UNIVERSITY OF CANBERRA | CENTRE FOR SUSTAINABLE COMMUNITIES

Ripple Effect Mapping: an empowering participatory learning and evaluation process

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Acknowledgements

ISBN: 978-1-74088-610-9

The views expressed in this report are those of the authors and are not necessarily those of the Centre for Sustainable Communities, Action Research for Development research group, or the University of Canberra.

Recommended citation: Pamphilon, B & Nema, G. (2021). 'Ripple Effect Mapping: an empowering participatory learning and evaluation process'. University of Canberra. Centre for Sustainable Communities Monograph Series No. 5.

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Our strengths, developed over more than fifteen years, are those of collaborative and participatory research in regional and community development in both Australian and international contexts. Working in partnership with communities and related regional and community agencies, we aim to:

• Build sustainable environmental, social, cultural and economic capacity through partnership in research and development

• Work with communities in the recognition of their own strengths, assets and capacities using processes which respect action learning and collaboration

• Develop strategies for change in response to evolving environmental, social, cultural and economic contexts

• Build leadership and professional networks that support sustainable and cooperative endeavours in communities.

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Executive summary

Ripple effect mapping (REM) is a participatory evaluation process designed to enable development programs to identify the long-term impacts of complex programs. This monograph shows how its use in low literacy farming communities in Papua New Guinea not only enabled the evaluators to understand the range and type of impacts of two gender transformative agricultural development programs but most importantly it gave project participants an opportunity to reflect on the range of outcomes and the challenges. It made them proud of what they had achieved, re-energised them and enhanced their commitment to on-going work.

Through the process of appreciative inquiry peer interviews and ripple identification large group work, women and men were able to identify how, where and why their families and their farming had changed. This naming affirmed their success, large or small. As they mapped and discussed the different levels of ripples, they saw what they achieved as peer educators collectively across their own cultural networks and their community. The REM process showed participants the power of local learning that flows on within local networks and across the community. Through the wider dissemination of the REM results, the validity and value of local knowledge also becomes visible to wider stakeholders and actors.

REM is a valuable participatory evaluation tool and can contribute to a deeper understanding of gender transformation as women and men map and analyse their experiences of moving from being 'gender neutral' or 'gender blind' to 'gender aware' and 'gender responsive'.

Just as ripples spread out when a single pebble is dropped into water,
the actions of individuals can have far-reaching effects.
Dalai Lama.

I alone cannot change the world,
but I can cast a stone across the waters to create many ripples.
Mother Teresa

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List of abbreviations

CCF—Community Capitals Framework

CISP— Coffee Industry Support Project

F—female

FBM—Family Business Management

FFT—Family Farm Team

M—male

MFFA—Model Farming Families' Activity

PNG—Papua New Guinea

REM—Ripple Effect Mapping

VCE—village community educator

Introduction

This monograph describes ripple effect mapping (REM) and explores its place as part of program evaluation. It uses the example of a ripple effect evaluation that was conducted in 2018 in Papua New Guinea (PNG) to understand the impacts of an asset-based community development agricultural research for development program. Ripple effect mapping proved to be a valuable tool indeed, as it not only enabled the evaluators to understand the range and type of impacts from the program but most importantly it gave project participants an opportunity to reflect on the many outcomes and the challenges. It made them proud of what they had achieved, re-energised them and enhanced their commitment to future work.

The monograph is written for practitioners in the field of development and for evaluators interested in new approaches in participatory practice, especially for understanding the long-term uptake, outcomes and impact of a program or project. The monograph introduces the background to REM and its core components, then describes how REM was applied in PNG. It presents a case study of the process and results of one REM study in the community of Kwinkya in the Western Highlands. The monograph concludes with an analysis of the benefits in using REM. Endnotes with references and/or online links to further reading are provided for those interested in following up concepts in greater detail. The full Ripple Effect Mapping research report can be found here.

The history of Ripple Effect Mapping

The process of ripple effect mapping was developed to address the need for participatory and people-centred evaluations that could capture the intended and unintended impacts of complex real-life programs. It emerged from two program evaluations —the Community Capitals Framework (CCF) evaluation and the evaluation of the Horizons Program. Both of these programs shared an interest in processes that would enable participants and community stakeholders to celebrate their achievements as well as understanding more of the project long-term impacts[i]. Both projects focused on the capitals and assets that were harnessed in the program. Whilst the CCF project directly linked to the Community Capitals Framework[ii], the Horizons Program evaluators wanted to map and explore how increases in social capital[iii] might lead to increases in other capitals.

