Capacity development and strengthening for energy policy formulation and implementation of sustainable projects in Indonesia

CASINDO

DELIVERABLE NO. 13:

Integration of Renewable Energy Technologies in the national curriculum SPECTRUM

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Preface

This report is deliverable no.13 of the project 'Capacity development and strengthening for energy policy formulation and implementation of Sustainable energy projects in INDOnesia (CASINDO)'. The CASINDO project aims to establish a self-sustaining and self-developing structure at both the national and regional level to build and strengthen human capacity to enable the provinces of North Sumatra, Yogyakarta, Central Java, West Nusa Tenggara and Papua to formulate sound energy policies and to develop and implement renewable energy and energy efficiency projects. Information on upcoming events, the presentations and meeting minutes of project team meetings and completed project reports can be found on the CASINDO website: www.casindo.info

The CASINDO project is funded by NL Agency and implemented by a consortium co-ordinated jointly by the Indonesian Ministry of Energy and Mineral Resources and the Energy research Centre of the Netherlands (ECN), comprising the following organisations:

- Indonesian Ministry of Energy and Mineral Recourses, Jakarta.
- Muhammadiyah University of Yogyakarta, Yogyakarta.
- Diponegoro University, Semarang.
- University of Sumatra Utara, Medan.
- University of Mataram, Mataram.
- University of Cenderawasih, Jayapura.
- Institute of Technology of Bandung (ITB), Bandung.
- Technical Education Development Centre (TEDC), Bandung.
- Eindhoven University of Technology, Eindhoven.
- ETC-Nederland, Leusden.
- Energy research Centre of the Netherlands ECN, Petten.

In the course of the preparation of this progress report the authors consulted extensively with the technical teams in North Sumatra, Yogyakarta, Central Java, West Nusa Tenggara and Papua and with the Ministry of Energy and Mineral Resources. The contributions provided by these organisations are greatly appreciated.

Abstract

This report focuses on the achievements for settling a national curriculum for Renewable Energy Technologies (RET) within the framework of national programme SPECTRUM, which includes all curricula of the medium technical schools in Indonesia

Contents

List of abbreviations

BG	Biogas
BM	Biomass
BSNP	Board for National Standards in Education
CBSA	Active learning (Cara Belajar Siswa Aktif)
DGEEU	Directorate General of Electricity and Energy Utilization
EE	Energy efficiency
ETCERE	Education and Training Agency of the MEMR
ETCENEREC	Education and Training Centre for Electricity, New Energy, Renewable and Energy Conservation of the MEMR (former ETCERE)
EWG	Indonesia–Netherlands Energy Working Group
HYCOM	ASEAN Hydropower Competence Centre
IDBP	Indonesian Domestic Biogas Programme (BIRU)
KBK	Competency Based Curriculum (Kurikulum Berbasis Kompetensi)
KD	Basic competence (Kompetensi Dasar)
KTSP	School Level Curriculum (Kurikulum Tingkat Satuan Pendidikan)
MEMR	Ministry of Energy and Mineral Resources
MHP	Micro Hydro Power
RE	Renewable Energy
REP	Renewable Energy Program
RET/TET	Renewable Energy Technology (Teknologi Energi Terbarukan)
RPP	School level learning implementation plan (Rencana Pelaksanaan Pembelajaran)
SMK	Vocational and Technical School (Sekolah Menengah Kejuruan)
PV	Photovoltaic
SK	Competency standards (Standar Kompetensi)
TEDC	Technical Education Development Centre
WP	Work Package
WE	Wind Energy

1. Introduction

According to the CASINDO project document under the Working Package 8: Dissemination and communication 4 main activities had to be fulfilled:

1. To organise and conduct a national seminar on regional energy planning
2. To develop and maintain a CASINDO website
3. To prepare and update a leaflet describing the objectives, activities and results of CASINDO.
4. To participate in international seminars, workshops and conferences to present CASINDO.

From WP3 to all of these activities contributions were given. In the National Seminar on National and Regional Energy Policy Formulation & Implementation that has taken place on 25 October 2011, the Introduction of RE Training Modules at SMK was presented; especially attention was given to the steps taken in the integration of RET education at the national level. From WP3 also contributions were given to the CASINDO website and the two leaflets that have produced under CASINDO; both were distributed during the National Seminar of 10 – 11 March 2010 and the National Seminar of 25 October 2011. From WP3 also opportunities were taken to present CASINDO. In the Annex to this report the different conferences/seminars/meetings/contacts are listed, where this was done.

