

INTEGRATING SCIENCE-BASED TOOLS AND APPROACHES FOR RURAL DEVELOPMENT

THE CASE OF RURAL DEVELOPMENT PROJECT IN THE PHILIPPINES

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Abstract

The implementation of a rural development program at national level has been designed to establish the government's platform for a modern, climate-smart, and market-oriented agri-fishery sector while institutionalizing reforms for improved operations in the agriculture sector. The implementation lessons and best practices from the development program implemented in Mindanao have achieved outstanding performance in espousing accountability, transparency, and good governance. These best practices are being adopted and expanded in the rolling out of national program for rural development through introduction and establishment of project innovations that espouse climate change (CC) resilience, commodity value chain, and modernized agricultural practices through employing science-based tools and approaches. The vulnerability and suitability assessment (VSA), expanded VSA (e-VSA), and applied geotagging technology are noble and first-of-its-kind initiatives of project implementation in agriculture in the Philippines. The collaboration of geospatial tools has technologically upgraded the agriculture sector's manner of decision-making in terms of identifying investments and programming resource allocation in agriculture.

Policy framework context

The Philippine agriculture sector has been marked by the continuing challenges of urbanization and modernization occurring in the country. In its thrust of uplifting its implementation design in order to respond to these indispensable challenges of development, the Philippine agriculture sector has prompted to formulate and adopt strategies that showcase its overall strategic framework toward agriculture modernization and development aimed to be both locally and globally competitive. This framework is governed

by relevant policies and guidelines that collectively provide a holistic approach toward attaining the goals of food security and self-sufficiency, income enhancement and profitable market surplus, modernized and sustainable agriculture and fisheries practices, natural resource management, climate change (CC) resilience, and local development. The Agriculture and Fisheries Modernization Act (AFMA) of 1997 mandates the Philippine's Department of Agriculture (DA) to formulate the Agriculture and Fisheries Modernization Plan (AFMP) that provides the implementation road map to achieve inclusive

growth and climate-smart agriculture. The central goal of the AFMP is to raise rural incomes, create employment, and improve the competitiveness of the agriculture and fisheries sector through a value-chain, market-oriented, and integrated service delivery approach. The AFMP is the translation of the national goals, agenda and policies into strategic programs, and projects in agriculture context. As such, it should be the continuing basis and consistent context for the agriculture sector's investment programming, annual plan and budget proposals, and fund allocation across operating units and functions. The national AFMP that looks into nationally relevant agricultural commodities and products is being cascaded locally and is translated into regional AFMPs that create and implement agricultural programs responsive to area-specific needs. The effectiveness and value of the local AFMPs is advocated as the authoritative plan and is promoted for adoption by all stakeholders, particularly the local government units, as the common basis for local planning. This manifests a devolved planning and programming of investments approach that takes a shift from the usual modality of "top-down" business practices of the DA. More importantly, the AFMP has also initiated a shift from resource-based to technology-based industry. On another note, the Philippine Development Plan (PDP) 2011–2016 sets forth the overall direction and framework of the country's agriculture and fisheries development within this 6-year span. It aims to align strategies of all sectors toward attaining inclusive economic growth, massive job creation, and poverty reduction. It focuses on achieving a competitive and sustainable agriculture and fisheries sector characterized by improved food security and increased rural incomes, enhanced sector

resilience to CC risks, and enhanced policy environment and governance. In support to the PDP 2011–2016 and AFMP strategic goals, the agriculture sector has adopted the Agrikulturang Pinoy (Agri-Pinoy) program as an approach that complements the overriding national agenda of poverty alleviation, particularly in rural areas where majority of the country's poor live and depend upon agriculture and fisheries livelihoods. The Agri-Pinoy now advances the principles of inclusive growth, food staple sufficiency, natural resource management, and area-based development. It includes strategies to (1) institutionalize regionally-based, spatial planning; (2) develop a systems approach for both planning and resource allocation; (3) provide the critical infrastructure needed by priority value chains; and (4) building a more resilient production base to accommodate fluctuations in global markets and effects of CC (i.e., through climate-smart agriculture). The Agri-Pinoy sector strategy strongly articulates the significant shift from “top-down” practices to “bottom-up” kind of engagement while instituting and revolutionizing into a modernized way of agricultural practices and innovations for rural development. Although the shift in engagement strategy, agricultural planning considers the combined “top-to-bottom” and “bottom-up” approaches to planning and programming that run parallel with the achievement of modernization strategies of the AFMP. This two-pronged approach will help ensure that the sector's budgetary resources will be prudently allocated to priority programs, projects, and activities that are supportive of the PDP 2011–2016 goals and strategies for the agriculture and fisheries sector. Top-to-bottom planning defines the national goals, policies, and directions for the sector. Bottom-up planning involves the participation of the communities thereby ensuring plan ownership by the stakeholders. It also empowers the local government units, to respond to the felt needs of their constituencies by proposing specific interventions and areas of investments from both the local government and from the agriculture sector.

