

# Articles

## Knowledge management and innovation in the tea plantation sector of Sri Lanka 2010/07/10

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### **Background and maternal healthcare in the tea plantation sector**

The plantations of Sri Lanka date back to the colonial era when huge numbers of workers were needed on labor-intensive tea plantations. The health of the workers was the responsibility of plantation management. Various legal acts were put in place throughout the 1930s and 1940s to provide medical care. However, there were no special provisions for maternal and child health (MCH) services, although they should have been given high priority since a large percentage of the workforce comprised women of childbearing age.

There were no major changes in the provision of MCH services on the estates until the acquisition of the plantations by the government under the Land Reform Law in 1974/75. In 1974, the Family Health Bureau of the Ministry of Health commenced an estate MCH service with trained midwives, family welfare supervisors, assistant medical practitioners, and estate medical assistants. Women were also provided transport facilities and paid leave to attend antenatal clinics.

With changing economic policies and the restructuring of the plantation sector, the management of plantations was gradually transferred to the private sector. By 1998, with a few exceptions, all estates were managed by the private sector. This led to a complete change in the management of health and welfare services.

In the mid-1990s, the maternal mortality rate (MMR) on plantations was in the range of 0.9–1.9 per 1,000 live births, which was higher than the national average for Sri Lanka. The difficult terrain and long distances that pregnant woman had to travel to government institutions providing emergency obstetric care may have contributed to some of those deaths. Poor accessibility to quality care in the antenatal and natal periods and the lack of quality essential obstetric care and protocols also resulted in the high MMR in the plantation sector. The future plans for the provision of maternal health services seemed uncertain, with limited commitment by the state to provide MCH services.

The basic preventive health indicators in the plantation sector showed gradual improvement during 2010, but interventions in the areas of nutrition and general behavioral changes to promote healthy lifestyles were lacking. In 2012, the MMR for Sri Lanka was 22.4 per 100,000 live births. The president of the Sri Lanka College of Obstetricians and Gynaecologists (SLCOG) declared the organizational vision for 2014 to be “zero maternal deaths with minimal morbidity.” It was acknowledged that lowering the MMR to single digits in the plantation sector would be a major challenge. Attempts to do so using traditional management systems yielded disappointing results, even with expanded emergency obstetric care, skilled attendants at deliveries, and more trained midwives.

### **Application of knowledge management to MCH on plantations**

The Ministry of Health and SLCOG determined that the unique plantation culture contributed to maternal deaths, since the living conditions and sociocultural environment differed from those in the rest of Sri Lanka, for example, in the number of home births. It was decided to involve multiple stakeholders from the Ministry of Health, National Productivity Secretariat (NPS), Plantation Human Development Trust, and Training Hospital at Gampola in a knowledge management (KM) campaign to address MCH issues. First, studies were performed to determine whether the application of a KM system could have a significant impact on reducing the MMR. Once it was obvious that it could, the APO KM framework was applied to design a system to alleviate the MCH problems in the plantation sector.

The main objective of the KM and Innovation demonstration project is to reduce MMR in the plantation sector of Sri Lanka. It was also meant to showcase how a community could undertake KM initiatives with broad-based commitment. Launched on 9 June 2014, the project is being carried out in the Central Province of Sri Lanka, where 90% of the plantation community live. Plantation residents constitute 20% of the total Central Province population, and 93% in the Nuwara Eliya district live on plantations. Two tea plantation estates were selected to pilot this initiative: the Rothschild and Sogama estates in Kandy and Nuwara Eliya districts, respectively.



Volunteers from the Sogama community estate during a briefing session on the KM project.

Additional studies were carried out to identify the knowledge gaps of healthcare providers and potential recipients of preventive and curative MCH services. The vision of the project is "improved health and productivity for plantation workers through KM and innovation." Four project objectives were identified: improving the health of pregnant women on plantations; raising productivity levels of estate workers through KM; increasing the satisfaction of pregnant women with MCH services at Gampola Base Hospital; and securing community involvement in

healthcare. These goals explicitly linked the expansion of services to full utilization of the services available.

