CO<sub>2</sub> result was much lower than the one for the EVOO & the ORGANIC EVOO, mainly because of the difference in the processing (olive press) and production



procedures. The result was 0.0519kg CO<sub>2</sub> per 1 kg Olives.

### What Is “myclimate”?

The “myclimate” foundation ([www.myclimate.org](http://www.myclimate.org)) is a nonprofit organization and international initiative that originated as a spin-off of the Swiss Federal Institute of Technology (ETH) Zurich in 2002. It is based on the concept of voluntary and innovative solutions for climate protection and the promotion of renewable energies and energy efficient technologies. “myclimate” is one of the leading providers of carbon offsetting measures. Its clients include large firms, small and medium-sized enterprises, public authorities, nonprofit organizations, event organizers, and private individuals.

### What Projects Does “myclimate” Fund?

“myclimate” funds projects that lead to a direct reduction of greenhouse gases and, thus, makes tangible climate protection possible. The projects achieve their effect through the substitution of fossil fuels with renewable energies or by means of energy effi-

ciency measures (energy-saving measures or the use of efficient technologies).

### Duration - Results

Gaea started the implementation of the project in December 2008. Within those years, almost 2,500 tons of CO<sub>2</sub> were offsetted. In terms of the results of the carbon neutral certification (Appendix 2 & 3), these have to be evaluated in the medium and long term. Socially responsible measures and policies should not be expected to have an immediate and direct positive effect on the company’s profit and loss account, but should be viewed rather as a contribution to the company’s reputation and sustainability, as well as to the added value to the brands. At Gaea, we consider our environmentally responsible policy as part of our commitment to quality and sustainability and we do not expect an immediate payback; therefore, we do not pass the heavy offsetting cost directly to the products’ sales price. We have received positive feedback for our efforts, such as an e-mail from our partner in Denmark – a country that is a pioneer in environmental projects – stat-



“Socially responsible measures and policies should not be expected to have an immediate and direct positive effect on the company's profit and loss account, but should be viewed rather as a contribution to the company's reputation and sustainability”

ing the consumers' positive reactions towards Gaea's carbon neutral extra virgin olive oils.

### “Green Leader Award” by “myclimate”

In March 2011, **GAEA** was awarded by “myclimate” for its commitment towards environmental sustainability, receiving the **“GREEN LEADER - Reduction of polluting emissions for a better environment”** award.

During a special ceremony that took place in Athens, Aris Kefalogiannis, GAEA's CEO, received the award from Rene Estermann, “myclimate” CEO, who noted: “myclimate”, as a leading organization when it comes to the calculation and offsetting of the polluting emissions, wishes through these awards to contribute in the awareness of all companies, while at the same time reward those companies that have proven thus far that they can make the difference.”

### Future Actions in Regard to the Carbon Neutral Project

Instead of adopting the view ‘we pollute, we pay, we are good’ our project and certification is based on the following principle: ‘Our activities pollute the environment. We monitor in detail every stage to establish how and how much. We take active measures every year to reduce the amount of CO<sub>2</sub> emitted at every single stage of our activities, and in the end of the year, for those CO<sub>2</sub>

emissions that we did not manage to eliminate, we pay the offsetting fees.’

From the analytical calculations that took place during the carbon neutral project, it became obvious that the most harmful emissions for the environment are produced at the production stage of the very few pesticides and fertilizers used in the olive cultivation. Due to this fact, we decided to work closely with our partners, suppliers and agricultural cooperatives in order to reduce the use of pesticides and to replace them with other methods, similar to the ones applied in organic cultivation.

### Other Green Projects

Gaea is currently involved in several other ‘green’ projects, including:

- Design and implementation of a new project with the aim of reducing energy consumption on our factory premises in Agrinion.
- Replacement of the lighting system in our factory and offices with an energy-saving system.
- Recycling program for packaging materials.
- Recycling of batteries (through the AFIS program).
- Recycling of electrical and electronic devices.
- Recycling of paper and print cartridges in our offices and factory.
- Gradual replacement of the company's executive cars with environmental friendly cars.

*Close to the Children and Our Planet... Environment Day 2009.* Under the motive "Love to the Environment = Love to our Children", Gaea distributed our carbon neutral extra virgin olive oils along with T-shirts carrying a 'green message' in the SOS Children's Villages in Vari and Plagiari.

*Environment Day 2010.* Gaea participated for a second year in the WWF's global initiative "Earth Hour". For this initiative, we turned off all the lights at our factory premises in Agrinion for 1 h, giving our own message against global warming. In addition, Gaea created a webpage on the WWF's website, so as to stimulate our partners and personnel to participate in the WWF's campaign.

*Environmental Protection Educational Program.* Gaea worked in cooperation with the Hellenic Society for the Protection of Nature for the implementation of the program "Ecological Schools" for the students of the elementary school in Agrinion.

*...and Also to Our Colleagues*

## **Cooperation and Education of the personnel**

According to the company's policy, great emphasis is given to the education and the good internal collaboration of our personnel. To achieve this, we provide our employees with educational opportunities, such as attendance to seminars to improve their knowledge and skills, as well as education programs for their further development. Moreover, the company guarantees the safety and hygiene of our employees' workplaces. In addition, great emphasis is also given to the cooperation and communication between departments. Our employees are informed on a regular basis about the subjects related to healthy diets, environmental protection and economical issues.

Our employees are being informed on a regular basis on the subjects related to the healthy diet, environmental protection as well as economical issues

In addition, great emphasis is also given to the human relations and communication within all integrating GAEA departments. Our employees are being informed on a regular basis on the subjects related to the healthy diet, environmental protection as well as economical issues.

In December 2010 GAEA successfully completed the SMETA Standards - Ethical Audit by Bureau Veritas. GAEA is 1 of the 3 food companies that have been audited thus far in Greece and as per the auditors who checked GAEA's "working practises", the one with the highest standards.

## **Beyond Borders: Gaea Took a Starring Role at the Oscars – for a Second Time**

Gaea took a starring role in the 81<sup>st</sup> Oscar Academy Awards through its dynamic presence in the 10<sup>th</sup> Annual Award Celebration of the nonprofit "Children Uniting Nations" held on February 22, 2009. Famous celebrities united their voices with Gaea's carbon neutral olive oils by signing the company's poster "We Are Helping Mother Earth". Nichelle Nichols from Star Trek II even promised to take GAEA's extra virgin olive oils on her future 'space mission'! It's worth mentioning that this is the second time Gaea's 2 DOP extra virgin olive oils have been selected by the organizers of the Oscars as they were included in the gift baskets for 300 VIPs in 2007!

## **Our Green Rev - Oil - Ution!**

Through the calculation of our CO<sub>2</sub> emissions/carbon footprint, Gaea is committed to gradually intervene in all practices involved in olive oil production which are harmful for the environment - spanning the entire journey from cultivation to the supermarket shelves - in order to reduce CO<sub>2</sub> emissions year after year.

## The 1st WATER FOOTPRINT for olive oil products

GAEA's continuous interested in investing in the sustainability of its products has moved forward with the first Water Footprint calculation as well.

For this GAEA recently calculated the first Water Footprint for its Olive Oil products and became a member of the Water Footprint Network (WFn) which is a non-profit foundation under Dutch law. It is essentially an international network by and for its partners.

### Business & Water: The Importance

Water Footprint (WF) of a product is the volume of freshwater used to produce the product, measured over the full supply chain. The objective is to measure the WF of all the processes entailed when manufacturing/producing a product such as olive oil. Water is a critical resource and essential for business. There is no substitute for water and scarcities will lead to challenges for the Food and Agricultural Industries.

Collaboration and information from WFn will help us to understand how we can achieve a more sustainable and equitable use of water. This is of interest for both the company that produces and sells the products as well as the consumers that buy them.

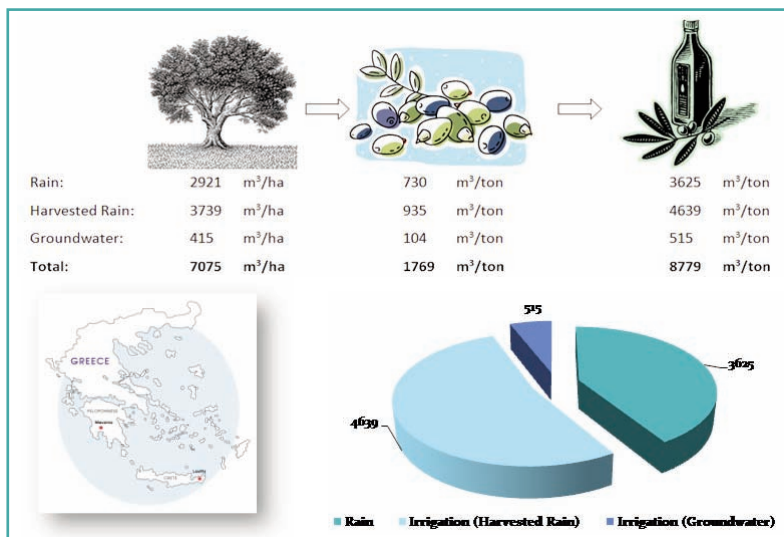
GAEA cooperated with WFn to learn more, reinforce our corporate image and strengthen our brand name not only through sales but also through environmental awareness and inform our customers about all this.

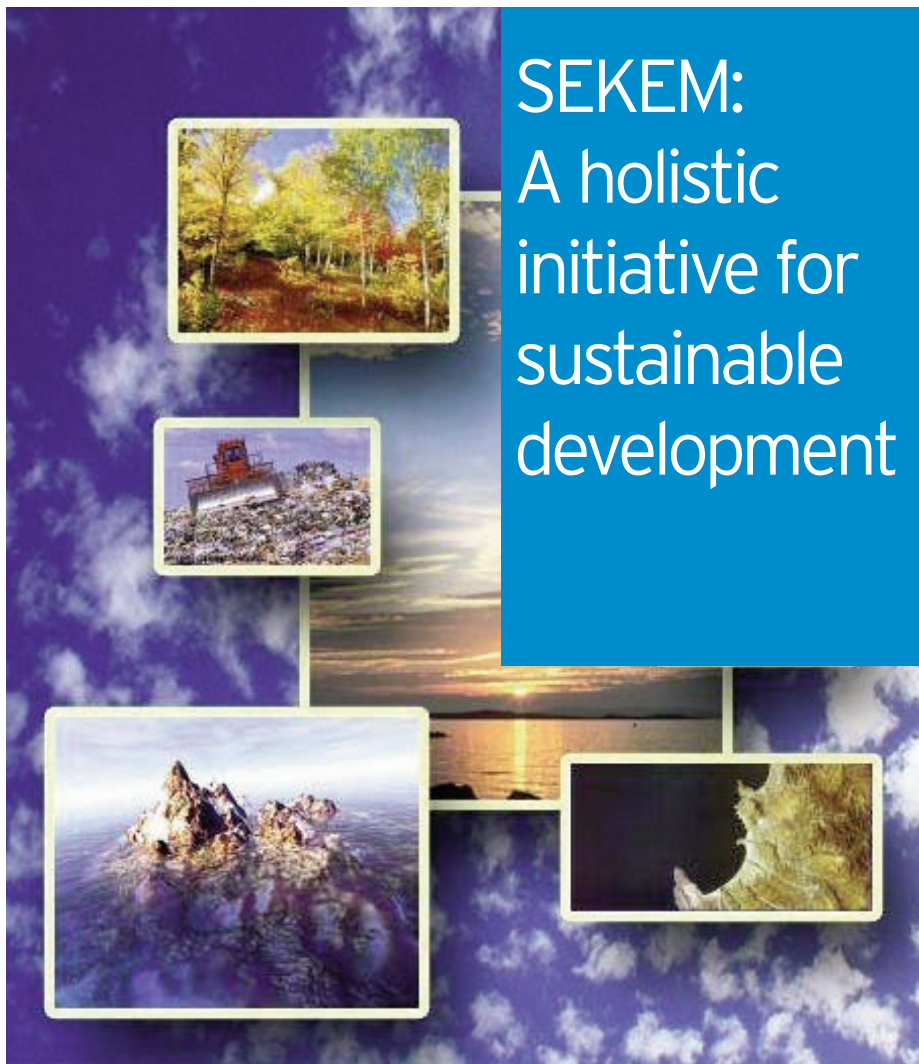
GAEA cooperated with CSE (member of WFn since 2008) and calculated the first Water Footprint for GAEA's Olive Oil products, the first of its kind worldwide.

Calculations were conducted for olive oil that is produced in the regions of Lasithi, Crete and Messinia, Peloponnese with the support of CSE and Christos Zoumides, Water Footprint expert and Research Fellow Department of Environmental Management at the University of Technology in Cyprus.

## RESULTS - CONCLUSIONS

- On average, the Water Footprint of 1 ton of olive oil at Messinia olive groves is 4813 m<sup>3</sup>/ton (4358 from rain + 455 from irrigation) and 8779 m<sup>3</sup>/ton at Lasithi (3625 from rain + 4639 from harvested rain + 515 from groundwater).
- The water footprint of olive oil is quite big, because it takes about 5 tons of olives for the production of 1 ton of olive oil. The calculations distinguish the source of water for the trees (rain, irrigation and irrigation source), and hence the final product.
- The major reason behind the large difference between the two olive groves is that Lasithi olive grove is much more irrigated than Messinia (95% compared to 8.5%). Also the climatic conditions (e.g. incoming precipitation) are different in the two locations as well as the yields and product fractions. ■





## SEKEM: A holistic initiative for sustainable development

### Matthias Keitel

Policy Analyst,  
Heliopolis Academy,  
SEKEM

3 Cairo-Belbeis  
Desert St.  
P.O. Box: 2834  
El Horreya, Cairo,  
Egypt  
Tel.: +20 22 6564140  
Fax: +20 22 6564123  
Matthias.keitel@sekem.com

**T**he great challenges of our world - food insecurity, climate change, poverty - are long-term problems mainly caused by unsustainable economic practices. These common economic practices have to be transformed into sustainable practices, preferably in a holistic way. The SEKEM Initiative has lived this approach since its inception in 1977. Its holistic business model does not only follow economic principles, but also integrates ecological, societal, and cultural dimensions. It thereby complies with market demands and standard economic procedures, protects the environment and promotes climate change adaptation and mitigation, guarantees ethical standards and human rights, and promotes the human development of its employees, students, and suppliers.

**Keywords:** Holistic business model, biodynamic agriculture, Sustainability Flower, integrated value chain, human development.

### SEKEM - Une initiative globale pour le développement durable

Les grands défis de notre monde (l'insécurité alimentaire, le changement climatique, la pauvreté) sont des problèmes à long terme causés principalement par des pratiques économiques non durables. Ces pratiques économiques communes doivent être transformées en pratiques durables, de préférence de manière globale. L'initiative SEKEM a suivi cette approche depuis sa création en 1977. Son modèle économique global ne suit pas seulement des principes économiques, mais intègre également une dimension écologique, sociale et culturelle. Il répond ainsi aux exigences du marché et aux procédures économiques standards, protège l'environnement et favorise l'adaptation au changement climatique et son atténuation, garantit des normes éthiques et les droits de l'homme et encourage le développement humain de ses employés, étudiants et fournisseurs.

**Mots clés :** Modèle holistique de business, agriculture biodynamique, Fleur de la Durabilité, chaîne de valeur intégrée, développement humain.

### SEKEM - Una iniciativa global para el desarrollo sostenible

Los grandes desafíos de nuestro mundo - la inseguridad alimentaria, el cambio climático, la pobreza - son problemas a largo plazo, causados principalmente por las prácticas insostenibles de la economía. Estas prácticas económicas comunes tienen que transformarse en prácticas sostenibles, preferiblemente de una forma holística. La Iniciativa SEKEM ha seguido este enfoque desde su creación en 1977. Su modelo de negocio integral no sólo sigue principios económicos, sino que también integra dimensiones ecológicas, sociales y culturales. Con ello se ajusta a las exigencias del mercado y los procedimientos económicos estándar, protege el medio ambiente y promueve la adaptación al cambio climático y su mitigación, garantiza estándares éticos y derechos humanos, y promueve el desarrollo humano de sus empleados, estudiantes y proveedores.

**Palabras clave:** modelo holístico de negocios, agricultura biodinámica, Flor de Sostenibilidad, cadena de valor integrada, desarrollo humano.

