

Green education to strengthen human capital

Highlights from Indonesia - Netherlands cooperation

SMK
BISA-HEBAT
SIAP KERJA • SANTUN • MANDIRI • KREATIF

NL Netherlands



CONTENTS

This one-off magazine is a joint publication of Dutch and Indonesian partners in the INNOCAP and vegIMPACT NL programmes. These partners worked together to strengthen agricultural education in poultry, horticulture and ruminant production at SMK level. SMKs (Sekolah Menengah Kejuruan) are vocational upper secondary schools. All programme partners share the conviction that educational cooperation and private sector development should go hand in hand.

The digital version of this magazine is enriched with links to websites and videos of the programme partners and their highlights of the joint Indonesian - Dutch programmes.

PREFACE

Starting from 2016, Indonesia and the Netherlands work together to improve vocational education in Indonesia, in particular in agriculture. We believe that improving vocational education will have a direct impact on the quality of human resources and the welfare of the population in both countries.

The Netherlands is the second largest exporter of agricultural products in the world. Without good education at all levels, we would never be able to sustain our success in this field. In the Netherlands, agricultural schools

from vocational to higher education are working closely together with the agricultural industry to benefit as much as possible from each other's knowledge and experience. Because good education on agriculture is essential for every step in the value chain, from production, processing, transport up to promotion and sales.

To bring vocational education in Indonesia to a next level we are working together with the Indonesian Government and selected SMKs. A number of partnerships have been created

between vocational schools and the industry. There is a close collaboration between universities from the two countries, IPB Bogor and Wageningen University and Research, amongst other in the vegIMPACT NL programme. Nuffic Neso Indonesia coordinates the 'Innovation In Capacity building' (INNO-CAP) programme focusing on agriculture with three Dutch green Universities of Applied Sciences. Aeres, HAS and Van Hall Larenstein and their partners joined forces to optimise the Dutch contribution and to benefit all parties involved. Furthermore, Nuffic Neso

Indonesia continues the educational cooperation under the Orange Knowledge Programme (OKP).

We are confident that these efforts mutually benefit both our countries. With this magazine we will provide you with insights in both the results achieved so far and the future opportunities to continue with this intensive Indonesian - Dutch cooperation.

Peter van Tuijl
Director Nuffic Neso Indonesia

nuffic neso



TIMELINE



Poultry



Horticulture



Ruminants

Preparations for the activities started in November 2016, a MoU was signed between Indonesia and the Netherlands on the Revitalisation of Agricultural Upper Secondary Education.

• Launch "CowSignals in Bahasa Indonesia" Roodbont Publishers

• Joint study tour to the Netherlands

• Teacher training in poultry and didactics in Bawen

• Teacher training Integrated Pest Management (IPM) and didactical Innovation Jember

• Teacher workshops on Learning Materials Subang

• Teacher training and start of Workfield Advisory Committee with ruminant private sector

• Teacher training by PT EWINDO company in Subang

• Teacher training Post Harvest Management and Problem-Based Learning Batu and Jember

• Start potato training in Bandung

• Start internship two VHL students

• Advisory mission on Bromaxx® poultry system in Bawen

• Teacher training in capacity building in broiler production

• Training Value Chain Management, PBL Subang

• Teacher workshop on e-learning and improved education

• Mini Job Fair Subang

• Gender awareness workshop in Bawen and Cibadak

• On-line coaching for SMK teaching staff from Cibadak, Lembang and Bawen

• Guest lectures from ruminant private sector

• Potato training in Emmeloord, the Netherlands

• Horticulture student exchange visit to the Netherlands

• Upscaling Forum on SMK revitalisation

• Trainer workshops on linkages SMKs with horticulture industry

• Teaching Factory Development at SMK Subang and Jember

• Teacher training on Problem-Based Learning and IPM

• Mini job fair in Jember, Horti Expo Subang

• Teacher training on Creative Learning Environment at SMKs

• Teacher training on Bromaxx® poultry system in Barneveld

F



IPB Bogor AU

Institut Pertanian Bogor Agricultural University

Website: www.ipb.ac.id

Total students: 7,949

Total teachers: 84



SMKN 2 Subang

Website: www.smkn-2sbq.sch.id

Total students: 2,051

Total teachers: 125

INNOCAP and vegIMPACT NL support for:

• Poultry and Horticulture



SMKN 1 Bawen

Website: www.smkn1bawen.sch.id

Total students: 2,180

Total teachers: 103

INNOCAP support for:

• Poultry and Ruminants



SMKN 2 Batu

Website: www.smkn2batu.wordpress.com

Total students: 554

Total teachers: 72

INNOCAP support for:

