



NAMIBIAN STANDARDS INSTITUTION



Standards and Certification for Oil and Gas Developments

Dr. Eino Mvula

20 August 2024

CONTENT

01 Introduction

02 Our Business Model

03 Our Services & Value Proposition

04 National Quality Infrastructure

05 Importance of Standards and Certification

06 Standards for Oil and Gas Developments

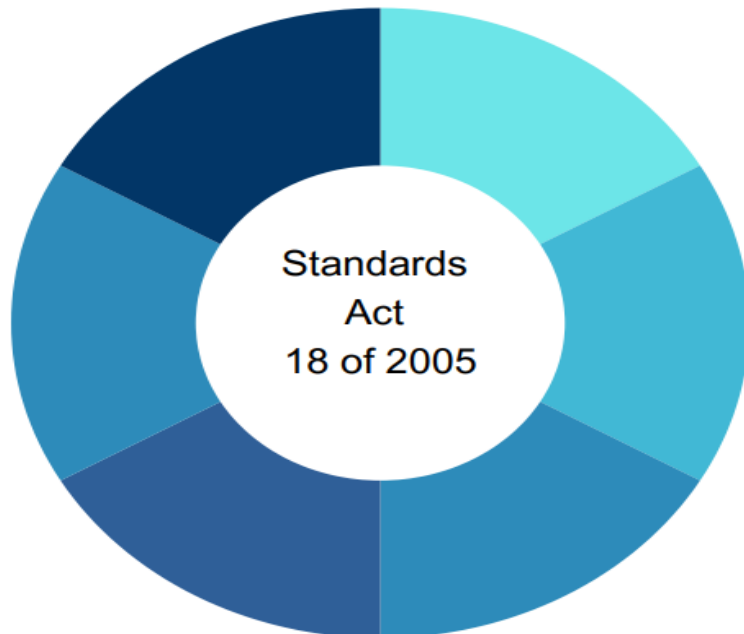
07 Certification for Oil and Gas Developments

08 Conclusion

01: Introduction

LEGISLATIVE MANDATE

- Prepare, Issue, and Promote Standards
- Supply Information and Training on Standards
- Certify Commodities and Systems
- Test Material and Issue Reports or Certificates
- Establish and Control Lab
- Administer Technical Regulations



BUSINESS MODEL

• Standards Development

NSI carries out its legislated mandate as the only body mandated to develop, maintain, publish, and distribute Namibian Standards (NAMS) in Namibia.

