

THE FUTURE WE ALL WANT

Green Economy,
sustainable development
and poverty eradication



The Future We All Want

**Green Economy,
sustainable development
and poverty eradication**

1st edition
INPE
São José dos Campos
2012

Sc76f Scarpa, Fabiano

The future we all want: Green economy, sustainable development and poverty eradication / Fabiano Scarpa; Ana Paula Soares. – São José dos Campos, SP: INPE, 2012.

28p.

Ilustração de Jean Galvão.

ISBN: 978-85-17-00062-1

1. Meio Ambiente. 2. Sociedade. 3. Economia verde.
4. Sustentabilidade.

I. Soares, Ana Paula. II. Galvão, Jean. III. Título.



Expressions like sustainability and green economy have been part of our day to day life since the end of the 1980s. In fact, they are everywhere- in the news, on hoardings, on products we buy at supermarkets and advertisements from public and private institutions.

Companies that encourage environmental conservation projects, such as reforestation and recycling usually link their image to sustainable development as a marketing strategy.

But then some questions arise: Where do the concepts of sustainability and green economy come from? Are they being fairly used? Why are they so closely related to social inclusion and poverty eradication?

On the following pages you will read some of the discussions that have happened in this field across different countries.

EVERYTHING STARTED IN STOCKHOLM

Since the 50s there has been a huge economic growth around the world. Industrial activities were driven by many different factors, which includes population growth and an increasing number of consumers as a consequence. Such economic expansion increased atmospheric pollution significantly, as well as demands on the planet for natural resources.

The awareness that environmental degradation due to human activities could have major impacts acutely modifying life on Earth, led the UN (United Nations) to organise a conference which took place in Stockholm, Sweden in 1972 (The United Nations Conference on Human Environment).

Representatives from all over the world gathered together at the meeting. It was the first big effort to address the relationship between human beings and the environment. At the end, a declaration containing 19 principles regarding agreements on conservation issues was produced.

Further information can be found at www.un.org



A PLANET UNITED

In 1987 the World Commission on Environment and Development published an innovative report- "Our Common Future"- that raised the concept of sustainable development defining it as "a development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Later, other conferences were organised aiming to find solutions in order to reach sustainable development. The most important ones are as follows:

- **Stockholm, Sweden (1972)** (The United Nations Conference on Human Environment - (The first recommendations on environment protection were made)
- **Rio de Janeiro, Brazil (1992) - ECO 92** (Recommendations for reducing greenhouse gases and elaboration of the document agenda 21)
- **Kyoto, Japan (1997)** (Kyoto protocol - establishes that industrialized countries will reduce their emissions of greenhouse gases by 5% of the levels at which they were in 1990)
- **Hague, The Netherlands (2000) Cop 6** - (Introduces carbon credits)
- **Bonn, Germany (2001)** (Creation of a fund for developing countries)
- **Copenhagen, Denmark (2009) Cop 15** - (recommendation to not exceed a global temperature average of 2°C above industrial revolution levels)
- **Cancun, Mexico (2010) Cop 17** (global fund for researches on sustainable development)
- **Rio de Janeiro (2012) - Rio+20** (a document for the protection of biodiversity and natural resources has just been released)

