Machine Translated by Google

MINISTÉRIO DA
DEFESA

DEFENSE & ENVIRONMENT

PREPARATION WITH SUSTAINABILITY

Machine Translated by Google

MINISTÉRIO DA
DEFESA

DEFENSE & ENVIRONMENT

- PREPARATION WITH SUSTAINABILITY -

Machine Translated by Google

SUMMARY

5
PRESENTATION OF
MINISTRY OF DEFENSE

6
I - THE PROTECTION OF THE ENVIRONMENT
ENVIRONMENT IN DEFENSE

16
II - PRESERVATION:
A SECULAR LEGACY

26
III - SUSTAINABILITY

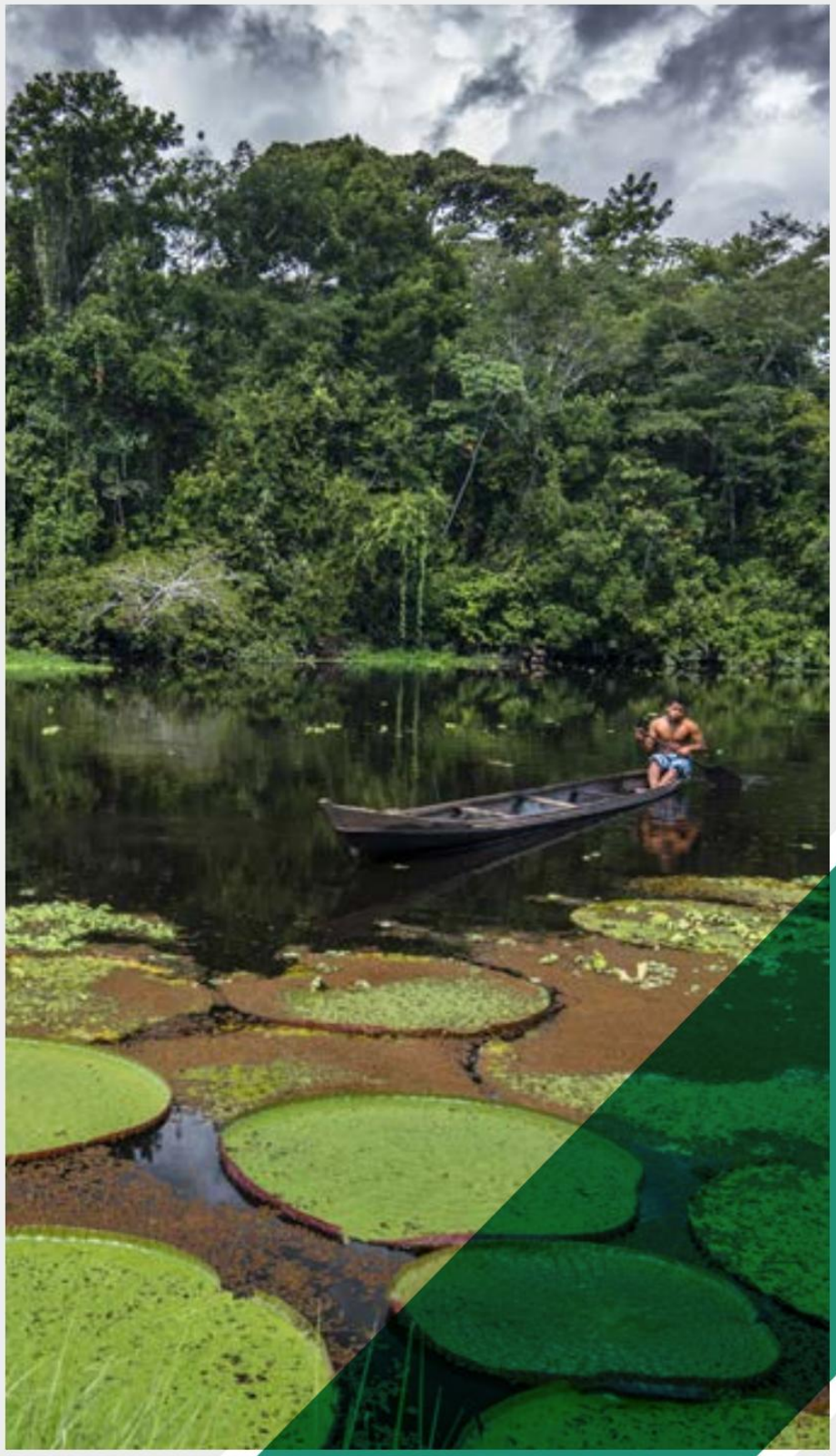
36
IV - RECOVERY

40
V - SUPPORT OPERATIONS
TO THE ENVIRONMENT

46
CONCLUSION

47
RELEVANT LEGISLATION

Machine Translated by Google



PRESENTATION OF MINISTRY OF DEFENSE

The Ministry of Defense presents the unprecedented Green Book on Defense, following the update of the triad of official Brazilian documents on defense matters – the National Defense Policy, the National Defense Strategy and the White Book on National Defense –, which were delivered to the National Congress in November 2016.

Defense documents, known worldwide as white papers, fulfill, among others, the important role of publicizing Defense actions and priorities, encouraging and qualifying the necessary debate on this agenda, which belongs to all Brazilian women and all The Brazilians.

Traditionally, the contribution of the Armed Forces goes far beyond its primary mission, defending national territory and sovereignty, and encompasses the occupation and integration of the territory, as well as the promotion of national development. Environmental protection and the secular legacy of preservation, although less known, are also part of this noble list of activities.

Entitled “Defense and the Environment – Preparation with Sustainability”, the Green Book aims to disseminate, in a modern and accessible format, good environmental management practices carried out by the Ministry of Defense, the Brazilian Navy, the Brazilian Army and by the Brazilian Air Force.

With this new publication, we share with society information on protection, preservation, sustainability and recovery measures; and on operations in support of the environment through which the Ministry of Defense and the Armed Forces participate in the global effort in favor of the environment.