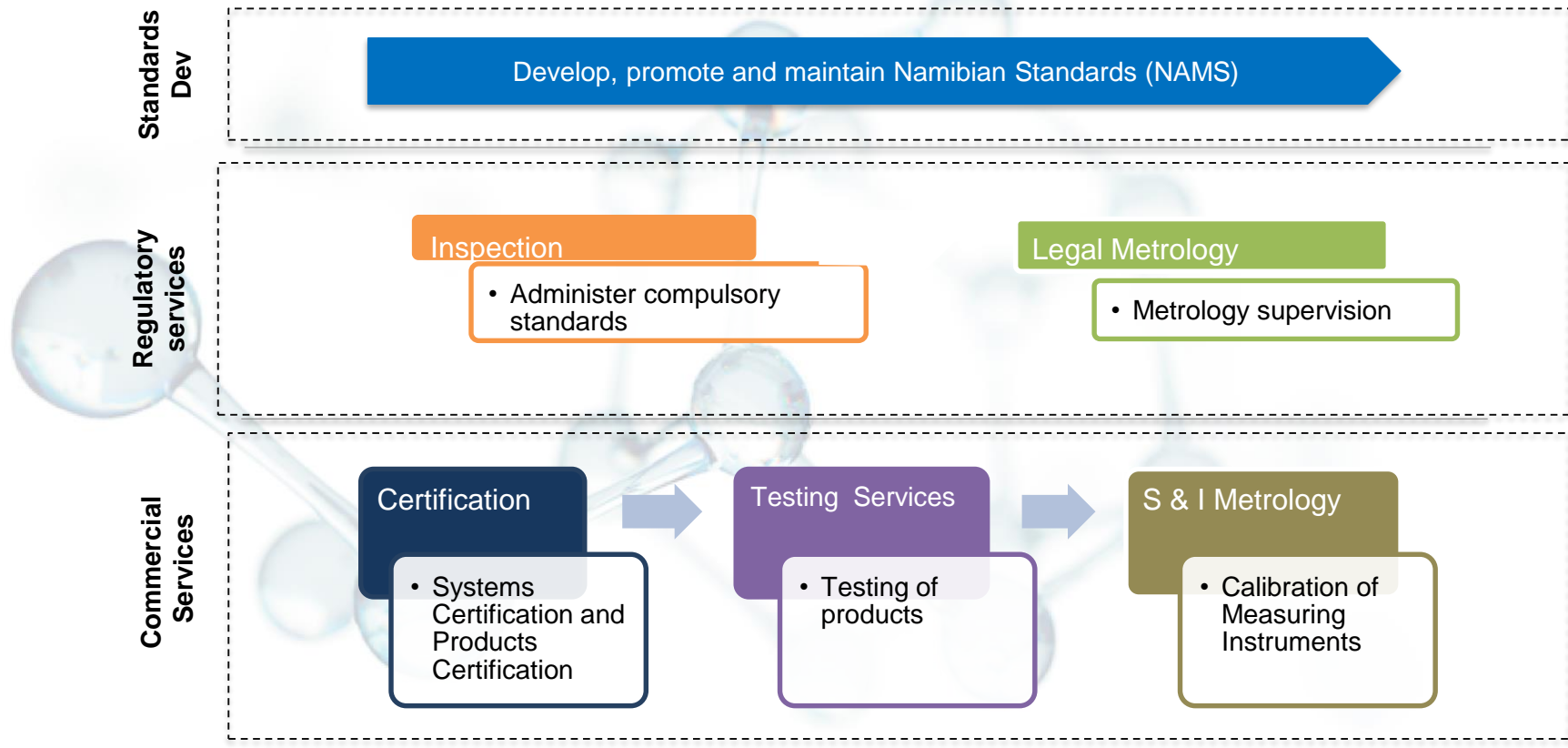
• Regulatory Services

Provision of regulatory services by administering compulsory standards under the Standards Act No 18 of 2005 and administering legal metrology technical regulation of the Trade Metrology Act No 77 of 1973/ soon to be repealed by the Metrology Act No 5 of 2020.

