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# THE Road from Rio+20

2014

*Towards Sustainable Development Goals*

Special contributions by  
**Yann Arthus-Bertrand,**  
**Günter Fischer** and  
**Tom Reese**



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# The Road from Rio+20

Towards Sustainable Development Goals  
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This publication was coordinated by Eugenia Nunez with contributions made by a team including Rafe Dent, Maria Durlava, Robert Hamwey, Malick Kane, Henrique Pacini, Bonapas Onguglo, and Yvonne Paredes. The team is grateful to Andres Carnevali who designed the publication, and Chris Simpson who edited the articles.

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# From Rio to SDGs



P R E F A C E

*Mukhisa Kituyi*

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Over 20 years after the 1992 Rio Earth Summit, advancing sustainable development from the local level to the global level remains a major challenge and responsibility. In fact the development challenges, especially of poverty eradication, have become even more intractable. The 2012 United Nations Conference on Sustainable Development (Rio+20) discussed these global imperatives and agreed, inter alia, to define sustainable development goals (SDGs) to serve as a guide for the international community in implementing actions to better advance sustainable development.

The agreement to develop SDGs came at a time when the UN community is also engaged in elaborating a new global governance framework to guide development discourse and efforts in the post-2015 period when the current UN Millennium Development Goals will expire. While distinctly separate, the two processes are more than likely to give rise to one set of post-2015 sustainable development goals. Such goals, as provided in the outcome document of the Rio+20 summit, should be action-oriented, addressing all three dimensions of sustainable development (economic, social, environmental) and their inter-linkages in a balanced way; they must be concise, easy to communicate and relatively few in numbers; and they must be relevant to all countries.

The emphasis that the new goals must reflect fully the three dimensions of sustainable development and ensure their balanced treatment is very important. It addresses some of the lacunae in the current MDGs framework, namely lack of integration among the different goals and weak emphasis on economic drivers of development with the result also that trade enablers received limited attention. Yet development experiences over many years and recently in many countries have shown that economic growth is critical to inclusive development and this can be sustained by an enhanced and qualitative participation in international trade, accompanied by financial including investment and technology flows and supportive institutional, regulatory and human capacities. Building competitive productive capacities to increase participation in trade in turn requires enabling policies and measures at national, regional and international levels.

UNCTAD, as part of the United Nations system, is contributing to the discourse among Governments with analysis and advice. Our efforts are squarely focused on fostering a process of trade-led development that is socially, economically and environmentally inclusive and also builds up culture and creativity.

This fourth issue of our Rio+20 Journal, which we termed the “*The Road from Rio: Towards Sustainable Development Goals*” articulates some perspectives on such goals and the contribution of international trade. We have invited several leading personalities to share their views on aspects of the development framework in the post-2015 period. We hope this contribution will help Governments and other stakeholders navigate the multitude of global issues facing the international community today and define a sustainable development framework that can have a major impact on poverty eradication across the globe in the years ahead.



Secretary-General of UNCTAD



## From the editor

Rio+20 saw United Nations Member States renew their commitment to sustainable development, ensuring promotion of an economically, socially and environmentally sustainable future and “freeing humanity from poverty and hunger as a matter of urgency”.

One term that comes up again and again in the Rio+20 Conference Declaration, entitled ‘The Future We Want’ is an ‘enabling environment’, considered essential for sustainable development. Here, all key actors have an important role to play: government through positive legislation, business through public-private strategic partnerships, or civil society through its active engagement.

This edition covers various aspects of this ‘enabling environment’. It takes the reader beyond the watershed moment of Rio+20 to investigate what critical issues would have an impact on sustainable development and related policies and strategies – and how all social and economic actors, in particular environmentalists, can contribute.

From Guillermo Valles Galmés comes an article underlining the significant role of international trade in sustainable development, arguing that a successful post-2015 development agenda should fully leverage trade to stimulate sustainable development globally. Strengthening this point further is an article by Ransford Smith on trade’s potential as driver of growth and poverty eradication through realization of the productive employment of people, and the exchange of essential goods and services.

Focusing on culture and creativity, Irina Bokova, stresses that, to put people first, education, culture and the sciences must be integrated firmly into the post-2015 agenda. Sustainability, she says, has deeper roots than financial and economic assets.

Other essays directly address specific issues raised in ‘The Future We Want’. There, for example, Member States reiterate the importance of integrating water usage into sustainable development, and underline the critical importance of access to clean water and sanitation within its social, economic and environmental dimensions. Taking this as their cue, Graziella Magalhães Candido de Castro and Rudinei Toneto Jr. analyze why other infrastructure projects in Brazil such as telecommunications and electricity have proved more successful than water infrastructure. They call for access to clean water and sanitation to be integrated into the future Sustainable Development Goals (SDGs). For his part, Nestlé Chairman Peter Brabeck-Letmathe demonstrates how a public-private partnership can provide a model of best practice for water strategy.

‘The Future We Want’ underlines how an enabling environment will contribute to the development, adaptation, dissemination and transfer of environmentally sound technologies. It highlights the role of foreign direct investment, international trade and international cooperation in the transfer of environmentally sound technologies.

In his essay, Simon Cleasby proposes biofuels as a way to reduce dependence on fossil fuels and describes, with an example from Sierra Leone, how Africa, with its abundance of underused land and excellent climate is well adapted for sugarcane cultivation and ethanol production.

Nuclear energy in the past seemed to provide a solution in the move away from fossil fuels. However, accidents from the more distant and recent past have alerted governments to its possible downsides. Jürgen Korff explains how already, back in 1986, the Chernobyl nuclear disaster provided a wake up call and gave rise to the accelerated development

of solar energy, a rapidly growing resource with positive impacts on the environment.

A sustainable future that balances the economic, social and environmental dimension requires catalysts. In this regard, three articles provide some novel ideas. Katie Beckett draws inspiration from a case study in Namibia to illustrate how building capacity for the production and trade in natural products from sustainable and ethical supply chains can contribute to the post-2015 development agenda.

On the level of practical implementation, voluntary international standards and certification have, since the early 20th century, played a key role in the development and inter-operability of traditional energy resources; they will certainly continue to play a key role in the development of alternatives. Here Sébastien Haye describes the form and function of a new global standard for sustainable production of biomass and biofuels, implemented through a voluntary certification system.

In the final essay, the mining company Vale illustrates the point made in ‘The Future We Want’ that “mining offers the opportunity to catalyse broad-based economic development, reduce poverty and assist countries in meeting internationally agreed development goals”. It outlines its actions, working with communities, civil society, governments and investors, in providing benefits at local level and “transforming natural resources into sustainable development.”

It is hoped that the examples and case studies contained in this and other volumes in the ‘Road from Rio’ series will provide inspiration to UN Member States and stakeholders in their reflections on what the future SDGs should look like and how they might be implemented ◀

*Eugenia E. Nuñez*

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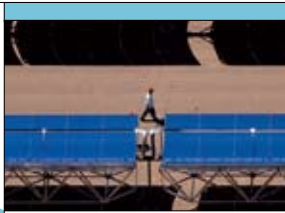
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Schoolchildren in Bobo-Dioulasso, Burkina Faso (11°10' N, 4°18' W)  
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# Enabling a sustainable future: trade and knowledge

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## Trade as an enabler of sustainable development and poverty eradication

*Guillermo Valles Galmés*

The author highlights the significant role of international trade in the sustainable development-oriented Post-2015 Development Agenda, notably as an enabler of the Sustainable Development Goals such as poverty eradication, universal access to healthcare and education, and a healthy environment for all. He argues that a successful post-2015 Partnership for Development should attach increased importance to, and more fully leverage trade to stimulate sustainable development globally.



Favela Morro da Coroa, Santa Teresa, Rio de Janeiro, Brazil (22°55' S - 43°12' W)  
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Eradicating poverty and providing adequate access to food, energy and basic services while ensuring environmental sustainability remains among the biggest development challenges of the 21<sup>st</sup> century  
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The world is in constant flux. Radical changes have taken place over the past two decades in the social, economic and environmental areas, as well as culturally. Now characterized by globalization, the world economy has expanded by nearly 200 per cent. Global population has grown from about 5 to 7 billion people and is expected to rise further to 8 billion by 2030, with the effect that consumption levels are rising sharply. And GDP per capita has doubled from USD 4,200 to nearly USD 10,000 lifting a significant number of the world's population from the grips of poverty and under-development. However, the poorest countries and people within many countries have yet to benefit from globalization's economic achievements. As such, eradicating poverty and providing adequate access to food, energy and basic services while ensuring environmental sustainability remains among the biggest development challenges of the 21<sup>st</sup> century, notwithstanding the progress made under the MDGs.

Cognizant of and in response to these global development challenges, the international community is resolved in designing a global development agenda beyond 2015 with poverty eradication and sustainable development at its core. The outcome documents of two recent global summits, the 2010 United Nations MDG Summit and the 2012 Rio+20 Conference on Sustainable Development, consolidate and guide two independent yet closely linked international efforts dedicated to this task. Ultimately, these efforts seek political commitment for strengthened national actions and international cooperation needed to support a post-2015 development agenda that hopes to open the door for a new era of development-led globalization by providing people across and within countries with economic opportunities, equitable and inclusive access to sustainable use of natural and environmental resources, and opportunities for social-cultural expression, security and development.



The United Nations Post-2015 Development Agenda must seek to deepen and extend efforts pursuant to the 2000 Millennium Summit and the Millennium Development Goals (MDGs), while the Sustainable Development Goals (SDGs) called for in the Rio+20 Conference must advance principles for sustainable development adopted at the 1992 Rio Earth Summit and promulgated through Agenda 21. Today, there is broad agreement that both of these efforts should ultimately converge in one Post-2015 Development Agenda centered on the global achievement of sustainable development and eradication of poverty. There is also broad acknowledgement that both processes also must take cognizance and respond to changing economic, social and environmental conditions since 2000.

The goals need to be limited in number. If an SDG is created for every global issue, certainly such a number would be difficult to manage, monitor, communicate, finance and achieve. And in practical terms, a large number of SDGs would also make it difficult to integrate relevant issues – artificially characterized into separate and independent goals – into an integrated holistic development process.

The first step towards a consolidation of many possible sustainable development goals involves recognizing that dynamic and resilient economies, transparent societies and a healthy environment underpin a central objective of poverty eradication and sustain inclusive social and economic progress. Thus, many issues in the goals are really not sustainable development goals in themselves, but rather enablers, or drivers, of sustainable development. For example, equitable international trade can enable countries to achieve food security, generate decent employment opportunities for the poor, promote technology transfer, ensure national economic security and support infrastructure development, not only for moving goods to and from ports, but also for basic services such as health, education, water, sanitation and energy. As such equitable trade may be more effectively harnessed in delivering sustainable development when integrated into the SDG framework as an SDG enabler. In such framework, trade would serve as an enabler for potential goals such as poverty eradication, job creation, universal healthcare and education, and a healthy environment.

Other related issues may be best integrated into the development framework as targets for closely related goals rather than independent goals. For example, countries' performance in effecting greenhouse gas reduction, arresting deforestation, promoting sustainable agricultural practices, and reducing over-fishing and effluent pollution in oceans can all be effective targets used to measure countries' respective progress in supporting the goal of providing their citizens with a healthy environment for current and future generations.

As regards international trade, after over two decades of experience with globalization, it is widely recognized today that international trade can be a powerful engine of sustainable development and poverty alleviation. Participating in international trade can widen the economic space needed to create new job opportunities, promote efficient use of resources, increase access to food, energy and basic services, and improve productive, managerial and entrepreneurial capacity required for economic diversification, growth and development.

However, it must be acknowledged that trade can have negative, as well as positive, impacts on economic, environmental, and social systems. Countries have found that economic activities supporting rapidly expanded trade can result in serious environmental degradation when complementary environmental policies are not in place. Pollution of air, water, and soil, and unrestrained natural resource exploitation causing desertification, deforestation, sea level rise and fisheries depletion may grow to levels that jeopardize sustainable development efforts. Unmanaged, trade liberalization can also have negative social impacts including brain-drain and cultural erosion. However, prompted by warnings loudly voiced in the 1992 Rio Earth Summit, countries have made substantial progress in the past two decades to assess the impacts of trade and trade liberalization allowing them to conduct trade in a way that captures its benefits, while minimizing its negative impacts.

