



CHAMBER OF MINES OF SOUTH AFRICA

Serving South Africa's Private Sector Mining Industry since 1889

*Working together  
for a sustainable  
future since 1889.*

# THE FUTURE OF VENTILATION QUALIFICATIONS

SAIOH Conference

Dries Labuschagne

18 August 2011

- Landmark dates
- Current qualification system
- Latest developments
- Proposed “new” system
- Challenges
- Conclusion

# Landmark Dates

---



1889



Chamber of Mines

1911

Mines and Works Act No 12:

Permitted the granting of certificates of competency for a number of skilled mining occupations to whites and coloureds only.

1916

CoM arranged courses for dust Inspectors

1920

JP Rees started lecturing ventilation Officers

# Landmark Dates

---



1944



Mine Ventilation Society

# Landmark Dates

---



1950s



AWT Barrenburg



JdV Lambrechts



WL le Roux



GD Beadle

1956

Amended Mines and Works Act No 27:

Repeal Section:

Permitted the granting of certificates of competency for a number of skilled mining occupations to whites and coloureds only

# Landmark Dates

---



1960s



RM Stroh



R Hemp



W Holding



JHJ Burrows

# Landmark Dates

---



1970s



J Guthrie



DE Wrigley



HES Moorcroft



D Marais

## 1970s

- MVS published the following text books:
  - Mine Ventilation Notes for Beginners – 1971
  - Ventilation of South African Gold Mines – 1974

## 1980 / 90s

- Other text books published:
  - Environmental Engineering in SA Gold Mines – 1982
  - Environmental Engineering Data Book – 1992

## 1990s

- Chamber of Mines close down Training wing
- Administration to Technicon SA (UNISA)
- Independent Trainers

# Landmark Dates

---



1991

Minerals Act and Regulations Act 50 of 1991

Regulation 2.16.1

At every underground mine, or such other mines as the

Principal Inspector of mines may direct, **the manager shall**

**appoint a competent person or persons who shall**

**hold a qualification in Mine Environmental Control,**

**recognized by the Chief Inspector.....**

# Landmark Dates

---



1996

Mine Health and Safety Act 29 of 1996

Regulation 22

a) The competent person referred to in regulations 5.1( 1) must be in possession of the following -

i) **Where the competent person performs the obligations underground:**

1) **Certificate in Mine Environmental Control, issued by the Chamber of Mines of South Africa.**