The world is facing multiple crises - economic, social, and ecological. The Mediterranean countries are particularly affected as they struggle with weak and unbalanced economies and are located in a region that is more susceptible to climate change.

Businesses need to address all of these crises in order to contribute to and possibly strengthen our quality of life. One very promising approach to address the wide variety of challenges that we are facing is a holistic business model, which applies innovative solutions to address all affected dimensions: ecological, economic, societal, and cultural life. Such a holistic business model is sustainable entrepreneurship.

Sustainable entrepreneurship has not yet moved mainstream; however, it gains momentum through the growing awareness of global challenges such as climate change and the exploitation of finite resources. This momentum is further spurred by organizations like the Schwab Foundation in Geneva.

One pioneering example is SEKEM. It demonstrates how sustainable entrepreneurship has been practiced and lived for more than three decades in Egypt. SEKEM has formed an integrated value chain from start to finish by growing organic raw materials through sustainable agricultural methods, then processing them into foodstuffs, textiles, and pharmaceuticals, and lastly packing and distributing them to wholesalers, supermarkets, and small shops. Its companies, its schools and vocational training centre, its medical centre and research laboratories, its training facilities, and its university make the SEKEM Initiative a role model for sustainable entrepreneurship in the region and worldwide.

## **SEKEM - 34 years of Sustainable Entrepreneurship**

In 1977 Dr. Ibrahim Abouleish founded SEKEM which is located about 60km northeast of Cairo in rural Egypt. At that time he had returned to Egypt after 21 years of study and work in Austria. When he saw how Egypt's state of affairs and its socioeconomic fabric had deteriorated, he had a vision for his country:

*"Sustainable development towards a future where every human being can unfold his or her individual potential; where mankind is living in social forms reflecting human dignity; and where all economic activity is conducted in accordance with ecological and ethical principles."*

This vision integrates ecology with economic, societal, and cultural life and is the guiding principle of all SEKEM activities.



<sup>1</sup> SEKEM, Report on Sustainable Development 2009, p. 6

## Ecology

SEKEM's business model is based on biodynamic agriculture, a specific form of organic agriculture that views the farm as "a self-contained, self-sustaining ecosystem responsible for creating and maintaining its individual health and vitality without any external or unnatural additions. [...] Soil, plants, animals and humans together create this image of a holistic living organism."<sup>2</sup> SEKEM applies biodynamic agricultural methods according to Demeter standards, including the extensive use of compost, to turn desert lands into living and healthy soil. Currently, SEKEM and its biodynamic suppliers have over 20,000 acres of farmland and cultivate over 9,000 acres. The use of resilient crops and natural predators negate the need for external inputs such as chemical fertilizers and pesticides. Biodynamic agriculture means closed nutrient cycles, in which SEKEM rears livestock to produce its own compost, grows cereals to feed the livestock, and uses crop rotation to enhance soil fertility. The surplus is sold in supermarkets and organic shops, both nationally and internationally.

The benefits of biodynamic agriculture are numerous: Healthy soils with a high content of solid organic matter increase the water holding capacity (up to 70 percent at SEKEM<sup>3</sup>) and protect the soils from erosion. Compared to common practice, increased energy efficiency, lower greenhouse gas emissions and increased soil carbon sequestration make biodynamic agriculture a superb tool to mitigate climate change. SEKEM has sequestered emissions of over one million tons CO<sub>2</sub>-equivalents<sup>4</sup> since its inception over 30 years ago. Through diversification methods such as agro-forestry and crop rotation, the risk of crop failure is minimized. Intercropping and the abstinence of chemical inputs increase biodiversity. On the SEKEM

The SEKEM companies include the largest packer of organic tea and the leading producer of herbs in the Middle East

farms, which used to be desert land, there are more than 60 bird species, over 90 varieties of trees and shrubs and a broad range of small animals like hedgehogs, lizards, snakes, mongoose and foxes. Finally, biodynamic agricultural methods are healthier as they don't expose farmers, animals, soils, air, and surface waters to hazardous chemicals.

## Economic life

The raw materials are further processed by the companies of the SEKEM Group in order to produce high quality organic foodstuffs (ISIS), textiles (NatureTex), and phyto-pharmaceuticals (ATOS Pharma). These products are distributed and sold on the national and international market. The SEKEM group of companies therefore forms an integrated value chain. The returns of these companies are partly reinvested into the social and cultural activities of the SEKEM Development Foundation (SDF) which is the umbrella organization for SEKEM's activities in research, education, and medical care.

The SEKEM companies include the largest packer of organic tea and the leading producer of herbs in the Middle East. Additionally, they are all compliant with 14 international standards and certificates (ISO, Fairtrade, Demeter, etc.).

The SEKEM Group has implemented a comprehensive management system, integrating the four dimensions of sustainable development (ecology, economy, society, culture), and generating annual reports on progress and achievements. This management system is based on the Sustainability

<sup>2</sup> Demeter USA, Biodynamic Agriculture - At a Glance, 2009

<sup>3</sup> Climate Neutral Group, 2007: Compost project Egypt

<sup>4</sup> According to the measurements of Boki Luske & Joris van der Kamp (2009)



Flower, which serves as the conceptual framework for performance monitoring and evaluation at SEKEM. The Sustainability Flower was developed by the International Association for Partnership in Ecology and Trade (IAP). The IAP was established by SEKEM and several of its European business partners to create a dynamic interaction between farmers, producers and traders in order to provide consumers with the highest quality of organic products at the fairest price. Its 14 members are CEOs of SEKEM (Egypt), Alnatura (Germany), Eosta (The Netherlands), and other renowned growers, producers, manufacturers, and supporters of the organic industry.

Currently the Sustainability Flower is under revision. The goal is to make the flower more adaptable for new companies that also want to use this tool.

## Societal life

In 2010, the SEKEM companies employed over 1,800 people, mostly from the surrounding local communities. It engages with all of its stakeholders in a transparent way.

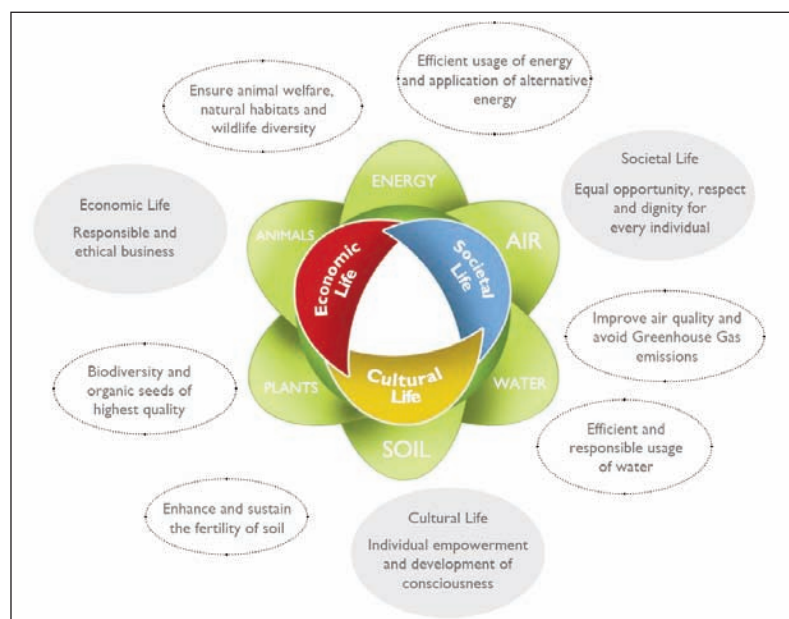
The SEKEM companies offer programmes which promote social security and equal opportunities. Examples are: trainings, health insurance, and pension schemes. Of central importance to the companies are also equal opportunities among employees; particularly to advance the professional

equality of women in the workplace which was promoted through the project "One Business Community... equal opportunity" (2009) and honoured with the "Gender Equality Award 2009" for ISIS. Also the United Nations Development Fund for Women awarded SEKEM for its efforts in this field.

The Code of Conduct of SEKEM is based on its vision for sustainable development which is depicted through the Sustainability Flower and further refined using the principles of the United Nations Global Compact (UNGC) and the relevant conventions of the United Nations and the International Labour Organisation.

Furthermore, SEKEM is actively involved in several initiatives of UNGC which is just one instance in which SEKEM is at the forefront of national and international initiatives for sustainable development.

SEKEM has received numerous awards for its holistic business model. Among others, the SEKEM Initiative was honoured with the Right Livelihood Award which is also known as the Alternative Nobel Prize.



## Cultural life

The SDF operates a broad range of educational, social, and cultural institutions. There is a kindergarten, various programmes for socially disadvantaged children, schools, and a vocational training centre which together educate about 600 children and students. The SDF also provides health services (via a medical centre with a catchment area of over 30.000 people in the surrounding villages), and supports cultural and artistic development (eurythmy classes, "Monday Forum"). Additionally, the SDF established the Heliopolis Academy for Sustainable Development which aims at improving the capacity to conduct, publish, and disseminate relevant social and scientific research in the areas of medicine, pharmacy, renewable energy, biodynamic agriculture, arts, and social sciences. To proliferate knowledge about biodynamic agriculture, SEKEM actively supports the Egyptian Biodynamic Association (EBDA) which offers trainings on the application of biodynamic methods. Currently there are about 200 farms under the EBDA.

Furthermore, the SDF is currently engaged in establishing the Heliopolis University for Sustainable Development. By doing so, the educational circle at SEKEM is complete. It includes a kindergarten, primary school, secondary school, community school, and the vocational training centre. Through education, training, and consulting, SEKEM intends to create capacity in order to scale up successful and sustainable business models.

All of these programmes create jobs, provide better learning opportunities, provide health care for the people in the surrounding villages, and improve societal inclusion of children with special needs. In doing so SEKEM significantly contributes to the alleviation of poverty, fights social exclusion, and im-

The holistic business model of the SEKEM Initiative unites social, cultural, and economic components to interact in harmony with nature

proves literacy. This also ensures the integration of SEKEM within the wider social community of the region and therefore contributes to cultural understanding between the local population and the SEKEM staff.

## A model for the future

In light of the many great challenges that the world, and specifically the Mediterranean region, is facing, holistic business models are the best long-term solution because they address problems in all aspects of life. Such initiatives are particularly important in overcoming the current economic crisis in Egypt which stems from the revolutionary uprising at the beginning of this year. A shift from the common economic short-term shareholder value-oriented business model to a greener and more social economic life is more important than ever.

The holistic business model of the SEKEM Initiative unites social, cultural, and economic components to interact in harmony with nature. It truly captures the idea of true sustainable entrepreneurship and contributes to a better future for Egypt and the Mediterranean region.

## Bibliography:

- [1] Boki Luske & Joris van der Kamp (2009): Carbon sequestration potential of reclaimed desert soils in Egypt. Louis Bolk Instituut & Soil and More International
- [2] Climate Neutral Group (2007): Compost project Egypt. See also: <http://globalchallenge2009.geo.uu.nl/pdfmap/projectsheetEgypt.pdf>
- [3] Demeter USA (2009): Biodynamic Agriculture - At a Glance, 2009. See also: <http://www.demeter-usa.org/files/At%20A%20Glance.pdf>

SEKEM (2010): SEKEM Report on Sustainable Development 2009, Egypt. ■



## Emprendeverde Network: A platform to foster entrepreneurship in the environmental sector



### Ana Leiva

*Former Director  
of the Biodiversity  
Foundation  
(Fundación  
Biodiversidad),  
Ministry of  
Agriculture, Food  
and Environment*

**D**eveloped by the Biodiversity Foundation (Fundación Biodiversidad), a public foundation of the Government of Spain, Ministry of Agriculture, Food and Environment, Emprendeverde Network (the green-launch-business Network) is the first platform to support entrepreneurs specialized in 'green' business, a virtual space to encourage the establishment and consolidation of sustainable enterprises or business lines related to environmental issues in Spain.

Emprendeverde Network is a project funded by the European Social Fund which aims to connect entrepreneurs and investors, thereby facilitating financial support for the start-up of new businesses in the environmental sector. Through this network, the new entrepreneurs can also receive advice and training to develop or improve their business plan.

**Keywords:** platform, entrepreneurs, investors, environment, new business, sustainable companies, finance, advice.

### «Red empredeverde»

Développée par la Fundación Biodiversidad, fondation publique du gouvernement Espagnol, sous l'égide du ministère de l'Environnement, du milieu rural et marin, la «Red empredeverde» (Réseau entreprenez vert) est la première plate-forme de soutien aux entrepreneurs spécialisée dans les activités «vertes», un espace virtuel pour fomentier la création et la consolidation d'Eco-entreprises ou de lignes d'activité liées à l'environnement en Espagne.

La «Red empredeverde» est un projet cofinancé par le Fond Social Européen dont l'objectif est de mettre en contact des entrepreneurs et des investisseurs, en facilitant de cette manière l'obtention de financements pour la mise en place de nouvelles activités dans le secteur environnemental. À travers ce réseau, les nouveaux entrepreneurs peuvent également bénéficier de conseils et d'une formation pour la rédaction ou l'amélioration de leur business plan.

**Mots clés :** plate-forme, entrepreneurs, investisseurs, environnements, nouvelles activités, entreprises durables, financement, conseil.

### Red empredeverde

Desarrollada por la Fundación Biodiversidad, fundación pública del Gobierno de España, dependiente del Ministerio de Medio Ambiente, y Medio Rural y Marino, la Red empredeverde es la primera plataforma de apoyo a emprendedores especializada en los denominados negocios 'verdes', un espacio virtual para fomentar la creación y consolidación de empresas sostenibles o líneas de negocio vinculadas al medio ambiente en España.

La Red empredeverde es un proyecto cofinanciado por el Fondo Social Europeo cuyo objetivo es poner en contacto a emprendedores e inversores, facilitando de esta forma la obtención de financiación para la puesta en marcha de nuevos negocios en el sector medioambiental. A través de esta Red, los nuevos empresarios también pueden recibir asesoramiento y formación para redactar o mejorar su plan de negocio.

**Palabras clave:** plataforma, emprendedores, inversores, medio ambiente, nuevos negocios, empresas sostenibles, financiación, asesoramiento.

## What is the Empreverde Network?

Last April, the Biodiversity Foundation launched [www.redempreverde.es](http://www.redempreverde.es) platform, a virtual site created to encourage the creation and development of new "green" businesses whose intention is not only getting an economic return, but also looking for a positive impact on society and the environment, improving employment, driving eco-innovation in enterprises and sustainability of economic activities.

But what exactly is a 'green' company? Green Business can be understood as a sector which contributes to decarbonize the economy and reduce greenhouse gas emissions; it also contributes to reducing energy consumption as well as the consumption of raw materials and water by applying eco-efficient strategies. Likewise, green business aims to prevent or minimize pollution while encouraging and achieving waste reduction, supporting re-usage and/or recycling. This type of business introduces products into the market which are designed to minimize the environmental impact throughout their life cycle (eco-design). Furthermore, green business values natural resources in a certain area encouraging their sustainable use and conserves and restores biodiversity (species, areas and ecosystems).

In this regard, the Empreverde Network is aimed to every entrepreneur, investor and stakeholder interested in 'green' entrepreneurship, i.e., all those interested in economic opportunities related to environmental protection and sustainable use of natural resources.

The project, funded by the European Social Fund through the Operational Programme Adaptability and Employment 2007-2013, covers a whole range of actions to contribute to the creation and consolidation of companies in the environmental sector by capturing,

advising, training, contacting with potential investors/funders and supporting entrepreneurs, including support for the development of new environmental business lines in small and medium enterprises (SMEs) already consolidated.

"The Empreverde Network is aimed at entrepreneurs, investors and stakeholders in economic opportunities related to environmental protection and sustainable use of natural resources."

## Supporting entrepreneurs

As regards entrepreneurs, Empreverde Network has launched various initiatives to help them create and strengthen their business. Its social network allows new entrepreneurs to get one's name and to contact investors in order to find ways of financing his business and to share their experiences with other 'green' entrepreneurs, bringing together ideas and projects.

The Empreverde Network also provides advice and training to entrepreneurs, this meaning any professional entrepreneur, small and medium enterprises (SMEs) or 'microsme' which is currently developing a business venture (or has the intention to do it) including new business lines.