A universal, rules-based, open, nondiscriminatory and equitable multilateral trading system, as well as meaningful trade liberalization, with accompanying flanking measures, remains critical if the global economy is to reach out and connect those still marginalized from



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global markets. And the multilateral trading system itself must evolve. Areas where change can help support sustainable development include strengthened disciplines on agriculture, fisheries and fossil fuel subsidies; agreement on forms of non-actionable government support to national sustainable production and consumption; reduced environmental and other non-tariff barriers to trade including voluntary sustainability standards; broader terms for the transfer of environmental technologies to, and broadened use of related intellectual property rights by, developing countries.

Moreover, given the increasing importance of global value chains in world production models, more attention needs also to be focused on helping developing countries to connect with global production and supply chains, including by meeting environmental requirements, and facilitating the participation of low-income producers or exporters in the production and trade of environmentally and socially preferable products. This would contribute to enhancing industrialization as well. Improved international cooperation should also build developing countries' human and productive capacities to enable them to participate in an environmentally sustainable global economy; generate employment for the jobless and increase access of the poor to basic services such as energy, water, communications and transport. At the national level, improving pro-poor outcomes of trade depends on the ability of countries to implement complementary national measures to facilitate their participation in the trade of sustainably produced goods and services, and promote the inclusive and equitable diffusion of its benefits. A clear area is through production of

green goods and services through mechanisms such as biotrade and renewable energy. Policy space to be able to use appropriate policies to build sustainable and resilient economies is a key factor.

Through an integrated portfolio of analyses on policy options, capacity building technical assistance projects and intergovernmental consensus building activities, UNCTAD works in close partnership with developing countries and other international organizations, the private sector and NGOs to foster a transition to more sustainable (and less polluting) production, trade and development processes. UNCTAD's current work focuses on opening new production and trade opportunities, and removing barriers especially non-tariff measures, in green products, including biotrade, renewable energy, organic agriculture products, and creative industries that assist in particular rural communities in developing countries to sustainably diversify production, tap new markets, generate jobs including for women, youth and ex-combatants, and mitigate climate change.

International trade has a fundamental role to play as an enabler for engendering inclusive economic growth and sustainable development, and in turn contribute to eradicating poverty. Thus trade should be integrated into the future development framework in accordance with the appropriate goals, targets and indicators as a key enabler of poverty eradication and sustainable development ◀

### End Notes

- 1 IPCC, 2007, IPCC Fourth Assessment Report: Climate Change 2007.
- 2 OECD, 2012, OECD Environmental Outlook to 2050.
- 3 UNDP, 2011, Human Development Report.

### About the author

**Guillermo Valles Galmés** (Uruguay) is currently Director of UNCTAD's Division of International Trade in Goods and Services, and Commodities. He has served as Ambassador to the United Nations and the World Trade Organization (WTO) in Geneva, where he was lead negotiator for several regional trade agreements and Chair for Rules negotiations for six consecutive years. A career diplomat for some 35 years, he has served as Ambassador to China, the European Union, Belgium and Luxemburg as well as in different posts in Japan and Argentina.

# The Millennium Development Goals (MDGs)



**1.**

**Eradicate Extreme Poverty and Hunger**



**2.**

**Achieve Universal Primary Education**



**3.**

**Promote Gender Equality and Empower Women**



**4.**

**Reduce Child Mortality**



**5.**

**Improve Maternal Health**



**6.**

**Combat HIV/AIDS, Malaria and other Diseases**



**7.**

**Ensure Environmental Sustainability**



**8.**

**Global Partnership for Development**



## The Road from Rio: trade, a key fellow traveller

*Ransford Smith*

Ransford Smith argues that trade was given short shrift in the Millennium Development Goals and that the Road from Rio constitutes a unique opportunity to unleash its potential – coupled with other social measures to educate and empower – as an enabler of development at once, inclusive and sustainable.



Open market close from Dhaka, Bangladesh (23°52' N - 90°21' E)  
© Yann Arthus-Bertrand / Altitude - Paris

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The potential role  
for trade that has now  
emerged in the context  
of the post-2015  
development agenda  
is exceedingly welcome  
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The Millennium Development Goals (MDGs) were a historic response by the global community to the scourge of poverty and social deprivation in the developing world. They did not, however, constitute an effective answer to the challenge of development which faces poor and marginalized members of the world community.

Despite commendable efforts at both national and international levels, and in particular considerable progress – particularly in Asia and Latin America – on MDG 1, eradicating extreme poverty and hunger, most goals will remain unmet by target date, 2015.

In Africa, poverty, the Gordian knot of underdevelopment, has proven extraordinarily difficult to unravel. While there has been some progress in other areas - primary school enrolment, gender parity in primary education, halting and beginning to reverse the spread of HIV/AIDS, the number of people living in extreme poverty has actually increased in Sub-Saharan Africa since the launch of the MDGs in 2000, and at 48.5 per cent, the proportion of people living in extreme poverty remains well above the 28.3 per cent target level necessary to meet MDG 1.

Trade was given what might reasonably be called short shrift in the MDG framework. Goals 1 to 7 were devoid of any reference to growth and to economic development in general and national initiatives and development assistance, primarily ODA, were positioned as the main vehicles for moving countries and peoples towards the MDG goals and targets. In this context, MDG 8, Developing a Global Partnership for Development, may be seen as a 'soft goal', vague and lacking in specificity, with

a mix of un-related targets and inadequate indicators that cover inter alia development of a non-discriminatory trading and financial system, debt sustainability, certain areas of market access, youth employment, access to medicines, and access to information and communications technology. The prospect of fulfilling those aspects of MDG 8 related specifically to trade was in any event impaired in the period since the Millennium Summit by the long stalemated WTO Doha Round, a situation that will be redressed only if the recent modest but welcome Bali Package of the WTO Ministerial Conference proves to be profoundly catalytic.

Against this background, the potential role for trade that has now emerged in the context of the post-2015 development agenda is exceedingly welcome. While specific elements of the agenda will ultimately be defined through UN inter-governmental processes in New York, it is evident, following the Rio+20 conference, that sustainable development anchored in social, economic and environmental pillars, and poverty eradication, will be its core. The Road from Rio thus takes us inevitably towards inclusive development. Importantly, we believe that growth and equity constitute the indispensable scaffolding for development that is sustainable and inclusive.

This brings us back to trade and why trade is critical to the post-2015 development agenda. We must ensure that trade's potential as a driver of growth and poverty eradication through the productive employment of people, and the exchange of essential goods and services, is fully realized. This role is magnified by the prominence of trade in the Gross Domestic Product (GDP) of developing countries as a whole, and especially so for many poor and small countries. Furthermore, it is a role made even more salient by the fact that trade has the capacity to be both a macro-enabler and a micro-enabler of Sustainable Development Goals (SDGs).

In its role as a macro-enabler trade will contribute to GDP expansion, to employment and to revenue generation by Governments. These are channels through which individuals productively employed can improve the quality of life for themselves and their families, and through which Governments can provide and improve the quality of public services such as health, education, sanitation and water, and transportation,

and as well, developmental infrastructure such as telecommunications, roads and ports. As a micro-enabler, trade lends itself to specific measures at the product and sector level – taken unilaterally or in regional and multilateral contexts – to promote desirable social and economic outcomes – such as removing duties from environmental goods, from educational and health items, or from basic consumer goods.

East Asia the poster region for poverty reduction, and which achieved MDG 1 more than ten years ago, offers dramatic evidence of the role that trade can play in economic growth and poverty reduction. But it also provides clear evidence that the impact of economic growth on poverty will differ from country to country and, by extension, from region to region. It is thus evident that in order to move beyond trade expansion and economic growth to inclusive development, and especially to ensure major reduction in and eradication of extreme poverty, other measures will be required. These measures should, for example, be directed at promoting through the provision of targeted education and skills training the fullest possible participation in economic activity by marginalized groups, such as women, youth, and the rural and urban poor. Social policies, including safety nets and targeted transfers, should respond to the needs of those in danger of being left behind. Increasing revenues accruing to government – much of it derived from the dynamic trade sector – should be equitably directed towards social infrastructure and services that empower the poorest and most marginalized and improve their living conditions.

Trade now constitutes the major share of GDP in many developing countries and a substantial share of GDP in most developed countries. Indeed, in low income countries trade constitutes more than a half of GDP (53 per cent) and for many small economies the proportion is much higher. The challenge is to ensure that trade openness and expansion promotes economic growth which leads to inclusive development and to the elimination of extreme poverty. There is every reason to believe that with commitment and partnership at the national and international levels, this challenge can be met.

The Road from Rio should witness trade's evolution from Engine of Growth to Enabler of the SDGs ◀

### About the author

**Ransford Smith** is a career diplomat, former Permanent Representative of Jamaica to the WTO and UN organizations in Geneva; and former Deputy Secretary-General of the Commonwealth Secretariat.



## Knowledge for sustainability

Irina Bokova

For Irina Bokova, the “boundless potential of human ingenuity” is the best resource to tackle emerging global challenges and tipping points for the planet. Education, science and culture are drivers and enablers of sustainable development and should, she says, be integrated firmly into the post-2015 agenda.



Women from the Miao ethnic minority in Guizhou province, China, learning how to film living heritage as part of a cultural mapping project, MDG-F Joint Programme on Culture and Development

© Liang Qiankang

**W**hat makes *sustainable development* sustainable? What are the key factors that enable and drive sustainability? These questions are leading the global conversation on a new development agenda to build the future we want for all.

In order to answer them, we must build on the unprecedented progress that countries have made since 2000 in taking forward the Millennium Development Goals. The *United Nations Millennium Declaration* embodied a great, humanist ambition to promote human rights and dignity as the basis for more inclusive and equitable development. This was also the historic expression of political will to set not just a declaration of rights but a framework of targets and deadlines to translate them into reality. This experience is the backbone for building a new transformative agenda to follow 2015.

There has been great progress since 2000, including in some of the world’s poorest countries, but advances have been uneven – and enduring inequalities may come to undermine the sustainability of positive results. Countries must consolidate and accelerate progress at a time of rising uncertainty, when expectations are heightening in many societies for greater equality, social justice and inclusion.

### How can we do better?

First, as we have learnt, there is no “one-size-fits-all” development model. It is not enough to set global targets – we need to reflect more on how we can achieve them in relation to each context. Too many well-intended development efforts have fallen short, because they did not take into account and build on local cultural settings.



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More fundamentally, development has not focused enough on people – on providing individuals with the capacities to realise fully their rights and aspirations. This point has been highlighted in the recent report of the *High Level Panel of Eminent Persons on the Post-2015 Development Agenda*, as well as the 2012 report, *Realizing the Future We Want for All*.

To put people first, education, culture, and the sciences must be integrated firmly in the post-2015 agenda. Sustainability has deeper roots than financial and economic assets. Sustainability is about skills and information; it is also about respecting cultural diversity, equal opportunity and learning to live together. This must also encompass the importance of universal access to information and knowledge, freedom of expression and media development.

I see this as a key outcome of *United Nations Conference on Sustainable Development* – genuine sustainable development calls for more than green investment and low carbon technologies. It calls for a better education for more relevant skills, sharper scientific and technological innovation in the area of sustainability and a stronger focus on culture and cultural diversity. These are drivers and enablers of sustainability – they provide women and men with tools to cooperate in resolving complex and connected challenges and to adapt to a changing and pressured environment. These are catalysts for the greatest of all renewable energies, which is human ingenuity.

Rio+20 called also for a greater balance between the economic, social and environmental dimensions of sustainable development. Education, culture and the sciences are ways to integrate this agenda and to make it work.

Education provides skills and knowledge for the world of work, but, fundamentally, it is also a force for empowering individuals and enhancing their inherent dignity. This power lends sustainability to all development efforts.

Culture is a dynamic economic sector, representing trade opportunities and revenues, but it is also a force for social cohesion and inclusion. Cultural goods have both an economic and a cultural value, and this integrative power is its greatest strength. As the President of Ireland, Michael D. Higgins has argued, “the cultural space is wider than any economic space.” UNESCO’s 2005 *Convention on the Protection and Promotion of the Diversity of Cultural Expressions* highlights the dual nature of cultural goods and services, and this is why the Convention is an increasing reference, including in international trade.

