

Country Name	Vocational Training Improvement Project in Agricultural and Livestock Sector
Republic of Nicaragua	

I. Project Outline

Background	Vocational education in the agriculture and livestock sector has been provided by the Training Centers of Agricultural Technology (CETA) of the National Institute of Technology (INATEC). Classes at CETAs have been conducted by their instructors according to textbooks delivered from the INATEC headquarters. The textbook for the agriculture and livestock courses used by CETA had been already prepared for almost all courses, but it was not always easy for students to understand because it was full of text and lacked some content. For those reasons, the instructors themselves provided supplementary explanations for the missing parts of the textbooks in their classes. In addition, due to the wide variety of subject areas, the instructors were teaching a subject outside of his or her area of expertise and did not always fully understand the contents of the textbooks for all subjects.														
Objectives of the Project	<p>Through elaboration and revision of didactic materials and capacity development of instructors, the project aims at strengthening teaching techniques of INATEC's instructors, thereby contributing to improvement of technical education of INATEC.</p> <ol style="list-style-type: none"> Overall Goal: Appropriate technical instructions in agriculture and livestock sector have been continuously taught at CETAs in order to contribute to improve technical education of INATEC. Project Purpose: INATEC instructors can teach the appropriate agriculture and livestock technologies at their class. 														
Activities of the project	<ol style="list-style-type: none"> Project site: INATEC and 15 CETAs in the country. Main activities: Elaboration of textbooks and guidebooks, needs assessment of training programs, training of INATEC instructors, monitoring of CETA classes, etc. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Nicaragua Side</td> </tr> <tr> <td>1) Experts: 6 persons</td> <td>1) Staff allocated: 60 persons</td> </tr> <tr> <td>2) Trainees received in Japan: 13 persons</td> <td>2) Facility: Office space, storehouse, etc.</td> </tr> <tr> <td>3) Trainees received in the third country: 6 persons (Bolivia)</td> <td>3) Local cost: operational cost, etc.</td> </tr> <tr> <td>4) Equipment: Vehicles, PC, etc.</td> <td></td> </tr> <tr> <td>5) Local cost: travel expenses, honorarium, etc.</td> <td></td> </tr> </table> 			Japanese Side	Nicaragua Side	1) Experts: 6 persons	1) Staff allocated: 60 persons	2) Trainees received in Japan: 13 persons	2) Facility: Office space, storehouse, etc.	3) Trainees received in the third country: 6 persons (Bolivia)	3) Local cost: operational cost, etc.	4) Equipment: Vehicles, PC, etc.		5) Local cost: travel expenses, honorarium, etc.	
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Project Period	(ex-ante) July 2013 to June 2018 (60 months) (actual) September 2013 to September 2018 (60 months)	Project Cost	(ex-ante) 430 million yen (actual) 311 million yen												
Implementing Agency	National Institute of Technology (INATEC)														
Cooperation Agency in Japan	None.														

II. Result of the Evaluation

1 Relevance/Coherence
<p>[Relevance]</p> <p><Consistency with the Development Policy of Nicaragua the time of Ex-ante Evaluation></p> <p>The agricultural sector policy, the "Program for Inclusive Rural Development" (PRORURAL Incluyente) (2010-2014), stated that education for young people was essential for sustainable regional development, especially in the agricultural sector. It also indicated that vocational education schools should be effectively used to strengthen the productive capacity of small and medium scale farmers. The project was consistent with the development policy of Nicaragua at the time of ex-ante evaluation.</p> <p><Consistency with the Development Needs of Nicaragua at the time of Ex-ante Evaluation></p> <p>Textbooks for the agriculture courses of CETA were not always easy for students to understand because they were full of text and lacked some content. Therefore, instructors had to provide supplementary explanations for the missing parts of the textbooks in their classes. In addition, to cover wide varieties of subjects, instructors had to teach a subject outside of his or her area of expertise. Thus, the project was consistent with development needs of Nicaragua for revising the textbooks and training the instructors at the time of ex-ante evaluation.</p> <p><Appropriateness of Project Design/Approach></p> <p>The project design/approach was appropriate. No problem attributed to the project design/approach was confirmed.</p> <p><Evaluation Result></p> <p>In light of the above, the relevance of the project is ③. (④ : very high, ③ : high, ② : moderately low, ① : low. *To be the same afterwards.)</p> <p>[Coherence]</p> <p><Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation></p> <p>In the "Country Assistance Policy for the Republic of Nicaragua" (2013), one of the priority areas was set as "the infrastructure development for the economic activation," and related to this it was mentioned that the promotion of agriculture, livestock and fisheries and the support for rural development would strengthen the economic base. Also, it was described that the development of industrial human resources through the technical cooperation would be continuously supported. The project was consistent with the Japan's ODA policy to</p>

Nicaragua at the time of ex-ante evaluation.