ii) **Where the competent person performs the obligations on surface:**

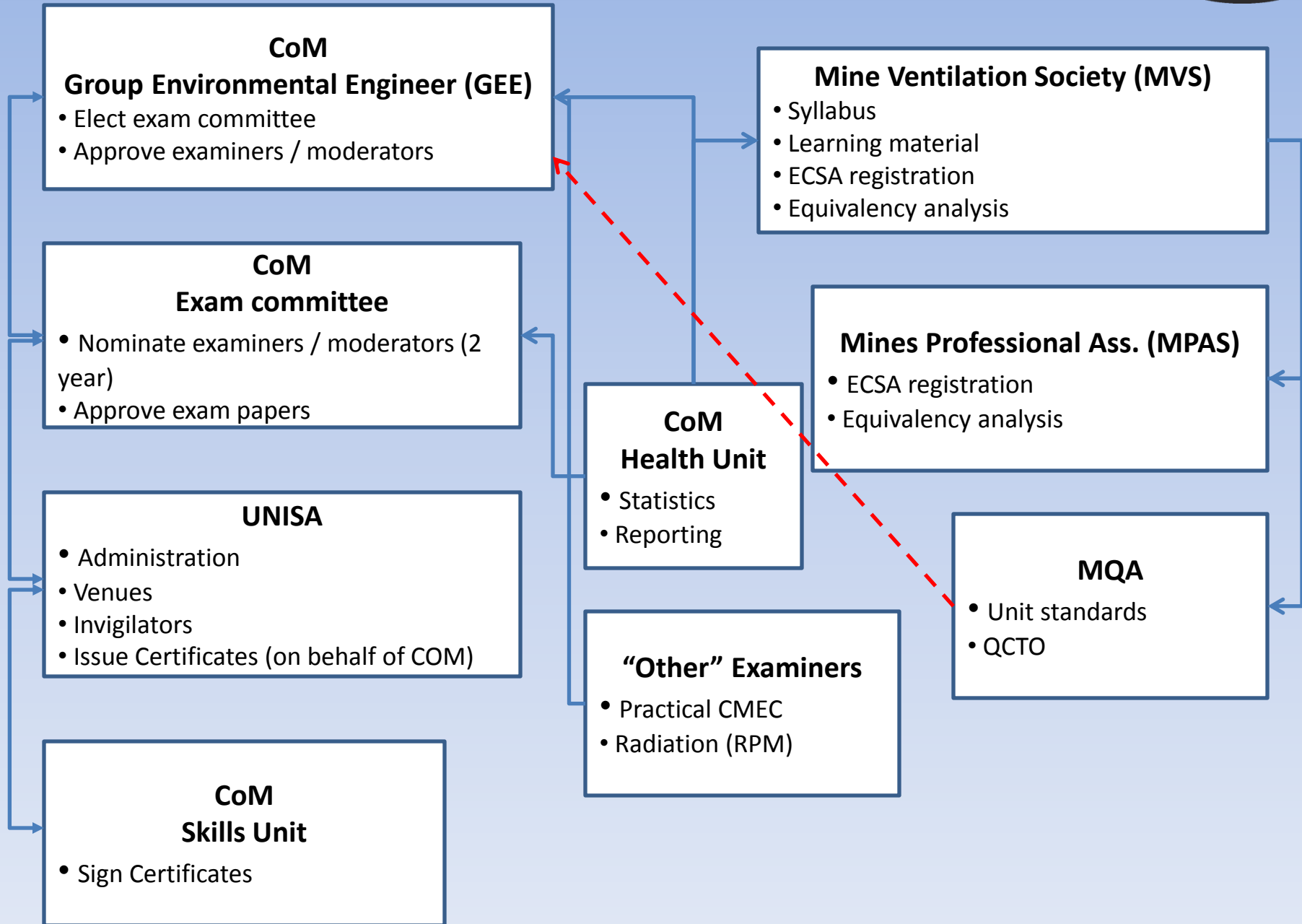
1) **Intermediate Certificate in Mine Environmental Control, issued by the Chamber of Mines of South Africa, and be certified as an Occupational Hygienist by the Southern African Institute for Occupational Hygiene; or**

2) **Certificate in Mine Environmental Control, issued by the Chamber of Mines of South Africa.**

## 2000s

- Amendment of Higher Education Act
- Higher Education Qualifications Framework
- Establishment of Quality Council for Trades & Occupations

