Overview of Covid-19 Impact on Agriculture and Building Back Better through Sustainable Mechanization: The Case of the Philippines

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Proclamation No. 926 – (March 16, 2020)

Philippine President Rodrigo Duterte issued Proclamation No. 929 which: (a) declared the whole Philippines under a State of Calamity for a period of six (6) months from 16 March 2020; and (b) imposed an Enhanced Community Quarantine throughout the island of Luzon from 12:00 a.m. of 17 March 2020 to 12:00 a.m. of 13 April 2020, both effective unless earlier lifted or extended as the circumstances may warrant.

Covid 19 Impact to Agriculture

Restrictions on the Movement of People

Unhampered movement of all cargoes within, to, and from the entire Luzon.

Business establishments were closed except certain businesses, such as: (a) which provide basic utilities and critical services (e.g., water, electricity, internet, telecommunication, gas, garbage collection, funeral services); (b) involved in the production, processing and distribution of basic necessities (e.g., food, pharmacies / drugstores, banks); (c) capital markets (PSE).

Retailers are enjoined to sell products in quantities sufficient to meet a household’s needs for a maximum of seven days only.

Source: Donemark Calimon and Marvin Masangkay

Source: http://northernforum.net/da-cag-valley-hits-p1-9m-sales-from-kadiwa-ops/

Affected by the pandemic

- 7,190,000 ha farm holdings with around 5,562,577 farms (CAF 2012)
- DFA repatriated a total of 204,481 overseas Filipinos worldwide with 69,477 sea-based workers and 135,004 land-based workers. Most of them returned to the countryside.

Gross Domestic Product (GDP)

- Agriculture, forestry and fishing (AFF) posted a growth of 1.2 percent in the third quarter of 2020
- Palay, grew by 15.4%; Corn, by 4.1%; Support activities to agriculture, forestry and fishing, by 2.7%; Fishing and aquaculture, by 2.1%; and Mango, by 2.4%
- Livestock, which dropped by 7.7%; Poultry and egg production, 3.6%; Other animal production, 4.9%; Banana, 1.3%; and Coconut including copra, which by 2.0%

Source: https://globalnation.inquirer.net/191403/dfa-repatriated-more-than-200k-filipinos-overseas-during-pandemic
https://psa.gov.ph/nationalaccounts/sector/Agriculture,%20Forestry%20and%20Fishing?fbclid=IwAR3XaWzSBx82JZ4IuHSXuFLGRvSHvKYQj852LuhIJ9ac7Gp-vUOlMpD2ok
Mobility restrictions due to lockdowns resulted in quantity reduction in farm labor translated to overall reduction in agricultural output.

Reduced agricultural production caused by farmers’ limited access to farm inputs and markets to sell the produce.

First quarter of 2020 - reduction in aggregate volume of agricultural production estimated in 3.11 percent or 17.03 million tons.

Southeast Asia decline in agricultural farm labor affecting 100.77 million individuals. Reduction translated to 1.4 percent (USD 3.76 billion.) decrease in GDP of the Southeast Asian region.

Drop in agricultural labor force (ALF) in 2020 with a 1.4 percent drop from the ALF in 2019.

(Source: Gregorio and Ancog, 2020)

Global Food Security Index in Southeast Asia, 2015–2019
Source: The Economist Intelligence Unit (2020) as presented by Gregorio and Ancog, 2020
Six strategic areas towards attaining comprehensive agricultural mechanization development:

1. Promotion of appropriate agricultural and fisheries mechanization technologies to increase agricultural productivity for food security and safety and farmers income;
2. Improvement of the local assembling and manufacturing industry;
3. Development and enforcement of standards, testing and evaluation, and registration of agricultural and fisheries machinery;
4. Improvement of support services including marketing and credit facilities, research, training and extension programs, infrastructures, and postharvest facilities;
5. Implementation of agricultural and fisheries mechanization programmes; and
6. Provision of integrated support services to farmers and stakeholders for the successful operation and management of agricultural and fisheries mechanization projects.