Raul Jungmann
Minister of State for Defense

Machine Translated by Google

I - THE PROTECTION OF THE ENVIRONMENT

ENVIRONMENT IN DEFENSE

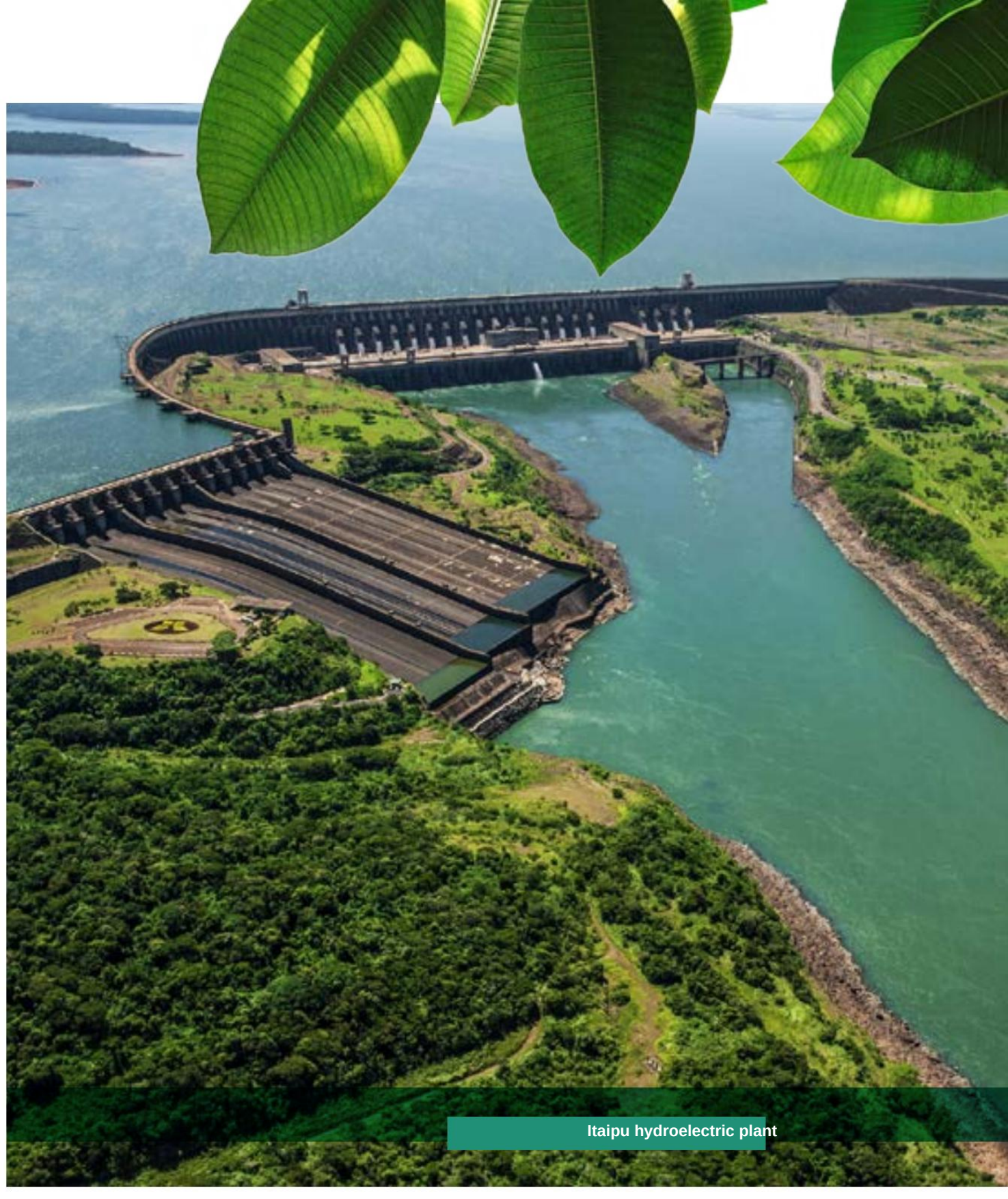
“Everyone has the right to an ecologically balanced environment”, declares the Constitution of the Federative Republic of Brazil and “the Public Power and the community have the duty to defend and preserve it”.

The debate on the environment, in addition to being part of Brazilian legislation, is crucial for the preservation of life; and the country has been an important player in this field, due to some good examples, which have even gained international recognition.

For example, Brazil's energy matrix stands out, which is essentially clean (green); the largest national reserves of fresh water on the planet (12% of the total); in addition to an extensive preserved vegetation cover, with about 516 million hectares (second only to Russia).

It is natural, therefore, that the Ministry of Defense and the Armed Forces play a leading role in protecting the environment, establishing norms and supervising their due execution, promoting good practices by all military units and offering adequate professional qualification.

Brazil is marked by diversified natural wealth and it is up to the Defense not only to protect this heritage, but to help in its preservation as a task inherent to the work of the Forces.



Itaipu hydroelectric plant

Machine Translated by Google

FORCES SUSTAINABLE

The Armed Forces, in addition to their role in guaranteeing national security, promote environmental education, based on critical and innovative thinking, focusing on an awareness of maintaining the ecological balance.

And the five axes of the Public Environmental Agenda (A3P) are observed and practiced by the Forces. They are: the rational use of natural resources and public goods; proper management of waste generated; the quality of life in the work environment; raising the awareness and training of civil servants; and bidding and sustainable construction.

Special mention should be made of the care taken with Brazilian waters. In 2002, for example, the **Brazilian Navy** promoted the implementation of the Environmental Management System in its Land Military Organizations that presented activities of polluting potential. The idea was to prevent negative impacts on the environment.

This decision was supported by the Environmental Crimes Law (nº 9.605/1998) and by the Oil Law (nº 9,966/2000). Norm NBR ISO 14001 also guided this initiative. Additionally, the Directorate of Ports and Coasts (DPC) was responsible for Environmental Management in the Navy.

In operations with greater polluting potential, in addition to the development and maintenance of an environmental management system, biennial audits also began to take place. In addition, those that may have the potential to cause a pollution incident

waters for oil now have an Individual Emergency Plan.

For ships, the Navy adopted rules and procedures to regulate the preparation of the Ship's Emergency Plan for Oil Pollution, in addition to the pollution prevention mechanisms already adopted by them.

Rio de Janeiro Naval Base – Mocanguê Island Complex

The other Navy operations, with less potential to cause environmental pollution, in turn, began to follow a simplified system, but with the same respect for environmental legislation and adopting processes focused on pollution prevention.

It is unquestionable that the pollution of water by oil, lubricants and different fuels has a great environmental impact. With that in mind, the Navy, together with the National Petroleum Agency (ANP) and the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA), began to participate

Machine Translated by Google

active in the organizational structure, and may also exercise the function of Operational Coordinator.

The Navy also directs its operations towards the prevention and response to oil spills, making use of containment barriers that are used continuously, whether in operations or even with ships moored at the bases, neutralizing the impact as much as possible. by waste.

In addition, the ships work to monitor water pollution caused by vessels, platforms and their support structures, through Naval Patrol and Inspection actions. Complementarily, the Navy has the support of partners to promote simulated exercises in response to leaks, with a focus on improving its performance.

Naval Inspection Team

Professional qualification is another crucial aspect of this effort. Since 2009, the discipline “Environmental Education” has been present in all establishments of the Naval Education System and in the Ensi Courses for Maritime Professionals. Also, the Navy promotes exchanges, based on partnerships with public and private institutions, to carry out courses and seminars focused on environmental conservation.

But it's not just the Navy that looks after natural resources. Since 2011, the **Brazilian Army** has established operational, educational, logistical, technical and administrative procedures for environmental management in its organization. This legislation also contemplated the formation of an awareness and a sensitization about the importance and necessity of preserving the environment.

It is unquestionable that the Army has, in protecting the environment, a fundamental part of its work in defense of the country and the integrity of its citizens.

assets. And actions are developed in all regions of Brazil, with emphasis on the environmental quality of military units.

Additionally, all Army personnel have a role in the Environmental Management System.

At Força Terrestre, it is the Department of Engineering and Construction that performs the role of consultancy for environmental issues. And its Directorate of Real Estate Heritage and the Environment proposes and enforces the norms related to environmental protection. However, each soldier has a personal mission to watch over the areas where the Army operates.

The management of natural resources in military buildings, in addition to supporting nature, also makes it possible to create suitable natural environments for instruction and training. It is a collective effort whose mission is to improve structures and establish soil and water resources management programs, as well as care for flora and fauna.

An example of this is the definition of quality standards related to the use and management of natural resources, focusing on rational use and permanent availability, always aiming at ecological balance.

Machine Translated by Google

Headquarters of the 19th Battalion of Hunters, “green island” in Salvador-BA

Like the Navy and the Army, the **Brazilian Air Force (FAB)** is also committed to preserving the environment and promoting an awareness of sustainability.

Its Basic Doctrine includes cooperation for the country's development, as it undertakes procedures to defend, preserve and recover the environment, establishing environmental management processes in its organizations throughout the country.

In the case of the Air Force, environmental management was defined by a resolution called RCA 12-1/2014, which established the essence of this work in the military field, with the adoption of sustainability criteria and standards, in addition to the development and execution of projects, such as recycling programs. In 2014, for example, the FAB held the “First Environmental Seminar of the Brazilian Air Force”, which brought together government entities and public management to discuss sustainability.

Currently, several measures are undertaken at the national level, and by all the Forces, with a focus on preserving the environment, encouraging educational activities, protecting areas against deforestation and using solar energy in military buildings.

Machine Translated by Google

THE DEFENSE

FROM THE AMAZON

The work of protecting the environment goes far beyond ecological awareness and good practices within military institutions. It is also necessary to make use of studies, research and strategic inspection related to the country's natural resources.

