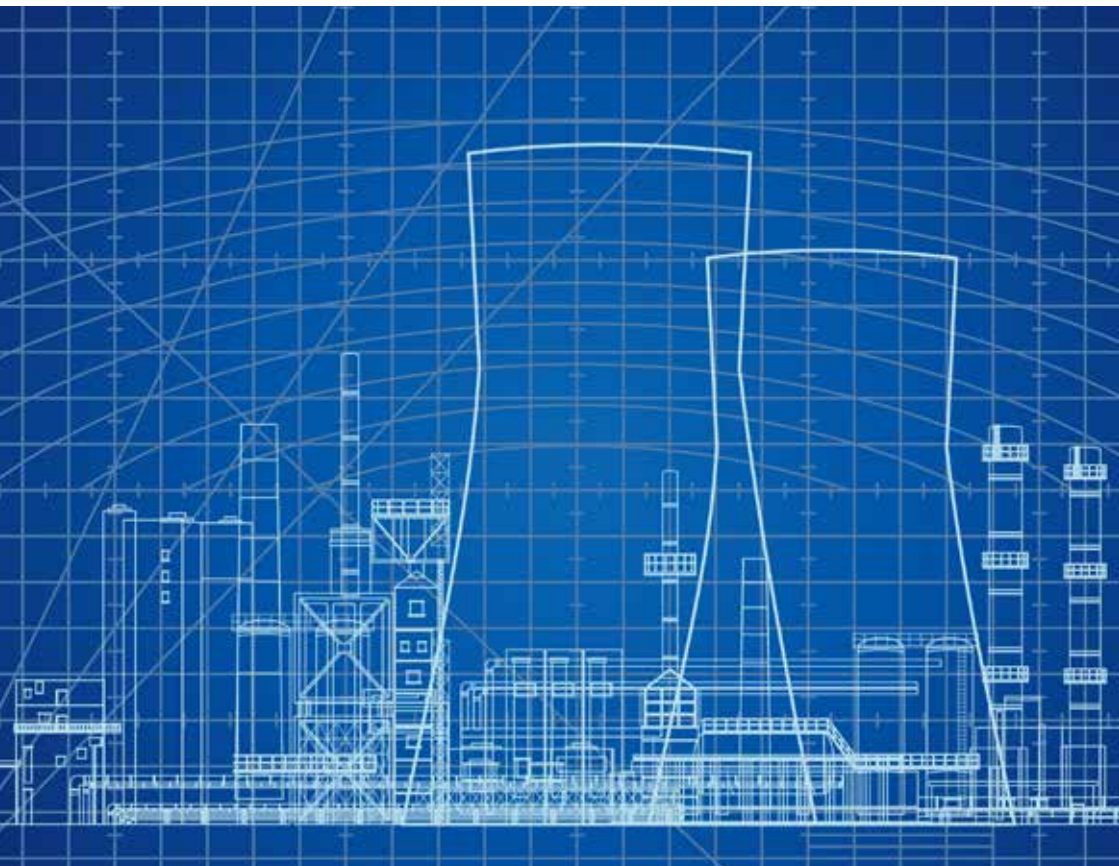




W A N O



**COMPASS 2018-2022:
GUIDING THE WORLD'S NUCLEAR
OPERATORS ON THEIR PATH
TO EXCELLENCE**

To maximise the safety and reliability of nuclear power plants worldwide by working together to assess, benchmark and improve performance through mutual support, exchange of information, and emulation of best practices.

A large industrial cooling tower emitting steam, situated behind a field of golden corn under a clear blue sky.

WANO MISSION

CONTENTS

WANO Mission	1
WANO Vision	3
Industry Performance Context	4
Compass 2015	6
Compass 2018 - 2022	8
Focus Area 1	11
Focus Area 2	13
Focus Area 3	15
Focus Area 4	17

WANO VISION

A sunset scene with two industrial buildings and their reflection in water. The sky is a mix of orange, yellow, and light blue. The sun is low on the horizon, creating a bright glow. Two tall chimneys are visible, one on the left and one on the right, with their reflections in the water. The water is calm, showing a clear reflection of the buildings and the sky. The overall mood is serene and industrial.

WANO and its members
will be worldwide leaders
in pursuing excellence in
operational nuclear safety for
commercial nuclear power.