The team were particularly interested in ripples that involved more than one capital. They identified that 'impacts that cross two ripples indicate a transitional change affecting other elements in the same process or

Figure I: The Community Capitals Framework [iv]

program. Ripples across three levels of change indicate transformational change - change that makes a difference in policy, institutional practice, or everyday thinking and acting'[v]

Since this early development in 2008, REM has been used in diverse settings and projects. In their review, Washburn and colleagues[vi] note that REM has been applied in community development, youth development, childcare, rural community marketing, poverty alleviation aand in their own work with Extension Wellness ambassadors.
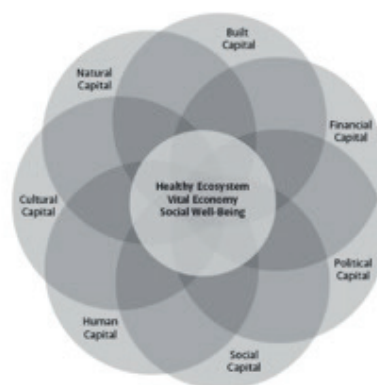
The Ripple Effect Mapping process

REM uses four participatory processes, each intended to encourage inter-group dialogue. Chazdon and her colleagues emphasise that to be effective all four elements of REM need to be used however REM can also be used as a complement to other evaluations methods.

To use a recipe metaphor, if REM were like bread, there would be key ingredients–flour, yeast, water, salt–without which our product would not likely be known as bread. Other ingredients - raisins or seeds, for example - are optional additions[vii].

The four ingredients in REM are:

1. ***Appreciative Inquiry*** [viii] – initially developed by Cooperrider and Srivastva for use in organizational development, appreciative inquiry invites people to work together to identify the generative aspects of a program. Although this enables people to focus on positive impacts and achievements, there may be negative aspects that are also generative. Appreciative Inquiry is an affirmative approach as it focuses on individual/community strengths rather than deficits.

2. ***A Participatory Approach*** [ix] **–** the participatory approach holds that all stakeholders and participants have insights that can contribute to an evaluation. Here participation is not just bringing people together but using a range of ways for everyone to engage in a meaningful way. This approach is committed to creating evaluation findings that resonate with, and are useful to, all stakeholder groups.

3. ***Interactive Group Interviewing and Reflection*** **–** the process of bringing people together to reflect as peers and as a group enables participants to use their own words and knowledge to name and identify core findings. The process of using a peer-to-peer interview first allows participants to talk through their own perceptions and then further develop this through group work.

4. ***Radiant Thinking (Mind Mapping*** [x]***)* –** the concept of radiant thinking refers to the associative capacity of the brain to create links between concepts and organize these. A common application of this is mind mapping in which concepts are visually displayed in a series of web-like connections
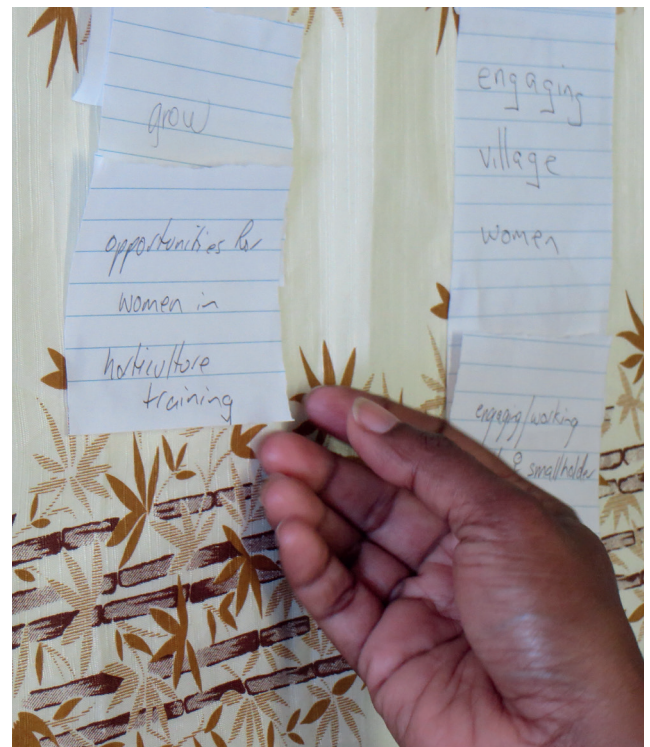
Applying Ripple Effect Mapping in Papua New Guinea

The REM evaluation focused on two complementary projects, CARE PNG's Coffee Industry Support Project (CISP) and the University of Canberra's Family Farm Team (FFT) program. Both projects focused on the 'farming family' which in PNG is understood as up to three multi-generations who live in the same house or co-located huts, and which may also include non-biologically or maritally related children or adults.

Overview of the CARE PNG Coffee Industry Support Project

Beginning in 2013, the goal of this on-going project is to improve the social and economic wellbeing of women coffee farmers in the highlands of PNG. To achieve this CARE PNG partners with key industry stakeholders, coffee cooperatives, community-based organizations and coffee farmers to promote women's meaningful engagement in the coffee industry. CISP engages stakeholders to create an enabling environment for women's engagement along the coffee value chain through improving organizational practices, coffee extension services and household financial management practices, so that they are more gender equitable.

