

Risk Based Verification – Cambodia cook stove project



Chee.Keong.Lai@dnv.com

www.dnv.com/certification/climatechange

1. Introduction of Det Norske Veritas AS
2. Risk Based Validation/Verification Approach
3. Key steps in validation process (CDM & Non CDM)
4. Key steps in verification and certification process
5. Cambodia GERES Cook Stove project – experience feedback
6. Mistakes to avoid and Lessons to be learnt



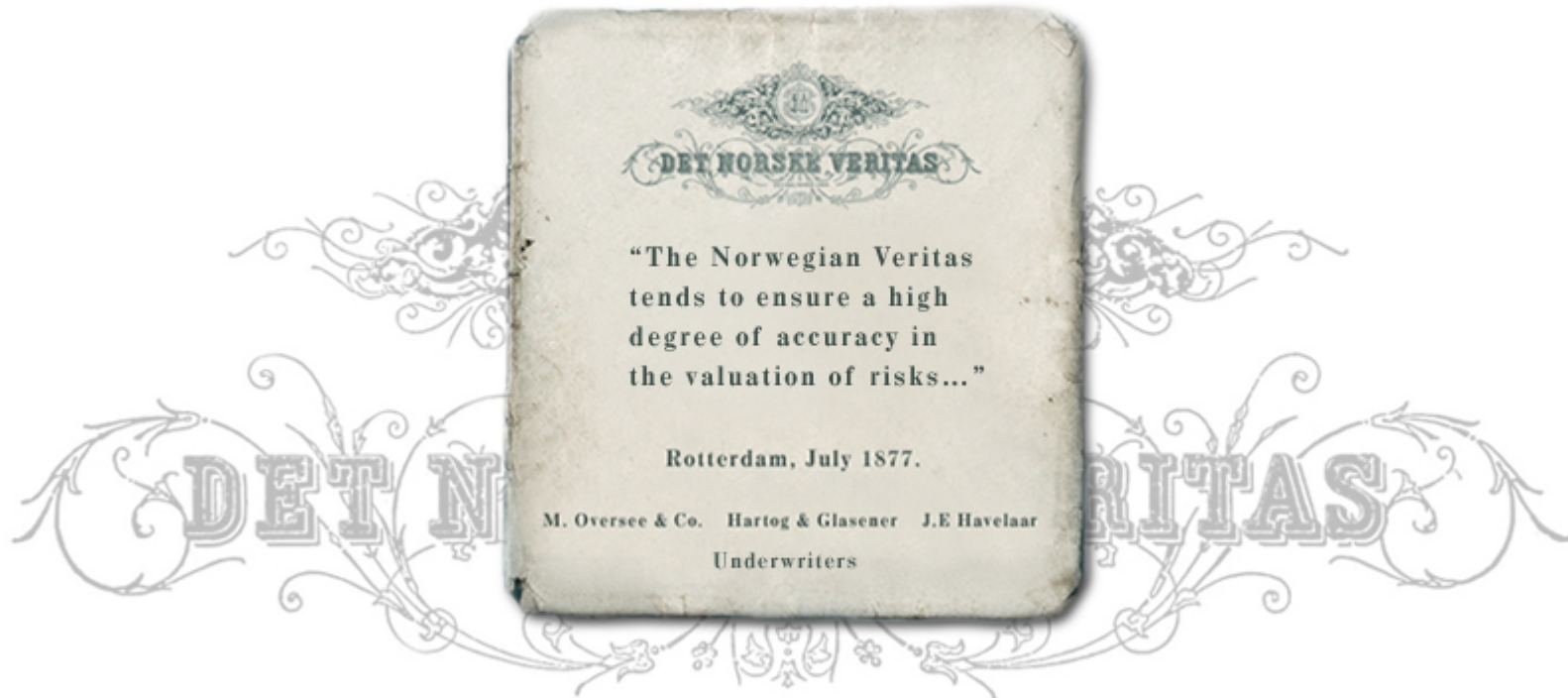
Introduction of Det Norske Veritas AS



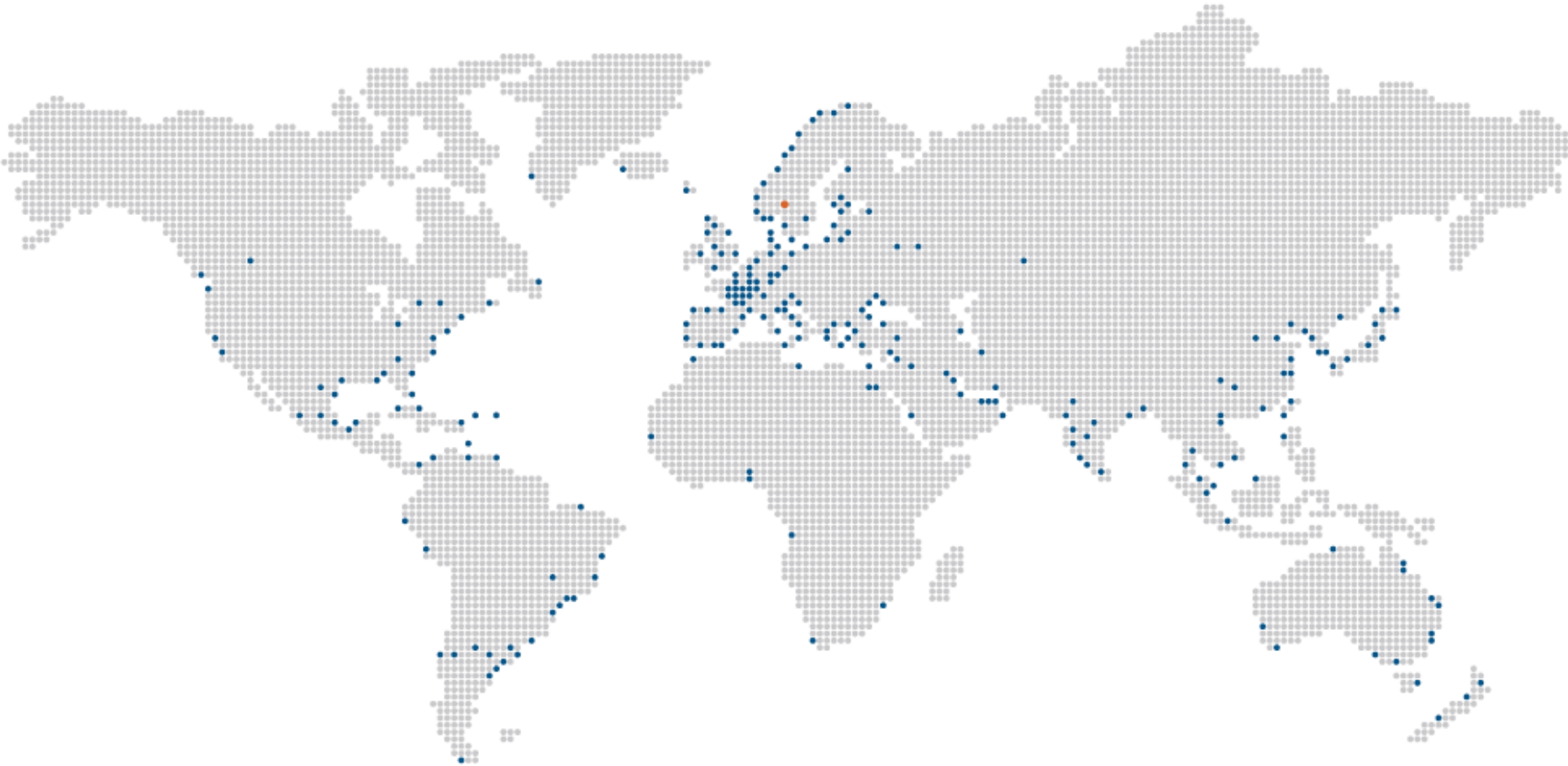