The Network provides general or specialized training, as well as free advice on issues such as the development of business plans, incorporation of new business lines related to the environment, specific information on environmental issues, eco-innovation and sustainability, financing and investment channels. To that aim, Empreverde Network accounts with the support and advice of an advisory board, composed of entities related to the entrepreneurship business and that are specialized in different areas and subjects of interest.

Moreover, the Biodiversity Foundation has launched the Empreverde

Contest, which is worth 150,000 Euros, and aims to support entrepreneurs in their business ventures, supporting thereby their development and implementation. The object of the contest is to reward those 'green' entrepreneurs distinguished by its contribution to the sustainable economy, helping them create and consolidate their business. The deadline for applications expired on October 31<sup>st</sup>, 2011; 200 nominations of entrepreneurial projects, mainly related to the field of renewable energy, energy saving and energy efficiency and environmental consulting have been presented.

## **A network open to all**

However, the Empreverde Network does not only seek to directly support entrepreneurs, but is also designed to create synergies with other existing initiatives in order to support entrepreneurship and making them available to both 'green' entrepreneurs and investors or eco investors, therefore facilitating them to contact with new employers that could enter and participate in new projects and sustainable businesses. Since the main objective of the Empreverde Network is to serve as a bridge between entrepreneurs and potential investors, the project also includes the development of various actions, such as holding investment fora.

In any case, the Empreverde Network is a space open to professionals from all disciplines, such as researchers, academics or business schools, government representatives, civil society, etc., who are interested in 'green' entrepreneurship. Not surprisingly, the Empreverde Network has been conceived as a free and open access Platform 2.0, where anyone interested in 'green' entrepreneurship can be registered as a member. Its main objectives are basically

three: channel network services; serving as a meeting point for the exchange of knowledge and experience, working as a social network to enable networking, participate and find synergies with other entrepreneurs and investors, and to disseminate various business initiatives and investment opportunities.

**The Empreverde Contest, which is worth 150,000 Euros, rewards initiatives that are distinguished by their contribution to sustainable development**

## **Constantly growing**

The Empreverde Network exceeded thousand members, entrepreneurs, investors and people involved in the 'green' business in the first three months. Of these, more than 400 registered members are entrepreneurs who have already established a firm and over 390 are new entrepreneurs who hope to do it soon. A total of 28 are investors and 256 are members are Internet users, interested in this type of business.

The Network's website has received more than 15,000 visits, with about 8,000 unique visitors and over 91,000 page views. Regarding the resources of the Empreverde Network, the 69 videos posted so far on the web have been played over 1,500 times, with about 250 files for download, 46 discussion topics and 36 blogs.

In total, 48 groups were created to work on the Internet, being the most active groups the ones dedicated to the development cooperation and renewable energy, with 67 followers; environmental consulting (57) sustainable tourism (55), residential renewable energy (54) or social net-

“The Empreverde Network is a free, open access Platform 2.0, open to all professionals of all disciplines and areas of activity that are interested in green entrepreneurship”

works and environment (50). The Empreverde Network is also present in social networks, accounting in July with more than 1,500 followers on Twitter and 1,000 friends on Facebook.

All these data certainly show that the Empreverde Network is a growing and active space, with an enormous degree of permanence. As the first platform specialized in green business to support entrepreneurs in Spain, despite his youthness, Empreverde Network is already a place where the exchange of knowledge and experience between professionals is achieving its objectives, those of developing and strengthening the entrepreneurial spirit in the environmental sector.

More information on [www.redempreverde.es](http://www.redempreverde.es)  
Más información en [www.redempreverde.es](http://www.redempreverde.es) ■





## SEED: On the basis of a triple bottom line

Amélie Heuer

Operations Coordinator  
SEED Initiative  
Division of  
Communications and  
Public Information  
(DCPI)  
United Nations  
Environment  
Programme (UNEP)

P.O. Box 30552  
00100 Nairobi  
Kenya  
amelie.heuer@seedinit.org

**W**hile the concept of the green economy has been valued and broadly accepted at policy level for stimulating investment in green technologies, creating employment and reducing greenhouse gas emissions, it is still trying to find a stronger foothold at the local level.

Small, micro and medium-sized enterprises (SMMEs) can play a central role in making the green economy a reality because they are the engine of the global economy. While most follow the conventional model for businesses, there is a growing number of pioneers who look at success also in terms of the social and environmental benefits; **on the basis of a triple bottom line.** Their path to success is often much more challenging than for conventional, single bottom line, businesses.

By identifying and addressing these challenges at the national and global level, governments, financial institutions, and other stakeholders can encourage and enable social and environmental small and micro-enterprises to establish and ultimately promote the green economy at the local level.

**Keywords:** green economy, triple bottom line, entrepreneurship, SMME, social, environmental, enterprises.

### SEED : sur la base d'un triple résultat

Bien que le concept d'économie verte ait été évalué et largement accepté au niveau politique afin de stimuler l'investissement dans les technologies vertes, la création d'emplois et la réduction des émissions de gaz à effet de serre, il reste encore à lui trouver un meilleur ancrage au niveau local.

Les micro, petites et moyennes entreprises (MPME) peuvent jouer un rôle central pour faire de l'économie verte une réalité, car elles sont le moteur de l'économie mondiale. Alors que la plupart suit le modèle de développement classique, un nombre croissant de pionniers envisagent également le succès en termes d'avantages sociaux et environnementaux, sur la base d'un triple résultat. Leur chemin vers le succès est souvent beaucoup plus difficile que pour les entreprises classiques, celles avec un résultat unique.

En identifiant et en relevant ces défis au niveau national et mondial, les gouvernements, les institutions financières et les autres parties prenantes peuvent encourager et permettre la création de micro et de petites entreprises sociales et environnementales et promouvoir ainsi l'économie verte au niveau local.

### SEED: sobre la base de una triple línea de base

Si bien el concepto de economía verde se ha valorado y aceptado en términos generales a nivel de políticas para estimular la inversión en tecnologías verdes, la creación de empleo y la reducción de las emisiones de gases de efecto invernadero, se sigue tratando de encontrar un punto de apoyo más sólido a nivel local.

Las microempresas, así como las pequeñas y medianas empresas (MIPYMES) podrían desempeñar un papel central en transformar la economía verde en una realidad, ya que son el motor de la economía global. Mientras que la mayoría sigue el modelo convencional de negocio, hay un número creciente de pioneros que buscan el éxito también en términos de beneficios sociales y ambientales, sobre la base de la triple línea de base. Su camino hacia el éxito es a menudo un reto mayor que para las convencionales, negocios de una única línea de base.

Identificando y haciendo frente a estos desafíos a nivel nacional y mundial, los gobiernos, las instituciones financieras y otros interesados pueden alentar y ayudar a las empresas pequeñas y a las microempresas sociales y ambientales para establecer y promover en última instancia la economía verde a nivel local.

## The Green Economy - powered at the local level for global success

Much of the international and national work on the green economy focuses on the policy drivers for stimulating investment in green technologies, creating employment and reducing greenhouse gas emissions. But actors who can play a central role in making the green economy a reality are small, micro and medium-sized enterprises (SMMEs) because they are the engine of the global economy.

The vast majority of SMMEs follow the conventional model for businesses: they operate on the basis of a single, financial, bottom line. The greater the profit, the more successful a business is considered to be. Regulatory measures across the globe reinforce this approach.

But fortunately, there is a growing number of pioneers who look at success also in terms of the social benefits a business provides. These benefits are not just 'jobs created' - of course a major consideration as unemployment, especially for young people, grows alarmingly; rather they extend, for example, to community services and the forging of new cohesive social structures.

Some of these pioneers go even further, and operate on the basis of a triple bottom line: success for them means delivering social and environmental benefits from the outset, not as an add-on - they are exemplars of sustainable development and are already the 'face' of the green economy. SEED has worked with a large number of such green social enterprises in developing countries during their start-up phase, for instance:

- In one of the world's biodiversity hotspots, in Colombia's Chocó region, Oro Verde, has created the basis for the world's first local certifi-

“There is a growing number of pioneers who look at success also in terms of the social benefits a business provides.”

cation scheme for precious metals and has propelled a worldwide fair-trade movement around responsible small-scale mining. The programme empowers communities by helping them to protect and gain control over their land and use it sustainably; it improves working and living conditions by introducing new labour standards; it provides communities with opportunities to diversify their income; and it ensures the reforestation of the land with indigenous plants. Unlike traditional mining, Oro Verde uses neither mercury nor cyanide in the extraction of gold and platinum, so miners and the tropical rainforest are protected.

- Or in Ghana, where the Ghana Bamboo Bikes Initiative designs, develops and markets multi-purpose bikes and related products and services using native bamboo. As the frames are light and stable, the bikes are suitable for rough terrain and for carrying large farm loads, passengers, water and even patients. This initiative not only improves the lives of the people in Ghana by delivering a sustainable and affordable form of transportation that satisfies local needs but also creates employment opportunities for skilled and unskilled persons - especially youth - along the value chain by setting up a local bamboo bike industry. In addition the production of the bamboo bikes, compared to that of the traditional metal bicycles, requires less electricity and no hazardous chemicals. Bamboo is the fastest growing canopy for the re-greening of degraded lands, provides nutrition for humans and animals and helps improve air and water quality.
- In Senegal, an initiative has created the innovative business model "MicroPowerEconomy". These stand-alone hybrid power systems, which mainly use renewable energy sources



(such as wind and solar power), establish environment-friendly and reliable electrification of rural villages while promoting the development of local enterprises to ensure the power supply's economic viability, for both the rural customers and the power provider. The model provides green energy technology, micro-finance services and business training to stimulate local economic growth; it opens new opportunities for income-generating activities, and helps create a local circular flow of income, thereby reducing rural to urban migration; it leads to a reduction in greenhouse gas emissions and to reduced dependency on imported fossil fuel; it enhances security by providing public lighting; it contributes to education by improving access to lighting and information; and finally it contributes to healthcare as it enables better local refrigeration of medicines and vaccines.

While these cases show great diversity they often face similar obstacles. Their path to success is much more challenging than for a conventional, single bottom line, business. To establish and scale up, they need:

- Financing: Microfinancing opportunities have grown a lot, but start-up enterprises still often face funding difficulties as they have little by way of track record. And even when they have gone some way towards scale up, access to funding and the financial

“Microfinancing opportunities have grown a lot, but start-up enterprises still often face funding difficulties as they have little by way of track record”

flows from say, the carbon market, is by no means straightforward for.

- Appropriate regulation and incentives: the development of standards can provide market rewards; fiscal measures can be targeted at small and micro green businesses; government procurement can stimulate innovation; and help to businesses to find opportunities in addressing challenges such as climate change can reveal innovative solutions appropriate for local problems and so aid adaptation.
- Access to technologies, skills development and training opportunities for both entrepreneurs and local communities, including the financial and business skills necessary for sustainable enterprises, all of which are often in short supply. Without these, there will not be the capacities on the ground to absorb any financial flows resulting from major funding and investment, and the transition to a green economy will not take place as fully, or as rapidly, as it might.

There is no shortage of budding innovative entrepreneurs wanting to operate at the local level. Given the right opportunities, they can solve local problems in a truly sustainable manner, at the same time strengthening local institutions and helping to preserve local culture. But developing and putting those opportunities into place will take time. All the more is Rio+20 a trigger for governments, financial institutions, and other stakeholders to act quickly to encourage and enable social and environmental small and micro-enterprises to establish, and put in place strong mechanisms for reporting and evaluation of pro-poor and environmentally beneficial outcomes. That would indeed power the green economy at the grassroots and add significantly to the overall impact. ■

# Sustainable Public Procurement



Buy green  
and make a  
difference!

Marta Anglada  
Roig<sup>1</sup>

UNESCO Chair in Life  
Cycle and Climate  
Change

Escola Superior de  
Comerç Internacional -  
Universitat Pompeu  
Fabra (ESCI-UPF)  
Tel.: +34 93 295 4710  
Fax: +34 93 295 4720  
marta.anglada.roig@gmail.com  
unescochair@esci.upf.edu

**T**hese days we are increasingly aware of our impact on the environment. The scientific evidence is clearer and stronger than ever before - our actions are changing our environment. Communities across the globe are facing the dramatic consequences of climate change, excessive use of natural resources, threats to biodiversity and increasing poverty. These problems cannot be tackled without making a shift towards more sustainable production and consumption practices. To bring about change it is going to take commitment and action from every one of us

Every procurement decision we make has an impact on the environment and on society - from the emissions which public transport produces, to the conditions of the workers who extract the stones of our houses. Sustainable procurement means carefully considering these impacts when choosing what we buy.

**Keywords:** Green Public Procurement (GPP), Sustainable Public procurement, Life Cycle Analysis (LCA), Life Cycle Thinking (LCT), European Commission (EC), public authorities, procurement, criteria, tender, green.

## ACHETEZ VERT ET FAITES LA DIFFÉRENCE!

De nos jours, nous sommes de plus en plus conscients de notre impact sur l'environnement. Les preuves scientifiques sont plus claires et plus fortes que jamais : nos actions sont en train de changer notre environnement. Les communautés du monde entier font face aux conséquences dramatiques du changement climatique, à l'utilisation excessive des ressources naturelles, aux menaces sur la biodiversité et à la pauvreté croissante. Ces problèmes ne peuvent être résolus sans faire un virage vers des pratiques de production et de consommation plus durables. Pour amener le changement, il va falloir l'engagement et l'action de chacun d'entre nous.

Chaque décision d'achat que nous faisons a un impact sur l'environnement et sur la société : des émissions produites par les transports en commun aux conditions de vie des travailleurs qui extraient les pierres de nos maisons. L'achat durable signifie d'examiner attentivement ces impacts quand on choisit ce que nous achetons.

**Mots clés :** Marchés Publics Écologiques (MPE), Marchés Publics Durables, Analyse du Cycle de Vie (ACV), Réflexion Axée sur le Cycle de Vie (RAC), Commission Européenne (CE), autorités publiques, marchés, critères, offre, vert.

## ¡COMPRA VERDE Y MARCA LA DIFERENCIA!

Hoy en día cada vez somos más conscientes de nuestro impacto sobre el medio ambiente. La evidencia científica es más clara y más fuerte que nunca - nuestras acciones están cambiando nuestro entorno. Las comunidades de todo el mundo se enfrentan a las consecuencias dramáticas del cambio climático, el uso excesivo de los recursos naturales, las amenazas a la biodiversidad y el aumento de la pobreza.

Cada decisión de compra que hacemos tiene un impacto sobre el medio ambiente y en la sociedad - desde las emisiones que produce el transporte público hasta las condiciones de los trabajadores que extraen las piedras de nuestras casas. Adquisición sostenible significa considerar cuidadosamente estos impactos a la hora de elegir lo que compramos.

**Palabras clave:** contratación pública verde, contratación pública sostenible, análisis del ciclo de vida, concepto de ciclo de vida, Comisión Europea (CE), autoridades públicas, contratación, criterios, oferta, verde.



# Sustainable Public Procurement

## Introduction

Public authorities must be committed to protecting the environment. Every spending decision public authorities make will have consequences for the environment - so it is important to consider the issues carefully. The Government has a responsibility to lead this action, not least through the goods and services it buys. The European Commission estimates that public authorities in the European Union spend 1.5 trillion Euros each year on the procurement of goods and services, which means 16% of the EU Gross Domestic Product (GDP)<sup>2</sup>. If all public bodies chose environmentally friendly products in their procurement actions, they would significantly contribute to sustainable development. For this reason, Green Public Procurement - spending public money responsibly in products and services that foster sustainable development - must be a priority in order to trigger the market towards more environmentally friendly products.

Public authorities, who often call for the involvement of the productive sectors and citizens in taking care of the environment and making cities more sustainable, play an important role in leading by example. Leading the way in greening processes and fostering a demand for environmentally friendly and socially fairer products and services is part of a shared strategy in order to preserve the planet today and in the future.

## What is Sustainable Public Procurement?

Sustainable Public Procurement means procuring products and services considering not only their economic and technical aspects, but also environmental and social ones, in order to have the lowest environmental and most positive social impact locally and globally.