<Interlinkage with other JICA's Interventions>

Appropriate technologies developed by the preceding projects were reflected in the textbooks and in the training instructors as planned. The collaboration/coordination between the project and the preceding projects¹ of JICA was planned at the time of ex-ante evaluation and was implemented, the positive effects were confirmed at the time of ex-post evaluation.

<Cooperation with Other Institutions/Coordination with International Frameworks>

Any cooperation/coordination with donors or international frameworks was not clearly planned at the time of ex-ante evaluation.

<Evaluation Result>

In light of the above, the coherence of the project is ③.

[Evaluation Result of Relevance/Coherence]

In the light above, the relevance/coherence of the project is ③.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

At the time of project completion, the Project Purpose was mostly achieved as planned. Most instructors in charge of the vocational education courses of the agriculture and livestock sector were using the curricular documents developed by the project (Training Modules, Teaching Plans, and Didactic Materials) in their classes (Indicator 1). The following guidelines developed by the project were officially approved by INATEC before the time of project completion: i) "Writing Know-How" for Developing Students' Textbook, ii) "Video Materials Production Process and Methods," iii) "Guidebook on the implementation of cascade training for INATEC instructors," iv) "Graph Line Methodological Guide," and v) "Integrated Agricultural Technical Training Program and Technical Verification Criteria."

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

By the time of ex-post evaluation, the project effects have been continued. In 2022, all of the 221 instructors of the Bachelor's Degree in Agricultural Technology, General Agricultural Technology, General Agronomy Technology and General Animal Husbandry Technology courses used the curricular documents in their classes. They attend 194 groups of 4 technical careers, teaching a total of 4,890 technical students of all shifts in 16 Technological Centers. Normatively, all instructors have used the curricular documents, as it was evidenced in the instructor's notebook of each module in the ex-post evaluation survey.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

At the time of ex-post evaluation, the Overall Goal has been achieved beyond the plan). INATEC has continued reviewing and revising didactic materials according to the methodology developed by the project (Indicator 1). Periodic updates depending on the course duration (by one year and a half or two years) have been carried out through technical roundtables with the private productive sector to make appropriate technological adjustments. Technical training for instructors has continued (Indicator 2). Training courses have been always monitored. Also, webinars were conducted in 2020 and 2021 when the COVID-19 infections were spread. Training topics have varied, such as apiary management, assembly of secondary piping and irrigation emitters and livestock farm management in 2021. Training has been conducted based on the annual training plan for INATEC as part of the annual operating plan of the National Center for the Training of Instructors and Teachers. More than 80% of the students of the General Agriculture and Livestock Engineer Courses passed the evaluation at the end in 2019, 2020 and 2021 (Indicator 3).

<Other Impacts at the time of Ex-post Evaluation>

The following positive impacts have been confirmed in the ex-post evaluation. First, INATEC has invited groups which have specific interests including gender promotion groups to the sectoral technical roundtables. It has also organized technical round tables involving students, women's groups and ethnic groups. These efforts of INATEC have contributed to the reflection of situations of all productive social sectors in the national technological curriculum. For example, taking up situations of the indigenous communities, the curriculum has been adjusted to their natural and agro-ecological conditions. Second, based on the shared project experience such as methodologies for manual development and cascade training with other courses, the students' performance of the General Technician in Agronomy, the General Technician of Zootechnique and the Agricultural and Livestock Technical Baccalaureate has been improved. The percentage of the students who passed the evaluation at the end increased from 2019 to 2021.