INDUSTRY PERFORMANCE CONTEXT

This view on the state of the nuclear power industry serves as the backdrop against which the activities and priorities of WANO have been assessed.

By the end of 2016, almost six years have passed since the events at Fukushima Daiichi precipitated by the Great Eastern earthquake in March 2011. This seminal event for the nuclear power industry generated significant global impact and required a strong response. All organisations that either operate or have oversight responsibilities for the nuclear power sector have carried out stress tests, or other rigorous reviews, which have resulted in many improvement initiatives. These activities have resulted in a range of improvements, from changes to physical plant designs to radical overhauling of national regulatory arrangements and practices. Likewise, there has been a fundamental shift in thinking about the extent to which the industry prepares for the unexpected. This shift has resulted in improvements to severe accident planning, emergency preparedness arrangements and availability of back-up equipment and services.

All WANO members agreed to the implementation of the 12 Post-Fukushima action themes. At the end of 2016, all of these had either been fully implemented or had been absorbed into WANO's products and services. WANO members have also supported increased engagement and provided additional resources for WANO to deliver enhanced products and services in support of the vision and mission. It has resulted in a significant strengthening of WANO.

Industry performance, as measured by the performance indicators for individual units and members, is published on the www.wano.info website. The 2016 report shows that there have been some notable improvements as measured by some of these indicators, such as the number of members meeting collective radiation exposure goals.

However, several of the performance indicators, after showing improvements at a global level for the past decade, are now essentially no longer on an improving trend.

The fundamental premise of WANO is that, by deploying its products and services, and with the receptive spirit of continuous improvement upheld by its members, incremental improvements in the performance of the world's plants should be evident. WANO must, therefore, analyse the aforementioned slowing trend of improvement. It needs to reflect on the differences that still exist in the regional deployment of some of these products and services to determine whether there is room for improvement. It is clear that a number of factors influence the performance indicators and these must be reviewed and understood, including the outages required to implement Post-Fukushima modifications, and issues relating to significant changes to the electricity markets and generation mix.

In the final analysis it can be said that the nuclear power industry is in a more robust position than it was prior to March 2011, and that the level of nuclear safety is in an improved position.

Nevertheless, there are new challenges that the nuclear power community must address. Most notably the rapid expansion of the industry in certain regions and the emergence of new entrant members will require our members to reinvigorate activities aimed at exercising our collective responsibility for maximising nuclear safety. With the ongoing growth of nuclear generation in eastern countries and the relative general reduction in nuclear generation in western countries, WANO needs to adapt its arrangements to most effectively support this change in the industry.











There is still clearly room for further improving the consistency and quality of delivering WANO's programmes, with the objective of improving industry performance and reducing risk. There is also room for increased alignment and improvement in our understanding and deployment of safety culture and the role that corporate and station-level leaders play in the daily operations of our facilities.

It is against these insights that WANO has established its strategic priorities. These have been designed to improve the way in which WANO can be of best service to its members and promote excellence in the safety and operation of their plants.

COMPASS 2015 SET A COMMON FOCUS AROUND THE WORLD

The first iteration of *Compass* in 2015 was set around the 12 Post-Fukushima action themes. *Compass* enabled a common focus across the world on these action themes as well as setting out other important focus areas. It has resulted in some notable achievements.

These include:

-  Expansion of WANO programmes to include emergency planning fundamentals.
-  Initial development and testing of a WANO-wide emergency support plan to support members in emergency situations.
-  Introduction of a WANO assessment process that has proven to be a beneficial means of communicating with senior executives of our member organisations and an indicator to identify where member resources should be applied.
-  An increase in the peer review frequency to once every four years and mandating corporate peer reviews for all members.
-  Introduction of an Internal Assessment process of the four regional centres and London Office; this has now been carried out twice with the latest Internal Assessment of the organisation completed at the end of 2016.
-  Development of a peer review equivalency process to enable members to take credit for activities conducted by other nuclear safety organisations that meet the equivalency process requirements.
-  Completion of the assessment of severe accident management arrangements.
-  Introduction of design-informed reviews as a part of the peer review process.
-  Increase in the support to new entrants and new units; this has been assisted by a group of experts at WANO's branch office in Hong Kong.
-  Further development of our working arrangements with the International Atomic Energy Agency (IAEA) to seek to minimise the impact on members and optimise the use of resources for the benefit of both organisations.