### **Major accomplishments**

A major achievement was the establishment of an emergency obstetric hotline. This compensates for the difficult terrain and long distances to reach emergency facilities. Under outreach activities by Gampola Base Hospital, expectant mothers on plantations are also given regular health education.



PO Expert Praba Nair visiting Gampola Teaching Hospital to understand the needs of patients on the estate.

A pamphlet on basic maternal healthcare in both Singhala and Tamil was produced and distributed to pregnant women. Monthly clinics operate on both estates to perform health checks. As a result of all these activities, a patient satisfaction survey showed improvement in overall services provided by the Training Hospital at Gampola.

Besides improving the health of pregnant women, the NPS offered guidance on basic productivity concepts such as 5S, the 7Rs, and kaizen to improve productivity on the Rothschild and Sogama Estates. It was encouraging that the communities took ownership in applying these concepts, resulting in marked improvements in cleanliness and order. Households also started planting fruit and vegetables for healthier diets as well as to provide additional income. On the Sogama Estate, some households dug communal ponds for fish breeding. More than 100 volunteers on each estate took leadership roles to ensure that the initiatives introduced have been sustained. They also suggested new initiatives such as setting up libraries to promote learning.

One of the key lessons from this project is that volunteers can take ownership of KM initiatives if they are given responsibility and accountability. It also showed that communities and healthcare services can cooperate to solve real problems.



A health screening session on the Rothschild estate enables hospital staff to identify the healthcare needs of the estate community before designing intervention programs.

It is not easy to work with such diverse organizations in a single project without a common purpose and shared vision. To ensure successful collaboration with multiple stakeholders, it is important to involve senior staff in the early stages of a project.

This program has confirmed that KM can be effectively used to improve living conditions and health in a community. The Rothschild and Sogama Estates can be models for other plantations to follow. This model could also be adapted to other specific sociocultural environments through future projects in other communities.

*Contributed by:*

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*Photos courtesy of Praba Nair*

# Articles

## p-Watch—The German Energy Transition: best practices in renewable energy and energy efficiency 2010/05/10

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*(This is the unabridged version of the p-Watch article by Uwe Juergen Bauer published in the APO News May–June 2010 issue.)*

Within the last 10 years, the share of renewables in electricity production tripled. Renewable energy (RE) is the second biggest energy source behind lignite (20.8%) and now delivers 23.9% of Germany's total energy production. Currently, Germany has a total installed RE capacity of 84 GW out of total installed electrical capacity of 160 GW. The total investment in RE in 2013 was €16.3 billion, and more than 37,000 people were employed in this sector.