The Brazilian Amazon, with its very characteristic climatic and geographic characteristics, needs constant mastery, interpretation and analysis; this is done using remote sensing with satellite images, involving units in Brasília, Manaus, Belém and Porto Velho, which collect, analyze and disseminate data.

The Ministry of Defense, through the **Management and Operational Center of the Amazon Protection System (CENSIPAM),** for example, aims to protect the Legal Amazon.
And this is undertaken from the synergy of government actions, as well as the articulation, planning and integration of knowledge management. With this, the institution has been moving towards becoming a national and international reference in the generation, integration and dissemination of information related to the Amazon.

To fulfill this purpose, CENSIPAM establishes partnerships inside and outside Brazil, promotes studies and research, such as, for example, on the risk of floods and issues related to watersheds, or even geoprocessing and remote sensing techniques.

The Center also develops actions to support public policies in the region, using the technological park to promote education, digital inclusion, health, environmental management, daily func- tional regularization, territorial organization, support to civil defense, security and citizenship.

The use of satellite telecommunication channels, spread across the Amazonia, also enhances the exchange of knowledge and strengthens the government's strategic programs. This integration of information, at the federal, state and municipal levels, results in the improvement of territorial management in the region.

These are some examples that illustrate the work at the national level, literally by land, water and air, in which the commitment to the defense of the environment is perceived, based on policies, practices, studies and interventions.

This is a mission undertaken by the Forces based on the coordination of the Ministry of Defence; a commitment renewed daily, in the name of protecting national heritage, from continental borders to the integrity of its cities; from citizens' safety to the maintenance of the ecological balance.

One of the telecommunications points spread across the Amaz

Machine Translated by Google

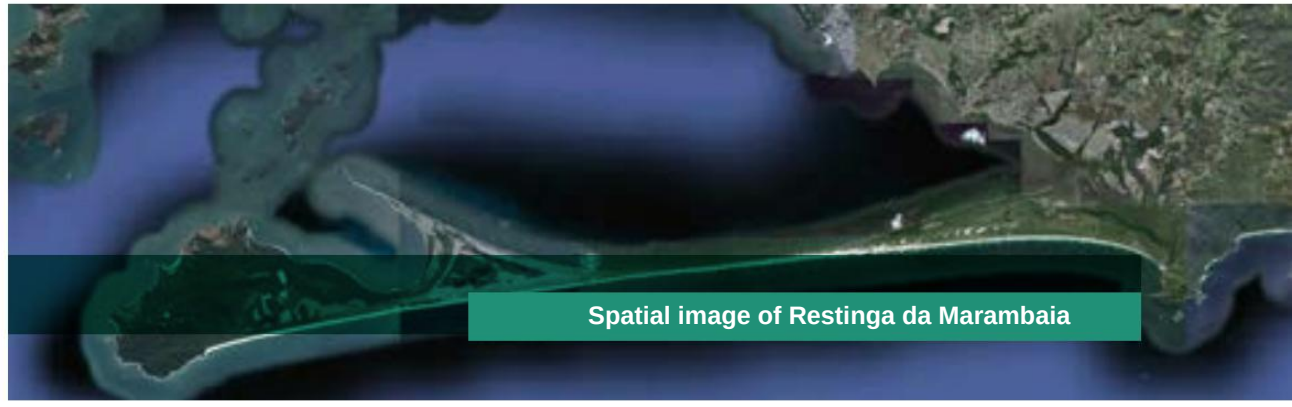
II - PRESERVATION: A SECULAR LEGACY

The Armed Forces have, in their tradition, the preservation of biomes and green areas in a country of continental dimensions, such as Brazil. And this is also done from a wide structure of barracks, bases and training camps (some centenary), which contribute to the preservation of all national heritage.

An example of this historic commitment is Decree No. 14,273, of July 28, 1920, which approved the regulation of the Campo de Instrução de Gericinó, in Rio de Janeiro. Article 6 says:

“It is strictly forbidden for the troops to cut down trees in these forests or in the Serra de Gericinó. The camp's administration will organize the instructions for the use of the forests [...] in order to prevent the general felling that could harm the yield of the spring waters. A felled tree must be replaced by another”.

Gericinó Instruction Field - an area of 4,579 ha in Rio de Janeiro



Spatial image of Restinga da Marambaia

Another example comes from the **Brazilian Navy** which, more than 100 years ago, precisely in 1906, showed interest in the Ilha da Marambaia, in Rio de Janeiro, where it later founded a School for Apprentices-Sailors.

In the 1980s, the Ilha da Marambaia Training Center was created on site, a reference in the conservation of an extensive area of Atlantic Forest on the island, based on initiatives such as, for example, the total removal of waste produced in the area. The presence of the Navy is also essential for complying with the restrictions arising from the fact that Marambaia Island is an Environmental Protection Area.

The Island is currently visited by students and researchers in areas such as Botany, Ecology, Zoology, Archeology, Climatology and Geoprocessing. These field activities are the result of partnerships between the Navy and several teaching institutions.

The Brazilian Army is also present at the site, occupying an area of almost 34 square kilometers in the sandbank of Marambaia. There, the Land Force maintains the Army's Technology Center and Evaluation Center. Both organizations develop research and undertake technical and operational assessment activities of a military nature, as well as supporting researchers from civilian and business institutions.

The extensive military activity, however, does not affect the local fauna and flora, which are well preserved. In fact, the presence of the Armed Forces on Marambaia Island precisely guarantees the ecological preservation of 95% of the area; This is why the island is so visited by teaching institutions in search of typical sandbank species, many of which are already in the process of becoming extinct elsewhere on the Brazilian coast.

Machine Translated by Google

In the Midwest, the **Brazilian Air Force (FAB),** in turn, preserves an area of 22,000 square kilometers (equivalent to the size of the State of Sergipe), in the Serra do Cachimbo (border between Pará and Mato Grosso). There is the Campo de Provas Brigadeiro Velloso, which houses military training and also undertakes periodic flyovers to detect and inhibit deforestation.

In that location, the FAB promotes the reintegration into the environment of several species of Brazilian fauna, which are rescued from illegal trade by IBAMA. As an example, jaguars and endangered macaws, as well as parrots kept in captivity.
These animals get a new home and the opportunity to survive and reproduce in the Serra. FAB also helps IBAMA transport wild animals.

But Serra do Cachimbo is only part of this work at the national level, undertaken by the Forces. Another important example is the presence of the FAB in the Amazon, both in the protection of borders and in the preservation of natural resources.

There, reconnaissance aircraft are used to collect data on the terrain, the course of rivers, fires and deforestation, among other missions. These actions produce images that are later analyzed and end up helping to create new routes for airplanes and helicopters.

AH-2 Saber operating at the Proving Ground Brigadeiro Veloso in Serra do Cachimbo-PA

Still talking about the presence in the Amazon, for more than 50 years Ae ronáutica has been responsible for bringing the North region closer to the rest of the country. Airfields are being built throughout the state, giving the government capillarity, which is able to reach indigenous and riverside communities, fundamental in the protection of the rainforest. And, to minimize the impact of military constructions in the region, the replanting of native trees is done continuously.

Preservation, for the Armed Forces, also means reducing the emission of polluting gases and reducing noise. The FAB, since 2013, has been undertaking measures in air navigation, such as the

Preservation Area in the Amazon

SIRIUS program, which allows the use of more direct routes based on the concept of Performance-Based Navigation.

Furthermore, the implementation of 650 new procedures at the air terminals in Rio de Janeiro and São Paulo resulted in a reduction in the emission of around 1,800 tons per day (or 460,000 tons/year) of CO2 into the atmosphere, from the savings of almost 560 tons of fuel every day.

It is also important to remember the new methodologies in air traffic management, which made it possible to reduce by eight minutes

Machine Translated by Google

the route of the Rio-Sao Paulo airlift. Another significant improvement comprises the ascent and descent procedures, which were modified and started to be carried out continuously, reducing the power used by the engines and, thus, providing less exposure of the communities close to the aerodromes to the noise generated by the aircraft.