The same goes for the sciences – we need a stronger integration between social and human sciences and the natural sciences. This holds the key for scientific progress that is accessible to all, equitable and, therefore, sustainable. The integration of social and natural sciences is important for policy making, in order to widen the balance of options and ensure well-rounded decisions. Cooperation in this way can help bridge the gaps that have emerged among the economic, social and environmental aspects of development.

To move forward, we must identify drivers and enablers of sustainable development – we must also craft the right approach to harness their power.

Education is a case in point. Since 2000, the number of out-of-school children has been reduced from 108 to 57 million in primary school, with significant improvement in gender equality. However, the focus on access has tended to leave aside the quality of learning. Today, 250 million children of primary school age still cannot read or write. Far too many young people lack the basic skills for a world of work, and this is a time bomb for global unemployment and civil unrest.

This is the meaning of the recent results of the *UN World Global Survey* (with over 500,000 participants in 190 countries), where the call for “good education” emerged as top priority. We need a revolution for skills, to provide young people with the tools they need to lead decent lives, to get decent jobs, and to tackle the challenges of climate change. Education should also focus on promoting social inclusion and teaching practical skills. In the post-2015 global agenda, this calls for a holistic education goal, with a focus on quality and equity of lifelong learning. This must acknowledge education’s role as an enabler for all development goals – in a world getting younger every day, education clearly holds the keys to the future.

The same is true for culture. Culture was not recognized as a factor in drafting the Millennium Development Goals. One reason may have been a lack of indicators and evidence on the contribution of culture for development. This has changed. Over the past decade, the power of culture has become recognized both at the global and national level. In 2006, culture was mentioned in less than 30 per cent of UN Development Assistance Frameworks – this stands now at above 70 per cent.<sup>1</sup>

Between 2006–2008, UNESCO joined forces with UNDP and other agencies to lead eighteen Culture and Development Joint Programmes of the Millennium Development Goals Achievement Fund (MDG-F), financed by Spain. The results show that culture is a key enabler of sustainability and contributes to development through social inclusion and poverty reduction.<sup>2</sup> Thousands of jobs have been created or sustained – from Costa Rica to Senegal, from Cambodia to Egypt – in the cultural sector, including tourism, creative industries, music, the cinema, and crafts, where UNCTAD plays a leading role. These Joint Programmes have confirmed the importance of the cultural dimension for local ownership and inclusive participation – essential factors for the sustainability of development.

Building on its six international Culture Conventions, UNESCO is determined to secure recognition of culture as an enabling factor in the post-2015 agenda. Two UN General Assembly Resolutions on Culture and Development have already been adopted, in 2010 and 2011. The Hangzhou International Congress on “Culture: Key to Sustainable Development” was held in May 2013, followed by the *High Level UN General Assembly Thematic Debate on Culture and Development* in June, and a session on education and culture of the Open Working Group on the Sustainable Development Goals – all testifying to a global shift in perceptions of culture.

All these are signs of a deeper recognition of the need to make far more of the potential of innovation and knowledge for sustainability. Across the world, innovative solutions and new ideas are emerging. The boundless potential of human ingenuity is our best resource to tackle emerging global challenges and tipping points for the planet. We must support cultural diversity, the sciences, freedom of expression to foster innovation, critical thinking, through intense exchanges, supported by new tools of communication and information and new media. We can build a stronger global innovation ecosystem to inform more effective policies for the common good. The Rio+20 Outcome Document underlined here the need for a stronger science-policy interface, and to enhance national scientific and technological capacities, especially in developing countries. UNESCO is working at all of these levels, to harness the full power of the



Argentina - vocational training: Student honing her skills at the new school of the Fundacion Teatro Argentino de la Plata sponsored by UNESCO's International Fund for Cultural Diversity (IFCD). Established by the 2005 Convention on the Protection and Promotion of Cultural Diversity, the IFCD provides support to initiatives designed to boost the creative capacities in developing countries. Since 2010, the Fund has invested in 61 projects in 40 countries

sciences for all. This includes the creation of a Scientific Advisory Board to support the UN Secretary-General and strengthen the links between science, policy and society.

We live today in a new age of limits -- in terms of resources and the boundaries of our planet. This means we must make far more of the boundless energy of human ingenuity and knowledge. We must release the full power of innovation and creativity, to craft new solutions that are inclusive, just and sustainable. No single country can hope to tackle these challenges alone. Climate change, the loss of biodiversity and pollution have little respect for national borders. This is especially true for the challenge of sustainably managing the ocean, highlighting the need for networks of observation and knowledge management. Sustainability cannot be a matter for Governments alone, but a concern for all parts of society, including universities and the private sector. This calls for stronger and more effective multilateralism, along with new partnerships to unleash the full potential of education, culture, and the sciences as drivers for human dignity and human rights, and breakthrough enablers of sustainable development <

## End Notes

- 1 For a comprehensive analysis of the inclusion of culture in the UNDAF, see <http://unesdoc.unesco.org/images/0022/002200/220060e.pdf>
- 2 For an overview of the results of the MDG-Fund projects, see <http://www.unesco.org/new/en/culture/achievingthe-millennium-development-goals/mdg-f-culture-and-development/>

## About the author

**Irina Bokova** has been the Director-General of the United Nations Educational, Scientific and Cultural Organization since 15 November 2009. Before being elected as the first woman to head the Organization, she served as Bulgaria's Secretary of State for European Integration, Minister of Foreign Affairs, Ambassador to France and Monaco, and Permanent Delegate to UNESCO, among other distinguished positions, and contributed to the drafting of Bulgaria's new Constitution in 1991. As founder of the European Policy Forum, Ms Bokova has always worked to overcome divisions and promote dialogue, diversity and human rights. She has been actively engaged in international efforts to advance education for all, gender equality, human rights and cultural dialogue.



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Blue Lagoon, near Grindavik, Reykjanes Peninsula, Iceland (63°53' N, 22°27' W)  
© Yann Arthus-Bertrand / Altitude - Paris



# Blueprints for basic needs: water and sanitation

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## Water is critical for a sustainably oriented global economy

*Peter Brabeck-Letmathe*

Peter Brabeck-Letmathe illustrates how business can partner government and civil society in support of cost-effective solutions to conserving freshwater resources, treating wastewater and giving populations around the world access to drinking water and sanitation – as well as in providing models of best practice for water strategy.



© UN Photo / Ekhtiar Dababe

**W**hen we were celebrating 140 years of Nestlé, I was reflecting on what the biggest challenges for our company were, and I found that water was critical. That led me to look at the water situation in the world and I was quite astonished by what I found: there was an issue developing between water usage and water availability. Studies show that we're using 10 per cent more water than is sustainable in the longer term, and the gap continues increasing with population growth, prosperity and urbanisation. We need to use water more efficiently and we need to make clear that this water issue is urgent and has to be tackled now. If we don't find comprehensive and cost-effective solutions very soon, we might have a major food crisis in the world, with massive shortfalls in cereal production due to water scarcity resulting from increasing overuse.

Water is one of the biggest challenges for sustainable development over the coming decades. Its effects can be felt environmentally, socially and economically. Government has a pivotal role to play in creating a strategy that reflects national priorities and also manages and co-ordinates water resources, but since government resources are increasingly limited, businesses must also have a stake in the solution.

The shape of this 'stake' was the focus of discussion recently at the World Bank headquarters where, in my role as chairman of the 2030 Water Resources Group role, I started a high level discussion about "Sustainable Development Goals on Water Resources Management and the Role of the Private Sector". Global companies are rightly concerned: healthy people with access to safe water and decent sanitation are both our employees and consumers. Together with other stakeholders we are also concerned as global citizens: we want all people to access truly safe water and acceptable sanitation – sooner rather than later.

▼

Together with other stakeholders, we are also concerned as global citizens: we want all people to access truly safe water and acceptable sanitation – sooner rather than later

▲





Collecting tap water in Liberia, March 2013

At the end of last year, I was invited by Paul Polman, member of the UN Secretary-Generals High-Level Panel, to be the business “ambassador” to provide input to the discussion on the water-related UN Development Goals. Combining Sustainable Development Goals with Millennium Development Goals, I proposed four targets, all of them requiring joint efforts of all stakeholders under the leadership of governments:

**1) Universal access to safe drinking water** by 2025 at the latest, with a parallel focus beyond 2025 on quality, moving from an “improved” water perspective to “truly safe drinking water”. Water for survival is a human right: governments and stakeholders will have to agree on the amount that everybody should have access to and whether a person is able to cover the cost of the water distribution or not. This amount should be defined in a way that it is achievable with present financial resources.

**2) Improved sanitation.** Accelerate the provision of access to improved sanitation to at least 120 million additional people per year, aiming for universal access before 2050. Data on actual improvements achieved show that this is realistically possible and, with more strengthened efforts, political leaders might aim for even more ambitious targets.

**3) Adequate treatment of all municipal and industrial wastewater prior to discharge** by 2030. There is a need to introduce best practice initiatives to reduce ground-water pollution from agricultural production.

**4) The water overdraft.** If we don’t change the way we are using water today, we put all three targets above at risk. And the nexus discussion – water-food-energy – demonstrates that water shortage will become a choke

point for economies, especially those now moving out of widespread poverty. Worse, as mentioned above, we risk shortfalls of up to 30 per cent of global cereal production due to water scarcity by 2030. The target here: we have to bring freshwater withdrawals (for all uses) back into line with sustainable supply (natural renewal minus environmental flows), watershed by watershed.

This is for me the primary role of the 2030 Water Resources Group, a public-private partnership involving the private sector, civil society organisations, the World Bank Group, three regional development banks and several governmental development organisations. The group has a global view, but acts locally, providing information and advice for governments to set coherent strategies in countries and watersheds, in a disruptive approach that aims at overcoming the various political and ideological rigidities in addressing water overuse.

The challenge is also huge for the targets on drinking water, sanitation and wastewater: Cumulative spending on water and sanitation infrastructure is forecast to be close to USD 20 trillion by 2030. This amount is necessary for the worldwide renewal, maintenance and extension of the schemes in both developing and developed economies. Since government resources are increasingly limited, business should come in with proposals for new and different solutions to providing services at a lower cost. Where feasible and politically acceptable, business might help with mobilising finance and managing projects – within clear and coherent regulations set by governments.

So why else should companies get involved? With Nestlé, we were looking at what was critical to our business and saw that water was vital. When we’re helping to find



Water Scarcity a Problem at IDP Camps in North Darfur, Sudan. January 2014

solutions to the water problem, we're also ensuring that our company has the necessary resources to develop. And our Creating Shared Value philosophy states that if in the long term we want to create value for our shareholders, we also have to be able to create value for society at large.

Let me give you some examples, first on drinking water. Already in 1999, around its factory in the state of Punjab, Nestlé India initiated a project to provide clean drinking water facilities in village schools. We invested in the drilling of deep bore wells, allowing the school children regular access to clean drinking water. As of today, 60 drinking water facilities have been completed, reaching around 22,000 school children.

On improved sanitation: Since 2007, Nestlé have worked with the International Federation of Red Cross and Red Crescent Societies (IFRC) and the Red Cross Society of Côte d'Ivoire to provide water and sanitation facilities and hygiene training in Côte d'Ivoire.

On wastewater: the first wastewater treatment plant of the Nestlé Group started operations in the early 1930s, long before people started to use the words "environment" and "sustainability". Meanwhile, we treat the wastewater of all our factories around the world.

Finally, overdraft: at Nestlé we are reducing fresh-water withdrawals for our own use, from 4.5 litres per USD of sales 10 years ago to less than 1.5 litres today.

Nestlé and other companies can contribute to a range of good practices on all the above four targets, bringing to bear their own experience and practical observations in the field, where relevant, cost-effective and adding greatest value. This will help with growing societal prosperity in emerging economies and by protecting living conditions in advanced economies. For this we have to set ambitious, but realistic targets for development post 2015.

