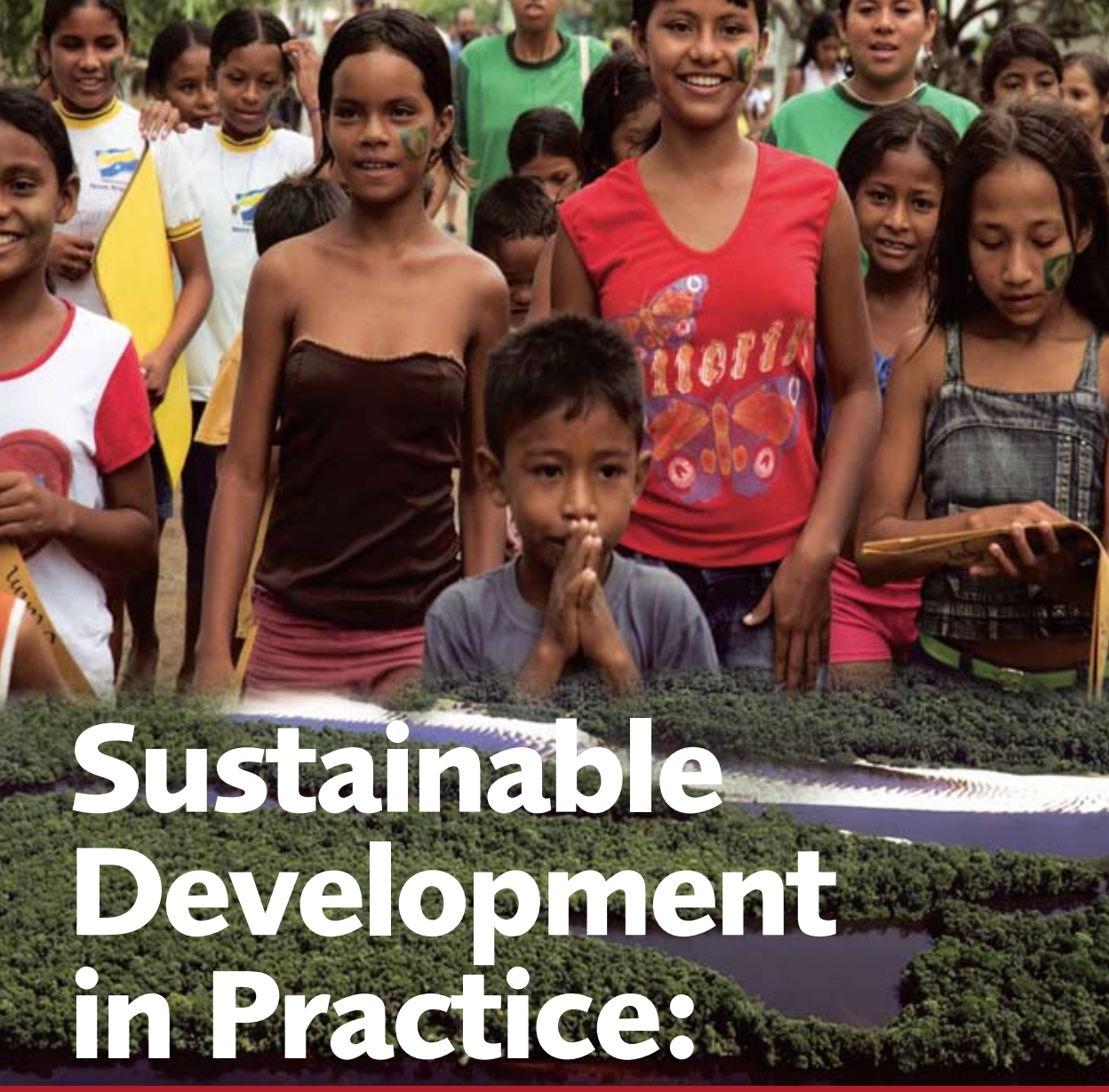


Sustainable Development in Practice:

Lessons Learned from Amazonas

Virgilio M Viana

Sustainable Development in Practice: Lessons Learned from Amazonas

Virgilio M Viana

First published by the International Institute for Environment and Development (UK) in 2010

ISBN: 978-1-84369-773-2

Further information is available at:
www.environmental–mainstreaming.org

For a full list of publications or a catalogue please contact:
International Institute for Environment and Development (IIED)
3 Endsleigh Street
London WC1H 0DD
United Kingdom
newpubs@iied.org
www.iied.org/pubs

A catalogue record for this book is available from the British Library

Citation: Sustainable Development in Practice: Lessons Learned from Amazonas
Environmental Governance No. 3. International Institute for Environment and Development, London, 2010.

Front cover photo credit: Luciana de Francesco
Printed by Park Communications, UK on 100% recycled paper using vegetable oil based ink
Design by: Tony Credland [tony@phonecoop.coop]
Please recycle

Contents

Acronyms

ADS	Amazonas Sustainable Development Agency
AFEAM	State Agency for Economic Development
AFLORAM	Forest Agency of Amazonas
CCBA	Community and Biodiversity Standards
CEPAL	United Nations Commission for Economic Development of Latin America and the Caribbean
CECLIMA	Center for Climate Change
CEUC	Center for Conservation Areas
CIGAS	Amazonas Gas Company
CNS	National Council of Rubber Tappers
COIAB	Coordination of Indigenous Organizations of the Brazilian Amazon
COIAM	Coordination of Indigenous Organizations of Amazonas
ESALQ	Luiz de Queiroz Agricultural School, University of São Paulo
FAS	Amazonas Sustainable Foundation
FAPEAM	Amazonas Foundation for the Advancement of Science
FEPI	State Foundation of Indigenous Peoples
FOIRN	Federation of Organizations of Indigenous Peoples of the Negro River
FSC	Forest Stewardship Council
FUNASA	Brazilian National Health Foundation
IDAM	Institute for Agroforestry Development
IDESAM	Amazonas Institute for Conservation and Sustainability
IIED	International Institute for Environment and Development
IMAFLORA	Institute for Forest and Agricultural Management and Certification
IPAAM	Amazonas Environmental Protection Institute
ISA	Socioenvironmental Institute
ITEAM	Amazonas Land Tenure Institute
REDD	Reduced Emissions from Deforestation and Forest Degradation
REDD+	Reduced Emissions from Deforestation and Forest Degradation plus Forest Management, Conservation and Enhancement
SDS	Secretary for Environment and Sustainable Development
SEDUC	Secretary of Education
SEPROR	Secretariat of Agricultural Production
UEA	University of Amazonas State
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
ZFV	Green Tax Free Zone Programme

Acknowledgements

This book draws on lessons learned from implementing environmental and sustainable development policies, programmes and projects in Amazonas State, in Brazil. I am grateful for the support, friendship, enthusiasm and teamwork of my colleagues at the Secretary for Environment and Sustainable Development (SDS) and its implementing institutions: State Foundation of Indigenous Peoples (FEPI), Amazonas Environmental Protection Institute (IPAAM), Amazonas Sustainable Development Agency (ADS) and Amazonas Gas Company (CIGAS). I am also grateful for the support and partnership of colleagues from other governmental agencies at state, federal and municipal levels. I am greatly indebted to all those staff and political leaders who gave support to my ideas and provided input to refine them. I would like to make a special acknowledgement to Governor Eduardo Braga, whose political support and partnership was an essential part of the work done in Amazonas.

I am thankful for the support of non-governmental partners from institutions and individuals from the various sectors of Amazonas' society: research, business, environmental and social movements. Their support was a key element in our success. An especial source of motivation came from forest communities and their leaders, from whom I had the opportunity to learn different values and perspectives. I would also like to thank the critics, who, in various ways, also provided input to help me identify and overcome challenges as they appeared.

This book benefited from a number of contributions, especially from my colleagues at the International Institute for Environment and Development (IIED). When I first shared the idea of this book with Steve Bass in a meeting in Montreal, he responded with great enthusiasm and support. During my mini sabbatical at IIED in 2009, I benefited from discussions with Camilla Toulmin, Ivan Bond, James Mayers, Maryanne Grieg-Gran and Duncan Macqueen. The manuscript benefited greatly from insightful comments of Ivan Bond and Maryanne Grieg-Gran and an excellent review by Steve Bass. I thank John Hudson, on behalf of DFID for its support to this project. I also benefited from a number of discussions with international scholars, policy-makers and leaders in various meetings, including a special seminar at Chatham House. I should highlight the contribution of Bianca Jagger, a source of inspiration and encouragement. I am very thankful to all.

The book received a special contribution from the assistants who helped me revise, document and translate various materials that were used in the text: Fernanda Tavares (Manaus), Rosana Della Mea (London), Roberto Strumpf, Thais Megid and Luiza Lima (São Paulo), as well as from Leianne Rolington of IIED, who managed the copy edit, layout and print process. They all deserve special recognition for their support. I am also grateful to the colleagues of Amazonas Sustainable Foundation (FAS), who have given me support to continue to dream and transform ideas into practice. I would also like to thank Irish Aid for their generous financial support.

Finally, I should thank the spirits of the forest. With all its mysteries and enchantment, the Amazon forests, rivers and lakes have provided me with the drive and inspiration necessary to face and overcome many, many, many challenges. They deserve my most especial gratitude.

To My mother Iolanda, a source of eternal love, inspiration and guidance.

Etel, my love, companion of many journeys, dreams and thoughts.

Cecilia, Daniel, Caio and Pedro, my children, whose love and friendship is a continuous source of motivation and happiness.

Foreword

For decades, Brazil and the Amazon in particular have been synonymous with a 'frontier' style of development that has destroyed forests. From 2000 to 2002, a team of Brazilian researchers worked with IIED to explore options for more forest-friendly forms of development, and indeed for ways in which forests could sustain development. The team was led by Prof Virgilio Viana. Unusually for a scientist, Virgilio's analysis was one of political economy: *'The biggest challenge... is to change the paradigm that guides public policies and private investments – forests have been seen as obstacles for development, not as opportunities'*. Virgilio's proposed solutions were scientifically based but sought to be attractive to as many stakeholders as possible, including partnerships between communities and private companies, and incentives such as carbon sequestration funds for smallholders to conserve the forest fabric.

Virgilio's work with IIED produced a book – a rich source of ideas but none the less a book. So we were delighted when, in 2003, the Governor of Amazonas, Eduardo Braga, appointed Virgilio as the first ever Secretary for Environment and Sustainable Development, but we were not surprised: Virgilio had already demonstrated the gift of being able to complement a research career with an entrepreneurial approach to ideas. What did surprise us was how far he was able to put many of his ideas into practice over the ensuing years, refining them, taking them to scale, and ensuring mainstream institutions build them into their operations.

When, after five years of innovation and institution-building, Virgilio sought a short sabbatical at IIED to reflect on his experience in Amazonas State, we jumped at the chance to give him some breathing space and help him tell his own story. The result cannot be said to be an objective review of progress. However, there are many ostensibly independent papers assessing new forest initiatives in the literature, and doubtless many more will be produced. The Bolsa Floresta scheme alone – where forest households are rewarded with monthly payments into credit card accounts for practising 'farming without fire' – is already attracting much academic interest. Rather, in circumstances where sustainable development still seems to be abstract or far-off, and only expressed in idealistic policy documents, the more valuable commodity is well-told narratives about actual changes that have really been made – on the ground, in institutions and their operations, in the production systems of companies big and small, and in people's livelihoods. How was the case for change made? What made people jump at the idea? How did existing institutions make the change, and with what kinds of result? We also thought it would be intriguing to see how Virgilio had made the transition from scientist to politician. The popular image is that scientists like complexity, will read a PhD thesis before breakfast, and will stick at a problem for years; politicians like simplicity, will read no further than the first page, and want quick solutions before the next election. Can the best of both worlds combine in one person?

As Virgilio describes, Amazonas State has begun a paradigm shift from 'forests as a bad' to 'forests as a good':

- Where once the political debate was characterised by 'problemology' – focusing on deforestation and poverty, it is now about 'solutionology' – ways for forests to produce the things politicians and voters want like jobs, income and security.
- Where environmental organisations dealt with 'externalities' on the margins of mainstream decisions, their mandates have been expanded so that they can become development catalysts, ensuring investment in the environment as a foundation for development.
- Where sustainable development strategies were complex, now simple and attractive schemes (like Bolsa Floresta) are under way that ordinary people can easily understand, that fire the imagination, and that have wider benefits.
- Where the government had attempted a sole but inadequate lead in sustainability, it has shifted to enabling

many drivers of change, such as the media and NGOs, to scale up new approaches led by farmers and social enterprise.

In such ways, Amazonas has begun to progress from a vulnerable position: exposure to the threats exerted by a chain of deforestation causes; to a resilient position: sustaining real value chains in forest-based goods and services. Virgilio identifies further governance improvements that are needed to realise this potential, mainly in terms of streamlining institutions and stripping out anomalous roles. Moreover, he proposes a National Project for the Amazon; this offers a policy tool kit based in large part on the Amazon experience, but with other ideas to better sustain national and global public goods from forests in the fields of water, climate and energy, and to benefit from emerging international payment schemes.

As Victor Hugo once asserted, there is 'no army as strong as a good idea whose time has come'. We believe that the ideas developed and honed by Virgilio and his Amazonas colleagues are both timely and inspiring – for Brazil as a whole and indeed for countries further afield, as they now search for new 'green economies'.

Steve Bass
Senior Fellow, IIED
London, March 2010

[1] Introduction: Setting the Stage

Why this book has been written

This book came out of a challenge: could I draw the lessons from over five years in office as State Secretary for Environment and Sustainable Development of Amazonas? Many developments over that time seemed to be unique and worthy of review. Firstly, the opportunity that arose to install a new secretariat for the environment in 2003. Previously, Amazonas – despite being the largest Brazilian State – did not have such a position. Secondly, this State Secretary was also a professor of forestry at ESALQ, University of São Paulo, and therefore brought a scientific perspective to policy-making – an academic background that also proved useful in facing the challenge of writing this book. Thirdly, I had the opportunity to apply the perspectives of an active practitioner in the field; being the former president of a non-governmental environmental and forest certifying organisation (Imaflora), with several field projects. Fourthly, I was able to bring to bear my experiences of political processes at the international level (Forest Stewardship Council – FSC), national level (Brazilian Association of Foresters) and local level (Environmental City Council of Piracicaba). Finally – and unusually in today's world where too many complain of an 'absence of political will' for environmental improvement – I had the privilege to work with Governor Eduardo Braga, a brilliant and audacious politician, who offered the essential political support and partnership for a revolution in public policies related to the environment and sustainable development in Amazonas. Such were the factors that were combined in my experience as State Secretary.

The challenge of preparing the book was not merely a personal one; many people on both the Brazilian and international stage were calling for the lessons, due to the significant changes on the ground that we seemed to have achieved. There appears to have been broad recognition of its results and success. Amongst the most important indicators of this success was a study by the United Nations Commission for Economic Development of Latin America and the Caribbean (CEPAL, 2007), which carried out an independent assessment of our work. According to CEPAL, our Green Tax Free Zone Programme (the sustainable development programme of Amazonas), could be described as "a unique experience in the world" in the field of environmental and sustainable development policies. I draw on their work extensively as a third party verification of some of the work. The Programme also received a number of prizes and distinctions as well, and it has proved useful to reflect on the rationales offered by the awarding committees.

Perhaps the most significant overall indicator of our work was the continuous reduction of deforestation rates from 2003-2008 (totalling a 70 per cent decrease), whilst the economy of the state grew by over 9 per cent a year. Protected areas concurrently increased by over 135 per cent, with an additional 10 million hectares protected and complemented by significant achievements in social indexes (Table 1).

Seeking lessons from public policy innovations

It is a difficult task to postulate lessons learned when interventions take place in a complicated context. Successes of sustainable development policies depend on their effectiveness and efficiency in dealing with multiple local factors and circumstances. Policy design requires a blend of scientific understanding of the factors driving economic and social behaviour, and a political understanding of the context in which policies are implemented. Moving from an appropriate policy design to the progressive accumulation of small achievements is the art of policy implementation.

A useful book will identify policies, strategies and instruments that are of a general nature, and lessons that can be valuable in different landscapes and contexts. The lessons presented here should therefore be taken with

[Table 1] Deforestation rates (km²/year) in the Legal Amazon States: 2003-2009

States/year	2003	2004	2005	2006	2007	2008	2009
Acre	1,078	728	592	398	184	254	167
Amazonas	1,558	1,232	775	788	610	604	405
Amapá	25	46	33	30	39	100	70
Maranhão	993	755	922	651	613	1,272	828
Mato Grosso	10,405	11,814	7,145	4,333	2,678	3,258	1,049
Pará	7,145	8,870	5,899	5,592	5,526	5,606	4,281
Rondônia	3,597	3,858	3,244	2,049	1,611	1,136	482
Roraima	439	311	133	231	309	574	121
Tocantins	156	158	271	124	63	107	61
Legal Amazon	25,396	27,772	19,014	14,196	11,633	12,911	7,464

Source: INPE/PRODES (2010)

a word of caution. Local circumstances vary tremendously in time and space and it is impossible to design a blueprint that 'fits all'. Policy success is a result of a correct macro strategy and a sum of a large number of small achievements, which are obviously context specific. I am confident however that three types of 'lessons' can at least serve as a source of inspiration and general guidance for policy design and implementation: real stories of actual change, descriptions of innovations, and summing up the values and principles behind what we did and how we did it.