In the South, the Army, for more than 200 years, has occupied an area in Rio Grande do Sul, the Campo de Instrução Barão de São Borja, with more than 50 thousand hectares. And even with the intensity of military exercises, the flora and fauna typical of the Pampas have been preserved.

Armored maneuvers at CIBSB

The Field is used by military units from all over Rio Grande do Sul, which carry out tactical exercises, including the use of mechanized and armored troops. In addition to the military purpose, the structure also acts in harmony with its socio-environmental obligations, by ceding the use of the territory for leases.

CIF satellite image, center

Machine Translated by Google

Formosa, in Goiás, also deserves mention. In Campo de Istruções de Formosa, a study on natural erosion has been carried out since 2012, based on a Technical Cooperation Agreement between the Command of the 11th Military Region of the Brazilian Army and the University of Brasília (UnB).

A study in an area of almost 15 thousand hectares was carried out, for the registration of 26 species (eight of them threatened with extinction). From this work, species of high ecological requirement were found, such as the jaguar, and rare species, such as the armadillo and the otter, among others.

The purpose of this cooperation is to study and propose solutions for natural erosion at the site, which encompasses a total area of 105,000 hectares of cerrado; and also carry out scientific research to map and monitor the training field, in addition to identifying species of medium and large mammals.

The maintenance of diversity in this location is the result of the continuous extension of native vegetation and the heterogeneity of habitats. It is also an indication that military activity in the region has been favorable to environmental preservation.

Puma

Another important example is linked to the protection of the Alcatrazes Archipelago, in São Sebastião (São Paulo). In order to reconcile National Security and ecosystem conservation, the Ministry of Defense and the Ministry of the Environment (MMA), with the intervention of the **Navy,** IBAMA and the Chico Mendes Institute for Conservation and Biodiversity (ICMBio), signed a Term of Commitment in order to guarantee harmony in the joint management of the area.

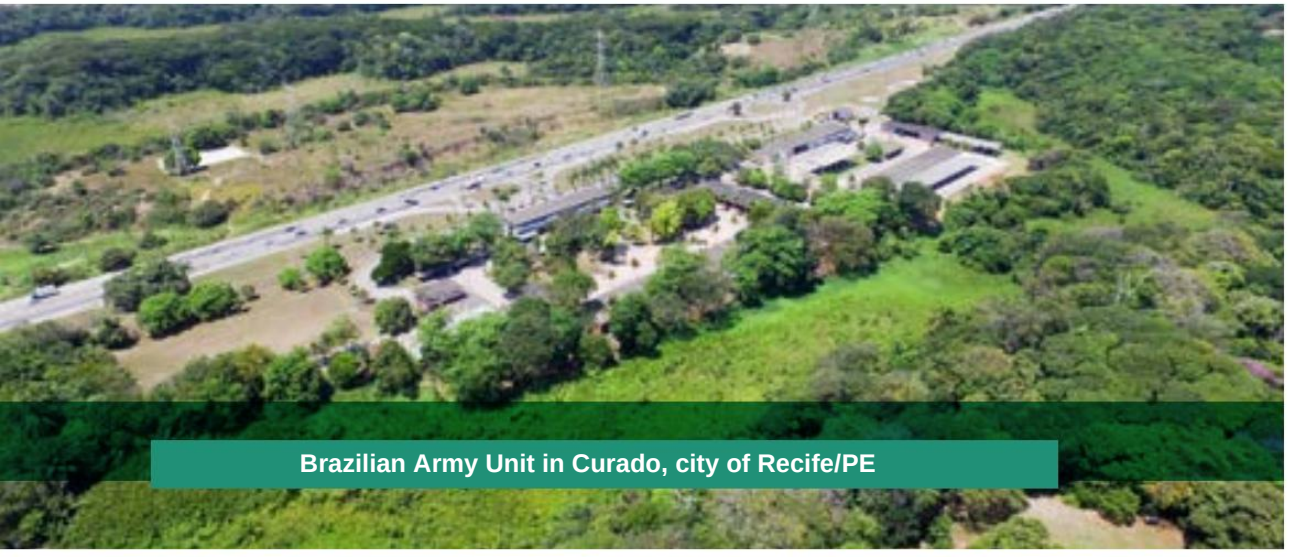
The Navy promotes integrated inspection actions, navigation safety, protection of human life at sea and compliance with the ban on anchoring vessels and diving around the Archipelago. When there are shooting exercises by ships, the nautical community is notified in advance.

Alcatrazes Island

From the Southeast we go to the Northeast, where in Recife (PE), numerous **Army** actions demonstrate the Forces' concern with environmental preservation. A good example is the protection of the environmental heritage at the Curado Military Complex, headquarters of the Northeast Military Command and six other Military Organizations.

In 2009, the campaign “The Green Protecting the Green” was started, with the purpose of planting 24,000 tree seedlings in six months, one for each military member serving in the area.

Machine Translated by Google



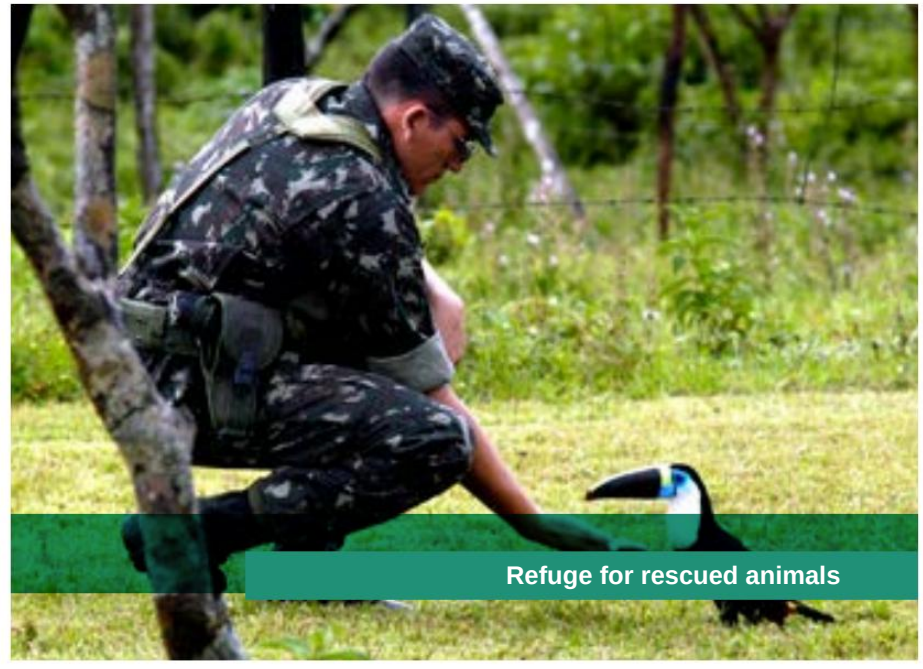
Brazilian Army Unit in Curado, city of Recife/PE

In Pernambuco, there is the Guararapes National Historical Park, which was revitalized by the Army Command, with the aim of conserving and recovering the natural characteristics of the place, marked by Land Force traditions. This work was developed in partnership with the Instituto do Patrimônio Histórico e Artístico Nacional (IPHAN), with approval from the Ministry of Culture.

The creation, by means of a Presidential Decree, of the Inter-Ministerial Committee for the Revitalization of the National Historical Park of Guararapes, composed of the **Ministries of Defense and Culture,** will make it possible to take advantage of the historical, touristic and cultural potential of the Park, transforming it into a sociocultural option for students, researchers and tourists, in addition to promoting the social inclusion of poor communities settled in its surroundings.

This national park is considered the birthplace of the Brazilian Army, as it was the scene of the first battle of land troops, in 1648, an episode that was later known as the “Battle of the Guararapes”.

The preservation of fauna is also a fundamental part of the Forces' commitment to environmental balance in Brazil. The Jungle War Instruction Center, in Manaus, Amazonas, created by the Brazilian Army over 50 years ago, occupies an area of over 150,000 hectares and has trained military personnel since the 1960s. rescued animals that cannot be returned to the wild.