“Safeguarding life,
property, and the
environment”

More than 140 years of managing risk

- Det Norske Veritas (DNV) was established in 1864 in Norway
- The main scope of work was to identify, assess and manage risk – initially for maritime insurance companies

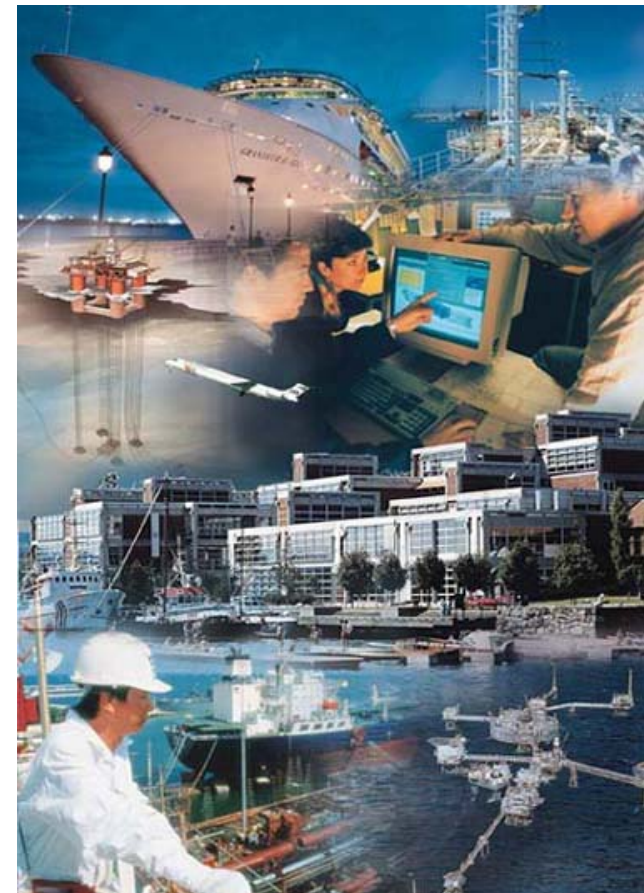


300 offices in 100 countries



● Head office ● Local offices

- Leading CDM validation/verification body with 50% market share
- Chair of the DOE group upon the CDM Executive Board
- Over 100 trained GHG auditors
- 300 offices worldwide