Source: Rico, 2014
Source: https://www.officialgazette.gov.ph/2013/06/05/republic-act-no-10601/
Building Back Better through Sustainable Agricultural Mechanization

RA 10601 AFMech Law of 2013
Enabling Environment

## FUNDS ALLOCATED FOR AGRICULTURAL MACHINERY AND SMALL SCALE IRRIGATION PROJECTS

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NATIONAL RICE PROGRAM (P ’000)</th>
<th>NATIONAL CORN PROGRAM (P’000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agricultural Machinery</td>
<td>Small Scale Irrigation Projects</td>
</tr>
<tr>
<td>2011</td>
<td>1,000,000</td>
<td>584,922</td>
</tr>
<tr>
<td>2012</td>
<td>2,588,249</td>
<td>618,000</td>
</tr>
<tr>
<td>2013</td>
<td>2,197,743</td>
<td>1,280,000</td>
</tr>
<tr>
<td>2014</td>
<td>2,141,238</td>
<td>1,142,732</td>
</tr>
<tr>
<td>2015</td>
<td>850,880</td>
<td>1,338,381</td>
</tr>
<tr>
<td>2016</td>
<td>614,389</td>
<td>1,195,906</td>
</tr>
<tr>
<td>2017</td>
<td>2,016,700</td>
<td>2,871,088</td>
</tr>
<tr>
<td>2018</td>
<td>1,921,744&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1,992,849&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>2019</td>
<td>650,840</td>
<td>1,759,032</td>
</tr>
<tr>
<td>2020</td>
<td>890,638</td>
<td>997,494</td>
</tr>
<tr>
<td></td>
<td><strong>Sub-Total:</strong> 14,872,421</td>
<td><strong>13,780,404</strong></td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL:</strong> 36,298,494</td>
<td><strong>USD 753,373,306.38</strong></td>
</tr>
</tbody>
</table>

Source: General Appropriations Act as presented by NAFIAT, 2020

1 USD = 48.1813 PHP
08 December 2020
https://www.xe.com/currencyconverter
**NUMBER OF RICE AND CORN MACHINERY DISTRIBUTED BY DA**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Agricultural Machinery Distributed</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rice Program</td>
<td>Corn Program</td>
</tr>
<tr>
<td>2011</td>
<td>3412</td>
<td>75</td>
</tr>
<tr>
<td>2012</td>
<td>7718</td>
<td>486</td>
</tr>
<tr>
<td>2013</td>
<td>8005</td>
<td>644</td>
</tr>
<tr>
<td>2014</td>
<td>3052</td>
<td>811</td>
</tr>
<tr>
<td>2015</td>
<td>1622</td>
<td>1182</td>
</tr>
<tr>
<td>2016</td>
<td>2274</td>
<td>1265</td>
</tr>
<tr>
<td>2017</td>
<td>2687</td>
<td>1650</td>
</tr>
<tr>
<td>2018</td>
<td>1600</td>
<td>1428</td>
</tr>
<tr>
<td>2019</td>
<td>926</td>
<td>556</td>
</tr>
<tr>
<td></td>
<td><strong>31,296</strong></td>
<td><strong>8,097</strong></td>
</tr>
</tbody>
</table>

Source: DA Rice and Corn Programs as presented by NAFIAT 2020
## Government Support to Mechanization