• Horticulture

SMK (Sekolah Menengah Kejuruan) are vocational upper-secondary schools. There are about 500 SMKs that offer agricultural specializations. SMK programs are typically three years in duration and cover general topics as well as vocational oriented subjects. INNOCAP and vegIMPACT NL programmes strengthened 7 SMKs in Java in partnership with IPB Bogor.

nuffic neso

Nuffic Neso Indonesia

Website: www.nesoindonesia.or.id



SMKN 1 Cibadak

Website: www.smkn1cibadak.sch.id

Total students: 1,082

Total teachers: 86

INNOCAP support for:

• Ruminants



SNAKMA Lembang

Website: www.snakma.com

Total students: 437

Total teachers: 28

INNOCAP support for:

• Ruminants



SMK IPP Ciamis

Website: www.smkipppciamis.sch.id

Total students: 410

Total teachers: 17

INNOCAP support for:

• Poultry



SMKN 5 Jember

Website: www.smkn5jember.sch.id

Total students: 2,352

Total teachers: 189

INNOCAP and vegIMPACT NL support for:

• Horticulture



Aeres

Website: www.aeres.eu

Total students: 10,000+

Total staff: 1,245+

INNOCAP Poultry partners:

- Roodbont Publishers, Zutphen
- Jansen Poultry, Barneveld



HAS Den Bosch

Website: www.hasuniversity.nl

Total students: 3,000+

Total staff: 450+

INNOCAP Horticulture partners:

- HollandDoor, Wageningen
- Lentiz, Naaldwijk



Wageningen UR

Website: wur.eu

Total students: 10,000

Total staff: 5,500

vegIMPACT NL partners: vegimpact.com

- IPB Bogor
- 20 horticulture private sectors



Van Hall Larenstein, Velp

Website: www.vhluniversity.com

Total students: 4,200

Total staff: 394

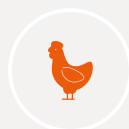
INNOCAP Ruminants partners:

- Zone College, Doetinchem
- Nordwin College, Leeuwarden
- BLES Dairies, Leeuwarden
- Roodbont Publishers, Zutphen
- AgriProFocus Indonesia
- IPB Diploma, Bogor

The Dutch partners organised their support for the SMKs around three sub sectors in agriculture: ruminants, poultry and horticulture. Aeres, HAS and VHL all involved other Dutch partners from private sector and from vocational education. This way, they shared the Dutch experience of engaging private sector in vocational education. In the vegIMPACT NL programme, the partners also involved the horticulture industry based in Indonesia.



NETHERLANDS



Partnership for Exchange

For many Indonesians, vocational secondary school (SMK in Bahasa Indonesia) is a popular educational choice in pursuing a professional career. Students learn skills through a hands-on approach and gain the competencies to start a professional career. With the domestic agriculture sector leaning towards intensification, the demand for more skilled workers is becoming increasingly urgent. This is in short the challenge for the agricultural courses at vocational schools.



Ms Heni Mahendrayani, Principal of SMKN 2 Batu, with Private Sector

The Indonesian-Dutch programmes INNOCAP and vegIMPACT NL both aimed at SMK strengthening by partnering between agricultural vocational schools in Indonesia and Netherlands. While INNOCAP worked on educational exchange in poultry, ruminants and horticulture courses, vegIMPACT NL focused on horticulture with a strong private sector link.

The programmes organized a number of exchanges between Indonesia and the Netherlands. First there was the



Ms Mitha Wulandaru
AgriProFocus Indonesia

"Companies are like a sparring partner for the school"

study tour for teachers and school managers, later followed by expert missions, training of teachers, student exchange visits and internships. The activities helped participants to understand and compare the vocational education systems in both countries.

Ms Mitha Wulandaru, then working at AgriProFocus Indonesia, helped organise the study tour for a delegation of 24 teachers who visited Aeres, HAS, VHL, WUR and their private sector partners in the Netherlands. "In this tour, I noted that the Dutch have two layers of engagement. At the operational level, schools coordinate with companies around guest lectures and internships. But there is also a strategic level, in which companies are like a sparring partner for the school when it comes to updating the subjects in the course. When I got back, my job was to promote similar

linkages between SMKs and the private sector in their area."

Ms Wulandaru adapted the approach and started with organising guest lectures as a first contact. "It is a fine art of balancing a match in time and in content. The business practitioner should talk about the topic for that week and from his or her own experience. When that match is OK, students and teachers react with enthusiasm, which makes it easier to take it to the next level. And that is getting them to join the workfield advisory committees." In these committees, teachers and company staff discuss how the school's curriculum can meet the industry requirements for hiring staff.