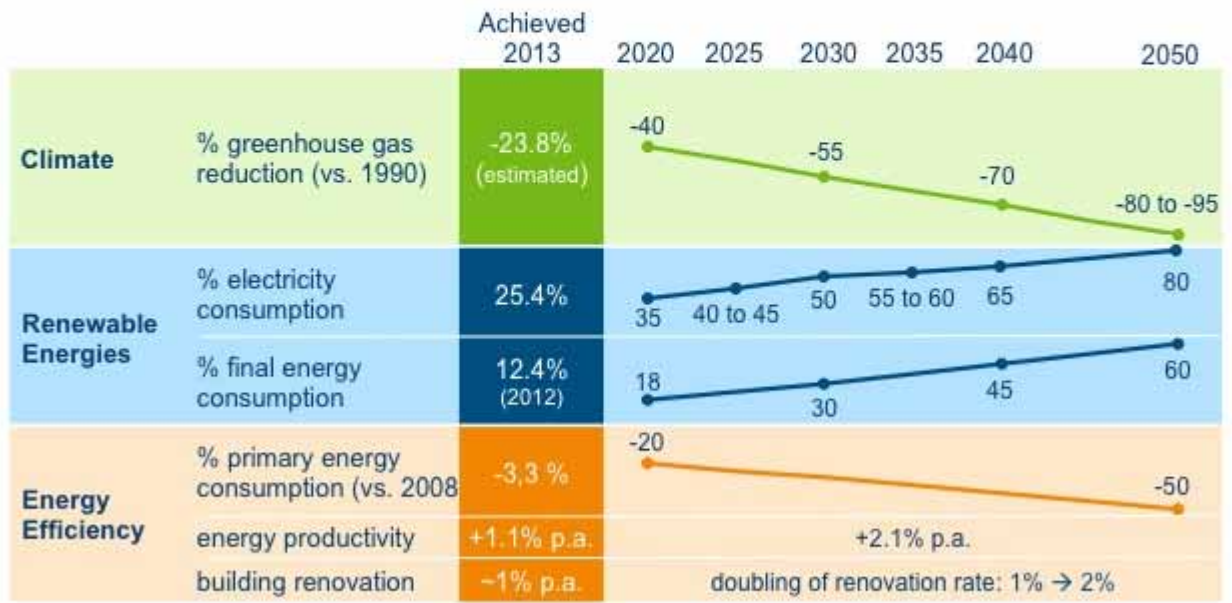
Today, the German government is working on the so-called Energy Transition (*Energiewende*) as the biggest national infrastructure project. The main political objectives of the Energy Transition are:

1. Reduction of greenhouse gas emissions of 40% by 2020 and of 80–90% by 2050 vs. the 1990 level;
2. Complete phase-out of nuclear power by 2022 (40% of nuclear power plants were switched off after the Fukushima disaster and the remaining nine plants will be phased out by 2022);
3. Independence from oil and gas imports, since in 2012, Germany imported 98% of its petroleum, 86% of natural gas and 100% of uranium, making it vulnerable to price hikes or supply disruptions;
4. Competitiveness, since the Energy Transition offers the chance to secure an efficient, cost-competitive energy supply in the future and is seen as an engine for innovation, growth; and employment; and
5. Ensuring the security of the future energy supply for coming generations.

### Core strategic targets

Based on the political objectives, the German government defined two core strategy targets as pillars of the Energy Transition (Figure 1). The first is to increase the share of RE in the overall energy mix. The energy supply will switch to a portfolio dominated by RE like wind, solar, geothermal, biomass and waste, and hydropower. RE will deliver 30% of electricity consumed in 2020 and 80% in 2050. The second is to increase energy efficiency (EE) and reduce energy consumption (Figure 1). The target is a reduction in primary energy consumption of 20% in 2020 and of 50% in 2050 vs. 2008. Energy productivity should increase to +2.1% annually. The results so far are remarkable, and Germany is on track to reach its long-term targets.

## Targets of the Energiewende until 2050



BMWi 2014

Figure 1. Targets of the Energiewende (Energy Transition) until 2050. Drawn by the author based on data from the Federal Ministry of Economics and Technology (BMWi) and Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

### Renewable Energy Act

The Renewable Energy Act (*Erneuerbare-Energien-Gesetz*) supports the promotion and deployment of RE. It was the major success factor over the past 15 years because its enforcement has enabled RE use to grow at a rapid pace. The core principles of the Renewable Energy Act are: 1) Renewables have guaranteed grid access and priority transmission and distribution. Network operators are required to feed this electricity preferentially into the grid. All have the right to become a utility and to feed electricity into the grid. 2) Every kWh generated from RE facilities receives a fixed feed-in-tariff (FiT) for a specified period, usually at a premium price reflecting the higher costs of RE compared with fossil fuels. 3) There is no charge to public purse. The FiT is not a subsidy and not dependent on the tax budget. The additional cost or difference between the FiT paid out and wholesale stock exchange price is shared among all energy consumers.

These three principles lead to investment security, which builds the foundation of sustainable growth in RE. The positive experience in Germany shows that a FiT in combination with guaranteed grid access is the most successful model for the deployment of RE. This simple, straightforward model has lowered prices to the extent that solar systems in Germany are the least expensive worldwide.