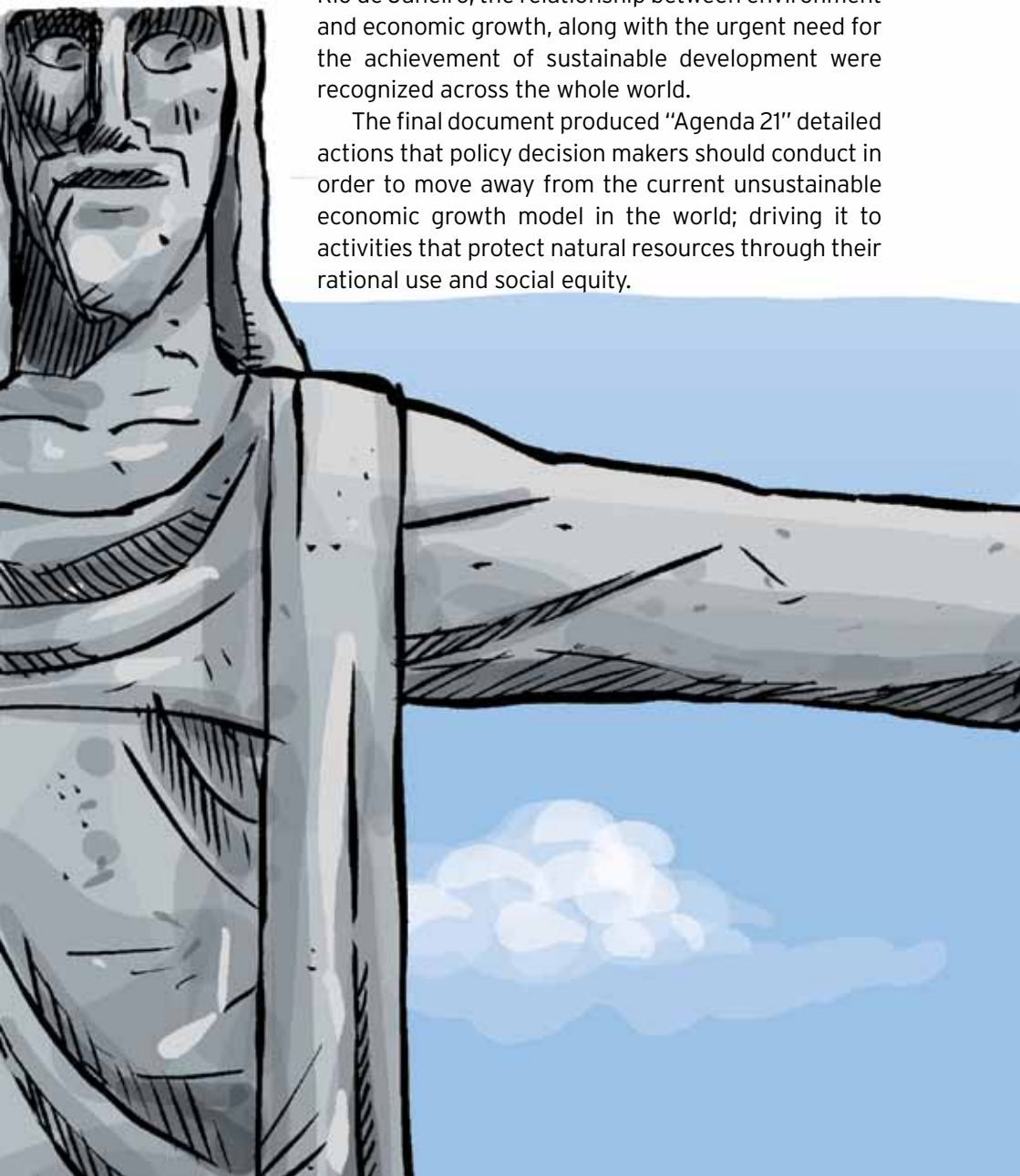




SUSTAINABILITY, ECONOMY AND POVERTY

At the summit Eco 92, that took place in the city of Rio de Janeiro, the relationship between environment and economic growth, along with the urgent need for the achievement of sustainable development were recognized across the whole world.

The final document produced “Agenda 21” detailed actions that policy decision makers should conduct in order to move away from the current unsustainable economic growth model in the world; driving it to activities that protect natural resources through their rational use and social equity.



The major points include atmospheric protection, deforestation reductions, soil loss prevention and actions against desertification, air and water pollution prevention, stopping the overexploitation of fisheries and safe toxic residue management.

Besides environmental issues tackling models of development that leads to environmental damage; the Agenda 21 also included poverty and external debt of developing countries; unsustainable models of production and consumption; demographic pressures and the international trading structure.

The programme also made recommendations to strengthen the role of other groups- women, worker's organisations, farmers, children, young people, indigenous peoples, scientific community, local authorities, companies and non-governmental organisations (NGO) in order to reach sustainable development.



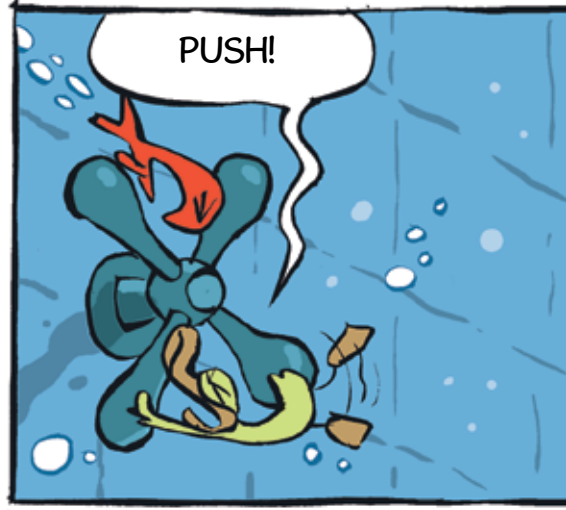
WHY GREEN ECONOMY?