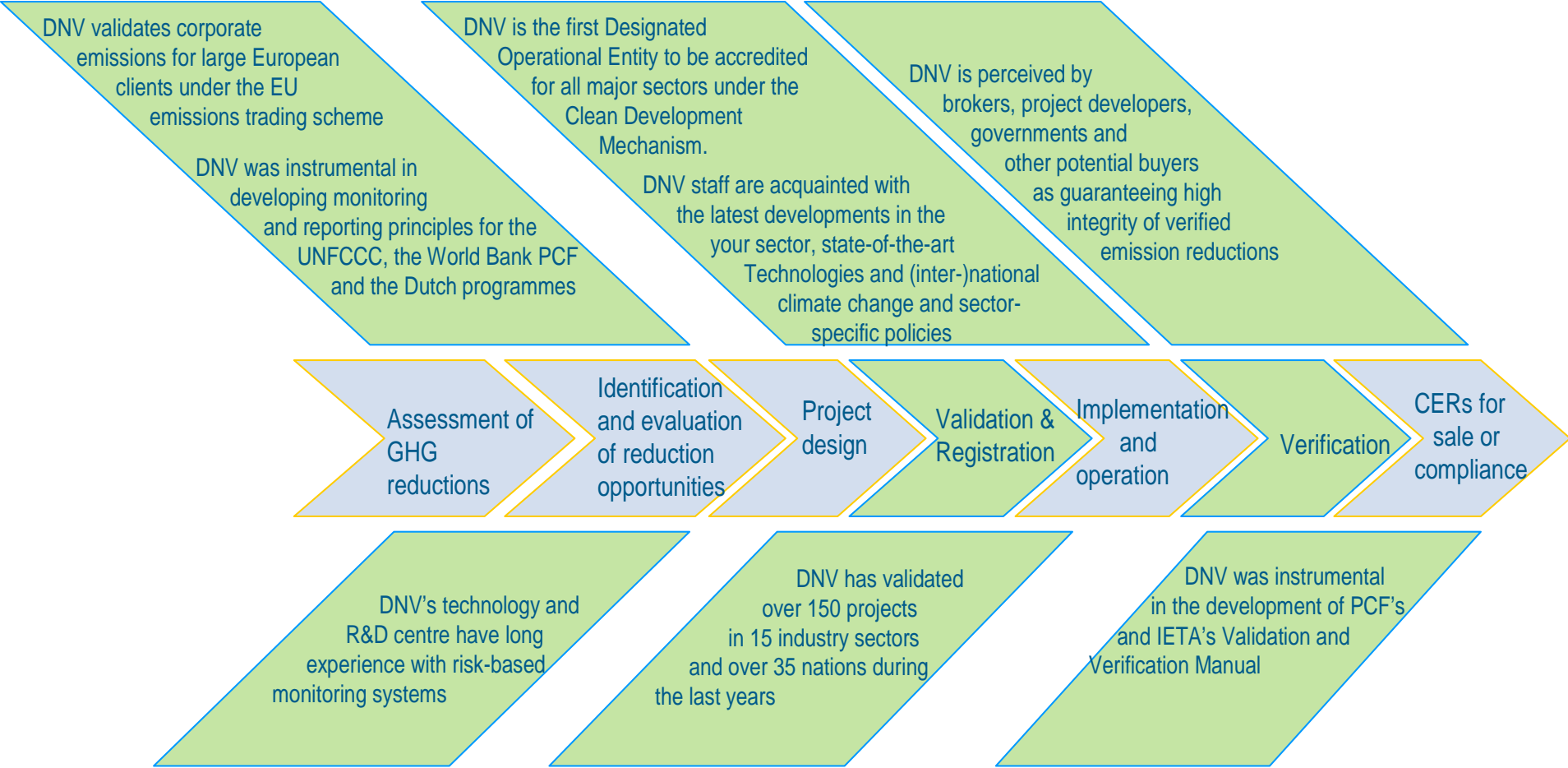
Accredited For All Major Scopes



DNV is accredited for 14/15 of the Scopes !

<http://cdm.unfccc.int/DOE/list/index.html>

DNV along your value chain



Reference List


DNV Certification

Climate Change Services

DNV project reference list

Climate Change Services

Best Verification / Certification Agency GHG Emission, Global
Experiences until February 2016 - January 2015



DNV Verification. So you can be sure.


DNV Certification

Climate Change Services

DNV project reference list

Climate Change Services

Best Verification / Certification Agency GHG Emission, Global
Experiences until February 2016 - January 2015



DNV Verification. So you can be sure.


DNV Certification

Climate Change Services

DNV project reference list

Climate Change Services

Best Verification / Certification Agency GHG Emission, Global
Experiences until February 2016 - January 2015



