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Impact Study on the Effects of Demining Operations in Nicaragua

To evaluate demining operations in Nicaragua, the *Acción Integral contra las Minas Antipersonal* program conducted a study on the effects of demining in communities directly affected by landmines. The study showed both the negative effects of anti-personnel mines and the consequences they had on the community, and the positive effects that demining had in terms of security, trust and economic benefits.

by Carlos J. Orozco [AICMA]

During 2007, the *Acción Integral contra las Minas Antipersonal* program of the Organization of American States studied the effects of demining operations in Nicaragua. In developing the study, AICMA took into consideration information requirements of the different stakeholders, such as national authorities, donors, contributors and other organizations involved in mine action, and the need to evaluate results in order to promote the socioeconomic development of the country. The study did not address communities that had not been cleared; many landmine-affected communities still exist in Nicaragua.

The Study

The 2007 study satisfies the information needs of the international community and highlights the benefits gained from humanitarian-demining efforts, not in terms of the number of mines destroyed, but in terms of the economic and social impact in the communities where mine-action initiatives were implemented and financed by international donors. The study, sponsored by the Swedish International Development Cooperation Agency, is relevant due to the level of financial and technical assistance provided by the international community to Nicaragua, and as a key to evaluating the results of that investment. The study also allows us to understand, from the perspective of affected communities, the perception of demining operations and related activities carried out in dangerous areas close to surveyed homes, and to gain insights into the communities' thinking about the potential for development in these areas.

This study was conducted when Nicaragua reached 90-percent advancement in clearance operations according to registered objectives in its National Demining Plan.¹ The information gathered during the study allowed AICMA to:

- Define the impact caused by AP mines in Nicaragua, shedding light on the intensity experienced by numerous affected communities
- Capture the perception of affected communities regarding the socioeconomic benefits after mine clearance
- Highlight the views of women in affected communities on humanitarian-demining operations and their consequences
- Empower national authorities
- Guide international donors on development initiatives for rehabilitation of cleared land
- Establish a model for assessment of humanitarian demining in other countries

In summary, the study shows the results of years of investment in humanitarian demining in Nicaragua. It also shows that a referential model can be effective in combining the efforts of affected countries, international donors and international organizations.

The AICMA program in Nicaragua coordinated and carried out the impact study. The study relies on relevant variables to assess implementation of mine-action activities and the quality of activities relevant to the Information Management System for Mine Action. Likewise, in order to maintain objectivity, the *Instituto Nacional de Estadísticas y Censos* (census bureau) was in charge of data collecting and processing.