Mr Jan Steverink is one of the experts that worked with the three ruminant sections at SMKs in Lembang, Cibadak and Bawen. Being

"Internships are a big part of the school career"



Mr Jan Steverink
Zone College

the team leader at Zone College, an agricultural school at MBO (secondary vocational education) level, he noticed: "We like to compare the SMKs here to Dutch MBO, but there are two main differences. The SMKs do more general education, so there is less time for vocational specialisation. Second, MBOs have stronger relation with the private sector."

In our case, students come to school three days a week. The other two days they spent working and learning with a partner company. These companies have been certified for a safe and adequate on-the-job learning environment. As these internships are such a big part of the school career, there are individual plans and strict monitoring. Ideally, for these students the internship becomes their first job, after they graduate."



Action planning at the end of the study tour



Students Fikri, Hanna, Siri and Nicolien talking to farmers during internship



Ms Eti Rohayati, the teacher of SMKN 2 Subang with her students

Ms Ratna Komala was one of the third grade students of SMKN 2 Subang that joined the student exchange tour to the Netherlands. "I saw they all use digital technology over there, at the HAS university and also in the horticulture companies we visited. I have never seen this before in Indonesia." Ms Ratna joined workshops at school with East West Seed Indonesia Company and with Winaya Mukti University and did an internship at a strawberry farm. "I keep learning from every experience, from packing strawberries to visiting modern greenhouse technology."

In 2019, two Dutch students from VHL travelled to Java and did their internship with the ruminant majors of SMKs in Lembang, Bawen and Cibadak. Ms Siri Sauer: "Actually, it felt like an exchange visit with Fikri and Hanna. They had been with us in Velp first, as students from IPB Diploma in Bogor. So, they helped us with our tour along the three SMKs."

Ms Nicolien van der Horst: "Our assignment was to see the current practice at the SMKs. For us, the striking difference was that SMK students are quiet in class and rarely ask questions. They do like practical lessons more. When we interviewed students, we found that

some want to start a farm or business, others prefer to continue their studies." Ms Siri adds: "We think it is a great idea to promote internships, as we learned so much ourselves. I hope the SMKs consider how to make internships a safe learning experience, especially for female students."

[see short film about study tour](#)

"I learned a lot from my internship and participating in guest lectures"



[see interview](#)

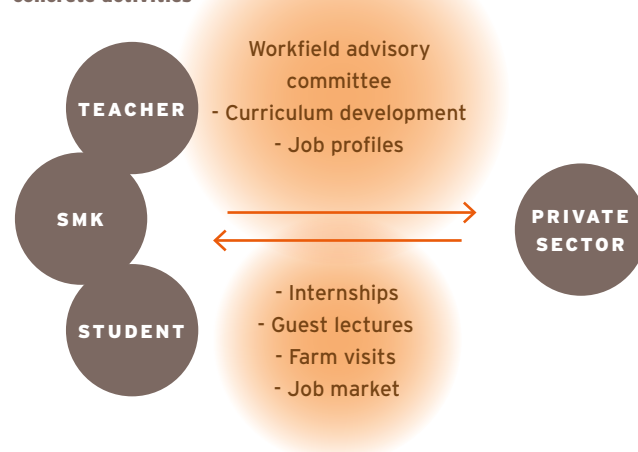
Ms Ratna Komala
SMKN 2 Subang

Engaging the Private Sector

The benefit of agricultural SMKs engaging with the private sector is a two-way street.

In a nutshell, private sector engagement allows teachers and students to understand the interests and needs of the industry. And it helps schools to keep abreast of the latest market trends. This way, schools can adjust their curriculum to include actual issues in the industry. Students that know about these issues are better prepared for work after graduation. For the private sector, finding skilled workers is extremely important. Their involvement with SMKs allows them to tap into the next generation of young, well-trained, and knowledgeable staff.

Teachers engage at the strategic level, students enjoy the concrete activities



In West Java, SMKN 1 Cibadak started to partner with PT Waluya Wijaya Farm in Sukabumi. The teachers and the owner, Mr Septian Hasian Wijaya got inspired during their study tour to the Netherlands.

"The bottleneck for growth of my business is skilled staff, who know how to handle cows and run modern dairy equipment. I am having ten interns from the SMK and I am seriously considering recruiting one student as a milking operator." Mr Septian invested in the relation with SMK by giving guest lectures and joining the workfield advisory committee. He urges the school to be more proactive in reaching out to the companies. And he also recommends his fellow businessmen and women to get involved with the SMK in Cibadak or elsewhere.