<Evaluation Result>

In light of the above, the effectiveness/impact of the project is ④.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results	Source
(Project Purpose) INATEC instructors can teach the appropriate agriculture and livestock technologies at their class.	1. Instructors in charge of the vocational education courses of the agriculture and livestock sector use the curriculum documents elaborated and revised by the Project (Modules, didactic Planning, Didactic Materials) in their classes.	<u>Status of the achievement (Status of the continuation): Almost achieved as planned (continued).</u> (Project Completion) ● Monitoring results of April-May 2018 showed: 1. 87.1 % of instructors had the modules of 2018. 2. 96.8% of instructors had the didactic planning of 2018 and conducted the class based on the planning. 3. 98.4% of instructors used some didactic materials in the class. (Ex-post Evaluation) ● In 2022, among 221 instructors: 1. 100% of instructors had the modules. 2. 100% of instructors conducted the didactic planning. 3. 100% of instructors used the didactic materials in the class.	Project Completion Report. INATEC.
(Overall goal) Appropriate technical	1. INATEC continues the elaboration and revision of	<u>Status of the achievement: Achieved.</u> (Ex-post Evaluation)	INATEC

¹ "Improvement of Cattle Productivity for Small and Medium Scale Farmers Project in the Republic of Nicaragua (2005-2010), Project on Diffusion of the Sustainable Agricultural Technology for Small Farmers. (2008-2013).

instructions in agriculture and livestock sector have been continuously taught at CETAs in order to contribute to improve technical education of INATEC.	didactic materials according to its necessity and continuously carries out the evaluation after its use.	<ul style="list-style-type: none"> Materials have been evaluated and updated in 2020 and 2021, including Training Modules, Teaching Plans, Didactic Materials and didactic videos to strengthen the teaching-learning process, by reflecting opinions of not only instructors and students, but also the private productive sector. 																	
	2. Agriculture and livestock technical training (theoretical and practical) is carried out in a sustainable way, to the instructors of the Agriculture and Livestock Technology Teaching Centers (CETAs)	<p><u>Status of the achievement: Achieved beyond the plan.</u> (Ex-Post Evaluation)</p> <ul style="list-style-type: none"> In 2019, four technical training courses were conducted for a total of 50 instructors of 25 CETAs. Two educational videos were produced. In 2020, two training courses were conducted for a total of 26 instructors of 15 CETAs. Also, two webinars were conducted (3,500 participants). 13 technical training courses were conducted for a total of 196 instructors in 2021. 	INATEC.																
	3. At least 80% of the students of the General Agriculture and livestock Engineer courses, approve the evaluation that is applied at the end of each module.	<p><u>Status of the achievement: Achieved beyond the plan.</u> (Ex-post Evaluation)</p> <ul style="list-style-type: none"> More than 80% of the students of the General Agriculture and Livestock Engineer Courses passed the evaluation at the end in 2019, 2020 and 2021. <table border="1" data-bbox="676 607 1321 763"> <thead> <tr> <th></th> <th>No. of students who took the evaluation</th> <th>No. of students who passed the evaluation</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>2019</td> <td>382</td> <td>329</td> <td>86%</td> </tr> <tr> <td>2020</td> <td>375</td> <td>334</td> <td>89%</td> </tr> <tr> <td>2021</td> <td>610</td> <td>562</td> <td>92%</td> </tr> </tbody> </table>		No. of students who took the evaluation	No. of students who passed the evaluation	%	2019	382	329	86%	2020	375	334	89%	2021	610	562	92%	INATEC.
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3 Efficiency

Both the project cost and the project period were within the plan (ratio against the plan: 70% and 100%, respectively). Outputs were produced as planned. Therefore, the efficiency of the project is ④.

4 Sustainability

<Policy Aspect>

Production at the field level and also vocational training have been prioritized in the national development plan “National Plan for Fighting Poverty and Human Development” (2022-2026). Vocational training of the agricultural and livestock sector has supported also by the “General Education Law” (Law 582) (2006) and “Regulatory Law of INATEC” (Law 1063) (2021).” It is expected that these laws would be continuously effective.

<Institutional/Organizational Aspect>

INATEC headquarters and 15 CETAs have sustained the structure for providing quality vocational training and implemented the Annual Operation Plan. At the headquarters, the Curriculum Department of the Directorate of Educational Programs has been responsible for curricular and material development, through the technical roundtables, based on the Technical Standards of Labor Competencies. The Curriculum Department was reorganized in 2020, consisting of 20 public officers (14 Professional Training Specialists, 2 Layout Designers, 2 Secretaries, 1 Department Head and 1 Educational Program Director). The number of the officers has been sufficient for fulfilling the responsibilities. 311 instructors were hired to attend the Agricultural and Livestock Technical Baccalaureate, General Agricultural Technician Course, General Technician in Agronomy Course, and General Technician in Zootechniques Course in 2021. The instructors have been able to focus on the subjects in their area of expertise. Classes of CETAs have been supervised by the technical-teaching assistant director, the area chief and methodology experts three times per month. There has been no plan for changes in this organizational setting.

