

Building Resilient Communities

by Strengthening Livelihoods and Giving People More Options

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Introduction

Partners for Resilience or PfR, is an Alliance of five-Netherlands based humanitarian, development and environmental organizations who joined together to reduce the impact of natural hazards on vulnerable communities. The five Netherlands-based organizations are CARE, Cordaid, Netherlands Red Cross, Red Cross/Red Crescent Climate Centre and Wetlands International is working towards the integration of disaster risk reduction (DRR), climate change adaptation (CCA) and ecosystem management and restoration (EMR) in its work. As PfR, we believe in our vision of resilience that puts communities at the centre by empowering them to strengthen their livelihoods; it connects disciplines by using the combined strength of organizations working in partnership; it expands their focus by encompassing wider ecosystems and considering wider timescales; it connects humanitarian and development focus.

- Incorporating climate and weather forecasts and ecosystem restoration activities into agricultural processes help rejuvenate soil conditions and increase income from livelihood activities
- Effective livelihood strengthening activities should include building capacities of communities to market and sell their products
- Through the 3R (Recharge, Retention, Reuse) approach, low cost and appropriate technologies in minimising drought risks are possible and very easy to replicate



Terracing to Minimize Landslide Risk & to Create Vegetable Plot
Photograph Courtesy Phoebe Pandyopranoto

In Southeast Asia, PfR was implemented in identified communities in Indonesia and the Philippines. Implement from 2011 to 2015, in Indonesia the main areas were two islands in East Nusa Tenggara (NTT) Province — Flores and Timor Islands. Care and Cordaid worked in Timor with their implementing local partners, namely, CIS Timor, and *Bina Swadaya Konsultan* (BSK) and *Yayasan Bina Tani Sejahtera* (YBTS) respectively. In these areas, the communities faced drought and landslides, thus the program has endeavoured help communities adapt to changing rain patterns and restore the ecosystems with a focus on improving community livelihoods.

In these areas, almost all of the community members are farmers who are rarely or never given any new set of skills to help improve their agricultural activities. Farmers rely on traditional agricultural techniques and are unable to overcome pest and plant diseases that attack their crops. The communities notice that the types of pests and plant diseases are now changing and their previous methods in dealing with them are no longer effective. These resulted into harvest failures, exacerbated by droughts. Farmers cannot just rely on income from agriculture and this has forced people, especially the youth, to seek employment outside of the villages, including the main cities, just to be able to work as factory labourers or domestic workers even though it is 3000 km away from their home.

Implementing PfR in the Province

Livelihoods and seed diversification

Due to these prevailing conditions, PfR's interventions have focused on helping farmers improve their livelihood options. The program has provided capacity building on planting techniques, plant rotation, diversification, soil treatment, plant maintenance, production of organic fertiliser, organic pesticide and the use of liquid fertilisers. Each organisation has also introduced livelihood options, such as post-harvest production and animal husbandry to enable communities to diversify their livelihood options. PfR has also provided capacity building to strengthen community organisations (self-help groups) and

cooperatives to enable them to manage their livelihoods. Farmers have also been taught how markets work, including means of production and savings and credit activities to assist them in gaining access to capital. Besides introducing planting techniques, YBTS has also introduced affordable seeds from the EWSI Corporation. These seeds have been produced to be able to withstand current plant diseases and pests. The EWSI's research and development department produces up-to-date seeds that can help farmers minimise the risk of pests that may attack their plants. Some of these seeds also require less water so they are suitable to be planted in locations that are prone to drought. This will reduce the risk of harvest failure for farmers as they are able to use better quality seeds.

The 3R Strategy

PfR partners have not only focused on livelihood strengthening activities but also on addressing hazards and risks that may impact negatively on communities and their livelihoods, taking into account the different timescales. In Timor, communities have been facilitated to implement risk-proof livelihoods through addressing the drought hazard. PfR used the 3R strategy in aiming to protect the availability of water for the whole year and minimise drought risks. 3R stands for (a) *Recharge* or adding water to the water buffers so it can improve infiltration capacity of the soil so that rain or run-off water can increase the available ground water; (b) *Retention* is a strategy to retain rain water when it is falling so that a community may have water stocks to be used at a later time either through stored containers or in the form of surface water or alternatively it can also be stored beneath the soil using artificial containers; and (c) *Reuse* or revolve water as much as possible by re-using household washing waste-water to be used for small scale irrigation.