Mr Ujang Karsandi is a teacher at SMKN 1 Cibadak in ruminant agribusiness also visited the Netherlands. Mr Ujang witnessed the collaboration between schools and private sectors. "In the Netherlands, schools do not have their own farms, they make arrangements with nearby farms. Now at our school we are equipped for beef cattle, not for dairy business, so we are happy to liaise with Waluya Wijaya Farm in Bogor. They allow us to use their dairy farm for practical learning on dairy. The company allows us to use their facility for practical learning. And most importantly, they provide internship programs for students.

Mr Johan Meinderts, INNOCAP Ruminants coordinator at VHL, notes: "Some SMKs had ongoing interactions with the private sector already. Our programme strengthened this



Mr Ujang Karsandi

see interview

"We want to hire one of the interns as a milking operator"



Mr Septian Hasian Wijaya
PT Waluya Wijaya Farm

further. One observation is that teachers have to dedicate most of their time to lecturing. Which leaves limited time to link with the private sector. It is clear to me that students who get the opportunity to learn from private sector in result become curious for theory. So, this combination of knowledge, skills and work attitude makes them better prepared for a job in the real world."

In the horticulture sector, workshops for SMKs and private sector partners were organised in Jember, Batu and Subang. In each workshop, about 15 companies showed up to explore or deepen the linkages with SMKs. The workshops resulted in joint action plans. SMKN 5 Jember partners with local seed company PT Benih Citra Asia on a new curriculum on seed production and seed quality assessment. The SMK is incorporating feedback

from the industry players and uses farmers and industry actors to provide lectures and hands-on training.

A key partner for SMKN 2 Subang is EWINDO, part of the Dutch company East West Seed. They were already partnering for internships and guest lectures. Now they also signed an MoU on plant trials. The SMK happened to have two hectares of land available, while EWINDO's R&D department needed land for testing plant varieties. And the company invited the SMK teachers for training.

Mr Tito Wahyu Anggoro is happy how SMKN 2 Batu established partnerships with the private sector. Mr Tito is a teacher in Biology and Microbiology Analysis. He recalls from the study tour: "In the World Horti Center in the Netherlands you can find Lentiz vocational school, the business exposition, and

research facilities all in the same building.

It is just designed for cross-fertilisation. Here in Indonesia we find not all private sectors are equally supportive. But we have business partners that do take interns and give lectures to our students. So we appreciate their commitment with putting their names and logos at the main entrance of our school building."

In addition to these direct links between SMKs and the private sector, some teachers also thought about mobilising alumni networks. SMK graduates may hold the key to more private sector involvement: they have a personal link with the SMK where they graduated and they are inside the world of work. They can help build the initial contact, trust, and cooperation between SMKs and industry.

[see interviews](#)

"Students exposed to private sector become active learners in class"



Mr Johan Meinderts
Van Hall Larenstein

[see interview](#)
[SNAKMA Lembang](#)

[video impression](#)
[SNAKMA Lembang](#)



"Our graduates can help us link up to many of the relevant companies in horticulture"

Mr Tito Wahyu Anggoro
SMKN 2 Batu

[see interview](#)

Blended learning: a new approach to active learning

Blended learning is an approach to education that combines online educational materials with practical learning and traditional classroom methods. To a certain extent, the student can shape his or her learning process: it allows for online interaction and it is flexible for time, place, path and pace of learning. Blended learning can also be used in professional development and training situations. The way in which blended learning is delivered is dependent on circumstances.



in the
classroom



at home

**blended
learning**



in practice



Students at SMKN 1 Bawen handling a poultry flock

Aeres is a Dutch educational organisation, specialized in agricultural education and training at vocational and applied university level. Poultry is a key expertise area within Aeres. For several years Aeres teachers and trainers have built up experience with blended learning techniques that work well for their students. Mr Harm Holleman, INNOCAP Poultry coordinator at AERES MBO listed the following benefits for students and for education institutes.

Benefits for students

- Students have the ability to control their learning pace and learn remotely.
- It gives students a more comprehensive understanding of the course content.
- Students can easily interact with teachers and fellow students.

Benefits for vocational schools

- It reduces training costs.
- Various e-learning methods result in better student participation.

In the INNOCAP programme Aeres shared its knowledge on blended learning techniques with poultry teachers and management from SMKs in Bawen, Ciamis and Subang. Aeres involved two Dutch companies in the process. The first one is Roodbont Publishers, that provided e-learning materials in the Indonesian language on poultry health and poultry feed. The other one is Jansen Poultry Equipment that agreed to build a Bromaxx® broiler housing system at SMKN 1 Bawen. In this way both the e-learning component and a new innovative practical component were added to the programme.