Discussions on sustainable development always include issues related to changes in consumption behaviour- saving water and energy, avoiding consumerism, using public transportation in order to avoid major environmental impacts....

But then a question emerges: Do we need to quit or reduce dramatically the usage of everything we´ve conquered in terms of goods and technology in the modern world in order to live in a sustainable way?

The expression "Green economy" refers to the optimisation of activities that provide rational use of natural resources where the benefits are so evenly distributed that poverty levels are barely detected and greenhouse gases emissions are very low (decarbonized economy), minimizing the negative effects on the environment.

To achieve that, innovative technologies are necessary so that different segments of society can make use of machines with low energetic consumption. Appliances like televisions, computers, refrigerators and lamps must have low rates of energy consumption.



Energy matrices need to be gradually replaced by clean and renewable sources of energy such as eolic (wind energy), photovoltaic (sun energy), biodigester (energy from heat released by burning gases from animal manure, decomposing agriculture wastes and sewage) and tidal power (converting energy of tides into electricity).

Water consumption also has to be approached with responsibility.

About 2.5% of the water available on the planet is drinkable (the rest is in form of sea water). The vast majority of this freshwater is frozen in the form of ice caps and glaciers or is in the underground. So only 0,3% of the freshwater is available in rivers and lakes and has to be shared with all the living beings (apart from the ones that live in the oceans of course) and human beings (7 billion people today).



THE ECOLOGICAL FOOTPRINT

The Ecological Footprint of a country, a city or a person, consists of the size of productive areas of land and sea that can provide products, goods and services that sustain different lifestyles. In other words, the ecological footprint is a way to translate, in hectares (ha), the extension of a territory that either a person or an entire society uses, on average, to sustain a lifestyle.

Studies have shown that since the 1980s the demands for natural resources on Earth have increased dramatically and are now greater than their regeneration capacity.

Recent data shows that we are using 25% percent more than what Earth can regenerate. That means we now need a quarter of a planet more in order to sustain our lifestyle.

We can say that this is an irrational way of exploiting nature because the rate of consumption is faster than renovation capacity.

HOW MANY PLANET EARTHS?

The drawing bellow shows how many planets are necessary to sustain the lifestyles of different continents and countries.