I write this book with a sense of urgency and unrest. The planet is facing a dramatic climate change emergency, with humanitarian and environmental disasters of an unprecedented nature. I sense that the problem is worse than most people think. I am, however, an optimist. Human history does not follow a linear trajectory: sudden and dramatic changes do happen. Consider the Berlin Wall, for example, whose fall was not foreseen just a few years before, and yet has led to huge gains in wellbeing for many. So, I believe there is room for optimism and hope. We can be stewards of a sustainability revolution.

Appropriate public policies, programmes and projects can be important drivers of this much-needed sustainability revolution. In Amazonas we were able to demonstrate that radical changes in development pathways are possible and not too difficult. The challenge is to bring the right policies, strategies and solutions in a timely way to an unfolding political process. I hope that this book helps to keep alive the hope that we can stop deforestation, eradicate poverty and prevent a global climate catastrophe. This will only be possible, however, if decision-makers at all levels give the necessary attention to our inner challenges: spiritual equilibrium and love. These are our utmost challenges for a sustainable future.

Book structure

This book is divided into four sections. First, I set the stage for the book, by presenting the social, economic and the environmental context of Amazonas State in a nutshell. Having a basic understanding of these circumstances is necessary to understand the context in which lessons were learned. The second section describes the Amazonas sustainable development experiment – the ZFV or Green 'Tax Free' Zone Programme. The third section presents the lessons learned from the various strands of that experiment. Here I attempt a

synthesis of the most important elements for crafting policies for sustainable development in the tropics, on the basis of the Amazonas experience – as guiding principles, not a blueprint that should fit all circumstances.

The final section is a vision for the future. The world is continuously changing and Amazonas cannot stand still if it is to respond proactively and continue to shape a sustainable economy and society; here, therefore, some recommendations for Amazonas are made. Beyond the state, the future of the wider Amazon is at stake – and indeed bound up with that is the fate of the planet. Brazil and other Amazon countries do not have what I would term a 'national plan' for their rainforest landscapes. Do we envision a landscape dominated by national parks or soybean plantations? One or the other – or both? In what proportions? The Amazon desperately needs national plans and their efficient implementation, which result from scientific evidence, popular support, and consensus-building in a strong political process. This requires a robust participatory process, combined with the best science and the wisdom and knowledge of indigenous peoples and traditional populations.

The geographical setting of Amazonas State – heart of the Amazon

There are three geographical territories variously associated with "the Amazon". First, is the Amazon Region – seven million square kilometres encompassing nine countries. Second, is the Brazilian "Legal Amazon" – a geopolitical territory within Brazil which covers 5.2 million square kilometres, includes nine states, and represents about 60 per cent of the Amazon Region (Ferreira et al, 2002). Third is the State of Amazonas – 1.6 million square kilometres and representing about a third of the Brazilian Legal Amazon. The focus of this book is the Brazilian State of Amazonas.

Amazonas State borders five other Brazilian states (Pará, Mato Grosso, Rondônia, Acre and Roraima) and three neighbouring countries (Perú, Colombia and Venezuela) and thus has in its frontier areas an extensive sample of the multiple realities that comprise the diverse landscape of the Amazon Region; pressures from agriculture, road development, infrastructure, excessive logging, and so on. Amazonas State itself also faces the threats and drivers of deforestation and unsustainable development in their various forms. Its borders with Rondonia, Acre, Mato Grosso and Pará states, for example, experience typical frontier dynamics and deforestation (Figure 2).

The social and economic setting - a spectrum from major cities to forest communities

People's presence in the Amazon began with the first Indian settlements around ten thousand years ago. Their population is estimated to have been several million by the time of the arrival of the Portuguese and Spanish in the early 16th century. Following a history of bloodshed, massacres and cultural destruction, indigenous peoples comprise only a small segment of the population today - less than 5 per cent of Amazonas' total population of 3.4 million inhabitants.

Some twenty groups of isolated, non-contacted Indians live in remote areas. Amazonas State is home to some 66 indigenous groups, speaking over 30 languages and comprising the largest Indian population; as well as the first elected Indian mayor in Brazil, São Gabriel da Cachoeira. It is also home to hundreds of thousands of non-Indian traditional populations, the descendents of the Chico Mendes movement: the seringueiros (rubber tappers) and ribeirinhos (riverine dwellers). These people live in the middle of the forest or on the banks of meandering rivers and lakes. Their roots date back to the days of the rubber boom of the late 19th and early 20th centuries. Amazonas State has also become home to new colonizers of European origin, who settled along roads built by the Federal Government in the 1960s and 1970s, such as the Transamazon highway. These colonizers came from the dry zones of the Brazilian northeast and small farmlands of southern Brazil.

These new migrants, combined with those attracted by Manaus industries, riverine populations and Indians, all now comprise the complex and diverse human setting in which environmental and sustainable development policies are designed and implemented in Amazonas.

In the 1960s and 1970s, during the military regime, two distinct sets of development policies were implemented in the Brazilian Amazon. The strategy was to integrate the Amazon into the rest of Brazil in order to secure Brazilian sovereignty over the territory. The first development policy was aimed at the expansion of the agricultural frontier, through highway construction, support to agriculture, and public investment in large mining and hydroelectric projects. This model accelerated deforestation, migration, land tenure conflicts and violence. This agricultural and mining-based development policy was applied to an even greater extent in other Brazilian states and as a result, Amazonas' forests tend to be in better shape than those of its neighbours.

The second development policy was aimed at implementing a free trade zone in Manaus, the capital of Amazonas State. In the beginning (1960s and 1970s), it was a duty free area, driven mostly by commerce, in the form of imported goods to Brazil. In the second phase (1980s onwards), the Manaus Free Trade Zone gradually moved into a high-tech industrial cluster - electronics, motorcycles, and so on. This cluster was supported by tax breaks and technological incentive policies. Migrants from other regions of Brazil, as well as former rubber tappers, were attracted to Manaus and it became the most dynamic economic centre of the Amazon Region. The Manaus Free Trade Zone has had an extraordinary impact, possibly beyond its original intention: a rare combination of economic development with environmental conservation. By concentrating most economic activity in the capital, with considerable success, state and federal development policies in Amazonas did not need to focus on agricultural expansion. Between 1985 and 2002, Amazonas had experienced a huge accumulated economic growth of 502.4 per cent, but had lost of only 2 per cent of its forest cover. Without intending to, the Manaus Free Trade Zone became a successful environmental policy in tackling deforestation.

Manaus is now home to a modern and booming economy, driven by high-tech industries, and brought about by a 40-year-old and successful tax incentive policy. Indeed, Manaus has the largest share of the formal economy of the Brazilian Amazon, generating more than 50 per cent of federal taxes from the whole Amazon and the seventh highest GDP in Brazil. Manaus has also been a regional cultural centre since the former days of the rubber boom, with the Opera House as its main icon. Manaus' industrial production exceeded US$ 30 billion in 2008 (SUFRAMA, 2008) and continues to expand as a result of favorable tax incentives. However, these incentives are dependent on federal legislation, which is often subject to challenges and political debate in the national congress and federal government. In contrast with the booming high-tech industrial economy of Manaus, the Human Development Index of other municipalities in Amazonas is very low – as low as 0.52 in Jutaí compared to 0.774 in Manaus (PNUD, 2000).

In most rural areas, a subsistence economy prevails, based on shifting agriculture. Cash income is very low and extreme poverty is entrenched. More than 90 per cent of the state's rural population has no access to basic sanitation, electricity or proper housing. Distances between towns are large, some of which are further than three thousand kilometres by boat from the capital Manaus. Forest dwellers are further isolated and separated by days of travel by boat to the nearest towns. This isolation drastically increases costs of social services, such as health and education. Protein intake is sufficient, however, mostly as a result of abundant fish and game resources.

Historically, some very different landscapes have been formed by economic pressures. Rubber extraction cycles in the Amazon, occurring from the end of the 19th century through to the mid-20th century, were the most important economic landmarks of post-colonial history. The rubber economy faced two periods of boom and bust: the first in the early 20th century and the second after the second world war. With the decline of the rubber economy, many rubber tappers moved to cities or to river banks. Forest areas were abandoned by rubber barons, who were formally the landowners. Rubber tappers moved into a subsistence economy based on fishing, agriculture and other extractive activities, such as harvesting brazil nuts. To this day, this remains the typical economic landscape of the Amazonian riverine populations. Indian populations suffered from these occupations of their territory, especially those by river banks and in rubber-rich forests. Indians were pushed to the headwaters of rivers and remote forest interiors.

The environmental setting – major ecosystems of global and national value but increasing contestation

Amazonas hosts some of the most isolated and pristine landscapes on Earth. I call it the "deep Amazon". Travelling from Manaus to distant towns may take two weeks by boat, even travelling 24 hours a day. Even today, 98 per cent of Amazonas State is covered by native vegetation, mostly tropical rainforest ecosystems. Amazonas houses more tropical rainforests than any tropical country aside from Brazil itself (2 per cent more than the Democratic Republic of Congo, 50 per cent more than Indonesia, and 30 times larger than Costa Rica). Amazonas shelters the world's greatest animal and plant biodiversity and the largest reservoir of above-ground fresh water - storing 16 per cent of world's total.

The majority (54 per cent) of the state is protected through federal and state conservation areas – parks and reserves – as well as Indian reserves (Table 2 and Figure 1). Until 2003 however, with the exception of part of Mamirauá Reserve, practically all protected areas fitted the category of "paper parks", that is, existing legally on paper but with little active protection on the ground. None of these even had a manager. Nevertheless, management of protected areas has improved considerably since 2003, with the creation of new programmes and institutions as well as legislation; particularly the State Center of Conservation Areas – CEUC. As of 2010, 29 protected areas had a full time manager, more than 30 out of a total of 41 had over US$100,000 investments on practical management implementation.

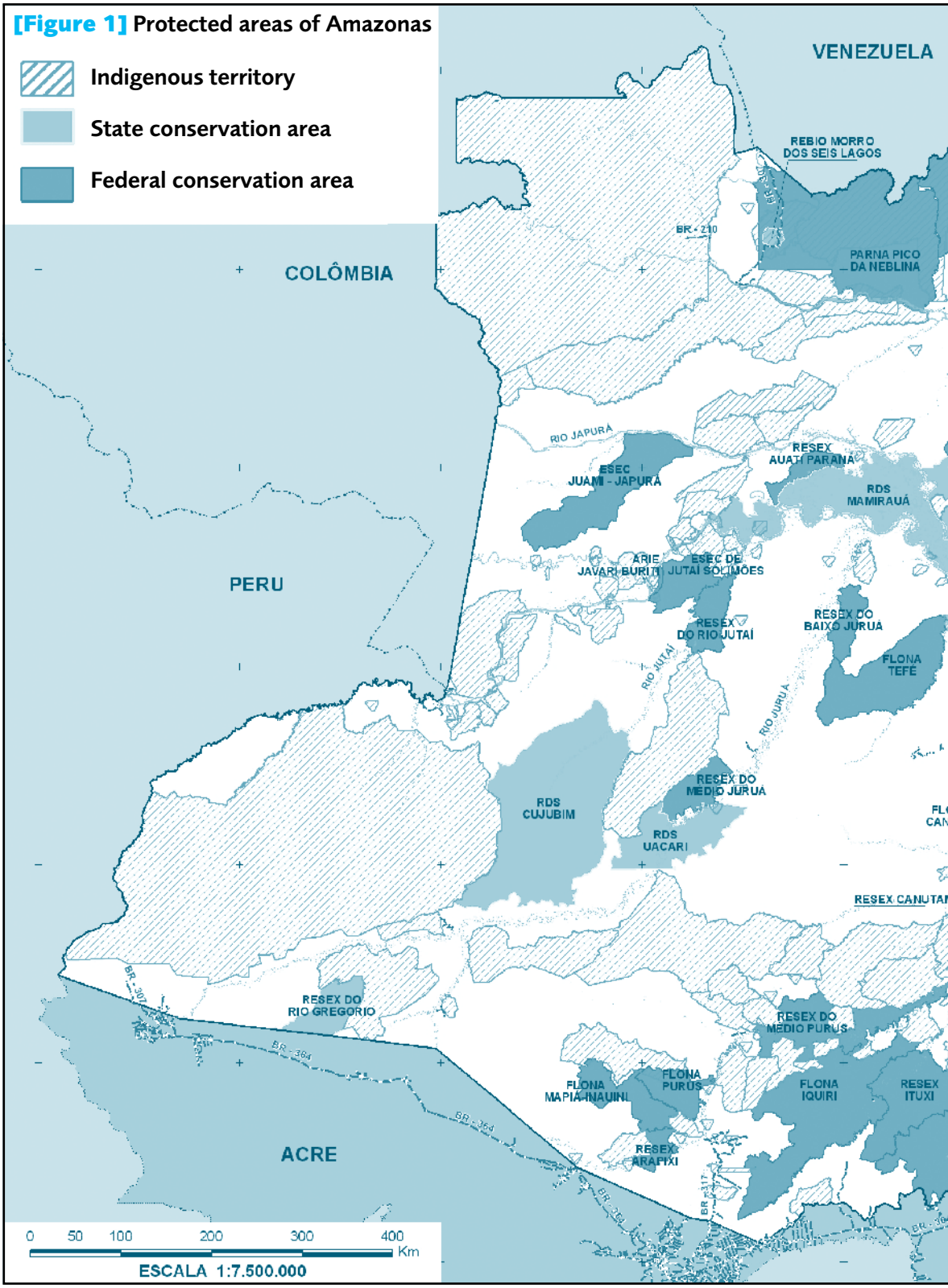
[Table 2] Size of protected areas in Amazonas State

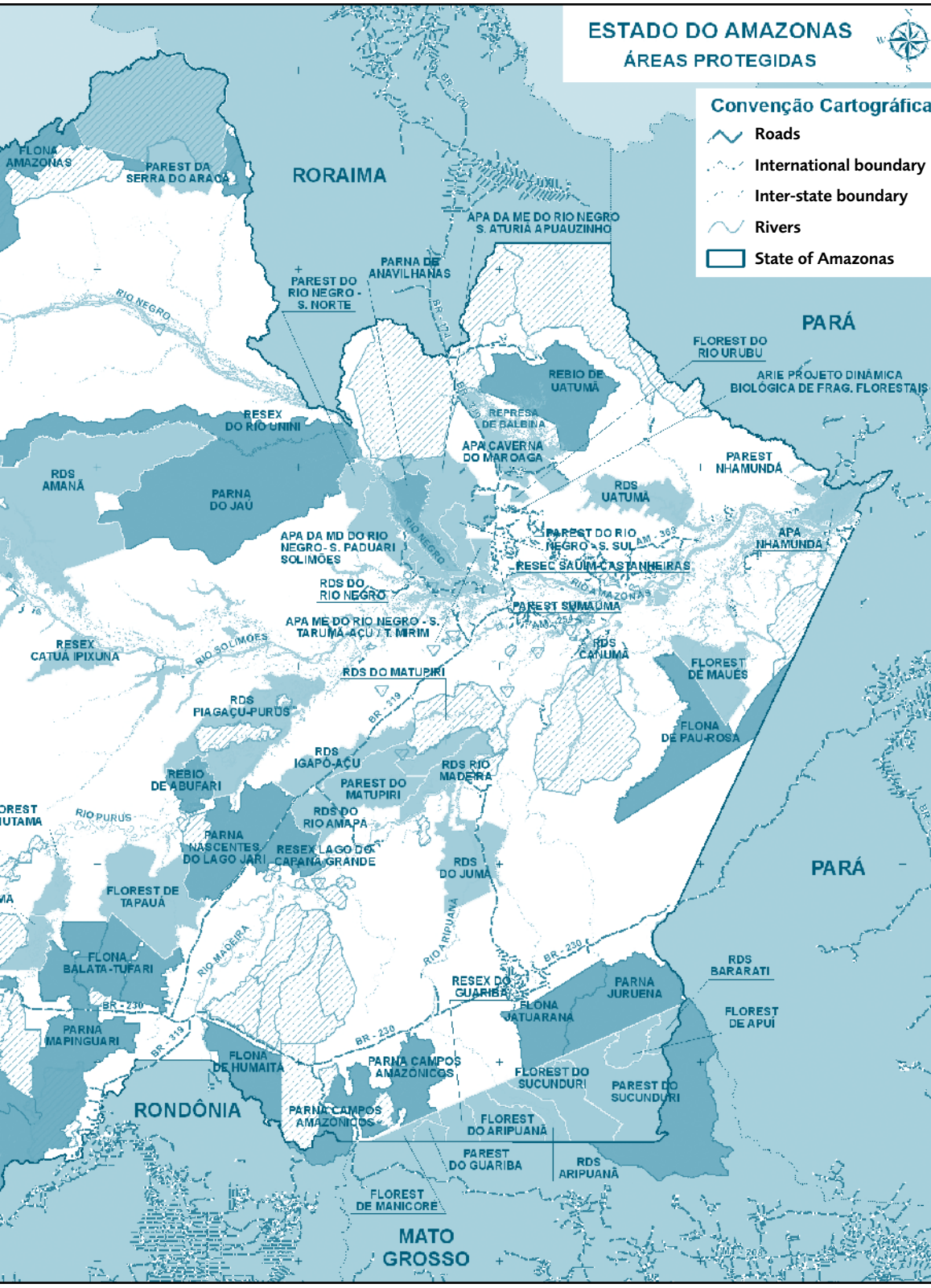
Protected Areas	Dimension (ha)	% of state*
Federal Conservation Areas	21,534,656.42	13.81
State Conservation Areas	19,007,032.65	12.19
Indigenous Lands	43,195,986.77	27.70
Total	**83,737,647.90**	**51.03****

Source: CEUC (2010); FEPI (2010)

(*) Total state area is 157,782,000 hectares (FEPI) (**) There are overlaps between these different categories of protected areas.