Introduction of ICT in project monitoring and supervision

The agriculture sector remarkably commenced institutional and operational reforms when the World Bank-assisted Mindanao Rural Development Program (MRDP) was implemented in the southern islands of the country since 2000. The implementation of the development program in Mindanao has been confronted with many challenges ranging from perceived corruption, site inaccessibility, difficult monitoring and evaluation activities, and the rest. Despite transparency measures being adopted and established in implementation, the prevailing bottlenecks on the capacity and governance in project implementation by the local government units has remained a challenge. Moreover, the prevailing peace initiatives particularly in conflict-affected areas in Mindanao as well as those hard-to-reach subproject sites need due attention for a continued monitoring and supervision of the better economic opportunities provided by the project without compromising the integrity of its established transparency. In a span of almost 14 years (2000–2014), the project has its share of multi-variated implementation issues while continuing to carry out its goals to provide development opportunities and effect positive change in this side of rural community in the country. In 2010, the problem on project monitoring and supervision was highlighted during the World Bank Supervision Mission that exposed issues on implementing rural infrastructure projects, particularly excess contract costs against the indicative cost, absence of construction activity on site, and overstated physical accomplishments. These infrastructures supposedly provide linkage from production areas to market as well as boost up production yields of agricultural farms and provide support to post-harvest facilities. Further, implementation weaknesses were underscored that included the absence of a structured monitoring system to identify the locations of the widely dispersed subprojects, poor documentation of technical proposals (i.e., feasibility study and detailed engineering

designs), deficient construction/supervision implementation arrangements, the lack of document to confirm whether there were no discrepancies between the actual elevations and those indicated in the plans, and many other technical deficiencies and irregularities. Consequently, this resulted to cancellation in the implementation of three subprojects, and then instituted measures toward strengthening the feasibility study processes, detailed engineering designs, and implementation capacity of the regional offices and the local government units. With these overwhelming operational and institutional issues, the project was pressingly prompted to develop an innovative strategy to strengthen its transparency mechanism and in monitoring, validation and evaluation of project implementation. As a result, the project sought out-of-the-box, new-age idea, and forward-thinking resolution to these challenges of rural development implementation.

In 2011, the MRDP launched the innovative strategy in enhancing project monitoring, supervision, and validation using the applied geotagging technology (AGT) or simply geotagging. The geotagging tool provides a facility that is low cost, competent, and technologically advanced in addressing Monitoring & Evaluating (M&E) constraints and bottlenecks. Geotagging, also called geolocation, is the practice of associating a digital resource (e.g., photos, videos, website, SMS) with a physical location. Location information is typically given in terms of latitude and longitude coordinates, which can pinpoint any place on earth with a high degree of precision. The AGT is a web-based or Internet application compiled to digitally complement project implementation on the ground. It combines engineering review tools and supervision experiences with location based on digital technologies (i.e., GIS, GPS, geotagging) resulting in a project that can be viewed in its actual location and its physical progress and seeing the total developmental impact of the subproject as a whole in relation to its access, links, and influence areas. In rural development application, this data embedded in the facility known as Google Earth is

facilitated the establishment and specification of geotagging's minimum set of requirement (i.e., geotagging device, software, applications) as well as the standard procedures and guidelines in conducting geotagging works from data gathering in the field, annotating geotag data, data processing and banking, and online presentation of geotag outputs housed/linked in the project's official website, including the needed capacity building of personnel involved in geotagging works. The textualization of the geotagging technology manual is another challenge, considering the wide range of project types and the corresponding and distinct features of each type of project for implementation. While the rural infrastructure (FMRs, bridges, potable water system, irrigation and postharvest facilities) has been the initial focus to establish a standard system for geotagging, the geotagging requirement for micro-enterprise and livelihood projects has already been developed and established in order to document the existence and operations that cater to

the special considerations of each of the various features of the projects (i.e., animal dispersal and production, farm crop production, agricultural machineries for land preparation, crop establishment, and post-harvesting) implemented by the community beneficiaries. The geotagging schedule of each type of project facilitates showing of visual progress of project implementation controlled by the geotag photos depicting the overall development impact of the project and its comparative relationship with its surrounding influence areas.