Water should not be seen in isolation – the main message in my previous article for the UNCTAD publication *The Road to Rio+20*, issue 3, 2012, ([http://unctad.org/en/PublicationsLibrary/ditcted2012d2\\_en.pdf](http://unctad.org/en/PublicationsLibrary/ditcted2012d2_en.pdf)) was that we must leave silos behind, understand the nexus water-food-energy and act accordingly. And we must make sure that measures taken are cost-effective. Businesses can make a contribution to meeting these challenges and many companies do have ongoing projects in most – if not all – of the target areas. But there is not one player, one group alone who can solve this water problem. We need everyone for whom a watershed matters involved: governments, NGOs and private enterprise

### About the author

**Peter Brabeck-Letmathe** is Chairman of the 2030 Water Resources Group, a public-private partnership involving the private sector, civil society organisations, the World Bank Group, three regional development banks and several governmental development organisations. He is Chairman of Nestlé S.A., served from 1997 to 2005 as the Group's CEO, and then, until 2008, as Chairman and CEO. Born in 1944 in Austria, Peter Brabeck-Letmathe graduated from the University of World Trade in Vienna with a degree in Economics.



## Meeting the development goals in sanitation services in Brazil: a long way forward

*Graziella Magalhães Candido de Castro  
and Rudinei Toneto Jr.*

Setting Brazil's successes in achieving greater access to electricity and telecommunications against its shortfalls, within a context of the Millennium Development Goals, in improving access to sanitation, sewage services, clean water and solid waste disposal, Graziella Magalhães Candido de Castro and Rudinei Toneto Jr. call for incorporating access to these basic services into future Sustainable Development Goals (SDGs).

Access to infrastructure is one of the main factors determining economic development. Good infrastructure can guarantee basic services, as well as positive externalities in health, environment, productivity and possibilities for investment. In the case of basic sanitation, such as clean water services, sewage, as well as solid waste management, positive development and environmental spillovers are even stronger.

Within this context, the Millennium Development Goals (MDGs) set an objective to halve the number of people lacking access to clean water and sewage collection by 2015 compared to 1990 levels. Other MDGs related to poverty reduction, universal access to quality basic education, gender equality, reduction in child mortality, among others.

However, the MDGs defined no targets for other services with important societal value such as solid waste management, access to telecommunications, access to electricity and decent housing conditions.

This article analyses the evolution of the access to water supply and sewage collection in Brazil in comparison with the objectives of the MDGs. It examines in particular a theoretical scenario on how the goals would have been achieved, if they had also considered other services such as access to electricity, telecommunications and solid waste management.

In Brazil, the percentage of households with access to infrastructure rose significantly between 1991 and 2010. However, national statistics show that, for all services, the goals would already have been met in 2010, except for services which effectively relate to the MDGs. The situation is better for households with access to clean water infrastructure, as only 2.7 percentage points remain to achieve the MGD in this area. For sewage collection, the situation is more serious, since this service needs to be extended by 18.6 per cent up to 2015 to meet the target established by the United Nations.



Children learning horticulture skills at Casa das Mangueiras, Ribeirao Preto, Brazil

Clearly, the biggest problem is sewage collection, which is, of all the services analyzed, the one that tends to have the most negative impacts

TABLE 1

**Percentage of Brazilian households with access to infrastructure**

Service/Year	1991	2010	% of MDG
Water	70,7%	82,7%	85,4%
Sewage	35,3%	57,0%	67,6%
Electricity	86,9%	97,8%	93,4%
Telephone	18,6%	87,9%	59,3%
Solid waste management	63,9%	87,4%	81,9%

Source: Developed by the authors based on demographic surveys from 1991 and 2010.

While Brazil as a whole is near to attaining the goal on clean water access and has already attained the goals in other infrastructure services (except sewage collection), the growth is unequal and depends on the economic conditions and geographic areas of the country.

AS TABLE 2 shows, the percentage of municipalities meeting the MDGs is higher in the southeastern and southern regions of the country. However, in the South, the percentage is still very low for access to water and sewage collection.

The situation is more dire in the northern, northeastern and west-central regions, and the worst in the North, where fewer than 2 per cent of municipalities meet water and sewage collection goals. In the northeastern and centre-west regions, around 10 per cent of the municipalities have met the goals set by the United Nations, except for water supply in the northeastern region. It should be remembered that a high percentage of municipalities in all regions meet the goals, where they existed, for access to electricity, telephone coverage and solid waste management. The exception is solid waste management in the northern and northeastern region, where only half of the municipalities met the goal.

TABLE 2

**Percentage of municipalities meeting MDGs, per region**

Region	Percentage of municipalities				
	Water	Sewage	Electricity	Telephone	Solid waste management
North	1,7%	1,0%	82,2%	75,8%	52,7%
Northeast	2,9%	10,7%	99,6%	84,1%	52,0%
Southeast	38,5%	66,1%	99,5%	98,3%	85,9%
South	26,0%	21,1%	99,9%	99,8%	87,2%
Centre-west	9,0%	9,5%	99,5%	100,0%	78,9%

Source: Developed by the authors based on a census from 1991 and 2010.

It is interesting to observe that the higher the rate of urbanization, the higher the relative number of municipalities that succeed in reaching MDGs for clean water access and sewage collection. In the municipalities with up to 10 per cent of households in rural areas, none met the target. On the other hand, in the group of municipalities with urbanization rates from 90 to 100 per cent, about 75 per cent have managed to halve their deficits

for water access (77.4 per cent) as well as sewage collection (75 per cent).

Another question that merits attention is the number of municipalities meeting the goals in relation to their per-capita GDP in 2010. As expected, income has a strong relation to the level of access to infrastructure. The percentage of municipalities meeting the goals for clean water supply grows with income, but only for the first two scales of per capita GDP. For the subsequent levels, this percentage remains stable. It can also be seen that, among the poorest municipalities with per-capita income under USD 4,000, only 4.1 per cent managed to meet the goals set by the United Nations. This percentage grows to 29 per cent once income per capita rises to between USD 4,000 and USD 8,000 and reaches 49 per cent for municipalities with per-capita income above USD 8,000.

Taking into account the percentage of municipalities reaching the goal for sewage collection, the positive relationship between per capita income and access to infrastructure is even clearer. At the first level of income per capita (less than USD 4,000), only 13 per cent of municipalities met the goal while, at the highest income level (above USD 20,000) this percentage reaches 71.4 per cent.

As for reductions in the deficit of access to electricity and telephone services, the percentage of municipalities for all income levels is greater than 90 per cent, except for telephone access at the lowest income level where the rate is 85.9 per cent.

Like the other services mentioned, solid waste management is very correlated to income. In the lowest level of per-capita income slightly more than half of the municipalities have reached the target for deficit reduction, for other income levels this percentage is higher than 85 per cent of the municipalities. It is therefore clear that even though Brazil is very close to meeting the goal for access to clean water and has already met the goals for access to electricity and telephone and solid waste management, a number of municipalities in Brazil have yet to achieve them.

Clearly, the biggest problem is sewage collection, which is, of all the services analyzed, the one that tends to have the most negative impacts. Garbage is another serious problem: while collection has risen during the period analyzed, its destination continues to be open-air depots known as city dumps.

In 2007, Brazil approved a national law for basic sanitation, which identifies a need to develop municipal plans for sanitation to achieve universal coverage. More recently, the country approved a national law for solid waste, which calls for the end of city dumps by 2014. These are essential objectives to combine development with sustainability. The high existing deficits in

sanitation and solid waste services, the concentration of problems in low-income municipalities, lower urbanization rates, smaller population sizes and lower population densities contribute to amplifying the challenge of meeting the goals.

At the same time as Brazil as a whole is on course to meet the goals at an aggregate level, various regions and municipalities could be sidelined in the development process once again reinforcing the strong regional and human inequalities that exist. A large part of the difficulty comes from the low investment capacity of the government as well as low incentives for private investors to

reach the section of the population most affected by such deficits, whether due to the low expected profitability of investments or the low purchasing power by the population lacking such services.

Many countries like Brazil still need to invest heavily to achieve the MDGs. Thus, given the positive impacts in terms of economic and social development as well as the relevance of environmental issues, Sustainable Development Goals (SDGs) should incorporate access to all public services, especially basic sanitation (clean water services, sewage, solid waste management), electricity and telecommunications ◀

### About the authors

Graziella Magalhães Candido de Castro and Rudinei Toneto Jr. are researchers in the Low Carbon Economy Center of the University of São Paulo in Ribeirão Preto, Brazil.

## Annexes

TABLE 1

Percentage of municipalities reaching the goals, per State of Brazil

State	Water	Sewage collection	Electrification	Telephone access	Solid waste management
Rondônia	0,3%	0,0%	7,7%	7,7%	4,7%
Acre	0,0%	4,3%	52,2%	43,5%	34,8%
Amazonas	0,0%	8,3%	283,3%	233,3%	150,0%
Roraima	1,6%	0,0%	9,7%	6,5%	8,1%
Pará	0,0%	12,5%	1037,5%	1000,0%	587,5%
Amapá	0,0%	0,0%	8,6%	6,7%	6,7%
Tocantins	33,3%	0,0%	866,7%	822,2%	644,4%
Maranhão	2,5%	1,3%	170,9%	78,5%	45,6%
Piauí	0,2%	0,0%	7,7%	5,0%	3,4%
Ceará	2,9%	4,4%	130,9%	121,3%	64,0%
Rio Grande do Norte	4,2%	16,1%	128,8%	128,8%	85,6%
Paraíba	3,4%	10,7%	96,1%	94,4%	51,1%
Pernambuco	3,3%	27,0%	110,5%	106,6%	65,1%
Alagoas	0,6%	5,3%	56,7%	52,6%	29,8%
Sergipe	1,8%	5,4%	44,0%	44,0%	30,4%
Bahia	15,5%	58,8%	424,7%	329,9%	222,7%
Minas Gerais	202,7%	464,9%	977,0%	944,6%	770,3%
Espírito Santo	2,4%	6,5%	16,1%	16,1%	11,3%
Rio de Janeiro	1,0%	3,1%	4,8%	4,9%	4,9%
São Paulo	52,0%	73,4%	78,3%	79,0%	75,1%
Paraná	146,3%	119,4%	480,6%	479,1%	419,4%
Santa Catarina	45,7%	42,9%	310,0%	310,0%	282,9%
Rio Grande do Sul	17,0%	12,9%	58,2%	58,2%	49,3%
Mato Grosso do Sul	1,3%	0,8%	8,1%	8,2%	4,5%
Mato Grosso	2,8%	0,3%	29,4%	29,4%	22,3%
Goiás	6,0%	12,4%	96,8%	97,2%	86,2%
Distrito Federal	0,3%	0,3%	0,3%	0,3%	0,3%

Source: developed by the authors based on demographic surveys from 1991 and 2010.

TABLE 2

**Percentage of municipalities meeting the goal of clean water access, by urbanization rate, in 2010**

Urbanization rate	Target attained	
	No	Yes
up to 10%	100,0%	0,0%
from 10% to 20%	100,0%	0,0%
from 20% to 30%	97,2%	2,8%
from 30% to 40%	98,4%	1,6%
from 40% to 50%	97,9%	2,1%

Source: developed by the authors based on demographic surveys from 1991-2010.

TABLE 3

**Percentage of municipalities meeting the goal for sewage by urbanization rate in 2010**

Urbanization rate	Target attained	
	No	Yes
up to 10%	100,0%	0,0%
from 10% to 20%	95,0%	5,0%
from 20% to 30%	99,1%	0,9%
from 30% to 40%	98,7%	1,3%
from 40% to 50%	99,1%	0,9%
from 50% to 60%	97,3%	2,7%
from 60% to 70%	87,8%	12,2%
from 70% to 80%	66,2%	33,8%
from 80% to 90%	46,0%	54,0%
from 90% to 100%	22,6%	77,4%

Source: developed by the authors based on demographic surveys from 1991-2010.

TABLE 4

**Percentage of municipalities reaching the clean water access goal, based on GDP per capita in 2010**

GDP per capita (USD)	Target attained	
	No	Yes
up to 4,000	95,9%	4,1%
from 4,000 to 8,000	71,0%	29,0%
from 8,000 to 12,000	50,9%	49,1%
from 12,000 to 20,000	51,0%	49,0%
above 20,000	51,4%	48,6%

Source: developed by the authors based on demographic surveys from 1991-2010.