The European Commission estimates that public authorities in the European Union spend 1.5 trillion Euros each year on the procurement of goods and services, which means 16% of the EU Gross Domestic Product

Every product or service bought has environmental impacts throughout its life-cycle - from the extraction of raw materials, the manufacturing of the product, through to its use and disposal. The integration of environmental, social and ethical considerations into the tender documents lead to new, added criteria when choosing and managing products, services and/or works. At its most basic, this can mean simply making sure you always buy recycled paper or Fair Trade coffee. At its most comprehensive, it means systematically integrating environmental and social considerations into all procurement activities, whether purchasing goods, services or works - from defining the true needs, to setting appropriate technical specifications and evaluation procedures, to monitoring performance and results.<sup>3</sup>

Examples are: using renewable resources and reducing CO<sub>2</sub> emissions, minimising the environmental impact at the utilisation stage, procuring 100% child labour-free products and the use of non-toxic substances. A great many more environmentally sound solutions are now available on the market at competitive prices - examples include more energy efficient school buildings, green electricity, catering services offering organic food and less polluting public transport.

## Are we on the right path? European initiatives

In 2005, the EC carried out a study to evaluate the level of GPP in all 25 Eu-

<sup>1</sup> Formerly at: ICLEI - Local Governments for Sustainability, Freiburg im Breisgau (Germany)

<sup>2</sup> A report on the functioning of public procurement markets in the EU: benefits from the application of EU directives and challenges for the future. (2004) [http://ec.europa.eu/internal\\_market/publicprocurement/studies\\_en.htm](http://ec.europa.eu/internal_market/publicprocurement/studies_en.htm)

<sup>3</sup> Procura+ Manual - A Guide to cost-effective Sustainable Public Procurement

European Member States. The aim of the project was to measure the current level of GPP, and to make available examples of technical specifications for products and services identified as the most suitable for "greening". More than 1,000 tenders were analysed and over 860 questionnaires were filled out. The study showed that there were 7 countries - known as the Green-7 (Austria, Denmark, Finland, Germany, the Netherlands, Sweden and the United Kingdom) - that included more environmental criteria in their tenders. As a result, the European Development Strategy (EDS), published in 2006, stated that by the end of 2010, all European Member States should achieve the same level as the Green-7 countries in greening their public tenders. One of the recommendations to achieve this was to establish GPP National Action Plans in all EU Member States.

There are several initiatives, national governments, NGOs and organizations across Europe working towards assisting purchasers in implementing sustainable procurement by providing guidance on setting environmental requirements in tendering together with other practical advice on green or sustainable procurement. In addition, some governments and non-governmental organisations maintain databases of green products that contain environmental criteria and links to possible suppliers. Some of these are:

- European Commission: <http://ec.europa.eu/environment/gpp>
- United Nations Environment Programme: <http://www.unep.fr/scp/sun/facility/reduce/procurement>
- Procura+ Campaign: [www.procuraplus.org](http://www.procuraplus.org)
- ICLEI - Local Governments for Sustainability: [www.iclei.org](http://www.iclei.org)
- Swedish Environmental Management Council (SEMCo): [www.msr.se](http://www.msr.se)
- EcoBuy Vienna Initiative: [www.oekoinkauf.de](http://www.oekoinkauf.de)
- IHOBE (Basque Government): [www.ihobe.net](http://www.ihobe.net)
- Barcelona City Council: <http://www.bcn.es/agenda21/ajuntamentsostenible/index.htm>
- Xarxa Compri Reciclat (Government of Catalonia): <http://xcr.arc.cat>
- Green Purchasing International Forum in Cremona (Italy): <http://www.forumcompraverde.it>

Many European countries have already implemented GPP National Action Plans, and many cities are already including GPP in their political agendas. A new Helpdesk for GPP has also been launched as of January 2010. Its main mission is to promote and disseminate information about GPP, and to provide timely and accurate answers to stakeholders' enquiries<sup>4</sup>.

## Procurement criteria: what is already available?

The European Commission (EC) has taken initiatives to develop proposals for environmental criteria for a number of product groups with the ambition to harmonise the procurement process practised in the EU Member States to the extent possible. The EC



<sup>4</sup> Stakeholders can send their questions by email to [gpp@biois.com](mailto:gpp@biois.com)

intends to recommend every Member State to consider the suggested criteria within the framework of all countries National Action Plans for Green Public Procurement (GPP).

A first set of criteria was developed initially by ICLEI - Local Governments for Sustainability as a part of a Training Toolkit for GPP<sup>5</sup> to facilitate purchasers to increase the use of environmental criteria in the procurement process. The criteria were established on the basis of a broad stakeholder consultation and are, where appropriate, based upon European or, in the absence thereof, national environmental criteria and guidelines. The toolkit is comprised of a set of core criteria, and comprehensive criteria that can be easily included in public tenders. The following product groups were covered: copying and graphic paper, cleaning products and services, office IT equipment, construction, transport, furniture, electricity, food and catering services, textiles, and gardening products and services.

Besides the EC procurement criteria, there are other organisations that have developed a set of criteria for different product groups, and which can be easily used in public tenders. For instance, the Procura+ Campaign<sup>6</sup> has a set of criteria for six product groups, the Swedish Environmental Management Council (SEMCo)<sup>7</sup> has also developed environmental criteria within ten different product areas, and Ihobe<sup>8</sup> (Basque Country, Spain) has published environmental criteria for over 21 product groups.

Most procurement criteria are based on ecolabels (especially Type I and III). Ecolabel criteria are not based on one single factor, but on studies which analyse the impact of the product or service on the environment over the course of its life cycle. For instance, in 2008 the Diputació de Barcelona (Spain) carried out a study about the

existing ecolabels for 46 product groups. The aim was to promote the incorporation of ecolabel criteria in the preparation of public tenders.

## **Integrating Life Cycle Thinking (LCT) into Green Public Procurement (GPP)**

A number of initiatives aimed at enhancing sustainable development and promoting beneficial conservation of biodiversity are under way in several countries around the world. Most European measures include a common denominator: the life cycle approach for products or activities. This approach considers all the impacts associated with all of the life cycle phases, “from the cradle to the grave” so to speak, because in each stage new environmental support is required, both in the forms of supply of primary resources and of absorption of pollutants.

The use of Life Cycle Assessment (LCA) as a means for identifying the negative environmental impacts associated to the use of materials and energy and water resources and to the release of emissions throughout a product system's life cycle is increasingly being recognised. The European Commission, for example, has already produced keynote documents in which the crucial role of LCT is highlighted: the thematic strategy on the Sustainable Use of Natural Resources, and the thematic strategy on the Prevention and Recycling of Waste. Fostering LCT approaches and tools is also the main aim of the ongoing Life Cycle Initiative<sup>9</sup>, an international partnership launched and maintained by the United Nations Environment

Most European measures include a common denominator: the life cycle approach for products or activities

<sup>5</sup> [http://ec.europa.eu/environment/gpp/toolkit\\_en.htm](http://ec.europa.eu/environment/gpp/toolkit_en.htm)

<sup>6</sup> <http://www.procuraplus.org>

<sup>7</sup> <http://www.msr.se>

<sup>8</sup> <http://www.ihobe.net>

<sup>9</sup> <http://lccinitiative.unep.fr>

Programme (UNEP) and the Society for Environmental Toxicology and Chemistry (SETAC), of which GiGa is the only Spanish partner.

In public procurement, Life Cycle Thinking should be the proper basis for all GPP criteria development to be included in public tenders. The life cycle approach seeks to identify possible improvements to goods and services in the form of lower environmental impacts and reduced use of resources across all life cycle stages. The key aim of Life Cycle Thinking is to avoid burden shifting. This means minimising impacts at one stage of the life cycle, or in a geographic region, or in a particular impact category, while helping to avoid increases elsewhere. For example, saving energy during the use phase of a product, while not increasing the amount of material needed to provide it<sup>10</sup>.

In public procurement, for instance, the use of LED<sup>11</sup> lights applied in street lighting is quite a common practice nowadays, and people are convinced of the benefits it implies both economically and environmentally in the long run. However, 10-15 years ago LED lighting was not used widely, and public authorities did not include environmentally criteria in public tenders to foster the use of LED lighting as they do nowadays. The shift towards the use of LED lighting was triggered by LCA and related economic studies that proved both the environmental and economic benefits of using more efficient and less polluting lights.

Even though LCA is a very useful tool, there is no point in requiring too much in a tender as there may be a lack of suitable offer on the market. It has been argued already that one should not recommend LCA the whole time, but instead just focus on some of the impacts. Arguing for LCT does not necessarily mean that always a new LCA

“In public procurement, for instance, the use of LED<sup>11</sup> lights applied in street lighting is quite a common practice nowadays, and people are convinced of the benefits it implies both economically and environmentally in the long run”

should be done, but it means to base one's choices on best examples and literature that follow the life cycle approach. By using LCT, one can avoid a too narrow perspective and avoid shifting problems from one stage of a product's life cycle to another.

The Environmental Management Research Group (GiGa)<sup>12</sup>, within the Escola Superior de Comerç Internacional at Pompeu Fabra University (ESCI-UPF), has been a pioneer in the field of LCA in Spain, and is currently active on many issues related to product and the environment, such as ecolabelling, ecodesign or green procurement.

## Conclusion

Even though many activities have been carried out over the last years, Green Public Procurement is still not fully seen as a priority and much work must be done in order to make it compulsory in all political agendas. The EC is working hard towards promoting and implementing sustainable public procurement and many countries have already implemented a GPP National Action Plan.

The development of procurement criteria should be harmonized and double work should be avoided: firstly, there is no need to 'reinvent the wheel'; additionally, the more criteria sets available, the more the market is confused on the real needs from public authorities.

Finally, it can be argued that the use of the Life Cycle approach should be made compulsory in all GPP criteria development, in order to be aware at all times of global impacts while trying to minimize the local ones. ■

<sup>10</sup> <http://lct.jrc.ec.europa.eu>

<sup>11</sup> Light-Emitting Diode (LED)

<sup>12</sup> Grup d'investigació en Gestió ambiental: <http://www.giga.cat>



## The importance of promoting both the demand and the supply side of the market to successfully implement sustainable public procurement in the Mediterranean

Áurea Adell Querol <sup>1</sup>  
aure.adell@ecoinstitut.es

Bettina Schaefer <sup>1</sup>  
bettina.schaefer@ecoinstitut.es

Josep Esquerra <sup>1</sup>  
josep.esquerra@ecoinstitut.es

**S**ustainable Public Procurement is an important instrument for the achievement of several policies and strategies defined to promote sustainable development. Most programmes and plans for a more responsible public procurement focus mainly on the demand side (the public administrations) and in the introduction of social and environmental criteria in their procurement practices. However in order to be able to purchase products or contract services with environmental and/or social benefits, it is necessary that they exist, that is to say, that there is a large and diverse enough offer of such goods and services for public authorities to buy them. In this article, we will try to present, some of the elements that should be put in place to achieve the best coordination between the supply and the demand side for a more successful sustainable procurement in the Mediterranean.

**Keywords:** Sustainable public procurement, green public procurement, environmental, social, criteria, demand, supply, procurement, consumption.

### L'importance de promouvoir aussi bien la Demande que l'Offre sur le marché afin de permettre la mise en place réussie de Marchés Publics Durables en Méditerranée

Les Marchés Publics Durables sont un instrument important pour la réalisation de plusieurs politiques et stratégies définies pour promouvoir le développement durable. La plupart des programmes et des plans pour un achat public plus responsable se concentrent principalement sur la demande (les administrations publiques) et sur l'introduction de critères sociaux et environnementaux dans leurs pratiques d'achat. Toutefois, afin de pouvoir acheter des produits ou solliciter de services avec des avantages environnementaux et/ou sociaux, il faut qu'ils existent, c'est-à-dire qu'il y ait une offre de ces biens et services suffisamment large et diversifiée pour que les pouvoirs publics puissent les acheter.

Dans cet article, nous tenterons de présenter quelques-uns des éléments qui devraient être mis en place pour atteindre une meilleure coordination entre l'offre et la demande pour un Marché Public Durable réussi en Méditerranée.

### La importancia de promover tanto la demanda como la oferta del mercado para implementar con éxito las Compras Públicas Sostenibles en el Mediterráneo

Compras Públicas Sostenibles es un instrumento importante para la consecución de una serie de políticas y estrategias definidas para promover el desarrollo sostenible. La mayoría de los programas y planes para una contratación pública más responsable se centran principalmente en la parte de la demanda (las administraciones públicas) y en la introducción de criterios sociales y ambientales en sus prácticas de contratación. Sin embargo, para poder comprar productos o contratar servicios con beneficios ambientales y/o sociales, es necesario que existan, es decir, que haya una oferta lo suficientemente amplia y diversa de bienes y servicios que las administraciones públicas puedan adquirir.

En este artículo vamos a tratar de presentar algunos de los elementos que deben ser implementados para lograr la mejor coordinación entre la oferta y la demanda para una contratación pública sostenible con más éxito en el Mediterráneo.

## Introduction

Sustainable Public Procurement is considered an important instrument to promote and implement several social and environmental policies and strategies as it is recognised in several policy documents such as in the Johannesburg Plan of Implementation<sup>1</sup> or in several communications and reports from the European Union<sup>2</sup>.

In order to promote Sustainable Public Procurement, each public authority- at local, regional, national and international level- should define a sustainable procurement strategy or programme in accordance with their competencies, resources and economic and social reality, as these are different in each of them.

In the definition of such programmes and plans at national or regional level, three aspects should be taken into consideration.

1. As the social and economic reality in each Mediterranean country is different, authorities have to first conduct an analysis of their present situation together with the relevant actors highlighted previously, in order to define the sustainable public procurement plans and strategies from:

- The knowledge of the different legal provisions, systems, tools and mechanisms to promote sustainable consumption and production in place in other countries
- An analysis of the priority product and service groups in their region, according to the productive system in place and the business opportunities in the internal market or for exportation
- The identification of key stakeholders and their willingness to introduce social and environmental criteria in their processes both in the production and decision-making.

Most sustainable procurement strategies focus on setting up targets, developing tools or organising training seminars for public authorities

2. At national or regional level, most sustainable procurement strategies focus on setting up targets, developing tools or organising training seminars for public authorities (the demand side) as the emphasis has been put in the role of public administrations as driving force for greening, introducing environmentally friendlier products in the market. However to really move the market it is necessary that there exists a supply of products and services with environmental and/or social benefits (the supply side). No sustainable procurement will take place if no sustainable supplies exist or if the benefits of the different alternatives cannot be proven. Therefore, sustainable public procurement strategies in the Mediterranean should try to coordinate and work both with the demand and the supply side.

3. Finally, the involvement of all relevant actors and stakeholders in the process has to be guaranteed. That includes:

- The business and production sector, to create the supply of more sustainable products and services in the regional market (and will be part of the demand too).
- Public administrations both at national, regional and local level. In

<sup>1</sup> Plan of Implementation of the World Summit on Sustainable Development.  
[www.un.org/esa/sustdev/documents/WSSD\\_POI\\_PD/English/WSSD\\_PlanImpl.pdf](http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf)

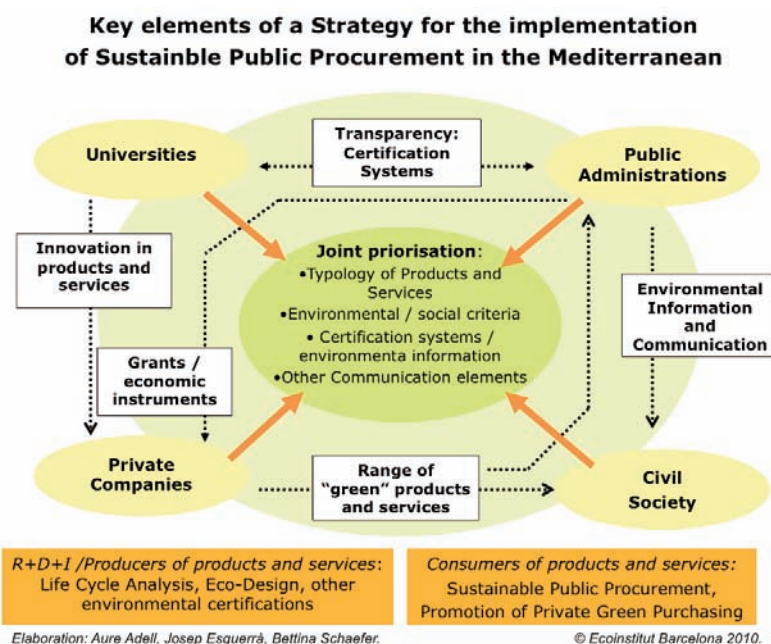
<sup>2</sup> Such as the Communication on Integrated Product Policy (COM/2003/0302 final), the Communication for an Environmental Technologies Action Plan for the European Union (COM/2004/0038 final), the Review of the EU Sustainable Development Strategy, the Communication on the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan (COM/2008/0397 final), or the Communication on Contributing to Sustainable Development : the role of Fair Trade and non-governmental trade-related sustainability assurance schemes (COM/2009/0215 final).