The technology that is Google Earth-based tracking of projects has transformed the process of validation and monitoring of civil works and agri-fishery facilities. The collaboration of geotag photos provides online spreadsheet and graphical progress of the projects at various levels resulting in a web-based mapping system. The system also illustrates the status of project progress exhibiting the extent of their physical accomplishment that relates to the corresponding financial disburse-

ment of the project. The geotag data that is available online in real time supports request and facilitates the prompt release of payments to projects corresponding the actual physical (Figure 3).

Hence, it has paved for virtual monitoring of the real condition of the project sites without really conducting actual site visits. The development of geotagging tool has become the instrumental facility that is competent and technologically advanced in primarily addressing monitoring and evaluation activities, including elimination of fabrication of bogus and fraudulent project plans and designs, duplication, and splitting of project proposals. Since its formal introduction in 2011, various audiences such as the World Bank, government agencies, private sectors, community beneficiaries and other interested stakeholders signified their interest to learn and adopt the technology in their respective project implementation. The geotagging tool has upgraded the benchmark of implementing projects with greater transparency, accountability, and participation. The World Bank has also dubbed it as a revolutionary and inexpensive approach of using Information and Communication Technology (ICT) applications. It has been recognized by the president of the Philippines as a significant tool for a transparent and publicly accountable government and was awarded a good practice award by the National Economic Development Authority in 2012. Moreover, the tool is becoming recognized internationally with the international paper contributions from the World Bank, while the tool also receives invitations for presentation from countries like India and Malaysia. Seeing the institutional and operational transformations that has picked up the implementation performance at the midterm of the rural development project in Mindanao, this has prompted the DA to take the initiative to roll out and adopt the technology in the whole agriculture sector as well as harmonizing the rules of engagement with partner local government units and other stakeholders that have been successfully espoused and established in Mindanao.

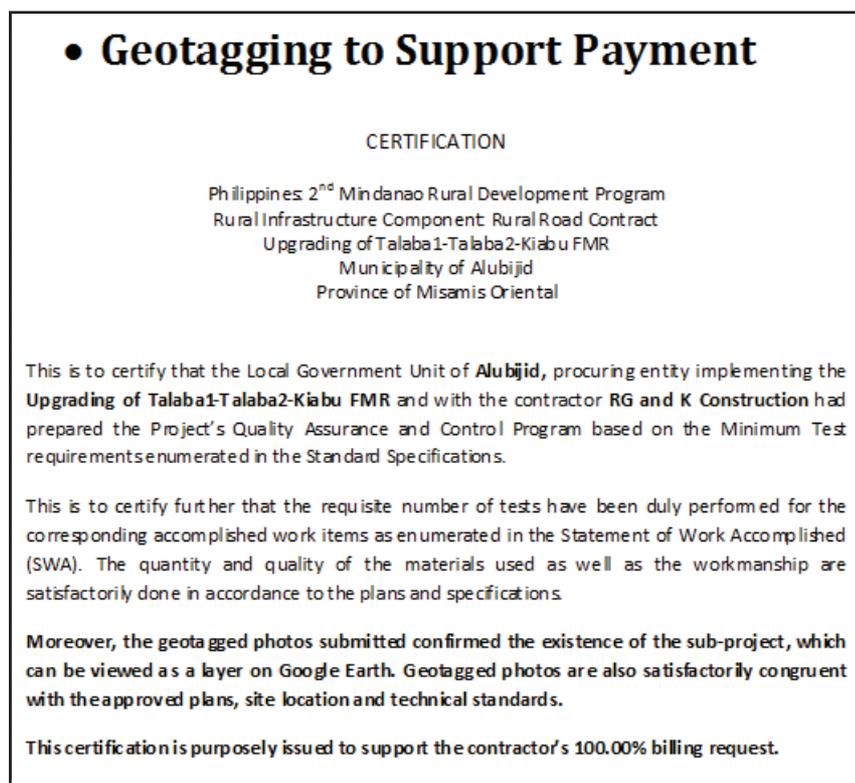


Figure 3: Sample certification as proof of quality compliance and support document for payment