In the course of the implementation of WP3: Development of skilled manpower for renewable energy and energy efficiency, the teaching in RET at selected 11 pilot medium technical schools –SMK- (see report D7) made considerable progress, due to the upgrading of the teachers of these schools (see reports D8 and D9) and the development of school level RET learning implementation plans (see Reports D10 and D11). Within WP3 also a roll-out strategy for implying more schools was formulated and set in motion (see Report D12).

It became however increasingly clear that for the integration of RET in the school practice of the medium technical schools in Indonesia (SMK), RET should become part of the fields of study, as described in the national SPECTRUM programme for secondary technical education. Especially in 2011 important steps were made in this process: the expectation is that in the 1st quarter of 2012 RET will become an integral element of SPECTRUM. The main focus in this report regards therefore the integration of RET education in the national curriculum; this was done in consultation with the local CASINDO coordinator, Mr N. van der Linden.

2. Developments in the national curriculum

2.1 Introduction

This report is a reflection of accumulated experiences gathered in the course of the implementation of WP3. In this respect the experiences of the CASINDO SMK are leading, as also the discussions at the central Ministry of National Education, with TEDC and ETC/TTP will be highlighted.

This information is based on discussions with/between different stakeholders working under WP3 and the observations made in the monitoring visits carried out by TEDC and ETC/TTP joint meetings with

the 11 CASINDO SMK in the course of the CASINDO programme[1]. Aside these sources of information, TEDC has put up documents to support RTE integration in the SPECTRUM programme. These documents will be central in this report. Before elaborating on those, a short general introduction is given on the development of the national curriculum in Indonesia.

2.2 Development of the national curriculum in Indonesia

The national education curriculum has experienced many changes since the independence of Indonesia. Major changes occurred in 1947, 1952, 1964, 1968, 1975, 1984, 1994, 2004 and the latest is 2006. These changes are a consequence of changes in the political system, in the sciences, and also in the social, cultural, economic circumstances of Indonesia. From the outset the entire national curriculum was based on the Pancasila and the 1945 Constitution.

Since 1975 the curriculum became more oriented essential education goals and had an integrative approach. Efficiency and effectiveness were emphasized. The Development of the Procedure Instructional Systems (Pengembangan Prosedur Sistem Instruksional) was introduced, which was influenced by psychology of behaviorism[2], in which a strict relation between stimulus to and response by the student to this stimulus was emphasized (focus on manipulating the student's leaning environment for better learning results).

Since 1984 the emphasis was put on careful instruction and choice of lesson materials (adapted to level of school classes and level of students) and promoting active learning (CBSA - Cara Belajar Siswa Aktif). Learning goals were for the first time defined along the taxonomy of Bloom (see below in this paragraph). From 1994 onwards the study load of the students was more taken into account by limiting the number of subjects and the substance of each subject. Since 1994 the concept of Competency-Based learning was introduced and developed. Competency-based education had to focus on the development of the ability to do (competence), in accordance with certain previously set performance standards.

In 2000 the first competency based curriculum (KBK- Kurikulum Berbasis Komtensi) was designed and had to be implemented by all schools in Indonesia in 2004. In this approach a major shift in the responsibility for the design and implementation of teaching and learning in the classroom was envisaged. In the curriculum of 2000 the responsibility for the development and implementation of learning processes was now divided between the Ministry of National Education at the one hand and the schools with management oversight at the district level at the other hand. Whereas the Ministry is now responsible for the development of global educational standards, the school is primarily responsible setting these standards at school level by designing a syllabus for each subject and related instruction programmes at the classroom level.

[1] Initial visits and subsequent monitoring visits have been carried out in respectively June 2009, July 2010, and May 2011. Aside these visits meetings with the 11 CASINDO SMK have taken place in October 2009, October 2010, and October 2011.

[2] Behaviorism, also called the learning perspective (where any physical action is a behavior), is a philosophy of psychology based on the proposition that all things that organisms do—including acting, thinking, and feeling—can and should be regarded as behaviors (according to http://en.wikipedia.org/wiki/Experimental_psychology); Learning can the best be approached by altering behavioral patterns or modifying the learning environment.

The taxonomy of Bloom[3] remained central in the definition of educational objectives. Bloom's Taxonomy divides educational objectives into three types: Cognitive, Affective, and Psychomotor. Within these types, learning at the higher levels is dependent on having attained prerequisite knowledge and skills at lower levels. Bloom's Taxonomy aimed at motivating all involved in education to focus on all three types of educational objectives at the same time, so creating a holistic approach to education.