One of CISP's foundational activities is the Family Business Management (FBM) training[xi] which aims to address the prevalent attitudes in households that result in women's unequal participation in important decision making for the family. Thus, the FBM training helps to reinforce and value women's contribution to the family's livelihood and supports families to work together more effectively, plan together and make decisions together.

The Model Farming Families' Activity (MFFA) is the other major component of the CISP. The MFFA targets coffee farming families and trains them to be models in their communities. Model Farming Families are composed of a husband, wife and their children. A model family is given two types of training: theory (social trainings abstracted from the FBM training) and technical (skills and knowledge of coffee management). It is a pre-requisite for Model Farming Families to attend the theoretical training before moving onto the practical sessions. The theoretical part includes topics on gender, skills in dialogue and communication building, problem solving, leadership, decision–making methods and participatory techniques that positively challenge coffee farming culture.

Overview of the University of Canberra Family Farm Team Program

The Family Farm Teams (FFT) program began in 2012[xii]. Three locations were selected to reflect PNG's cultural, geographic and agricultural diversity: the highlands (Western Highlands province), the islands (East New Britain province) and the lowlands (Central Province). Through participatory action research[xiii], appreciative inquiry and asset-based community development (ABCD)[xiv], the team developed a series of experiential learning[xv] activities for farmers with low literacy. The resultant FFT program[xvi] uses a gender transformative approach that encourages male and female family heads to work together as a family team and to collaboratively plan the further development of their agricultural and family activities. The three[xvii] modules were: 1) Working as a family farm team for family goals; 2) Planning your family farm as a family team; and 3) Communicating and decision-making as a family farm team. The FFT program[xviii] was complemented by brokered training in the areas of sustainable livelihoods, business and financial literacy, and agricultural production development relevant to each area.

The FFT program uses a peer education approach in which volunteer female and male farmers who are selected by the local partner agency are trained as peer educators[xix] known as village community educators (VCEs). The VCEs are encouraged to use the FFT learning first in their own family and then further disseminate the training to other families through farmer-to-farmer peer education and/or with groups through their affiliations such as churches. These VCEs become important role models for gender equitable planned farming in their own communities.

The Ripple Effect study

The study was a collaboration between CARE PNG and the University of Canberra's Centre for Sustainable Communities as both organisations had developed a 'family' approach to address gender-equitable agricultural development in rural communities and wanted to explore their common interest in if and how family approaches had long term impact[xx]. The study was conducted with farmer participants in three FFT project sites and two CISP sites[xxi]. The full study was conducted by Gloria Nema, a PNG researcher who had experience in agricultural settings and was a Monitoring, Evaluation and Learning officer with high level skills in group facilitation.

The overall ripple effect study research questions were:

• What language and concepts used within the 'family teams' models enable women to negotiate more equitable farm and family roles?

• To what extent does the 'family teams' model have a ripple effect in farming communities?

In each site the overall research activities took five days with the REM process conducted on the last day of the group-based activities:

• Monday: Evaluation overview and focus group with trained farmers

• Tuesday: Farm visits, informal discussions, document review

• Wednesday: Focus group and interviews with non-

trained farmers

• Thursday: Ripple Effect Mapping session

• Friday and Saturday: Follow up interviews and farm visits

Adapting Ripple Effect Mapping for PNG: the session design and process

The REM process needed to be adapted for PNG. Given the low literacy of most of the farmers and their lack of experience in both interviews and focus groups, the REM session took a full day to enable maximum dialogue and participation. Tok Pisin, the lingua franca of PNG, was the main medium of communication, with participants discussing in their local language in the small group or pair work. The following section outlines the adaptations and the key process lessons.

Introduction—the first step was an explanation of REM in very simple terms using the analogy of a rock being thrown into the water. This analogy resonated so well with the participants that it was returned to across the REM workshop.

Appreciative Inquiry peer interviews—each person was asked to pair up with someone in the group who they do not normally associate with and tell their story about the family-based training. This gave them the opportunity to get to know others a little more and enabled a new sharing and learning experience. As 'stories' (tok storis) are a well-known process in PNG, this concept was readily understood by the participants.

Open ended questions were written up by the facilitator as a guide to use to gather information from the person telling the story.

• What have you learnt (seen/heard) from the family teams training?

• How have you practised ideas from the family teams training? What have you done?

• What changes have you seen in your/others' family/ community after the family teams training? And if so,

what is different from before?
- Who has helped/supported you in practising ideas from family training?

During this process, the facilitator actively monitored the group to ensure the story telling focused on the program and took notes of any surprising or new insights. She also noted barriers to change as they arose across the REM process. Most of the discussions took part in the local language and Tok Pisin. Everyone found the discussions very insightful and enjoyed talking to each other.