Refuge for rescued animals

In all, 400 animals live in this Army sanctuary and have all the necessary care. Due to efficient preventive management, these animals end up living much longer than if they were in their natural environments. In 2014, the space received an Amazon Aquarium, with more than 200 animals and a Knowledge Hollow, for educational and preservation activities.

This military area is highly preserved and completely integrated into the biome. And, in addition to harmonizing with the environment, it also supports military activities, providing the jungle warrior with the knowledge to work in the Amazon Biome. This gives the military the potential to convert natural hazards into allies.

It is worth emphasizing the important interaction between the **Ministries of Defense and the Environment,** which have been carrying out understandings for the delimitation of preservation areas that would be created within Military Areas; In this initiative, the conciliation of the interests of nature conservation with those of National Defense stands out. That is, the attributes for which the military areas were created will be maintained in integrity, as well as the continuous improvement of the operational capacity of the Armed Forces, at the same time that the idea of the Secular Legacy of Preservation of the Environment will be strengthened. Environment by Defense.

Machine Translated by Google

III - SUSTAINABILITY

Consume indefinitely, without depleting natural stocks. This is the best way to understand the concept of sustainability. And what must limit development is not the production capacity of men and their machines, but the natural capital remaining around them, such as forests and water.

Another important aspect is the control of waste and efficient use of available resources. It is necessary to inhabit, without harming the environment and to consume assertively.

It is this notion of sustainability that permeates the assertive management of military actions undertaken by the Armed Forces, from three specific perspectives: the ideal use of energy; the handling of waste and substances; and the way military installations are built and maintained.

SMART USE

OF ENERGY

The **Brazilian Air Force,** for example, bet on economy and sustainability by using solar energy to supply some Airspace Control Detachments in isolated regions in the north of the country.

The indigenous community of Tiriós, located on the border of Pará and Suriname, for example, can only be accessed by air transport, as there are no roads or navigable rivers nearby.
But energy from solar panels supplies the place in the morning and, only at night, diesel-powered generators are used.
In operation since 2015, solar energy has enabled a 45% saving in energy costs.

Another important example is Surucucu, in Roraima, where 144 photovoltaic panels produce up to 20kW of power, capable of sustaining (autonomously) the operation of a military unit for up to 15 hours a day, since 2013. consumption of diesel oil, from 5 thousand liters/month to 1.5 thousand liters/month.

Still on renewable energies, the Preparatory School for Air Cadets, in Barbacena (MG), adopted solar heating, where a plate system enables savings of almost 156,000 kW/month, equivalent to the consumption of 777 homes.

DTCEA-TS solar energy project (Tiriós - AP)

Machine Translated by Google

The Army Headquarters, in Brasília (DF), implemented, in April 2016, a pilot project for the generation of photovoltaic energy, produced from sunlight. The initiative was carried out in partnership with the company Itaipu Binacional, with 360 photovoltaic panels. This system allows generating, on average, 12,000 kWh/month.

This is one of the first large-scale hybrid systems in Brazil, integrating photovoltaic panels, batteries and the public grid. Based on the experience acquired in the project, the Army intends to install similar systems in Special Border Platoons in the North of the country, taking advantage of this clean and renewable energy source.

Solar frame at QGEx - Brasília - DF

HANDLING WASTE

International conventions, such as the Prevention of Pollution Caused by Ships (MARPOL 73/78) and the Preparation, Response and Cooperation in Case of Pollution by Oil (OPRC 90) establish that merchant oil tankers and other vessels with gross tonnage above 150 must have an emergency plan to prevent and respond to oil spills at sea. Compliance with these standards is supervised by the **Brazilian Navy.**

Aware of this, the Navy acts to prevent its military operations from causing environmental emergencies. In this sense, it employs a series of initiatives, such as the use of oil containment barriers; use of absorbent blankets; proper oil storage; adequacy of filling stations and the construction of fuel stations with suspended tanks.

One example is the Fuel Depot, located in the Environmental Protection and Urban Recovery Area of Jequiá, in Rio de Janeiro. The presence of the Navy in this area contributes to its conservation and preservation. Additionally, the unit has an energy efficiency program to save water and electricity, approved in an environmental audit carried out by the Directorate of Ports and Coasts.

Navy Fuel Depot

Machine Translated by Google

The Navy also undertakes a number of other practices in its military operations that are worth mentioning.

A good example is selective garbage collection, in which plant residues are converted into organic fertilizer; unusable cooking oil is sent to soap making cooperatives; and the implementation of ecopoints for the correct disposal of batteries and electronic materials.

Other good practices include using equipment that generates less noise. To avoid the release of raw sewage, the Navy operates a treatment plant at the Ammunition Center, responsible for the daily monitoring of effluents.

The **Army** also deserves attention in this area. The Academia Militar das Agulhas Negras also has an initiative related to sewage treatment. Since 2015, the unit has been enabling improvements in water and sewage treatment in the municipality of Resende, in Rio de Janeiro, based on a contract with the municipality's concessionaire, with an average treatment capacity of the station of 68 liters per second. This effort also contributes to the improvement and preservation of the Alambari River, which runs through the region.

Sewage treatment plant at AMAN

The Technical Guidance Booklet for Installation, Operation and Removal of Underground Fuel Tanks comprises safety measures to neutralize the risks when removing a fuel tank. The filling stations, therefore, have been updated to meet the new environmental standards, based on their own methodology designed to minimize the environmental impact.

The **Air Force,** like the Navy and the Army, also promotes preservation actions in its units spread throughout the national territory. Attitudes such as the reuse of cooking oil and selective collection are employed in order to minimize the environmental impact of these Miliary Organizations.

Florianópolis Air Base, for example, in partnership with the local Commercial and Industrial Association, implemented a program aimed at environmental preservation and education, reduction of grease in the sewage system and improvement of treatment efficiency.

In Belém, the Coleta Seletiva Solidária Project was created involving the community in an effort for local development. The military send the materials duly sorted to the city's Association of Collectors of Selective Collection, which, consequently, generates work and income. Lectures are also promoted to raise awareness about the correct disposal of waste.

In Rio de Janeiro, the Aeronautics Electronic Material Park also has an Environmental Management Plan focused on the correct disposal of waste. In just three years, 14 tons of industrial waste were processed, minimizing soil and water basin contamination.