Science-based tools for agricultural commodity development

The design of rolling-out a development project into a Philippine Rural Development Project (PRDP) throughout the country has been the offshoot of the best practices, implementation lessons, and successful engagement with the local government units by the rural development project in Mindanao. These best practices showcase the principles of accountability, transparency, and good governance in rural development. The significant spike in doing monitoring and evaluation using ICT has added greater credibility in doing business in a more technologically advanced approach. Built on these development reforms, these best practices are being adopted and expanded in PRDP along with introduction of further refinements and innovations that include CC resilience and commodity value chain through employing science-based tools in the design and setting up of enabling policy and strategic environment that provide operational platform for agricultural modernization and rural development. The need to make the sector sustainable and resilient has been a long-standing concern in the face of expanding land and water degradation and the realities of CC. The AFMP framework and guidelines call for the identification of innovative measures to respond to CC and mainstream CC adaptation and risk reduction in the various agriculture sector interventions by using improved tools for assessing CC vulnerability. The use of transparent, evidence-based, and innovative tools and approaches have been developed and tested by the agriculture sector including the vulnerability and suitability assessment (VSA), expanded VSA (e-VSA), value chain analysis (VCA) tools, rapid market assessments, and use of geotagging with geomapping. These tools shall help ensure technical validity, greater transparency and rationale in the planning and prioritization of infrastructure and enterprise development investments and across a wide range of public investments. Agro-industrial based enterprise development is one of the key contribu-

tory components of PRDP for agricultural development and toward achieving inclusive growth, job creation and increased farm and fishery productivity and incomes building on the existing policy framework. This constitutes engaging broad sections of the sector in the production of marketable surplus through investments in strategic segments of priority commodity value chains prioritized under the Regional Agriculture and Fishery Modernization Plan (RAFMP) and the Provincial Commodity Investment Plans (PCIPs), the latter being a strategic plan that rationalizes interventions within the various segments of the value chain of commodities significant to the development and realization of the local and national goals of the sector. It adopts the farm-to-table service delivery strategy being pursued under the Agri-Pinoy framework.

Commodity prioritization and planning tools and mechanisms

Prioritization of commodities with national importance is supported by the high value crops development program (HVCDP), which also includes fisheries and livestock to the list of commodities

for prioritization. The commodity prioritization tool is employed and shall be used in preparing the priority commodity list that shall be subjected to the VCA. One refinement introduced as an assessment tool to generate the data for prioritization of commodities is the use of combined VSA and the participatory resource appraisal–resource and social assessment (PRA–RSA). The VSA is a tool developed by DA's Bureau of Soils and Water Management (BSWM) as a guide to determine the vulnerability of a particular area that could affect the production and suitability of a particular commodity. The VSA particularly ranks areas (e.g., municipalities, provinces and regions) based on spatial multi-criteria analysis of agro-climatic data (i.e., land suitability, extreme climate events, and crop type), technically known as agro-edaphic suitability (AES), to determine its suitability to a given commodity. (Figure 4). It supports the creation of a VSA map based on the ranking of municipalities for prioritization.

In 2013, the DA has further expanded the VSA tool and launched the e-VSA project that takes into account socio-economic data, hence generating a new composite index from a combined analysis of VSA and socio-economic

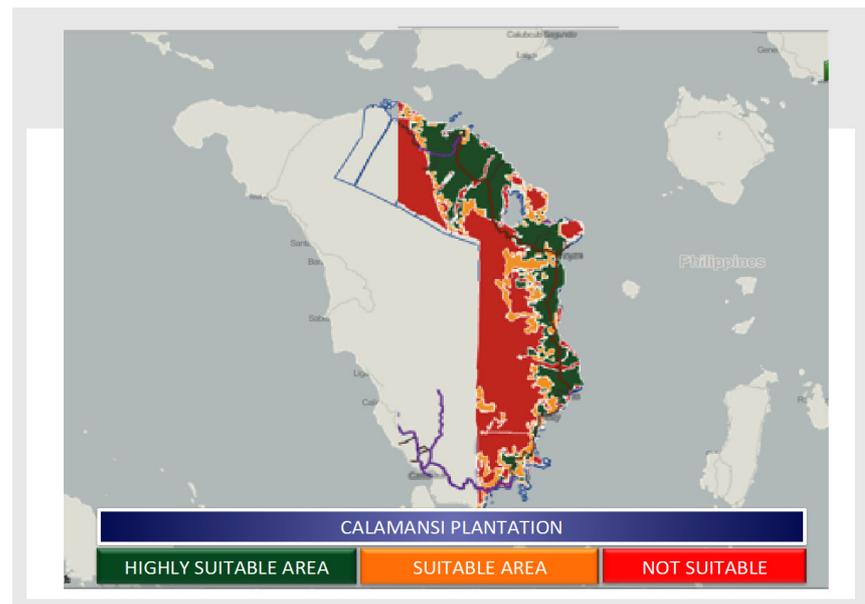


Figure 4: Calamansi (Philippine Lemon) suitability map of the province of Oriental Mindoro, Philippines.