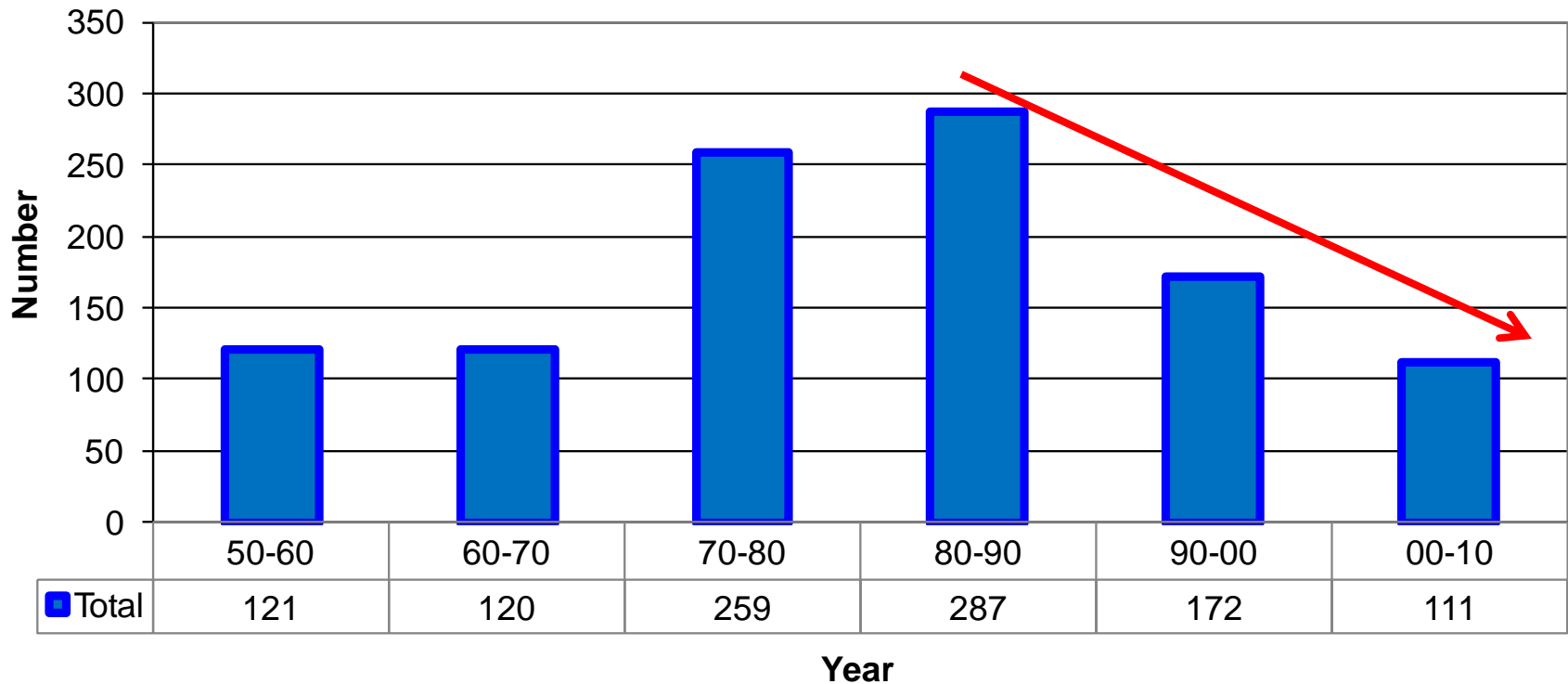
# CURRENT QUALIFICATIONS PROCESS



# CURRENT QUALIFICATIONS PROCESS



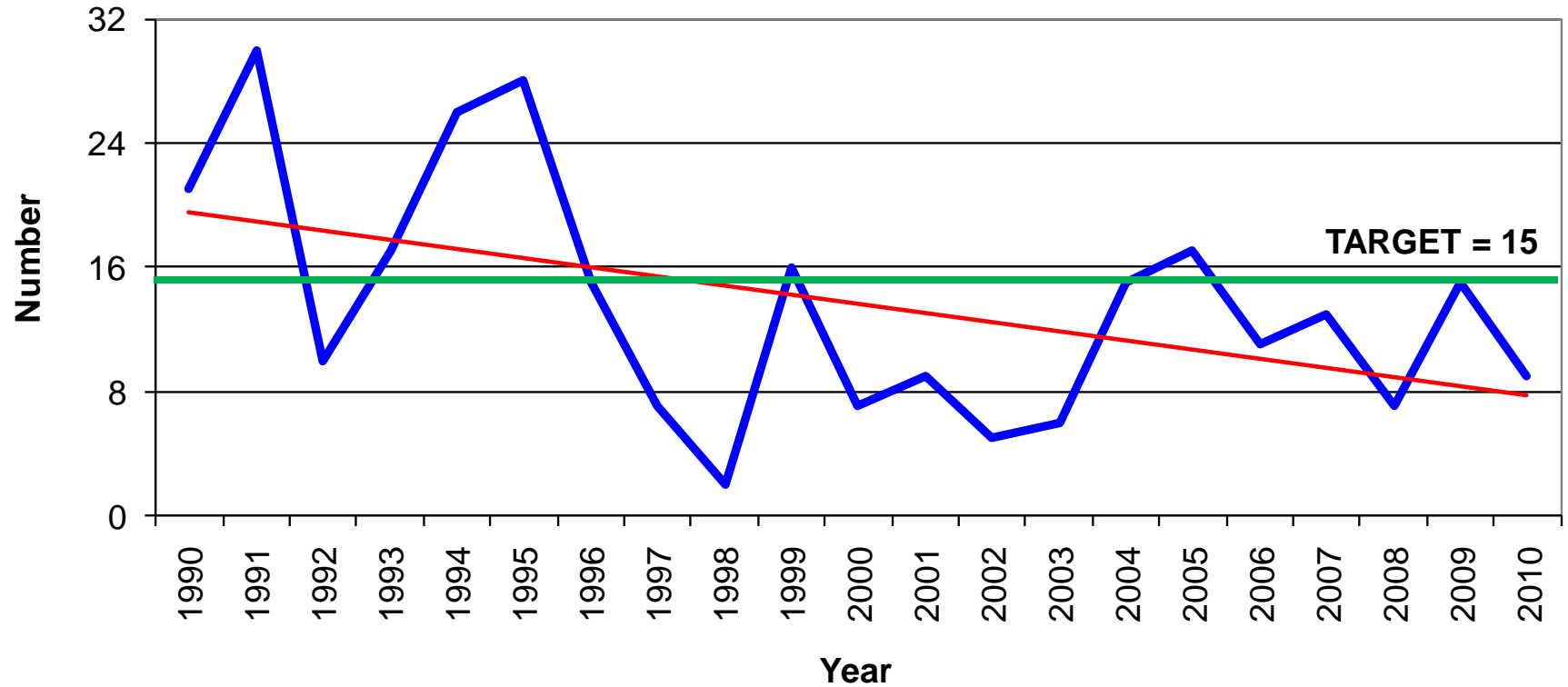
## Number CMEC Issued per Decade



# CURRENT QUALIFICATIONS PROCESS



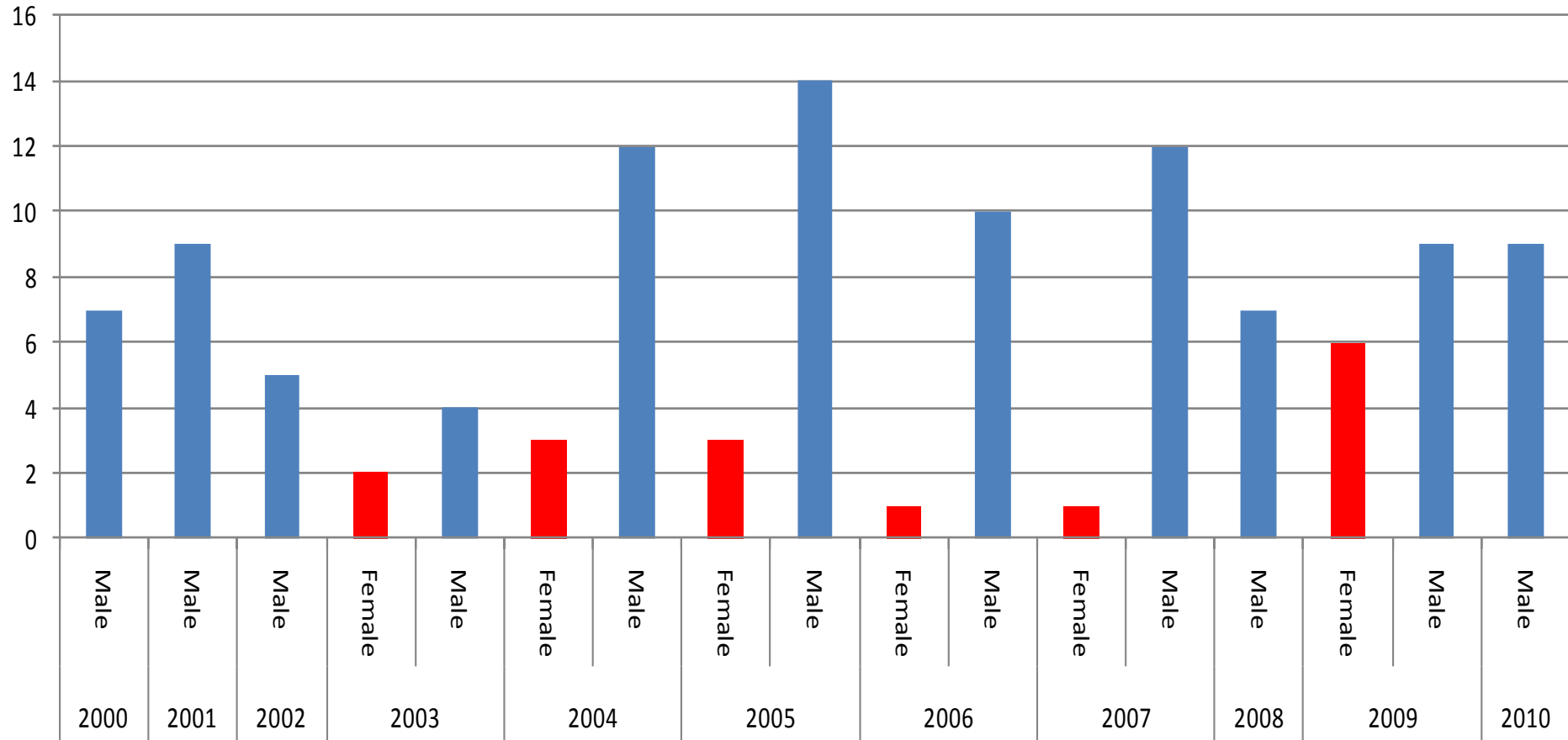
## Number CMEC Issued 20 Years



# CURRENT QUALIFICATIONS PROCESS



## Certificates by Gender



## UNIT Standards (MQA)

- >70 Unit Standards completed
- All submitted to SAQA for registration
- Learning programmes to be developed

## CMEC Syllabus

- Last revised late nineties
- Revision in 2009 / 2010
- Not in line with ECSA requirements
- Not in line with Taxonomy
- Papers 1 & 2 revised in line with Blooms Taxonomy

# LATEST DEVELOPMENTS



## Blooms Taxonomy

### CURRENT % DISTRIBUTION FOR SYLLABUS

	Paper 1		Paper 2		Paper 3		Paper 4		Paper 5		Paper 6		Total	
Analysis	15	9.87%	4	10.26%									19	10.06%
Application	47	30.92%	13	33.33%									60	32.13%
Comprehension	45	29.61%	11	28.21%									56	28.91%
Knowledge	22	14.47%	8	20.51%									30	17.49%
Synthesis	9	5.92%	1	2.56%									10	4.24%
Evaluation	14	9.21%	2	5.13%									16	7.17%
	152	100.00%	39	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	191	100.00%

### RECOMMENDED % DISTRIBUTION FOR SYLLABUS

Analysis	15.00%
Application	10.00%
Comprehension	20.00%
Knowledge	30.00%
Synthesis	10.00%
Evaluation	15.00%
	100.00%