Cognitive educational objectives regard knowledge, comprehension, and critical thinking of a particular topic, starting from remembering and going up to understanding, applying, analysing, evaluating, and to creating. Affective educational objectives are about the awareness and growth in attitudes, emotion, and feelings, beginning with receiving and going up to valuing, organising, and to characterising. Psychomotor educational objectives describe the ability to physically manipulate tools or instruments (i.e. sensory guidance motor activities, mental preparedness to (re)act, response by practicing, habituation of actions, complex motor actions, and adaptation to / origination of actions[4]).

Bloom's taxonomy is in particular relevant for the distinction between normative, adaptive, and productive subjects that is used in the curricula for medium technical education. Normative subjects regard Religious education, Citizenship Education, Indonesian language, Physical Education Sport and Health, and Art and Culture (19% of lesson hours); Adaptive subjects concern English, Mathematics, Natural Sciences, Physics, Chemical Science, Social sciences, Communication, and Entrepreneurship (46% of lesson hours). Productive subjects concern all aspects with respect to a technical education subject (i.e. plumbing, electrical engineering, mechanical engineering, etc.)(26% of lesson hours). Aside these main groups of subjects, there is space for Local content, as well as extracurricular Personal development (9% of the lesson hours).

The current Competency Based Curriculum is based on the KBK of 2003 (National Education Law No. 20, 2003), in which the establishment of a new curriculum according to new educational standards was envisaged. The assessment of teaching subjects relevant for basic competences is stated in the Standard of Competence Graduates / SKL (No. Permendiknas. 23, 2006). Within this legal framework descriptions of competencies in secondary technical education subjects were given within the SPECTRUM Programme.

2.3 The central place of the SPECTRUM Programme

The Spectrum programme lists all the subjects that are being taught as disciplines in the medium technical schools (SMK) in Indonesia under the main category of Technology and Engineering [5]. The Spectrum programme is being administered by the Directorate 3 (D3) of SMK Guidance that falls under the Directorate General 2 (DG2) for Secondary Education of the Ministry of National Education. D3 fulfils the following functions:

- Preparation of materials for the formulation of policies in the field of vocational high school education

[3] Bloom's Taxonomy is a classification of learning objectives within education proposed in 1956 by a committee of educators chaired by Benjamin Bloom in *Taxonomy of educational objectives: the classification of educational goals*.
[4] Worked out by other educationalists; not by Bloom
[5] This done in Attachment to the Decree of the Director General of Primary and Secondary Education 251/C/KEP/MN/2008 of 22 August 2008

- Preparation of the formulation of standards, criteria, guidelines and procedures in the field of vocational high school education.
- Provision of technical guidance, supervision and evaluation in the field of vocational high school education.

Within this D3 the Deputy Director Learning (DD3) is responsible for the Section of Assessment and Accreditation, and *Section Curriculum Implementation*. To this Section of Curriculum Implementation proposals/suggestions for new curricula and/or modifications/additions have to be submitted primarily to the DD3.

Currently the following 18 subjects taught under Spectrum Technology and Engineering[6], are:

1. Building Techniques
2. Mechanical Plumbing and Sanitation
3. Survey and Mapping Techniques
4. Electrical Power Engineering
5. Techniques and Procedures for Air Cooling
6. Mechanical Engineering
7. Automotive Engineering
8. Aircraft Technology
9. Techniques Boating
10. Textile Technology
11. Graphic Techniques
12. Mining Geology
13. Instrumentation Industry
14. Chemical Engineering
15. Sailing
16. Industrial Engineering
17. Petroleum Engineering
18. Electronic Engineering

From the outset of the CASINDO programme and also before there were contacts between the Ministry of Energy and Mineral resources (MEMR) and TEDC with DD3 on possible options for integrating RET in the SPECTRUM programme. During these contacts two main issues emerged:

1. the future employment perspectives for students with a RET SMK degree, and
2. the way RET could be integrated in Spectrum (as part of one of the 18 existing subjects, or as a new 19th subject.

DD3 proposed to clarify these issues in an academic document that also should give a justification for the new attention RET should get within secondary technical education that is rooted in Indonesia's energy policy decisions.

[6] Besides the main category Science and technology the Spectrum programme for vocational education also covers the main categories: Information and Communication Technology (3 subjects), Health (one subject), Arts, Crafts and Tourism (7 subjects), Agribusiness and Agro technology (7 subjects), and Business and Management (3 subjects).