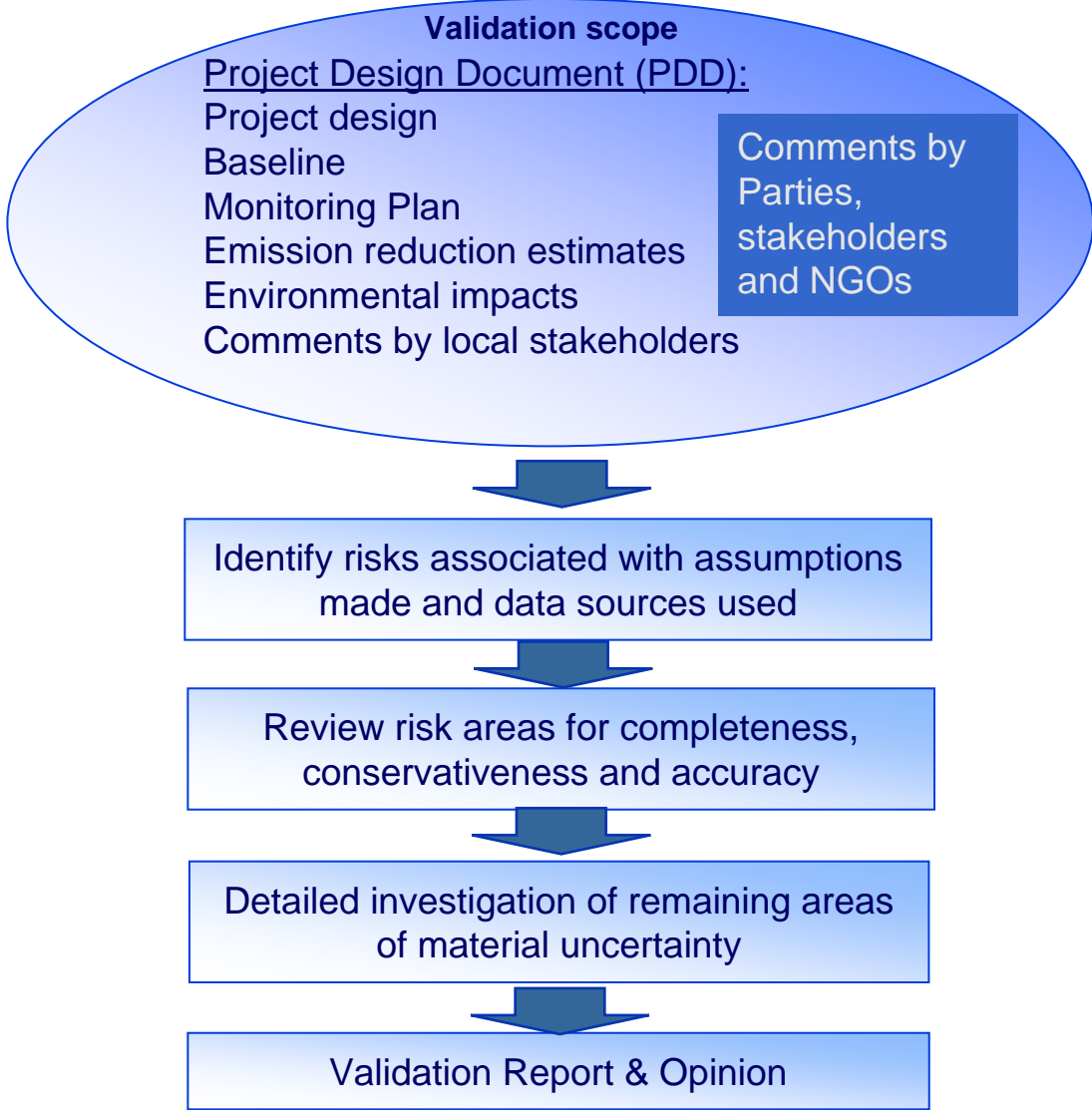
DNV Verification. So you can be sure.



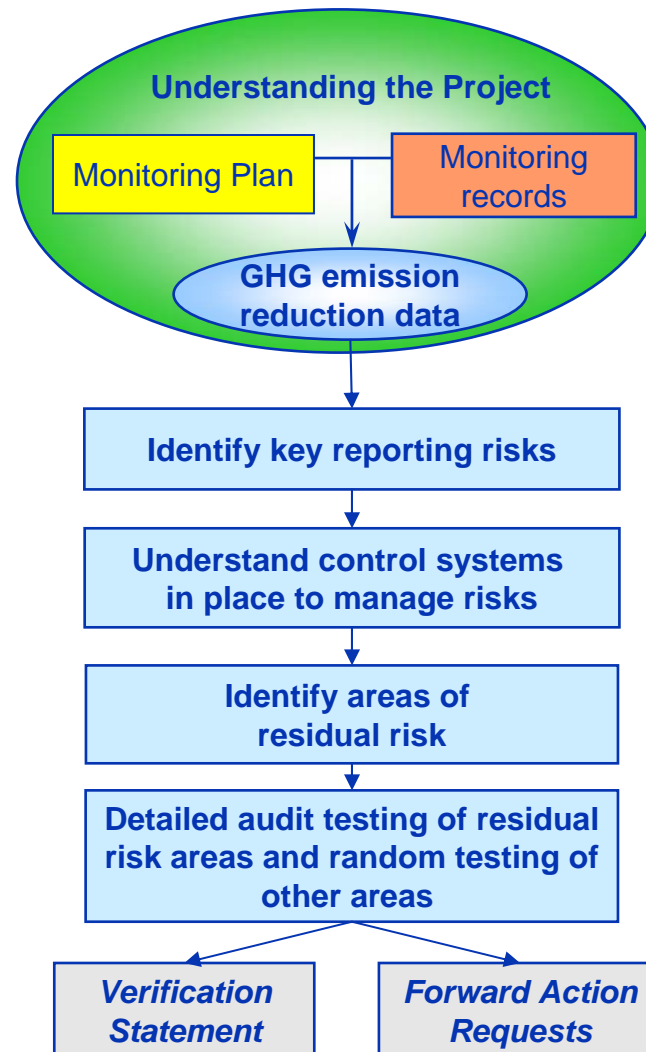
Risk Based Validation/Verification Approach