Appreciative Inquiry group reflection— each participant explained their partners' story to the whole group. During this process the facilitator used large paper sheets to record the initial mapping notes by categorizing words into groups and drawing arrows signifying relationships. Doing this in front of the group, ensured that all participants could see the emerging ripples. Through this process the participants had the power to agree or disagree during the process.

Although the REM developers have stated that this stage takes approximately 45 minutes to an hour, in PNG this took two to three hours. Everyone was enthusiastic about sharing their 'stories' and therefore it took more than the required time to share and discuss. Agreement could be observed as through nods of approval and/or attentive listening. Some farmers agreed by providing additional comments to what others were saying, especially when the facilitator probed for clarification.

Re-mapping—whilst the participants had lunch, the facilitator re-drew the ripple map. Importantly this was also a time for participants to discuss informally what they might see emerging. After lunch, through a facilitated discussion, all participants gave their feedback on the ripple effect map and added any details or missing ripples. This was done by the facilitator posing questions for each ripple, recording additional comments, correcting errors or adding words as the meaning became clearer through

elaborations by the participants. Everyone in the group had to agree to the notes on one ripple before moving to the next one. This iterative process took 30-40 minutes to reach the confirmation of the final map.

Concluding discussion—the final closure discussion invited people to respond to how they found the REM activity itself. Although this is a conventional form of process evaluation, it also enabled other issues to emerge. It was at this point that all groups spoke of the pride they now had in their achievements and how they had been part of a valuable ripple process for their community. Members of the groups felt the tool would be useful for other community interventions, with some participants expressing interest in being trained in using the REM.

Summary—The REM process revolved around facilitating a safe and open environment for participants to reflect on their lived experience in order to surface their knowledge, distill and clarify that knowledge then consolidate that knowledge as a group. The REM process enabled knowledge to be shared across a group and iteratively developed. In the busy lives of subsistence farmers, time for deep reflection is limited. The REM process provided a space for these PNG farmers to be proud of how far their work had rippled and influenced others. More importantly, as the PNG facilitator emphasized , 'it gave the farmers an opportunity to be themselves by expressing ideas and thoughts in their own words, and seeing their ideas being captured into a final public product that would not be altered 'out of sight'.

REM findings: the example of Kwinkya in the Western Highlands

This section shares the REM findings in one study site to illustrate the responses of the participant farmers and the types of impact data that can be generated through the REM process.

Kwinkya is located in the Mul-Baiyer district[xxii] of the Western Highlands. At the time of the project (2012–2015), the district had a recent history of tribal warfare, high food crop and coffee productivity, poor market access due to bad roads, and very low levels of education and literacy. Most families were practising semi-subsistence farming and although food security was adequate, most families had poor nutritional and financial security.

Kwinkya bush material house , Western Highlands

The Family Farm Team project that had been conducted in Kwinkya in partnership with the Baptist Union church had concluded three years before the REM study. The major components of agricultural development were:

• Family Farm Team modules - UC team

• Maria books development[xxiii] - UC team

• Food crop production - Fresh Produce Development Agency

• Financial literacy - Nationwide Microbank

Six females and five males had been trained as Village Community Educators (VCEs) and had directly trained others in their village over a two-year period (~48F, 19M, plus their families). This training was typically conducted informally within the extended family and wantok (kinship) network, although some training was run through the existing networks of the Baptist Union church.

A base-line and end-line study had been conducted as part of the project[xxiv] however the focus of this evaluation was on the longer-term uptake and impact of the UC Family Farm Teams training as this was an innovative approach not previously used in PNG.

The Kwinkya REM process involved the following number of activities and participants:

• Two focus groups: VCEs (4 F, 5 M), Farmers who had not been directly involved in the project (7 F, 2 M),

• Three in-depth interviews (2 F, 1 M male)

• 10 farm visits.

• The REM session: 26 farmers (18 F, 8 M)
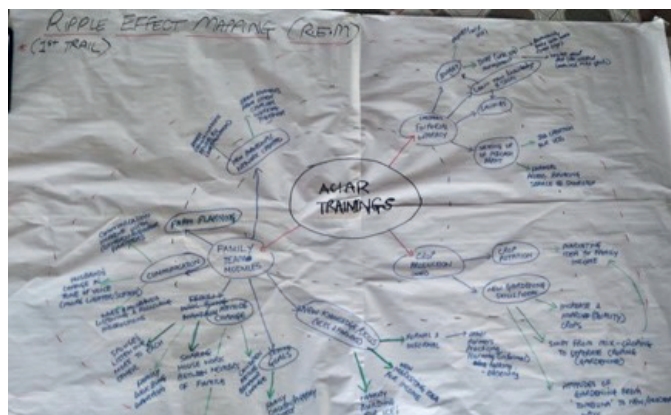
The ripples in Kwinkya

The REM process revealed four types of ripples.