2.4 TEDC's proposal to the Ministry of National Education

2.4.1 TEDC's RET activities

From 2006 onwards TEDC was involved in cooperation with ETC/TTP in the development of different RET programmes. It started with:

1. RET Program Development for TEDC Career Centre, implying:
   - Setting out five areas of RET and its development is done in stages one by one starting from the MHP, Solar PV, WE, biomass and biogas.
   - Setting a pattern of development for each field, starting from the ToT, SKKD and syllabus development, preparation of modules, training Career Centre.
   - Developing partnerships with stakeholders and practitioners RET

2. After that RET development program for SMK was done, which entailed:
   - Development and Implementation of Teacher Training RET
   - RET Program Validation
   - Preparation of specification of demonstration equipment needed for RET education
   - Expansion of implementation of RET programme from 11 SMK with 19 SMKs to 30 schools
   - Submission of RET as a new Skill Competency Program in SMKs to Spectrum consisting of:
     - Compilation of Academic paper for DD3
     - Compilation of Competency Standard and Basic Competencies (SKKD) and Syllabus of RET for DD3
     - Specification of demonstration equipment for RET education in SMK to DD3

2.4.2 Academic Paper

TEDC has drawn up the Academic Paper[7], in which a policy justification was given for RET integration in Spectrum and a presentation of TEDC's achievements regarding RET programming and module development and the development of its laboratory facilities since 2006 was given. The Academic paper states that the legal basis for an education program on Renewable Energy Technologies can be found in different Laws and Acts.

a) Law No. 20 Year 2003 on National Education of Indonesia. The Law stipulates that the national education system should be able to guarantee quality education, by improving the quality, relevance and efficiency of education to meet the challenges from the demands for changes in local, national, and international education reform. The upgrading of the skills within the areas of new and renewable energy are not serving only local, but also national and global needs. Therefore the attention to new and renewable energy should be anticipated in the education of the national workforce.
b) Energy Act No. 30 of 2007 is the legal basis for Indonesia's energy supply policy for serving the national energy needs, the policy priorities of energy development, resource utilization policy of national energy and national energy stocks. The law declares that every Indonesian citizen has the right to access modern energy sources (light, heating cooking). Energy conservation is in the Energy law considered as a systematic attempt to conserve energy resources and to increase domestic energy utilization efficiently.
c) The policy on renewable energy was further worked out in Presidential Regulations / Instructions regarding the national energy policy (2006), the provision of electricity (2005), the commercialization of biofuels and liquefied coal (2006, 2008), the generation of renewable energy at medium scale (2006), the pricing of geothermal energy (2009), and small scale renewable energy applications (2002, 2006).

[7] Renewable Energy Competencies In Technical Vocational High Schools In Indonesia, Background, Definition of skills competencies, PPPPTK BMTI Bandung, October 2011

d) The energy law No 30 and building law No 28, as well as governmental / presidential regulations on conservation policy (2009), 5-year national energy policy (2006), for saving energy and drinking water (2008) guides the policy on energy conservation.
e) Renewable energy and energy conservation programs are integral part of the Eleven National Priority United Indonesia Cabinet II (2009-2014) on: Bureaucratic Reform & Governance, Education, Health, Poverty Reduction, Food Security, Infrastructure, Investment Climate and Business Climate, Energy Security, Environment and Disaster mitigation, Disadvantaged areas, and Post-Conflict areas.
f) In the Energy Vision 25/25 the direction of the national energy policy direction is outlined and aiming at to increase the utilization of renewable energy to 25% by 2025. The vision stressed to 2 issues: energy conservation by improving energy efficiency, by diversifying energy supplies through renewable energy. .

Regarding policy priorities the Academic Paper finally states that sustainable energy management objectives must be supported by capacity building of human resources that are designed and conducted in a systematic and programmed with either through vocational secondary education and higher education in accordance with the characteristics of renewable energy technologies.

About employment perspectives the Academic Paper gives an indication of the professions new RET students can be employed. Besides that an estimate is given of the human resources needed for MEMR related renewable energy within the framework of the Strategic Plan 2010-2015, issued by the Directorate General of Electricity and New Energy of the Ministry of Energy and Mineral Resources.