### NUMBER OF SPIS PROJECTS DISTRIBUTED BY DA FOR THE PERIOD 2017-2020

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
<th>Region</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rice</td>
<td>Corn</td>
<td></td>
</tr>
<tr>
<td>CAR</td>
<td>12</td>
<td>6</td>
<td>R8</td>
</tr>
<tr>
<td>R1</td>
<td>19</td>
<td>8</td>
<td>R9</td>
</tr>
<tr>
<td>R2</td>
<td>11</td>
<td>15</td>
<td>R10</td>
</tr>
<tr>
<td>R3</td>
<td>12</td>
<td>13</td>
<td>R11</td>
</tr>
<tr>
<td>R4A</td>
<td>11</td>
<td>12</td>
<td>R12</td>
</tr>
<tr>
<td>R4B</td>
<td>11</td>
<td>3</td>
<td>R13</td>
</tr>
<tr>
<td>R5</td>
<td>17</td>
<td>-</td>
<td>BARM MM</td>
</tr>
<tr>
<td>R6</td>
<td>8</td>
<td>2</td>
<td>Sub-total:</td>
</tr>
<tr>
<td>R7</td>
<td>13</td>
<td>-</td>
<td>TOTAL:</td>
</tr>
</tbody>
</table>

Source: BAFE Feb. 2020 as presented in NAFIAT 2020
Government Support to Mechanization

RA 11203 – Agricultural Tariffication Law of 2019
RCEF - Rice Competitiveness Enhancement Fund

To fund key interventions such as mechanization, seeds, financing, and other strategic interventions that will improve productivity and competitiveness, enhance the value chain and increase farm incomes.

Four Key Programs of RCEF

1. Rice farm machinery and equipment
2. Rice seed development, propagation and promotion
3. Expanded rice credit assistance
4. Rice extension service

Government Support to Mechanization

DEPARTMENT OF AGRICULTURE- AO 27 S. 2020

5 August 2020

ADMINISTRATIVE ORDER
No. 27
Series of 2020

SUBJECT : ESTABLISHING THE FARM AND FISHERIES CLUSTERING AND CONSOLIDATION PROGRAM (F2C2) TOWARDS GREATER INCLUSIVE AGRI-BUSINESS DEVELOPMENT IN THE COUNTRY

(1) bring about economies of scale in Philippine agriculture production,
(2) ensure better access to markets, financing and investments for crops, livestock and fisheries ventures and development projects,
(3) strengthen the active role and contribution of farmers and fishers to the economy, and
(4) accelerate agriculture growth and countryside development;

The **F2C2 program** seeks to advance the interest and condition of Filipino small farmers and fishers by encouraging them to adopt the strategy of clustering and consolidation of their production, processing, and marketing activities as community business enterprises, including the pooling of assets, labor and other resources in order to:

<table>
<thead>
<tr>
<th>(e) Ensure greater availability and wider utilization of agri-aqua technologies, farm mechanization, logistics and transport support, and post-harvest facilities;</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Effectively achieve and benefit from economies of scale in commodity production;</td>
</tr>
<tr>
<td>b) Forge stronger linkages among farm and fish producers to their commodity’s markets and the bigger global value chain;</td>
</tr>
<tr>
<td>c) Improve the bargaining and market power of primary farm and fishery producers;</td>
</tr>
<tr>
<td>d) Establish better access to sources of credit and financing and investments, and as well better access to domestic and export markets;</td>
</tr>
<tr>
<td>e) Ensure greater availability and wider utilization of agri-aqua technologies, farm mechanization, logistics and transport support, and post-harvest facilities;</td>
</tr>
<tr>
<td>f) Encourage active “Big Brother-Small Brother” partnerships, joint ventures, and contract growing arrangements between Farmers Cooperatives and Associations (FCAs) and the much larger corporate enterprises and attract more private investments towards the agriculture sector;</td>
</tr>
<tr>
<td>g) Effectively raise the overall productivity of the sector and the incomes of Filipino farmers and fishers.</td>
</tr>
</tbody>
</table>
Covid 19 Impact to Agriculture

The Bayanihan to Recover As One Act or the Bayanihan 2 Law (RA 11494 – July 27, 2020) allocated ₱24 billion to the DA for direct cash assistance and low-interest rate subsidies to qualified farmers, fisherfolk, and agri-fishery enterprises.