Risk-Based Validation Approach



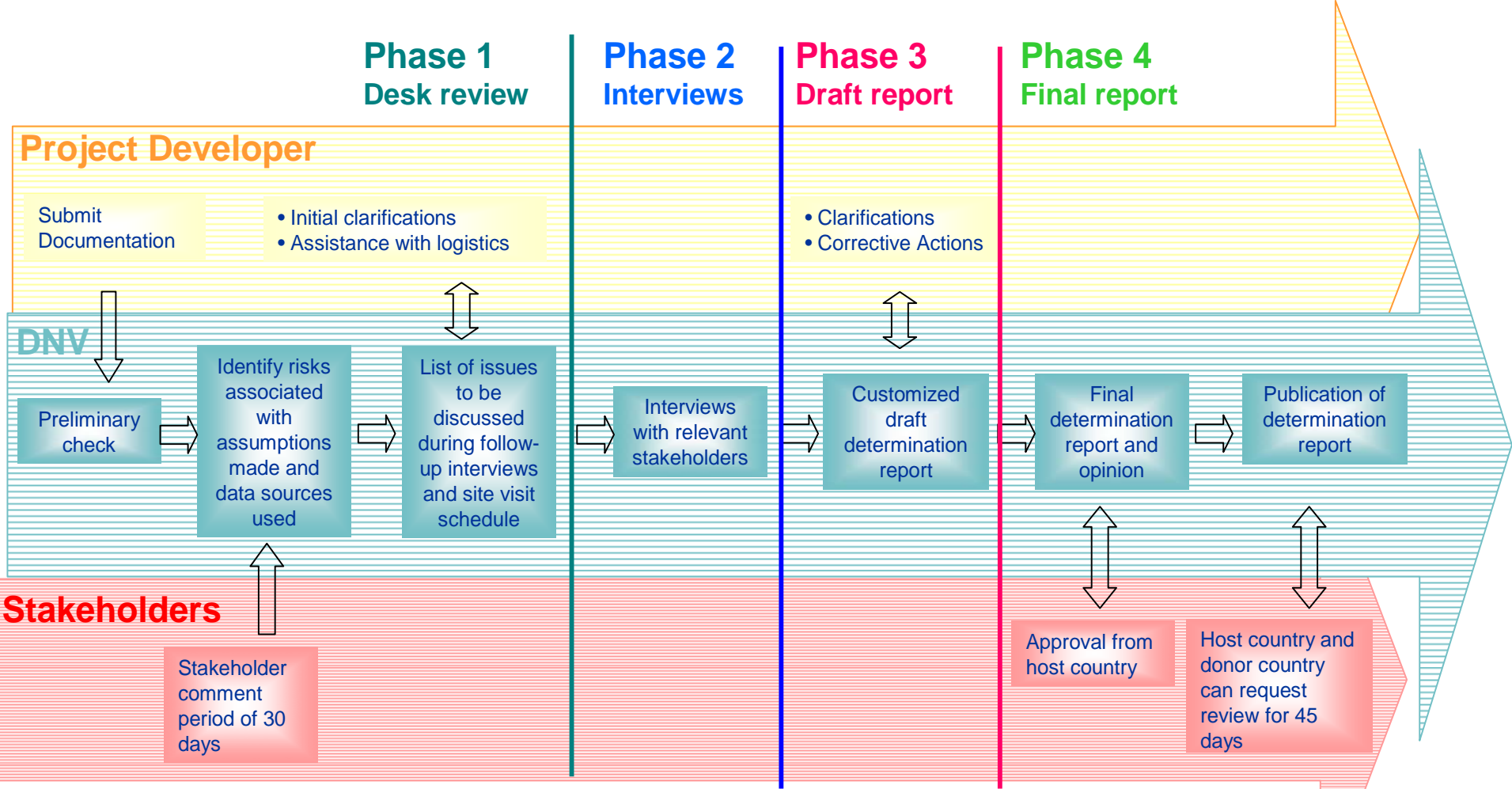
The Risk Based Verification Approach



Key steps in validation process (CDM & Non CDM)



The Validation Process (CDM project)



An Ideal Validation Timeline

Week	1	2	3	4	5	6	7	8
30 days of public stakeholder process (CDM project only)	█	█	█	█				
PDD Desk review	█	█	█	█				
Follow-up interviews					█			
Draft determination report						█		
Resolution of outstanding issues							█	
Final determination report								█

■ An Efficient Validation Process

- Adding Value
- Access to sufficiently accurate data and sources
- Check additionality
- Capacity to measure and document
- Good project management
- Communicate, communicate, communicate

Main differences between CDM and non-CDM project

- CDM project will have to go through the followings:
 - web-hosting of PDD at DOE's website for stakeholders to comment;
 - Letter of Approval from Host country DNA
 - Letter of Approval from Annex 1 country (for bilateral projects, i.e. Malaysia)
 - Modalities of communication (MOC)
 - Registration with UNFCCC