## Chamber Qualifications



**2015**

**CHAMBER OF MINES**

**TERTIARY INSTITUTIONS**

**LEVEL 10**

**PHD  
DEGREE**

**LEVEL 9**

**MASTERS  
DEGREE**

**LEVEL 8**

**HONORS  
DEGREE**

**Mine Vent  
Engineer**

**LEVEL 7**

**BACHELOR  
DEGREE**

**UJ - Full time  
UNISA - Distance**

**Mine Vent Eng  
Technologist**

**LEVEL 6**

**CMEC  
(Not Graded)**

**ADVANCED  
CERTIFICATE**

**Distance Learning  
UNISA**

**Mine Vent Eng  
Technician**

**LEVEL 5**

**HIGHER  
CERTIFICATE**

**Distance Learning  
UNISA**

**Snr Mine Vent  
Eng Practitioner**

**MQA – UNIT STANDARDS / QCTO**

**LEVEL 4**

**INTERMEDIATE 2  
(Not Graded)**

**NATIONAL  
CERTIFICATE**

**Mine Vent Eng  
Practitioner**

**LEVEL 3**

**INTERMEDIATE 1  
(Not Graded)**

**NATIONAL  
CERTIFICATE**

**Asst Mine Vent  
Eng Practitioner**

**LEVEL 2**

**PRACTICAL  
(Not Graded)**

**NATIONAL  
CERTIFICATE**

**Observer / RPM  
/ AQA**

**LEVEL 1**

## Transition – NB Dates

- Remain on current system with Chamber or Mines (current students)
- Last entry for Intermediate P1 “New Students” – 2012/2013
- Administration from UNISA to Chamber – January 2012
- New registrations on “New” system – 2013
- Final CMEC examination – October 2015
- Full CMEC not obtained 2015, no qualification

# PROPOSED “NEW” SYSTEM



## Level 5

CMEC requirements incorporated into **UNISA** Framework

### ANNEXURE H: HIGHER CERTIFICATE in MINE VENTILATION ENGINEERING H. Cert. (M Vent Eng)

Qualification code	Once approved by Senate and registered with SAQA a code will be allocated to this new Qualification.		
Qualification descriptor	Higher Certificate at Exit NQF Level 5 with Minimum Credits 120. CESM Category: <b>080901</b> (HESA Circular 25/2007)		
Name of qualification: Type: Designator: Qualifier:	Higher Certificate None in Mine Ventilation Engineering		
Purpose of qualification	To provide students with the basic introductory knowledge and practical techniques to apply such knowledge and techniques in an occupation in the Mine Ventilation Engineering field as <b>Technical Assistants</b> .		
Duration of study	A minimum of ONE (1) year		
Admission requirements	<ul style="list-style-type: none"> <li>National Senior Certificate (NQF Level 4) with Rating Code: 4 (50 - 59%) for English, Mathematics (not Mathematical Literacy) and Physical Science; or</li> <li>An N3 or equivalent certificate obtained from a FET College with a 50% pass mark for Applied Science and Mathematics;</li> </ul> In addition, a student must obtain a National Certificate in Mine Ventilation Engineering (NQF level 4)		
Progression in framework	Progression to: 1. Advanced Certificate in M Vent Eng		
Majors or Specialisation Field	Mine Ventilation Engineering		
NQF level	Number of modules/papers	National hours	Total credits
5	10	1200	120
Total	10	1200	120

# PROPOSED “NEW” SYSTEM



## Level 6

CMEC requirements incorporated into **UNISA** Framework

### ANNEXURE H: ADVANCED CERTIFICATE in MINE VENTILATION ENGINEERING Adv. Cert. (M Vent Eng)

Qualification code	Once approved by Senate and registered with SAQA a code will be allocated to this new Qualification		
Qualification descriptor	Advanced Certificate at Exit NQF Level 6 with Minimum credits 120. CESM Category: 080901 (HESA Circular 25/2007)		
Name of qualification: Type: Designator: Qualifier:	Advanced Certificate None in Mine Ventilation Engineering		
Purpose of qualification	To provide students with intermediary knowledge and practical techniques to apply such knowledge and techniques in an occupation in the field of Mine Ventilation Engineering as Assistant Technicians.		
Duration of study	A minimum of ONE (1) Year		
Admission requirements	Higher Certificate in Mine Ventilation Engineering.		
Progression in framework	Progression to: 1. Bachelor of Science in Engineering (M Vent Eng).		
Majors or Specialisation Field	Mine Ventilation Engineering		
NQF level	Number of modules/papers	National hours	Total credits
6	10	1200	120
Total	10	1200	120