# Sustainable Public Procurement

general, local authorities have been more proactive in promoting sustainable procurement and are the pioneers in this field.

- Universities, research centres and expert organisations to support both the public and private sectors in the definition of the tools or criteria for a more sustainable production both in environmental and social terms.
- Civil society (including citizen and non governmental organisations-NGOs) as they can highlight priorities from the ground and because they are part of the demand of more responsible products and services.

The following graphic summarised the key elements of such a strategy:



## Working with the supply side, get the market ready

A key element to sustainable public procurement is the transparency and existence of standardised information in order to compare products and offers from an environmental and/or social point of view and to be able to choose, in each case, for the more sustainable option.

The way this is done can differ from country to country and by product groups. In some case that can be regulated by law like the safety sheet for chemical products or the consumption and CO<sub>2</sub> emission declaration for vehicles in the European Union. In others it can take the form of voluntary instruments such as:

- Regional, national or international ecolabel like the *Fair Wear Foundation* for textile products
- Standardised self-declaration like the *IT-Ecodeclaration* for some Information and Communication technologies
- Sustainable management systems such as environmental management systems (*EMAS, ISO 14.001* or similar), corporate social responsibility systems or social accountability standards (like *SA 8000*).

However third-party verification is advisable to guarantee transparency.

The Government of Catalonia (a region of Spain) decided to develop their own ecolabelling system- *Distintiu de Garantia de Qualitat Ambiental*<sup>3</sup>- for priority product groups according to the Catalan productive sector.

Whereas in Italy, no specific ecolabel has been set up but efforts from the central Government have focused in the promotion in the country of the *European ecolabel*<sup>4</sup>.

Once there is some credible and standardised information of the better behaviour of products and companies, the next step is the definition of the sustainability criteria for public procurement activities. Depending on the

<sup>3</sup> [http://www.mediambient.gentcat.net/eng/empreses/ecoproductes\\_i\\_ecoserveis/que\\_es\\_distintiu.jsp](http://www.mediambient.gentcat.net/eng/empreses/ecoproductes_i_ecoserveis/que_es_distintiu.jsp)

<sup>4</sup> <http://ec.europa.eu/environment/ecolabel/>

The Government of the Basque Country (a region of Spain), through their Environment Management Agency- lhobe- is defining environmental criteria for the public procurement of priority product groups based on criteria developed by the European Commission but adapted to the Basque context and companies<sup>5</sup>.

To do that, the technical assistance of lhobe (Ecoinstitut Barcelona) makes first a draft of possible criteria from the EU criteria and other tools available. They criteria are presented to Basque companies in discussion forums to involve them in the process and get to know if the criteria are feasible (at long and mid term) and the verification requirements are easy for them to provide. With their feedback and the concerns from the public sector, final sets of procurement criteria are set in different levels of requirement (from basic to excellence) in order for companies to adapt gradually.

product group and the market situation, sustainable procurement strategies will have to define together with the private sector and other relevant stakeholders (NGOs, research centres, etc.) clear social and/or environmental criteria for public procurement.

### **Promoting the demand side, the power of consumers**

Public administration not only can exercise their influence in the market but due to their function, ask for the respect and promotion of sustainability to the private sector and citizenship in general. In order to be consistent and credible, it is essential for the administration to be exemplary and to implement measures of the practical efforts to reduce its own impacts to go with the messages it send to the society.

Therefore, in order to promote sustainable consumption, public administrations have to first lead by example and afterwards, promote sustainable procurement by other actors, namely the private sector and the citizenship.

#### **a) The demand from the public sector**

As highlighted in a survey on green public procurement for the European Commission in 2005<sup>6</sup> and observed by us through out the years of experience on sustainable public procurement, in

order to promote sustainable public procurement certain barriers have to be overcome in different steps.

At first, the main barriers are lack of legal clarification, lack of knowledge and training and lack of tools and instruments. For that reason, numerous are the strategies on sustainable public procurement in which special emphasis has been made on:

- The clarification of the legal framework and the provision of options to implement sustainable public procurement.

In 2002, the Government of Catalonia published a law<sup>7</sup> to allow the regional government departments and agencies to reserve certain contracts for social insertion companies or special employment centres.

- The development of guidelines and resources to help public authorities implement sustainable public procurement.

<sup>5</sup> <http://www.lhobe.net/Paginas/Ficha.aspx?IdMenu=95390acd-6155-45cc-b339-1e2b3e4435ef>

<sup>6</sup> Bouwer M, et.al. Green Public Procurement in Europe 2006- Conclusions and recommendations. Virage Milieu & Management. the Netherlands. 2006.

<sup>7</sup> <http://www.gencat.cat/diari/3791/02358100.htm>



# Sustainable Public Procurement

In 2005, Ecoinstitut developed a guide on who to introduce social criteria in the procurement of work wear and other textile products for the NGO Setem who is in partner of the Clean Cloth Campaign<sup>8</sup> in Catalonia and who established together with several Catalan public authorities the Catalan network for Ethic Public Procurement<sup>9</sup>. The guide and the exchange between public authorities, has helped to replicate the first experience on the matter conducted by Barcelona City Council<sup>10</sup>.

- And in carrying out training seminars and conferences to exchange experiences and train practitioners and relevant actors.

In 2006, the Hecshel Centre in Israel, as part of a coordinated project with ICLEI and together with the Israeli Ministry of the Environment, conducted a seminar on green procurement for "Heschel Environmental Fellows", people who occupy varied posts in the non-profit, business and government spheres. The objective of the seminar was to train the participants and to define the main action lines for a national action plan on green procurement for Israel.

Once the first barriers are overcome and some experience is won on sustainable public procurement, practitioners highlight the lack of political support and the perception that more sustainable products are more expensive as the main barriers for sustainable public procurement. Is in this moment when the strategies of public authorities with overarching competences have started developing tools:

- To get a better picture of the real costs of products and services beyond the purchasing price, as costs,

like impacts, can occur during the whole life cycle of the products.

In 2009, the European Union has funded a project, the SMART-SPP<sup>11</sup> the objective of which is to promote innovation through public procurement and to develop a tool to evaluate the life-cycle costs and CO<sub>2</sub> emissions of different energy-efficient innovative solutions in order to choose the economically and environmentally most advantageous.

- And to measure the impacts on SPP in economical, environmental and social terms are being developed not only to monitor progress in the implementation of policies but also to be able to communicate the real benefits of SPP and obtain this more political support.

In 2008, the European Commission contracted the development and testing of a methodology to measure the total expenditure, total number of contracts, CO<sub>2</sub> reduction and costs reduction of Green Public Procurement<sup>12</sup>. Even though the method is under revision, it plays an important role as a first reference for future measuring systems.

Therefore, each public organisation, according to their competences and situation will have to define, where to make more emphasis when developing their own strategy to promote sustainable public procurement and how to make the most of existing policies and resources.

<sup>8</sup> <http://www.cleanclothes.org/>

<sup>9</sup> <http://comprapublica.wordpress.com/>

<sup>10</sup> <http://bcn.cat/agenda21/ajuntamentsostenible/english/index.htm>

<sup>11</sup> <http://www.smart-spp.eu>

<sup>12</sup> [http://www.ec.europa.eu/environment/gpp/studies\\_en.htm](http://www.ec.europa.eu/environment/gpp/studies_en.htm)

## b) The demand from the private sector and citizenship

When applying sustainable procurement in public authorities, these improve their efficiency and reduce their impacts due to a rationalisation and reduction of consumption and the purchase and contract of more responsible products and companies. However, if a real shift in the market has to be obtained, it is not enough with the tender processes and companies involved, but sustainable procurement actions need to be disseminated and promoted in other sectors of the society.

The promotion of sustainable procurement from companies has to be linked to other instruments for the sector to realise the benefits of sustainable procurement. These are mainly:

- Environmental management systems where sustainable procurement can help reduce the environmental impacts of the companies operations
- Eco-design and ecolabelling programmes where not only the products and solutions are conceived in an environmentally friendlier way but also products and materials with lower environmental impact are used
- Corporate social responsibility and social accountability systems in order to guarantee the respect of the fundamental principles and rights at work of the International Labour Organisation<sup>13</sup> in the company and through out their suppliers' chain.

For the civil society, sustainable consumption will have to be promoted through awareness raising campaigns and other initiatives (see the CP/RAC Annual Technical Publication<sup>14</sup> n° 7 and 8 for more information and examples).

The promotion of the demand from this other actors will create synergies as more demand of environmentally and socially responsible products and servic-

es (or boycott of irresponsible companies) will foster their up-take by more companies as market opportunities increase making those sustainably preferable products more available in the market.

## Final remarks and conclusions

To sum up, in order to promote sustainable public procurement in the Mediterranean region, the plans and strategies that have to be developed have to, on the one hand, make sure that in their markets there is enough supply of products and services with social and/or environmental benefits and that standardised and transparent information is available in order to be able to choose objectively between offers.

On the other one, resources will have to be developed together with the relevant stakeholders in order to tackle the barriers that practitioners will face as they start implementing and gain experience in sustainable public procurement.

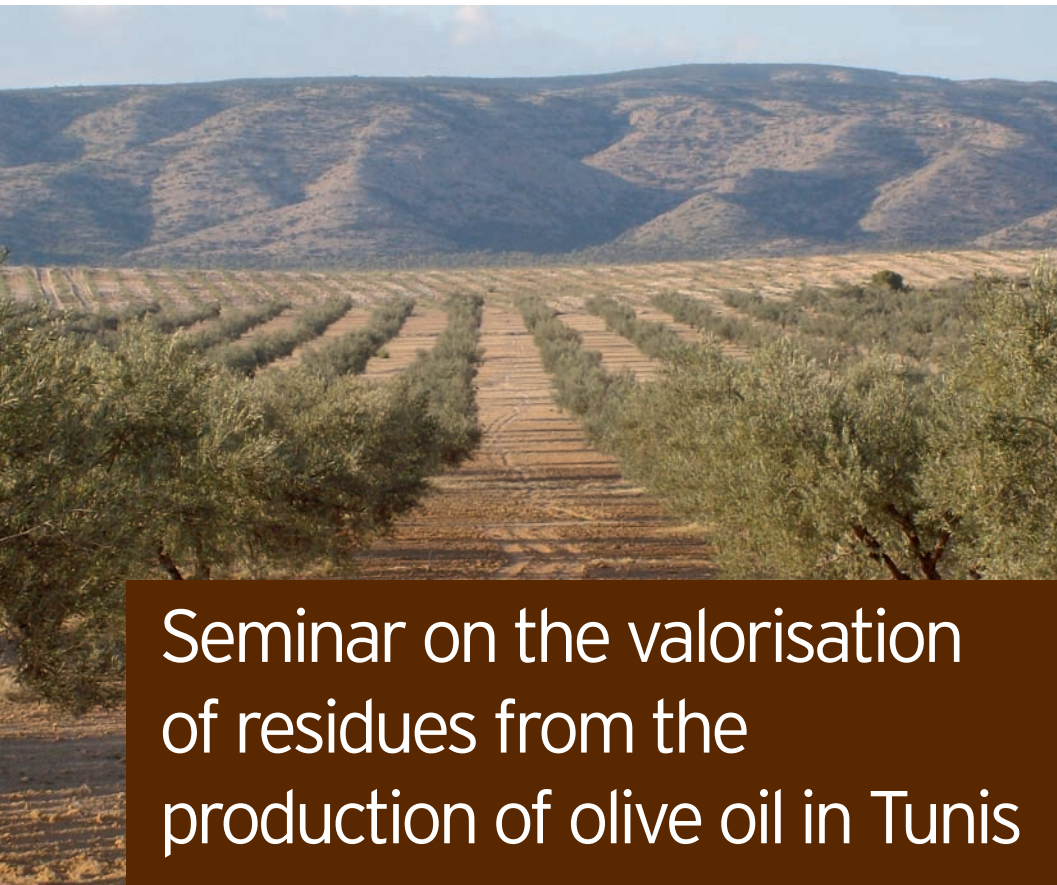
With those measures, public administrations will tend towards sustainability. However if the public sector has to drive the market, their practices and results have to be communicated externally to the rest of the society in order not to miss the opportunity to promote sustainable consumption from other actors. The administration has to lead by example, but to be able to lead it has to promote their practices externally.

Finally, we don't have to forget that sustainable procurement is an instrument to achieve the better implementation other economical, environmental and social policies and therefore those more overarching strategies will have to be set as well in order to support sustainable public procurement. ■

“That sustainable procurement is an instrument to achieve the better implementation other economical, environmental and social policies”

<sup>13</sup> <http://www.ilo.org/public/english/standards/index.htm>

<sup>14</sup> <http://www.cprac.org/en/publications/annualmagazine>



## Seminar on the valorisation of residues from the production of olive oil in Tunis

Frederic Gallo <sup>1</sup>  
Chemical Engineer,  
CP/RAC Technician  
fgallo@scprac.org

In the context of the launch of the new Tunisian Ecolabel for bottled olive oil, the CP/RAC took part in a seminar at the Tunis International Centre for Environmental Technologies (CITET) to look at the different ways of managing olive oil residues. Representatives at the seminar from Tunis included experts from the Ministry of the Environment and Sustainable Development, the National Waste Management Agency (ANGED) and CITET.

Tunis has more than 67 million olive trees in an area covering 1.7 million hectares, accounting for approximately 80% of the country's arboriculture. In 2009, 802,150 tonnes of olives and 160,000 tonnes of oil were produced (7% of the world's olive oil production and 9% of global olive oil exports). Some 70% of the oil is exported, of which 97% is in bulk and 3% in bottles. Exports represent 43% of all exports from the agro-food industry and 5% of Tunisia's total of exported goods. According to the National Oil Office, Tunis has 1,750 oil mills, 7 factories to extract residual oil, and 40 bottling plants, along with a number of refineries and coal-bunkers.

**Keywords:** CP/RAC, Olive Oil, Tunisia, compost, exports, ecolabel, seminar, workshop, capacity building.

### Séminaire sur la valorisation des déchets de la production d'huile d'Olive à Tunis

Dans le cadre du lancement du nouvel écolabel tunisien pour l'huile d'olive en bouteille, le CAR/PP a participé à un séminaire au Centre International de Tunis pour les Technologies Environnementales (CITET) afin d'examiner les différentes manières de gérer les résidus d'huile d'olive. Les représentants présents au séminaire de Tunis comprenaient parmi eux des experts du ministère de l'Environnement et du développement durable, de l'Agence Nationale de Gestion de Déchets (ANGED) et du CITET.

Tunis compte plus de 67 millions d'oliviers sur une surface de 1,7 million d'hectares, ce qui représente environ 80 % de l'arboriculture du pays. En 2009, 802 150 tonnes d'olives et 160 000 tonnes d'huile ont été produites (soit 7 % de la production mondiale d'huile d'olive et 9 % des exportations mondiales d'huile d'olive). Environ 70 % de l'huile est exportée, 97 % en vrac et 3 % en bouteilles. Ces exportations représentent 43 % du total des exportations de l'industrie agro-alimentaire et 5 % du total des biens exportés par la Tunisie. Selon l'Office National de l'Huile, Tunis dispose de 1 750 huileries, de 7 usines d'extraction d'huile résiduelle et de 40 usines d'embouteillage, ainsi que des raffineries et des charbon-bunkers.

### Seminario sobre la valorización de residuos de la producción de aceite de Oliva en Túnez

Como parte del lanzamiento de la nueva Ecoetiqueta tunecina para aceite de oliva embotellado, el CAR/PL participó en un seminario en el Centro Internacional de Túnez para las Tecnologías Ambientales (CITET) para observar las diferentes formas de gestión de los residuos de aceite de oliva. Asistieron a dicho seminario expertos del Ministerio de Medio Ambiente y Desarrollo Sostenible, la Agencia Nacional de Gestión de Residuos (National Waste Management Agency, ANGED) y CITET.