No	Fields	2010	2011	2012	2013	2014	2020	2025	Assumptions
		Number of Persons							
a	Generation	9,942	10,834	11,814	12,892	14,084	20,421	29,610	1 org / 4MW
b	Transmission	1,803	1,948	2,058	2,129	2,290	2,633	3,027	30 Km / org
c	Distribution	15,149	15,818	16,518	17,257	18,015	23,419	30,444	50 Km / org
d	Business Support	13,750	15,125	16,638	18,301	20,131	29,189	42,324	5 persons per company, growth company average 1% per year
e	Energy Manager	150	300	450	600	750	1,500	2,250	3 persons for each unit per building
f	New Renewable Energy (PLTB, PLTS, biomass)	250	400	550	700	850	1,700	2,550	5 persons for every 10 units
	Totals	**41,044**	**44,425**	**48,028**	**51,879**	**56,120**	**78,862**	**110,205**	

The table shows that, if out of the 30 SMK, 10 open a RET vocational skill competency discipline of one group per year of 30 students, then 300 renewable energy technicians will graduate in 2015; these people are trained to work in the energy field or fields of work related to energy and electricity. According to MEMR's estimate, there should be ample place for new RET trainees within MEMR.

2.4.3 SMK RET Educational Program with Competency Definitions

Besides the Academic Paper, TEDC elaborated the Description of Education Program Vocational High School[8]. In this description the purpose of skills competencies related to Renewable Energy

[8] Description of Education Program Vocational High School, PPPPTK BMTI BANDUNG, August 2011

Technologies (RET) were given. The purpose includes the aspects the taxonomy of Bloom is covering: it regards professional attitudes (affective), social interaction skills (affective), but also skills related to the proper handling of the functioning of RET in practice (psycho motor), and the skills to acquire more knowledge about this and RET knowledge in general (cognitive). The purposes as indicated in the RET Program document are the following.

Purposes RET Educational Program

a. Establishing a professional attitude for working quickly, accurately and following procedures or codes of ethics.
b. Fostering social interaction skills, such as communication, honesty, integrity, initiative, adaptability, and the ability to cooperate with other people either formally or informally.
c. Improving the knowledge and skills in the operation, maintenance and installation of renewable energy systems.
d. Developing the experience to be able to plan and organize the work and to solve problems according to the responsibilities given as an implementer / renewable energy technician.
e. Improving the knowledge and skills in the manufacturing of renewable energy system components.
f. Improving the knowledge and skills in conducting feasibility studies related to renewable energy systems.
g. Improving the knowledge and skills related to the management of renewable energy systems.
h. Increasing the capacity for renewable energy technologies entrepreneurship.

In accordance to the requirements of the national curriculum regarding General Competencies and Vocational competencies were defined.

a. General Competencies

1. Behave in accordance with the teachings of religion in line with adolescent development
2. Optimal self-development by taking optimal advantage of own skills and to improve own deficiencies
3. Demonstrate an attitude of confidence and of responsible behavior and actions, while working
4. Participate in the enforcement of social rules
5. Respect for global diversity in religion, nations, tribes, races, and socio-economic groups
6. Establish and implement information and knowledge in a logical, critical, creative, and innovative way
7. Demonstrate ability to think logically, critically, creatively, and innovative in making decisions
8. Demonstrate ability to develop a learning culture for self-empowerment
9. Demonstrate a competitive attitude and sportsmanship for getting the best results
10. Demonstrate ability to analyze and solve complex problems
11. Demonstrate ability to analyze the natural and social phenomena
12. Use the environment productively and responsibly
13. Participate in social life within in the democratic context of the nation and state
14. Express oneself through art and cultural activities
15. Appreciate works of art and culture
16. Produce creative works, both individually and in groups
17. Maintain health and safety, physical fitness, as well as environmental hygiene
18. Communicate orally and in writing effectively and courteously
19. Understand the rights and obligations of oneself and others in the association in the community
20. Appreciate the differences of opinion and have empathy toward others
21. Demonstrate skills of reading and writing manuscript systematically and aesthetically
22. Demonstrate skills of listening, reading, writing, and speaking in Indonesian and in English
23. Master competencies and entrepreneurial expertise to meet the demands of the workplace or to attend higher education in accordance with admission requirements.

b. Vocational Competencies

1. Conducting feasibility study of renewable energy utilization.
2. Putting up the components of renewable energy technologies systems
3. Operation the renewable energy unit including the control and system settings, either manually or computer-based (with a program PLC / SCADA).
4. Maintenance of the equipment of the renewable energy unit(s), including its hardware and software, in

accordance with the requirements of the operational characteristics of equipment / systems.
5. Instalment renewable energy unit equipment, including hardware and software, in accordance with the requirements of the operational characteristics of the equipment / systems.
6. Management of renewable energy unit(s) in a productive way for economic development, while taking care of environmental conservation.
7. Mastering of the basics of entrepreneurship in the field of renewable energy technologies.