TABLE 5

**Percentage of municipalities meeting the sewage collection goal, by per-capita GDP in 2010**

GDP per capita (USD)	Target attained	
	No	Yes
up to 4,000	86,3%	13,7%
from 4,000 to 8,000	57,9%	42,1%
from 8,000 to 12,000	45,1%	54,9%
from 12,000 to 20,000	46,1%	53,9%
above 20,000	28,6%	71,4%

Source: developed by the authors based on demographic surveys from 1991-2010.

TABLE 6

**Percentage of municipalities meeting the electricity access goal, by per-capita GDP in 2010**

GDP per capita (USD)	Target attained	
	No	Yes
up to 4,000	2,5%	97,5%
from 4,000 to 8,000	0,4%	99,6%
from 8,000 to 12,000	0,5%	99,5%
from 12,000 to 20,000	1,3%	98,7%
above 20,000	2,9%	97,1%

Source: developed by the authors based on demographic surveys from 1991-2010.

TABLE 7

**Percentage of municipalities reaching telephone access goals, by per-capita GDP in 2010**

GDP per capita (USD)	Target attained	
	No	Yes
up to 4,000	4,1%	85,9%
from 4,000 to 8,000	1,0%	99,0%
from 8,000 to 12,000	0,8%	99,2%
from 12,000 to 20,000	0,0%	100,0%
above 20,000	0,0%	100,0%

Source: developed by the authors based on demographic surveys from 1991-2010.

TABLE 8

**Percentage of municipalities reaching trash collection goals, by per-capita GDP in 2010**

GDP per capita (USD)	Target attained	
	No	Yes
Up to 4,000	43,9%	56,1%
from 4,000 to 8,000	14,0%	86,0%
from 8,000 to 12,000	6,6%	93,4%
from 12,000 to 20,000	3,9%	96,1%
above 20,000	8,6%	91,4%

Source: developed by the authors based on demographic surveys from 1991-2010.



Itajuíbe community in Itaim Paulista, São Paulo, Brazil

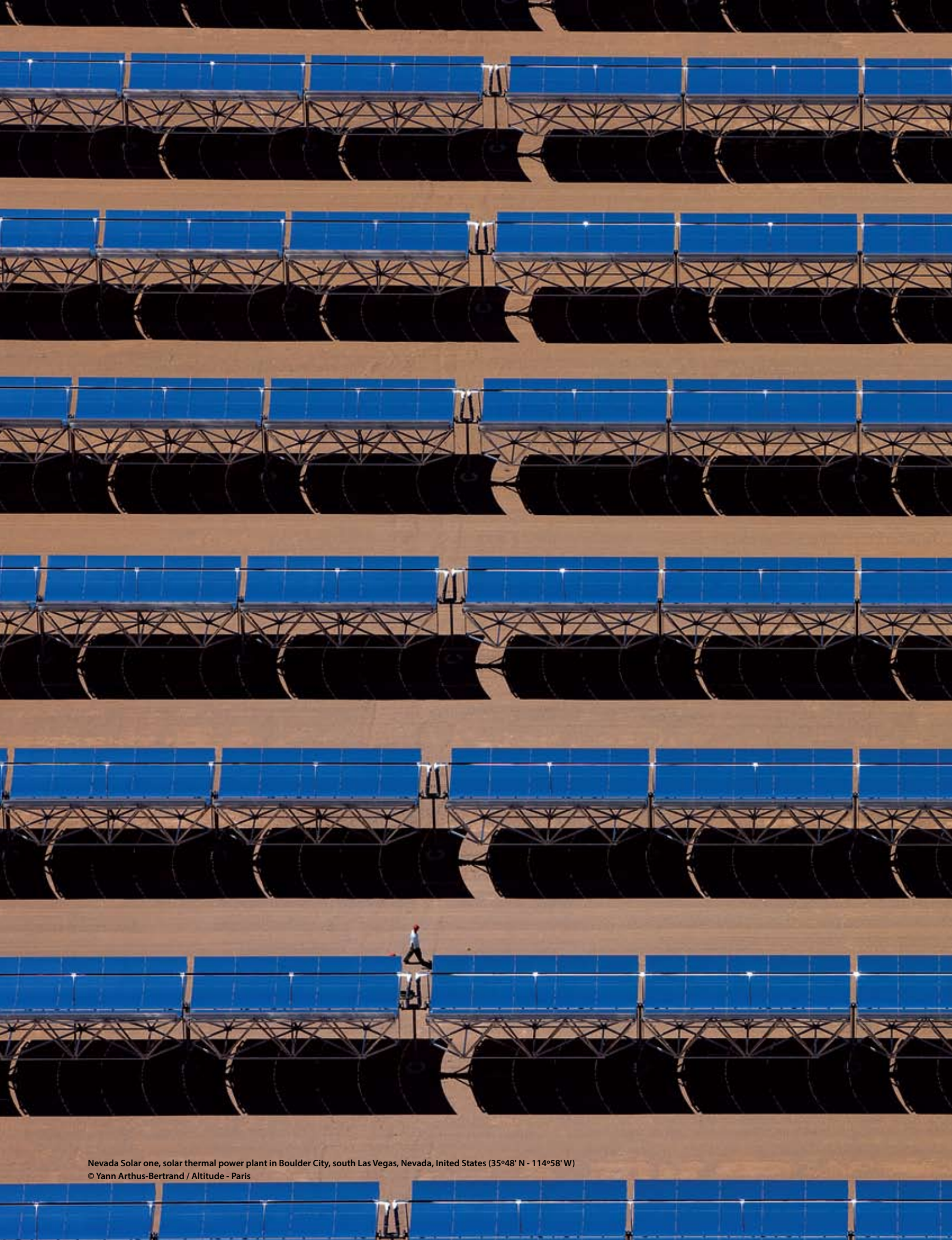




© UN Photo/Kibae Park

Children collecting water in Kallayanpur slum, one of the urban slums in Dhaka.  
1.1 billion people in developing countries have inadequate access to water and 2.6 billion lack basic sanitation. 12 June 2010.  
Dhaka, Bangladesh





Nevada Solar one, solar thermal power plant in Boulder City, south Las Vegas, Nevada, United States (35°48' N - 114°58' W)  
© Yann Arthus-Bertrand / Altitude - Paris



# Sustainable energy sources: now and in the future

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## Sustainable bioenergy: an opportunity for Africa and global sustainable development

*Simon Cleasby*

With a new solid and credible policy and certification framework, thanks to environmental bodies and international financial institutions, biofuel is today seen as a way to reduce dependence on fossil fuels. Sub-Saharan Africa, with its extensive amounts of under-utilized land and water resources, favourable climates for biomass accumulation and increasingly investment-friendly policies is particularly well adapted for growing sugarcane for ethanol production and, in the process, improve farm management and logistics, for example the Addax Bioenergy sugarcane-based project in Sierra Leone.



Addax Bioenergy factory site overview, Mabilafu, Sierra Leone

Never has the dynamic towards sustainable development been stronger, with the evolution of the United Nations' Rio+20 initiatives and the creation of the New Partnership for Africa's Development (NEPAD), which reflects the commitment of African nations to eradicate poverty and underdevelopment on their continent.

As the world gears towards the definition of the Sustainable Development Goals (SDGs) which will guide the period post 2015, Africa and sustainable bioenergy can make a significant contribution both in their formulation and achievement, including the reduction of reliance on

fossil fuels and the necessary reduction of greenhouse gas emissions.

### **Sustainable bioenergy**

Although the bioenergy debate continues, with some reason, past mistakes have largely become part of the lessons learnt. As a consequence, strict social, environmental and economic criteria have emerged, defined both by international development organizations (e.g. the World Bank, the African Development Bank, the Roundtable for Sustainable Biomaterials) and economic blocks like the European Union (for example, the EU's Renewable

Energy Directive - RED). A series of projects now implement these standards, which have become a solid and credible policy and certification framework.

Bioenergy from sugarcane is widely recognised as the most efficient and sustainable crop for biofuel production, thanks to its high fermentable sugar content. In addition, its residual fibres are ideal for power generation and the recycling of by-products into fertilizer. Sugarcane grows best in sunny, hot and humid climates, with the best conditions found in Brazil, but also in sub-Saharan Africa and other tropical areas.

## The African opportunity

The poverty rate has declined in Africa, but the continent remains in urgent need of jobs, an efficient agricultural sector, infrastructure investment, health and education facilities, as well as improved access to energy.

According to the World Bank, African farm yields are among the lowest in the world. Traditional farming practices produce low yields and contribute to environmental degradation (including deforestation), while slash-and-burn methods contribute to land erosion, carbon emissions and air pollution.

At the same time, Africa has extensive amounts of under-utilized land and water resources, favourable climates for biomass accumulation and increasingly investment-friendly policies. With the farming practices that commercial agriculture can bring, it is possible to make better use of land for food, fibre and fuel production. The crop yields achieved by subsistence farmers can be further increased through outreach programmes and access to agricultural inputs and equipment that would otherwise not be available at affordable costs in rural areas. Thus, Indirect Land Use Change and potential displacement of food production need not be compromised if improved agricultural yields can be achieved to provide the necessary food security for an expanding population. In addition, African soils in general contain low levels of carbon, which under proper agricultural practices result in minimal carbon emissions from Land Use Change.

**Africa is one of the last frontiers for industrial development that can be undertaken sustainably and without negative impacts to communities and the environment**

The commercial farming techniques introduced for sustainable bioenergy projects can improve farm management and logistics, helping reduce hunger, poverty

and environmental degradation, while improving the skill sets and livelihoods of entire populations. The knowledge transfer on improved agricultural practices and modern farming techniques in planting, irrigation and harvesting benefit the sector as a whole. Farming cooperatives and contract farmers find opportunities to either supply the ethanol factory with feedstock, or use the plantation land left fallow in the crop cycle to plant food crops for their own use or for cash.

Bioenergy projects thus create direct employment and trigger infrastructure development, as well as opportunities for a diverse range of economic and social activities within the communities concerned. As income rises, other benefits are seen, reflected in improved housing and the ability to pay for schooling, as a virtuous circle of development kicks in.

Bioenergy crops are thus a promising option for farming in Africa. Sustainable projects can increase energy independence, optimise the use of precious foreign currency reserves currently spent on food and energy imports, as well as improve the overall land carbon balance. They have the potential to be a powerful vector of sustainable and inclusive development, both locally and internationally.

### Africa contributing to global sustainable development: market access - the EU example

Africa needs predictable access to international markets, under binding trade agreements, in order to be fully successful. This ensures the volume of sales that enables the industry to be competitive on domestic and international markets. Under these conditions, Africa could become a major contributor to the EU's 10 per cent target for the replacement of fossil fuels with sustainable biofuels by 2020, fulfilling the area's stringent sustainability standards.

This could create a win-win situation, as African development advances and the EU has every interest to maintain its ambitious targets for fossil fuel substitution with renewable bioenergy, coupled with tough sustainability criteria. "Bad" bioenergy, which does not meet the EU's high sustainability standards, should not

count towards its RED (Renewable Energy Directive) target. This creates a powerful deterrent to unsustainable bioenergy production. A "stretch" target would also justify further investments in R&D to achieve 2<sup>nd</sup> generation bioenergy from cellulose, which could logically be added onto existing sugarcane-based bioenergy factories.

In terms of sugarcane ethanol, based on current levels of productivity, barely 4 million hectares of land is needed to fulfil the EU's 10 per cent target for ethanol. This represents only 0.2 per cent of the African landmass or 0.5 per cent of potential arable land (FAO figures). And there is no need or interest to tap the African ecosystems for agricultural development, thanks to the vast expanses of degraded land that are either abandoned or irregularly used and could be returned to productive cropping. Furthermore, only 2.3 per cent of the surface water in Africa is currently used (UNEP) and tropical rainfall in parts of Africa removes the need for supplementary irrigation during the rainfall season.