Túnez cuenta con más de 67 millones de olivos en una superficie de 1,7 millones de hectáreas, lo que representa aproximadamente el 80% de la arboricultura del país. En 2009, hubo una producción de 802.150 toneladas de aceitunas y 160.000 toneladas de aceite (7% de la producción mundial de aceite de oliva y el 9% de las exportaciones mundiales de aceite de oliva). El 70% del aceite es exportado: 97% a granel y 3% embotellado. Las exportaciones representan el 43% del total de las exportaciones de la industria agroalimentaria y el 5% del total de los bienes exportados de Túnez. Según la Oficina Nacional de Aceite, Túnez cuenta con 1.750 molinos de aceite, 7 fábricas de extracción de aceite residual, y 40 plantas embotelladoras, junto con un número de refinarias y carboneras.

# Sustainable Agriculture

The Director of CITET, Samir Belaid, stressed that it is imperative to identify solutions that are compatible with ecological requirements and that are financially acceptable with regard to valorising residues from extracting olive oil and to reducing the activity's environmental impact. The recently approved initiative by the Ecolabel Consultative Committee for bottled olive oil was discussed as a means of encouraging companies to adopt clean production criteria and sustainable development practices. Kamel Saidi, Head of Company Services at CITET, went over the methodology used and the technical and ecological criteria applied when preparing the Ecolabel, as well as the main problems encountered during the preparatory committee meetings. A total of 75 criteria were drawn up, of which 57 are compulsory. He highlighted that the two-phase extraction system is considered the most ecological on account of the low volume of residue, and the low consumption of water and electricity compared with other extraction systems. However, obtaining the Ecolabel does not exclude the use of other technologies. To conclude, he presented a CITET pilot initiative working alongside two oil mills that are in the process of obtaining the Ecolabel.

**A total of 75 criteria were drawn up, of which 57 are compulsory**

Afef Siala, Deputy Director of the National Waste Management Agency of Tunisia (ANGED), emphasised that, every year, Tunisian oil mills produce an average of 1 million tonnes of olive oil mill wastewater (liquid residue from producing olive oil) - a figure that has increased on account of conversion of mills to continuous extraction - along with some 650,000 tonnes of pomace (pasty residue), approximately 70,000 tonnes of leaves, and some 150,000 tonnes of high-energy-value sludge arising from the extraction of residual oil - making a total of 2,000,000 tonnes of waste from all over the country. This has led the Ministry of the Environment and Sustainable Development to prepare a National Action Plan to manage mill wastewater in order to promote its valorisation.

Representing CP/RAC were Frederic Gallo, who presented an introduction to the environmental problems associated with the uncontrolled management of residues from the olive oil industry; Joan Tacias, an expert in managing olive oil residues, who gave a presentation about the various alternatives that are economically viable; Agustí Romero, an engineer from the Institute for Food and Agricultural Research and Technology (IRTA) of the Generalitat of Catalunya, who presented a comparison of the two-phase and three-phase extraction systems; and José María Álvarez, an expert in plants that compost olive oil residues, who presented the composting of olive oil residues as a viable and ecological alternative to traditional waste-management methods (storage and evaporation in pools, as a watering fertiliser, and extraction of residual oil using solvents, etc.) and discussed the experience of the Junta of Andalusia in promoting and constructing composting plants for the olive oil industry. The public that took part - some 60 people - were mostly mill owners and civil servants.



# Sustainable Agriculture

Frederic Gallo highlighted the pollutant potential of the residues produced by oil mills (1 m<sup>3</sup> of residues produces the same amount of pollution as 200 m<sup>3</sup> of residual municipal water) during the short period during harvesting and grinding olives. Disposing of this residue in the municipal residual water network may cause the water treatment facilities to malfunction since they are not designed to handle such high concentrations of contaminants at the same time. In such cases, the entire treatment process often needs to be shut down. Likewise, it is highly damaging to dispose of the residue in rivers on account of the fact that the natural degeneration process consumes vast quantities of oxygen, causing biological alterations in the environment that makes it difficult for aquatic life to survive. Pouring the residue onto the land also causes significant problems in that, besides contaminating aquifers and wells (which ought to be closed if they are sources of drinking water), it reduces the fertility of the soil not only because of the presence of phenolic compounds that inhibit plant growth but also because it increases salinity and causes other harmful physico-chemical alterations in its natural properties.

In his presentation, Joan Tacias commented that there is an extensive range of technological options available that minimise the impact of managing residues and that can even valorise oil mill waste. However, most of these technologies have not got further than the pilot study stage on account of the costs involved.

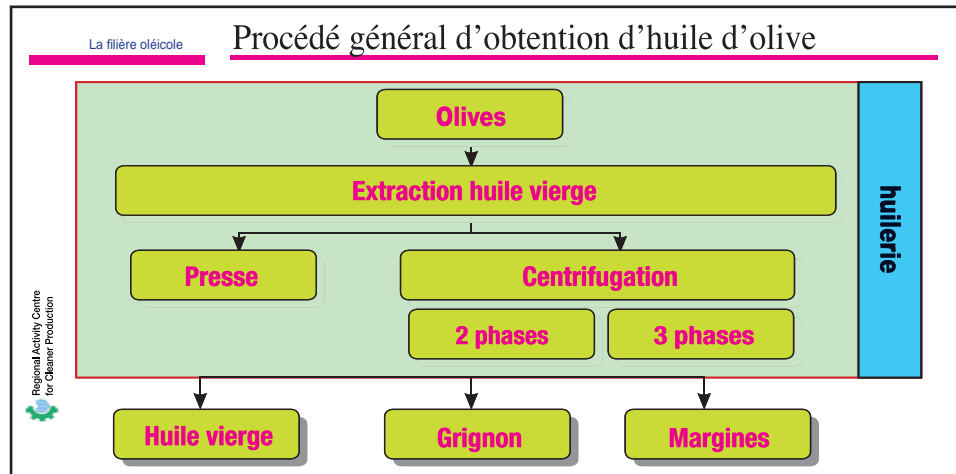
He described the characteristics of the residues produced by each extraction system, along with the most common options for their valorisation. In three-phase systems, the options for valorising pomace (semi-liquid residue) are to extract residual oil, use it as fuel, use it as a complement for animal fodder, or



to compost it, whilst valorisation options for olive oil mill wastewater include using it as a liquid fertiliser in controlled doses, evaporation in pools, and its use as an additive in compositing.

The same applies to two-phase systems, except the semi-liquid pomace needs first to undergo a drying process, if residual oil is to be extracted, owing to the higher water content of two-phase pomace. Needless to say, this drying process is not necessary if the residue is to be used for composting. In both cases, it is advisable to separate the stones first as they are an excellent fuel.

In summing up the main points of his presentation, Joan Tacias highlighted the need to look at what is the best residue management system on a case-by-case basis, studying factors such as mill size, their geographical location, the extraction technology used (three-phase, two-phase, etc.), the number of mills in the area, the presence of extractive industries producing olive-pomace oil, the price of oil in the market (virgin, olive-pomace, and low-grade), along with the price of pomace. The three-phase system is recommended for small mills that have enough agricultural land to allow for controlled fertilising or evaporation in



large pools owing to the fact that it is not possible to process olive oil mill wastewater at a reasonable cost. On the other hand, the two-phase system is the best way of minimising the problem of residues in all other cases, besides reducing water consumption. The two-phase system can involve improving operations and valorising residues, such as employing a second centrifuge, separating the stones, and composting. Drying the pomace using an electricity cogeneration system and subsequent extraction of oil is only to be recommended for very large mills. Finally, a public aid system is highly recommended as a means of promoting two-phase extraction technology (as happened in Spain via European funding) and in order to ensure that there are processing centres for use by large mills or cooperatives.

In his presentation, Agustí Romero covered the differences, from a techni-

cal point of view, between two-phase and three-phase systems, and also looked at the environmental impact of both technologies. From an environmental perspective, two-phase systems are much more preferable because they use less water and minimise residues (almost 70% less in terms of volume and with an 80% lower pollutant potential), and also consume less energy. Liquid residues produced by three-phase technology require large storage pools that, besides posing a risk of leakage into aquifers, are foul smelling, and are also prohibitively expensive for many mills. From an organoleptic point of view, three-phase oil is slightly superior (scoring 7.2 compared with 7.1) but the content of polyphenols (natural antioxidants) of two-phase oil is higher, - i.e. it retains its properties for longer - than three-phase oil. On the other hand, the initial economic investment is greater for two-phase technology than for three-phase technology and the traditional method of valorization of pomace (using solvents in order to extract the residual olive oil) is less beneficial economically on account of the previous drying process needed, given that pomace from two-phase systems has a higher moisture content than that produced in three-phase systems.

José María Álvarez presented the composting of residues from two-phase mills as the most rational and benefi-



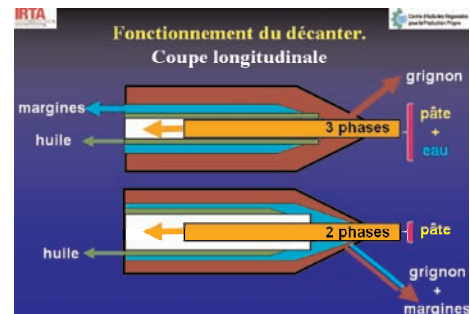
# Sustainable Agriculture

cial option for the environment in managing residues arising from the production of olive oil. He pointed out that the Junta of Andalusia's 2007-2012 Climate Change Action Plan is explicitly based on the re-use in agriculture of agricultural by-products, prioritising composting over energy recovery, and providing public funds for the construction of composting plants and promoting the use of compost. Over the medium and long term, the advantage of compost is that it increases the content of the soil's organic matter, which is usually low in agricultural land in Mediterranean countries. In this sense, a paradox was highlighted in that many mills have to buy compost (which is expensive and difficult to find) to use on their olive groves whilst, at the same time, they are disposing of pomace, which is rich in organic compounds, by sending it to plants that extract residual oil or to cogeneration plants, both of which options incur transport costs and bring in little revenues for the mills.

As a more direct and more financially viable option for producers with land where residues can be spread, the idea of applying these solid residues (two-phase pomace - *alperujo* in Spanish) directly to the land without undergoing prior composting was considered. In the end, the Junta of Andalusia discarded the application of residues from two-phase extraction directly to the land as an authorised management system because two-phase pomace has a high-moisture content and is difficult to handle and to control the dosage when applied directly to the soil, thus giving rise to environmental risks such as:

- The potential contamination of underground water supplies.
- An undesirable demand for nitrogen in the soil arising from the high C/N ratio of residues, which may compete with the nitrogen available for olive trees.

“Over the medium and long term, the advantage of compost is that it increases the content of the soil's organic matter”



- Toxic effects for plantations due to its content in polyphenols.

These risks disappear when a previous composting process takes place. Composting is an aerobic biological process where microorganisms break down biodegradable organic material under conditions where aeration, temperature and moisture are controlled. Two-phase pomace compost contains approximately 80% of the nutrients (nitrogen, phosphorus and potassium) extracted by olive harvests from the land. It also has high levels of organic matter (between 30% and 50% on a dry-weight basis) and organic carbon (25%).

To improve the composting process and its quality, it is advisable first to add to the pomace another residue such as olive leaves, straw, pruning waste, pine bark, etc., as materials to give the compost body, along with nitrogen-rich matter (cattle dung) to balance C/N ratios. To produce compost that is of good quality (stable, and free of pathogens, weed seeds, insect larva and zero phytotoxicity) some 6-10 months are needed - a time scale that matches perfectly to the olive season, thus avoiding the need of boosting the speed of the process. Composting can be open (known as a windrow system), with the use of a front-end loader to turn the compost in order to air it, or closed - the recommended option for volumes in excess of 6,000 m<sup>3</sup> per year. Closed systems require a larger initial investment than open systems, although operating costs are lower.

# Sustainable Agriculture

Compost is applied as an alternative to chemical fertilisers over the whole area between the lines of olive trees, in combination with a ground cover. The main advantages of composting are as follows:

- Large amounts of nutrients are gradually fed to the plants.
- In increasing the content of organic matter in the soil, desertification and soil erosion are avoided.
- There is reduced risk of the soil and underground water becoming contaminated by the inappropriate application of chemical fertilisers used in conventional agriculture.
- There is an increase in the amount of carbon (C) captured by the soil, a process that helps mitigate climate change arising from the emission of greenhouse gases.
- Composting can make a greater contribution than energy recovery to reducing CO<sub>2</sub> emissions.
- The use of compost has a preventative effect against fungal infections because it helps make plants stronger - something that has been demonstrated in various studies.

José María Álvarez emphasised that Andalusia has many years of experience in composting two-phase residues and that the Junta of Andalusia offers subsidises of up to

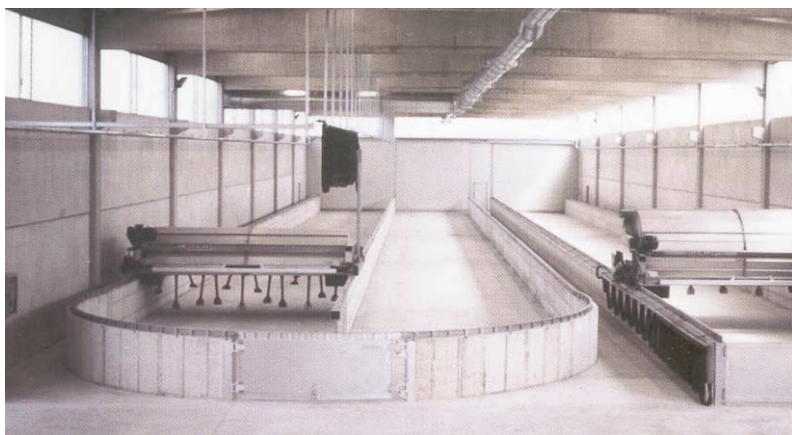


Windrow composting plant

50% of the cost of composting projects. Some 20,000 tonnes of compost are produced by olive mills every year, although that figure is expected to be 5 times higher by 2012. Most of the compost produced is used by olive producers themselves.

A 15-year study by the University of Jaén carried out at an olive farm called Cortijo Angulo, which only uses compost obtained from olive residues, found that, compared with neighbouring producers that used chemical fertilisers, there was 400% more organic matter in the soil, 26% greater water retention capacity, 600% more total nitrogen, and 1,084% more phosphor. The farm also achieved carbon fixation of 40 tonnes per hectare, which means that, from a perspective of mitigating climate change, composting is preferable to valorising the energy from pomace. In this sense, it is recommended that the Administration deliver CO<sub>2</sub>-reduction certificates to those farmers that use pomace compost.

José María Álvarez pointed out the collateral benefits of composting that were identified in the Cortijo Angulo pilot study - the recovery of lost soil fertility as a result of erosion, making land available for grazing animals, and an increase in rabbit and partridge populations. It is possible, therefore, to say that the farm was returning to the classic Mediterranean agro-silvo-pastoral system, offering rich biological di-



Closed system composting plant



# Sustainable Agriculture

versity and soil protection from erosion compared with agro-chemical exploitation that bases productivity on the use of chemical fertilisers.

In conclusion, José María Álvarez highlighted the backing given by the Junta of Andalusia to the composting of residues from olive mills such as organising invitations to submit applications for funding to construct compost plants, holding information sessions, developing composting application technology, monitoring and promoting composting experiences, creating the Composting for Organic Agriculture Working Group of Andalusia as an information-sharing platform for olive mills, the agro-industry, the public administration, research centres, engineering firms and recycling companies. ■

**Andalusia has many years of experience in composting two-phase residues and that the Junta of Andalusia offers subsidises of up to 50% of the cost of composting projects**

## Contacts

CITET (<http://www.citet.nat.tn>)

ANGED (<http://www.anged.nat.tn/>)

Frederic Gallo (<http://www.cprac.org>, [fgallo@cprac.org](mailto:fgallo@cprac.org))

Joan Tasiás ([jtasias@agritem.com](mailto:jtasias@agritem.com))

Agustí Romero (<http://www.irta.cat>, [agusti.romero@irta.cat](mailto:agusti.romero@irta.cat))

José María Álvarez ([jose.alvarezpuente@gmail.com](mailto:jose.alvarezpuente@gmail.com))



The continued application of compost has a reparative effect and prevents soil erosion

## A method to implement BAT (Best Available Techniques) in South Mediterranean Countries: The experience of BAT4MED project<sup>1</sup>



Tiberio Daddi<sup>1</sup>,  
Maria Rosa De  
Giacomo<sup>1</sup>, Gloria  
Rodríguez Lepe<sup>2</sup>,  
V́ctor Luis  
Vázquez Calvo<sup>2</sup>,  
Evelien Dils<sup>3</sup>,  
Liesbet  
Goovaerts<sup>3</sup>

<sup>1</sup>Institute of  
Management -  
Scuola Superiore di  
Studi Universitari e  
di Perfezionamento  
Sant'Anna

<sup>2</sup>Instituto Andaluz  
de Tecnología

<sup>3</sup>Vlaamse Instelling  
voor Technologisch  
Onderzoek N.V.  
(VITO)

**T**he paper aims to describe a method to introduce and disseminate Best Available Techniques (BAT) in two key industrial sectors in three South Mediterranean Countries: Egypt, Morocco and Tunisia. The method has been applied during an on-going European project named BAT4MED co-funded by the Seventh Framework Programme of EU.