A non CDM (i.e. VCS) project will not need to do All the above



CDM Verification Process

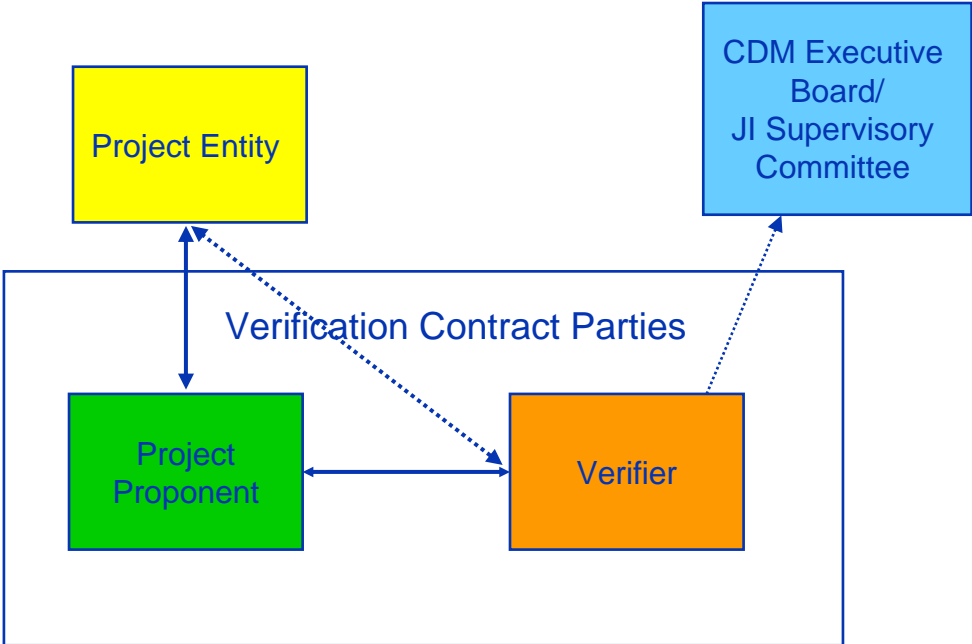


- Review and confirmation of project or operational performance *as described* in monitoring plans or reporting protocols.
- Confirmation by examination and provision of objective evidence that real, measurable and long-term emission reductions *have been achieved*, in accordance with pre-determined criteria.

Compliance with Audit Criteria

- Kyoto Protocol criteria
- Marrakech Accords modalities
- Host country criteria
- Project Specific criteria
- Approved methodology
- EB Decisions

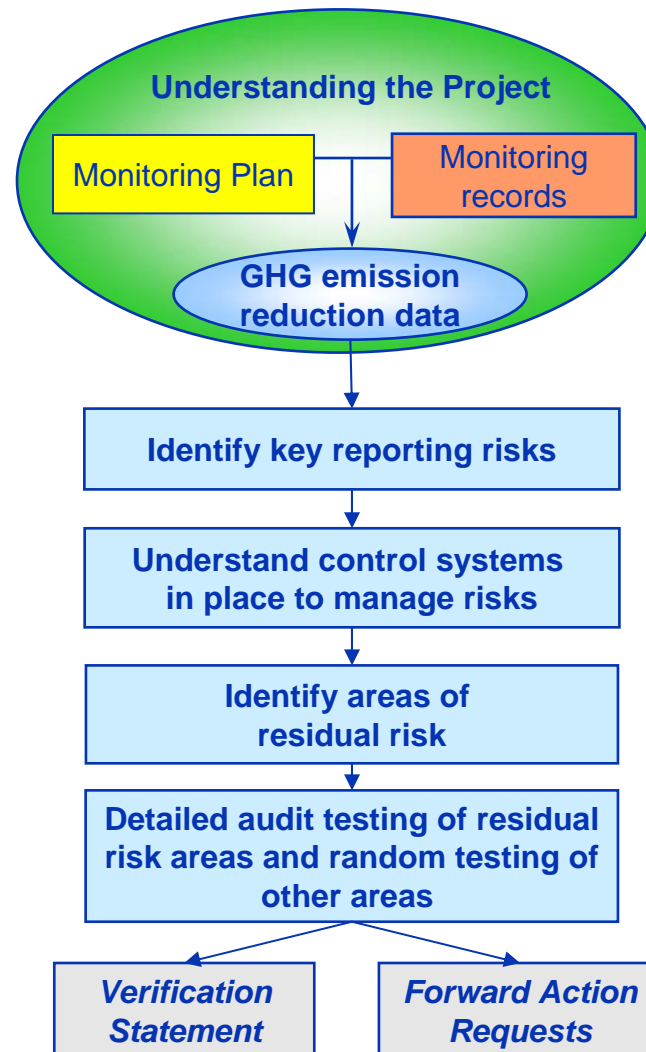
Verification Actors



Solid lines indicate contractual relationships. Dashed lines indicate possible communication channels during validation.

Note: Other relationships are possible.

The Risk Based Verification Approach



The verification team should become familiar with the project

- Latest revision of the PDD
- CER spreadsheet
- Monitoring plan
- Monitoring report (to be web-hosted for CDM projects)
- validation report
- initial verification report,
- previous periodic verification report (as applicable),
- the written management manual, operating licenses of local authorities (as applicable).
- Other documents, such as process flow diagrams, technical drawings, manuals of equipment suppliers, performance records

On-site Verification (I)

- ensure that the project has been implemented as planned
 - verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan
 - approve adjustments and amendments to the monitoring plan that may have become necessary during the detailed design and construction of the project
 - verify that the local ability and capacity to monitor and report project progress over the project lifetime is in place
- = Initial verification or (optional) Validation Plus service