North America

5.22



United States - 5.33
Canada - 4.22

Europe

2.66



Germany - 2.56
Sweden - 3.38

Eastern Asia and Oceania

0.72

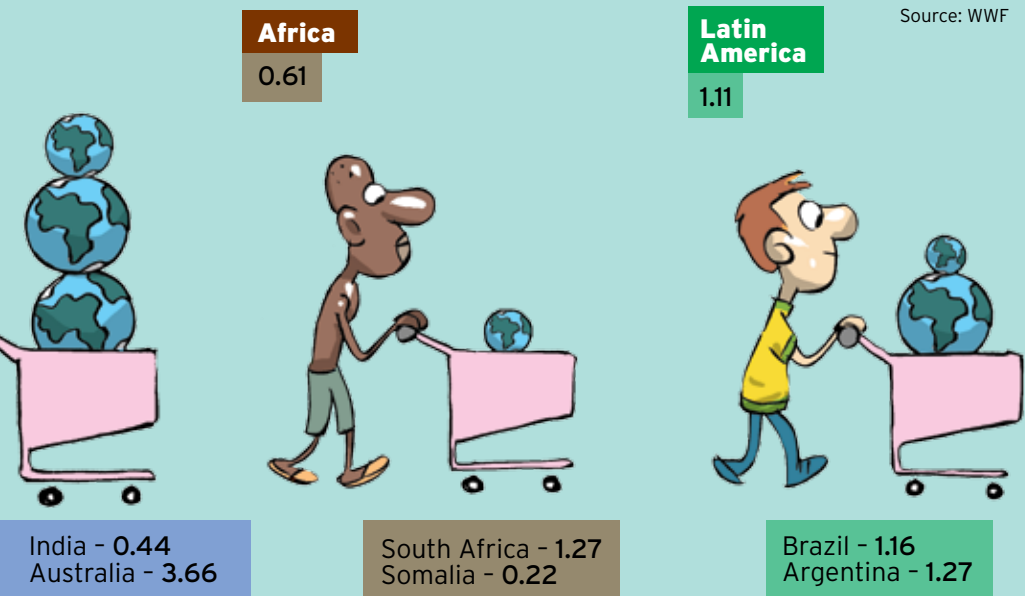


Japan - 2.44
China - 0.88

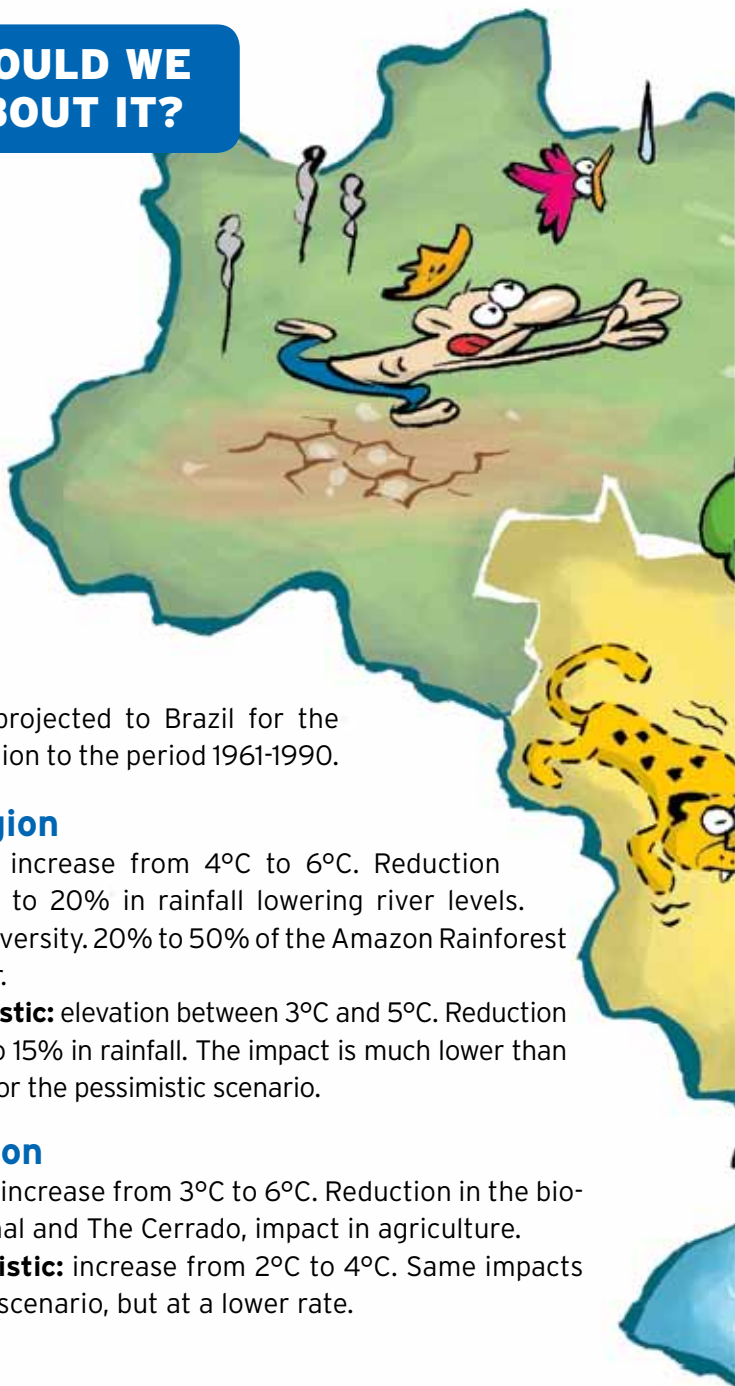
WHAT ARE THE COMPONENTS OF THE ECOLOGICAL FOOTPRINT?

To calculate the footprints it was necessary to study the various types of productive lands (agricultural, grazing, oceans, forests and urbanised areas) and different forms of consumption (feeding, housing, energy, goods and services, transportation and others). The sorts of technologies used, the population sizes and other data are also taken into account.

Each type of consumption is converted, using specific tables, into an area measured in hectares. Furthermore, it is important to include areas that are used to receive wastes and residues and to preserve an amount of land and water for nature itself, in other words, animals, plants and ecosystems where they live, assuring the conservation of biodiversity.



WHY SHOULD WE CARE ABOUT IT?



Climate changes projected to Brazil for the 21st century in relation to the period 1961-1990.