Nevertheless, there is currently a threat of lower EU volume targets for the replacement of fossil fuels, following recent EU proposals to limit cereal-based bioenergy, including sugarcane. This would unnecessarily cap low-carbon and low-impact bioethanol that has been certified as sustainable by the highest standards and certification bodies. This could create a physical entry barrier to even the best performing and lowest cost bioenergy producers. In addition, the proposals create uncertainty for investors in the African and European bioenergy supply chain and run the risk that projects currently being considered in Africa may not be pursued, creating another lost opportunity for the African agricultural sector.

### The Addax Bioenergy example

The models exist today to accelerate progress towards sustainable and inclusive development.

Addax Bioenergy's sugarcane-based project in Sierra Leone is an example of a sustainable model in the making. It is the first and only bioenergy project to be brought to financial close in Africa and



Sugarcane plantation in Sierra Leone, Addax Bioenergy project



Addax Bioenergy site, Mabilafu, Sierra Leone

is partially funded by eight international development finance institutions that require the respect of the highest sustainability standards. The project, which is due to be commissioned at the end of 2013, includes a 10,000 hectare sugarcane estate, an ethanol factory, a renewable electricity plant (to be fed by the sugarcane biomass) that will power the ethanol factory and provide approximately 20 per cent of Sierra Leone's national grid, a farmer development program to improve local food security and income generation, and a potential sugarcane out grower program.

The project began in 2008 with a two-year in-depth social and environmental study (EISHA), which is recognised as one of the most thorough ever performed, and one of the most extensive and transparent stakeholder dialogue and consultation processes ever carried out in the country,

according to the nation's Environmental Protection Agency and local NGOs. The project also introduced a major innovation by integrating local landowners in the land lease payments process, enhancing land rights and enabling direct lease payments.

The Addax Bioenergy project is designed to comply with the environmental criteria under the EU Renewable Energy Directive (RED) and the social and land rights criteria under the IFC Performance Standards and Guidelines. Independent audits undertaken twice annually have confirmed that the project is in compliance with the applicable standards of the EU RED, IFC, the Africa Development Bank environment and social safeguard policies and the relevant Sierra Leone legislation. In addition, the project is the first in Africa to be certified by the Roundtable for Sustainable Biomaterials (RSB). The

RSB global sustainability standard represents a global consensus of over 120 organizations including farmers, fuel refiners, regulators and NGOs, and is intended to ensure the sustainability of biofuels production practices, while streamlining compliance for industry.

### Ensuring a win-win situation

Addax Bioenergy fully supports the strengthening of certification criteria for bioenergy production. However, in view of global economic, social and environmental goals, it would be difficult for companies like Addax Bioenergy to understand a rise in the sustainability threshold, while reducing the volume target. It is more logical to raise the standards and to ensure that certified sugarcane-based biofuels have access to EU and other international markets ◀

### About the author

**Simon Cleasby** became CEO of Addax Bioenergy in January 2013. Prior to that, he was Regional Director at Illovo Sugar Ltd, in charge of the company's operations in Swaziland and Mozambique. Mr. Cleasby has had an extensive career spanning 25 years within the sugar and food industries in Africa and has developed a broad experience in agricultural operations, ethanol production and power cogeneration. He has a degree in chemical engineering and an MBA from the University of Cape Town, South Africa.



## From hazelnuts to renewables

*Jürgen Korff*

The loss of its hazelnut crop during the 1986 Chernobyl nuclear disaster gave German chocolate manufacturer Alfred T. Ritter, an incentive to develop a renewable energy source: solar. Today, Ritter Energie- und Umwelttechnik (Ritter Gruppe) has been selling ecological heating systems for 25 years. CEO Jürgen Korff describes its philosophy in one word: ecoquent, a short form of 'ecologically consequent'. Mr Korff's aim is to bring solar heating technology to different markets by matching the right technology with the right application.



**In the spring of 1986 the nuclear disaster of Chernobyl made the world stay still.**

Roadblocks prevented the transportation of contaminated vegetables; in Germany everybody talked about Becquerel; complete lettuce fields were all covered with land; children were no longer allowed to play in the sandbox. Chernobyl was more than a terrible accident. It also showed us that our human and technical resources, as well as our knowledge failed. We, and especially many generations to come, will have to fight against the consequences for a very long time.

Nevertheless, something good happened after this terrible experience. Mr. Alfred T. Ritter, owner of the chocolate company Ritter Sport, was directly affected by the catastrophe; most of his hazelnut harvest in Turkey was contaminated. This happening was his final motivation to actively contribute to the reduction of fossil fuels by investing in a promising renewable energy source, solar energy. In 1989, he and Mr. Klaus Taafel, a visionary German engineer, founded a company whose aim was to integrate solar technology into the heating technology. Their vision was to make solar heating systems available for everybody. At that time, they were pioneers and started to create the appropriate market conditions. Nowadays, the

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## Why solar heat?

On the one hand, sun energy is the largest natural resource available and also the only one available for free. On the other hand, heat accounts for the largest share of the global energy consumption. In 2009, the IEA reported that global energy demand for heat represented 47 per cent of the final energy use, which is higher than the final energy use for electricity (17 per cent) and transport (27 per cent) together. About 80 per cent of this demand is met by fossil fuels (coal, gas, oil, nuclear energy). Solar thermal energy (solar energy for heat generation) can contribute significantly to the reduction of fossil fuels. In our business, solar thermal technologies turn solar energy into hot water which can be used at home, in any

type of building, and in the industry, thus reducing the use of conventional fossil fuels that are conventionally burned to meet that heat demand. By the end of 2012 the size of the solar thermal market worldwide has been estimated to be 383 million square meters of solar collector area (268.1 GWth). This corresponds to an annual collector yield of 225 TWh which is equivalent to savings of 24 million tons of oil or 73.7 million tons of CO<sub>2</sub>.<sup>1</sup>

For households, governments and companies energy requirements are enormous and represent a significant cost factor. Currently, solar thermal technologies can be used in different types of markets which range from domestic hot water, space heating for homes and buildings, industrial processes to air conditioning.

Further figures from the IEA show the potential that solar thermal has. In 2009, the industry accounted for 44 per cent of the global energy consumption for heat, homes and residential buildings for 42 per cent, commercial buildings for 9 per cent, and the agricultural and fishery sector for 5 per cent. It also estimates that 14 per cent of the energy consumption for generating domestic hot water and providing space heating in homes or buildings could be provided by solar thermal energy by 2050. The share of solar thermal energy used in industrial processes with temperatures below 120°C could reach 20 per cent, and solar heat could account for 17 per cent of the energy use for cooling by then. All in all, solar heating and cooling could avoid some 800 megatons (Mt) of CO<sub>2</sub> emissions per year by 2050.<sup>2</sup>





## Ecologically consequent by conviction

Ecology is close to our heart and technology is our passion. Together they have been determining the way we act for 25 years ago. We think and work in an ecologically consequent manner, ecoquent, and develop our products accordingly. This philosophy makes us unique and one of the most innovate companies in the heating sector.

Our mission is to use our technology and know-how to make the most efficient use of renewable energy, contribute to energy efficiency and to sustainable environmental protection. Acting in a people-friendly way and achieving business success are equally important to us.

Our core competence is solar thermal technology. We develop, manufacture, and sell highly efficient and innovative solar thermal systems that deliver hot

water for domestic, commercial and industrial use. We strive for the optimum utilization of solar energy and our goal is to offer customers the best value for money. Our systems enable independence from fossil fuels and from increasing energy costs. Together, our products and our customers, contribute to the reduction of CO<sub>2</sub> emissions.

The vision of our founders is still valid 25 years later. The pioneering work is done. Now it is important to reinforce the vision, to match our ambition with the reality, and to make the success measurable. We want to become the first CO<sub>2</sub> neutral company in the heating sector who achieve this exclusively on the basis of its business model. Besides the measures we continually implement for the reduction of the environmental footprint of our products such as increasing energy efficiency in the production, reducing the use of materials, and optimizing the

design of our products; we want to start a dialog with our customers in order to measure the CO<sub>2</sub> emissions that are prevented by the use of our products. This dialogue aims at increasing customer loyalty and the sense of community, but also the ecological consequence of our supply chain.

## The optimal mix for the future

By the end of 2012, there were about 67 million solar thermal systems in operation worldwide. Even though the residential sector is rapidly developing from a niche market to a mass market for the solar thermal industry, there are still many technology boundaries, as well as economic and non-economic barriers which hinder the widespread commercialization of solar thermal technologies. The largest solar thermal market is China (89% of the whole market in 2012), followed by Turkey. Germany is ranks third.



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Other key markets in Asia are India, Japan, South Korea and Taiwan. In Latin America the main drivers are Brazil and Mexico. The upward trend in Africa is led by South Africa.

A further market penetration can certainly be reached by developing market oriented products which match the climatic and economic conditions of different regions. However, a good mix of technological innovation, policy support and dissemination campaigns

will definitely be necessary to accelerate the deployment of solar thermal technologies globally. Challenges such as seawater desalination and water treatment represent a must for the solar thermal industry in the near future especially in developing countries where water scarcity is a huge problem.

We are a company made up of a highly committed team; we enjoy a technical edge and work intensively towards further improving the benefits of our

thermal systems. The results achieved so far are an incentive for us to strive towards even more innovation: for our customers and for the sake of the environment. Our latest innovation, the AQUA PLASMA collector saves 688 kilos of CO<sub>2</sub> per year when used for heating up water compared to a typical fossil fuel gas-condensing heating system in Germany. With an average collector life time of 20 years, this is equal to 13.8 tons of CO<sub>2</sub> savings ◀

### End Notes

1 IEA Solar Heating & Cooling Program, Solar Heat Worldwide, Edition 2013.

2 IEA, Solar Heating and Cooling Roadmap, 2012

### About the author

**Jürgen Korff**, is CEO of the Ritter Group. The family-owned German company sells ecological heating systems since 25 years ago. Mr. Korff aims at bringing solar heating technology to different markets by matching the right technology with the right application. Nowadays, the Ritter Group has 15 companies in 9 countries including the largest European markets, China and USA. Luxembourg as well as in different posts in Japan and Argentina.



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**Seeing the Forest: To be visible and accessible, the Bullitt Center grows where ancient forest once dominated and now a large urban population will be able to learn from the project's achievements. Just as forests know how to sustain themselves in order to survive, the hope is that a city full of people can do the same. Left: A pedestrian leaves an ephemeral trail in the headlights of passing cars. Right: Responsible campers aim to have as small an impact as possible, to honor the special places they inhabit for a short while.**

<http://www.tomreesephoto.com>





Offshore Wind Farm outside the Harbour of Copenhagen, Denmark (55°41' N - 12°40' E)  
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# Catalysts for a sustainable future

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## The role of natural product value chains in the post-2015 development agenda

Katie Beckett

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The author contends that building capacity for the production and trade in natural products from sustainable and ethical supply chains can contribute to the post-2015 development agenda and achieve goals such as poverty eradication, empowerment of women and job creation at community level. She illustrates this with commercial examples drawn from Namibia where the PhytoTrade Africa trade association seeks to increase capacity, grow business opportunities and supplementary income and, in turn, promote the conservation of natural resources.



▼  
According to market data,  
the natural cosmetics sector  
is worth USD 26 billion  
and growing  
▲

As described in the Report to the Secretary-General, *Realizing the Future We Want for All*, unless there is a clear shift towards more sustainable consumption and resource use, the world's natural supplies will be increasingly threatened. Production and commercialisation of products from natural sources provide opportunities to address social, environmental and economic sustainability objectives of the post-2015 development agenda, and presents rural producers with development prospects. In regard to social impacts, natural product value chains give producers access to supplementary income with the potential to contribute towards poverty reduction, addressing issues such as hunger and insecurity, while enhancing livelihoods in rural areas. Along with these core post-2015 agenda values including human rights and equality, environmental sustainability is also integral to the natural product sector, without which the supply chains would grind to a halt as resources are depleted.