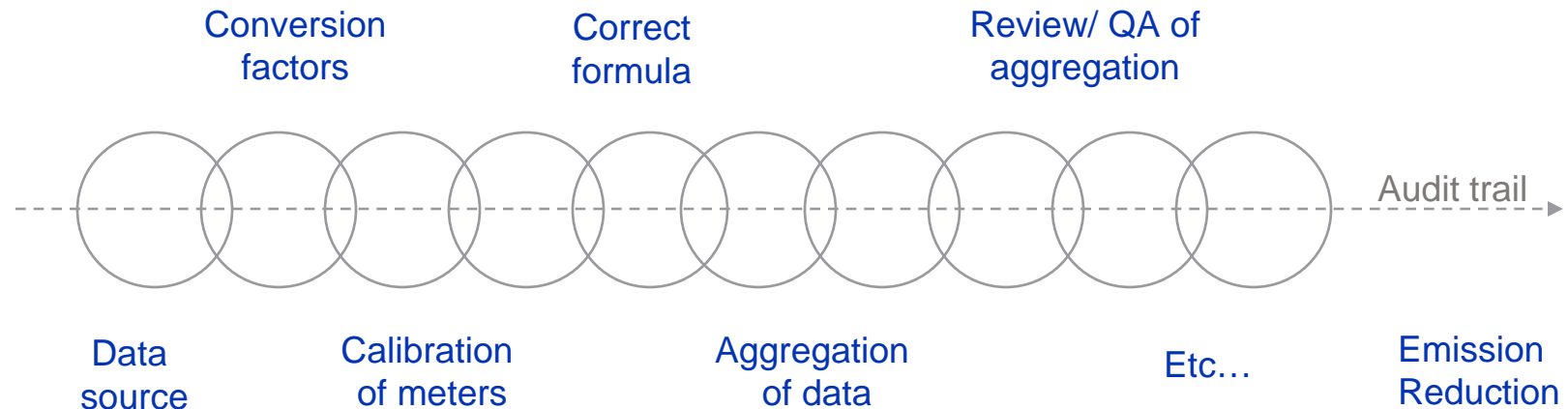
On-site Verification (II)

- establish that an audit trail of project performance records is present and sustains the claimed ERU/CER
- verify that necessary quality assurance and quality control activities are established to evaluate the GHG emission reduction data and
- express a conclusion with a high, but not absolute, level of assurance about whether the reported GHG emission reduction data is “free” of material misstatements

Audit trail – GHG emission reduction calculations



MANAGING RISK



- Check the line of consistency and accuracy
- Check compliance with approved methodology
- Our statement says something about the reliability of the ER number

Key verification points

- Check for inconsistencies
- Check start date of project/crediting time/last monitoring period
- Check for any anomaly
- Cross-check numbers
- Perform reasonableness checks (Load factors/generation capacity/days in operation/downtime....)

■ Verification Statement

“Based on the information that was presented to DNV and evaluated by DNV, it is our opinion that 498 710 tons of CO₂-equivalents have been abated by the project during the years Sept. 2005 – August 2006“

- Written assurance that a process or project conforms to specified requirements and/or have achieved certain results. Certification is documented by the issue of a certificate.
- Certificate describes the achievement of real, measurable, additional and long-term emission reductions from a CDM project, which results in Certified Emission Reductions (CERs) or VERs for Voluntary Carbon Standard.



Cambodia GERES Cook
Stove project-experience
feedback



Cook stove project as a case study (VCS) – validation phase



Determine compliance with VCS and other relevant criteria:

- Assess the completeness and appropriateness of the submitted project design document (PDD)
- Verify the project's contribution to sustainable development in the host country
- Assess the soundness of the project baseline
- Assess the completeness and appropriateness of the project monitoring plan
- Assess the planned operational management and technical/ engineering practices as well as quality assurance procedures to be applied by project operators
- Assess the methodology and the assumptions made to estimate the emission reductions produced over the project's selected crediting time
- Assess whether social and environmental impacts of the project are sufficiently addressed

Cook stove project as a case study (VCS) – validation phase

- **Baseline**
- **Methodology**
- **Additionality**
- **Assumptions (ex-ante and ex-post)**
- **Monitoring challenges**

Cook stove project as a case study (VCS) – validation phase

■ Baseline

- Various literatures have been reviewed and summarised in the monitoring report and the PDD.

FAO (1977): reduction of forest cover

pre 1970s was 13 227 100 ha or 73% of the total land area.

1996 was 10 535 763 ha or 58 % of the total land area. – **alarming!**

- Charcoal and fire wood usage:

National Statistics Institute (1997) 59% of the total wood energy was used in Phnom Penh.

FAO (2001) reveals that sustainable use of fuelwood through re-growth is just 4% of the total demand per year. – **alarming!**

- Project Proponent: 90% of the Cambodian rely on fuelwood for cooking. In the absence of the project, the demand for fuelwood would continue to grow and it would deplete the forest in a faster rate and the fuelwood supply is and will not be sustainable.

Cook stove project as a case study (VCS) – validation phase

■ Methodology

- “Voluntary Emission Reductions - Improved Efficiency in Use of Non-Renewable Biomass” developed by the Climate Care Trust, derived from CDM methodology AMSII.G., and amended by the Joanneum Institute and approved by the community of practice (HEDON, Stove and Carbon Special).
- Not an approved CDM methodology, **but its application is justified to be the best available methodology at the time of PDD preparation.**
- The methodology has included a **15% of leakage reduction**, which was deemed to be conservative, and in line with CDM methodologies that also apply the same 15% discount factor where the leakage is hard to assess.

Cook stove project as a case study (VCS) – validation phase

■ Additionality

- emit less airborne particles - improves the living conditions of the users
- more efficient cook stoves is narrowing the gap between the rising fuel wood needs of a growing population and the diminishing forest resources
- reduce the consumption of firewood - better combustion efficiency and insulation to prevent heat from escaping.
- reduce the consumption of charcoal and firewood

In the absence of the project, the rate of firewood chopping for cooking or charcoal making would continue.