# PROPOSED “NEW” SYSTEM



## Level 7

CMEC requirements incorporated into **UJ** framework

First year common		Second year common		Third and final year	
Semester 1 To June	Semester 2 To November	Semester 3 To June	Semester 4 To November	To August	To Nov
Engineering Management 1		Engineering Management 2		Engineering Management 3	Design Project
Mining 1		Mining 201 (ug hard rock)		Occ health & safety & environ- ment	
		Mining 202 (ug coal)		Mine Ventilation Engineering 1	
		Mining 203 (surface)		Mine Ventilation Engineering 2	
Physics 1		Rock Mechanics 2		Mine Ventilation Engineering 3	
Geology & practical		Introduction to Mine ventilation Engineering (Practical + Inter- mediate)		Mine Ventilation Engineering 4	
Survey & practical		Mine economics & str geology		Mine Ventilation Engineering 5	
Chemistry	Citizenship	Mine engineering 2		Mine Ventilation Engineering 6	
Mech drawing	AutoCAD	Beneficiation	Environmental Management		
Engineering Mathematics		Statistics			
Computer Apps					
Workshop Practice					

# PROPOSED “NEW” SYSTEM

---



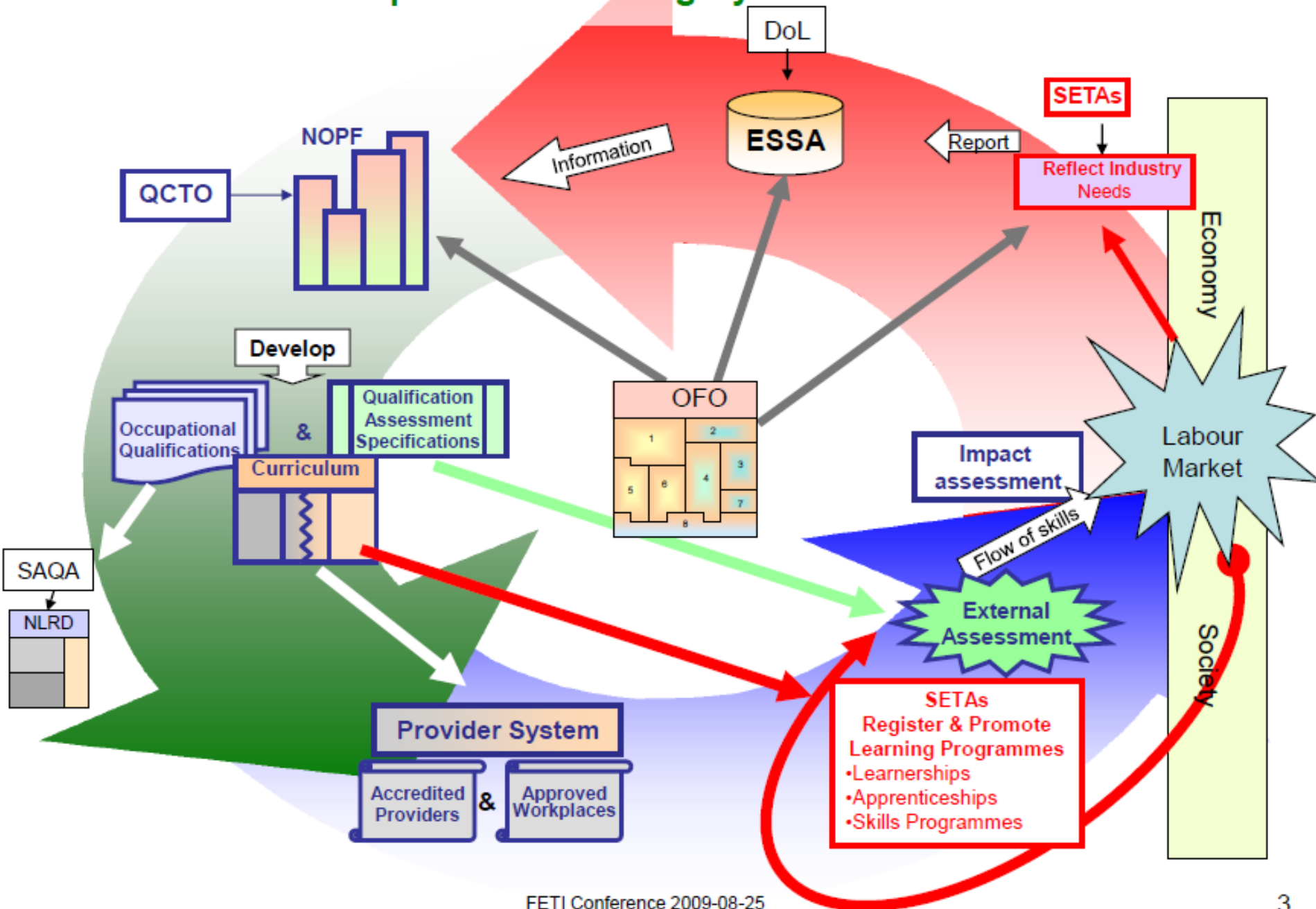
Level < 5

MQA

## UNIT STANDARDS

- Takes forever to complete and register
- Might be taken over by events e.g. QCTO

# Demand Driven Occupational Learning System



# PROPOSED “NEW” SYSTEM

---



## QCTO

- Linking in to a labour market need and not just a training need as in the past
- Three main focus areas being:-

• Subject Specifications

• disciplinary knowledge component

• Practical Skills Modules

• specific practical skills and associated applied knowledge

• Work experience modules

• the work content and scope learners will be exposed to

## QCTO

- Assessments will be conducted by **QCTO accredited providers** on subject specification and practical skills modules.
- Candidates will receive a statement of results from the providers and this is termed an ‘internal assessment’.