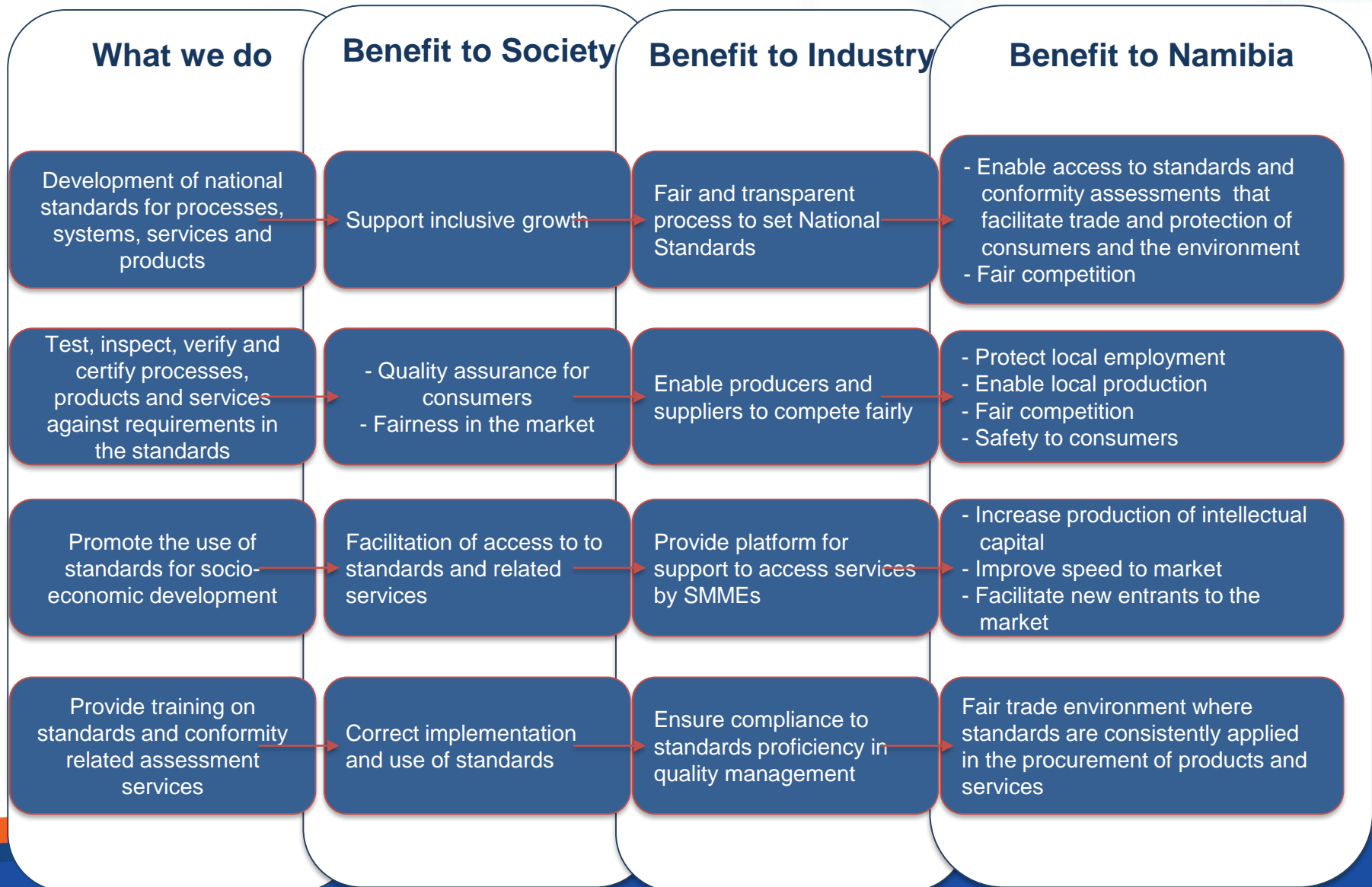
• Commercial Services

Provision of voluntary conformity assessment services such as testing, certification and calibration; and training on standards on competitive commercial terms