The first level ripples — knowledge retention.

The second level ripples — ideas or practices that had been applied

The third level ripples — positive changes from putting the training ideas into practice.

The fourth level ripples — long-term changes seen in families and communities.

Kwinkya Ripple Effect Map

The first level ripples showed knowledge retention - what the participants remembered of the three types of trainings delivered by the project (family teams, financial literacy and crop production).

- Family teams: the importance of family communication; the value of setting family goals.
- Financial literacy: the importance of a budget and savings plan
- Farm production: the value of single cropping for income, planned production, crop rotation

The second level ripples showed the practices that participants valued and had applied over time

- Family teams: setting family goals, communication and decision-making, working together as a family
- Partnerships: with other churches, networks with neighbouring farmers
- Financial literacy ripples: budgeting, savings, setting up a microbank account.
- Farm production ripples: new farming methods, farm planning, working with what we have.

The third level ripples showed the positive changes participants valued when putting the training ideas into practice.

- Family teams: couples discussing family goals, positive change in husbands' communication tone, couples listening more to each other, more respectful family communication, change in gender roles of men, children helping parents more when aware of family goals

- New partnerships: farmers from other churches working together, network created through new relationships built as a means of sharing ideas with other church farmers.
- Financial literacy: improved time/ time management by linking to savings goals; Microbank: banking services at doorstep saves travel time and money; agents : local job creation, respect from community for their work, new knowledge and skills
- Farm production: increased production, improved quality, greater income, shift from mix-cropping to separate cropping, changed attitudes from traditional gardening mostly for consumption to more commercial ways.

The fourth level ripples were the long-term changes seen in families and communities:

- Family teams: family daily activity planning and regular farm planning as a family unit, new ways of family communication especially between spouses, women were included in decisions and felt valued, achievement of short-term and in some cases long-term goals, family happier than before, on-going collaborative relationships with other farmer groups

The fifth level ripple of transformative change was not reported in Kwinkya. However examples of transformative change in other locations included:

- Family teams: a whole family quit gambling and smoking; all family violence had ceased in a number of families
- Farm production: three cocoa cooperatives were established; one community have developed agreed community goals

Understanding the ripples

There were a number of themes that emerged in Kwinkya. These changes were very similar themes to all the highlands site in the study. In the farm practice area, it was clear that most farmers had continued with the move from semi-subsistence to more planned farming with a number of new farming practices evident— soil and drainage management, use of pesticides and insecticides— and financial practices— book keeping, budgeting, savings and the opening of bank accounts.

The long-term changes in family dynamics both in the home and in farming practices were of particular note.

1. Family members working together

Two main areas where participants reported visible changes in family members working as a team were when communicating and during gardening. The responses in Kwinkya suggest that for the 'family team' to function, spaces have to be created for effective dialogue and discussion with all members of the family, including children. Ideas were often communicated during family meal times or gatherings with all members of the family present. As the woman below clearly expressed, her family communication and her own communication had changed for the better .

> *I learnt in the family team training about working together as a family, about sharing ideas and talking together. I think that is very important, sharing ideas and talking together. I learnt this as well in the communication part of the training. It helps my family understand each other and to share responsibilities within the family. Now every member has a part to play. I used to be a woman who used to get angry a lot with my husband, argue a lot. But that changed when I changed my way of talking. My husband talks with respect to me as a result of this. (F)*

Decisions were being reached collectively as a result of the FFT training, which indicates that women and children's opinions were acknowledged and that this matters. Both are important components for the family to function as a team.

For a number of participants who discussed FFT ideas and failed to get an immediate response from family members, they applied the new gardening methods and initiated discussion during gardening. Encouraged by the increase in quality and quantity of crops as a result of new gardening methods, women and men reported working together and sharing of labour more within families. In PNG, women and men often do farm work separately, which as the man below noted can lead to unequal workloads.

> *Working together as a family team is good. In the past I usually worked alone in the garden. After coming to the family team training, I went back home and told my family what I learnt and that from now on everyone had to work together. Each person will have a responsibility. There are six of us in my family, now everyone knows what they are supposed to do and it has helped a lot with work load." (M)*

2. Food crop marketing for family income

Business-oriented food crop production was not practised by many before the FFT training in Kwinkya. Most participants spoke of how marketing was done only when there was surplus in the harvest and families needed small amounts of cash for basics like salt and soap from the local trade store. The change from 'subsistence' thinking 'income generating' thinking was frequently mentioned as illustrated by the following quote from a Kwinkya woman.