[Figure 1] Protected areas of Amazonas




ESTADO DO AMAZONAS
ÁREAS PROTEGIDAS
Convenção Cartográfica
Roads
International boundary
Inter-state boundary
Rivers
State of Amazonas
RORAIMA
PARÁ
RONDÔNIA
MATO GROSSO
FLONA AMAZONAS
PAREST DA SERRA DO ARACÁ
APA DA ME DO RIO NEGRO S. ATURIÁ APUAUZINHO
PARNA DE ANAVILHANAS
PAREST DO RIO NEGRO - S. NORTE
RIO NEGRO
FLOREST DO RIO URUBU
ARIE PROJETO DINÂMICA BIOLÓGICA DE FRAG. FLORESTAIS
REBIO DE UATUMÃ
REPRESA DE BALBINA
RESEX DO RIO UNINI
APA CAVERNA DO MAROAGA
PAREST NHAMUNDÁ
RDS AMANÃ
PARNA DO JAÚ
RDS UATUMÃ
APA NHAMUNDÁ
APA DA MD DO RIO NEGRO - S. PADUARI SOLIMÕES
PAREST DO RIO NEGRO - S. SUL
RESEC SAUIM-CASTANHEIRAS
RDS DO RIO NEGRO
RIO AMAZONAS
PAREST SUMAÚMA
APA ME DO RIO NEGRO - S. TARUMÃ-AÇU / T. MIRIM
RESEX CATUÁ IPIXUNA
RIO SOLIMÕES
RDS CANUMÃ
FLOREST DE MAUÉS
RDS DO MATUPIRI
RDS PIAGAÇU-PURUS
FLONA DE PAU-ROSA
RDS IGAPÓ-AÇU
REBIO DE ABUFARI
PAREST DO MATUPIRI
RDS RIO MADEIRA
RIO PURUS
RDS DO RIO AMAPÁ
PARNA NASCENTES DO LAGO JARI
RESEX LAGO DO CAPANÃ GRANDE
RDS DO JUMA
FLOREST DE TAPAUÁ
RIO MADEIRA
RIO ARIPUANÃ
FLONA BALATA-TUFARI
RESEX DO GUARIBA
PARNA JURUENA
RDS BARARATI
FLONA JATUARANA
FLOREST DE APUÍ
PARNA MAPINGUARI
FLONA DE HUMAITÁ
PARNA CAMPOS AMAZÔNICOS
FLOREST DO SUCUNDURI
PAREST DO SUCUNDURI
FLOREST DO ARIPUANÃ
PAREST DO GUARIBA
RDS ARIPUANÃ
FLOREST DE MANICORÉ
BR-230
BR-319
BR-163
AM-363
AM-254

[Figure 2] Amazonian States of Brazil

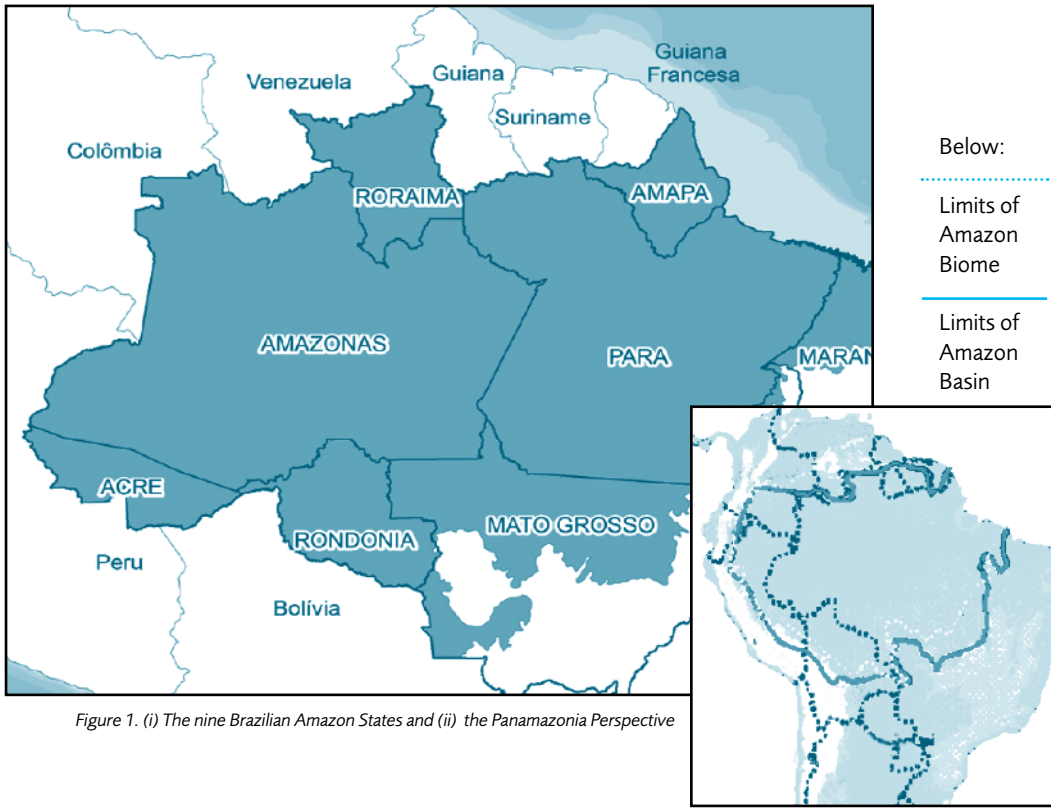


Figure 1. (i) The nine Brazilian Amazon States and (ii) the Panamazonia Perspective

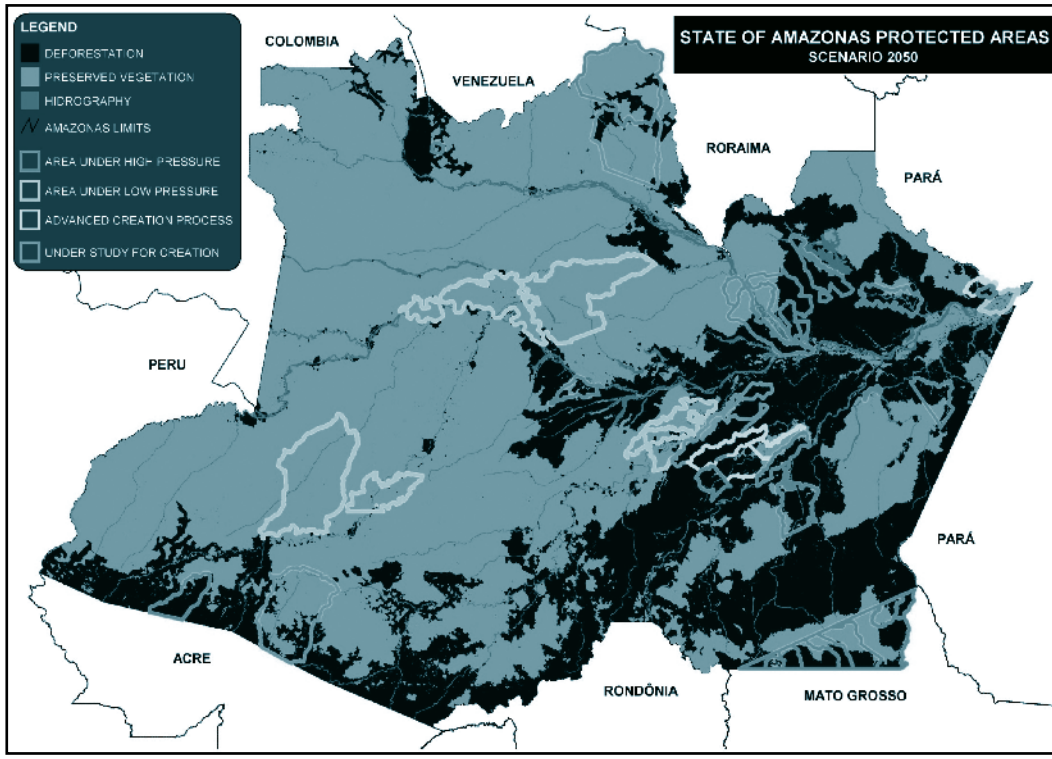
Although 98 per cent of the state is currently covered by natural ecosystems, this does not mean that there is no threat of deforestation. According to independent modelling of scenarios of the dynamics of deforestation throughout the wider Amazon (Soares Filho et al 2006), Amazonas deforestation is expected to reach over 30 per cent by 2050 under a 'business as usual' scenario (Figure 3). It became clear from the current trends and historical patterns of frontier expansion in both the Atlantic forest and the Amazon that environmental and sustainable development policies in Amazonas State needed to be anticipatory in nature. Our strategy was not to wait for the reality to deteriorate but rather to act in anticipation of worsening problems.

The most important drivers of deforestation in the Brazilian Amazon, which can be found in Amazonian states and areas with high deforestation rates, derive from the economics of agricultural frontier expansion. The first step of the deforestation process often begins with illegal logging of high value timber, which enable the illegal logger to pay for constructing further forest roads. These new roads then create the opportunity for the illegal grabbing of public lands. Land grabbing is associated with cattle ranching – the most lucrative land use in remote areas. As roads further improve and property rights become formalised, intensive agricultural

production can proceed in areas where soil, topography and climate conditions are favourable. In older agricultural frontiers, the high productivity of cattle farming and soybean plantations contrast with the low productivity of areas in the early stages of agricultural expansion.

Infrastructure building such as road construction and paving plays a catalytic role therefore, with most deforestation occurring within 50 kilometres of roads (Box 1). Large-scale projects for mining or hydroelectricity also fuel deforestation by attracting migrant workers from other regions of Brazil.

[Figure 3] Expected deforestation in Amazonas State by 2050



Source: Soares-Filho et al, 2006

Amazonas State consequently wrestles with great challenges arising from its contrasting geographic, environmental, social and economic realities. Given the heterogeneity of the Amazonas landscape, many challenges emerged. How, then, can the ideal of sustainable development be achieved for such a complex state? How can life quality be improved, and economic growth and environmental conservation be promoted at the same time? How can the dynamic of frontier expansion be prevented from advancing into the deep Amazon? Perhaps the key question – the prerequisite to answering these other dilemmas – is how can the value of standing forests and their products and environmental services be increased?

[Box 1] BR-319

The Porto Velho-Manaus road (BR-319) was built and paved in the 1970s. Since then it was gradually abandoned due to poor maintenance and harsh tropical conditions. The federal government decided to reconstruct and pave the road in 2007; a decision which led to an intense political debate. Environmentalists and researchers pointed to the threats of deforestation and its social impacts, while political leaders argued in favour of its potential economic benefits. I led the proposal of a railway instead (Viana 2007), and commissioned a study on its costs and benefits compared to road paving (Cascão, 2008). The choice became a hot political issue and the federal environmental agency (IBAMA) had not issued an environmental licence for the road as of February 2010.

The effects of the BR-319 highway are intended to be minimised by SDS's plan for Zoning and Sustainable Development of the area influenced by the highway. The Plan envisages the establishment of environmental control measures and incentives for sustainable use of natural resources within conservation areas in the region. In 2007 and 2008, the Economic-Ecological Zoning was consolidated in the municipalities influenced by the BR-319 (Canutama, Humaitá, Manicoré, Novo Aripuanã, Apuí and Borba). Nine new federal and nineteen new state conservation areas were established, covering 11.5 million hectares.

The beginning of a new era: the birth of the Green Tax Free Zone Programme

Until 2002, Amazonas was subject to a mainstream Brazilian paradigm, which I call the "mato (weed/woods/forests) paradigm". Not so much a formal policy, this takes the form of a deep assumption that forests are inherently bad – a symbol of underdevelopment – and should thus be mined for their resources, for example timber or game, and substituted by more 'productive' land uses, such as agriculture and cattle farming.
A number of public policies in Brazil were driven by the mato paradigm. At the federal level, land tenure policies only granted private land titles in public lands to those who had 'improved' the land; a key indicator of improvement ("benfeitoria") being deforestation for agriculture or cattle farming. At the state level, an iconic policy was the governmental programme to give rural populations chainsaws at no cost, as a form of support to get rid of the persistent obstacle to development – the forest.

Our belief was that new situations required new policies, which have to be guided by new paradigms. In place of the mato paradigm, we coined a new paradigm, which became our slogan: "forests are worth more standing than cut". This formed the core of our communication strategy and its promotion was the first step in changing attitudes and values towards forests. Our challenge was to create political and public support to establish forestry and fisheries management as desirable long-term land uses. This political support was necessary to agree and implement new kinds of policies aimed at supporting sustainable forestry and fisheries management as well as nature conservation.

In 2003, the newly elected government of the State of Amazonas implemented major institutional and political reforms. Their centrepiece was a sustainable development programme, named "Programa Zona Franca Verde" (ZFV, or Green Tax Free Zone Programme). This programme became one of the most important policies of Governor Eduardo Braga's political platform.

The basic task of the ZFV Programme was to put our new forest paradigm into practice. Policies aimed at reducing deforestation should place less emphasis on policing and more on financially rewarding those who

keep their forests standing. The objective was to add tangible value to forest products and environmental services, so that forest management became more economically attractive than agriculture or cattle ranching.

The driver of the ZFV Programme was a newly created secretariat, the Secretariat for Environment and Sustainable Development (SDS). SDS was established as an umbrella institution in 2003, with a mission to coordinate the design and implementation of the state's policy for environment and sustainable development. Prior to that, Amazonas State had only the Amazonas Environmental Protection Institute (IPAAM), an agency mostly focused on the environmental licensing of the high-tech industries in Manaus, with only a handful of staff to deal with the 'green' agenda of forestry, agriculture and fisheries.

From an institutional point of view, there were four initial challenges: first, to create an institution capable of designing cross-sectoral policies for sustainable development (SDS); second, to reform IPAAM so that greater emphasis was given to forestry and fisheries; third, to create an institution to promote sustainable land uses (AFLORAM, which later became ADS); and fourth, to create a land tenure agency to secure rights for those forest dwellers and riverine populations that either lack or have fragile documentation of their land rights (ITEAM – Amazonas Land Tenure Institute). Improving IPAAM was simply not enough; there was a need to create a new institutional culture beyond command and control – the core business of IPAAM. SDS focused on policy design, AFLORAM / IDAM on forestry extension and ITEAM on land tenure.

In 2003 forests were not, in fact, worth more standing than cut. From this point onwards, basing all sustainable development policies around our new paradigm "forests are worth more standing than cut" was necessarily visionary, since this had not previously been achieved. We realised that deforestation entails a set of activities that are economically attractive – notably illegal logging and land grabbing. No-one deforests as a result of ignorance, stupidity or irrationality; on the contrary, deforestation is a result of a rational decision given current policies and prices. The challenge is to change this rationality. Our approach was not to study the value of forests in an academic sense but, rather, to put in place practical possibilities to create and increase the value of forests and the revenue streams that they can sustain.

Seemingly simple, this was none the less a radical change and a major pillar of a quiet revolution. The new development paradigm was at first received with scepticism and criticised by mainstream political leaders, especially those associated with the agricultural sector. The personal engagement of Governor Braga was a key element for successful advocacy, providing the political support necessary to withstand the critics. As time passed, the new paradigm gained in strength as it moved from theory into practice. Concrete and early results were the key ingredients. Effective communication of these results was an essential part of our strategy, reinforcing the paradigm shift.

Small-scale producers and the private sector were supported in their investments in forestry, fisheries management, agroforestry and sustainable tourism. This was not an entirely privatized affair, however: forest protection was also supported through the expansion of the state's protected areas and by improving environmental regulations and law enforcement. Local, national and international partnerships were developed to increase the efficacy of public policies, with national partners providing more funding than international organisations.

Early results

The ZFV Programme seems to have already become a landmark in Amazonas history through its achievements and its widespread recognition, both inside and outside of Brazil. A noteworthy independent assessment was carried out by the United Nations Economic Commission for Latin America and the Caribbean (CEPAL, 2007). CEPAL's analysis indicates that the three priorities of the ZFV Programme – reducing deforestation, expanding the protected areas network and improving the life quality of forest peoples – have already been achieved to a quite remarkable extent:

- Reducing deforestation: during the period of 2003-2008, annual deforestation rates were reduced by 70 per cent.
- Protected area coverage: the total area increased by over 135 per cent.
- Improving quality of life: prices received for key forest and fisheries products significantly increased in this period. Education and health, as well as other social programmes, also experienced major gains.