02: Our Business Model

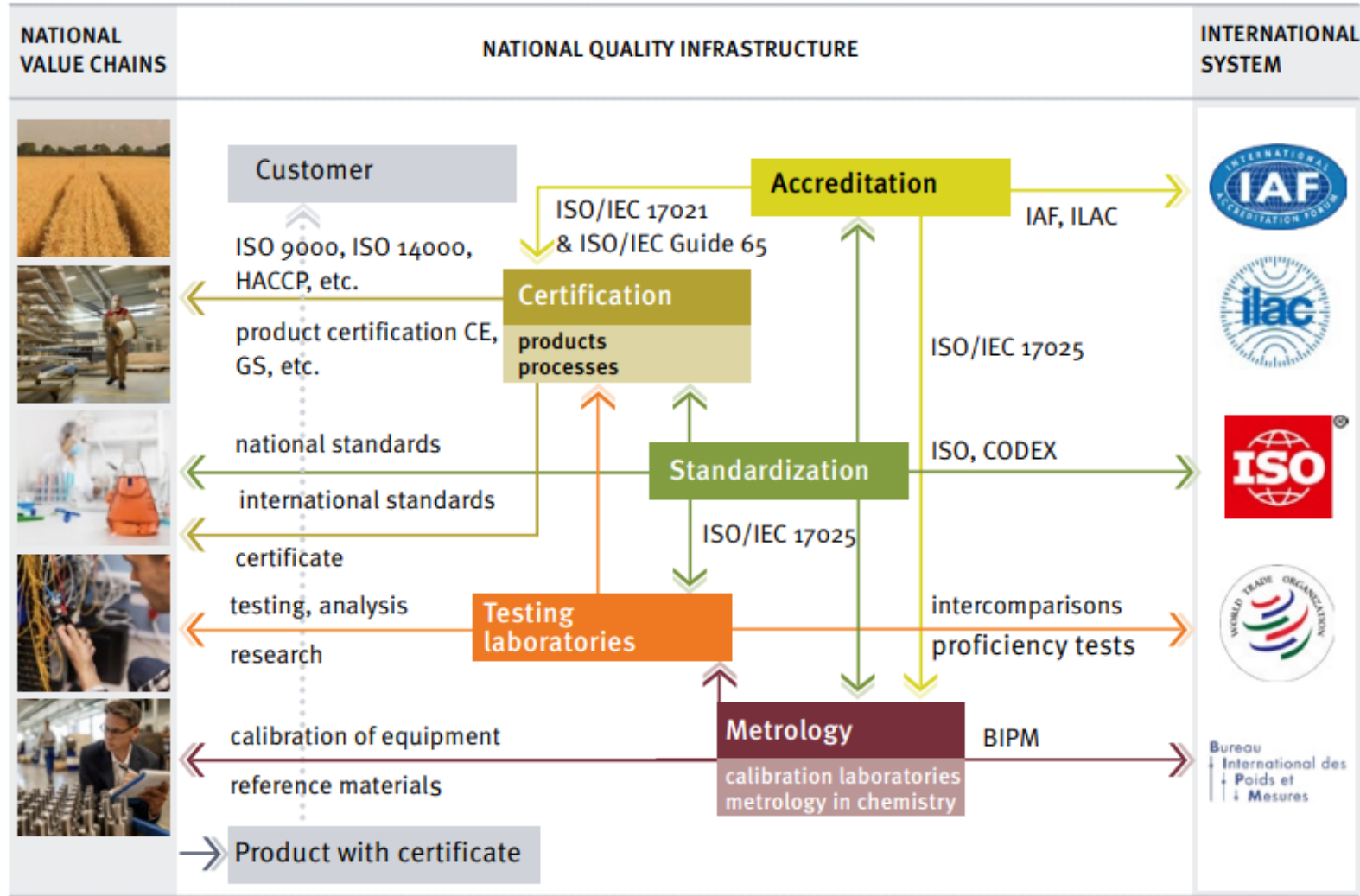


03: Our Services & Value Proposition



04: National Quality Infrastructure

Applicable to all products & processes



05: Importance of Standards and Certification in Oil and Gas Developments

1 Regulatory Frameworks

Regulatory compliance in oil and gas upstream development involves adherence to specific frameworks set by governing bodies to ensure environmental sustainability and safety.

2 Permitting and Licensing

Obtaining permits and licenses is essential to comply with regulations and standards for exploration, drilling, and production activities in the oil and gas industry.

3 Health and Safety Standards

Stringent health and safety standards are imperative to protect the workforce and the environment in oil and gas upstream operations.

4 Compliance Audits

Regular audits are conducted to assess compliance with regulatory requirements, ensuring adherence to industry standards and best practices.

06: Standards

Statutory Provisions

• National Standards Body, enjoys its legislated mandate as the only body mandated to develop, maintain, publish, and distribute Namibian Standards (NAMS) in Namibia as provided under section 20 of the Act

Regional & International Representation

- International Organisation for Standardisation (ISO)
- African Organisation for Standardisation (ARSO).
- International Electro Technical Commission (IEC)
- Southern African Development Community (SADC) Standardisation, Quality assurance, Accreditation and Metrology (SQAM)