Northern Region

- **Pessimistic:** increase from 4°C to 6°C. Reduction ranging from 15% to 20% in rainfall lowering river levels. Alterations in biodiversity. 20% to 50% of the Amazon Rainforest prone to disappear.

- **Less Pessimistic:** elevation between 3°C and 5°C. Reduction ranging from 5% to 15% in rainfall. The impact is much lower than the one predicted for the pessimistic scenario.

Midwest Region

- **Pessimistic:** increase from 3°C to 6°C. Reduction in the biodiversity of Pantanal and The Cerrado, impact in agriculture.

- **Less pessimistic:** increase from 2°C to 4°C. Same impacts as the pessimistic scenario, but at a lower rate.

Northeastern Region

- **Pessimistic:** Increase ranging from 2°C to 4°C and decrease in rainfall ranging from 15% to 20%. Decrease in reservoir levels. Impacts in agriculture and population health. Biodiversity loss in the Caatinga.

- **Less pessimistic:** elevation ranging from 1°C to 3°C. Reduction of rainfall can reach 15%. Same impacts as the pessimistic scenario but at a lower rate.

Southeast Region

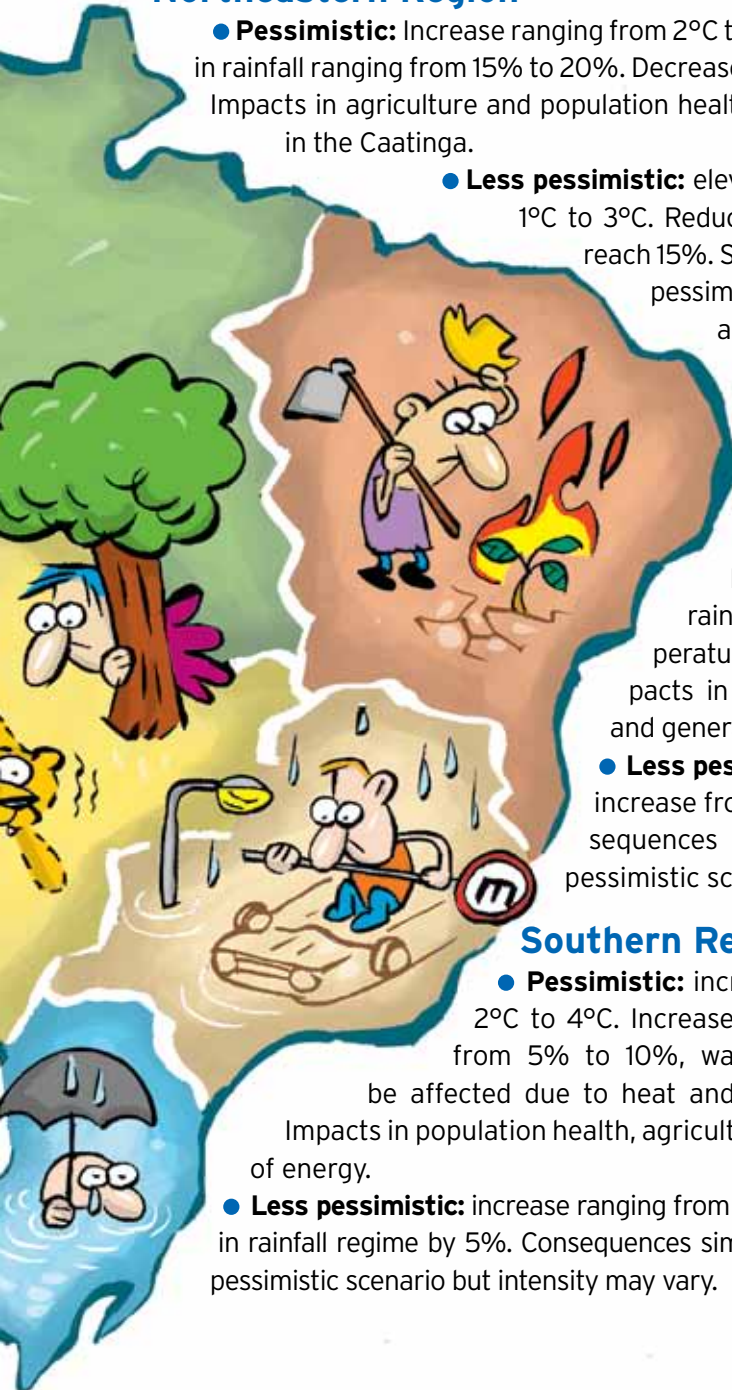
- **Pessimistic:** increase ranging from 3°C to 6°C. Extreme events of rain, drought and temperature are expected. Impacts in agriculture, health and generation of energy.