[Table 3] Deforestation in Amazonas (km²)

2003	**.....**	**1,558**
2004	**.....**	**1,232**
2005	**.....**	**775**
2006	**.....**	**788**
2007	**.....**	**610**
2008	**.....**	**604**
2009	**.....**	**405**

Source: CEUC (2010); FEPI (2010)

** Difference of 2002/2003 x 2007/2008...-74%*

[Table 4] State Protected Areas of Amazonas in million hectares

In million hectares (number of protected areas)
*** Protected areas up to 2002..... 7.3 (12 units)**
*** New protected areas 2003-9..... 11.7 (29 units)**
*** Total state protected areas..... 19.0 (41 units)**
160% increase in relation to 2002

Source: CEUC 2010

[Table 5] Increased producer prices in Amazonas state

Pirarucu fish (Araipama gigas) increased from R$ 1.80 to R$ 4.30/kg
Andiroba oil (Carapa guianensis) increased from R$ 6.00 to R$ 22.00 / lt
Brazilnuts (Bertholetia excelsa) increased from R$ 4.00 to R$ 15.00 /can

A large-scale example of sustainable development

In the late 1980s, 'sustainable development' was proposed as a new paradigm to shape the long-term policies of communities, cities, states, countries and the world as a whole. In essence, it means to improve the quality

of life of those living here today, whilst respecting the needs and rights of future generations. Sustainable development is also associated with a balanced combination of economic, social and environmental objectives. Policies for sustainable development aim at promoting: (i) social fairness and conflict resolution; (ii) sustainable economic growth; (iii) environmental conservation; (iv) secure tenure rights for the poor and for business investment; and (v) sustainable use of natural resources. These policy goals contrast sharply with the outcomes observed in conventional development policies, which usually result in: (i) poor income distribution, injustice and conflicts over resource use; (ii) boom and bust economic cycles linked to resource overuse and depletion; (iii) environmental degradation associated with deforestation, biodiversity losses and soil erosion; and (iv) predatory natural resource use.

The former are worthy aims and the ZFV Programme is in line with them – but it sought rather to implement them. Conceptually, ZFV is in line with the landmark report 'Our Common Future' (Brundtland Commission, 1987), Agenda 21 (Rio 1992 Conference) and the UN Millennium Development Goals. However, the ZFV Programme is wholly Brazilian, being both created in and tailored to fit the socioeconomic and environmental characteristics of Amazonas' landscapes. The Programme has benefited from previous experiences in the states of Amapá and Acre and has been in implementation since 2003, with the mission to promote sustainable development through forestry, fisheries and agribusiness production systems that are environmentally sound, socially fair, and economically viable.

It has not been an easy task to translate the ideal of sustainable development into practical and coherent actions in the Amazon. It means, in many cases, drastic changes in development styles. Over the last 500 years, Brazilian forests have been subject to the unsustainable extraction of high quality timber such as rosewood, as well as non-timber species such as palm heart. Anthropogenic large-scale forest fires are also a common feature of Brazilian forest history. The dynamics of deforestation and land use in the Amazon are fairly similar to those which have been observed in other biomes of Brazil, such as the Atlantic rainforest, which is about 93 per cent deforested. Although many policies and programmes have attempted to use the 'sustainability' concept, there are a number of policy failures. We aimed to address these with a truly cross-sectoral approach, focusing on the improvement of value chains for environmentally-sound forest and fisheries products; by creating jobs; and through ensuring the protection of those forests that required it. We turn to each of these below.

A cross-sectoral approach

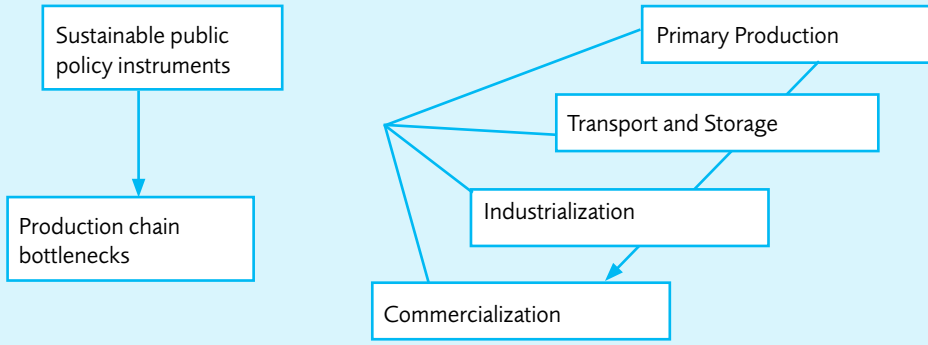
The Green Tax Free Zone (ZFV) Programme was conceived as a set of cross-sectoral policies aimed at promoting sustainable development. Its name was an attempt to convey the concept of sustainability in popular terms to the Amazon population. For the majority of people in Amazonas, the phrase "tax free zone" has come to mean economic development and jobs (in the Manaus industrial complex). 'Green' is associated with natural resources: forests, rivers and lakes. "Green Tax Free Zone" thus means, in simple terms, economic development and job creation on the basis of natural ecosystem management and protection. Communication of this simple message was an essential component of our strategy to gain political support for policy change. In practice, as we shall see, there were a few genuinely tax-free elements of the policy, but in general the concept is not about tax. A noteworthy case is the tax-free policy for all non-timber forest products of Amazonas, implemented in 2005.

Improving value chains for forest and fisheries products

One of the strategies of the ZFV Programme was to focus on unblocking the bottlenecks to productive and sustainable forest and fisheries value chains. These bottlenecks were identified by multiple stakeholders

through participatory planning and implementation processes. The assumption was that in order to increase the value of standing forests, the entire value chain has to improve in efficiency and efficacy. This includes all phases of value chains; from land ownership and establishment, through primary production, transportation, storage, industrialization and commercialization. At the beginning of the chain, for example, land tenure rights need to be secure in order for owners to be certain of receiving long-term revenues from sustainable resource use, which consequently becomes more attractive than short-term 'mining' of forest resources.

[Figure 4] Guidelines of the Green Tax Free Zone Programme implemented in the Amazonas State



Important bottlenecks in value chains for forestry and fisheries products included:

- poor land tenure regularization
- bureaucratic environmental licensing
- poor access to credit
- poor access to markets
- low price paid to producers in comparison with middlemen
- deficient or absent technical assistance
- poor management
- low technological level of production systems
- low level of education
- poor transport infrastructure and high transportation costs
- poor and expensive energy supply
- poor management of protected areas
- poor communication
- low level of local value adding

Policy instruments targeted these bottlenecks at the various links in value chains of major forest and fisheries products (Figure 4). Each bottleneck was the subject of an analysis; examining the problems which produced them, and an assessment of alternative solutions – resolving those which were technically sound, economically viable and in line with the thinking of most stakeholders involved in the process, especially the poorest.

Photo by FAS

Photo by Edgar Duarte/FAS

Photo by FAS

Photo by FAS

Photo by Pedro Bala/FAS

Photo by FAS

Photo by FAS

Photo by Dida Sampaio

Photo by FAS

Creating jobs and increasing income from forests, rivers and lakes

One focus of the ZFV Programme was the creation of jobs and increasing the income from sustainably managed forests, rivers and lakes. This certainly formed an attractive and simple message and as such was a key element in promoting this major paradigm shift for public policies in Amazonas. Even those who were traditionally against environmental policies would agree that forests should be made more valuable to local communities and become a part of a strategy to increase income and improve quality of life. This was one of the most important messages of the electoral campaigns and was supported by voters in the election and re-election of Governor Braga.

Increasing the protected areas network

The final focus of the ZFV Programme was on increasing the size of the network of protected areas. This was not an easy task, since there was considerable prejudice against protected areas – particularly in those areas which had been established through a top-down approach, where there remained continuing conflicts with local populations. People's prejudice was reinforced by the prevailing lack of management – the "paper parks". Our strategy to reverse this prejudice was to show how important protected areas are in safeguarding fisheries, forest resources and environmental services for a future sustainable economy. We focused on protected areas to implement a number of innovative policies to incentivise sustainable production. The strategy was to build on success stories such as pirarucu fish management and brazilnut processing. These results were communicated widely in the media and served to reduce the prejudice against protected areas.

How the Green Free Trade Zone Programme Works

Three operational elements are important here: building on diverse experiences to date within Amazonas; adding a large number of instruments and institutions; and effective coordination.

Building on diverse experiences to date: As a cross-sectoral policy, the ZFV Programme included practically all secretariats and state institutions. Moreover, it built on their diverse experiences of handling the unique characteristics of Amazonas State: the large expanse of forests; relatively little forest degradation; a natural system of river-based transportation; and the Manaus free trade zone policies. The Programme built on past experience of initiatives in forest management, fisheries management, agroforestry and certification. These pilot experiences provided 'glimpses of the future', or 'milestones on the roadmap', for the ZFV Programme.

Constructive instruments and institutions: The ZFV Programme gave priority to the following instruments and institutions – most of which acted as 'carrots' rather than 'sticks':

- **land tenure regularisation** through the creation of a new Amazonas Land Tenure Institute (ITEAM);
- **legalising sustainable approaches** to forestry and fisheries, necessitating improvements to environmental laws and regulations and the reduction of bureaucracy and legalisation costs;
- **access to credit** for sustainable forestry and fisheries management through the expansion of the activities of the State Agency for Economic Development (AFEAM);
- **strengthening the scientific and technological basis for sustainable activities**, including the creation of the Amazonas Foundation for the Advancement of Science (FAPEAM);
- **technical assistance** to sustainable forestry and fisheries management and associated value chains, initially through AFLORAM and later through the creation of a forestry extension programme in a restructured agricultural extension service - the Institute for Agroforestry Development (IDAM);
- **reducing taxes on non-timber forest products**, necessitating changes in legislation;

- **sustainable public procurement**; governmental purchases of small-scale agriculture, forestry and fisheries products through a newly created public company - Agency for Sustainable Development (ADS);
- **market access** for forestry and fisheries products through fair deals with large buyers such as large supermarkets for fish, brazilnuts and other products;
- **expanding the network of protected areas**, including the creation of a new Center for Conservation Areas (CEUC), as a part of SDS;
- **a climate change policy**, including the creation of a new Center for Climate Change (CECLIMA), in charge of designing and implementing climate change policies, as a part of SDS;
- **a system to pay for environmental services** through the Bolsa Floresta Programme, including the creation of a public-private special purpose Amazonas Sustainability Foundation (FAS);
- **social programmes**, especially those improving health and education, including a specific programme for the education of indigenous peoples at the Secretary of Education (SEDUC) and at the State University of Amazonas (UEA).

Clear coordination: Management of the Programme was coordinated by the Secretariat of Environment and Sustainable Development (SDS) and the Secretariat of Agricultural Production (SEPROR). This dual coordination was an improvement on the previous situation where the agricultural secretariat held sole responsibility for production-oriented policies. Our strategy was therefore to engage them, to avoid the risk of having the new sustainability ideas undermined. This coordination strategy was based on identifying cross-sectoral policies and programmes that were compatible with the sustainability concept and paradigm of the ZFV Programme and then making them work well together. Coordination is not merely a mechanical thing, however, it requires joint motivation and ownership of often very different partners, as well as good political manoeuvring skills. One strategy employed to encourage cross-sectoral engagement of high ranking officials and non-governmental stakeholders was to hold public events in which the governor would participate. During these events, all governmental and non-governmental agencies involved in activities related to the ZFV agenda were included in the programme and invited to announce their new initiatives. This political exposure frequently resulted in increased interest in and engagement with sustainability policies by all governmental agencies. Here, though, I am beginning to stray into the lessons we learned about this major process of changing the political economy. The next section attempts to lay out these often very diffuse and interconnected lessons in a more systematic way.

[2] Lessons Learned – Bridging Environment and Development, Theory and Practice

The following 'lessons learned' have been drawn from practical experiences and personal reflection. Although drawn from the particular Amazonas context, I hope they can be used as a reference for other situations – albeit with a word of caution: local circumstances vary tremendously in time and space and it is impossible to design one blueprint that 'fits all'. I am confident however that some of these lessons may serve as inspiration and general guidance to those facing the challenge of building bridges between the many actors involved in sustainable development, and between its theory and its practice. Successful sustainable development policies are the result of both a sound macro-strategy and the sum of many small details, which are undoubtedly site-specific.

[Lesson 1] Change the 'natural resource liquidation' paradigm of development by making forests worth more standing than cut

Key Amazonas innovations and their results

- **Tax incentives for forest products:** until 2002, tax incentive policies in Amazonas State explicitly excluded business activities that were based on rainforest products. In 2003, a new state law (No. 2.826/2003) not only made business based on rainforest products (fruits, fish, timber) eligible, but gave them priority; provided that they came from managed natural forest ecosystems with all appropriate licenses. This tax incentive resulted in eliminating state taxes on non-timber forest products, which totalled 17 per cent.
- **Technical assistance to forestry:** up to 2002, Amazonas, the state with the largest rainforest area within Brazil did not have a forestry extension programme. Amazonas State offered technical assistance only to agriculture and cattle ranching. In 2003, a new agency, Forest Agency of Amazonas (AFLORAM) was established to provide technical assistance for forest-based production. In 2007, it became part of a redesigned agency, merging with agricultural extension: the Institute for Sustainable Agroforestry Development of Amazonas (IDAM). This created the first ever forestry extension programme in Amazonas which could therefore handle farm-forest synergies and tensions. Small-scale forest management plans were prepared by forest extension agents and totalled 976 between 2005 and 2007.

Rationale

The term 'Mato' (forests) in Portuguese has a very negative connotation, meaning 'weed'. Brazilian history is based on the anthropocentric view that forests and other natural ecosystems are inherently bad, and consequently that development must necessarily imply their substitution with other land uses. Natural ecosystems seem to lack order, seem too complicated, and are associated with backwardness. Getting rid of 'mato' is thus seen as positive step for development. It is no surprise, therefore, that a number of policies support the substitution of natural ecosystems with more 'orderly' systems, such as agriculture or tree planting in rows. These policies do not generally state openly their position against the 'mato', and this remains as an unstated paradigm.

An indicator of this paradigm is traditional *land tenure policies,* which identify deforestation as a necessary 'improvement'. In order to secure land tenure rights, rural populations need to show a significant clearing of their forests, combined with plantings of agricultural crops or pastures, which is considered to constitute development. If rural populations practice non-timber or timber forest management, those areas do not qualify for formal land ownership claims, as this is not considered to be development.

Another indicator is the traditional *credit and tax incentive policies* that have favoured only agricultural and

cattle farming. Until very recently, in the Brazilian Amazon as a whole, financial support for non-timber or timber forest management was almost non-existent, and negligible when it was available.

Development policies such as for technical assistance, education, and science and technology, reinforce this, typically not prioritising natural ecosystem management. It is no surprise therefore, that natural ecosystem management is less attractive to rural populations than the alternatives or that these populations choose to deforest rather than manage their forest ecosystems. The same prejudice against natural forest ecosystems is found against the management of natural fisheries, savannas and other native terrestrial ecosystems. Support for the management of natural fisheries and native terrestrial ecosystems is either non-existent or insignificant compared to support for agriculture, fish farming and plantation forestry.

We realised, however, that there are great opportunities for policies that encourage the management of natural ecosystems. Products from natural ecosystem management are often organic and will have greater market potential in today's more environmentally-discriminating markets than in the past. These products are often eligible for fair trade and environmental certification – attributes that have become increasingly valuable recently.

Natural ecosystems are often managed by indigenous and traditional populations, who tend to have less political power or access to the decision-making process. The bias against natural ecosystem management thus also serves to increase social injustice and inequities towards these segments of society. Traditional and indigenous ethno-ecological knowledge is often disregarded and not given appropriate acknowledgement. We recognised the opportunity to develop policies that value and promote indigenous knowledge of natural ecosystem management.

Natural ecosystems provide ecosystem services which have lately received greater recognition for their importance and financial value; these include biodiversity conservation, watershed production, carbon storage and sequestration, and rainfall processes, amongst others. We further appreciated that these environmental services need to be understood and incorporated into macro development plans and policies. Without due regard to the maintenance of environmental services provided by natural ecosystems, development policies cannot be called 'sustainable'.

Finally, in the era of a 'low carbon economy', natural ecosystem management usually has a lower carbon footprint than those alternatives that depend more on external inputs. Managing natural forests requires fewer chemicals and fossil fuels than tree plantations. Managing natural fisheries requires fewer external inputs than fish farming. Natural ecosystem management is a cost-effective part of climate mitigation and adaptation strategies. Furthermore, the resilience of natural ecosystems may be greater than cultivated agroecosystems – a hypothesis to be tested.

Lessons Learned

- Natural ecosystem management and protection needs to be valued as an important component of development policies, indeed as a foundation for them.
- Products obtained from natural ecosystems should receive more favourable treatment by cross-sectoral policies than those obtained from agriculture, fish farming or tree planting.
- Environmental services provided by natural ecosystems should be given financial value through innovative policy instruments, which should ensure direct benefits to forest owners.

- Natural ecosystem management and protection policies should be inclusive and flexible in order to suit all forest owners, from Indian and traditional populations to governments, farmers and private companies.

[Lesson 2] Create political support for sustainability and the environment by focusing on jobs, income, votes and other mainstream incentives

Key Amazonas innovations and their results

- **Green Tax Free Zone – improving jobs:** rather than focusing on command and control initiatives (such as fines and policing), the focus was on creating jobs and increasing income from sustainably managed forests. This simple message was a key ingredient in promoting a major paradigm shift for public policies in Amazonas and was supported by voters in elections.
- **Fisheries management – improving legality and income:** the programme to support lake management, processing, marketing and control of illegal fishing of pirarucu (*Araipama gigas*) more than doubled the price paid to fisherman over 2003-2007. This resulted in significantly increased income, reduced illegal and unsustainable fishing, and moreover was strongly backed by riverine populations.
- **Timber management – improving legality and income:** the programme to support legal timber production from managed forests increased the value of standing forests. In the Negro River region, timber is produced with chainsaw processing. Illegal timber, often coming from deforestation areas, was worth R$ 200 per cubic metre in 2008. Yet legal timber, coming from forest management areas, was worth R$ 800 per cubic metre in 2008. This fourfold increase in value was a great incentive for sustainable forest management policies, gaining broad political support.