*"Blended Learning
brings theory and
practice together"*



Mr Harm Holleman
Aeres MBO

Students of SMKN 2 Batu in a practical session on young plants



The impact of the project was that Indonesian teachers improved the curricula by making these more student-centred and better adapted to the requirements of the poultry industry. Students gained practical competences and became more aware of feed and health issues in the poultry sector. This was strengthened by the practical experience they gained during their internships in the poultry industry. In the course of the INNOCAP programme, SMK teachers noticed that their students were sharing a lot of pictures and videos from practice. This is the best proof that blended learning was happening: education, practical learning and e-learning came together.

The future

Despite some technical problems during the programme, the overall conclusion was that blended learning offers new opportunities for education in Indonesia. Especially when we consider the growth of the internet and the widespread use of smartphones and tablets, especially among young people. For SMKN 1

Blended learning offers new opportunities when we consider the growth of the internet and use of smartphones and tablets among young people.

Bawen, SMK IPP Ciamis and SMKN 2 Subang the use of blended learning techniques will be the gateway towards becoming regional knowledge institutes. New student groups will be identified, especially in lifelong learning programmes (farmers, managers and workers in the poultry industry). Soon Aeres will launch a brand new learning platform that can be adopted and customised by SMKs, universities and training institutes. Through this learning platform innovative learning pathways can be integrated and, best of all, joint learning communities can be organized on a regional, national and international scale. These communities will form a bridge between Indonesia and The Netherlands, and will be the basis for developing new knowledge and sharing new experiences.



Illustration of the e-learning module developed by Aeres and Roodbont Publishers

[see e-learning module](#)



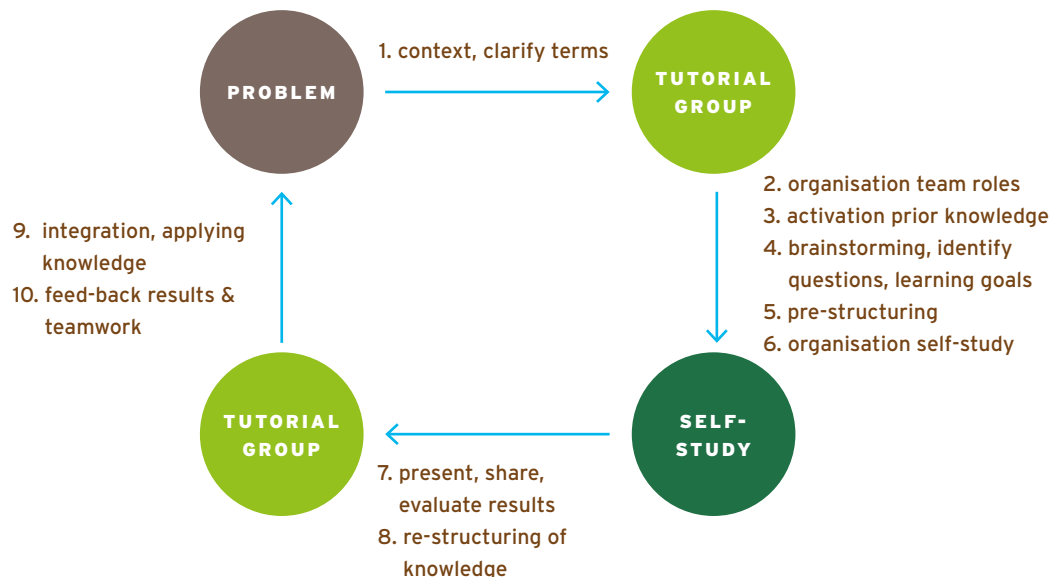
Students of SMKN 1 Bawen are doing research in the school lab

Problem-Based Learning

Problem-Based Learning is actually a positive learning method which puts the student at the center. Called PBL for short, this learning method builds students' knowledge and skills by giving them a complex, real-life problem to solve. At HAS Den Bosch, the method follows a 10-step approach in which groups of students organise themselves, analyse the case given, define learning goals, and explore and discuss these in cumulative steps. A tutor accompanies the group and the process. The students learn in three ways: they acquire knowledge but also train skills and develop attitudes.



Students at SMKN 2 Subang working on step 2 of the PBL method



During the study tour in the Netherlands, the horticulture teachers experienced the PBL approach at HAS university Venlo campus and chose to learn more. Their interest was to apply this approach to enhance the 'soft' skills of SMK students: communication - collaboration - creativity and critical thinking. It was agreed to further train SMK teachers how to apply this approach as an extra tool, adding to existing didactical practice.

A case story as used in the PBL is about Kevin. Imagine he just graduated from SMKN 5 Jember and wants to follow his father's footsteps as a vegetable farmer. While he was at school, he saw on the Internet how advanced farmers in other countries use protective structures such as greenhouses with plastic, shade nets or screens. He understands these structures help to regulate the temperature and

moisture, benefitting the health and growth of vegetables and leading to a better harvest. Since then, Kevin has been looking at the possibilities for the vegetable farm back home. He listed the issues he expected to deal with to achieve his goal. He talked with teachers, private sectors and advanced farmers and sought out the options and solutions. For each option, he assessed the strength and weakness and costs of different systems before deciding what type of greenhouse would best fit his needs.