> *This idea of marketing for income has made me realize too that I as a pastor's wife can actually do something to help my family, by bringing income. I feel happy and I think it is a great idea. (F)*

Participants spoke of witnessing an increase in food crops sales at the roadside and the taking of certain crops in bulk to sell at Mount Hagen, the major market two hours away. As one male explained:

> *Something I've noticed in the community is before there never used to be roadside marketing, you'd hardly see any women sell their food crops because everyone gardened for consumption. When we sat for the training and learnt about the story of 'Maria' it opened the women's eyes to the idea of selling their crops. There's also been a change in variety of food crops they sell. Like you see the round cabbage? We never had that here before, it used to be something we bought from Mt Hagen. Now we have women gardening and selling that I've noticed these changes. (M)*

Evidence of increase in local food crop marketing in Kwinkya shows farmers are now gardening primarily as a business idea for regular income as compared to prior to the FFT education program where they were gardening mainly for consumption. With the increase in food crops produced and the regular flow of income for farming families, there was an increase in options for a variety of nutritious food, especially store-bought protein that is accessible and supplements the family diet. Furthermore, farming families were now considering selling produce outside their locality which connects them to bigger markets. Many examples like the one below were shared.

> *In the past I gardened mainly for family consumption. Now I garden to sell at the market. Food crops like corn, greens, cassava and sweet potato I sell here in Kwinkya. Other crops like peanut and mandarin I take to Mt Hagen to sell. (F)*

These results suggests that farmers in Kwinkya are moving in the direction of more business-like farming and are aware of the benefit of accessing larger formal markets.

3. Individual attitude/behavior changes

The REM also showed attitude and behavior changes (referred to as 'tingting' (thought) and 'pasin' (action) in Tok Pisin). Participants gave accounts of their personal changes as well as the changes in their family members once they started practising FFT ideas. Changes as described by both genders included men helping their wives more with gardening, couples listening to each other and communicating respectfully, children's ideas being included in family farm plans, women and men responding to their spouse in positive ways and being more aware of body language. The two following examples show that the changes for both genders could be significant.

> *My husband never gardened with me before. Even his first wife and I argued a lot. After the training I went home and did a huge peanut garden myself. Everyone thought I was crazy, but after I received 1000 kina from selling my peanuts my husband came around the house and asked what I had done. I told him about the training and he went and spoke to the first wife. She later came with him to the garden and helped me. I was very happy. Now we have a good relationship because the first wife and I garden together and don't argue or fight like we used to. (F)*

> *I was a man who used his work as an excuse to get away from helping my wife in the garden. I am a pastor so I told my wife that gardening is your duty, your business. You do your work and I will do mine. But after the training I was ashamed, I began helping my wife more. I realized it also stresses in the Bible about husbands supporting your wives. Now I help my wife more, I spend most of my time with my family helping them. I have seen the fruit of that. We no longer have shortage of food like oil, salt, and sugar, because my wife sells the garden produce and helps me. I realized my wife and children are much happier than before (M)*

4. Learning by observation

All participants spoke of how the project ideas made sense when they were practised and when gradual changes were observed in gardens. As a result, opportunities for sharing learning opened up when interested farmers who farmed nearby to the VCEs observed the improved crops when the new style of gardening was applied. The woman below explained this ripple dynamic.

I did not sit for the training but learnt from the stories my neighbour told me. When I saw the result in my garden, I was happy. Other women gardening next to me copied what I did, they never asked me but just imitated the way I planted my crops. Later when they approached me, I took them to my neighbour so she could share what she learnt with them. (F)

The REM findings showed that the learning process for not-directly FFT trained farmers began in the garden through observing first and then practising after one-to-one discussion with VCEs. The one-to-one discussions included choosing what crops to plant, mapping the garden, identifying markets and what to plant next after each harvesting. This ripple dynamic occurred in extended families and as seen in the quote below in polgynous families where cooperation across families is not common.

My husband's other wife heard from our husband how I was gardening. She came over one day to the garden and saw what I had done and asked me about it. I told her what I learnt and she saw what I did. She did not need instructions from me as she already knew how to garden, so she just went and did exactly what I had done. (F)

However, as the male farmer below noted, a number of farmers did not have the one-to-one discussion but went from directly from observation to new practices.

That's right. Farmers like me who were not formally trained saw what the VCEs were doing and copied their gardening style. Their crops seemed to be faring better than ours so we took the chance in trying something new. I am happy I did." (M)

A further ripple effect reported by 'copy-cat' farmers came from witnessing positive changes in the family dynamics of directly trained FFT farmers. Other farmers noticed that as the VCE families had developed more effective communication and decision-making they were more 'peaceful' and 'united'.

The Kwinkya farmer-to-farmer learning process occurred from a trained farmer to a 'copycat' farmer to another farmer. This process of learning by observation illustrated the salience of the informal transfer of knowledge and skills from one farmer to the next and one family to the next. As Kwinkya had had little or no agricultural extension and most farmers had only attended primary school they were not skilled in searching for new agricultural knowledge and skills. The ripple effect of learning by observation appears to have filled an important agricultural and family development gap in Kwinkya.