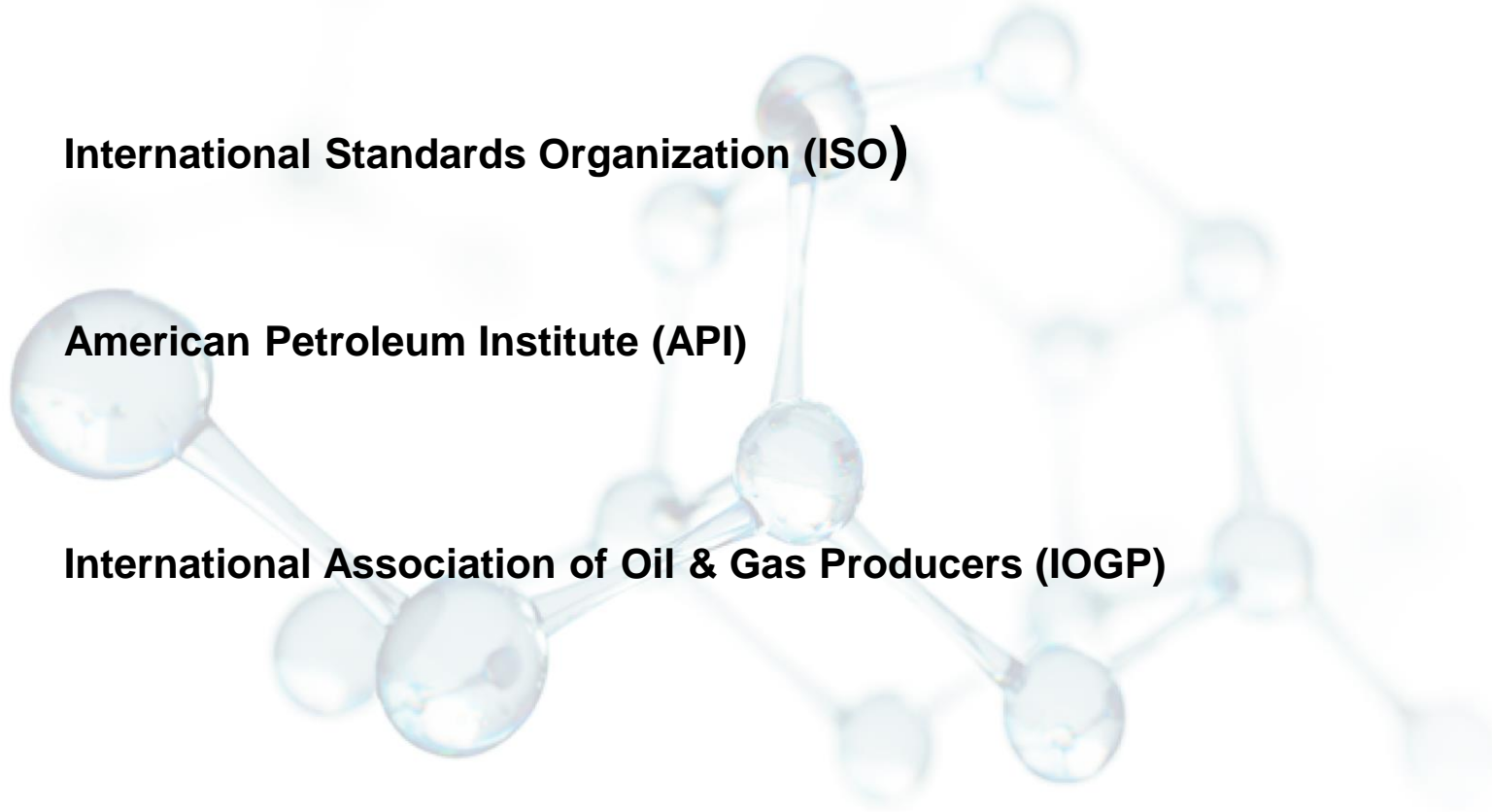
06: Standards

Key Organizations Setting Standards and Certification Requirements

International Standards Organization (ISO)

American Petroleum Institute (API)

International Association of Oil & Gas Producers (IOGP)



06: Standards

Key Organizations Setting Standards and Certification Requirements

ISO Standards for use in the oil & gas industry

ISO 10418 Basic surface safety systems
ISO 10423 Wellhead & christmas tree equipment
ISO 13533 Drill-through equipment (BOPs)
ISO 13534 Hoisting equipment - catwalk/moist
ISO 13535 Hoisting equipment - specification
ISO 13626 Drilling and well-servicing structures
ISO 13702 Control & mitigation of fire & explosion
ISO 13703 Offshore piping systems
ISO 14224 Reliability/maintenance data
ISO 14692 GRP piping, Parts 1-4
ISO 14693 Drilling equipment

ISO 15156-1 Selection of cracking resistant materials for use in H₂S environments
ISO 15156-2 Cracking-resistant steels and cast irons for use in H₂S environments
ISO 15156-3 Cracking-resistant alloys for use in H₂S environments
ISO 15138 HVAC
ISO 15544 Emergency response
ISO 15663 Life cycle costing, Parts 1-3
ISO 17776 Assessment of hazardous situations
ISO 20815 Production assurance and reliability management
ISO 21457 Materials selection (New)
ISO 23936-1 Thermoplastics
ISO 23936-2 Elastomers (New)
ISO/TS 27469 Method of test for offshore fire dampers (New)
ISO/TS 29001 Sector-specific quality management systems (Rev)

ISO 19900 Offshore structures - general requirements
ISO 19901-1 Meteocean design and operating considerations
ISO 19901-2 Seismic design
ISO 19901-3 Topside structures (New)
ISO 19901-4 Geotechnical and foundation design
ISO 19901-5 Weight control
ISO 19901-6 Marine operations
ISO 19902 Fixed steel offshore structures
ISO 19903 Fixed concrete offshore structures
ISO 19905-1 Jack-ups (New)
ISO/TR 19905-2 Jack-ups commentary
ISO 19906 Arctic offshore structures (New)

ISO 3977-5 Gas turbines - procurement
ISO 10428 Sucker rods
ISO 10431 Pumping units
ISO 10434 Bolted bonnet steel gate valves
ISO 10437 Special-purpose steam turbines (Rev)
ISO 10438 Lubrication, shaft-sealing and control-oil systems, Parts 1-4
ISO 10439 Centrifugal compressors
ISO 10440-1 Rotary-type positive-displacement process compressors (oil-free)
ISO 10440-2 Rotary PD packaged air compressors
ISO 10441 Flexible couplings - special
ISO 10442 Integrally geared air compressors
ISO 12211 Spiral plate heat exchangers (New)
ISO 12212 Harpin heat exchangers (New)
ISO 13631 Reciprocating gas compressors
ISO 13691 High speed enclosed gear units
ISO 13704 Calculation of leather tube thickness
ISO 13705 Fired heaters for general service
ISO 13706 Air-cooled heat exchangers (Rev)
ISO 13707 Reciprocating compressors
ISO 13709 Centrifugal pumps
ISO 13710 Reciprocating positive displacement pumps (Rev)