Senate Bill No. 1927 or the Cash Assistance for Filipino Farmers Act of 2020 (December 7, 2020)

- Department of Agriculture (DA) to use excess revenues from the ₱10 billion Rice Competitiveness Enhancement Fund (RCEF) in giving cash aid to farmers
- The Bill also states that only farmers who own one hectare or less of rice land are eligible to receive the financial aid
- In November 2020, DA and DBP signed a memorandum of agreement to distribute ₱5,000 cash assistance for almost 900,000 farmers affected by the COVID-19 pandemic. Each farmer-beneficiaries are slated to receive ₱3,000 in cash and ₱2,000 worth of food items.

Implementability of Contiguous Farming in the Philippines

RA 10601: Section 34

Enabling Environment for the implementation of Contiguous Farming in the Philippines.

Source: Amongo et al., 2019
RESEARCH INSTITUTIONS

ASSESSMENT OF THE LEVEL OF MECHANIZATION OF THE RICE AND CORN PRODUCTION AND POSTPRODUCTION SYSTEMS IN REGION IV

The MAMI has been adopted as national policy by the DA in November 2017 to determine the level of mechanization in the country

Source: Amongo, et al., 2018; Amongo et al. 2019

Mechanization requirement in the production systems to achieve the ideal level of mechanization

Identified mechanization gaps and interventions

Policy recommendation/support to attain the required level of mechanization

Protocol/procedure for conducting assessment of the level of mechanization in other Regions of the Philippines
To enhance the effectiveness and optimize the DA’s investment on mechanization through improved planning, efficient procurement and distribution and sustained utilization of farm machinery through the adoption of site-specific and appropriate AMTs in the agricultural production and postproduction systems.

**EXPECTED OUTPUTS**

- Protocol/procedure for the selection of appropriate AMTs
- Appropriate AMT schemes for efficient utilization in the rice, corn and selected HVC production systems
- Sample Map of Appropriate AMT scheme for one commodity
- Policy recommendation/strategies on the selection of appropriate AMTs as component of the different DA Banner programs

Source: Amongo and Gallegos, 2020
IDENTIFYING SUITABLE SITES FOR SMALL SCALE IRRIGATION PROJECTS (SSIPs) IN REGION IV-A (CALABARZON) THROUGH GIS-BASED WATER RESOURCES ASSESSMENT

RDE Agenda Addressed

- Mitigating climate change and improving the adaptive capacity of farmers through provision of relevant technologies and information
- Increase rainwater use efficiency and water availability in rainfed areas through rainwater conservation and rainwater harvesting interventions
- The research project focuses on the development of an integrated geographic information system (GIS) and Remote Sensing (RS) framework for assessing suitable sites of SSIPs.

HUMAN RESOURCE DEVELOPMENT


<table>
<thead>
<tr>
<th>RICE</th>
<th>Mechanized</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>4WT-HT</td>
<td>1.63</td>
<td>5.09</td>
</tr>
<tr>
<td>Transplanter</td>
<td>7.0</td>
<td>22.47</td>
</tr>
<tr>
<td>Combine Harvester</td>
<td>2.5</td>
<td>27.22</td>
</tr>
<tr>
<td>Total</td>
<td>11.13</td>
<td>54.78</td>
</tr>
<tr>
<td>% Decrease in man-day requirement</td>
<td>(79.68)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CORN</th>
<th>Mechanized</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>4WT</td>
<td>1.13</td>
<td>6.45</td>
</tr>
<tr>
<td>Mechanical Seeder</td>
<td>0.61</td>
<td>7.18</td>
</tr>
<tr>
<td>Combine Harvester</td>
<td>1.71</td>
<td>22.40</td>
</tr>
<tr>
<td>Total</td>
<td>3.445</td>
<td>36.03</td>
</tr>
<tr>
<td>% Decrease in man-day requirement</td>
<td>(90.44)</td>
<td></td>
</tr>
</tbody>
</table>

Sec. 4 No. 14 of Republic Act 7607 (Magna Carta for Small Farmers) defines a “farm worker” as a natural person who renders service value as an employee or laborer in an agricultural enterprise or farm regardless of whether his compensation is paid on a daily, weekly, monthly or pakyaw basis.” For the purposes of the recommended policies, farm workers are further classified as being landless and whose contribution is purely farm work.