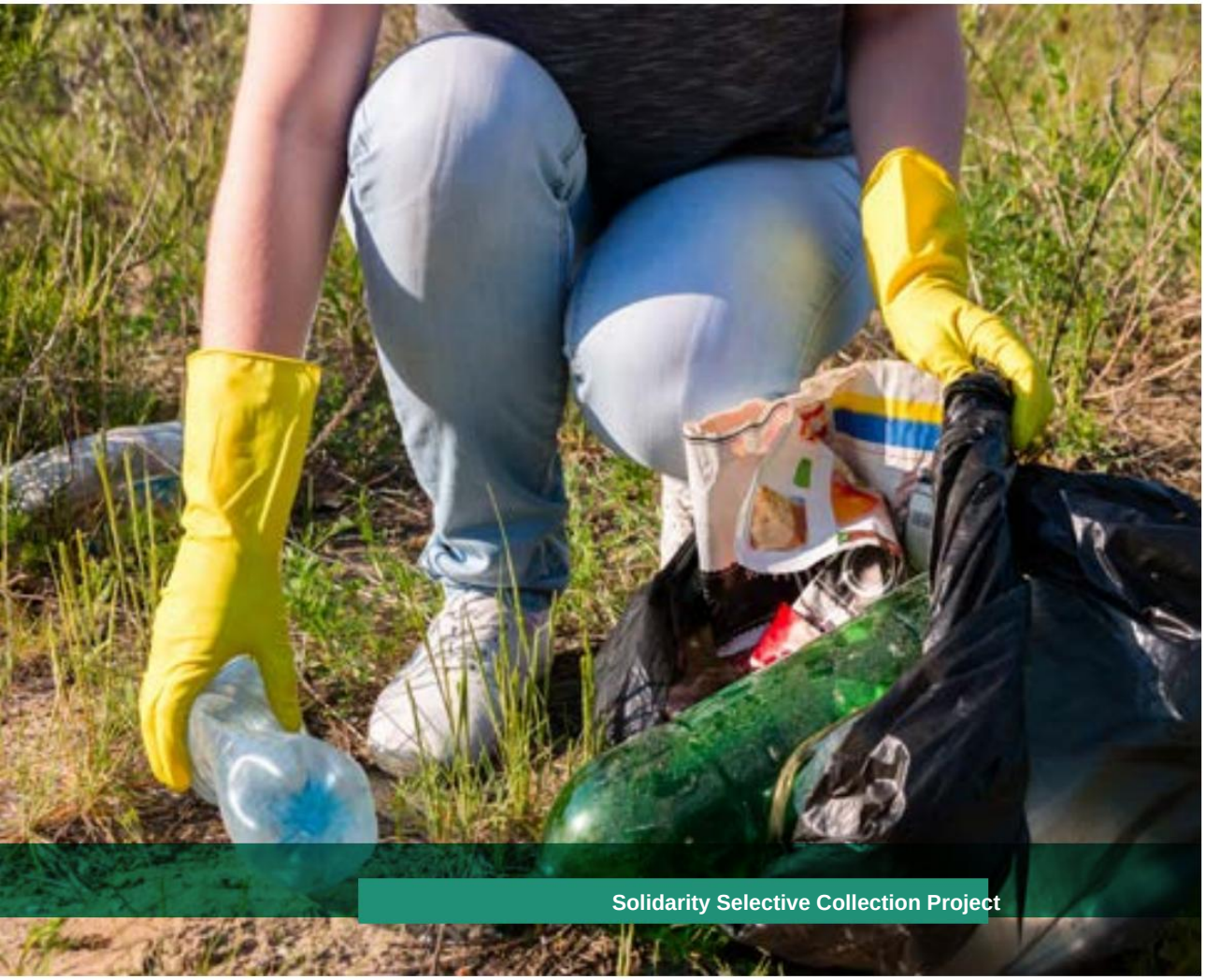
The unit also promotes reverse logistics, in which solid waste is returned to manufacturers for reuse. Since 2013, this unit disposes of barrels, batteries and batteries in this way.

In the Rio de Janeiro Support Group, hydrometers were installed to avoid wasting water, a measure that reduced consumption by 20,000 cubic meters, in addition to savings of R$ 200,000 in just two years.

Machine Translated by Google

Finally, the Air Control Department, also in Rio de Janeiro, promotes a series of initiatives dedicated to environmental preservation. A good example is the Information Units Network, which integrates the library with subordinate Military Organizations, allowing users not to print or mail materials, which also reduces costs.

In addition, there is a Document Management System that allows documents to circulate with electronic signature and digital dispatch, further reducing the need for paper printing. This practice is also in use in the **Ministry of Defense** and in the other Forces.



Solidarity Selective Collection Project

CONSTRUCTIONS AND CONTRACTS

Sustainable architecture and green building are also part of the conservation efforts undertaken by the services.

The projects for the Army's Information Technology Center and the new headquarters for the Superior Military Court, both in Brasília (DF), are good examples of reconciling modern architecture and sustainability. Such projects are certified by the Energy Efficiency in Buildings Program of the National Electric Energy Conservation Program (PROCEL), in addition to LEED certification, awarded to “green buildings”.

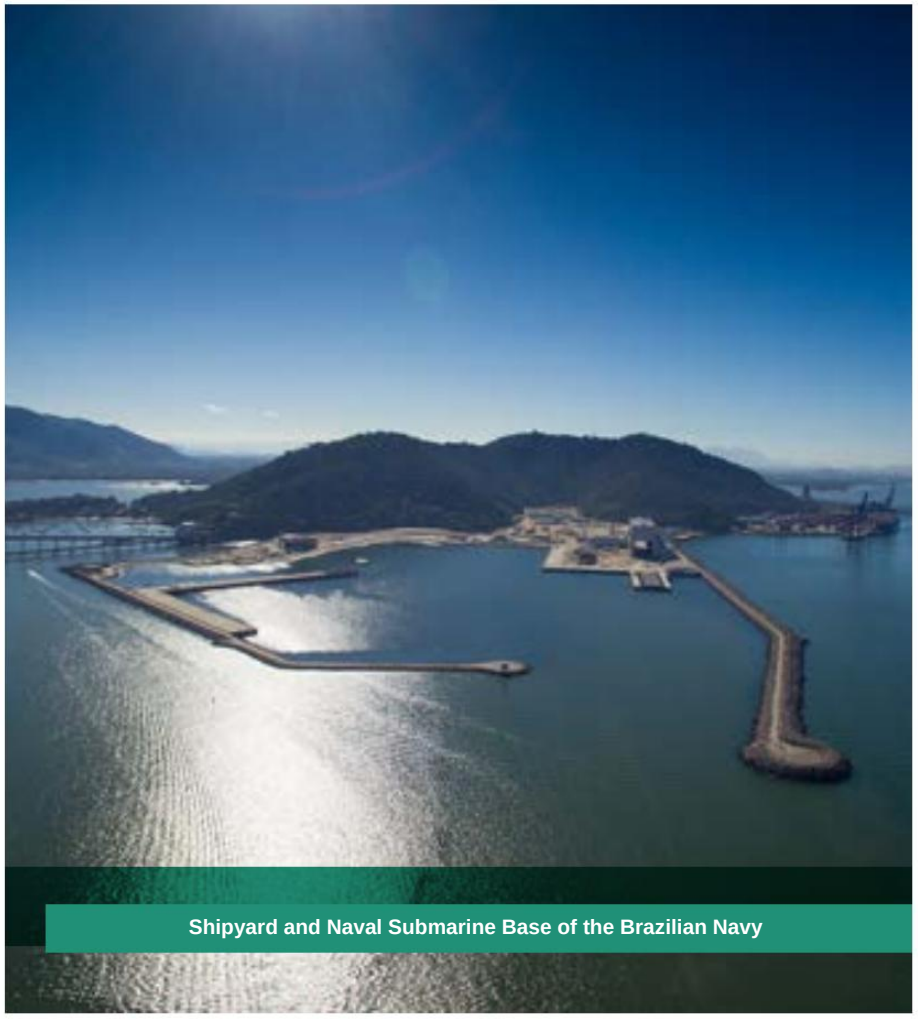
Among the main innovations, we highlight the use of building systems with low environmental impact, which use less water, use rivers and hydraulic equipment, in addition to solar heating and energy generation from photovoltaic panels. Ecological building materials are also used, which prioritize regional raw materials, reducing transport time and fuel use, in addition to stimulating the local economy.

EB IT Pole Project in Brasília/DF

Machine Translated by Google

Professional qualification in the Military Works System is also worth mentioning. An action, developed throughout 2016, involved professionals from all regional offices in a course focused on energy efficiency in public buildings, offered by the Ministry of the Environment.

The Navy has also acted in this field. Madeira Island, in Rio de Janeiro, was chosen for the installation of the Shipyard and Naval Base for the Construction of Conventional Submarines and Nuclear Propulsion. This is an environmentally impacted area, since, in the past, it served as a construction site for the Port of Itaguaí. The presence of the Forces in this area, however, represents the zeal for the natural balance of the place.



Shipyard and Naval Submarine Base of the Brazilian Navy

Over five years, based on the Environmental Impact Study and in accordance with current legislation, the Navy promoted monitoring of water quality, aquatic biota, terrestrial fauna, air quality, erosion, noise emissions , effluents, the emission of particulate matter, in addition to monitoring related to dredging and hydraulic embankment. Additionally, there is management of oily waste and different types of solid waste.

That maritime area was contaminated by pockets of heavy metals and, therefore, could not receive the disposal of sediments. With this in mind, the military unit's dredging and landfill works opted for soil replacement procedures with attention to protecting the marine environment.