Other measures undertaken by partner organisations and communities have helped to identify water sources and develop water distribution networks to channel water from sources to small scale reservoirs or containers located nearby to community agricultural fields. In addition, in order to help prevent landslides from occurring, PfR has supported communities to construct terraces on high



gradient land at risk from landslides. These terraces can also be used as additional planting areas for communities. This initiative has increased the area of crops in the villages and the communities are able to utilise the terracing for planting seasonal plants as well as cash crop trees, which all generate economic benefits.

Accessible and understandable weather and climate forecasts help strengthen livelihoods

Livelihood activities were further strengthened when weather forecasts were introduced to the communities. Communities had never had any weather forecasts, which contributed to why they had harvest failures in the past and why they planted during months when rainfall was not enough to water their rain-fed crops. Weather forecasts have not been distributed to farmers as they have difficulties in understanding and interpreting information in the weather forecasts that are produced by agencies cannot be understood nor interpreted by farmers.

BSK worked with *Bandung Technology Institute* (ITB), the *Meteorology Office*, *Yayasan*

Mitra Tani Mandiri (YMTM) and other stakeholders in TTS to produce monthly weather forecasts for villages in TTS. These weather forecasts will be produced on a monthly basis for the next 5 years. This information is very farmer-friendly and contains information on planting seasons and provides advice on what crops would be best suited to the in-coming rainfalls. In November 2014, for example, the rainfall in Tubuhue Village was suitable for planting green beans which the farmers planted and this was successful. The PfR communities in TTS District have been using the weather information to determine their planting months and which type of crops they will plant.

CARE established FILA (a Kupang District level Multi Stakeholder Climate Forum), which is a group that is responsible for collecting data on weather forecasts for Kupang District. The data contains explanations so that farmers in Kupang District are able to use it and disseminate this information at the community level. YBTS has worked with the Metrological Agency in Kupang to ensure that information is accessible to farmers using simple graphs to communicate in-coming rain-falls. All of the partners have applied

different approaches with the common aim to ensure that farmers have easy access to information on rainfall forecasts that can be used to assist them in making climate-smart choices in terms of what crops to grow and when to grow them.



Infused Irrigation
Photograph Courtesy Care and CIS Timor

Ecosystem restoration and livelihoods

Partners have continued to emphasise the importance of restoring ecosystems in order to ensure availability of water for the future. Conservation measures have been applied in all villages under the PfR. Conservation activities have been coupled with sustainable tree planting and management, which has assisted in creating new livelihood options. The ecosystem restoration measures have also helped rejuvenate soil fertility and improve soil productivity. This was proven by Oinlasi farmers who were able to grow the first vegetables in Oinlasi in unfertile sandy soil.

Positive impacts on the communities

Implement low cost technology to protect their livelihoods

To minimise drought risks, partners have assisted communities to improve water availability, soil quality, and maximise land for food and crop production whilst reducing the risk and impact of drought and landslides. These measures have enabled community members to improve their agricultural activities, even through the long dry seasons.

Cascading water traps were built by YBTS communities to help slow down the flow of water, so that water can be absorbed by the soil. CARE invited communities to construct a simple hole in the ground to contain the water from washing activities. A simple ditch was constructed to direct the waste-water to the hole and filter it for a few hours before it can be used for watering home gardens. PfR through the CARE partners also introduced a drip irrigation system to conserve water use. The communities used perforated plastic bottles so that the water could drip out slowly. The purpose is to keep the soil moist during the long dry seasons.

The community in Oinlasi Village testified that not only did the terracing prevent landslides but it enabled rain water to be absorbed by the soil rather than flowing down the hills. After only one year of constructing the terraces, the water level of the river located at the lower part of the terracing rose during the dry season.