<Technical Aspect>

Instructors have sustained sufficient skills, as they have been trained by INATEC's National Training Center for Instructors to guarantee the quality of technical education and training. Training opportunities have been open to also instructors from private centers and other public organizations who meet the entry requirements. The guidebooks and textbooks developed by the project have been utilized, including "Writing Know-How" for developing students' textbook and “Video Material Production Process and Methods.” Based on these resources, INATEC developed 29 didactic videos, 2 webinars, 2 other educational materials and 7 Podcast from 2019 to 2021. Instructors and students of CETAs have been able to access to the necessary guidebooks and textbooks, either physical or digital, through the portal site, PortalTEC. In order to maintain sufficient technical competencies, INATEC has institutionalized the materials developed by the project and made them digitally available, and it would continue training and monitoring processes in each center.

Table: Budget of INATEC (million Nicaraguan Córdoba)

	2019	2020	2021	2022	2023 (plan)
Programmed	1,425	1,499	1,637	1,780	2,124
Executed	1,362	1,291	1,637	544	NA

Note: The executed budget of 2022 was for the first four months. The planned budget of 2023 was in the approval process at the time of ex-ante evaluation.

Table: Budget allocated to CETAs in the agricultural sector (Nicaraguan Córdoba)

	2019	2020	2021	2022
Allocated	5,521,071	4,389,341	5,669,341	6,350,551

<Financial Aspect>

INATEC has continuously secured the necessary budget for curriculum/textbook development and instructor training, as the budget has been increasing, despite the country's socio-political crisis and the COVID-19 pandemic. Also, CETAs have received the necessary allocation to guarantee technical education and training, covering teaching materials, supplies, infrastructure, salaries for teaching and administrative staff, etc. According to INATEC, the cost for reproducing the students' textbooks have been included in the budget of 2023. As the budgets have been increasing, financial backup would be expected.

<Environmental and Social Aspect>

No issue on environmental and social aspect related to the vocational training of INAEC has been observed and it has not been necessary to take any countermeasures.

<Evaluation Result>

In light of the above, no problem has been observed in terms of the policy, institutional/organizational, technical, financial and environmental and social aspects. Therefore, the sustainability of the project effects is ④.

5 Summary of the Evaluation

The project mostly achieved the Project Purpose which was to strengthen teaching techniques of INATEC's instructors of the agriculture and livestock sector. Since the project completion, the Overall Goal has been achieved, as all of them have continuously used the curricular materials revised by the project. INATEC has continued the curricular and material development and training of CETA instructors, where more students have passed the evaluation at the end of the class. Considering all of the above points, this project is evaluated to be highly satisfactory.

III. Non-score Items

Adaption and Contribution:

- During the project period, JICA Nicaragua Office had close communication with the Directors' Committee of INATEC regarding the project progress along with the project design and the operational plan. Before the project was completed, JICA Nicaragua Office and INATEC developed the action plan to sustain the project effects with the "Monitoring Sheet for Completed Projects" which was introduced for JICA technical cooperation projects by JICA Nicaragua Office in 2019. This close communication and the use of specific monitoring form and accompaniment have ensured the implementation of the action plan which has resulted in the continuation of effectiveness.

IV. Recommendations & Lessons Learned

Recommendations for Implementing agency:

- It is recommended to INATEC to motivate the instructors to refer to the methodological guides "Training of Teachers with the Cascade Model" together with "Technical Verification Criteria" so that they could conduct effective training based on their learning levels.
- It is recommended to INATEC maintain the "PortalTEC" so that the instructors and students could always access to the materials when they need, so that they could constantly use the information as didactic planning, defined training plans and support documents.

Lessons Learned for JICA:

- In this project, the Project Purpose was mostly achieved by the time of project completion. Since then, the project effects have continued and the Overall has been achieved beyond the plan. INATEC's efforts for sustaining the project outputs have been supported by JICA Nicaragua office. INATEC has developed the action plan to continue the project effects, and this has been monitored and supported through the monitoring sheet by JICA Nicaragua Office. Thus, for all projects it is effective to develop the action plan for sustainability with the implementing agency before the project is completed and monitor the implementation together. This kind of tool would strengthen the communication and trust with the implementing agency. Through the action plan, it is important to fully have agreement on what specific actions are necessary to achieve the Overall Goal and how the implementing agency monitors the progress with JICA office.



Instructors elaborating bio-inputs based on the textbook developed by the project at the Agricultura Center.



Workshop conducted in the General Agricultural Technology course.