Rationale

Poorly designed and/or implemented public policies are often seen as a result of 'bad' intentions. While policies can be driven by special interest groups with nefarious or corrupt intentions, this is not always the case. I have seen a number of cases where policy failures resulted more from ignorance and poor advice than from bad intentions. As an example, when I presented a proposal for forest management policies to Amazon mayors, whose municipalities had almost 99 per cent forest cover and plentiful rivers and lakes, many had never heard of forest and fisheries management. To most, development could proceed only through expanding the agricultural frontier – thus deforestation. It is not to be unexpected therefore that only agricultural, logging and deforestation policies had been implemented at the municipal level.

There is a large gulf separating advocates, scientists and experts on sustainable development on the one hand, and politicians on the other. Politics is often seen with considerable prejudice by the former and politicians often have a negative image. It is not my intention to make any value judgment here but rather to point out that there is a lack of communication and understanding of respective roles and that all would benefit from overcoming those obstacles. Advocates, scientists and experts should narrow the divide and work with politicians to raise awareness about the potential benefits of sustainable development policies.

There is a great deal of potential to create political support for sustainability. In democratic regimes, politicians are judged by their constituencies on the basis of their perceived effectiveness in delivering desirable results. Politicians have short mandates to deliver results expected by their voters (mostly four years in the case of Brazil). Budgets are usually smaller than the demands and therefore priorities need to be established. Mainstream policies such as investment in highly visible infrastructure (roads, schools, hospitals and so on) are quite straightforward and thus seen as the most attractive and least risky option. Environmental and

sustainability policies, in contrast, are generally less visible and often seen as complicated, long-term and uncertain, and thus less attractive. Since they are not mainstream policies, they are often perceived as more risky and politically less attractive. Policy innovations are seen as more vulnerable to failure and approval by the public perceived as less predictable. A lack of knowledge increases the perception of the risk of developing sustainable development policies.

The strategy to obtain support from politicians for sustainable development policies can be divided into three parts: the first task is to identify policies that can link environmental and sustainability policies to salaried jobs and income-generating activities – hereafter summarised as 'jobs'[1]. Job creation is a very important element of political success to any politician, as it translates directly into votes. Votes, in turn, are the most important driver of good political behaviour in democratic systems. The question is therefore: which environmental and sustainability policies can generate jobs most efficiently?

When environmental agencies bring the challenge of job creation to the table of political decision-making, it certainly generates interest because it is unusual to hear that environmental interests can promote jobs; it can therefore also open important doors. Environmental and sustainability policies are usually considered to be enemies of jobs and economic development. Environmental licenses are commonly seen as unjustified obstacles to business or infrastructure development. The challenge of linking green policies to job creation is a key component of sustainability policies in the twenty-first century.

The second strategy is to communicate environmental and sustainability policies in simple terms. Politicians are not known in general for being expert or even knowledgeable on environmental and sustainability issues. On the contrary, there is a sense that environmental issues are not interesting and not particularly relevant to political success. There is often a sense that environmental and sustainability issues are complicated and can be handled only by experts. The challenge here is to simplify ecological concepts and solutions for policy design and implementation.

The third strategy is to translate the concept of sustainable development through simple messages. Sustainable development has become a widely accepted concept and yet it is poorly understood by most policy-makers. Part of the problem is that it is an all encompassing and exhaustive concept, covering future generations while considering the needs of the present, and balancing economic, social and environmental goals. Policy-makers and the population at large need to understand how the concept of sustainable development relates to their daily affairs and lives – sustainable development defined in practical terms.

'Green Tax Free Zone' meant jobs and prosperity based on the green economy (forests, fisheries, protected areas): 'forests are worth more standing than cut'. Sustainable development was presented as a strategy to protect the forest by increasing the financial returns to those who are dependent on and are the guardians of the rainforest. This was a simple message, easy to explain to all stakeholders.

The ZFV slogan was so simple and coherent that it received wide acceptance throughout the political spectrum, subtly undermining the opposition to environmental policies. No one could criticise job creation policies. The opposition used to argue that we should not elevate alligators and trees above people and the problem

[1] 'Jobs' is used throughout the text to refer to both salaried jobs and income generating activities. In rural areas in the Amazon, income generating activities tend to be more important, whilst in urban areas salaried jobs are relatively more important.

of human poverty; they would argue that those who defend the environment come from wealthy countries or segments of Brazilian society who can afford the luxury of environmental conservation. For the poor, the priority was to improve people's livelihoods, justifying the cutting of forests if necessary to achieve this goal. Changing the views of most political parties and politicians in favour of sustainability is a critical step. Linking these policies to jobs and votes is the most effective approach.

From a political perspective, one of the main assets of the ZFV Programme was its high political profile. The fact that Governor Eduardo Braga frequently spoke about it created an interest from all high-ranking officials (secretaries and presidents of public institutions) in being linked to the Programme. The fact that governmental communications and marketing campaigns gave an emphasis to the Programme created broad public awareness and encouraged multiple stakeholder participation.

Lessons Learned

- Environmental and sustainability policies can and should be linked to votes, jobs and other mainstream concerns - for Amazonas, the most effective link is through job creation.
- It is important to create opportunities to inform and educate policy-makers about environmental and sustainability issues. In either formal or informal settings, the key is to provide simple concepts and attractive solutions that can generate political support amongst their constituencies. One-on-one tutoring and advising can be very effective.
- Ecological concepts that underpin environmental and sustainability policies should be made simple and easily understood by all stakeholders, and related to something practical that can bring direct benefit to the stakeholders involved. The more simply they are framed, the easier it is for politicians to understand, feel confident, make speeches, and talk about the environment and sustainability.
- It is vital to focus on results that can be used to strengthen the political discourse, for example, providing bold numbers to reinforce the results and expand political support to environmental and sustainable development policies.

[Lesson 3] Place environmental and sustainability concerns at the centre of policy design and implementation – expanding environment institutions to become sustainable development catalysts

Key Amazonas innovations and their results

- **Secretariat of Environment and Sustainable Development (SDS):** Amazonas did not have a secretariat for the environment until 2002. When I was invited to become state secretary for the environment, I proposed that the new institution should address both the environment *and sustainable development*. With this addition, SDS was entitled to be a leader of the Green Tax Free Zone Programme. SDS received the formal mandate to (i) coordinate indigenous peoples, forestry, environment and natural gas policies and (ii) participate in the design of other sectoral policies, particularly in agriculture, science and technology, education and finance. In addition, SDS used the broad scope and concept of 'sustainable development' to informally participate in the decision-making for energy, health, transport and social policies. SDS came to occupy the centre stage of the political discourse and attracted substantial media coverage for its innovative programmes and solutions. The budget for SDS, as of 2009, was R$ 11.7 million, while the number of staff was 210. The importance of SDS is not proportional to its budget. More important than its budget and size was its credibility, leadership, professionalism and political support.

- **Agency for Sustainable Development (ADS):** This public company was created to support green businesses in collaboration with other sectors; predominantly agriculture, science and technology, education and finance. ADS established a mechanism with the Secretary of Education to purchase supplies for school meals from local small producers, and furniture from local manufacturers supplied by managed timber. In 2008 these programmes totalled R$ 13 million (school meals) and R$ 4.06 million (furniture). This new approach of sustainable public procurement processes resulted in increased income for local communities and small suppliers and became a strong driver of the political discourse on sustainable development.

Rationale

Environmental and sustainability policies need to move from the periphery to the centre of the decision-making process. Due to the perception that these policies are not particularly important to obtain votes, environment and sustainable development ministries, secretaries and agencies are usually on the periphery of the political decision-making process. The exception occurs with large projects that require environmental licensing and are perceived as having very negative environmental or social impacts. Then, usually as a result of public pressure, environmental agencies are brought to the centre of the policy-making stage. This has been the case with road paving or construction of hydroelectric dams. Yet in those circumstances, the project is already designed, and environmental licensing becomes more a source of additional costs and delays than a real opportunity to rethink development plans. This exacerbates the perception of most politicians and private sector developers that environmental issues are just a cost, a barrier to development. Changing this perception is not a simple task but it is a core strategic goal if policies are to support sustainable development.

As we found in Amazonas, one way to increase the political space for environmental policies is to expand the mandate of environmental institutions into also becoming 'sustainable development agencies'. This seemingly subtle change in name must be accompanied by a corresponding change in legal mandate. That new mandate then needs to be backed up by new roles and political attitudes. In particular, sustainable development institutions need to become catalysts of cross-sectoral policies. Sustainable development secretaries and ministers need to have the ability to think across sectoral boundaries, identifying synergisms and resolving conflicts and contradictions that exist between sectoral policies. New skills and attitudes are also needed at the advisory and technical staff levels.

The strategy to increase the political profile of environmental and sustainability policies is a two-step process. Firstly, it is necessary to create political support by linking environmental and sustainability policies directly to jobs and income generation – as discussed above. Secondly, it is necessary to move away from command-and-control environmental policies towards cross-sectoral policies aimed at green jobs and prosperity. If environmental and sustainability agendas are limited to command-and-control measures, they will never come to the centre stage of the policy-making process; they will only be called in to license projects designed by mainstream development agencies.

The problem is that sustainable development is sufficiently broad to encompass everything from education and energy to finance and infrastructure – all of which are relevant to sustainability goals. There appears to be too large a step between the current mandate of environmental institutions and the potential sustainable development institutions. There is a simple solution to this challenge, which begins by transforming environment ministries, secretaries and agencies into 'environmental and sustainable development' institutions. Such name changes – backed by an appropriate formal mandate – can expand the role of those institutions and

enable them to become catalysts of sustainable development elsewhere. To achieve this, environmental and sustainable development institutions must be formally and legally recognised as participants in governmental decision-making bodies and members of most relevant multi-stakeholder fora.

There is radical change when any governmental agency receives a 'sustainable development' mandate. Once they receive such a mandate, it is no longer possible to justify its absence in the process of designing and implementing policies for education, energy, health, finance, agriculture, forestry, infrastructure, science and technology, planning, human rights and social assistance. Once that process is put in place, the challenge becomes the development of operational roles, since new skills and training are required at all levels.

One successful strategy to bring the environmental and sustainable development agenda into multi- and cross-sectoral policies is to surprise policy-makers and policy stakeholders with creative and innovative solutions, often transferred from one sector to another. There are a large number of simple solutions that can make conventional policies and programmes more environmentally sound. They need to be selected on the basis of proven experience, with concrete references to results, costs and comparative advantages and they need to be perceived as low-risk. It is also critical to stress that they can bring votes, as noted above. Pictures and videos help to educate decision-makers and staff from other sectors. Innovative and creative solutions are often able to attract media coverage in a way that conventional policies and projects do not. This is an important political advantage to successful green projects and policies.

Creating new institutions can be necessary. In the case of Amazonas, until 2003 only one environmental licensing agency (IPAAM) and one agricultural extension agency (IDAM) existed. Although both required reform and development, it was not possible to fit new roles into their institutional culture. We therefore had to create new institutions to design cross-sectoral policies (SDS), deal with land tenure issues (ITEAM), work with forest extension (AFLORAM, later merged into IDAM), promote the marketing of sustainable products (ADS) and invest in science and technology (FAPEAM). Although this may seem like a lot of institutions, each one was necessary to create a focal point and bring political attention to issues that were, until then, neglected by policy-makers. Investing in new institutions opened doors for greater cooperation, especially with the federal government of Brazil. In addition, it also stimulated greater international cooperation.

Lessons learned

- Transform environmental ministries, secretaries and agencies into 'environmental and sustainable development' institutions.
- Provide a mandate to environmental and sustainable development institutions to participate in the design and implementation of multi-sectoral and cross-sectoral policies. Use the umbrella of sustainable development to occupy the political role of coordination of large development projects and give guidance to cross-sectoral policies.
- Add value to innovative and creative sustainability policies by attracting greater media coverage and linking that to political support and votes.
- Create new institutions to deal with key issues related to sustainable development.

[Lesson 4] Pay people for environmental services rendered – Bolsa Floresta: an innovative solution to fight deforestation and poverty

Key Amazonas innovations and their results

- **Bolsa Floresta:** Payments for environmental services through the Bolsa Floresta programme has become an icon for progressive public policies in the Amazon. The idea is simple - families who make a commitment to zero deforestation receive four types of benefit:

[Table 6] The Bolsa Floresta Components and Costs

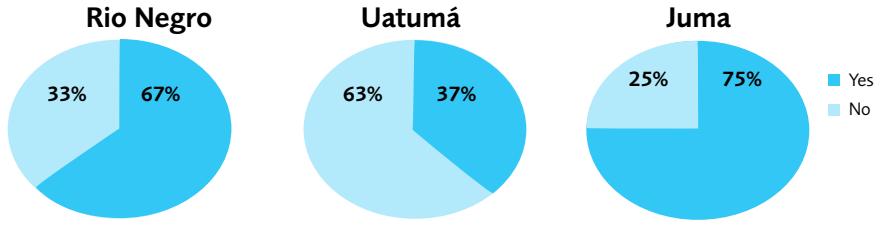
- The first component is Bolsa Floresta - Income (BFI): this is an investment in income-generating activities based on sustainable production in forests, fisheries, tourism, permaculture and agroforestry. In simple terms, anything that generates income, is legal, and does not produce smoke. Investments (in kind) in each reserve had an average of R$ 140 thousand per year.
- The second component is Bolsa Floresta - Social (BFS): this is an investment aimed at improving quality of life in communities, with a focus on education, health, communication and transportation. Investments (in kind) in each reserve were at an average level of R$ 140 thousand per year.
- The third component is Bolsa Floresta - Family (BFF): this is an R$ 50 monthly reward paid in cash to the mothers of families living in the Protected Areas, for their commitment to zero deforestation, children's education and the prevention of forest fires. Payments are made directly onto a debit card held by the mother.
- The fourth component is Bolsa Floresta - Association (BFA): this supports local grassroots organisations in improving local ownership of the overall programme. Associations of residents of Protected Areas receive support to strengthen their organisation, with a focus on office support (internet, solar panels, computers), transportation (speed boats) and logistics (fuel and food supplies). An average of R$ 12,000 per reserve per year is paid through money transfers to the grassroots organisations.
- Implementation of the Bolsa Floresta programme by Amazonas Sustainable Foundation (FAS) began in the second quarter of 2008. The budgets for 2009 (implemented) and 2010 (planned) are shown below.

Year	Total Budget (US$)	Bolsa Floresta Labour & Field Cost (US$)	Number of Families (registered/ benefited)	Total Cost per Family (US$)	Direct Cost per Family (US$)	Cost per Hectare (US$)	Direct Cost per Hectare (US$)
2009	8,690,600	1,025,000	6,813 6,325	1,276/ 1,374	150 / 162	0. 84	0.10
2010	11,066,666	923,077	8,000	1,383	115	1.00	0.08

FAS carried out a poll to explore perceptions about the Bolsa Floresta programme amongst its participants. Results show that communities did not have a great deal of faith in the programme when they first heard about it, which may be the result of historical frustrations over unfulfilled promises made by external actors such as governments, churches, NGOs, and research organisations.

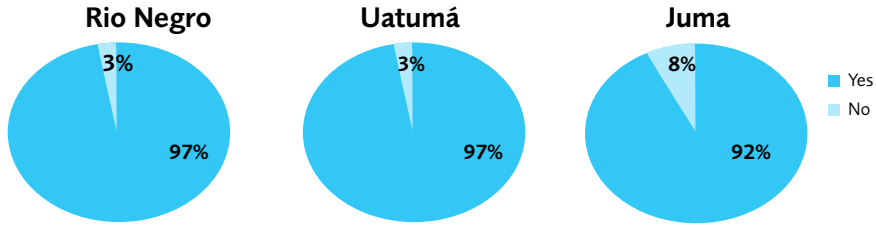
Since the start of the activities, however, confidence in the programme has increased dramatically.

Did you believe in the Forest Allowance Programme when you initially heard about it?



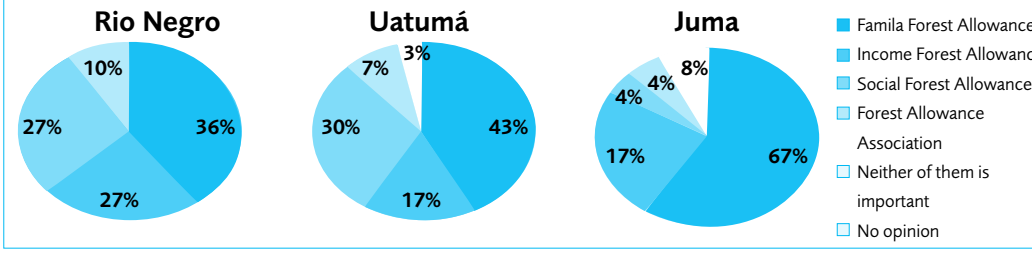
The direct cash payment to families (Bolsa Floresta Familia) is regarded as the most important component of the Bolsa Floresta programme.

Do you believe in it currently?