The idea is that anyone generating renewable energy can sell the energy (kWh) produced for a 20-year fixed period. Tariffs are set to ensure a modest Return On Investment (ROI). The FiT supports each technology in relation to its market position and technological maturity (Figure 2).

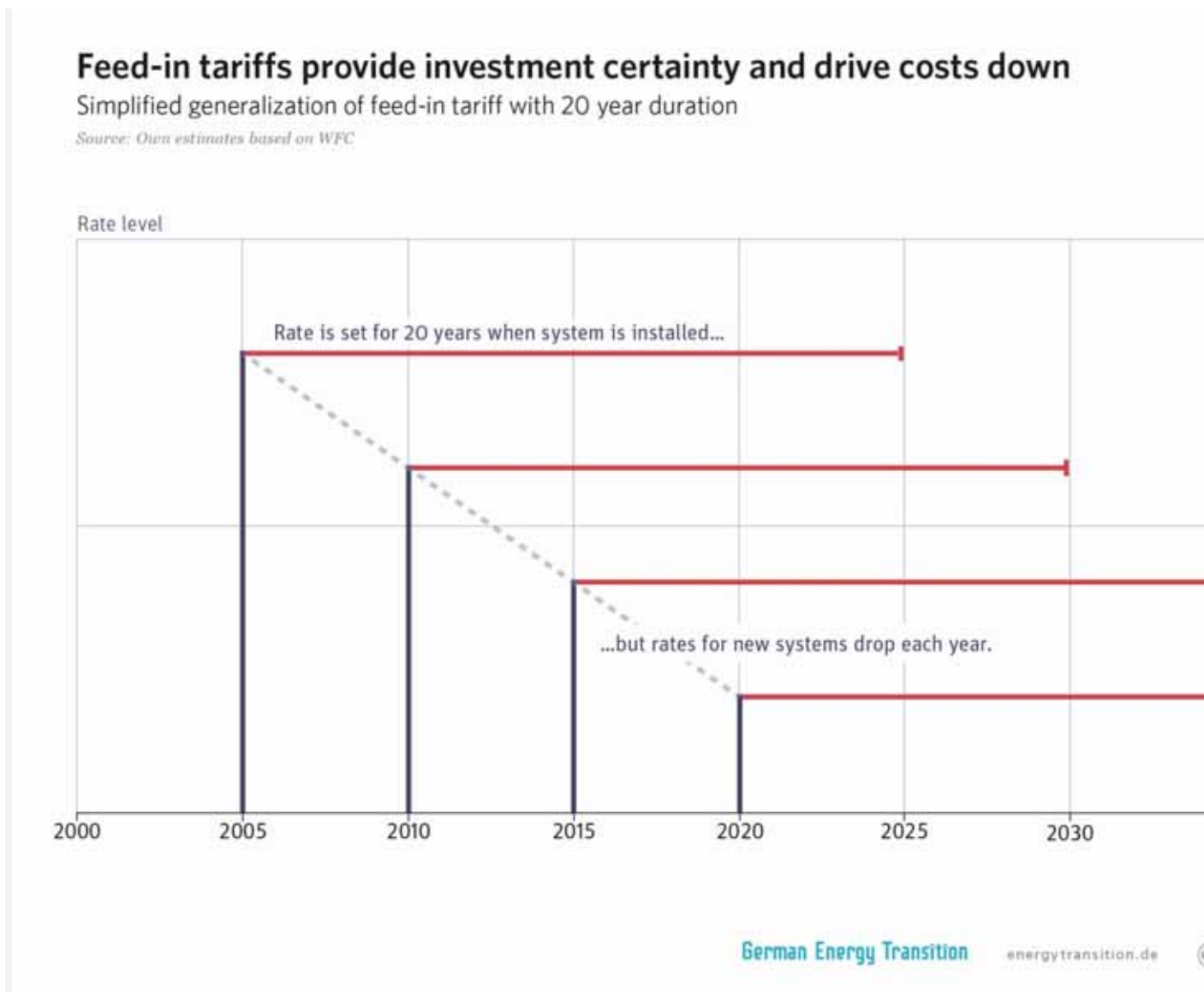


Figure 2. Feed-in tariffs provide investment certainty and drive costs down: simplified generalization of feed-in tariff with 20-year duration. Reprinted, with permission, from Energy Transition—The German Energiewende. Heinrich Boell Stiftung; [www.energytransition.de](http://www.energytransition.de).