- **Less pessimistic:** increase from 2°C to 3°C. Consequences are similar to the pessimistic scenario.

Southern Region

- **Pessimistic:** increase ranging from 2°C to 4°C. Increase in rainfall ranging from 5% to 10%, water balance might be affected due to heat and high evaporation. Impacts in population health, agriculture and generation of energy.

- **Less pessimistic:** increase ranging from 1°C to 3°C. Increase in rainfall regime by 5%. Consequences similar to those of the pessimistic scenario but intensity may vary.



LESS POVERTY IS CRUCIAL

On Average, the modern societies' lifestyles have given little contribution to sustainability. On the contrary, they have been responsible for accelerating the process of global warming and the effects are already being felt. For example, an increase in mean global temperatures and alterations in frequency and intensity of phenomena such as extreme rain and drought.

However, the countries with the largest ecological footprints (the richest) are those that will less suffer from global climate change due to human activities because the quality of life and the citizens' economic resources will allow for the reduction of the impacts caused by environmental alteration and a faster adaptation to the new situations that are coming.

Thus it is fundamental to reduce poverty in the world in such a way that people from less developed countries can find their own ways to adapt and survive.



Speaking of which, In 2000 the United Nations (UN) targeted eight ways to change the world that should be reached by 2015:

1



Stop starvation and misery

2



Top quality education for all

3



Equal rights for men and women

7



Quality of life and respect for the environment

8



Everybody working together towards development

4



Infant mortality reduction

6



Fight against AIDS, Malaria and other diseases

5



Improvement of pregnant health

NATURAL DISASTERS

One of the main impacts of global environmental change is the increase in frequency and intensity of extreme phenomena causing huge damage to inhabited areas including social, economic and environmental losses.

Natural disasters are generally associated with earthquakes, tsunamis, volcano eruptions and extreme meteorological phenomena such as heavy storms, hurricanes, tornadoes, severe droughts and heat waves. But also include local processes and phenomena like landslides, flooding and erosion. They can happen either naturally or due to human activities.

Brazil is among the countries in the world that are more affected by floods. Flooding makes up for 60% of all the natural disasters that



occurred in Brazil during the 20th Century. Of these, 40% happened in the southeast region.

In July 2011, the federal government created the National Centre for Monitoring and Alerts of Natural Disasters (CEMADEN). This department is linked with the secretary of policies and research and development programs of the Ministry of Science, Technology and Innovation (MCTI) located on the campus of the National Institute for Space Research (INPE) in Cachoeira Paulista, São Paulo. CEMADEN provides accurate information about risk areas related to landslides, heavy rainfall and flood events for the whole country.

Such pieces of information are elaborated from forecasts, detailed maps, satellite information and weather radars. Such data is processed to generate alert signals (from two to six hours) before the disaster occurs.



THE ROLE OF SCIENCE

Natural and anthropogenic (caused by human activities) global environmental change are the object of study of researchers in the field of Earth System Science. The main studies are: **scientific basis of climate change, impacts and vulnerabilities** on different segments such as agriculture, hydric resources, renewable energies, biodiversity, human health, coastal zones, cities, economy and public policies; **mitigation of greenhouse gases emissions, technological projects.**

Get to know some of the Brazilian initiatives in this field:

Earth System Science Center of INPE (CCST/INPE)

This is the newest area of activity of the National Institute for Space Research. The mission of this center is:

1) To generate interdisciplinary knowledge for the national development with equity and for the reduction of environmental impacts in Brazil and in the world; 2) To provide top quality scientific information in order to guide public policies on mitigation and adaptation to global environmental change.

For further information www.ccst.inpe.br

The Brazilian Network for Global Climate Change Research (Rede CLIMA)

Located at INPE Rede Clima is a Programme of the Ministry of Science, Technology and Innovation (MCTI). It is made up of 13 research groups spread across the five regions of Brazil aiming to conduct research on different areas in the field of global environmental change. It is the fundamental column of support to the activities of Research and Development of the National Plan on Climate Change created by the federal government.