parameters (e.g., poverty index, population, income, production area, number of farmers, among others) for enhanced planning and programming of allocation, resources, and investments. The areas being ranked are identified using the geocode that indicates the Standard Philippine Geographic Code of a locality. On the other hand, the commodity/ies that involve production areas under the global environment facility (GEF) sites where critical natural resource management interventions are deemed essential to enhance and sustain resource base of identified value chains, the PRA-RSA will be used as analysis framework. Participatory resource appraisal is based on a multidisciplinary approach to investigating rural communities in developing countries. It was developed as a way to gather and analyze information with limited time and resources that involves various techniques including secondary data review, semi-structured interviews, direct observation, conceptual models, and workshops. The rapid market appraisal (RMA), on the other hand, is an iterative and interactive research methodology, which is used to better understand complex market systems in a short time (Adapted from Young, 1994). It is a methodology that facilitates the identification of proper interventions or support programs to improve efficiency or strengthen the marketing system in a manner that would bring the broadest benefits to the most number of participants in the system. The focus of the RMA shall be on market size, market growth potential, ease of entry, and potential for value addition. A secondary data on the market may suffice when using the prioritization tool, while a deeper analysis of the market may be done during the conduct of the VCA of the priority commodity. VCA of prioritized commodities involves commodity experts, relevant national agencies (e.g., agrarian reform, environment and natural resources and trade and industry), state universities and colleges, top crop-producing local government units, and private sector representatives conducting the value chain study. A value chain is defined as the full

range of activities, which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final customers, and final disposal after use. The VCA report shall manifest a comprehensive report that identifies the key horizontal and vertical industry processes and key players, the needed investments and interventions, and market and business opportunities along the value chain with consideration to the result of the VSA and e-VSA and in-depth analysis of market appraisals and potential resource enhancement initiatives. The VCA report shall serve as basis of the proponent provincial local government units, being the point of entry of interventions, to identify potential agro-industrial enterprises that could be elevated into level 3 enterprises for full market integration, along with the implementation of appropriate rural infrastructure support that promotes a holistic development and marketable surplus enhancement of the priority agricultural crops. The rural infrastructures and enterprises investments are explicitly specified in the PCIP. The PCIP is a strategic plan that rationalizes the various interventions for the development/enhancement of priority commodities. With prudent and deliberate implementation, the VCA through the implementation of the PCIP shall essentially determine the value created in a product or service resulting from the determined set of value-adding processes and the participation of actors of the sector (i.e., farmers/fishers, private sector). Like any other plan, the preparation of PCIP shall be governed by the framework provided in the formulation of the AFMA in the context of the priority commodity. The integration of the science-based tools (VSA and e-VSA) and the technical assessment tools (RMA, PRA-RSA, and VCA) become the all-encompassing project analysis tool that facilitate a scientific project management decision-making approach in planning interventions, programming investments, and impartial allocation of resources for the development of the commodity.

Visualizing resource programming and potential investments

Transforming the data and result of the planning and prioritization of commodity investments using the science-based tools and approaches into explicit online maps better help planners and the management perceive and understand the relative importance and contribution to the overall development impact of commodity investments to its existing access, linkages, surrounding built-up structures, and influence areas. The use of geospatial tools through the application of geomapping and geocommons as mapping tools lay out the result of the prioritization mechanism into an online interactive map for better visual presentation of areas viable for investment. Geomapping as a spatial technique is used to represent geographical data (i.e., agricultural patterns, crop production, land suitability) into interactive visual mapping that displays data on a map hence, aids in targeting and prioritizing development interventions. In the context of prioritization, the tool is essential for the VCA to determine whether priority agricultural commodities are within the areas of value chain where investments are found to be feasible. The geocommons is a geospatial data management, visualization, and analysis platform providing collaborative, browser-based data analysis tools that can be used by both technical and non-technical users. Geocommons is also collaborated in the design to further maximize online analysis of data from the VSA, e-VSA and VCA, and other available data that will be converted into graphical representations and maps to determine strategic locations where intended project investments are to be established. These online maps are further enhanced through application of geospatial object color scheme and specifications on Google Earth that is standardized and customized to create a distinct feature and recognition to the overlaying geospatial objects ready for online viewing and presentation.