The paper illustrates the results of the methodology developed in the project and aimed at identifying two key common industrial sectors in the participating Countries. The methodology has taken into account the economic and environmental relevance of the sectors and has selected the food and textile sectors as the sectors where the dissemination of BAT will have the highest environmental benefit for the Countries.

The paper concludes by illustrating a methodology for determining BAT at sector level (VITO, 2011) in order to provide support to policy makers and officers in general in the selection of BAT (Georgopoulou et al., 2008).

**Keywords:** Best Available Techniques (BATs), Integrated Pollution Prevention and Control, methodology for BATs implementation.

### Une méthode pour la mise en oeuvre des MDT (Meilleures Techniques Disponibles) dans les pays du Sud de la Méditerranée : L'expérience du projet BAT4MED

Cet article a pour objet une méthode pour l'introduction et la diffusion des Meilleures Techniques Disponibles (MDT) dans deux secteurs industriels clé de trois pays du sud de la Méditerranée: l'Egypte, le Maroc et la Tunisie. La méthode a été appliquée dans le projet européen nommé Bat4Med cofinancé par le Septième Programme Cadre de l'UE.

L'article a pour objet l'identification, grâce cette méthode élaborée par le projet, de deux secteurs industriels clés et communs aux trois pays participants, et rend compte par ailleurs des résultats obtenus.

La méthode, prenant en compte les contextes économiques et sociaux des secteurs, a sélectionné l'alimentaire et la textile comme étant les secteurs où la diffusion des MDT aurait le plus grand impact environnemental positif, dans les trois pays.

L'article conclut en présentant une méthode pour le choix des MDT à l'échelle des secteurs choisis (VITO 2011) afin de soutenir les preneurs de décision dans la sélection des MDT (Georgopoulou et al., 2008)

**Mots clés :** Meilleures techniques disponible(MDT), Prévention et réduction intégrées de la pollution (IPPC), méthode pour la mise en oeuvre des MDT

### Un método para la aplicación de las MDT (Mejores Técnicas Disponibles) en los países del Sur del Mediterráneo: La experiencia del proyecto BAT4MED

Este artículo tiene como objetivo describir un método para la introducción y difusión de las Mejores Técnicas Disponibles (MTD) en dos sectores industriales clave en tres países del Sur del Mediterráneo: Egipto, Marruecos y Túnez. El método ha sido aplicado durante un proyecto europeo en marcha denominado BAT4MED cofinanciado por el Séptimo Programa Marco de la Unión Europea (EU).

El artículo recoge los resultados de la metodología desarrollada en el proyecto con el fin de identificar dos sectores industriales clave en los países participantes. La metodología ha tenido en cuenta la relevancia económica y ambiental de los sectores y ha seleccionado los sectores textil y de la alimentación como sectores donde la diseminación de las MTD tendrá los mayores beneficios ambientales para los países.

Se concluye con la descripción de la metodología para definir las MTD en nivel de sectores (VITO, 2011) con el fin de dar un apoyo a los legisladores y oficiales en general en la selección de MTD (Georgopoulou et al., 2008).

**Palabras clave:** Mejores Técnicas Disponibles (MTD), Prevención y Control Integrados de la Contaminación, metodología para implementación de MTD.

<sup>1</sup> This is a short version of the article. A free complete version is available following [http://businessperspectives.org/journals\\_free/ee/2012/ee\\_2012\\_04\\_Daddi.pdf](http://businessperspectives.org/journals_free/ee/2012/ee_2012_04_Daddi.pdf)

Industrial production processes account for a considerable share of the overall pollution in the Mediterranean (for emissions of greenhouse gases and acidifying substances, wastewater emissions and waste) (Daddi et al., 2010).

The European Member States are combating this industrial pollution mainly through the implementation of the EU Directive on Industrial Pollution Prevention and Control (IPPC Directive) (Schoenberger, 2009), adopted in 1996 by the European Commission (EC, 1996), codified in 2008 (EC, 2008), which has been recently recast along with other six environmental-industry directives into the current EU Directive on Industrial Emissions (EU, 2010) including the IPPC Directive (EC, 2008), the Large Combustion Plants Directive (EC, 2001), the Waste Incineration Directive (EC, 2000), the Solvents Emissions Directive (EC, 1999), and 3 Directives on Titanium Dioxide (EEC, 1978; EEC, 1982; EEC, 1992).

The IPPC Directive introduced a regulatory system that uses an integrated approach to environmental protection by controlling emissions to air, water and land, generation of waste, use of raw materials, energy efficiency, noise, prevention of accidents, and restoration of the site upon closure from those industrial activities falling within the scope of the Directive and listed in Annex I of the Directive (Honkasalo et al., 2005; Samarakoon and Gudmestad, 2011). The application of the IPPC Directive has important consequences for the installations under its scope, as all licenses are brought together with an integrated approach meaning that they must consider the environment as a whole (Raya and Vázquez, 2009; Daddi et al., 2011), introducing thus the figure of the single authorisation (Styles et al., 2009), the *Integrated Environmental Authorisation*, so-called "permit". Given this, the BAT Reference Docu-

ments (BREF), published by the European IPPC Bureau, are the tools to meet the requirements of the IPPC Directive (Kocabas, et al., 2009). In general, a BREF document gives information on a specific industrial sector in the EU, techniques and processes used in this sector, current emission and consumption levels, techniques to consider in the determination of the BAT and emerging techniques (Silvo et al., 2002).

## THE BAT4MED PROJECT

To this respect, the BAT4MED project, "Boosting Best Available Techniques in the Mediterranean Partner Countries", co-financed by the European Commission under the 7<sup>th</sup> Framework Programme for Research and Technological Development, aims to analyse the potential impact of the introduction of the Integrated Pollution Prevention and Control concept in the Mediterranean Partner Countries (MPCs) - Egypt, Morocco and Tunisia.

Though BAT4MED is tackled from the perspective of key industrial sectors, the goal of the consortium is to design and implement universal tools and methodologies, allowing thus easily the replication of the whole project in other countries and industrial sectors. To this end, particular efforts will be put into the development of each methodology, to ensure its applicability within the context of the project but also beyond it.

The project aims to help implement the Eco-innovation Action Plan (EC, 2011), building on the lessons-learnt of EU Technologies Action Plan (EC, 2004), by supporting the transfer and uptake of environmental technologies in developing countries. To that aim, the possibilities for and impact of diffusion of the EU IPPC approach to the MPCs will be assessed and the implementation of BAT in the national environmental programmes will be promoted and supported.

In the following sections of this paper the methodology of the first phases of the project will be illustrated.

## The Selection Of Key Industrial Sectors

The methodology for the analysis aims to select and analyze key industrial sectors with significant negative impacts on human health and environment in Egypt, Morocco and Tunisia. In particular the methodology aims to analyse several industrial sectors in order to select the ones with the highest Environmental Benefit Potential. The methodology has foreseen the collection of quantitative and qualitative data related to three classes of data: economic aspects, environmental aspects and social, health and institutional aspects. The first step of the methodology has foreseen a pre-selection phase. It aimed to pre-select 15 IPPC sectors of each MPC among the 27 covered by IPPC Directive. The further steps of the methodology are developed applying three classes of criteria to the 15 pre-selected sectors: a) economic, b) environmental and c) social-health-institutional criteria. For each class of criteria the methodology provides a score from a minimum of 1 to a maximum of 3. The score attributed is based on the relevance of the answer.

### • Economic criteria

This group of criteria aims to assess the economic relevance of the pre-selected sectors in the involved Mediterranean Countries. The kind of economic data considered, the criteria applied by MPCs and the attributable scoring system are indicated in the table below. All the data have been referred -when possible- to the last year available. Data have been collected from official sources, specified in the report elaborated to select the sectors.

A score has been assigned to each of data type on the basis of the relevance of the data collected. For example, in the case of the data on the number of firms, each MPC ranked each sector after having applied the indicator proposed. The data about number of firms have to be collected through the ratio among the number of firms of analysed sector and the number of firms of all IPPC sectors. The sectors with the rank lower than 6<sup>o</sup> position obtain 1 score, the sectors ranked between 4<sup>o</sup> to 6<sup>o</sup> position obtain 2 scores and the sectors ranked in the first three positions obtain 3 scores.

### • Environmental criteria

The environmental criteria aim to assess the environmental relevance

**Table 1.** Example of economic criteria and scoring system

<i>Kind of economic data</i>	<i>Applied criteria</i>	<i>Score attributed</i>	
Turnover	Turnover in \$ of analysed sector Total national turnover in \$ of all IPPC sectors	The sector is ranked lower than 6 <sup>o</sup> position	1
		The sector is ranked in 4 <sup>o</sup> , 5 <sup>o</sup> or 6 <sup>o</sup> positions	2
		The sector is ranked in the first three positions	3
Share of the gross national product (GNP)	Considering a ranking according to the contribution (in percentage) of each IPPC sector to the GNP of all IPPC sectors	The sector is ranked lower than 6 <sup>o</sup> position	1
		The sector is ranked in 4 <sup>o</sup> , 5 <sup>o</sup> or 6 <sup>o</sup> positions	2
		The sector is ranked in the first three positions	3
...	...	...	...

**Table 2.** Example of environmental criteria and scoring system

<i>Kind of environmental data</i>	<i>Applied criteria</i>	<i>Score attributed</i>	
Water consumption	The sector presents only domestic use of water or water use in production process	The sector presents only domestic use of water	1
		The sector uses water in production process	3
CO2 emissions	The sector is or not in the scope of the European Emission Trading System (ETS) Directive	The sector is not in the scope of the European Emission Trading System (ETS) Directive	1
		The sector is in the scope of the European Emission Trading System (ETS) Directive	3
...	...	...	...

of the industrial sector considered. Taking into account hypothetical difficulties in the collection of quantitative data about the environmental aspects, the method follows a “qualitative” approach. This approach aims to attribute the relevance according to the environmental characteristics of the production process of the analysed sectors or in some cases according to international and European documents (e.g. Directives) that identify priority sector from an environmental point of view. In Table 2 are indicated -for each class of data- the kind of data considered for the data collection, the

corresponding applied criteria and the possible score to assign. The Methodology foresees to give a higher relevance to the environmental aspect “water”. For this reason, three different indicators related to this environmental issue are foreseen: water consumption, wastewater: categories of pollutants and wastewater: priority substances.

- **Social, health and institutional criteria**  
The third class criteria is focused on social, health and institutional related aspects. The applied criteria and the corresponding scoring system are indicated in Table 3.

**Table 3.** Example of social, health and institutional aspects, criteria and scoring system

<i>Kind of social data</i>	<i>Applied criteria</i>	<i>Score attributed</i>	
National policy priorities	The improvement of environmental and/or health impact of the sector is not a priority mentioned in the official National policy acts. The improvement of environmental and/or health impact of the sector is a National policy priority	The improvement of environmental and/or health impact of the sector is not a priority mentioned in the official National policy acts	1
		The improvement of environmental and/or health impact of the sector is a National policy priority	3
Health and environmental perception of the citizens	The environmental aspects of the sector are or not considered significant by the population according to the results of National or local survey	The environmental aspects of the sector are not considered significant by the population according to the results of National or local survey	1
		The environmental aspects of the sector are considered significant by the population according to the results of National or local survey	3
...	...	...	...

The first criteria aims to assess the policy priority of each participating Country. The partners identified national acts that report about the environmental and/or health policies and identify the priority sector. The methodology requires that national analysis of MPCs have to specify why the sector has been or has not been considered a National priority.

This is the unique mandatory criteria of the methodology. It means that if a sector cannot be considered as a National priority, it is automatically excluded from the selection.

### **The identification of the key industrial sectors.**

Based on the collected data, the three Countries identified the "relevance" of each of the criteria for each IPPC sector. Moreover, the "Environmental Benefit Potential" of each sector has been identified according to the following formula that foresees different weight to the criteria. All partners of the BAT4MED project decided to give a higher weight to the Relevance of Environmental aspects, since in the call of the project the European Commission asked to focus on sector with high Environmental Benefit Potential.

Environmental Benefit Potential (EBP) = 25% x Relevance of economic aspects + 50% x Relevance of Environmental Aspects + 25% x Relevance of social health and institutional aspects.

After the application of this formula the eight sector selected in the three Countries were:

Cement, Lime and Magnesium Oxide Manufacturing Industries, Ceramic Manufacturing Industry, Ferrous metals processing industry, Food, Drink and Milk Industries, Iron and Steel Production, Non-Ferrous Metals Industries, Pulp and Paper Industry.

### **• The Benchmarking Analysis**

The Benchmarking Analysis aims to select -among the 8 common sec-

tors - 2 sectors to focus during the following phases and activities of the BAT4MED project. Among all pre-selected sectors, the 8 common sectors in the three Mediterranean Partner Countries have been identified (indicated in Table 4).

The final step of the Benchmarking Analysis aims to select the final two common sectors in order to valorise the transferability of the approach also in other countries.

For this reason the 5 sectors with the highest TEBP are further selected according to the following procedure:

1. We calculate the position of each sector in the ranking of EBP of each National Analysis;
2. We summarize the numbers related to the positions in that ranking identifying an unique final value. With this approach a low value indicates that the sector have a high position in each National EBP ranking. On the contrary an high value indicates that the sector is ranked in low positions considering the EBP calculated in the National Analysis;
3. We select the two sectors with the lowest value

The methodology for the final selection has been elaborated in order to avoid the selection with an high relevance in a participating Country but with a not so high importance in the other two Countries. The approach described is summarised in the following table.

As showed in the table above, the sectors selected are Food, Drink and Milk Industries, and Textile Industry. In the framework of the food sector the partners of BAT4MED project decide to focus the project activity to the dairy sector, being this one the most important one in the framework of the

# Sustainable Production

Table 4. Method and results about the final identification of 2 common sectors among 5 final

Common sectors	EBP *E <sup>1</sup>	EBP *M <sup>2</sup>	EBP *T <sup>3</sup>	Ranking E	Ranking M	Ranking T	Total Ranking
Ferrous Metals Processing Industry	2.708	2.232	2.202	2	5	5	12
<b>Food, Drink and Milk Industries</b>	2.375	2.357	2.357	4	1	2	7
Iron and Steel Production	2.326	2.357	2.340	6	1	3	10
Non-Ferrous Metals Industries	2.514	2.311	2.299	3	3	4	10
<b>Textile Industry</b>	2.764	2.290	2.624	1	4	1	6

<sup>1</sup> Egypt  
<sup>2</sup> Morocco  
<sup>3</sup> Tunisia

activity covered by the BREF of food sector.

## THE METHODOLOGY FOR DETERMINING BAT AT SECTOR LEVEL

The primary objective of the methodology for determining BAT at a sector level is to provide support to policy makers and permit writers in general in the selection of BAT. The methodology allows a detailed assessment of the available environmentally friendly techniques, so-called candidate BAT, at a sector level. In the BAT4MED project the methodology will be used for selecting the BAT at a sector level, i.e. for the dairy and textiles industry, and for 3 Mediterranean Partner Countries (MPCs), i.e. Egypt, Morocco and Tunisia.