For further information www.ccst.inpe.br/redeclima



National Institute of Science and Technology for Climate Change

Also located at INPE, it is the biggest interdisciplinary network of institutions developing research on environmental issues in Brazil. More than 90 research groups of 65 institutions and universities from Brazil and overseas with more than 400 participants divided in 26 research subprojects are involved. It aims to collaborate and contribute with the results for the development and accomplishment of the National Plan on Climate Change.

Financially supported by the National Counsel of Technological and Scientific Development (CNPq).

For further information www.ccst.inpe.br/inct

FAPESP Research Programme on Global Climate Change - RPGCC

This Programme aims to assist, with results from scientific researches the generation of strategies for mitigation and adaptation to climate change. It has a technological component for the development of technologies appropriated to the future, with the objective not only to mitigate emissions but also to generate mechanisms of adaptation across different sectors and activities. It also develops an observational component involving the recuperation and expansion of local climatic observations and paleoclimatology in order to overcome the lack of quality environmental observations for researches which have been a huge obstacle for the scientific advance in Brazil on this issue. The Programme also includes a relationship between science and climatic policy.

For further information: www.fapesp.br/programas/mudancas-climaticas



THE FUTURE WE ALL WANT

How can we help societies to move towards the direction of using natural resources wisely?

The challenge is huge and we need to work alongside both government and companies. But we, as citizens, can do our part. Think it over!

1 - Consumerism is a temptation and a very bad habit. It is one of the major factors that contribute for the shortage of natural reserves on the planet. Avoid replacing unnecessarily devices that aggregate high technology (mobiles for example) and reduce the consumption of disposable products.



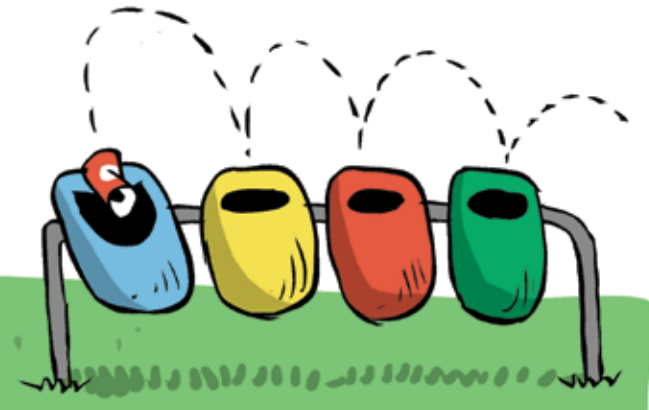
2 - Fluorescent lamps and LED lamps (light-emitting diode) are economic, use less energy and last for longer than incandescents. Choose appliances marked as class A. They are more efficient in using energy.



3 - Cellulose Paper Manufacturers consume a huge amount of water and energy. Thus, print what is really important and try to use both sides of the paper. Recycled papers must be used whenever possible.



4 - Gather together with your neighbors and people who live in your neighborhood. Ask politicians in your city for selective waste collection, recycling bins, and of course demand recycling.





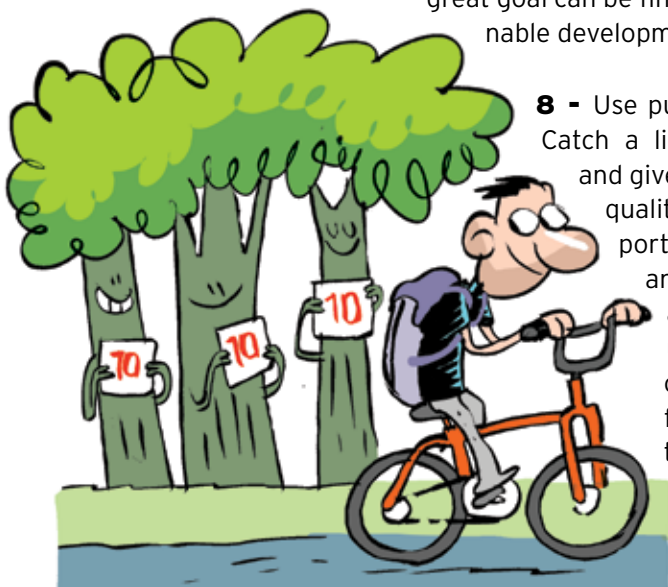
5 - Consumption of energy by electric shower is high. Thus showering must last no more than 10 minutes. This way you will save water and energy. Gas water heaters should be avoided as they emit greenhouse gases.