The group of students that have this case are expected to gradually dive into the cultivation of peppers, the technical options for protected cultivation, the costs, benefits and the investments needed. Their final presentation would include a comparison of options plus an advice to Kevin.

In the horticulture training weeks, the PBL approach was explained and then first practised with the teachers themselves. In the last training week, the approach was piloted with students of SMKN 2 Subang. The teachers took on the role of tutors and gave the students a case about Integrated Pest Management (IPM). The students had a few days to solve this problem in groups and then presented their findings. There was some unease at the start, tutors found it difficult to refrain from giving instructions and students hesitated in taking up the leadership roles in the groups. However, the final results were very encouraging. Students had been able to find and understand the relevant documentation on their own and had used their smartphones to search for additional information related to IPM. Even more traditional teachers were surprised by the student performance.

Challenges:

- How to assess the students? A regular exam scores the knowledge, but how to score for skills and attitude in a school setting. Especially as PBL is a group exercise.

- How to organise it in a practical way? In PBL, groups are max 12 people, which is smaller than regular classes. It would require additional teachers or staff to guide the process.
- How to describe a case for the SMK level of education? The Dutch examples were unfit and meant for BSc level. Teachers are to integrate this approach in their lessons where and when possible: still some topics require traditional ways of teaching.
- The Dutch trainers also learned to take enough time and use repeat events for the proper introduction of the PBL method. As the focus on skills and attitudes is quite different from standard teaching methods, teachers and their school managers want to truly familiarize themselves with it before starting any experiment.

At SMKN 2 Batu, Ms Viva Hardini teaches Agribusiness in Food and Horticultural Crops. She joined the study tour and was particularly interested to see how the private sector engages with the TVETs in the Netherlands. She also participated in the follow-up training events on PBL for the horticulture sector. After the training, she applied this method

"Inviting the private sector for guest lectures"



Ms Viva Hardini
SMKN 2 Batu

[see more interviews](#)

in a way adapted to SMK students. She also started to invite more private sector for guest lectures. In her opinion, this collaboration could go to another level, if her students could actively join competitions to show their skills to the business industries.

Mr Hartono is teaching agronomy at SMKN 5 Jember, and also joined the study tour to Netherlands and sits in the Workfield Advisory Committee. SMKN 5 Jember is now collaborating with seed company PT Benih Citra Asia, with Naura Farm, a dragon fruit plantation and also with EWINDO / East West Seed Indonesia. Mr Hartono organises internships for 130 students, so he knows many of the companies. And also he knows the competencies they look for when hiring staff. According to Hartono, the action needed is to create a hybrid curriculum. This means, the curriculum follows the guidelines from the Ministry of Education but also responds to the competencies as requested by industry partners. In his view active learning approaches such as PBL help to prepare students for a career in this industry.

"We need a hybrid curriculum that combines policy guidelines and private sector needs"



Mr Hartono
SMKN 5 Jember

"Active learning methods helps to prepare students for a career in horticulture"



Ms Englie Beenen
INNOCAP Horticulture coordinator



Students of SMKN 2 Subang are studying in the field



Students of SNAKMA Lembang in the classroom

Poultry Sector Highlight

Context

Indonesia's poultry industry was valued in 2017 at about US\$ 34 billion. It provides 12 million jobs and means a cheap source of protein for many Indonesians. It is estimated that Indonesia has 3.5 billion broilers, 200 million layers, and 24.8 million poultry farmers. The farming system continues to evolve and modernize, with scaling to reduce cost price and growing attention for food safety as the key trends in this industry. So, the poultry industry requires well-educated professionals to flourish.

INNOCAP Poultry

The partnership between Aeres and the poultry sections of SMKs in Ciamis and Bawen included training of teachers on poultry husbandry and technology. Experts from Aeres in Barneveld shared the latest insights on practices: preparing the house for a new flock, assessing chicken quality, vaccination techniques, brooding management, monitoring barn climate and health status, reduction of antibiotic use. In addition, the training included guided farm visits and also financial-economic issues like cost price calculations, recording and analysis of key financial indicators. Aeres introduced two online interactive modules in Bahasa Indonesia to test Blended Learning with the SMKs. The students bring practical issues from the barn to the classroom.

Teachers are equipped with the skills and knowledge to integrate all these practical issues in their lessons.