The Vocational Competencies were more specifically defined with respect to each RET, in accordance with the distinction made by the Board for National Standards in Education (BSNP) between Competency standards (SK) and Standard Competencies (KD). For this firstly the SK per RET were defined and secondly the KD that each RET requires. The whole programme gives the definition of Competency standards for General RET Competencies and Concentration RET Competencies.

The General RET Competencies aim at the provision of the understanding of knowing-why, the related technical comprehension of knowing-how, and the ability to handle quantitative and also qualitative reasoning. The Concentration RET Competencies are focused on equipping graduates to perform duties in their concrete future jobs, including the development of professional attitudes and aspects like responsiveness, rational thinking, decision-making, responsibility, independence and the ability to work together.

The programme envisages professional employment prospects of graduates who can be employed in various industrial sectors, as among others:

1. Electric Power Generation
2. Consultancy
3. Construction / Development
4. Manufacturing Industry
5. Mining industry
6. Industrial Processes
7. Field of Hospitality facilities
8. Field of Hospital facilities
9. Field of Building
10. Areas of Entrepreneurs Maintenance / Service

in the following functions amongst others:

1. Technicians in electrical installation of renewable energy
2. Operators in the generation or processing
3. Technicians for maintenance and repair
4. Implementing a feasibility study
5. Technical extension workers in the field of renewable energy
6. Supervisors for the experienced
7. Managers of small-scale electricity plants

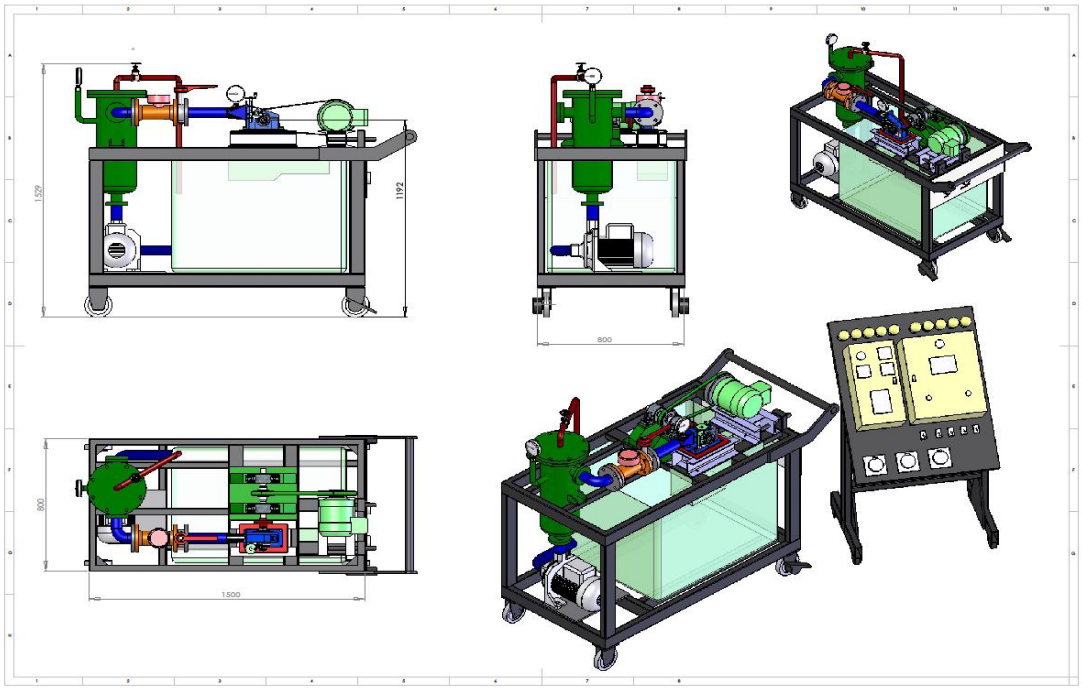
Finally the programme gives a specification of the total number of hours for normative, affective and productive (RET) subjects. The total number is set on 4,600 hours per 3 school years; for 4 school years (with RET Concentration competencies) this would be estimated on 6,100 hours.