Farm workers are the most vulnerable sector in the drive of the government mechanization values chain. They do not have direct access to programs of the DA nor they are eligible for subsidies afforded to farmers;

Shift of farm workers from the agriculture sector to the industry and services sector especially during off-peak season in the farm

<table>
<thead>
<tr>
<th>% OF RESPONDENTS REPORTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>RICE</td>
</tr>
<tr>
<td>Land Preparation</td>
</tr>
<tr>
<td>Planting</td>
</tr>
<tr>
<td>Manual Harvesting</td>
</tr>
<tr>
<td>Threshing</td>
</tr>
<tr>
<td>CORN</td>
</tr>
<tr>
<td>Land Preparation</td>
</tr>
<tr>
<td>Planting</td>
</tr>
<tr>
<td>Manual Harvesting</td>
</tr>
<tr>
<td>Shelling</td>
</tr>
</tbody>
</table>

Source: Rodulfo, et al., 2020
MANUFACTURING

Roadmap to Transform the Philippine Agricultural Machinery Manufacturing into a Competitive, Productive, Innovative and Sustainable Industry

To craft a roadmap to transform the Philippine agricultural machinery manufacturing into a competitive, productive, innovative and sustainable industry.

Expected Output

A realistic, cohesive and integrative Industry Roadmap for the development and advancement of the local agricultural machinery manufacturing industry for increased competitiveness, growth, innovation and sustainability.

Source: Rodulfo, et al., 2020

Open Systems Design Tractor (Oggun)
Source: Amongo, 2020 – Photo Gallery
**Banking System and Financial Support to Agricultural Mechanization**

**Private Banking Institutions**
- Private Commercial Banks
- Rural Banks
- Private Development Banks
- Stocks Savings and Loan Associations

**Government Banking Institutions**
- Development Bank of the Philippines
- Land Bank of the Philippines
- United Coconut Planters Bank (UCPB)

**Government Financial Support**
- From GAA Funding
- Banner Programs
- Rice Competitiveness Enhancement Fund (RCEF)
- Agricultural Credit Policy Council (ACPC)

Source: Amongo, 2020
**NGOs/POs/PRIVATE SECTOR**

**Private Sector as partners in sustainable agricultural mechanization**

Involve in **policy formulation** as members of the Committee on Agricultural and Fisheries Mechanization (CAFMech) of the Department of Agriculture.

Providers of **local and imported AFMTs (AMMDA)** which propel the agricultural sector in providing food, feed, fiber and fuel to Filipinos.

Collaborators in the **R&D efforts** to address the gaps and issues for agricultural mechanization development.

Extension agents responsible in the diffusion and utilization of AFMTs in the entire the country.

**Private Sector** serve as partners of farmers, fisherfolks, public sector and the government in attaining sustainable agricultural mechanization.

Source: Amongo, 2020
COVID 19 Impact on Agricultural Mechanization

Despite of its ill effects to the world (economic shocks, lockdowns, restricting mobilities, restricting agricultural production value chains, etc) COVID 19 Pandemic can also be viewed as a propeller for sustainable agricultural mechanization in the country. Among others, through:

- Additional financial support from the government
- Additional government programs on agricultural mechanization
- Increased funding for RDE activities
- Boost the manufacturing, trade and investment of agricultural mechanization technologies (AMTs)
- Increased government assistance to financing institutions

... for food security and sufficiency and for building back better through sustainable agricultural mechanization....
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RA 11203. An Act Liberalizing the Importation, Exportation and Trading of Rice, Lifting for the Purpose the Quantitative Import Restriction on Rice, and For Other Purposes


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https://globalnation.inquirer.net/191403/dfa-repatriated-more-than-200k-filipinos-overseas-during-pandemic
Thank You!