ISO 14691 Flexible couplings - general
ISO 15547-1 Plate & frame type heat exchangers
ISO 15547-2 Brazed aluminium platefin type heat exchangers
ISO 15649 Piping
ISO 15761 Shell valves DN 100 and smaller
ISO 16812 Steel & tube heat exchangers
ISO 17292 Metal ball valves
ISO 21049 Centrifugal and rotary pumps shaft sealing (Rev)
ISO 23251 Pressure-relieving and depressuring systems
ISO/TS 24817 Composite repair of pipework
ISO 25457 Flares details
ISO 28300 Venting of storage tanks
ISO 28300 LNG - Ship to shore interface (New)
ISO 28460

ISO 13624-1 Marine drilling riser systems
ISO/TR 13624-2 Marine drilling riser system analysis
ISO 13625 Marine drilling riser couplings
ISO 19901-7 Station-keeping systems for floating offshore structures (Amd)
ISO 19904-1 Floating offshore structures

ISO 13628-1 Subsea production systems (Amd)
ISO 13628-2 Subsea flexible pipe systems
ISO 13628-3 Subsea TFL pumpdown systems
ISO 13628-4 Subsea wellhead and tree equipment (Rev)
ISO 13628-5 Subsea control umbilicals
ISO 13628-6 Subsea production controls
ISO 13628-7 Completion/workover riser system
ISO 13628-8 ROV and interfaces (Rev)

ISO 13628-9 ROT intervention systems
ISO 13628-10 Bonded flexible pipe
ISO 13628-11 Flexible pipe systems for subsea and marine applications
ISO 13628-15 Subsea structures and manifolds (New)
ISO 13628-16 Spec for flexible pipe ancillary equipment (New)
ISO 13628-17 RP for flexible pipe ancillary equipment (New)

ISO 10427-2 Centralizer placement and stop-collar testing
ISO 10427-3 Performance testing of cement float equipment
ISO 10432 Subsurface safety valves
ISO 11960 Casing and tubing (Rev)
ISO 11961 Drill pipe
ISO 13085 Tubing aluminium alloy pipes (New)
ISO 13500 Drilling fluids (Amd)
ISO 13501 Drilling fluids - processing systems evaluation (Rev)
ISO 13503-1 Measurement of viscous properties of completion fluids (Rev)
ISO 13503-2 Measurement of properties of proppants
ISO 13503-3 Testing of heavy brines
ISO 13503-4 Measurement of stimulation & gravelpack fluid leakoff
ISO 13503-5 Measurement of long term conductivity of proppants
ISO 13678 Thread compounds (Rev)
ISO 13679 Casing and tubing connections testing (Rev)
ISO 13680 CRA seamless tubes for casing and tubing (Rev)

ISO 14310 Packers and bridge plugs
ISO 15136-1 Progressing cavity pump systems - drive heads
ISO 15463 Field inspection of new casing, tubing and plain end drill pipe
ISO 15464 Gauging and inspection of threads
ISO 15546 Aluminium alloy drill pipe (Rev)
ISO 16070 Lock mandrels and landing nipples
ISO 17078-1 Side-pocket mandrels (Amd)
ISO 17078-2 Flow control devices for side-pocket mandrels
ISO 17078-3 Latches & seals for side-pocket mandrels & flow control devices
ISO 17078-4 Side-pocket mandrels and related equipment (New)
ISO 17824 Sand control screens
ISO 20312 Design of aluminium drill string (New)
ISO 27627 Aluminium drill pipe thread gauging (New)
ISO 28781 Subsurface tubing mounted formation barriers (New)