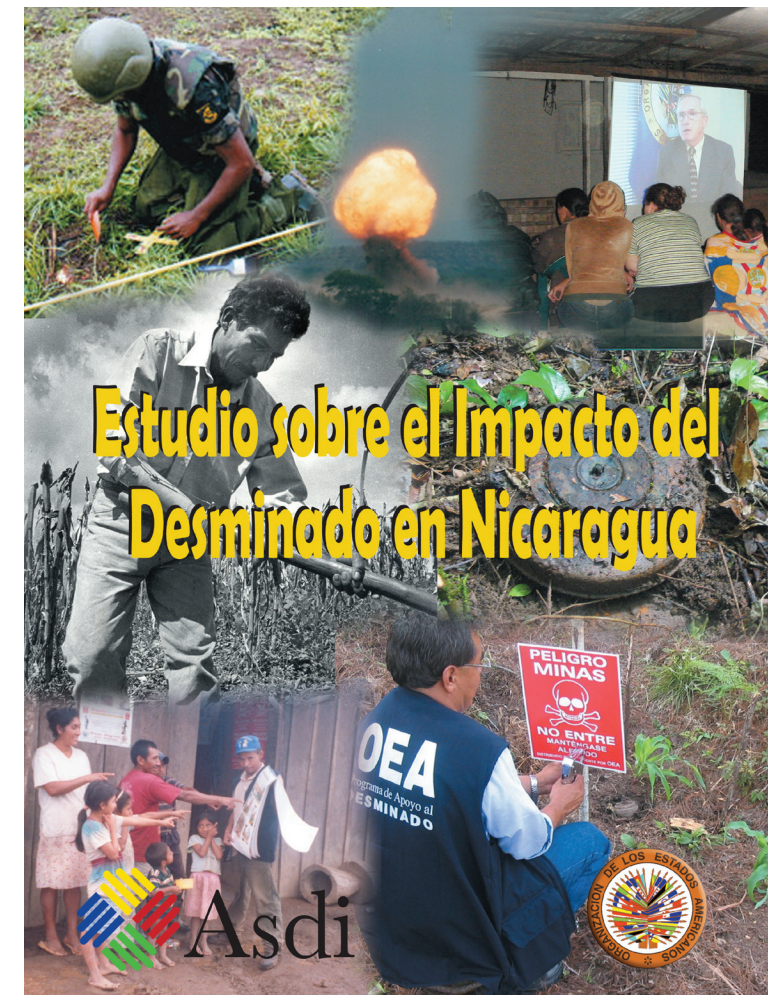
Overview

The government of Sweden asked the OAS to perform an impact study in 2006. In June of that year, the planning phase of the study, which focused on communities cleared of landmines, began with the Swedish International Development Cooperation Agency contributing 175,000 Swedish Krona (US\$20,945)². INEC was selected as the executing agency of the Impact Study of Demining in Nicaragua. INEC gathered field data and processed the information from August–November 2006. At the same time, a survey was administered to the institutions that benefited from mine action. INEC started the report in November 2006 based mainly on three sources of information: the survey results regarding demining effects in affected communities and their community leaders, the survey of beneficiary institutions, and the AICMA program database. The study was finalized in April 2007.

Background

Nicaragua is the most mine-affected country in Central America, stemming from the internal armed conflict that took place during the 1980s. At the conclusion of this conflict, Nicaraguan Army registries recorded 115,851 mines throughout the nation. Since demining efforts began in 1990, some 284 communities were determined to be located within one kilometer (0.62 square mile) of mined areas. Records show that by December 2006, these mines caused injury or death to more than 1,000 Nicaraguans.³

The National Plan was reformulated in 1999—following the destruction and delays in demining operations caused by Hurricanes Mitch and Felix in 1998—and established priorities and timetables for the clearance of an estimated 135,643 mines. Over the years, the National Plan was revised to include operations to clear large numbers of previously unregistered mines. In 2007, the Nicaraguan Army revised the total number of mines to be cleared in the country, setting it at 176,332. By February 2007, 13,944 unregistered mines, which were found during other activities not accounted for in the National Demining Plan, were destroyed with the support of the international donors. International contributions to support mine action in Nicaragua averaged US\$4 million during the 2000–06 period.



Cover of the "Study on the Impact of Demining in Nicaragua". PHOTO COURTESY OF PADCA-OA

Study Goals

The study sought to assess the benefits derived from demining activities, emphasizing the contribution toward poverty reduction by:

- Describing the human and social benefits resulting from demining
- Detailing the utilization of cleared areas, using the perceptions of affected communities as the main source of information
- Identifying the results and benefits from mine-risk education campaigns
- Reporting women's perceptions of the benefits from demining operations
- Suggesting ways to utilize and optimize cleared areas

Methodology

The report shows the demining results and measures the impact caused by landmines, as well as the effects among inhabitants of affected communities.

The main sources of information used in the report were the INEC survey among mine-affected communities, the questionnaire developed for institutions and the IMSMA database. INEC was in charge of survey implementation and data processing.

The target population of the survey was comprised of all existing homes in the communities where demining operations were implemented with the support of the OAS mine-action program. The survey took place in rural areas, among 10,101 dwellings in 107 communities with 44,849 inhabitants. Sampling was based on the communities located within one kilometer of mined areas where demining operations took place. Two sampling units were defined: Primary sampling units were defined as communities selected by random sampling; secondary sampling units were defined as dwellings also selected randomly.

To reach the dwellings in the selected communities and carry out the surveys of the target population, community maps from the INEC were used. The calculated sample size was 420 dwellings, where an equal number of persons 16 years old or older would be interviewed using the survey questionnaire. In all, the sample covered 21 communities among nine municipal districts in Nueva Segovia, Chontales, and both northern and southern autonomous Atlantic regions, known as RAAN and RAAS.

Three types of questionnaires were prepared for data collection related to the demining effects on the population survey:

- Home questionnaire
- Community leaders questionnaire
- Affected institutions questionnaire

Homes. The home questionnaire had nine sections:

1. Identification: identifies geographical information, head of families and classification of the person interviewed
2. Characteristics of the home members: examines age, sex, family relationship, education and marital status
3. Labor activities: collects data regarding economic activities of persons 10-years old and older
4. Housing and infrastructure: provides housing characteristics as well as mine-related incidents and benefits obtained from demining
5. Residence: examines place of residency and mobilization problems caused by the presence of landmines and benefits gained with demining
6. Goods and economic activity: gathers data on goods damaged by landmines, how goods were damaged and their use after demining
7. Livelihood and infrastructure: collects data on the sources of family income and available financing
8. Perception and assessment: captures the population's opinion about demining
9. Projects: studies the socioeconomic problems of the target population, as well as the projects under development, and those the population considers that could be developed in cleared areas