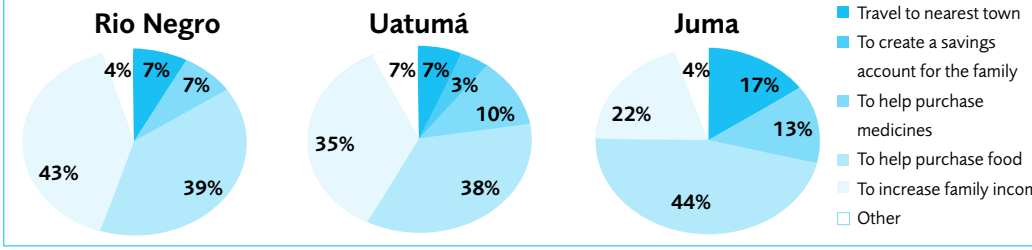


Money received from the Bolsa Floresta Familia payments are used for a variety of purposes, ranging from transportation to urban areas, to the purchase of food and medicine.

In your opinion, which component of the Forest Allowance Programme is the most important?



How do you use the money from Bolsa Floresta Familia?



[Box 2] The Juma Project

Established in 2006 by the Government of Amazonas, in a region which currently remains relatively isolated but is expected to face high deforestation pressures in the future, the Juma reserve encompasses 589,612 hectares and is home to 370 families. The reserve's acclaimed REDD project, implemented by Amazonas Sustainable Foundation (FAS), is expected to prevent the deforestation of around 330,000 hectares of tropical rainforest, taking account of leakage (Viana 2009).

According to an audit carried out by German company Tüv-Süd on behalf of the Climate, Community and Biodiversity Alliance (CCBA), Juma's REDD scheme will prevent an estimated 3.6 million tonnes CO2 equivalent (CO2e) of greenhouse gas emissions over the first crediting period, from 2006 to 2016. By the project's end in 2050, it is expected to have generated about 171 million tonnes of CO2e credits (Viana et al 2009).

In Juma, the incentives include a combination of direct payments to families, grants to community associations, investments in social programmes, and the promotion of sustainable income-generating activities, as well as support programmes and administration. The aim is to 'make forests worth more standing than cut', by delivering concrete and direct benefits to local communities. These communities count among Brazil's most marginalised and vulnerable groups and depend upon the forests for their survival.

The initial funding for the project comes from the Amazonas State government and Bradesco Bank. In a pioneering partnership, the Marriott International hotel chain agreed in 2008 to contribute US$ 2 million for the first four years of the project. In addition, the Marriott's guests will be offered the option to offset their emissions at US$ 1 per night.

The world's first CCBA gold-standard REDD scheme

The Juma Sustainable Development Reserve Project for Reducing Greenhouse Gas Emissions from Deforestation is the first Brazilian project that involves REDD to obtain validation from the Climate, Community and Biodiversity Alliance (CCBA). The CCBA certifies schemes that simultaneously address climate change, support local communities and conserve biodiversity.

Juma is the first project worldwide to receive the top score in the CCBA's Gold category, signifying exceptional social and environmental benefits that go beyond reducing greenhouse gas output. These additional achievements include strengthening environmental monitoring and control, promoting sustainable businesses that increase community income, and enhancing community development, education and scientific research.

While Juma was the first reserve to be validated under CCBA, the Bolsa Floresta programme is being implemented, as of February 2010, in 13 other reserves. All 14 reserves receive the same investments as the Bolsa Floresta programme, varying only with the number of families in each reserve. The only difference is that Juma has a unique revenue stream in the Marriot, so investment is proceeding at a faster pace.

Rationale

The most promising approach to fighting deforestation is in increasing the value of forest products (timber and non-timber) and environmental services to forest communities and owners. Environmental policies in the Amazon and many regions in the developing world suffer from an overemphasis on the command-and-control measures (predominantly fines and policing) however, which were established to meet perceived needs in previous decades. There was an assumption that by having stricter legislation, drivers of deforestation would eventually be controlled. The result of these command-and-control policies has been poor, as deforestation is an economically-driven process.

In 2007 Amazonas created a new mechanism to pay for environmental services, based on the concept of rewards for good forest stewardship: the Bolsa Floresta (forest stipend) programme. The Bolsa Floresta programme is a system to pay families from traditional populations that have made a commitment to zero deforestation in primary forests. Additionally, they commit to ensuring all children attend schools, and to maintaining fire breaks in shifting cultivation areas. Our objective was not to focus on punishment, but rather to create a positive incentive for forest conservation. We aimed to build an alliance and partnerships with forest populations to change their views and attitudes towards forests.

The Bolsa Floresta programme is the first Brazilian REDD+ initiative (Reduced Emissions from Deforestation and Forest Degradation Plus forest management, conservation and enhancement) to be audited against the international Climate, Community and Biodiversity Alliance (CCBA) standards. It rewards traditional and indigenous populations for their maintenance of the environmental services provided by the tropical forests – this requires good land management which can sustain the benefits provided by the standing forests, such as: climate stability; maintenance of rainfall patterns and hydrological cycles; carbon storage in trees; reduction of emissions from deforestation and degradation; and biodiversity conservation.

Our challenge for the Bolsa Floresta programme was to communicate, in a simple manner, the ways in which local populations would benefit from forest conservation. People were familiar with the concept of a "bolsa" because of the federal 'Bolsa Familia' programme that gives cash payments to poor families for ensuring children go to school, and that families participate in social programmes. We needed to differentiate our programme, however, which was based on the concept of ecosystem services rather than social assistance. Our simple message was: "make a commitment to zero deforestation and you will receive benefits from the Bolsa Floresta programme". The programme has been positively received, had wide political support, and is recognised for its success. Over 90 per cent of the families who participated in our educational workshops signed the formal commitment to zero deforestation.

As of 2009 this was the largest operational REDD project in the world, in an area of over 10 million hectares, in fourteen Protected Areas. The total investment of US$ 8.1 million per year (2008 budget) supports six thousand families. There is increasing national and international interest in expanding the programme to other areas and Bolsa Floresta is now ready to be scaled up. Mozambique, for example, has sent five directors to see the programme in the field and has launched an initiative to design a national REDD programme based on this experience. Representatives from several Latin American and African countries have visited and are making use of the lessons learned in Amazonas to inspire their own programmes.

The global carbon market is currently the only major international reward for forest conservation: it reached

US$ 118 billion in 2008, yet very little of it was invested in the protection of tropical rainforests. REDD+ is likely to become an eligible alternative for climate mitigation for the second commitment period of the UNFCCC, after 2012. Exactly how REDD+ will be included in the new international climate agreements presents a real international policy challenge. If the agreements support forest carbon through both a market instrument and a mechanism for intergovernmental funding, payments for environmental services could become a major instrument for forest conservation and sustainable development; but they must reach the rural poor to be effective. REDD+ can become a significant catalyst of change to stop deforestation and eradicate poverty in many regions of the world. As Nelson Mandela once said, "Those who are hungry are in a hurry" - we urgently need to start a revolution in the world's forests.

Lessons learned

- Invest in systems to pay for environmental services in order to incentivise good environmental behaviour, creating a positive rationality for good forest stewardship.
- Create value for forest carbon within the UNFCCC process. Carbon offsets through forests provide one of the best cost-benefit options for the abatement of greenhouse gas emissions.
- The Bolsa Floresta programme provides an example of how money can be disbursed through a combination of in-kind and cash payments. The system is a simple one and can be adapted for other regions of the developing world. The Bolsa Floresta provides an example of how benefit-sharing mechanisms within REDD programmes can simultaneously benefit the poor and protect forests.

[Lesson 5] Invest in good communications – especially relations with the media: helping journalists to bridge to politicians, the public and the forests

Key Amazonas innovations and their results

- **Workshops with journalists:** SDS carried out a number of workshops with journalists. These were timed to fit into their schedules, which tends to offer free time in the morning, since newspapers and television news programmes are usually prepared in the late afternoon and evening. Creating an atmosphere of informality and openness is the key to success; hotels that are without telephone lines and are close to nature have often provided the most appropriate settings. Journalists need to feel they are in an open atmosphere where they can ask all kinds of questions, even if they could be considered very basic. Workshops also provide an opportunity to establish personal contacts with journalists, enabling them to feel they can follow-up informally later to clarify any doubts on specific issues.
- **Field trips:** Field trips can be even more informative than workshops, providing journalists with the chance to see policy implementation for themselves. Journalists often have an urban background and little exposure to forest and rural realities and going to the forest can therefore be an attractive new adventure to many. This is an important opportunity for urban journalists, who are naturally inquisitive and so are likely to appreciate this kind of trip. Their urban audiences however, may not be so inquisitive about the forest world. How then is it possible to take this a stage further and make it clear how what happens in and to the forests is of direct relevance to the daily lives of the urban citizens far away? A key factor in the success of this was to provide journalists with a local stakeholder contact, who could explain their support to, and the benefits of, those projects and policies being implemented. Quotes from local community members provide the basis for good reports – more so than staff, authorities or political leaders.

Rationale

The media often plays a key role in any effective strategy to create political support for placing the environment and sustainable development at the centre of the policy-making process. It can raise the interest of voters concerning sustainability issues and, as highlighted earlier, it is important to link voters into the design and implementation of sustainability policies and thus attract political leaders.

The media also plays an important role in encouraging the proliferation of 'green' businesses and creating consumer awareness of sustainability. The consumption of organic, fair trade, environmentally-sensitive and low-carbon products plays an important role in driving sustainable business behaviour.

Media coverage has a tendency to favour environmental disasters, instead of the more positive agenda of sustainability projects, programmes and policies. Disasters and problems of environmental degradation are simple to describe, are generally accompanied by strong images, and have associated stories of human tragedy that capture the attention of the general public. The challenge is to attract journalists to positive agendas, which are often seen as too complex and intangible.

There is great potential to capture media coverage for the environmental and sustainability agenda for free. The inquiring nature of journalists and editors has often led to their becoming environmentally concerned individuals; they are increasingly conscious and informed about the seriousness of environmental problems. I have frequently mentioned to journalists that I am truly preoccupied with the future of their and my children due to climate change and environmental degradation and this always generates a response of great interest in these issues. Linking and developing the personal connection of journalists to environmental and sustainable development issues can serve as a strategy to attract interest. The greater the interest of journalists in learning about the concepts and practice of sustainability, the greater the opportunity is to increase spontaneous media coverage to positive agendas.

The problem remains that few have either the experience or formal education in the technicalities of sustainability issues. They often do not have the time to delve into the apparent complexities. Solutions to this include: (i) formal explanations of the underlying concepts of projects and policies at the beginning of press conferences and interviews; (ii) providing journalists with opportunities for learning experiences and journeys to the field with qualified experts who have good teaching skills; and (iii) working with universities running journalism courses to include the environment and sustainability in their academic programmes. Being a professor myself may have helped with this; I have often given mini-lectures to explain the rationale and conceptual basis for individual projects and policies.

Strong and in-depth media coverage of environmental and sustainability policies and projects can lead to two positive consequences: firstly, it provides an opportunity to provide exposure of elected politicians to the media and hence the public, which helps to build the support of voters around effective environmental and sustainable development policies; secondly, good media coverage can encourage green consumerism and drive business behaviour towards sustainability.

Lessons learned

- Ensure that journalists understand the rationale and concepts underpinning projects, programmes and policies, and have a senior member of government with teaching skills provide necessary explanations in

the first part of press conferences and interviews.
- Provide journalists with opportunities for learning journeys in the field, accompanied by staff or partners with good teaching skills.
- Establish partnerships with schools of journalism to enable the inclusion of environmental and sustainability issues in their formal academic programmes.
- Press releases are important tools but complete articles can be even more effective: in addition to providing the necessary information, they can be used verbatim, particularly on the internet, where several new media vehicles are keen to reproduce freely available articles.
- Press conferences are effective when there is a really significant announcement, otherwise, one-on-one exclusive interviews are more effective in capturing space. It is important to train staff in media relations for them to understand how journalists operate and how to communicate with them effectively.

[Lesson 6] Provide simple and attractive green solutions: engaging the public in identifying and developing solutions that most help them and the forests

Key Amazonas innovations and their results

- **Prochuva:** The majority of health problems in the Amazon are associated with poor drinking water, as with many other regions in the developing world. The capture of rainfall for clean drinking water is a traditional system in the Amazon; it can be very effective and healthy but has never been supported by official policies. The Brazilian National Health Foundation (FUNASA) ran a programme to support rainfall water use elsewhere in the country but not in the Amazon. I made a personal visit to the president of FUNASA but despite my arguments in favour of using rainfall water in the Amazon, the response was negative, since there was an extensive governmental programme to collect rainfall water in the dry northeastern Brazil. The Amazon, seen as an area with abundant humidity, was not perceived to have poor access to drinking water. SDS subsequently established a pilot programme in one community, Piranha, by the name of "prochuva" (pro-rain). This initiative was launched by Governor Eduardo Braga and became a big political success, with a great deal of media coverage. Later FUNASA visited prochuva and was motivated to fund the programme with a grant of US$ 3 million for its first phase. At a cost of US$ 300 per family, its benefits to public health and low maintenance costs, prochuva became a showcase for simple and inexpensive investment in public health.
- **Rubber tree kits and payments for environmental services:** The Amazon has significant populations of natural rubber trees (Hevea brasiliensis) in its native forest ecosystems. The rubber from these tree populations formed the basis of the economic boom at the end of the nineteenth century. Southeast Asian countries later out-competed Amazonian rubber and brought about the collapse of the Amazon's economy. Since that time, continual migration to urban centres has fuelled urban poverty, crime and child prostitution. Yet in the early twenty-first century, rubber has become an economically attractive alternative in Amazonas State, driven by four policy instruments. Firstly, as a part of the Green Free Trade Programme, the state government transformed and expanded a subsidies programme by paying rubber tappers for environmental services, at a rate of R$ 0.35 per kilo of rubber. Secondly, the government cancelled the sales tax on rubber, following a demand made by the Conference of Traditional Populations, which the state government organised in partnership with grassroots organisations. In addition, the state government provided rubber tappers with kits (knife, cups, cans and lanterns) at a cost of about US$ 100 per family, which was paid by the government. Finally, the federal government added its support, securing a minimum price of approximately US$ 1.75 per kilo of rubber. These policy instruments resulted in significant income increases for rubber tappers, with positive impacts on livelihoods and migration trends.

Rationale

Environmental and sustainable development policies are often seen as unrealistic, costly, impractical and unattractive policy options. There is a prejudice against 'green' thinking by mainstream policy-makers, who are conscious that the public tend to be uncomfortable with innovation and any change from 'business-as-usual'. Most ministers, secretaries and presidents of governmental agencies are under intense political pressure, embroiled in many disputes, and are risk-averse. Once environmental and sustainable development institutions are given the formal mandate and political space to participate in the decision-making process of cross-sectoral policies therefore, the battle is not immediately won: the challenge then becomes to win credibility and trust. Conventional policy-makers have a habit of investing in major projects that offer high political visibility. This is particularly true for infrastructure investment, which is viewed as permanent and therefore likely to perpetuate the name and legacy of a political leader. This often means that simpler and cheaper solutions to overcome small obstacles to sustainable development – the kind that are really needed – are ignored.

This special attention now needs to be given to the solutions identified by, or in some cases already successfully practiced by, local communities. The strategy is to avoid complicated solutions and start with simple ones, which are easily explained and understood by all parties - from policy-makers to the multiple stakeholders involved. Simple solutions also have a lower risk of poor implementation, which is often a barrier to success, and they often cost less.

Simple solutions are best developed through participatory processes and a common-sense approach. Those facing the problem should be offered the chance to identify and provide the solution, in a bottom-up manner. Endogenous solutions are, in general, better than external ones. They also tend to be cheaper, build on local know-how and traditional ethno-knowledge, and confer a sense of ownership – which creates a complicity that is important for continuous improvement throughout the process of implementation.

The Bolsa Floresta programme was established by 'engaging the public in identifying and developing solutions that most help them and the forests'. We initially engaged leaders of social organisations, public officials and researchers in participatory workshops in Manaus; we then brought the debate to community workshops. Both sets of stakeholders provided valuable input to the design process; in cases where there were conflicts between urban and forest stakeholders, I tended to favour those coming from communities.

Benchmarking is another component of a strategy to develop simple solutions. Reinventing the wheel is not a sensible choice if there is already a wide choice of wheels available; nor is repeating mistakes made by others if there are urgent tasks to achieve. A conscious effort should be made to learn from others' experience. The internet is a fast and inexpensive source of information; field visits and moving workshops can play an important role in developing and adapting simple solutions to local conditions; and expert advice can also help, when experts are prepared to engage in a participatory planning and evaluation process.

Lessons learned

- Identify a set of simple solutions to problems that are related to environmental and sustainability issues and that can have significant impacts on the quality of life of the poor; including income generation, sanitation, health, transportation and others.
- Design and adapt simple solutions through effective participatory workshops that value local expertise and traditional ethno-knowledge. Use participatory processes for continuous evaluation and improvements.

- Build successful teams with different areas of technical expertise, participatory expertise, creativity and complementary psychological profiles.
- Use benchmarking and expert advice to enrich the participatory process but not to substitute it. Do not repeat work done or mistakes made by others but explore current best practice in the field and others' experiences of it; then build on it.
- Communicate simple solutions with clarity and rigor to convince policy-makers and all stakeholders.