Bromaxx® Broiler Colony System for SMKN 1 Bawen

During the study tour, SMKN 1 Bawen staff got interested in upgrading their poultry facilities. With the support of Aeres experts, the options were analysed. SMKN 1 Bawen took the decision to acquire the Bromaxx® broiler system, which was developed by Jansen Poultry Equipment. The advantages are in increased productivity and better bio-security through its design with five levels of cages. The Bromaxx® is yet to be built at the SMKN 1 Bawen, but the teachers already made an extra visit to Barneveld for further training in working with the system.

see Bromaxx® video



Teachers from SMKN 1 Bawen at the Bromaxx® training

Horticulture Sector Highlight

Context

Fruits and vegetables are traditionally part of the Indonesian diet. Domestic demand is increasing as a result of the growing population and purchasing power of middle-income households. The fruit and vegetable sector was worth US\$ 10 billion in 2018 and is important for rural employment. Most of the fruit and vegetables are grown by hundreds of thousands of small farmers. The inconsistent supply and the variation in quality, size and shape are recurring problems for traders, processors and retailers in the domestic market. It makes it difficult to compete with imported fruit and vegetables. There are clear market and employment opportunities in the sector to increase production and supply quality products for a growing and urbanizing population.

Horticulture education

The support for the horticulture sections of SMKs in Subang, Jember, and Batu combined the institutional, educational and technical dimensions. Examples of the technical dimension addressed include:

- Integrated pest management (IPM), which helps to reduce the use of pesticides on a routine basis. IPM has 8 practical steps for growers, from preventive measures like planting appropriate varieties, to monitoring pests and responsible use pesticides.

- Horticulture value chain management. This is about coordination between all the actors for collective growth. It starts with understanding the consumer and delivering their requirements in the most efficient way.
- Post harvest management. This is about the proper storage, transport and handling to make sure the consumer gets fresh produce and food losses are kept to a minimum.
- Crop nutrient management training. This training was based on proven examples of nutrient management technologies so SMK teachers could include these techniques in their teaching practices.

On all these topics, practical readers were co-developed in Bahasa Indonesia and are now being used by the SMK teachers.



Horticulture education in SMKN 5 Jember

Ruminant Sector Highlight

Context

In Indonesia, dairy is a growth market due to the growing middle-class. The average milk consumption increased to 11.8 liters per capita in 2017 and is likely to grow further. The supply of milk is dominated by smallholder farmers, who keep 90% of the national dairy herd, and channel their milk through dairy cooperatives. There is also a small but growing number of modern, productive and efficient dairy companies. Most of the dairy industry is concentrated in Java. The Friesian-Holstein breed is the most dominant type of dairy cow in Indonesia.

Ruminants education

Van Hall Larenstein University of Applied Science led a broad coalition to strengthen the ruminant courses at three SMKs. The coalition interventions focused mostly on sustainable development of human resources and infrastructures present at the SMKs. After the study tour, need assessments were done and these resulted in action plans for strengthening the ruminant departments and personal development of teachers.

On the technical part, trainers and teaching staff developed handouts and matching worksheets for practical lessons in animal husbandry including: body condition scoring, fertility, feeding, milking, calf rear-

ing, housing, hoof trimming. This work coincided with the launch of CowSignals in Bahasa Indonesia, a very practical training guide from Roodbont Publishers in the Netherlands. The manual is for training the skills of observing natural cow behavior, both individual animals as well as dairy herds. Deviations of natural behavior are analysed and the obvious next step is to find and test solutions. The partners acquired 350 copies of the CowSignals Bahasa Indonesia manual and distributed them to the three SMKs in the ruminants pilot. In the subsequent training of teachers, the use of CowSignals manual, handouts and matching worksheets was introduced. The worksheets are used at the school farm, the manuals do not leave the classroom.

[download worksheets](#)