Cook stove project as a case study (VCS) – validation phase

■ Assumptions (*Ex-ante parameters*)

■ **Equipment ratio per family**

The assumption of equipment ratio per family in version 5 of PDD was 1.27. However, the figure has been adjusted to 1.28 based on the recent survey. This is still conservative as the field visit has confirmed that most families have at least two NLS stoves. - **OK**

■ **Fuel saving test -NLS** (laboratory and actual testing);

Values reported in the PDD were the **dry season** stove efficiency (higher value), 21.76% and 21.49% for charcoal and wood saving when switched to NLS respectively in version of 5 of the PDD. ---**risk**

The average efficiency value of charcoal and firewood is 21.2% and 20.89%, respectively (**average of both dry and wet seasons**) **OK**

Cook stove project as a case study (VCS) – validation phase

■ Assumptions (*Ex-ante parameters*)

■ Wood to charcoal conversion

6.45 kg vs IPCC default value of 6 kg wood /kg charcoal; ---**risk**

■ Stove lifespan

It was concluded that the life span of NLS for heavy users is about 4195.87 hours. The average use of NLS by domestic users is 3.5 hours. This would give an estimation of 3.28 years of lifespan. The project has assumed 3.0 years of lifespan. [OK](#)

■ NCV of biomass and EFCO₂, biomass

The earlier calculation has utilised default values of IPCC 1996, i.e. NCV biomass and EFCO₂, biomass. A FAR was raised to request that the latest IPCC 2006 values to be used. ---**risk**

Cook stove project as a case study (VCS) – validation phase

- Monitoring challenges (*Ex-post parameters*)
 1. Sales of New Lao Stoves to distributors,
 2. Stoves produced by respective producers.

This amount is reported on a routine basis when the complete NLS is produced. The total quantity of each stove type (7 types) produced is summed-up on a monthly basis. This data is collected by the monitoring staff and in turn keyed into the spreadsheet for calculation. – Risk

accuracy of data collected from the manufacturers;

manual transfer of data;

stoves sold are not in use (transit in the distributors premises)

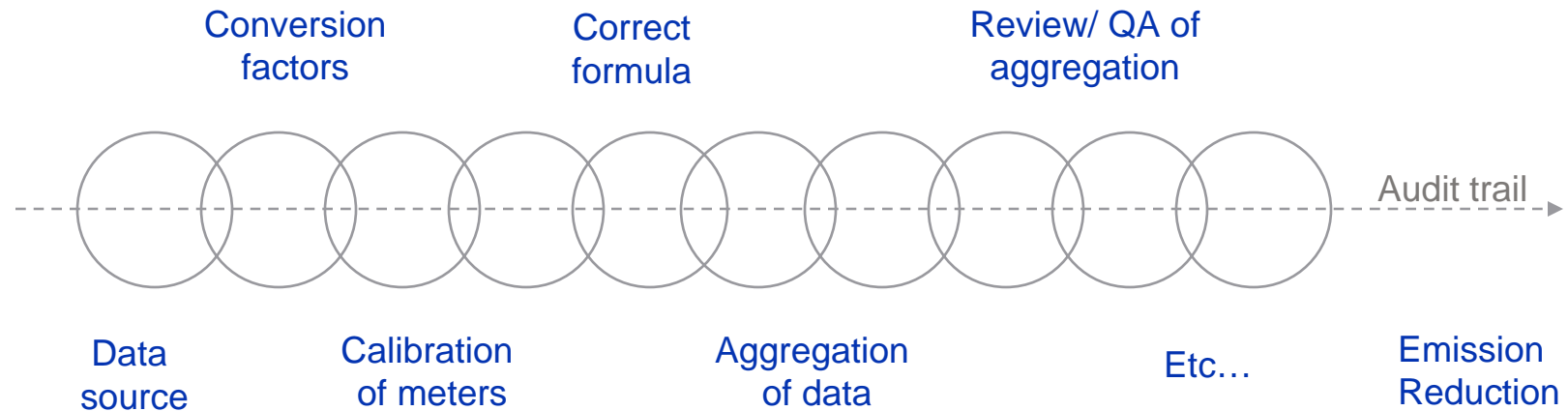
Cook stove project as a case study (VCS) – verification phase

Confirm that the principles of GHG management are being implemented:

- Accuracy
- Transparency
- Completeness
- Comparability
- Consistency

15% deduction from the calculated VERs was a safety net !!

Audit trail – GHG emission reduction calculations



- Check the line of consistency and accuracy
- Check compliance with approved methodology
- Our statement says something about the reliability of the ER number



Main causes of delay



Most important causes of delay

- Lack of assurance in default values used
- Lack of clarity in usage of IPCC default values and local / project specific values
- Lack of transparency and conservativeness in CERs calculations



Mistakes to avoid and Lessons to be learnt



Mistakes to avoid

- Ensure that project uses published default values (IPCC values)
- If possible, use approved methodologies (i.e. CDM)
- References should be made in PDD and monitoring report to substantiate statement or argumentation
- Ensure internal check is done effectively to prevent losing VERs

Lessons to be learnt

- Ensure that the project baseline, additionality is sound
- Most project chose to use higher values to have higher CERs – conservativeness id the key
- Respond promptly to outstanding issues (FARs)
- Internal checking to prevent data transfer or calculation errors
- Communicate frequently with your DOE



THANK YOU !