[Lesson 7] Demote problemologists and promote solutionologists – changing the paradigm from a problem focus to solutions

Rationale

Historically, a characteristic of many organisations working in the environment and sustainable development sector has been their focus on problems rather than solutions. This is the result of a long history of absence from the decision-making process, and the only alternative being to point to problems and attack those involved in the government and private sector whom they perceived to be involved in the mismanagement of ecosystems and development pathways. Such 'problemologists' are happy to discuss the issue for hours and then conclude that there is not enough information or understanding of the complexities involved. Ordinarily, the result of such discussions is to call for more research or schedule another meeting. After more research and meetings, the conclusion is that it is still premature to conclude and this process goes on indefinitely. I may be exaggerating here but the point is made.

This approach may now be a real disadvantage and the time has come for a change in attitude: 'green' thinking now means providing viable solutions to change the business-as-usual approach. This requires a major attitude shift from all stakeholders to becoming instead 'solutionologists'. A focus on solutions can help participatory processes to become more purposive, focused and efficient. The solutions-based approach also tends to be accompanied by an understanding that decisions will have to be made, either in one direction or the other - the world is not going to stop and wait; decisions will be made, good or bad.

One strategy to facilitate the conversion of problemologists to solutionologists is to revisit the concept of sustainability. If the goal is to promote sustainable development in all its dimensions (including ecological, cultural, political and so on), it can be difficult to ascertain whether a certain set of policies or projects will lead to such broad and often subjective objectives. Instead, one approach would be to aim for 'best management practices' that currently exist and have been proven within their context; these can be seen as practical steps in the long journey to sustainability. Often the first steps will have already been made or proven, at least for a certain point in time or for a specific area of the landscape, giving the confidence that a further stepwise approach will be successful. Best management practices can be audited and certified through their fair trade, organic, social and/or environmental indicators, and a large and growing number of cases of best management practices can thus be the substrate to pave the road towards long term sustainability.

Lessons learned

- Generate an explicit definition and debate about the need to shift from a team of problemologists to a team of solutionologists, without forgetting the need to work with more than just a few problemologists. Stress the need for solutions, the risks and costs of inaction; emphasise the learn-by-doing approach.
- Highlight the importance of proven 'best management practices', rather than dreams of 'sustainable land uses'.

- Give priority to certification through fair trade, organic, social and/or environmental indicators, so that these best management practices can be identified and rewarded.

Key Amazonas innovations and their results

- **Management of titica vines – achieving sustainability through traditional knowledge:** Titica vines (cipó titica) occur throughout the Amazon and include several species. These types of Amazonian 'rattan' are widely used for traditional crafts, brooms and furniture. Most production of titica vine is predatory: when the vine is harvested, the whole plant is pulled down; with continued production, the time had come for creating an incentive for sound management. Many researchers argued that it was too complicated to define the rules for vine management, yet practical ethno-ecological information indicated that if the vine's roots were twisted before being pulled, the plant would not be brought down. In addition, if a few roots were left in the ground it would recover faster, allowing future harvests within a few years. This solution was offered by Indians and extractivists, their illiteracy exacerbating the significant resistance amongst ecologists to underwrite any regulation for management based on these best local management practices. Eventually, during the participatory planning process, the ecologists were convinced; a regulation was enacted and this form of sustainable management became legally acceptable.
- **Priorities for community investment in the Social and Income Bolsa Floresta – pragmatic participation:** Participatory processes in Brazil often take years of research and discussion, as in the case of the design of Agenda 21. Problemologists tend to argue that more research and discussion is needed to come up with conclusions, usually ending up with a long list of desires and no priorities for action. This is particularly frustrating as it is does not generally attract the extra investment needed on the ground. Our approach for the Social and Income components of the Bolsa Floresta programme was more pragmatic and solution-focused. Each protected area has a budget, based on US$ 175 per family; each programme therefore has on average, US$ 70,000 per protected area per year. We run two workshops to define the investment priorities: first, we present the rules and conditions of the Social and Income components and invite people to discuss investment priorities with their families and communities; in the second workshop, they present their priorities and vote for the most important ones. Certainly, this does not result in the perfect investment portfolio, if there ever could be a perfect set of choices. The important lesson however, is that results are achieved at a relatively low cost (with less than 10 per cent of the budget being spent in identifying priorities), with strong support and engagement of local communities, and in an open, transparent and democratic process.

[Lesson 8] Make bureaucracy and regulation work for people – not the other way around

Key Amazonas innovations and their results

- **Reducing bureaucracy and increasing legality of forest management:** Tropical forest management is characterised worldwide by a high degree of illegality. In general, access to legality is expensive and bureaucratic, lends itself to corruption by large companies and excludes small-scale producers. SDS issued a number of regulations to increase access to legality, including: (i) different requirements for small-scale and large-scale forest management for timber; (ii) specific regulations for vines (cipó tititca, Heteropsis flexuosa), rosewood (pau rosa, Aniba rosaeodora) and other sensitive species; and (iii) legal regulations to harvest floating timber from Amazon rivers.

- Two of the new regulations are especially noteworthy. In the past, indigenous peoples and traditional

populations were required to have environmental licences to collect timber to build their houses, schools, and so on. Yet most had no documents, could not afford a forester's management plan, and could not afford to travel several times to Manaus; all such ostensibly legitimate use was, de jure, illegal. SDS crafted a new regulation exempting those indigenous peoples and traditional populations who have more than 95 per cent forest cover from the licenses, enabling them to produce timber for their own subsistence use. Another regulation dealt with the reality of "fishers of floating timber" in the Amazon - riverine populations who collect trees that float downstream. According to the former regulation, they had "no origin" and this otherwise rather sustainable activity was therefore illegal. A new regulation created simple procedures to legalise this activity, with one key rule: the trees had to have roots - in other words, they could not be logged and then thrown into the river.

- **Transforming gold miners into mineral extractivists:** Gold mining in the Madeira River has a long history of social and environmental problems. It is considered an illegal activity, and the Federal Police used to make occasional raids to seize boats and engines used in the garimpo (gold mine). The term 'garimpo' has a very negative connotation, being mainly associated with the type of large-scale gold mining that creates extensive social and environmental problems, some of which are highly dramatic and have been illustrated in several films and books. I went to visit to see the reality of it for myself and organised a planning workshop for the end of the field visit. I realised that the gold miners were in fact 'extractivists': in the rainy season, they extracted brazil nut and açaí fruits from the forest – activities that we call 'extraction' in Brazil; in the dry season, they moved to boat houses with their families and produced gold. They had never heard that mercury was harmful to health but, more concerning still, some believed that inhaling mercury smoke actually built up the body's strength. I proposed a pact: legalise small-scale, family-based gold production provided that gold miners (i) took a course on the hazardous effects of mercury, (ii) bought a US$ 100 gadget to recover mercury (cadinho), (iii) install a large can to deposit mercury-rich waste, and (iv) made a commitment not to mine on river banks but to limit themselves to river beds. The gold miners accepted this policy, which they implemented with considerable success. To support them, municipal governments built depots to receive mercury-rich waste, SDS provided the required course and an identity card to gold miners, and the state micro-financing agency provided credit for them to buy the gadget used to recover mercury. These simple solutions enabled the establishment of a new state regulation to licence such operations, with significant positive results in controlling environmental pollution and generating income.

[Box 3]

The solution for reducing bureaucracy and injecting common sense into environmental regulations includes four steps. Firstly, there is a need to bring in practitioners, such as forest producers, fishermen, and farmers, to identify the problems of existing regulations, which is best done through moving field workshops. These workshops need to have a balance of participation from practitioners, environmental agency staff, scientists, and any other relevant stakeholders. Secondly, an expert with practical experience is required to draft the regulation – this will need to be someone who has participated in the field workshop, has a sense of practicality, and has a good reputation. Thirdly, a formal workshop should be convened to discuss the proposed draft regulation. This workshop should be open and widely publicised, to confer legitimacy on the process. It should be ensured that the draft proposition is projected onto a screen for suggestions to be made directly on the text. Fourthly, the revised version should be posted on the internet for public consultation and comments. Depending on the degree of controversy, steps three and four can be repeated as many times as are necessary to produce a reasonable consensus before a formal decree is signed.

As far as possible, the most senior officials should participate personally in field workshops, and workshops for designing regulations. As Environment Secretary, I participated in dozens of field and planning workshops, which I believe was a key element to the success of the resulting instruments. This practice both empowers the participatory process and reduces the remoteness of policy-making. It also provides the opportunity for policy-makers to understand, develop and champion solutions that frequently meet with resistance amongst technical staff, who are often apprehensive about accepting unconventional propositions. In addition, the involvement of senior officials can encourage participation from key stakeholders such as mayors, city council members, religious leaders, and union leaders.

Rationale

A high proportion of illegal forestry, fisheries and agricultural activities are by-products of bureaucracy and poorly designed regulations – indeed, are enabled by them. Paradoxically, the solution is seen to be an increase regulation and enforcement, rather than to improve existing regulations and reward good ecological behaviour. This misunderstanding explains a major part of the failure of most environmental policies in the Amazon and other regions in the developing world. In general, regulations are designed by individuals with little practical field experience, approved in cabinet meetings by ministers with poor understanding of local realities, and with minimal input from those who are supposed to comply with the regulations.

The end result is likely to be tragically unrealistic and unenforceable environmental regulations. The bureaucratic requirements make access to legality almost impossible for many, especially the poor. The high cost of legality renders illegality more attractive, especially where law enforcement is weak. This undermines efforts to promote sustainable forestry and fisheries management.

Appropriate regulations are some of the most important challenges in the design and implementation of environmental and sustainable development policies. Effective regulations should surprise the public with their simplicity, be easily understood through clear language, and be easily recalled by virtue of their evident common sense.

Yet the language in which they are written is usually too complicated and difficult to understand, at least by non-lawyers. The permissions and documents required are often too many and without real utility. Why, for example, ask small woodworkers applying for an environmental licence to present a certificate of good standing with the federal, state or municipal tax authorities? Is this necessary to assess the environmental impacts of their activities? At the same time, the information required frequently neglects important points: for a small woodworking shop, for example, it is important to know what is done with the waste; what safety measures are in place for the workers; and how much sound pollution is generated - simple and common sense information. It is not necessary to request documents such as the engineering details of the building design.

Reducing bureaucracy and injecting common sense into environmental regulations is possible but is often not easy, especially in many of today's institutions that respond to increasing complexities with problemology and more complexity. Such institutions wrongly confuse the need for rigour with a requirement for difficult regulations, also ignoring the fact that, frequently, bureaucracy and unrealistic regulations open the door for corruption. This is not helped by many legal advisors involved in revising regulations tending to employ arcane writing styles.

Our experience has shown that there is great potential for low-cost changes to be made in both the regulatory and the bureaucratic frameworks for natural resource use. Regulations can use non-technical jargon and be understandable to the general public. The number of documents required for environmental licensing can be kept to a minimum and limited to those of proven necessity and direct relevance to environmental assessments. The key is to be clear about the outcome being sought from the policy, to employ a common-sense approach, and to win people over – including the bureaucrats and politicians – to the huge potential gains of unleashing that common sense.

Lessons learned

- Revise environmental regulations for sectors where there is a high frequency of illegality. Look for solutions to reduce: (i) the number of documents required; (ii) the cost of obtaining technical information for licensing; and (iii) the subjectivity of auditors in identifying compliance.
- Avoid cabinet decisions in the process of drafting new regulations (as opposed to policies). Rather use: (i) field workshops to identify practical problems; (ii) a strong scientific and ethno-ecological basis to provide evidence and a clear 'theory of change'; (iii) formal participatory workshops to discuss and approve new regulations; and (iv) open discussion of the new regulation over the internet, in order to produce as broad a consensus as possible before a formal decree is signed.
- Periodically evaluate progress in implementing the new regulations, to identify needs for further improvement.
- Relate the complexity of requirements to the scale and environmental impact of activities. Different norms for various scales of operations are needed to encourage legal production, especially by small producers.

[Lesson 9] Invest in partnerships for policy implementation – NGOs connecting government and local organisations

Key Amazonas innovations and their results

- **Partnership with the National Council of Rubber Tappers (CNS):** SDS established a partnership with CNS to produce kits of knives, cups, cans, lanterns and so on, for rubber tappers. CNS was able to contract small factories throughout the state of Amazonas, which would not otherwise have qualified through regular government procurement procedures. This strengthened these small factories, creating jobs in remote areas and lowering the costs of production.
- **Partnership with the Coordination of Indigenous Organizations of the Brazilian Amazon (COIAB) and Coordination of Indigenous Organizations of Amazonas (COIAM):** SDS supported institutional building and the development of both COIAB and COIAM, for them to play a more effective role in summarising and prioritising the demands and aspirations of indigenous peoples. Their roles were to prove very important in fine-tuning our policies, considering that there are over 60 ethnic groups, with over 30 languages spoken. This institutional support was a key ingredient in providing smooth communications with indigenous groups.
- **Partnership with the Federation of Organizations of Indigenous Peoples of the Negro River (FOIRN):** SDS provided the leadership in obtaining support from various government organisations to support a major investment in education and training for indigenous peoples in São Gabriel da Cachoeira. The project was implemented with the support of another NGO, Instituto Socioambiental (ISA), that was a key component for its success. FOIRN and ISA developed the project, SDS gave political support and the Amazonas Government funded the construction of the building, which is being managed by FOIRN.

Rationale

Political power can be addictive and policy-makers can be reluctant to share power in the process of policy design and implementation. With governmental structures that are too bureaucratic and inefficient, and which also hang onto their own powers, the consequence can be slow, costly and low-quality public policy and implementation.

There is sometimes space to tackle this problem by establishing partnerships between governments and non-governmental organisations. There are risks to be avoided however, and it is important to find the right NGO and operating model. Firstly, there is the risk of criticism from other NGOs that would have liked to take on the project themselves. Secondly, some NGOs do not have a culture of enabling practical solutions, particularly in relation to income-generation and support to small or community businesses; NGO staff rarely have business experience and are used to a grant model, not an enterprise model, which is frequently inconsistent with the need to build sustainable solutions. Thirdly, some NGOs do not have strong accounting procedures and end up in difficulties when they provide financial reports. Finally, some NGOs have a tendency to take too much control of a project, rather than supporting the real empowerment of local communities, as opposed to the partnership of local communities with other institutions.

Implementing the ZFV programme has involved a number of partnerships with NGOs. These were either technical organisations such as Instituto Mamirauá, which co-manages Mamirauá Sustainable Development Reserve; Amazonas Institute for Conservation and Sustainability (IDESAM), which helped with the design of the Juma Project; or grassroots organisations, such as the National Council of Rubber Tappers (CNS), which supported the production of rubber production tools and their distribution to seringueiros (extractivists). Partnerships with NGOs mean not only a fast-track to the right skills without involving too much bureaucracy, but also help in reducing the distance between governments and local communities. NGOs which are trusted by both government and communities can have a greater and more effective presence in more isolated and less accessible areas. Government officials tend to avoid going to such areas and there are, as yet, few administrative instruments to change this behaviour, particularly where officials are stable public servants.

Lessons learned

- As far as possible, establish partnerships with non-governmental organisations (NGOs) to implement or scale-up policy instruments and projects.
- Select NGOs based on clearly and transparently defined criteria, giving due attention to their professional qualifications and administrative capabilities.
- Base partnerships with NGOs on very detailed terms of reference, with a clear indication of expected practical outcomes.
- Provide NGOs with clear instructions for accounting procedures and, if necessary, relevant training.
- Encourage NGOs to establish multiple partnerships for project implementation, aiming at the real empowerment of local communities.
- Strengthen empowerment of local communities and local institutions, improving their governance, reducing dependence on governmental agencies and increasing local ownership of projects.

[3] A Vision for the Future of the Amazon

What next for Amazonas State?

I hope this paper has, thus far, helped to explain several successes in sustainable development and environmental policy in Amazonas. I do not want to leave an impression of a job done, or of complacency, however. Much more needs to be done to strengthen the foundations for sustainable development, which is necessarily time-consuming when some of our existing foundations, buried under an edifice of regulations, are not sound. Further, we need to keep an eye on our many new schemes, to ensure they stay compelling and effective as social and economic contexts continue to change. Particular priorities are:

- **Strengthening political support for sustainability:** Most political leaders in Amazonas today favour sustainable development policies, in part because this also reflects prevailing public opinion. This in itself is a huge leap forward. There is however a risk of setbacks if new political leaders start to challenge the concept of sustainability in light of new circumstances, such as a financial crisis, or the prospect of major development projects. Possible measures include: (i) programmes to provide continuous learning and education on sustainability for public, private and NGO leaders; (ii) programmes to present the results of sustainable development programmes and policies on mainstream media, especially TV, radio and the internet; (iii) policy advice to newly elected officials and their senior cabinet and staff members; and (iv) exposing those officials to field realities and the benefits of the various innovations described.
- **Improving environmental and sustainability policies:** Amazonas has rolled out a number of sound policies since 2003. Their efficacy and cost-effectiveness vary however, and improvements are needed. Possible measures include: (i) independent evaluations of policy efficacy and cost-effectiveness, problems and solutions by external institutions, such as CEPAL's recent study; (ii) complementary participatory evaluation by key stakeholder groups; and (iii) continuous improvement of policies in light of these periodic evaluations and of experience elsewhere in Brazil and internationally.
- **Strengthening public institutions:** The institutions, however, are not always ready for this. Most staff within the Secretariat for Environment and Sustainable Development are temporary staff. The advantage of this is the ability to recruit the right kind of new individuals as and when they are required. There is a risk, however, of losing institutional memory and lessons learned, especially in periods of election and political changes. Possible measures include: (i) creating permanent staff positions; (ii) creating salary and payment incentives to retain senior staff members; (iii) documenting processes and experiences so as to build both a strong institutional culture and an enduring knowledge base – for which I hope this paper is just a beginning.
- **Reaching the deep forest areas:** There is much to be done to strengthen forestry and fisheries extension, for example, and to make licensing accessible in the more remote areas. Transportation hazards, health problems and living conditions in the forest interior are substantially worse than in areas near urban settlement and there is a natural tendency of staff to avoid deep forest areas for this reason. Due to the costs of logistics and greater political interests, activities tend also to be focused away from these areas. There is a need for a special strategy and focus on deep forest areas, where some of the poorest and most knowledgeable people live.