Ruminant education in SNAKMA Lembang

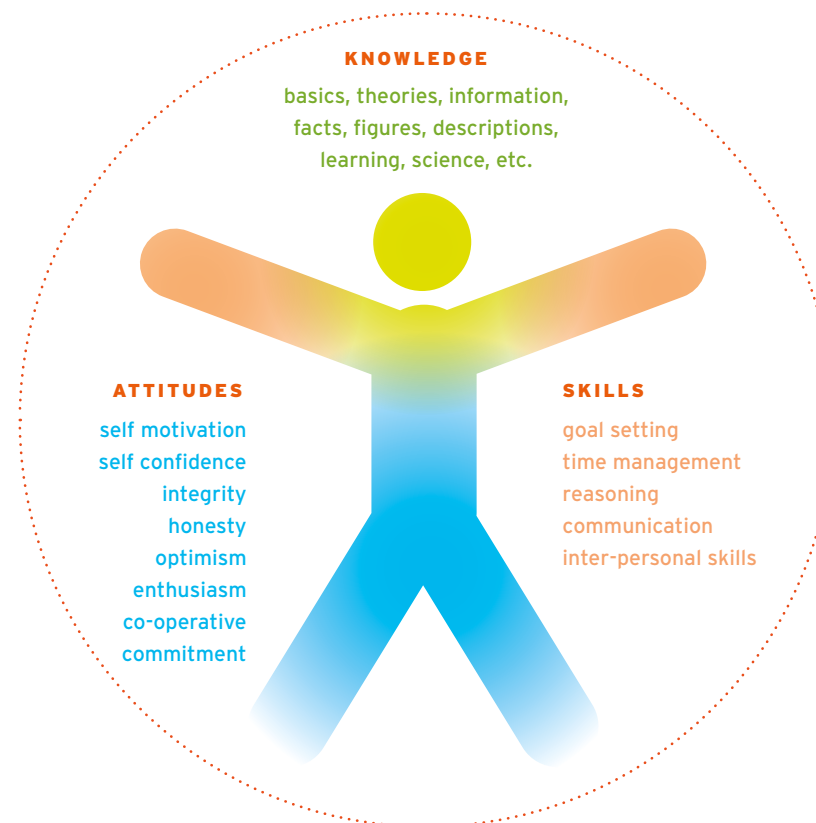
The way forward: investing in vocational education for agricultural growth

"The cooperation between Indonesia and the Netherlands can build on the lessons learned from INNOCAP and vegIMPACT NL programmes"



Mr Eko Hari Purnomo
Project Management Office
IPB Bogor

Mr Jan Verhagen
Senior scientist
Wageningen UR



Indonesia is a fast-growing economy, with substantial potential for growth in the agricultural sector. At the same time, it is an important trade partner of The Netherlands. The Netherlands is a global leader in agricultural research and education. Acknowledging that technical and vocational education and training is an intrinsic part of economic development in Indonesia, the Government of Indonesia started a process to strengthen vocational secondary schools (SMKs) in their task to educate and train young students.

Indonesia and the Netherlands worked and learned together to improve the Vocational Education and Training (TVET) system by enhancing the quality of the education at SMKs and strengthen the cooperation between education, private sector and government. Central to all this is preparing

and supporting young students to reach their full potential and be able to participate and contribute to the Indonesian society and economy.

The cooperation between Indonesia and Netherlands can build on the lessons learned from INNOCAP and vegIMPACT NL programmes. Such is the opinion of Mr Eko Hari Purnomo from the Project Management Office and Mr Jan Verhagen from Wageningen University and Research. Together, partners have worked on strengthening cooperation between SMKs and the private sector, created structures to enable continued learning and forged collaboration between institutes, staff and students within and between the two countries. Instrumental in this was the familiarisation with each other's educational system, the agricultural sector, its successes and

challenges. Joint teaching in Indonesia and visits of staff and students to the Netherlands laid the foundation for fruitful cooperation.

Especially connecting to the private sector via well-organized internships have proven to be useful in motivating students and preparing them for future work. Involvement of private sectors in school canvassing and promotion programs provided significant improvement on the quality of student input. Learning from the pilot project, partnership with the private sector may start from the student recruitment, curriculum development, learning processes (e.g. guest teachers, factory visits, and internships), student competencies assessment, until job recruitment process. Besides, online professional platforms are handy for students to create visibility on the job market and look for internships and jobs.

The revitalization programme for ruminants and poultry courses addressed SMKN 1 Cibadak, SNAKMA Lembang, SMKN 1 Bawen and SMK IPP Ciamis. For horticulture, the revitalization program was implemented at SMKN 5 Jember and SMKN 2 Subang and coordinated with the vegIMPACT NL programme. The interventions included curriculum development, strengthened partnerships between school and private sectors, infrastructure and facilities investment, and capacity building of teachers and students.

Since vocational education is strongly driven by the job market, the role of the private sector to contribute to the creation of a more sustainable flexible and adaptive vocational education system, for example through the chamber of commerce could be jointly explored.

There is also potential for online communication and coaching between Dutch and Indonesian teachers to exchange experiences, teaching methods and teaching materials. Online courses or e-learning modules can be jointly developed. In the near future, it may also open more opportunities for students from both countries to work on projects together.

To conclude, this joint cooperation is more than an exchange of knowledge, it is also an investment in young farmers lives, the education systems and relation between both countries. The developed integrated approach offers great potential for the revitalization of SMKs in Indonesia on a larger scale in the near future.

PARTNER WITH US

We welcome your ideas to join forces in supporting green education in order to strengthening human capital in agriculture. For more information please contact us at info@nesoindonesia.or.id