Integration and operationalization of science-based tools

To ensure the continuity and broadening of scope of the good practices started in the development project in Mindanao, the agriculture sector through the PRDP has initiated the full integration of the scientific planning, programming and allocation, and decision-making in the whole project implementation process. This particularly encompasses project conceptualization, safeguards requirement, project appraisal and validation, proposal preparation, procurement process, actual implementation, M&E, contract management, and operations and maintenance. The data from implementation are being translated into various platforms of documentations from actual fieldwork, print, and online and web-based system. Enhanced planning process and prioritization of commodity investments using science-based tools allocate resources to those interventions that have been identified through the VCA and included in the PCIPs. The use of various assessment tools such as the RMA, VSA, e-VSA, and PRA-RSA shall be done at the national and regional levels with the participation of the concerned provincial local government units or the municipal local government units, as applicable, to generate the commodity priority list. VCA and study shall be prepared for the priority commodities, the result of which shall be the basis for the preparation of the PCIP and interventions to be provided sup-

port. The priority interventions identified in the PCIP shall serve as basis in the identification of possible product segments or enterprises as prioritized by the proponent provincial local government that shall undergo business plan preparation as well as to pass through eligibility criteria in the selection of interested proponent group from the private sector that comes from the directory of industry players (e.g. producer groups, agri-processors, consolidators, exporters, etc.) identified in the value chain and included in the PCIP. Moreover, geotagging now becomes an integral requirement in the procurement process, as all approved projects ready for bidding are required to be geotagged. These geotag data are uploaded as part of the bidding documents primarily for interested contractors to initially and virtually see and study the actual location and condition of the project site. The web-based platform of procurement system is one of the key features in the PRDP website (www.daprdp.net) that facilitates online and real-time monitoring of the procurement process as well as flagging of relevant timelines at the various stages of implementation. Compliance to geotagging during actual project implementation facilitates the regular submission of geotag data at prescribed schedule such that the collaboration of these geotag data sequences that are regularly uploaded provides an online visual progress of the projects, viewed at the different scales (i.e., municipal, provincial, and national levels), provide the before-during-after activities of the project implementa-

tion, thus creating a web-based mapping and monitoring system. Moreover, geotagging of projects becomes a requirement to all implementing contractors to facilitate request for billing, compliance to personnel requirement, equipment, and processing facilities, among others. At the outset of the application of geotagging technology, it has never been in hiatus, in fact, its latest evolution is the development of an android mobile operating system (OS) dubbed as the "PRDP Geotagging Camera Application" that has increased the data authenticity and security. The ball has kept on rolling for the overwhelming request of technology transfer from the various national and local government agencies, local government units, private sectors, and civil society organizations who are mindful of the programs and interventions of the government. They are in the offing for training for the adoption of the technology. In summary, the science-based geospatial tools have provided avenues for strategic planning for implementing agricultural development intervention, transparent and informed project implementation, effective monitoring and supervision, identification and communication of implementation gaps and overlaps, and public feedback mechanism.

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Women's Entrepreneurship Development

The ILO's Women's Entrepreneurship Development programme (ILO-WED) works on enhancing economic opportunities for women by carrying out affirmative actions in support of women starting, formalizing and growing their enterprises, and by mainstreaming gender equality issues into the ILO's work in enterprise development. The ILO-WED approach is threefold, working with governments, employers' organizations, trade unions, and local community-based organizations to: create an enabling environment for WED that generates quality jobs; build institutional capacity in WED; and development of tools and support services for women entrepreneurs. It does so both through targeted approaches and gender mainstreaming, with a clear objective to contribute towards gender equality and women's economic empowerment.

ILO-WED works in partnership with constituents, relevant institutions, community organizations and other UN agencies. Currently, the ILO has projects across Africa, Asia and the Middle East. Special attention has been given to Developing Entrepreneurship among Women with Disabilities and mainstreaming disability into the ILO-WED work.

For more information, access:

<http://www.ilo.org/empent/areas/womens-entrepreneurship-development-wed/>