The benefits of Ripple Effect Mapping in Papua New Guinea

REM proved to be an engaging collaborative process that enabled the farmer participants, the project leaders and the evaluators to develop a shared understanding of the impacts of the agricultural development project. Importantly, the process created a collaborative learning environment in which the dialogic and visual methods enabled the full participation of all stakeholders regardless of their levels of literacy and/or school completion. Further, REM facilitated important community development outcomes through its process.

The learning benefits of Ripple Effect Mapping

A key benefit of the REM process was that through the appreciative inquiry peer interviews and group reflection participants were able to identify the most valuable things they had learnt and applied from the project. The REM process reinforced that learning and allowed people to name the changes that had resulted.

The VCEs were able to see what learning had flowed on to others and how much this was valued. Although the REM ripples were important 'data' for the project, the immediate benefit was that the REM process itself affirmed family and agricultural development achieved by individuals, families and communities. In all groups, participants explained that the outcomes of the REM exercise gave great pride and was an encouragement for them to continue working and sharing their learning.

The visual display and naming of what people felt they had learned through the collaborative identification of 'ripples' is particularly important in communities with low education as they often do not position themselves as competent active learners. The visual metaphor of the 'rock' creating 'ripples in water' was accessible and engaging for participants. As the ripples were mapped in front of the group, then discussed, modified and refined, the group were engaging in a collaborative thematic analysis. Using dialogue and visual methods reduced the power dynamics between evaluator and participants and empowered members as experts in their own world.

In PNG traditional wisdom and place-based situated knowledge has enabled rural communities to thrive and develop. Such community-based knowledge is passed down from adult to child, adult to adult and through the family and wantok (kinship) network.

Kwinkya women discussing their learning

However, the power of this knowledge is not always recognised within a community. The REM process showed participants the power of local learning that flows on within local networks and across the community. Through the wider dissemination of the REM results, the validity and value of local knowledge also becomes visible to wider stakeholders and actors.

The community development benefits of Ripple Effect Mapping

The appreciative inquiry process of REM directed attention to 'what worked and why'. The REM revealed the types of assets that had been leveraged and connected. Having time to notice these types of connections is rare in the busy daily lives of farmers however the visual display of the ripples made the impact evident and enabled participants to see the range of strengths in their community. Sustainable community development can only occur when people in the community are able to see and name the strengths they have and REM enabled this. This is aptly named by Kretzmann and McKnight[xxv] as 'building communities from the inside out'.

The dialogue across the REM session did enable each group of farmers who now have adopted 'family based' farming to see how they were valued as role-models in their community. Unlike other 'experts' who come to a community to share their learning, these local role models understand the cultural and local context and as they remain in the community they are both formally and informally accessible. The REM process showed the Village Community Educators that their process of peer education had rippled on to other communities and they could identify as change agents in their community. Through the REM groupwork they saw beyond the local changes in their family and village to see that they were part of a wider agricultural community development movement.

Ripple Effect Mapping as an evaluation process

REM proved to be an invaluable evaluation tool in PNG as it enabled people with little or no education to make significant contributions to the understanding of the project's impact. Although standard tools of baseline and end-line surveys, focus groups and 1:1 interviews were also used, each of these by necessity used the language and concepts of the project and as such may have not always fully resonated with the participants. The REM allowed locally grounded rich descriptions of impacts to be collected, not just for evaluation but to inform future project materials and workshops.

The sequential process of the REM stages enabled both individual and collective naming of impacts to be captured and most importantly highlighted the impacts that culturally mattered most. This also enabled the evaluators to consider the areas of impact did not ripple on. For example, as banking and savings aspects of the program were not mentioned as longer-term impacts in any location, this became important data for future program re-design.

The REM process did enable challenges to surface as each group discussed what they had achieved and what they were yet to achieve. Although these challenges proved to be similar in all sites, again hearing them discussed in the large group allowed individuals to see these as either structural or cultural rather than individual weaknesses.

- Markets—access to and/or availability of bigger or formal markets where cash and food crops could be sold in large quantities for a better price. Possible market saturation as many were producing the same kind of crops.

- Gender—adjusting family gender roles created some fear of being seen differently by community members or peers. Some women did not have enough support from family members to help facilitate desired change from ideas that were taught.

- Cultural obligations – Men were concerned about the effect on family saving on cultural obligation as giving a contribution provided security for the future of their families. Women were concerned about the danger of sorcery-related accusations if customary obligations were not met.

- Land shortage and access—as land in PNG is primarily customary, when families divide the land for the next generation, land shortage is a common challenge across the country. Further for women, although FFT increased their access to information and their participation in many agricultural decisions, many women, especially those in polygynous marriages, cannot access land for new ventures.

- Climate change —this was noted across all sites as an on-going challenge.