Another concern of the Navy during construction was the monitoring of submerged noise and the impact on the population of gray dolphins, common in Sepetiba Bay. The NGO Instituto Boto Cinza was a partner in this monitoring, completed in 2014. And the result of this effort was positive; second NGO report:

“It was possible to observe that the dolphins did not stop frequenting the areas of direct and indirect influence of the project and showed the same pattern of distribution and behavioral activity observed in other studies carried out in Sepetiba Bay”.

In addition to the Navy and Army, the Brazilian Air Force also undertakes sustainable engineering and architecture projects.

All recent FAB constructions follow the rules of the National Energy Conservation Etiquette (ENCE) and comply with the Sustainable Logistics Management Plan. In 2016, for example, a military residential complex was inaugurated in Curitiba, using rainwater reuse.

Another Air Force initiative is the gradual replacement of the light signaling system at the aerodromes, using energy-saving light bulbs. An example is the track in Barbacena (MG), which uses PWM LED technology for its lighting. This technology reduces energy consumption by around 92% for the entire useful life of the equipment, in addition to providing other benefits, such as longer component usage, reduced maintenance and less material in stock.

Machine Translated by Google

IV - RECOVERY

The commitment to the preservation and defense of the environmental heritage, undertaken by the Forces at the national level, is a daily mission, which is reflected from small actions, such as handling waste in military complexes, to initiatives of regional dimensions, such as efforts in the Amazon, on the Brazilian coast and in the construction of large military complexes.

However, in some cases, there is an effort to recover the environment previously affected by the unsustainable use of the
your resources.

A good example is the area of the Pátio Ferroviário de Brasília which, for years, was exploited for the extraction of material due to the urban expansion of the Federal District. Under the coordination of the Army, an important soil recovery process is carried out.

This technical cooperation agreement, signed in 2012, with the Environmental Sanitation Company of the Federal District (CAESB) and the Brasília Real Estate Company (TERRACAP) also has the support of the Brasília Environmental Institute (IBRAM).

Forest recovery is being carried out based on the correct disposal of waste: soil from excavations at TER RACAP works and sewage sludge (biosolid) produced by. The aim of this effort is to reforest 195 hectares of land.

Images of the recovered area in the 2012-2014 DF (2012 in detail)

Machine Translated by Google

The benefits can already be observed, such as the reduction in the load of sediments from erosion, which has a direct impact on the quality of drainage systems and water in the Paranoá Basin. The area is also the subject of academic research and receives visits from researchers, including international researchers, to learn about the techniques used.

Reforestation is an ongoing objective of the Forces. Several units across the country benefit from this effort.

CERNE sustainability project

Another example is in Anápolis (GO), where Ae ronáutica implemented, in 2011, the Erosion Control and Reforestation Project with Native and Exotic Species and already accounts for 16,000 seedlings planted and about 168 hectares recovered.

This effort helped adapt the containment basins and contour lines, in order to minimize erosion processes and facilitate the absorption of water by the soil, in addition to contributing to the preservation of springs. This initiative was recognized, in the same year, with the CEA Goiás Environmental Prize and, in 2012, the Planeta Água Prize for Ecological Consciousness, from Planeta Água Magazine.

In Santa Maria (RS), since 2016, around seven thousand seedlings have been planted around the runway. This effort was carried out jointly with the Department of Forestry Sciences and the Acoustic Engineering Course at the Federal University of Santa Maria, with the aim of creating a natural barrier to mitigate the noise of landings and takeoffs, thus promoting the well-being of the nearby community.

Other FAB units also systematically plant trees to recover degraded areas – and also as an educational initiative, honoring the diversity of Brazilian regions.

At the Academy in Pirassununga (SP), for example, more than 700 seedlings of 300 tree species were planted. There are araucaria trees, typical of the South, and even palm trees from the Northeast, in addition to jarinas, açaís and mahogany, characteristic of the Amazon.

Machine Translated by Google

V - OPERATIONS IN SUPPORT FOR THE ENVIRONMENT

The joint action of the Armed Forces in defense of the environment can be illustrated by the success of the Ágata operations, on the border of Brazil, between 2011 and 2016. Together with IBAMA and ICMBio, the Forces have already carried out 287 inspections (data from 2015).

The Amazon region accounts for the largest stretch of preserved tropical forest in the world. Even so, the Brazilian Amazon is affected by the practice of deforestation, which causes loss of biodiversity, in addition to the impact on the global climate.

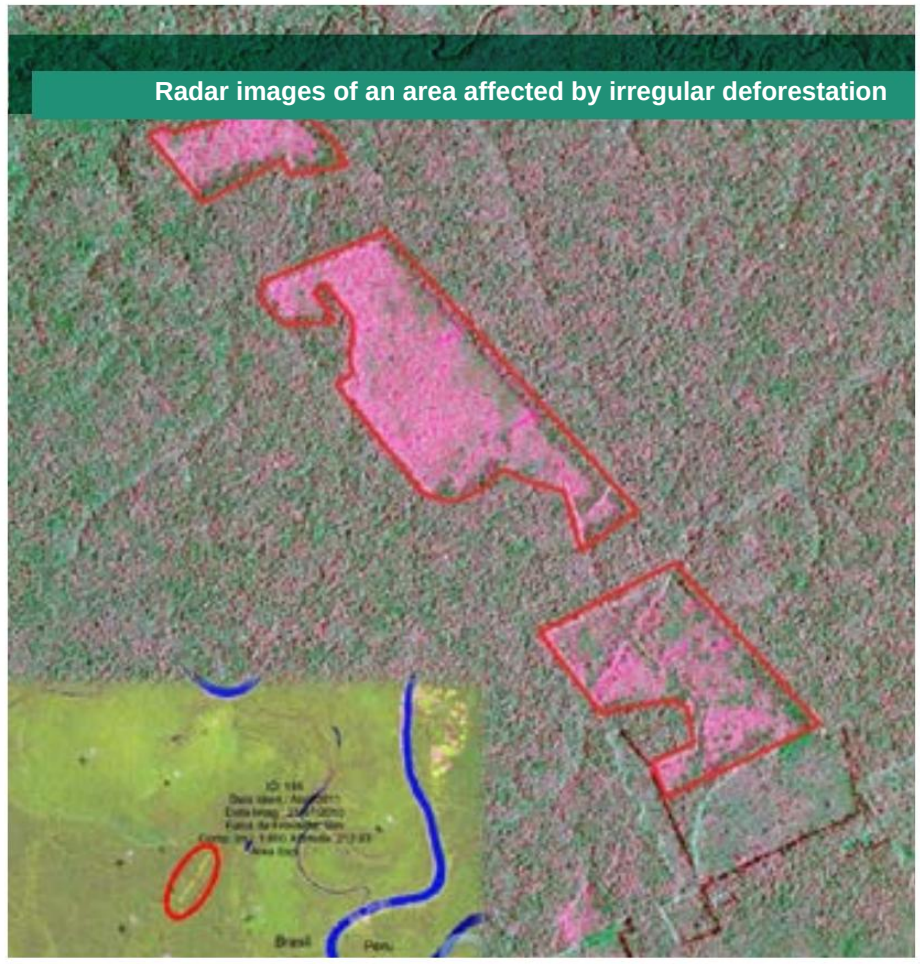
The most critical period takes place between October and April since, due to the density of clouds in the rainy season, the Deforestation Detection System in Real Time, of the National Institute for Space Research (INPE), is impaired, since it does not it can capture optical orbital images (something criminals know).

To reverse this situation, the **Ministry of Defense** is developing the Amazônia SAR project, to expand the capacity for detecting deforestation, generating alerts during the period of intense rains and thus complementing INPE's detection system.

This will be carried out from the Management and Operational Center of the Amazon Protection System (CENSIPAM), which will also support IBAMA in its inspection actions against environmental crimes.

This project uses radars to map the terrain and, therefore, measure the dimensions of the deforestation areas (even with the sky covered), complementing the information obtained by satellite imagery.