Community leaders. The questionnaire had the following six sections:

1. Community location: records the geographical location of the community
2. Interview data: captures data for analysis control
3. Socio-demographic characteristics: gathers information on the community leaders such as age, sex, education and labor activity
4. Community physical and demographic characteristics: compiles information on the number of houses, surface, borders and population
5. Mine- and unexploded-ordnance risk-education campaigns: reviews risk-education activities
6. Socioeconomic impact: determines the results of demining and MRE

Government entities and utility companies. Since roads, bridges, communication towers and high-voltage towers were mined, this questionnaire sought to gather data mainly from three institutions that benefited from demining operations: the Ministry of Transport and Infrastructure, the electric and energy company, and the institution that regulates communications.

The questionnaire had four parts:

1. Interview data
2. Institution/company identification
3. Respondent data
4. Institution perception regarding benefits from demining: includes demining assessment, type of issues related to mined areas and infrastructure, and benefits after completion of demining operations

To carry out the survey, three manuals were prepared, one each for interviewers, supervisors and reviewers.

Field research comprised data collection from the selected sample. INEC was responsible for the manual blueprints, sampling design and data collection. In order to obtain reliable information, the survey was performed by direct interviews of persons 16 years old and older.

From 4 October to 17 November 2006, data processing and analysis took place in INEC, which had professional personnel for recording and survey processing. Once data were verified, a supervisor reviewed the divergences and listings to correct information if required.

The result of the process was a database of dwellings and communities by district according to the sampling. The final report was issued in April 2007.

Conclusions and Findings Summary

The impact of anti-personnel mines in Nicaragua not only affects the security of the population but also extends into areas that limit economic well being. Aspects such as uninhibited movement of the population and security are presented as the most serious consequence of AP mines; access to communities, transportation, health, education, water and electricity are also affected. However, humanitarian-demining efforts have positively affected those aspects that are relevant for the economic development of affected communities.

There is a direct correlation between social indicators affected by AP mines and the benefits of demining operations, reaching the

national level, where the demining impact resulted in the improvement of education, the health system and transportation.

Affected communities noted a sense of safety and confidence in their immediate environment as the most positive aspects of the demining. After demining operations, people living in the affected communities felt themselves safe from the threat of mines and as a consequence could move about their community with confidence that they would not step on a mine. Given that the main goal of humanitarian demining is to return cleared areas to productive use, the goal was reached.

There is a need to direct initiatives toward land rehabilitation once land has been released. Likewise, it is necessary to develop financing and technical cooperation proposals to assist formerly affected communities improve the use of released land. National and local authorities must monitor cleared land in order to optimize its use.

The population highly values demining operations. Community leaders, utility companies and government entities involved in infrastructure development also share this assessment. The population also found the main economic benefit resulting from demining operations in the agriculture sector.

Mine-risk education campaigns have considerable coverage since the surveyed population knows about the dangers posed by landmines and ongoing demining operations to reduce those dangers. Campaign results were decidedly positive since they reduced dangerous behaviors.

The study results clearly show that landmine-affected communities were seriously affected at several levels before being cleared and reclassified as impact free, but it also shows the benefits from the humanitarian-demining efforts perceived by the populations and their leaders.

The study also provides important information elements for national authorities to develop projects that would benefit the population living near dangerous areas, and to pursue full socioeconomic rehabilitation of these areas. ♦

See Endnotes, Page 112



Carlos José Orozco serves as the Regional Coordinator of the OAS demining assistance program in Central America. He has been actively involved in mine action since 1998, when he assumed the post of National Coordinator of the program in Nicaragua. He has expanded the mine-action program to include a holistic victim-assistance vision that enables survivors to rejoin their communities in an economically sustainable way.

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News Brief

Research on Mine-detecting Bees in Croatia

Over the last two years, Zagreb University Agronomy Professor Nikola Kezic and his team have been training bees to detect landmines. Under Kezic's direction, the bees are being trained for landmine detection in Croatia, which is still plagued with landmines from its civil war in the early 1990s.

While mines are costly and time-consuming to find and remove, the bees can provide a quick and inexpensive approach to landmine removal. Known for their keen sense of smell, the bees are trained to associate the smell of food with explosive chemicals such as Trinitrotoluene, or TNT found in landmines. After training, the bees are sent to areas for quality assurance that have already been demined, where they search for the smell of explosives. If the bees land on an area where no mine had previously been found, a demining team will investigate to make sure no mines have been overlooked.