One of the most important evaluation findings for the larger research project was how intricately 'family' and 'farm' are practically and conceptually linked for PNG subsistence farmers. This suggests that key to the success of the two family-based agricultural programs was that the learning modules had integrated both. Further, the programs' use of the core concept of a 'family farm business' provided

the logic of paying attention to developing both the 'farm' and the 'family'. For the researchers, this enabled gender, family dynamics, formal and informal economic factors to be examined as well as other less visible factors in agricultural development, such as those concerning the environment, reproduction, health, faith, community and culture.

A Western Highlands woman farmer

Conclusion

The REM process has been designed to enable the deep engagement of project participants in impact evaluation, especially in complex contexts. Our experience has confirmed that the REM process supports the meaningful inclusion of participants in evaluation to the benefit of long term learning from the project and, more importantly, to the participants themselves. Whilst the REM process described in this monograph looked at long term impact of our projects, we believe that the empowerment benefits of the process cannot be overstated, indeed they could be seen as the most important benefit at a local level. Whilst the program leaders will use the REM lessons in future program development and share these with programs in similar contexts or with similar goals, we believe that through REM the collective naming of the impact of their work by the participants both rewarded and re-enthused them for future work and it empowered them.

It is important to note what we mean here by empowerment. The term has rightly been critiqued in the development field for its instrumental, linear and individualistic focus, for example economic empowerment which assumes that the transfer of assets from men to women will lead to the overall empowerment of women. Typically, these forms of empowerment are generated from outside a community through a top-down process and as such can often reduce people's sense of agency and power, in what is called the 'paradox of empowerment'[xxvi]. Place-based participatory development processes have been an important response to this paradox as they conceptualise empowerment as an individual and collective journey along a pathway and recognise that empowerment is about relationships, process and the changing of power relations[xxvii]. Therefore, participatory practice focuses on facilitating shifts of awareness and engages directly in surfacing the practices, norms and beliefs that maintain power inequity, that is on the communicative and transactional dynamics[xxviii]. Of most relevance to REM, these dynamics are acknowledged as specific to every given context.

We found that REM's appreciative inquiry and reflective groupwork provided a vehicle for women and men to identify *how*, *where* and *why* their families and their farming had changed. This naming affirmed their success, large or small. As they mapped and discussed the different levels of ripples, they saw what they achieved as peer educators collectively across their own cultural networks and their community. Hence the REM process made visible to the participants their 'power with' (working collaboratively) and 'power within[xxix]' (acknowledging and using personal strengths). In PNG, both are crucial outcomes for smallholder farmers, but especially for women who live with gender norms that obscure their major productive, reproductive, economic, and social contributions to their families and communities, and constrain the development of their potential.

Ripple Effect Mapping is a practical way to bring the community capitals to life and illustrates the interactions of the capitals, especially how the effective harnessing of the built, natural and financial capitals is dependent on the human, political, cultural and social capitals. REM is not only valuable as a participatory evaluation tool but it can contribute to a deeper understanding of gender transformation[xxx] as women and men map their journeys from being 'gender neutral' or 'gender blind' to 'gender aware' and 'gender responsive'.

Endnotes

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iv Chazdon et al. 2017 p.3

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vi Washburn, L., Traywick ,L., Thornton, L., Vincent, J. & Brown T. Using Ripple Effects Mapping to Evaluate a Community-Based Health Program: Perspectives of Program Implementers in Community based Health Promotion (2020) Health Promotion Practice Vol. 21, No. (4) 601–610 https://doi. org/10.1177/1524839918804506

vii Chazdon et al. 2017, p.6

vii Appreciative Inquiry https://en.wikipedia.org/wiki/ Appreciative_inquiry

ix Participatory evaluation https://www.betterevaluation. org/en/plan/approach/participatory_evaluation

x Mind mapping and radiant thinking https://en.wikipedia. org/wiki/Mind_map

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xii The project was conducted in partnership with the National Agricultural Research Institute, Pacific Adventist University and the Baptist Union of PNG and was funded by the Australian Centre for International Agricultural Research (ACIAR) https://aciar.gov.au/ project/asem-2010-052

xiii Participatory Action Research https://en.wikipedia.org/ wiki/Participatory_action_research

xiv Asset Based Community Development https:// en.wikipedia.org/wiki/Asset-based_community_ development

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xvi Family Farm Teams program— https://www.canberra. edu.au/research/faculty-research-centres/csc/family- farm-teams-program

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xxi CARE Coffee Industry Support Program https://
care.org/our-work/food-and-nutrition/markets/coffee-
industry-support-project/

xxii https://mapcarta.com/29660106

xxiii The Maria books are dual language (English and Tok
Pisin) early literacy books about a family who had
changed their farm and family activities. They were
developed from the project research findings, and
used to complement the FFT training see https://www.
canberra.edu.au/research/faculty-research-centres/
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