Once the system is connected to the grid, the FiT is fixed for 20 years. Each year the rate drops only for newly installed systems. The idea behind the annual reduction of the FiT is to force price cuts, which are possible in accordance with the growth in market size and the corresponding learning curve. The overall target is to bring RE technology to a pricing level competitive with that of traditional energy sources.

Based on the success of the Renewable Energy Act and constant cost reductions for RE systems, the German government has started a transition from FiT toward a more market-based model. The Renewable Energy Act is the most successful political tool, which has enabled the deployment of RE sources and made them cost-competitive with traditional energy sources.

### **Feed-in-Tariff and System Prices**

A feed-in-tariff (FiT) ensures a modest return on investment for the investor and encourages market growth. Growing markets and the increase in production capacity and output lead to cost savings due to scaling effects and learning curves. The annual decrease in the FiT makes sure that the cost-savings result in lower market prices for renewable energy systems. The most impressive example is the development of small photovoltaic systems (up to 30 kWp) as the following table shows:

Year	FiT	System price (€/kWp)	Installation (MW)
2004	0.540	5,000	660
2009	0.430	3,060	3,800
2012	0.190	1,800	7,600
2014	0.125	1,600	NA

NA, not applicable.

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**EE**



EE, called “the world’s most important fuel” by the International Energy Agency, is the second important pillar of the Energy Transition. The overall approach to EE is a balance of: 1) legal requirements such as energy saving ordinances, building codes, electricity tax, and EE labeling ordinances; 2) support mechanisms such as market incentive programs, low-interest loans for renovations; and grants for cross-cutting technologies; and 3) information tools such as power checks for low-income households, heating reviews, energy saving accounts, and various campaigns to raise awareness. EE measures are applied to multiple sectors, including transport, industry and business, buildings, and appliances and lighting.

EE measures are applied to multiple sectors, including transport, industry and business, buildings, and appliances and lighting (Figure 3). Two sectors are highlighted in more detail below.

# Articles

## p-Tools: Value chain analyses as a base for successful agribusiness development 2010/01/00

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*(This is the unabridged version of the p-Tools article by Woody Majers published in the APO News January–February 2010 issue.)*

### **Urgent need to do things differently**

The supply side of agrifood chains is confronted with challenging demands such as improving product varieties and productivity, reducing/eliminating postharvest and other losses, and ensuring soil fertility and water availability. On the other hand, consumers demand convenience, quality, safety, security, and affordability. Supply-demand dynamics are complicated by the current retail and distribution systems, leading to substantial inefficiencies and loss of value. The netchain improvement framework (NIMPF) is a tool to diagnose how chain actors can align their activities and create interventions to ensure market relevance and competitiveness for their chains/businesses. A summary of an SNV Netherlands Development Organisation project, funded by the International Fund for Agriculture Development under the overall responsibility of the Ministry of Agricultural Development and in partnership with the Agro-Enterprise Centre, in Nepal is presented to demonstrate the interventions carried out at different levels and the results achieved.

### **The NIMPF**

The NIMPF has improved substantially based on experience over the last decade. It involves a multicycle approach based on the plan-do-check-act cycle for continuous improvement (Figure). Each cycle contains 11 steps in four phases. The process is initiated through a quick scan to identify within a short period (hours) the most important challenges and low-hanging fruit. The subsequent cycle is a more detailed investigation to lead to an action plan for improvement, and the third cycle leads to more complex innovations and can take one to three years.