The natural products market is growing in various sectors across the world and was shown to increase by 9 per cent in 2012 (Penton Market Research, 2012). The cosmetic industry is one such sector experiencing increasing demand for natural ingredients and products which are performance driven and come with an ethical story of production. According to market data, the natural cosmetics sector is worth USD 26 billion and growing. However, it is not alone in this trend and the food and beverage sector is experiencing similar demands for natural and naturally derived products, where the functional food & beverage sector has reached USD 23 billion. It is not only 'natural' which has experienced increased demand, but also products that come from sustainable harvesting practices with a beneficial social impact. Fairtrade products showed significant growth in 2013, with as much as 33 per cent increase in sales in Germany. Although the markets for these products are





A Baobab tree near Sand River Selous, Selous Game Reserve, Tanzania



**PhytoTrade**  
AFRICA



small compared to the overall demand for conventional products, they do provide opportunities for producers of biotrade ingredients in least developed countries to access global markets and meet, on a small scale, some of the objectives of the post-2015 agenda including eradication of poverty and the creation of an inclusive economic sustainability programme. 'Biotrade' comes with various definitions and at UNCTAD's biotrade programme it is understood to include 'activities relating to the collection or production, transformation and commercialisation of goods and services derived from biodiversity'. Along with natural products described in the context of this article, BioTrade also includes sustainable tourism initiatives and animal products meeting similar development objectives in key markets.

As a result of the growing demand for products from biodiversity, there are several initiatives that have built strategies around the promotion of natural ingredients based on detailed knowledge of the resource and capacity to supply. PhytoTrade Africa is the natural products trade association for Southern Africa, working with members across the region to develop ethical, sustainable and regulatory compliant supply chains using indigenous plants, many of which have a history of traditional use, and impacting on more than 14,000 rural producers. By supporting members to progress up the value chain to a position where there is scope for greater social, environmental and economic returns, PhytoTrade aims to increase capacity, grow business opportunities and supplementary income, and in turn promote the conservation of the natural resources. One example is the development of the Baobab fruit powder supply chain. Baobab fruit pulp has been consumed traditionally in Africa for centuries and can now be found in international markets as a health food ingredient. The fruit powder is harvested and processed within Southern Africa before export to target markets where regulatory compliance has been achieved such as Novel Foods in the European Union and GRAS in the United States. The trade of Baobab fruit powder creates jobs at community level, and along the supply chain, and also provides an incentive to protect the trees and ecosystems in which it grows.

This commercialisation of natural products from sustainable harvesting and produced under fair trading, ethical terms, is one approach to grow business capacity of local communities and create income, and which is directly related to a key enabler in realising the *'future we want for all'*. Natural product commercialisation is supplementary to other income streams such as farming and, as described, contributes to the conservation of biodiversity. At the harvester level, supply chains within PhytoTrade's network consist of cooperatives, often largely composed of women, or community focussed harvester groups. The high number of women involved in harvesting and primary processing (such as decortication) meets part of the post-2015 development agenda where the empowerment of women is listed as another key enabler. As the harvesters move along the value chain, taking on more responsibilities and growing capacity, the women involved are presented with greater opportunities and development choices. PhytoTrade works with a women's cooperative in northern Namibia where the main commercial activities are focussed on products from the Marula tree. To enable growth and development of the cooperative, focus is given to product quality and diversification of target markets and customers. By supporting producers and organisations to move up the natural product value chain, there are opportunities to grow business capacity and create more sustainable supply chains.

A UNEP study (2012) focussed on Namibia found that biotrade currently represents approximately 4.5 per cent contribution to GDP in Namibia. It estimated that over the next 10 years, this could increase by 50 per cent and has potential to impact on a quarter of a million people in the country. These contributions from BioTrade alone have potential to drive Namibia towards the building of a green economy. The development of a green economy in the context of sustainable development and poverty eradication was a priority theme of the United Nations Conference on Sustainable Development (Rio+20) held in Rio de Janeiro, Brazil, last year. BioTrade however does not only impact the rural producers who are harvesting and processing the ingredients but supports the



*Sclerocarya birrea*, the marula



development of the natural product sector as a whole, creating impact at all points along the value chain through to the finished product consumer.

An important consideration in regard to the commercialisation of natural products from Southern Africa is the sharing of benefits that result from product research, development and sales. The purpose of the Nagoya Protocol is to implement the benefit sharing provision of the Convention on Biological Diversity (CBD) and further develop some specific articles such as access to genetic resources and products derived from such resources. The Protocol pays particular attention to the research and development phase where the purpose is commercially driven, as well as the use of traditional knowledge. It aims to address inequalities between provider and user countries and to promote research, development and innovation using genetic resources. In order to do so, individual countries must develop national frameworks which create enabling environments to promote the research and commercialisation of biodiversity, and encourage industry to consider these resources for new product development. This is a key focus point of PhytoTrade's activities and requires companies that use genetic resources in their R&D processes to build benefit sharing agreements into their supply chains. The benefit sharing agreements can include both monetary and non-monetary benefits, and clearly meet objectives of the post-2015 agenda as discussed above.

The commercialisation of natural products from sustainable and ethical supply chains in Southern Africa has the potential to contribute to the post-2015 development agenda through the various mechanisms discussed above. For real impact, industry are required to support the supply chains and grow capacity through engagement with sustainable and ethical production practices, ABS compliance, technology and know-how transfer, while simultaneously meeting the demands of consumers and growing the natural products sector. In turn, consumers can also contribute to the development of sustainable value chains and should be educated in order to make informed product choices that bolster the market for sustainable markets. Natural products value chains that are built around sustainable and ethical production practices, address gender imbalances, protect biodiversity and which are regulatory compliant, including ABS, have the potential to drive forward development opportunities and should be firmly integrated into the UN post-2015 development agenda <



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### About the author

**Katie Beckett** is Research and Innovation Manager at PhytoTrade Africa, the natural products trade association for Southern Africa, working with members to develop sustainable, ethical and regulatory compliant supply chains which meet market demands and on the implementation of the Nagoya Protocol on Access and Benefit Sharing.



## Towards a sustainable bio-based economy

*Sébastien Haye* \*

To ensure that the expanding production and processing of biomass is sustainable and delivers on its promises, the Roundtable on Sustainable Biomaterials (RSB) has created a global standard for sustainable production of biomass and biofuels. It is implemented through a voluntary certification system, recognized as a means to demonstrate compliance with the sustainability provisions of the European Renewable Energy Directive (2009/28/EC).

In the early 90s, the global awareness of environmental issues culminated with the United Nations Conference on Environment and Development in Rio (1992), also called the Earth Summit, which triggered the adoption of major international conventions such as the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC). These international conventions played an important role in creating a consistent framework for environmental protection and remediation. But more than twenty years after the Rio Earth Summit and Rio+20 last year, in spite of strenuous efforts from scientists, industries and the civil society to raise awareness on climate and environment issues, the expectations have fallen short regarding the necessary pivot towards a sustainable mode of economic growth – the sustainable development of mankind is still to come. With the emergence of new economic powers, and overall consumption of fossil resources continuing to rise, the modest results achieved through the Kyoto protocol (1997), the action plan adopted after Johannesburg's Summit (2002) or the EU's Climate-Energy Package (2012)<sup>1</sup> have been swamped.

A large range of products derived from petroleum (e.g. plastics, chemicals, building materials) can be substituted by biomass-derived equivalents

Thus, much is still needed in order to protect our environment, decrease the greenhouse gas intensity of our economies and avoid the worst climate change scenarios depicted by experts. A significant component of the solution, besides energy efficiency, is to decrease the relative share of products derived from petroleum in goods and services. While the substitution of fossil energy by biomass-derived energy is now being actively promoted in most countries as an immediate step towards a more sustainable energy mix, a much larger range of products derived from petroleum (e.g. plastics, chemicals, building materials) can also be substituted by biomass-derived equivalents, thus bringing the society closer to a bio-based economy.

But what if biomass-derived fuels and materials were no better or even worse than petroleum-derived products? What if greenhouse gas reductions of bio-based products were illusory? What if increased energy access were offset by important environmental and social damages, such as deforestation, water exhaustion or human rights infringement caused by these emerging supply chains?

With the ever-growing global hunger for energy and goods consumption, the uncontrolled and unregulated boom in biomass-derived products might add to the existing conflicts over land and pressure on natural resources to a point where the potential benefits of using biomass would be offset by negative effects on the planet and the people. This threat is perfectly illustrated by the retreat that followed the initial enthusiasm for biofuels at the beginning of the 21<sup>st</sup> century. Indirect and direct consequences of some biofuel projects can include unfair land deals, competition for land and resources with food production, increased deforestation and limited greenhouse gas benefits due to land-use change and massive use of fertilizers. These possible consequences contributed to the suspicion and sometimes hostility of the civil society against biofuels.

In reaction to this threat, the Roundtable on Sustainable Biomaterials (RSB – formerly the Roundtable on Sustainable Biofuels) was initiated in 2007 by the Swiss Federal Institute of Technology in Lausanne (EPFL) on the model of successful initiatives such as the Forest Stewardship Council and Fairtrade Standards.

Sustainability standards are being increasingly used by economic operators to demonstrate in a credible and objective way that their production chains bring about real benefits to the environment and to people. Thus, the RSB set out to create the global standard for sustainable production of biomass and biofuels, based on a multi-stakeholder consensus-building process. In 2013, it decided to expand the scope of its standard to all products derived from biomass, including bio-chemicals and intermediaries used to manufacture cosmetics, textiles or plastics. From its early years, the RSB strengthened its governance structure and is now counting more than 100 members, including leading industry players, non-governmental organisations, governmental agencies and UN bodies such as UNCTAD, UNEP and the UN FAO. As an official recognition of the openness and transparency of the RSB process, the ISEAL Alliance<sup>2</sup> accepted the RSB as Full Member in 2011.

As technologies and industries change, the RSB works to keep improving the definition and description of what sustainable biomass production and processing into bioenergy and biomaterials should look like, covering the entire supply chain from the farm/plantation/producer down to the final user. The RSB Standard therefore covers all direct environmental and social impacts of biomass production and processing, in particular the need to consult local stakeholders and obtain their free prior and informed consent; significantly reduce life-cycle greenhouse gas emissions; respect human rights (land, water and labor); enhance socio-

economic development and food security where needed; conserve biodiversity and ecosystem services; protect and maintain soil, water and air quality; and make a responsible use of technologies. In March 2013, RSB Members also agreed to implement the *Low Indirect Impact Biofuels (LIIB)*<sup>3</sup> approach in the RSB certification process, in order to address indirect impacts of biofuels and biomaterials.

The RSB sustainability requirements are meant to achieve concrete and measurable impacts on supply chains and ensure that biomass-derived products deliver on their promises. Thus, the RSB sustainability standard is being implemented through a voluntary certification system, which gives economic operators a chance to differentiate themselves in the market place by demonstrating sustainable practices in a credible and globally recognized fashion. The RSB certification system was recognized by the European Commission in July 2011, as a means to demonstrate compliance with the sustainability provisions of the Renewable Energy Directive (2009/28/EC).

In parallel, several governments are consulting the RSB to develop national regulations or build and implement national/regional roadmaps aiming at an increased use of sustainable bio-fuels, in particular in the aviation sector.