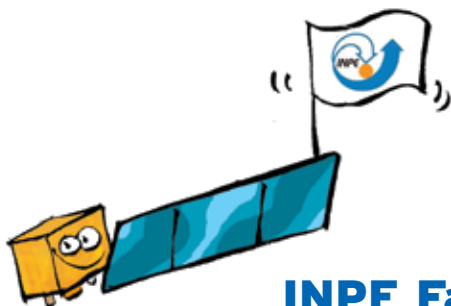
6 - Be a responsible consumer. Look for information on companies and try to find out whether they have committed environmental crimes. Sustainable attitudes are associated to recycling water, investment in innovative technology to reduce energy consumption and biodegradable products. For further information: www.akatu.org.br



7 - Practise citizenship wisely. Use the social networks to raise your voice. Demand of politicians and companies in your city, in your state and in your country to make sure that they are meeting all the necessary requirements for the conservation of biodiversity, hydric resources and soil in such a way that the great goal can be finally reached- sustainable development.



8 - Use public transportation. Catch a lift with your friend and give a lift. Demand high quality means of transportation - buses, trains and subways. If you are not going too far use your bike or go on foot. It's better for your health and the environment.



INPE Facilities in Brazil



Come visit us!

Book a free guided tour:
mirian.vicente@dir.inpe.br

Phone numbers:

+55 (12) 3208-6979

+55 (12) 3208-70711

Visit our website:

www.inpe.br

For further information:

atendimento.visitante@dir.inpe.br

THE FUTURE WE ALL WANT

Green Economy, sustainable development and poverty eradication

Original title: O futuro que queremos: economia verde, desenvolvimento sustentável e erradicação da pobreza.

Picture book about green economy, sustainable development and poverty eradication.

National Institute for Space Research (INPE)

Translated into English by: Fabiano Scarpa, Pedro James Stephens and Mattew Stock

Production: Earth System Science Center (CCST)/National Institute for Space Research (INPE) and the Brazilian Network for Global Climate Change Research (Rede CLIMA)

Coordination: José Antônio Marengo Orsini, Carlos Afonso Nobre and Paulo Nobre

Revision: Gilvan Sampaio de Oliveira, Marcos Barbosa Sanches, Fabiano Scarpa, Fábio Loyolla

Sources of information: United Nations (UN), UOL Educação, WWF

Brasil, Instituto Geológico da Secretaria do meio ambiente, Governo do Estado de São paulo, CEMADEM/MCTI, Instituto Akatu, Objetivos do Milênio, O Eco

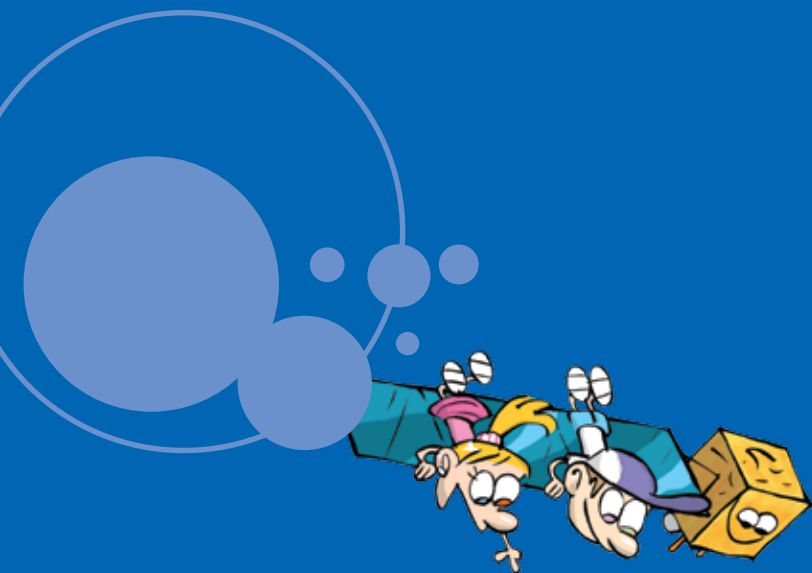
Text: Fabiano Scarpa and Ana Paula Soares

Designed by: Magno Studio

Illustrations: Jean Galvão

Design Supervision: Carlos Vieira

Educational materials produced by INPE can be downloaded from www.inpe.br/50anos



www.inpe.br

Instituto Nacional de Pesquisas Espaciais - INPE

Av. dos Astronautas, 1758 - Jardim da Granja
12227-010 - São José dos Campos - SP
Tel. (12) 3208-6000



Ministério da
Ciência, Tecnologia
e Inovação