### • Stepwise methodology

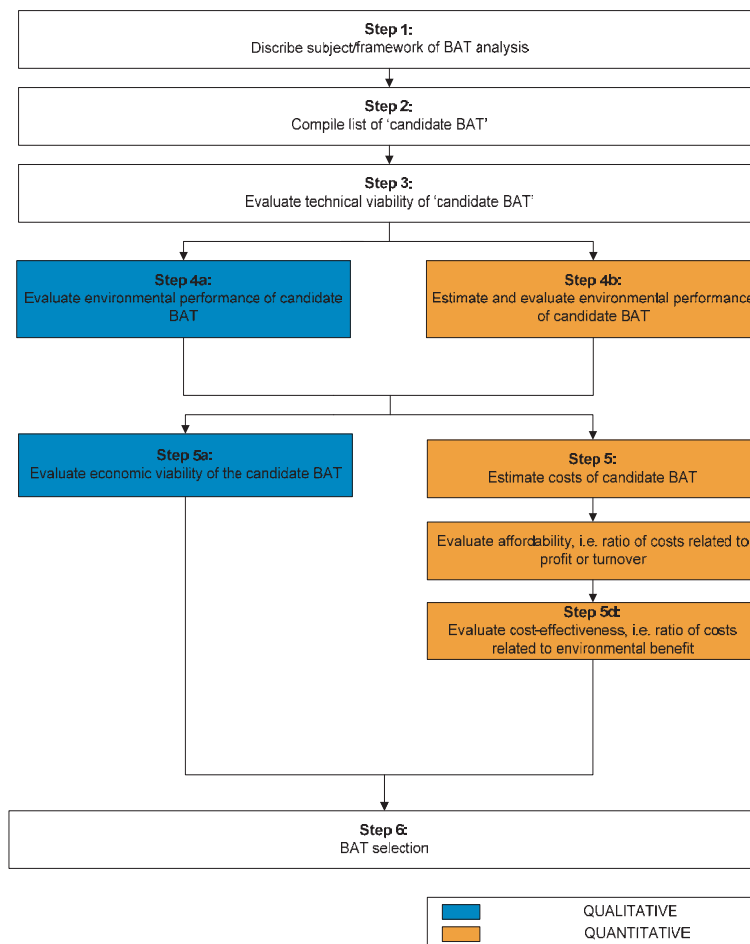
The methodology for the selection of BAT consists of 6 steps. These steps, shown in figure 4, must be completed one after the other.

Depending on the desired depth of the analyses, the complexity of the processes and data availability, these 6 steps will be defined qualitatively (expert analysis) or quantitatively. Due to the limited data availability in this project, the methodology will mostly be based on qualitative expert judgement.

To be able to use the methodology (not only for evaluating the technical viability, but also for evaluating the environmental benefit) the refer-

ence situation of the sector concerned (e.g. techniques applied and environmental impact) should be clearly defined in the BAT sector report. National issues which can have an impact on the selection of the BAT will also be addressed.

Figure 1. Flow chart of the methodology (Flemish BAT centre, 2010)



## CONCLUSIONS

The environmental relevance of BAT4MED selected sectors is confirmed in several international documents. Both the textile and food sector are listed in the "Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities" (LBS Protocol). The Protocol is a legally binding instrument for the 21 Mediterranean countries which are Contracting Parties to the Convention of the Barcelona for the protection of the Mediterranean region, including Morocco, Tunisia and Egypt.

Moreover, in accordance with the reports "Textile industry Pollution prevention in the within the Mediterranean region" (RAC/CP, 2002b) and "Prevention of pollution in the Dairy industry" (RAC/CP, 2002a) published by Regional Activity Centre for Cleaner Production (RAC/CP) in the year 2002, we could made some considerations about the transferability of the results of BAT4MED in other South Mediterranean Countries not involved in the project. The first report highlights how the textile represents an important sector for the whole Mediterranean Area. Countries like Syria, Libya and Turkey have an high number of firms and textile sector represents a high percentage of their GDP. With the same approach the second report identifies the Turkey as a very important Country for the Dairy sector.

Future paper and research articles linked with the BAT4MED project will aim at how the BAT Reports are developed in the participating Countries following the methodology presented in the paragraph 5.

## REFERENCES

1. Daddi, T., De Giacomo, M.R., Frey, M., Iraldo, F., Testa, F. The implementation of IPPC Directive in the Mediterranean Area. In Elzbieta Broniewicz (Ed) Environmental

Management in Practice, INTECH Publishing, Rijeka ISBN 978-953 Environmental Management in Practice, INTECH Publishing, Rijeka ISBN 978-953-307-358-3, 2011. -pp. 119-144.

2. Daddi, T., Testa, F., Iraldo, F., A cluster-based approach as an effective way to implement the ECAP: evidence from some good practices // Local Environment, 2010. - Vol. 15.- pp. 73-82.
3. Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste
4. Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.
5. Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning Integrated Pollution Prevention and Control.
6. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
7. European Commission, Communication from the Commission to the Council and the European Parliament, Stimulating Technologies for Sustainable Development: An Environmental Technologies Action Plan (ETAP) for the European Union, adopted in January 2004.
8. European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Innovation for a sustainable Future - The Eco-innovation Action Plan (Eco-AP), adopted in December 2011.
9. Georgopoulou, E., Hontou, V., Gakis, N., Sarafidis, Y., Mirasgedis, S., Lalas, D.P., Loukatos, A., Gargoulas, Mentziz, A., Economidis, D., Triantafilopoulos, T. & Korizi, K. BEAsT: a decision-support tool for assessing the environ-



- mental benefits and the economic attractiveness of best available techniques in industry // *Journal of Cleaner Production*, 2008. - Vol. 16, No.3. - pp. 359-373.
10. Honkasalo, N., Rodhe, H., & Dalhammar, C. Environmental permitting as a driver for eco-efficiency in the dairy industry: A closer look at the IPPC directive // *Journal of Cleaner Production*, 2005. -Vol. 13, No. 10-11. - pp. 1049-1060.
  11. Kocabas, A.M., Yukseker, H., Dilek, F.B. & Yetis, U. Adoption of European Union's IPPD Directive to a textile mill: analysis of water and energy consumption // *Journal of Environmental Management*, 2009. -Vol. 91, No. 1. -pp. 102-113.
  12. Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities. Conference of Plenipotentiaries of the Coastal States of the Mediterranean Region for the Protection of the Mediterranean Sea Against Pollution from Land-based Sources, 17 May 1980 (Athens).
  13. Raya I., Vázquez V. L. Sharing experiences to improve pollution prevention and control in the Mediterranean area. *International Innovation* // Research Media Ltd., December 2009. - pp 56-58.
  14. Regional Activity Centre for Cleaner Production (RAC/CP), Mediterranean Action Plan. Prevention of pollution in the Dairy industry, May 2002a.
  15. Regional Activity Centre for Cleaner Production (RAC/CP), Mediterranean Action Plan. Pollution Prevention in the Textile Industry within the Mediterranean region, September 2002b.
  16. Samarakoon, S.M.K. & Gudmestad, O.T. The IPPC directive and technique qualification at offshore oil and gas installations // *Journal of cleaner production*, 2011. -Vol. 19, No. 1. - pp. 13-20.
  17. Schoenberger, H. Integrated pollution prevention and control in large industrial installations on the basis of best available techniques - The Sevilla Process // *Journal of Cleaner Production*, 2009. -Vol. 17, No. 16. - pp. 1526-1529.
  18. Styles, D., O'Brien, K., & Jones, M. A quantitative integrated assessment of pollution prevention achieved by Integrated Pollution Prevention Control licensing // *Environment International*, 2009. - Vol. 35, No. 8. - pp. 1177-1187.
  19. Silvo, K., Melanen, M., Honkasalo, A., Ruonala, S., Lindstrom, M. Integrated pollution prevention and control - the Finnish approach // *Resources, Conservation and Recycling*, 2002. -Vol. 35. - pp. 45 - 60.
  20. VITO, BAT centre, BAT4MED: Boosting Best Available Techniques in the Mediterranean Partner Countries - Methodology report for BAT selection, Final deliverable to the European Commission - Research Directorate-General, Mol 2011.

## Contact details –in order of appearance–

### Enrique Villamore

*Director*  
Regional Activity Centre for Cleaner Production  
Mediterranean Action Plan  
United Nations Environment Programme  
c/ Dr. Roux, 80  
08017 Barcelona (Spain)  
Tel.: +34 93 553 87 90  
Fax: +34 93 553 87 95  
E-mail: [evillamore@cprac.org](mailto:evillamore@cprac.org)  
<http://www.sprac.org>

### Georgina Guillen

*Consultant Secretariat*  
UNEP / Wuppertal Institute Collaborating Centre on  
Sustainable Consumption and Production  
Hagenauer Strasse 30  
42107 Wuppertal, Germany  
Tel.: +49 202 4595810  
Fax: +49 202 4595831  
E-mail: [ginnie.guillen@scp-centre.org](mailto:ginnie.guillen@scp-centre.org)  
<http://www.scp-centre.org>

### Jérémie Fosse

*President, eco-union.org*  
Researcher, Esade Business School, eco-union  
Palau 4  
08002 Barcelona  
Tel.: +34 629 69 40 01  
E-mail: [jeremie.fosse@esade.edu](mailto:jeremie.fosse@esade.edu)  
[jeremie.fosse@eco-union.org](mailto:jeremie.fosse@eco-union.org)

### Daniel Arenas

*Professor, Esade Business School*  
Av. Pedralbes, 60-62  
08034 Barcelona - Spain  
Tel.: +34 93 280 61 62  
E-mail: [daniel.arenas@esade.edu](mailto:daniel.arenas@esade.edu)

### Emily Huc

*Entrepreneur and independent researcher*  
31 A Chesterton Road  
W106ET London  
Tel.: 0750 319 00 95  
Email: [emilyhuc@hotmail.com](mailto:emilyhuc@hotmail.com)

### Amir Rockman

*Biking in the Holy Land*  
Bike Jerusalem  
Keren ha-yesod 2, Mevasert Zion 90805 P.O.B 332  
Tel.: 972 52 3201273  
Fax: +202 23904816  
E-mail: [amir@bikejerusalem.com](mailto:amir@bikejerusalem.com)  
<http://www.bikejerusalem.com>

### Aris Kefalogiannis

*The 1st Carbon Neutral Extra Virgin Olive Oil in the  
World & the 1st Water Footprint for Olive Oil products.*  
C.E.O., Gaea Products S.A.  
171, Syngrou Av.  
17121, Athens, Greece  
Tel.: +30 210 9330595  
E-mail: [arisk@gaea.gr](mailto:arisk@gaea.gr)

### Matthias Keitel

*SEKEM - A holistic initiative for sustainable  
development*  
Policy Analyst  
Heliopolis Academy  
SEKEM  
3 Belbeis Desert Str., El Horreya,  
Cairo, Egypt  
Tel.: 004916091104568  
Fax: 00201283448834  
E-mail: [matthias.keitel@sekem.com](mailto:matthias.keitel@sekem.com)  
<http://www.sekem.com>

### Ana Leiva

*La Red emprenderverde, una plataforma para fomentar  
el espíritu emprendedor en el sector ambiental.*  
Ex Directora de la Fundación Biodiversidad,  
dependiente del Ministerio de Agricultura,  
Alimentación y Medio Ambiente  
Fundación Biodiversidad  
C/ Fortuny, 7  
28010 Madrid  
Tel.: +34 91 121 09 20  
Fax: +34 91 121 09 39  
<http://www.fundacion-biodiversidad.es/>

### Marta Anglada Roig

*Buy Green and make a difference!*  
UNESCO Chair in Life Cycle and Climate Change  
Escola Superior de Comerç Internacional -  
Universitat Pompeu Fabra (ESCI-UPF)  
Tel.: +34 93 295 47 10  
Fax: +34 93 295 47 20  
E-mail: [marta.anglada.roig@gmail.com](mailto:marta.anglada.roig@gmail.com)  
[unescochair@esci.upf.edu](mailto:unescochair@esci.upf.edu)

### Amélie Heuer

*SEED: On the basis of a triple bottom line*  
Operations coordinator SEED Initiative  
Division of Communications and Public Information  
(DCPI)  
United Nations Environment Programme (UNEP)  
P.O. Box 30552  
00100 Nairobi - Kenya  
E-mail: [amelie.heuer@seedinit.org](mailto:amelie.heuer@seedinit.org)

**Áurea Adell Querol,**  
**Bettina Schaefer,**  
**Josep Esquerrà,**

*The importance of promoting both the demand and the supply side of the market to successfully implement sustainable public procurement in the Mediterranean.*

Ecoinstitut

C/ Torre dels Pardals 69, ent 4rt

08032 Barcelona

Tel.: +34 93 348 13 86

Fax: +34 93 436 10 94

**Frederic Gallo**

*Seminar on the valorisation of residues from the production of olive oil in Tunis.*

Chemical Engineer

SCP/RAC Technician

Regional Activity Centre for Sustainable Consumption and Production

United Nations Environment Programme

c/ Dr. Roux, 80

08017 Barcelona (Spain)

Tel.: +34 93 553 87 90

Fax: +34 93 553 87 95

E-mail: [fgallo@scprac.org](mailto:fgallo@scprac.org)

<http://www.cprac.org>

**Tiberio Daddi,**

**Maria Rosa De Giacomo,**

**Gloria Rodríguez Lepe,**

**Víctor Luis Vázquez Calvo,**

**Evelien Dils,**

**Liesbet Goovaerts,**

*A method to implement BAT (Best Available Techniques) in South Mediterranean Countries: the experience of BAT4MED project.*

Institute of Management - Scuola Superiore di Studi

Universitari e di Perfezionamento Sant'Anna

Instituto Andaluz de Tecnología

Vlaamse Instelling voor Technologisch Onderzoek N.V. (VITO)

**Tiberio Daddi**

Assistant Professor

S.Anna School of Advanced Studies

Institute of Management - Sustainability Management Area

P.zza Martiri della Liberta', 33

56127 - Pisa - Italy

Tel.: +39 050 838 971

Fax: +39 050 883 936

E-mail: [daddi@sssup.it](mailto:daddi@sssup.it)

**Maria Rosa De Giacomo**

Researcher

S.Anna School of Advanced Studies

Institute of Management - Sustainability Management Area

P.zza Martiri della Liberta', 33

56127 - Pisa - Italy

Tel.: +39 050 882 760

Fax: +39 050 883 936

E-mail: [m.degiacomo@sssup.it](mailto:m.degiacomo@sssup.it)

**Evelien Dils**

R&D professional

Flemish BAT centre

VITO NV

Boeretang 200

2400 MOL, BELGIUM

Tel. + 32 14 33 59 83

E-mail: [evelien.dils@vito.be](mailto:evelien.dils@vito.be)

<http://www.vito.be/english>

**Liesbet Goovaerts**

R&D professional

Flemish BAT centre

VITO NV

Boeretang 200

2400 MOL, BELGIUM

Tel. + 32 14 33 58 93

E-mail: [liesbet.goovaerts@vito.be](mailto:liesbet.goovaerts@vito.be)

<http://www.vito.be/english>

**Víctor Vázquez Calvo**

Environmental Expert

IAT (Andalusian Institute of Technology )

Parque Tecnológico "Cartuja 93"

C/ Leonardo da Vinci 2 - 41092 SEVILLA

Tel.: 95-4468010

Fax: 95-4460407

E-mail: [vlvazquez@iat.es](mailto:vlvazquez@iat.es)

[www.iat.es](http://www.iat.es)

**Gloria Rodríguez Lepe**

International Project Manager

IAT (Andalusian Institute of Technology )

PCT Cartuja

C/ Leonardo da Vinci 2 - 41092 SEVILLA

Tel.: 95-4468010

Fax: 95-4460407

E-mail: [grodriguez@iat.es](mailto:grodriguez@iat.es)

[www.iat.es](http://www.iat.es)



For more information contact:

[www.switchmed.eu](http://www.switchmed.eu)

[policy.switchmed@scprac.org](mailto:policy.switchmed@scprac.org) or [networking.switchmed@scprac.org](mailto:networking.switchmed@scprac.org)

**Disclaimer:** The contents of this publication are the sole responsibility of the Regional Activity Centre for Sustainable Consumption and Production (SCPRAC) and can in no way be taken to reflect the views of the European Union.

SWITCH-Med Programme is funded by the European Union



**Regional Activity Centre  
for Sustainable Consumption  
and Production**