From Amazonas to Brazil – a National Project for the Amazon

Amazonas may be large but it constitutes only about a third of the Brazilian Legal Amazon; are we able to extend relevant Amazonas innovations to other states? In turn, can we ensure that appropriate federal policies are supportive of further progress in Amazonas?

The political scene in Brazil is strongly marked – and often driven – by regular public announcements of deforestation rates in the Amazon. If they increase, farmers and environmental institutions are blamed; if they are reduced, governments plunder the statistics to take credit. Yet whether deforestation rates are going up or down, deforestation is always proceeding; it is only that sometimes it happens faster, sometimes slower. The simple fact is that the forest is disappearing. As of 2008, 17 per cent had been deforested.

What are the implications of this? Is it good or bad for the country as a whole? What are the available alternatives and their costs and benefits? Should Brazil aim for zero deforestation, or establish a limit of 20 per cent, or 30 per cent? Should the Amazon landscape be dominated by parks and reserves, or soya plantations and cattle? Or both? In what proportion, and where? These are key questions and yet Brazilian society is not answering them. It does not yet have what I would term a "National Project for the Amazon", a macro development strategy, or a 'vision' for the future of the Amazon. Different stakeholders have different values and interests and therefore differing opinions about the fate of the Amazon forests. All of their world views are, to a large extent, legitimate.

There are many motivations to conserve the Amazon, ranging from the highly subjective to scientific fact. In the collective imagining, the prevailing view is that the Amazon is a place of mystery, with endless forests and un-contacted indigenous people; its complexity and mystery encourage a feeling of protection and care both for the forest and its peoples. This view is certainly prevalent among those who live in urban centres in both Brazil and around the world. There is another set of reasons for the conservation of the Amazon from an ostensibly more objective standpoint and these are important utilitarian justifications for Amazon conservation: (i) the potential for sustainable production of timber and non-timber forest products based on the Amazon's rich biodiversity; (ii) the role of the Amazon in regional and global climate regulation, especially carbon storage and sequestration, maintaining water vapour circulation processes and rainfall regimes; (iii) the value of ethno-ecological knowledge among traditional and indigenous peoples; (iv) the conservation of biodiversity of global value; and (v) the potential for all of these attributes to contribute to the eradication of poverty among Amazon peoples.

Motivations for deforestation are equally rational on their own terms, especially if the financial gains associated with cutting forests are high. Financial gains can be made from many activities, including: (i) timber extraction (both legal and illegal); (ii) land grabbing (both legal and illegal); (iii) increasing the value of farm properties; (iv) agricultural production; and (v) mining. There are also more subjective values, however, that drive deforestation, notably the view that 'development' comes from conquering the forest and expanding the agriculture frontier as though it were an advancing army – the 'mato paradigm' described earlier.

Today, with the agricultural frontier having advanced so far across the Amazon as a whole, a case can be made for the diminishing returns of this practice; that conserving the Amazon is an increasingly strategic core of Brazil's national interest. The case comprises three main arguments: firstly, that the Amazon forest is a primary source of humidity for rainfall regimes across the country. This has implications for agricultural production, hydroelectric power generation, and urban supply of water for domestic and business uses. Most climate change models predict that deforestation will increase the variability of rainfall, with more severe floods and droughts. Secondly, that the Amazon can become a source of revenue through both forest (timber and non-timber) and fisheries management. Thirdly, that the Amazon has the potential to be one of the most significant carbon storage centres in a low-carbon global economy. Unfortunately however, this case is not yet understood or accepted by all those who define the 'national interest'.

It is for this reason that I am calling for an open, well-informed Brazilian dialogue on the future of the Amazon. This dialogue should result in a 'National Plan for the Amazon', validating best current practices and reflecting a new and progressive consensus. Similar debates should take place in the neighbouring countries that together govern the Amazon Region. There is also a need for a multilateral dialogue, including all Amazon countries, possibly under the auspices of the Amazon Cooperation Treaty. Finally, the international community should also be invited to explore mechanisms by which payments for ecosystem services, knowledge sharing and development assistance can help transform National Plans into extensive real improvements in institutions, in the forest, and in people's livelihoods.

Building a consensus is no simple task as there are conflicts of interest, yet it is essential. It is more easily achieved when stakeholders are presented with solid facts and figures on approaches that work well – approaches such as those we have begun in Amazonas and I have begun to document here. It is also easier when the views and ideas of all key stakeholders are explored, from environmentalists and Indians to cattle ranchers and mining companies.

Shaping a sustainable Amazon – putting together the policy tool kit

In addition to building a common vision that will both justify and offer strong foundations for a National Plan for the future of the Amazon, there is a need to identify, design and develop appropriate instruments and institutions to implement the plan. Further building on the Amazonas experience, the following is a suggestion of broad principles for a set of policy instruments, the exact choice depending of course on the objectives of the National Plan as well as the environmental, social and economic dynamics in the specific region.
More details of the application of these policy instruments can be found in the annex of this publication.

- **Ensure good integration of public policies:** One of the most common policy problems in Latin America is what CEPAL calls "coordination failure". Government institutions act in isolation, with little synergy, duplication of effort, or lack of clarity from superimposing powers. Integrating sectoral and cross-sectoral policies can greatly improve policy efficacy. Sustainability can provide the conceptual framework to promote such coordination, which can be sharpened by a very clear idea of the specific integrated outcomes required.
- **Scale up good practice:** Cases of success stories need to be produced and promoted, to support their being scaled up. In a world where seeing things take practical shape is more important than hearing theoretical talk, concrete cases play a significant educational role. Scaling up success stories also needs support from well-targeted policies.
- **Discourage bad practice:** Unsustainable land use practices need to be strongly discouraged; increasing the likelihood of being fined and punished for bad practice is vital. Improving monitoring and patrolling is important, as well as increasing legal enforcement and reducing loopholes which enable an escape from punishment for illegal practices. The cost of illegality needs to be perceived as higher than the costs of legal land use.
- **Innovate for effective schemes in payments for environmental services:** Payments for environmental services looks to be one of the most promising mechanisms to finance sustainable development in the Amazon. Indigenous peoples, traditional populations, farmers and governments need to be paid for the environmental services they provide through their management of natural or reforested ecosystems. I suggest that at least initially, forest carbon can provide the best chance to create a financial mechanism that ties the interests of the international community with those of Amazonian countries.

- **Overcome bottlenecks in the value chains of sustainable products:** In order to make forests worth more standing than cut, products coming from managed forests and fisheries need a higher financial value to producers. It is necessary to provide economic incentives and reduce the bottlenecks and barriers in the various phases of the value chain. Bottlenecks can occur at various stages of the value chain: forest production; storage; transport; processing; or marketing. Having integrated approaches that identify and focus on the most critical stages can help to improve the competitiveness of products coming from managed native ecosystems and thus increase financial returns from standing forests.
- **Support sustainable community or small-scale business:** One of the most difficult challenges of sustainability is to put community or small-scale business onto an economically sustainable footing. There is a depressing history of failed projects that disappear once the funding stops. Support to sustainable business should include – but not be limited to – community-based enterprises. Such support should include favourable tax incentives, credit lines, technical assistance, logistics and certification.
- **Improve access and assistance to appropriate credit and finance:** Where credit is biased in favour of agricultural and cattle farming rather than forestry and fisheries, it encourages deforestation, albeit unintentionally. Innovative credit and finance programmes should be implemented in conjunction with technical assistance to sustainably manage natural ecosystems. Financing should therefore consider the particularities of the economics of natural ecosystem management, including the following aspects: size of the credit; moratorium period before repayment begins; interest rate; and the type of collateral guarantee. In financing for cattle-raising, for example, the herd can be held as collateral. Why, for forest management financing, could not trees similarly be used as collateral for loans?
- **Create and expand tax incentives for sustainable business:** Tax incentives are one of the strongest instruments for directing economic activities towards sustainability. In the Amazon, tax incentive policies have had a successful history, for example, in the development of the free trade zone of Manaus. Innovative tax incentives can be used to create incentives for the sustainable management of forest and aquatic ecosystems and for certified operations. Products that promote forest conservation, such as brazilnuts, should pay tax at a more favourable level than those products associated with deforestation, such as beef. International trade agreements should work towards reducing tariffs for forest-friendly products.
- **Promote certification:** Organic, fair trade and social or environmental certification can increase the competitiveness of products which have been obtained through good management of natural ecosystems and small-scale and non-conventional production systems. In a market economy, these production systems often have competitive disadvantages because the resources are geographically dispersed and transport costs are higher; and there may also be higher costs of production and logistics. Certification can however improve market access and, in some cases, provide premium prices that can become a catalyst for best management practices.
- **Support fair deals:** Poor communities and families are often trapped in unfair trade relationships; indeed, there are still some arrangements that include attributes of slavery. Government agencies and NGOs can play the role of honest brokers between communities and buyers; government purchases can discriminate in favour of small suppliers; and independent certification can help assure fairness in trade relations and support green consumerism.
- **Give education a high priority:** Education is a key driver of change for all stakeholders. Schools need to teach more about the dynamics of natural ecosystems and the principles of their sustainable management. Children and adults need to learn about best management practices and the theory that underpins them. Technical assistants should learn more about the management and protection of natural ecosystems and ecologically sound production systems and technologies, such as permaculture.

Development specialists need to be trained in the design and implementation of holistic and integrated policies and projects. Policy-makers need to be educated about sustainability concepts and solutions. Consumers need to be educated about the ecological and social footprint of their purchases. Education, at all levels, should be given top priority.

- **Support Science and Technology:** Within Brazil as in many countries, investment in science and technology has tended to favour agriculture and cattle farming rather than natural ecosystem management. This means that management of natural ecosystems is at a technological disadvantage when compared to cultivated agroecosystems. There is also a history of imported technologies that require external inputs and do not incentivise the development of local expertise and locally appropriate technology. It is necessary to change this pattern, to improve the technologies available to the management of natural ecosystems, adaptation and mitigation of climate change.
- **Increase agricultural productivity:** Low agricultural and cattle productivity creates an incentive for continuous deforestation to increase farm production through extensification. The same objective can be achieved by increasing productivity and there are a number of technologies that have been developed and tested in the Amazon, meaning that technical assistance and economic incentives for increasing agricultural productivity can be offered with confidence.
- **Increase technical assistance for sustainable management of natural ecosystems:** Most technical assistance available in the Amazon and other tropical regions is still directed toward the promotion of agriculture and cattle-raising and thus, indirectly, encouraging deforestation. Providing technical assistance for the sound management of forests and fisheries is essential. Likewise, it is also important to provide technical assistance for non-conventional production systems and alternative technologies.
- **Improve participation, transparency and accountability:** There has been an increase in stakeholder participation in the public debate in Amazonas and Amazonia alike. Designating different venues for effective stakeholder participation in the decision-making process is essential. It is important however that participation is objective and action-based, so that participants are not frustrated by insufficient accounting and feedback on decisions made.
- **Adapt to climate change:** Climate change is increasing the frequency of severe floods and droughts in the Amazon. This problem is likely to worsen in the future and presents considerable threats to Amazon populations, particularly the rural poor living in remote and isolated areas. There is a need to increase readiness for relief efforts, as well as linking REDD+ revenues to investment in adaptation programmes.

References:

Barreto, Paulo et al. 2006. Human Pressure on the Brazilian Amazon Forests. World Resources Institute: Washington, DC; Imazon: Brazil

Cascão/Pinto/Cascão. 2008. "Pre-Project of Economic, Financial, Social and Environmental Feasibility of the Implantation of the Railroad between Manaus and Careiro da Várzea in the State of Amazonas", Technical Report, Manaus-Brasília , 119p

Centro Estadual de Unidades de Conservação – CEUC.2010, Mapas das Unidades de Conservação. Available at http://www.ceuc.sds.am.gov.br/ucs/maps.html

Commission for Economic Development of Latin America and the Caribean (CEPAL). 2007. Análise Ambiental e de Sustentabilidade do Estado do Amazonas. Editora das Nações Unidas, Santiago, Chile.

Ferreira, L.V. 2002. *O uso de ecologia da paisagem na escolha de áreas prioritárias para a conservação da biodiversidade e análise de lacunas para a escolha de áreas prioritárias para a conservação da biodiversidade no bioma Amazônia: um instrumento de planejamento no Zoneamento Econômico-Ecológico*.

Fundação Estadual dos Povos Indígenas – FEPI. 2010. Dados Estatísticos: Terras Indígenas no Amazonas. Available at http://www.fepi.am.gov.br/programas_02.php?cod=1103

Instituto Nacional de Pesquisas Espaciais – INPE/PRODES. 2010. Taxa de desmatamento anual na Amazônia Legal (km2/ano). Projeto PRODES. Available at http://www.obt.inpe.br/prodes/prodes_1988_2009.htm

Indriunas, L. "HowStuffWorks - Como funciona a Amazônia". Publicado em 24 de agosto de 2007 (atualizado em 10 de julho de 2008) http://ambiente.hsw.uol.com.br/amazonia2.htm

Programa das Nações Unidas para o Desenvolvimento – PNUD. 2000. Índice de Desenvolvimento Humano - Municipal, 1991 e 2000 Todos os municípios do Brasil. Available at: http://www.pnud.org.br/atlas/ranking/IDH-M%2091%2000%20Ranking%20decrescente%20(pelos%20dados%20de%202000).htm

Soares-Filho, B. S., Nepstad, D, Curran, L., Voll, E., Cerqueira, G., Garcia, R. A., Ramos, C. A., Mcdonald, A., Lefebvre, P., Schlesinger, P.2006; Modeling conservation in the Amazon basin. Nature, v. 440, p. 520-523

Superintendência da Zona Franca de Manaus - SUFRAMA. 2009. Pólo Industrial de Manaus registra faturamento recorde de US$ 30,1 bilhões. 09/02/2009. Available at: http://www.suframa.gov.br/suf_pub_noticias.cfm?id=7595

Viana, V.M. 2007. Uma ferrovia no Amazonas? Diário do Amazonas, Manaus

Viana, V.M.; Cenamo, M.C.; Pavan, M.N.; Carrero, G.C. & Quinlan, M.D. 2008. Railroads in the Amazon: A key strategy for reducing deforestation. Carbon and Climate Law Review 3: 290-297

Viana, V. M. 2009a.Seeing REDD in Amazon. London, IIED. Available at www.iied.org/pubs/pdfs/17053IIED.pdf

Viana, V.M. 2009b. Bolsa Floresta: um instrumento inovador para a promoção da saúde em comunidades

tradicionais na Amazônia. IEA.

Viana, V.M. 2009b Bolsa Floresta: um instrumento inovador para a conservação e o desenvolvimento sustentável da Amazônia. Fundação Gilberto Freire.

Viana, VM. et al 2009. The Juma REDD Project. Manaus, FAS. Available at: www.fas-amazonas.org

Environmental Governance Series

No. 1 The challenges of environmental mainstreaming: Experience of integrating environment into development institutions and decisions

No. 2 Integrating environment and development in Viet Nam: Achievements, challenges and next steps

No. 3 Sustainable Development in Practice: Lessons Learned from Amazonas

Related IIED Titles

Creating and Protecting Zambia's Wealth: Experience and next steps in environmental mainstreaming, Natural Resource Issues No. 14, ISBN 978-1-84369-735-0, Order No. 17502IIED.

Environment at the heart of Tanzania's development: Lessons from Tanzania's National Strategy for Growth and Reduction of Poverty (MKUKUTA), Natural Resource Issues No. 6, ISBN 978-1-84369-656-8, Order No. 13543IIED.

Visit www.environmental-mainstreaming.org for more information and resources

Sustainable Development in Practice: Lessons Learned from Amazonas

Historically, the Amazon region has taken a 'frontier' approach to development that has destroyed forests. From 2000-2002, Professor Virgilio Viana worked with IIED to explore options for more forest-friendly forms of development. The Governor of Amazonas subsequently appointed Viana as the first ever Secretary for Environment and Sustainable Development. Viana was able to make the case for and implement several options, which were marked out by being scientifically based, simple to understand, and attractive to many stakeholders. For example, the Bolsa Floresta scheme – where forest households are rewarded with monthly payments into credit card accounts for practising 'farming without fire' – is conserving carbon, biodiversity and more. This book is the result of a short sabbatical at IIED to reflect on this experience, telling the story of Bolsa Floresta, many other schemes, and of improving the mandates of environmental institutions so that they become sustainable development agents. The book closes with a proposal for a National Project for the Amazon, based on experience in Amazonas State. IIED believes that the ideas developed and honed over the last few years are both timely and inspiring – both for Brazil and for countries further afield, as they now search for new 'green economies'.

Environmental Governance Series No. 3
ISBN 978-1-84369-773-2

3 Endsleigh Street,
London WC1H 0DD, UK
www.iied.org