ISO 3183 Steel pipe for pipeline transportation systems
ISO 12490 Actuation, mechanical integrity and sizing for pipeline valves (New)
ISO/TS 12747 Pipeline lift extension (New)
ISO 13623 Pipeline transportation systems
ISO 13847 Pipeline welding
ISO 14313 Pipeline valves
ISO 14723 Subsea pipeline valves
ISO 15589-1 Cathodic protection for on-land pipelines
ISO 15589-2 Cathodic protection for offshore pipelines (Rev)
ISO 15590-1 Pipeline induction bends
ISO 15590-2 Pipeline fittings
ISO 15590-3 Pipeline flanges
ISO 16708 Pipeline reliability-based limit state design
ISO 21329 Test procedures for pipeline mechanical connectors
ISO 21809-1 Polyolefin coatings (3-layer PE and 3-layer PP) (New)
ISO 21809-2 Fusion-bonded epoxy coatings
ISO 21809-3 Field joint coatings (Amd)
ISO 21809-4 Polyethylene coatings (2-layer PE)
ISO 21809-5 External concrete coatings (New)

ISO/TR 10400 Calculations for OCTG performance properties
ISO 10405 Casing/line of casing/tubing
ISO 10407-1 Drill stem design
ISO 10407-2 Inspection and classification of drill stem elements
ISO 10414-1 Field testing of water-based fluids
ISO 10414-2 Field testing of oil-based drilling fluids (Rev)
ISO 10416 Drilling fluids - lab testing
ISO 10417 Subsurface safety valve systems
ISO 10424-1 Rotary drill stem elements

ISO 10424-2 Threading and gauging of connections
ISO 10426-1 Well cementing
ISO 10426-2 Testing of well cements (Rev)
ISO 10426-3 Testing of deepwater well cement
ISO 10426-4 Preparation and testing of atmospheric foamed cement slurries
ISO 10426-5 Shrinkage and expansion of well cement
ISO 10426-6 Static gel strength of cement formulations
ISO 10427-1 Blow-spring casing centralizers

ISO 21809-1 Polyolefin coatings (3-layer PE and 3-layer PP) (New)
ISO 21809-2 Fusion-bonded epoxy coatings
ISO 21809-3 Field joint coatings (Amd)
ISO 21809-4 Polyethylene coatings (2-layer PE)
ISO 21809-5 External concrete coatings (New)



Standards in **brown** issued in 2010
 Standards in **green** are a priority for 2011 issue
 These ISO standards are only a core collection of several hundreds of International Standards available for the oil & gas industry

06: Standards

Management Systems Standards

ISO 9001 Quality Management System

ISO 9001 is a globally recognized standard for quality management, ensuring organizations meet customer and regulatory requirements.

ISO 14001 Environmental Management

ISO 14001 sets out the criteria for an environmental management system, helping organizations improve sustainability and reduce environmental impact.

ISO 45001 Occupational Health and Safety

ISO 45001 provides a framework to improve employee safety, reduce workplace risks, and create better, safer working conditions.

06: Standards

Management Systems Standards

ISO 50001 Energy Management

[ISO 50001](#) is an environmental standard for energy management in organizations. Its framework helps companies optimize their energy consumption efficiently. .

ISO 55001 Asset Management

[ISO 55001](#) is a standard for asset management. Companies with significantly high assets in cost or number will benefit from the management principles outlined in this standard.

ISO 223001 Business Continuity

[ISO 22301](#) is the international standard for business continuity management systems. It helps businesses move forward after emergency events.

06: Standards

Process in developing National Standards

Standards are developed and adopted in accordance with the WTO/TBT (Annex 3) Code of Good Practice for the Preparation, Adoption and Application of Standards



NSI TC 15- Petroleum and Petroleum Products entrusted with mandate to develop standards in Oil and Gas sector

STANDARDS CATALOGUE

06: Standards

Standard vs Technical Regulation

A Standard as a document approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, with which conformity is **not** mandatory.¹

A Technical regulation as a document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory.²

¹ WTO Technical Barriers to Trade Agreement Annex 1, § 2

² WTO TBT Agreement Annex 1, § 1

06: Standards

Standard Training

1. Management Systems Standards

- ISO 9001, ISO 14001, ISO 45001

3. Any other Special Standards Related Training

- Circular and Green economy
- Cybersecurity Standards
- Sustainable development
- Supply chain security management systems
- Procurement

4. Categories

- Executive Briefing for 1 day
- Introduction and Awareness for 1 day
- Development and Implementation for 3/5 days
- Internal Auditing for 3 days



07: NSI Certification

Certification

ISO 9001:2015
Quality Management

Suitable for organizations seeking to improve the quality of products and services & consistently meet or exceed their customer's expectations