The approach is based on an iterative, interactive process gradually building trust among the chain stakeholders, allowing collective actions and chain improvement. Chain innovation moves from a project orientation toward the business-as-usual model as part of total quality management in the chain.

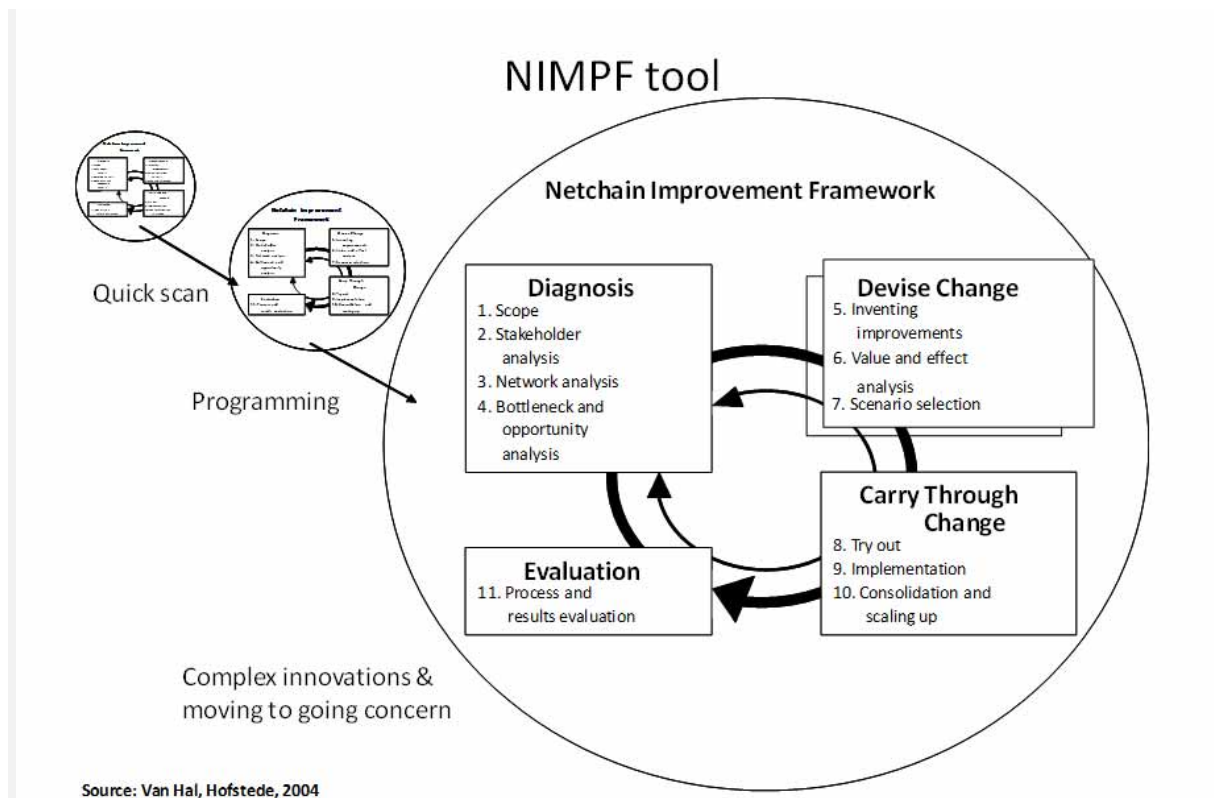


Figure. The Netchain Improvement Framework cycles. Reproduced, with permission, from Van Hal, P. and Hofstede, G.J., Netchain IMPRrovement Framework for chain and network diagnosis and change, 2004.

### Four phases

Every cycle has four phases: 1) diagnosis; 2) device change; 3) carry through change; and 4) evaluation. Every phase has multiple steps. For every step, a different set of analytical tools can be used (for details, go to [www.valuebasedmanagement.net](http://www.valuebasedmanagement.net)). Depending on the context of the problem and experience of the moderator, a specific mixture of tools can be used. The added value of the NIMPF is the specific sequence of tool usage for analyzing the context.