2.4.4 Specification demonstration equipment

In consultation with ETC/TTP, TEDC elaborated wit a team of specialists a list of demonstration equipment, or parts of such equipment with technical specifications and an indication of prices[9]. For this several equipment suppliers were asked for quotations, in order to give a fair price indication. The prices were indicated against a clear aiming at a good quality of (parts of) the equipment. The listing covered all renewable energy technologies, to which were attended in the CASINDO SMK Programme (i.e. MHP, PV, WE, BG, BM). The listing was the first used for the acquisition of demonstration equipment by the 11 CASINDO SMK, but served later as a part of the dossier that TEDC had prepared for the Board of Education and Human Resource Development Education Quality Assurance of the Ministry of National Education regarding the integration of RET in the national curriculum. The 11 CASINDO SMK should use the listing and the pricing compulsory, but were free in choosing their supplier(s). As soon as RET is integrated in the national curriculum, the Ministry of National Education will use the specifications for demonstration equipment itself for equipping schools that are involved in RET appropriately.

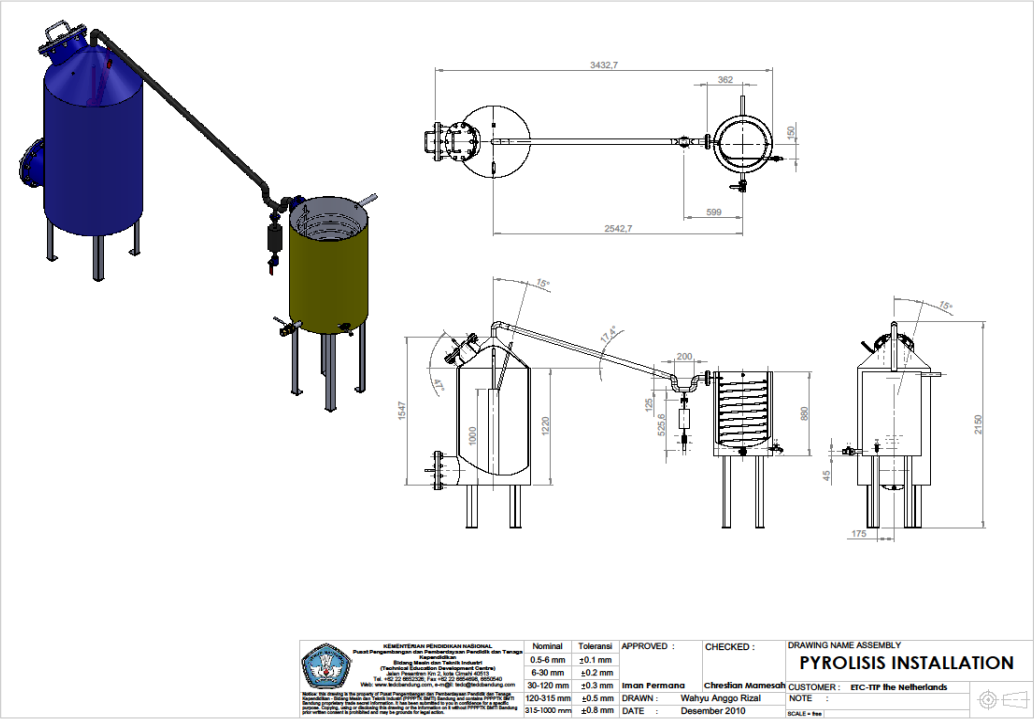
In this report two technical drawings are displayed as examples: the first concerns the Test Bed for testing MHP turbines and the second regards a Pyrolysis installation. In both cases technical also technical drawings were made of parts of these devises.

Fig 1: MHP Test Bed



[9] Panduan Pengadaan Alat Bantu Pembelajaran Teknologi Energi Terbarukan, April 2011; Spesifikasi Alat Bantu Pembelajaran Teknologi Energi Terbarukan Untuk Sekolah Menegah Kejuruan, April 2011, PPPPTK BMTI, Bandung Dengan ETC/TTP Belanda Dalam Program CASINDO

Fig 2: Biomass Pyrolysis Installation



2.4.5 Invitation Ministry of National Education

After earlier contacts between DD3 (Sub Directorate Learning) and TEDC, an invitation was extended to TEDC and ETC/TTP for information sharing and discussion on the integration of RET in the Spectrum Programme. In the meeting that took place on 26 September 2011were present Dr. Ir. Agung Budi Susanto MM - Head of the Sub Directorate, Drs Mansyur Syah MM – Head curriculum, and Drs Joko Adi Sasmito – officer Accreditation. Drs Iman Permana from TEDC provided an extensive presentation, herein giving information about the different components of the dossier TEDC would submit to the Ministry. From TEDC was also present Dr. Ahmad Dahlan – Vice Director Information and Communication of TEDC. ETC/TTP was represented by Drs Eric Kamphuis – ETC Manager CASINDO SMK Programme, as well as Drs Rogier Verschoor – ETC Officer CASINDO SMK Programme were present. Both gave confirmation to the presentation of Drs Iman Permana and were adding clarification in case requested.