- **Work experience modules** will be completed by learners at a registered place of work. Learner achievements will be signed off by the workplace and a workplace statement of results or record will be issued.

# PROPOSED “NEW” SYSTEM

---



Level < 5

MQA

QUALITY COUNCIL FOR TRADES AND OCCUPATIONS (QCTO)

- Previous agreement Ventilation should pilot
  - Workshop held to identify occupations
  - Community of Expert Practitioners (CEP) established –
- (No involvement from SAIOH)

# PROPOSED "NEW" SYSTEM



## QCTO Occupations

Occupation Code	Comment	Occupation Title
86	This occupation does not exist yet on the OFO. The occupation code is also unofficial.	Mineral Beneficiation Plant Worker
62		Mineral Resource Manager, Technical Services Manager
71	This occupation does not exist yet on the OFO. The occupation code is also unofficial.	Mining Draughtspersons
72	This occupation does not exist yet on the OFO. The occupation code is also unofficial.	Mining Technician
83	This occupation does not exist yet on the OFO. The occupation code is also unofficial.	Mobile Explosives Manufacturing Unit (MEMU) Operator
54		Occupational Hygienist
10	This occupation does not exist yet on the OFO. The occupation code is also unofficial.	Onsetter/ Banksman

# CHALLENGES

---



- When will Chamber qualifications stop?
- RPL – Recognition of Prior Learning (current holders)
- Lecturers at UNISA for ventilation
- Qualifications < Level 5 – Unit standards or QCTO or both?
- Current syllabus suitable for tertiary institutions?
- Training material for tertiary qualifications
- ECSA registration for current holders
- Cost implications for new qualifications

# CONCLUSION



~~COM  
Qualifications  
Intermediate P1 -  
??????~~

	< Level 5 Qualifications  MQA Unit Standards / QCTO 2013

~~COM  
Qualifications  
CMEC -  
2015~~

	> Level 5 Qualifications  Tertiary institutions UNISA / UJ 2013

---

QUESTIONS?

THANK YOU