At the end of this initiative, it is expected that the operational infrastructure will be able to monitor 950,000 km² of the Amazon rainforest during the rainy season and, with this, Defense hopes to contribute to minimizing the damage to Brazil's natural heritage in the region.



The Legal Amazon has an area of over 5 million km², encompassing 1/3 of the planet's tropical forests. The region is home to the greatest biological diversity, is home to the largest river and the largest freshwater basin in the world. These are characteristics that define a strategic region for Brazil and, therefore, it is essential to ensure its integration into the national scenario.

With that in mind, in 2008 the Federal Government started the Project for the Implementation of the Amazon Cartography System, to promote the deepening of knowledge about the region, based on the systematic collection of data, such as economic and ecological zoning, impact on the environment, fauna and flora, mineral resources, infrastructure implementation studies, demarcation of settlement areas, agribusiness, local development, border security, among others.

Machine Translated by Google

This strategic information will always be shared with civil society and with federal, state and municipal agencies, as a way to promote planning and decision-making.

The Forces, through **CENSIPAM,** develop technological intelligence actions, making use of remote sensing, communications and advanced data analysis techniques. Numerous other public administration bodies are part of this effort, such as the Federal Police, FUNAI, IBAMA, ABIN, ICMBio, among others.

In addition to multiple intelligence efforts, the Air Force also operates in the destruction of clandestine airstrips, used by illegal mining and drug trafficking. This prevents the withdrawal of natural resources and helps preserve the integrity of the region.

Another important contribution is the fight against fires, not only in the Amazon region, but throughout the national territory. In 2015, the **Air Force** supported an operation in Chapada Diamantina (BA) where, in three days, a C-130 Hércules aircraft released 150,000 liters of water in various locations. The water, in addition to preventing the outbreaks from spreading, cools the ground and allows the advance of teams on land, such as brigade members and firefighters who are transported by helicopters, such as the H-36 Caracal.

In the same year, the Air Force transported almost 20 tons of extinguishing agents to contain the fire at the Terminal da Alemoa, in Santos (SP), which reached six fuel tanks, causing a fire that lasted nine days.

The **Brazilian Navy** also maintains a strong presence in efforts to preserve and face crises. The year 2015 was when the dam broke in Mariana (MG), causing a flood of mud that advanced through cities and rivers, reaching Espírito Santo. The Navy has traveled to the region to support the efforts. One of the ships sent was the Vital de Oliveira, a hydroceonographic research vessel, responsible for surveying the conditions of marine life on the coast affected by the incident.

The Vital de Oliveira vessel is capable of collecting data from oceanography, meteorology, geology, among other inputs. It also has a remote operation vehicle, three laboratories, a meeting room and capacity for up to 40 researchers.

The vessel is the result of a cooperation agreement signed with the Ministry of Defense, the Ministry of Science, Technology, Innovation and Communications (MCTIC) and the companies Petrobras and Vale. And, together with eight research vessels subordinated to the Navy, the Vital de Oliveira assists the Forces in mitigating vulnerabilities and risks associated with extreme events.

Hydroceanographic Research Vessel Vital de Oliveira

Machine Translated by Google

In this effort to collect and analyze data, the Navy also sent a team of researchers from the Instituto de Estudos do Mar Almirante Paulo Moreira (IEAPM). The team was supported by members of the Federal University of Espírito Santo (UFES).

Collection and analysis activities at sea

Beyond the limits of Brazilian territory, at the extreme southern end of the planet is the Antarctic continent, a region closely related to the balance of the planet. A true natural laboratory, where the scientific community seeks answers to the various phenomena related to life on earth.

The Comandante Ferraz Antarctic Station (EACF) represents Brazil on that continent, following the regulations of the Madrid Protocol, which imposes procedures to be followed for carrying out scientific research and logistical support in the region, as well as strict rules and limitations on the disposal of waste and the adoption of preventive measures against marine pollution and for the assessment of environmental impacts.

The country remains at the forefront, due to the Station's exemplary environmental management. Together with Poland, it presented a proposal to make Admiralty Bay – where the EACF is located – the first Specially Managed Antarctic Area, optimizing the planning and coordination of activities in the area and restricting possible interference and environmental impacts.

Research activity at EACF - Antarctica

The Navy adopted a series of guidelines and preventive actions in its Antarctic mission. In 2012, all waste generated by the fire that occurred at the EACF in February of that year (about 900 tons) was selectively collected and brought to Brazil.
This action was supervised by representatives of the Ministry of the Environment and other countries.

A new unit will occupy the same place and will house 64 professionals in an area of 4,500 m². With regard to energy, complementary systems will carry out cogeneration (using the heat generated by engines and equipment); Furthermore, photovoltaic panels and wind motors will guarantee energy through renewable and safe means. The installation will operate sustainably, with significant savings in diesel oil and consequent reduction in carbon emissions.

Machine Translated by Google

CONCLUSION

This publication sheds light on just a few highlights of the efforts of the Ministry of Defense and the Armed Forces for the defense and conservation of Brazil's natural heritage. The issue is extremely relevant and requires permanent attention at the national and international levels, since the environment needs to be a concern of human life on the planet.

This awareness permeates military life, as a fundamental part of its zeal for Brazil's security, from all perspectives. And this is clearly illustrated in Complementary Law 97/1999, which determines that “it is up to the Armed Forces, in addition to other pertinent actions [...] to act, through preventive and repressive actions, in the land border strip, at sea and in inland waters, regardless of possession, property, purpose or any encumbrance that may be imposed on it, against border and environmental crimes”.

In military life, with its attributions and responsibilities, there is also an intrinsic concern of the Forces and the Ministry of Defense, to undertake sustainability in the management of all its initiatives throughout the country.

It is a commitment to Brazil, aimed at implementing good practices, raising awareness, with the objective of promoting a multiplier wave that involves all citizens in the name of the same objective; supporting, educating, supervising, preserving, recovering.

This challenge is also ours.

RELEVANT LEGISLATION

Decree No. 5940, of October 25, 2006 - Establishes the separation of recyclable waste discarded by federal public administration bodies and entities;

Decree No. 4,411, of October 7, 2002 - Action by the Armed Forces and the Federal Police in conservation units;

Complementary Law No. 140, of December 8, 2011 - Sets rules, pursuant to items III, VI and VII of the caput and the sole paragraph of art. 23 of the Federal Constitution, for cooperation between the Union, the States, the Federal District and the Municipalities in administrative actions resulting from the exercise of common competence related to the protection of remarkable natural landscapes, the environment, the fight against pollution and the preservation of forests , fauna and flora; and amends Law No. 6938, of August 31, 1981;

Complementary Law No. 97, of June 9, 1999 and its amendments, which provides for the general rules for the organization, preparation and employment of the Armed Forces, by establishing new subsidiary attributions;

Law No. 12,651, of May 25, 2012 - Establishes the new Forestry Code;

Law No. 12,305, of August 2, 2010 - Establishes the National Solid Waste Policy; amends Law No. 9605, of February 12, 1998; and makes other provisions;

Law No. 9,985, of July 18, 2000 - National System of Nature Conservation Units (SNUC);

Law No. 9,795, of April 27, 1999 - National Environmental Education Policy;

Law No. 9605, of February 12, 1998 - Law on Environmental Crimes;

Law No. 9,433, of January 8, 1997 - National Water Resources Policy;

Law No. 6938, of August 31, 1981 - National Environmental Policy.

The aforementioned legislation is complemented by specific norms published by the Ministry of Defense and the Armed Forces.

Machine Translated by Google

OFFICE HOUR

Minister of State for Defense
Raul Jungmann

Production:

Special Planning Advisory - ASPLAN
Media Advice - ASCOM

Photography:

defense Ministry
Brazil's navy
Brazilian army
Brazilian air force
Daniel Snege - Itaipu

MINISTÉRIO DA
DEFESA

Machine Translated by Google

MINISTÉRIO DA
DEFESA