The representatives of DD3 were positive about the content of the presentation and invited TEDC to quickly proceed with the submission of the dossier. Dr. Agung stated that the dossier should contain one extra element: an example of a social community development project executed by SMK students, where a particular RET (referred was to biogas) is used for the benefit of the local population. DD3 was prepared to provide funding, in case for such a case study extra expenditures had to be incurred. Dr. Ahamad Dahlan of TEDC stated that TEDC would meet this requirement.

2.5 Conclusion

With the invitation by the Ministry of National Education for submitting the dossier regarding the integration of RET in the Spectrum Programme and all the work done by TEDC (as is shown in this report), the submission in the first quarter of 2012 can be carried out. Decision-making on the new Spectrum programme is expected to be quick, as there is now urgency to establish of the new version of this programme, due to delays in the recent past. The integration of RET in the Spectrum programme will have a big impetus on the SMK that are thus far involved in teaching RET in their schools (up to now 31SMK). They are then in the position to open a new RET study option in their schools.

Annex: Dissemination on WP3 activities/results

In the following conferences/seminars/meetings/contacts the Development of skilled manpower for renewable energy and energy efficiency (WP3) under CASINDO has been disseminated.

1. Meeting 14th Energy Working Group Indonesia – The Netherlands on 1 – 3 December 2009 in Jakarta with field visit to Technical Education Development Center (TEDC)
2. National Seminar CASINDO, Jakarta on 10 – 11 March 2010
3. Seminar Knowledge for Development, organized by HBO Raad 22 Juni 2010
4. Meeting with all involved in renewable energy within SNV on 26 August 2010
5. EVD seminar on ADB in the Hague, 7 September 2010
6. Meeting 15th Energy Working Group Indonesia – The Netherlands on 8 –11 November 2010 in Amsterdam
7. Contacts with UNDP's Integrated Micro-hydro Development and Application Program (IMIDAP) in Indonesia on combined trainings (2010)
8. E-9 member countries (regarding Education for All) Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria, and Pakistan focus on improvement of teacher training; TEDC and PT ENTEC set up International Teacher Training E-9 Programme on Micro Hydro Power- Basic Level at invitation of Ministry of National Education in 2010.
9. Meetings with MHPP (GIZ funded) in Indonesia (2009 – 2011)
10. ASEAN Hydropower Competence Centre (HYCOM) in Bandung introduced standardised MHP technology packages to manufacturers and engineers for regional and international technology transfer. HYCOM was initiative of the Asean Centre for Energy (ACE), GTZ, TEDC (also TEDC's role in CASINDO) and PT Entec (2010, 2011).
11. Contacts with HIVOS on Iconic Island project (2010-2011)
12. Two articles by Iman Permana (TEDC) and Eric Kamphuis (ETC/TTP) on Renewable energy technologies at medium technical schools in Indonesia disseminated on CASINDO National Seminars (2010, 2011)
13. TEDC's contribution to 5 mason trainings for SNV/HIVOS' project Indonesian Domestic Biogas Programme –BIRU- (July 2010-February 2011), in line with TEDC's SMK module development.
14. CASINDO National Seminar, Jakarta on 25 – 26 October 2011
15. Contact with University of Twente on CASINDO approach (2011)
16. Seminar Duurzame Energie in Indonesië, by Cleantech Holland in Zoetermeer on 14 Juni 2011
17. Film about CASINDO SMK programme used in CASINDO SMK and other SMK
18. Contacts with Programma Uitzending Managers (PUM) on module development RET in polytechnics school in Ambon (2011)
19. Contacts with Alliander (Dutch electricity network company) on PV solar project in Lombok in cooperation with SMKN1 Kuripan (2011)
20. Conference of SWITCH-Asia Network Facility on energy efficiency solutions (EU) in Jakarta on 9 – 11 November 2011
21. Conferentie Onderwijsagenda 2015, organised by Global Campaign for Education-Nederland on 18 November 2011
22. Contacts with GIZ Vocational education, Germany (2011)
23. Contacts with PV company Roy Samuel Citra Katon in Jakarta (regarding installation of 5,000 PV units in Jayapura and role SMKN 3 Jayapura for training PV skills)(2011)