In Netutnana, the community constructed simple guttering and used containers to harvest rain-water to be used for basic needs such as washing. All of the PfR partners in Timor have worked with target communities to construct mini dams near agricultural fields for harvesting rain water. This water has been used for watering plants and livestock needs during long dry seasons.

Incomes increased with regular use of weather forecasts and the market calendars

The seasonal calendars capture information on the types of crops that should be planted for each month. The calendars are used for planting planning purposes. The farmers have regularly updated their seasonal calendars based on planting activities and the weather forecasts that they receive. In addition, the farmers also update their market calendars based on information from the local markets. The market calendar is used as a basis for determining what to plant so that the farmers get good prices during harvests. Henceforth, farmers in these villages will receive monthly weather forecasts to help them determine planting seasons and the appropriate plants to be used. Communities will also use this

information in decision making in regard to their seasonal and market calendars.

Increased harvest production and longer growing seasons have been coupled with efforts to link communities to markets for production of commodities such as snacks, crisps, jams and sauces that have an increased value and can be sold at times when crops may not be harvested. Some villages have gained the support of the Government Home Industry Agency enabling them to produce post-harvest products. The strong community organisations and cooperatives in villages have been officially established with a legal basis issued by the government. This has enabled them to make linkages with new markets such as hospitals, restaurants and vegetable suppliers that they had no access to previously. With these new markets, communities have been able to market their products and obtain better prices.

Additional livelihood options from ecosystem restoration activities

In some villages, partner organisations have helped communities to approach the Forestry Agency to provide support for tree planting activities. This Agency has provided hardwood seedlings to communities. These hardwood trees have an economic value and also help reduce risks. Tree planting management has been shared with the communities in a sustainable manner so that communities will continue to have economic benefits even beyond the project life.

Other ecosystem restoration measures have helped rejuvenate soil fertility. In the past, communities used to use chemical fertilisers without knowing the correct formula, which led to contamination of crops that eventually resulted in soil degradation. PfR partners have taught communities how to use chemical and organic fertilisers correctly. Oinlasi Village, however, was different. In the past, the sandy gravel soil in this village had never been cultivated. The PfR program facilitated communities to use organic fertiliser to 'transform' the condition of the soil. After several years, the first vegetables were produced in Oinlasi Village.

Mr. Yusuf Beti, Tubuhue Village said *"In the past during the rainy season, I only earned IDR 1,000,000 from 10 plots of green beans. Now, with correct planting techniques, good quality seeds and availability of water during the dry season I only cultivated five plots of green beans and earned IDR 2,000,000"*.

Mr. Sefri Sanak, Tubuhue Village, *"The weather forecasts have enabled me and other farmers to work more effectively. We now know the rain patterns and how to respond to them. Therefore, we won't have harvest failures"*.

Mr. Sefri Sanak, Tubuhue Village, *"The market calendar showed that the price of green beans was high in January. I checked with the weather forecast and the seasonal calendar and I knew that green beans would be perfect to be planted in November and harvested in January. I gained a good profit. This has never happened before"*.

A different way of thinking

The livelihoods strengthening model in Timor has fostered a different way of thinking in communities and local governments. The communities that initially thought they were powerless and that it was impossible to have water during the dry season were empowered and are able to minimise drought risks through 3R low cost technology. The Government Agricultural Extension staff responsible for providing agricultural training to the farmers also now understand that capacity building should go hand in hand with access, protection and management of water using sound environmental techniques. Additionally, they learned that the 3R initiatives can be easily replicated in other villages in Timor.

Challenges and enabling factors

Need for evidence so communities will try new approaches

Usually, before a community implements any initiative in Indonesia, they will want to see proof that it is effective. In this case, the partner organisations had to look for innovators and champions who were motivated to implement activities without having any evidence beforehand. When communities finally saw the benefits of constructing mini dams on their land; the small holes for containing household waste water to be re-used; the home garden activities and the benefits that they brought, instantly, more community members agreed to replicate these initiatives on their own.