#### *Phase 1: diagnosis/step 1: scope*

The step that defines the scope acts as a reference for all subsequent steps. It defines the value chain at macro sector/regional level or operational (micro) business-to-business (B2B) level. Scoping is directly linked to the objectives and strategy from a business perspective. In a netchain, while there is no unity of ownership, a clear delineation of crucial tasks and key stakeholders is made. In essence, this step focuses on aligning the objectives/goals of different stakeholders within the chain to work out relevant interventions.

#### *Steps 2 and 3: stakeholder and network analyses*

Chains and networks are open systems. Who are the stakeholders (Table 1)?

**Table 1.** Variety of stakeholders in agrifood business chains.

**Agri food business chain/network revealed**

<b>Institutional enabling environment</b>	Policy development & execution, research, project funding, donor organization, educational institutes...					
<b>Service providers</b>	Quality control Finance, banks, insurance ICT		R&D facilities Document processing Certification		Private training Consultancy Techn maintenance	
<b>Chain actors</b>	Fertilizer Crop protection Seeds Breeds Equipment	Crop Animals Fish Milk Silk Feed	Meat Dairy prod. Flour Juice Food prod. Semi processed	Commodity Fresh Processed Cold Dry Packed	Store Kiosk Market Hotel Restaurant	Local National Regional Global
	<b>Input supplier</b>	<b>Producer cooperative</b>	<b>Processor</b>	<b>Trader</b>	<b>Distributor/retailer</b>	<b>Consumer</b>

*Step 4: bottleneck and opportunity analyses*

This step finalizes the diagnosis and provides a perspective on possible solutions. It is the base for the creative part of step 5 during phase 2, which is to design the change(s) required. Here the key focus is to create a netchain that is more than sum of its parts. Experience suggests that project participants often skip a proper diagnosis phase and jump directly to step 5. However, without understanding the context, force field, etc., the success ratio during implementation is very low. During the second or third cycle, steps 1-4 can be updated quickly because in most cases the context does not change rapidly.

*Phase 2: device change*

In this phase, the idea is to move from the present to the desired situation and understanding the resources required to get there. Some examples of the objectives at the chain level are: optimizing transactions (speed, reliability); utilizing technology; introducing new information processing units; shifting transactions to other actors; eliminating linkages; or reorganizing actors like developing cooperatives, alliances, joint ventures, outsourcing, etc. Based on value and effect analyses (step 1) a scenario is selected (step 2).

*Phase 3: carry through the change*

This phase marks the start of the execution of the ideas developed during phase 2. Testing (step 3) and implementing (step 4) the ideas will lead to changing old habits and traditions or to eliminating certain activities. The major challenge is to introduce the actual change while normal business continues. This step increases the capacity of the netchain stakeholders to predict what effects the changes may have in terms of quantitative changes, changing roles, cultural differences, and effects on competencies of individuals, especially management. After implementation is completed, the next questions arise: How can the changes be consolidated? How can they be scaled up to other parts of the network (step 5)? In many cases, this will lead to a new project and a new cycle starting with step 1.

*Phase 4: evaluate improvements*

Before starting a new project, step 5, process and result evaluation, is important.

To what extent (both qualitative and quantitative) did the previous steps contribute to the goals defined during step 1? Which effects were not anticipated and which were not included? What is the opinion of all stakeholders on the future? The output of this step is important to improve the next innovation cycle.

### **Moderator shift**

During the multiple cycles, there may be a shift in moderators. During the quick scan, one person typically investigates the chain. This could be a chain leader or an outsider like a consultancy firm, regional innovation agency, NGO, or donor organization. During different cycles, the actors develop trust and experience win-win options. Chain innovation becomes more business as usual. The stakeholders involved change with every cycle. Generally, we see a shift toward more business involvement and fewer public actors. Operation should be “triple P (profit, people, planet)” driven so that an attractive, sustainable business model evolves and moderation shifts to the chain leader.