Biomass and the infinity of its bio-based derivatives undoubtedly represent a significant opportunity to bring our society closer to the sustainable functioning of the world which the Earth Summit and Rio+20 have aimed at for these last

Biomass and the renewable nature of its bio-based derivatives represent a significant opportunity to bring our society closer to the sustainable functioning of the planet



Jatropha plants in Mexico (courtesy of Global Clean Energy Holding)

decades. But building upon initial mistakes, the civil society, the private sector and decision-makers need to set the necessary safeguards in place to ensure that the potential benefits provided by biomass-derived products to mitigate climate change and reduce our dependence on petrol are not offset by environmental and social damages. Credible standards and certification systems such as the RSB are an efficient and valuable tool to make sure that the expanding production and processing of biomass is sustainable and delivers on its promises ◀

## End Notes

1 [http://ec.europa.eu/clima/policies/package/index\\_en.htm](http://ec.europa.eu/clima/policies/package/index_en.htm)

2 [www.isealalliance.org](http://www.isealalliance.org)

3 [www.liib.org](http://www.liib.org)

## About the authors

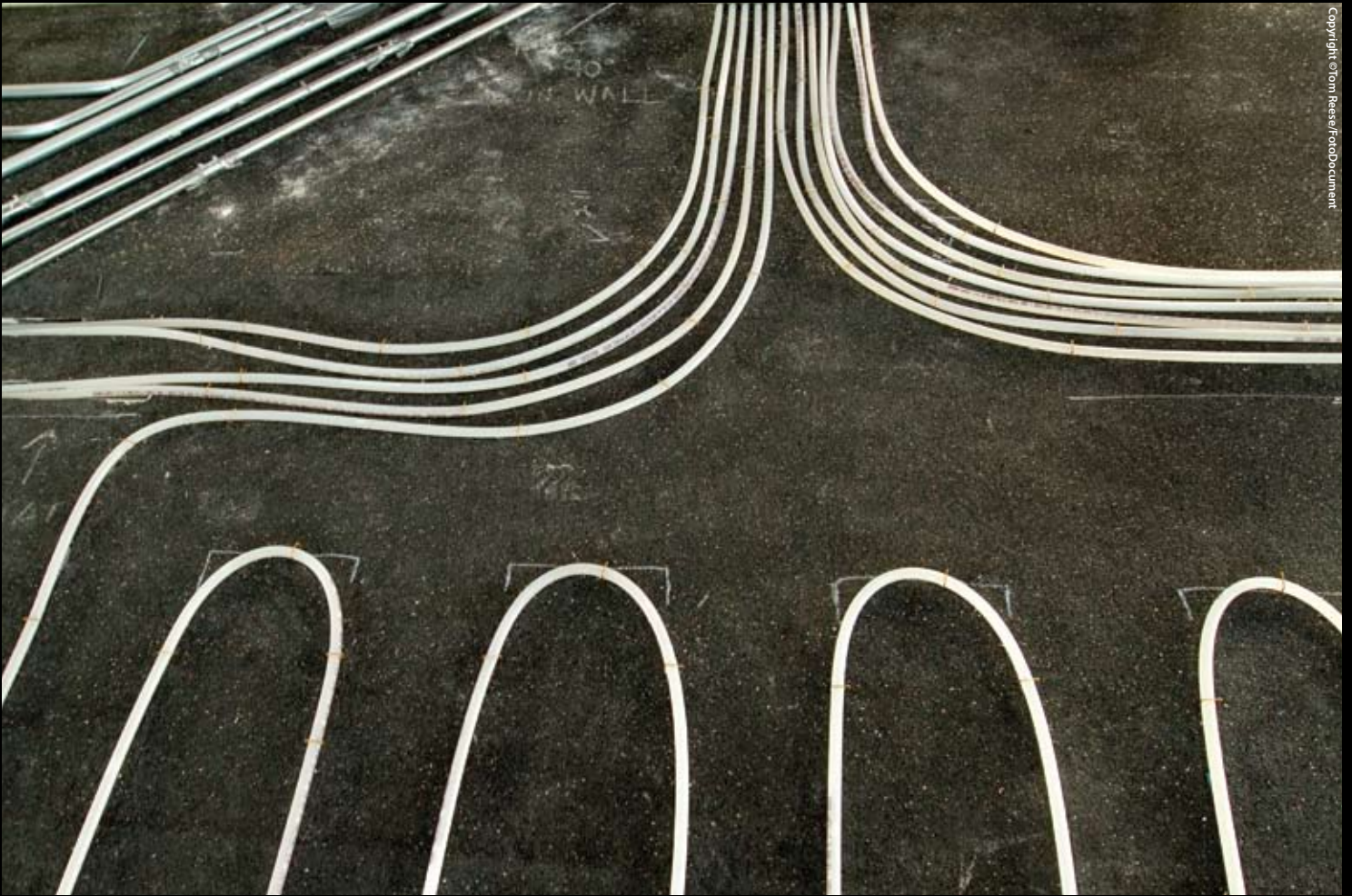
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\* Additional contributions:

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**Helena Kennedy** has 15 years of experience and manages RSB Services Foundation's marketing and communications activities, including advertising, business development strategy, content management, communications, events and website.

**Rolf Hogan** is the Executive Secretary of the RSB. With an academic background in both natural and social sciences, he has been working at the international level for more than 15 years in policy, project management, fundraising and communications. He held various positions with the International Union for the Conservation of Nature (IUCN) including the coordination of technical and policy work on the UNESCO World Heritage Convention from 1995 to 2002.



**Rooted and Flowing:** Like branching roots, the mechanical heating system carries fluid through a series of tubes.  
**Left:** The plastic tubes are now sealed within cement floors and transport heat through a water and glycol mixture.  
**Right:** Tree roots transport what they need from within the soil in a water and nutrient mixture.



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## Responsible mining: a catalyst for sustainable economic development

*Vania Somavilla*

The mining company Vale highlights the extractive sector's role in sustainable development and outlines its actions, working with communities, civil society, governments and investors, in providing benefits at local level. These include: enhanced freight and passenger transport infrastructure, especially in formerly "off-the-grid" regions; capacity building among local populations; and encouraging and enabling local suppliers; in short, "transforming natural resources into sustainable development."

**G**overnments, the private sector and civil society are constantly increasing their collaboration and collective actions to ensure a more sustainable world. This is evidenced by the frameworks and initiatives underway which aim for more efficient and effective results towards the global, post-2015 development agenda.

The Rio+20 Conference brought forth a critical evolution in how we address sustainability, in that its conclusions stressed a clear recognition of the role which the private sector plays in spurring sustainable development through responsible economic activity. We welcome this increased recognition. It sheds light on the positive, critical contributions of responsible business, and reaffirms that the challenges facing the global sustainability agenda are amazingly complex, and can only be addressed through collaboration between governments, the private sector and the collective will of society.

### Recognition of the extractive sector's role in sustainable development

In recent years, we have witnessed a deepening interest in how extractive sector activities impact the broader economy. We see this as a sign of healthy progress, whereby increased connectivity allows the world's citizens to question and compare models, more deeply understand challenges, and demand results. In mining, we have witnessed sea-change. There is a growing recognition not only that responsible mining unleashes benefits well beyond mining – providing a positive legacy on a local scale – but that this proliferation of progress can only occur when investors, governments and civil society work together.

Ever more so, we are shedding our collective naiveté on the limits of private sector contribution to sustainable development, embracing instead the enormous potentials held amongst us. We are working in mutual respect,



Mining operation in Minas Gerais, Brazil

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The Rio+20 Conference brought forth a clear recognition of the role that the private sector plays in spurring sustainable development through responsible economic activity  
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Mining operation in Mozambique

transparency and objectivity, aware that we are all catalysts for change, responsible to set the course for a more prosperous economy and equitable opportunities for advancement, from a local to global scale.

Done properly, in consultation and partnership with the communities, local governments and civil society, the impact of responsible mining investments can be truly transformative for a region.

### Transport corridors as platforms for sustainable economic growth and diversification

One of the most tangible illustrations of transformative change brought forth by the mining-industry investments – worth billions of dollars, often in remote regions – is seen in the construction and operation of transport corridors and their use beyond mining, for general cargo and passengers as well. Consisting of integrated rail/port systems, they also lay the ground work for complementary road, energy and telecoms investments along the course. They harness the potential of diverse forms of general cargo; make exports of value-added products competitive on global markets, and imports of essential parts, supplies, high-tech machinery et al in a timely and competitive fashion. These multi-faceted benefits at a local level set the scene for a more viable investment environment. They encourage business from other sectors to set up shop in formally “off-the-grid” regions, putting them onto the global map of competitive, formal economies, spurring economic diversification, hence greater leverage, sustainability and sound growth.

### Local content and capacity building

Due to its practices that privilege local content, another fundamental legacy which responsible mining brings forth is in strengthening the professional skills base on a local level, through recruitment and training of local workers, and support in capacity-building for local suppliers and local civil servants. These improvements in the baseline of professional and technocratic capacities are crucial to the viability of a given area to attract investors from other sectors and to diversity beyond mining-dependent GDP growth.

Investments in Mozambique towards mining and related infrastructure rely on a work-force of several thousand, of which over 85% are Mozambicans, represented in diverse levels of management and technical expertise. In recent years, approximately USD 1 billion were spent in services and goods provided by around 450 Mozambican suppliers. Furthermore, spill-over effects of the Mozambican mining activities have benefited more than 70 Malawian suppliers, totaling more than USD 3.5 million in 2012 alone.

As a major economic presence where it operates, mining companies play a leading role in identifying, encouraging and enabling local suppliers to meet their standards and be able to compete for business. Beyond mining, however, the support that accredited local suppliers receive from mining companies, through capacity-building and loan assistance, also strengthens their ability to branch out, thereby enriching the quality and availability of world-class, professional services in regions with historically scarce formal economic activity and employment.





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### Collective action

Collective action enhances the ability of governments to provide essential services at a local level. In Brazil, Vale addresses this through the pioneer concept, Public-Private Social Partnerships (PPSP). Through this approach, we assist local government in harnessing its own capabilities to access, manage and attract resources, so that it may address the critical needs of its constituents, encouraging improvements in human development indicators and in the diversity of the formal economic activity base, building blocks of sustainable prosperity.

Responding to the call for action to advance the global development agenda, we are engaged in a diverse range of initiatives. Amongst these is its leadership in the Sustainable Development Solutions Network (SDSN), tasked with transforming the current Millennium Development Goals into the UN's Post-2015 Sustainable Development Goals. In health, we are donating partners of the Global Fund to Fight AIDS, Tuberculosis and Malaria. In support of rural-based progress in human development, Vale and its partners are the lead contributors to a Millennium Village in Zambia, first of its kind to be driven by a mining company, reinforcing the essential link between mining and sustainability.

As a member of the World Business Council for Sustainable Development (WBCSD), our leading role as Co-chair in the Action 2020 initiative – a framework for action to rally the efforts of business to deliver on the economic, environmental and social issues which will feed into the UN's Sustainable Development Goals – also serves to ensure the vital link of the private sector towards structural, sustainable development solutions.

### Transparency: a pre-condition for sustainable development

Transparency and good governance are foundations of fair growth, essential to ensuring that reliable and mutually beneficial policies are enacted and maintained. Good governance is a shared responsibility, one to which governments, investors and civil society must strive together, to deepen quality and capacity at a local level, particularly in developing countries. Through partnership with the UN Global Compact and the Global Reporting Initiative (GRI), support for the Extractive Industries Transparency Initiative (EITI) and in partnership with the International Council on Mining and Metals (ICMM), responsible mining companies are committed to improvements in transparency in the extractive sector.

### Human resources and human rights

Human Resources that contribute to sustainable development must be guided by the respect of the right to organization and negotiation by workers via unions, when membership to such bodies is freely chosen by the workers and respects local laws, the contribution to the eradication of child labor in the communities where the company operates, the combat of any and all forms of discrimination against workers, and excellence in workers' health and safety. In terms of human rights, the Global Business Initiative on Human Rights (GBI), created to advance human rights in a business context around the world, plays a crucial role. Towards gender equality, we adhere to the Women's Empowerment Principles – a set of principles of the UN which offers guidance on how to empower women in the workplace, marketplace and community.



## Conclusion

Hence, global mining companies must be committed to transforming natural resources into sustainable development. We believe that sustainable development is achieved when our businesses provide value to our shareholders while establishing a positive social, economic and environmental legacy in the territories where we operate. Doing what is right, valuing our people and prizing our planet are fundamental values which guide our actions.

Today and in the years to come, we will continue working together with governments, fellow responsible investors, implementing agencies and civil society, locally, regionally and through multilateral initiatives towards a more sustainable economic growth and forging solutions for a brighter future ◀

More and more, we are  
shedding our collective naiveté  
on the limits of the private  
sector contribution to  
sustainable development

### About the author

**Vania Lucia Chaves Somavilla** is Vale Executive Director of Human Resources, Health and Safety, Sustainability and Energy. She developed her professional career at Vale, which she joined in 2001 as General Manager of Energy Sales Planning. She was appointed Director of Vale's Environment and Sustainable Development Department in April 2010. She is currently the CEO of a number of organizations that are carrying out activities in the environmental area, including Vale Florestar S.A., the Vale Environment Institute and the Vale Sustainable Development Association.



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Development that meets the needs  
of the present without compromising  
the ability of future generations  
to meet their own needs

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Sustainable Development as defined in  
**Our Common Future**  
also known as the Brundtland Report,  
from the United Nations World Commission  
on Environment and Development  
1987





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