ISO 14001:2015
Environmental Management

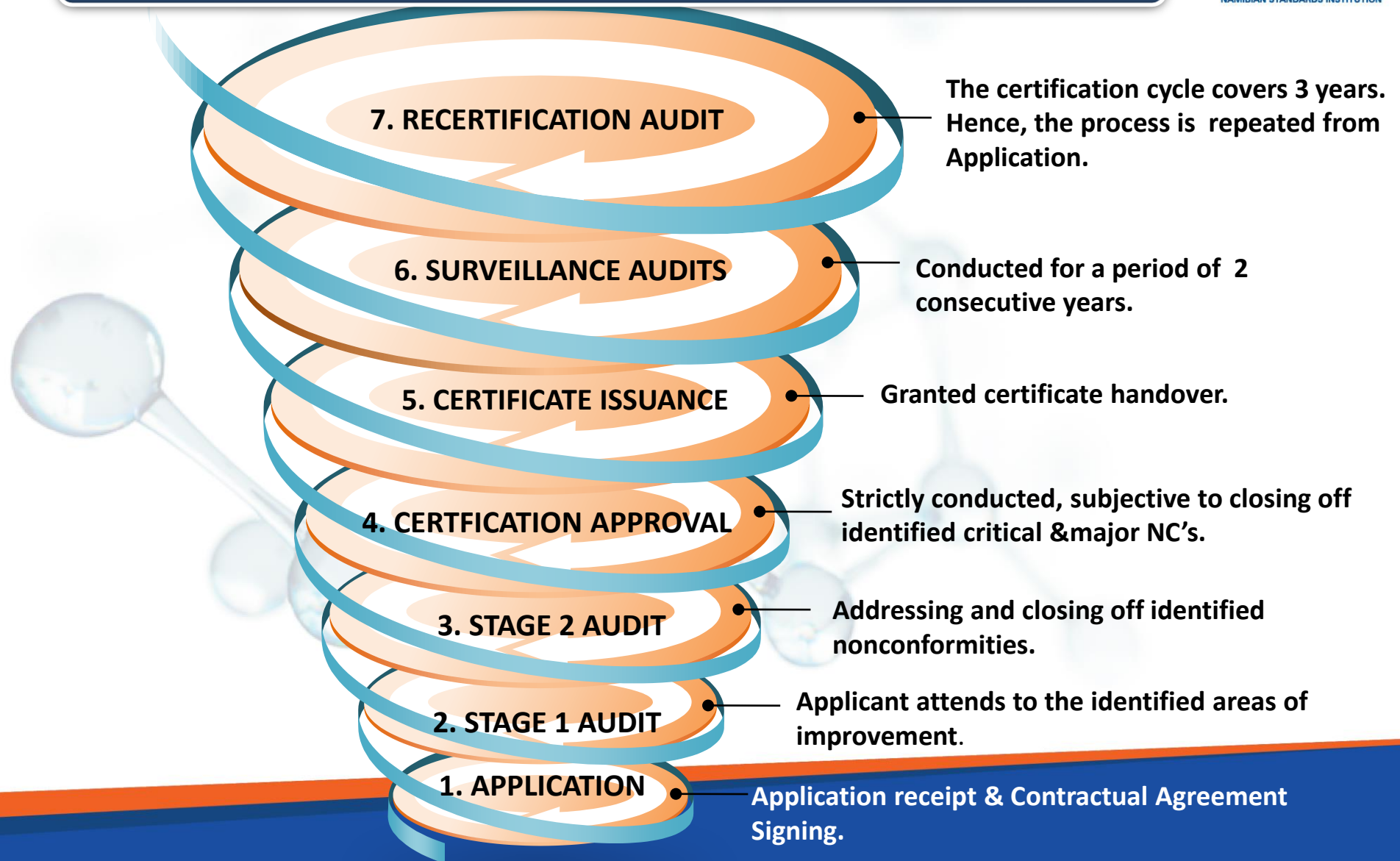
For organizations of any type, that require practical tools to manage their environmental responsibilities

For organizations that are serious about improving employee safety, reducing workplace risks & creating better, safer working conditions

ISO 45001:2018
Occupational Health & Safety Management

07: Certification

Certification Process



08: Conclusion



Technical
Regulation
Enforcement



Protection of
Environment



Health

- **A basis for regulation** : Standards are recognized solutions to implement the health and safety requirements for regulated products.
- **Efficient regulation through participatory processes** : When regulations are based on standards, these can be used to provide guidance on essential requirements.
- **Contribution to socio-economic development** : Regulations based on standards give the country access to the latest state-of-the-art requirements for products agreed by a broad stakeholder group.
- **Standards boost productivity and improve performance:** Increase efficiency by streamlining processes.

Thank you

creating peace of mind

<http://www.nsi.com.na>