### **Results and impact**

The NIMPF tool acts to align different stakeholders to increase their market relevance and competitiveness. Interviews with people experienced in food chain management suggest that clear positive tangible and intangible results are possible. The example of the SNV apple project in Nepal showed many of those results, including improved total chain performance (profitability, market position, access to capital, client-driven culture), accepted chain leadership, respect and equality between chain actors, and joint investments. The main conclusion of NIMPF experience is that future food businesses can compete effectively by being part of innovative, competitive value chains.

### **Apple value chain development: summary of a project in Nepal**

As reported on the SNV website ([www.snvworld.org](http://www.snvworld.org)), the mountainous district of Jumla is the largest apple-producing area in Nepal, with more than 10,000 smallholder farmers. Only 10% of Jumla apples made their way out of the district, while about 37,000 metric tons of apples, worth more than US\$12 million, were imported from India and PR China annually.

Under the High Value Agriculture project of the Ministry of Agricultural Development in partnership with the AEC and SNV Nepal, the NIMPF tool was applied to Jumla apple production, leading to a shift from sector selection and analyses (cycles 1 and 2 in 2008–2010) to commercial business network analyses and selection (cycle 3, 2010–2012). Specifically, interventions were made through a multi-stakeholder approach which led to the design and execution of new concepts to scale up the apple business (cycle 4, 2013 and 2014). The specific interventions at the level of different stakeholders are indicated in Table 2.

**Table 2.** Main interventions for apple value chain development in the SNV project in Nepal. Reproduced, with permission, from SNV Nepal 2013 at www.snvworld.org.

Area	Main intervention
Demand side	Create awareness of <u>Jumla</u> apple potential in major market centers. Identification and due diligence of agribusinesses. Support BH* in development of inclusive business plans.
Transaction	Facilitate buyer–seller meetings between producers, District Chamber of Commerce and Industries and District Cooperative Federation (DCF). Broker fair, transparent contracts between agribusiness (BH) and producer organizations through DCF. Support one-door apple transactions in <u>Jumla</u> through DCF involving 9 cooperatives.
Supply side	Capacity building of cooperatives and DCF (technical, organizational, and marketing arrangements). Capacity building and support for organic production and certification. Support District Agriculture and Development Office in developing service provision by local resource persons.
Policy and enabling environment	Support and facilitate dialogue on apple production among actors from private sector, government, and civil society for organic certification, one orchard per household campaign, improved road connectivity, one local resource person per village. Facilitate knowledge development, studies, and lobbying for pro-organic policy and practices.

\*BH Enterprises is a private company involved in the apple business since 1996.

Some documented results of the value chain improvement pilot project have been:

- 1) The incomes of more than 1,200 smallholder farmers increased by 200% to 300%, with 24% and 9% increases in sales of Grade A and Grade B apples, respectively.
- 2) The quality of apples improved through better orchard management, product grading, and organic certification.
- 3) The supply of Jumla apples to national markets increased and imports decreased.
- 4) Supplies of inputs by Nepalese agribusinesses became more reliable.
- 5) Two more private companies have established marketing ties with Jumla apple growers.
- 6) Seven of 30 village development committees (VDCs) are certified organic producers. These VDCs harvest about 1,800 metric tons of apples (20% of the total district harvest). The price at the farm gate is 40 NRS/kg; at the end market it is 100 NRS/kg (US\$1 = 92 NRS).



*Woody Maijers holds an MSc in Agricultural Engineering, Wageningen University. As a consultant, he worked in the field of chain and sector development (1990–1994) and as managing director of the foundation Agri Chain Competence Centre (1994–2001). Since 2002, he has been a professor of value chain management at the Inholland University of Applied Sciences in Delft, the Netherlands. In 2007, Maijers started his own company, The Value Chain Coach, focusing on training, strategic value chain development studies (B2B and sector level), and curriculum development for universities.*