Legalization of community organizations and support from other stakeholders

The government has provided a legal basis for community organisations and cooperatives

that have met certain requirements set by official regulations pertaining to cooperatives and community organisations. This legalisation has enabled communities to create links with new markets and other stakeholders like government agencies and the private sector to gain support. Partners have helped community organisations and cooperatives to access support from the government and private banks. Some community organisations have successfully accessed support from the banking sector where banks have provided competitive and reasonable loans for farmers and thus enabled them to access funds to further invest in their livelihood activities.

Use of low cost technology and availability of weather information

Drought has been a serious challenge for villages in Timor. The 3R approach that utilises low cost technology has been a strong contributing factor to the success of the livelihoods strengthening program in Timor. This technology is easy to replicate and was evaluated through the farmers' own monitoring of rainfall and found to be 90% accurate. Farmers are now able to use the information to inform them in their decision making and they now have more confidence that planting choices will result in less risk of harvest failure.

Market survey prior to livelihoods strengthening activity

PfR partners conducted a market survey in both Kupang and TTS Districts before they started the program. The survey showed that there were big market opportunities for some types of vegetables and fruits in both districts as most of the supplies came from other islands in Indonesia. PfR partners then introduced a range of alternative fruits and vegetables to the farmers to meet the market demand. This helped communities to very

Mr. Maklom, Nunsae Village said *"Now that I have utilised my home garden, I haven't had to buy chillies anymore for the last three years so I am cutting costs on my household expenses. I can even sell my chillies to local markets and my neighbours. Now, my neighbours have replicated this initiative."*



California papaya may stay on the tree
Photograph Courtesy Caré

Mr. Agus said *"No vegetables ever grew in Oinlasi because of the sandy gravel soil. BSK taught me how to treat the unfertile soil and how to plant vegetables. In four weeks, I harvested the first vegetables ever grown in Oinlasi. And my cucumbers, eggplants and tomatoes were amazing, two or three times bigger than the usual ones"*

quickly see the results of increased income within a very short period of time. The initial survey supported the success of this program.

Ways forward

Replication of the livelihoods strengthening model

Now that the government and other stakeholders have seen the concrete evidence and the positive impacts on the villages generated by the program, plans for replication are now being explored. A sub-district government in TTS was interested in the approaches used by partners and has cooperated with YBTS to replicate the strategies in three other villages in the same sub-district. In order to broaden the information on livelihoods strengthening that integrates Disaster Risk Reduction, Climate Change Adaptation and Environmental Management and Restoration, partner organisations and governments have used public radio so that information can be shared with a wider audience in the targets districts.

The TTS District government has also recognised that the weather forecast information produced in the PfR Program is useful for other sectors like health, forestry and disaster preparedness. The head of TTS District has shared the monthly weather forecasts with every government agency and NGO operating in the district to be used as a reference in their respective programs. The district government has also asked that the weather forecasts be distributed to all villages in TTS District and that communities use them for planning their livelihoods activities. Now,

many target and non target villages have access to weather forecasts to help them in planning their agricultural activities.

Resilience building and bouncing back

Some of the measures implemented in the livelihoods strengthening program will help communities strengthen their resilience and bounce back if a disaster occurs. The diversification of livelihoods provides alternative income generating activities and has helped them adapt to the changing climate and environment. Strong community organisations and cooperatives have also enabled communities to access funds, and have direct communication with local government offices, which can provide more rapid support and recovery if a disaster struck, thus helping communities to recover faster after a disaster. Now that partners have also assisted community cooperatives to establish links with the banking sector, PfR is hopeful that these initiatives will prepare communities to be more resilient to the risks they face, with a range of practices that will enable them to anticipate, adapt, respond and transform even beyond the project life.

TTS Government Agriculture Agency Extension staff are primarily responsible for training farmers in all villages in TTS. However, due to some internal reasons the staff have not received any capacity building from the government in recent years. The Agency asked YBTS in cooperation with its own staff to provide capacity building interventions to other villages in the district following the PfR approach. This has been undertaken and the Extension staff are ready to help other farmers throughout the district.



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