It is important to state that members have committed additional resources to enable delivery of all of the above activities in recognition of the importance these activities have in supporting the WANO vision and mission.

Significant progress has also been made on “One WANO” - improving consistency of WANO’s programmes worldwide. WANO has achieved this through cross-regional work on the Post-Fukushima actions; further development of policies, processes and organisational arrangements; exchanges and closer working between regional centres and the London Office, supported by the Executive Leadership Team and the regional and main governing boards.



COMPASS 2018–2022: AN EVOLUTION OF OUR STRATEGY FOLLOWING AN UPDATE OF OUR PRIORITIES

This is the first revision to *Compass* and, consistent with WANO's commitment to continuous improvement, this is an evolution of the focus areas set out in the first iteration of *Compass*.

There have been many inputs into this update including member feedback, learning from our programmes, the 2016 Internal Assessment findings and a strategy development workshop with members to agree our priorities. The proposed priorities and activity areas have then been subject to further review and discussion at regional governing boards and the WANO governing board.

A consistent message from all sources, and therefore the main change in our strategy, is that WANO and its members need to provide more support to improve plant safety and performance. WANO is not a regulatory body. The WANO mission is to maximise the safety and reliability of nuclear power plants worldwide by working together to assess, benchmark and improve performance through mutual support, exchange of information and emulation of best practice. In particular, mutual support needs to be targeted at those members that require help in addressing performance deficiencies to further improve their safety and reliability performance. WANO needs to support its members to meet both the WANO individual and industry agreed performance targets. With limited resources and challenging economic pressures for many members, support activities must focus on the most significant safety and performance issues, in particular, supporting those further away from excellence as well as new entrants and new units to help them start up safely and reliably.

These support activities need to be carried out while not diluting the effectiveness of the peer review processes.

WANO will also review the location of the support activities, particularly with the growth in nuclear generation in Asia, to ensure that they are being provided in the most efficient and effective manner.

WANO is a member organisation. Its effectiveness requires the active engagement and participation of its members. Senior leaders must fully understand the benefits and obligations of membership and also create a leadership environment that enables an effective nuclear safety culture. This area was agreed as a high priority for *Compass 2018–2022*.

Providing high quality and effective support to members requires appropriately experienced and trained staff. A number of the centres are experiencing difficulties in staffing, due in part to the significant economic challenges facing members. WANO needs to take action to enhance our worldwide human resources arrangements. This will include reinforcing member obligations relating to the provision of human resources, developing our full-time staff and internal training programmes, increasing use of member expertise and further engaging the young generation as they are the future leaders of the industry.

Another priority area agreed for *Compass 2018-2022* is improving the governance and working arrangements between the London Office and regional centres to enable a consistent approach to activities for both efficiency and effectiveness while maintaining member engagement. This includes providing greater clarity on the meaning of “One WANO”. The WANO programmes need refining to deliver increased member support.

The Operating Experience programme has recently been renamed Performance Analysis and is now developing a proactive and predictive approach to allow the organisation to identify and address performance issues early before they become more significant. WANO can use this information to adapt programmes both globally and, where necessary, locally to focus support where it will be most effective. One area recently identified where WANO needs to adapt its programmes is in the content of the Peer Review programme. Based on recent experience, WANO will carry out crew performance observations of operations teams as part of the peer review process.

Leadership is also an important priority area, as many issues are a result of leadership behaviours. This includes improvements in the identification of leadership and safety culture issues during peer reviews, supporting member development of effective leadership programmes and promoting such programmes amongst all members. WANO does not have the resources within full-time staff to run leadership programmes for all members, therefore WANO must work with members to support the development of effective leadership programmes and encourage sharing of such practices.

The Technical Support programme has been renamed Member Support to more accurately reflect the organisational and process-related activities of the programme. This programme's activities will be focussed on those areas where there is greatest member benefit. This programme also includes development of the support activities for new units and new entrants. Within many member organisations there is the need to make the role of WANO better known and understood, particularly among middle managers and below.

The Corporate Communications programme will focus on more proactive communication with members to help address this issue, including reinforcing the WANO vision and mission, together with a reminder of the support that WANO can provide and the career development opportunities that WANO can offer. The programme will also focus on education of key stakeholders, particularly those external organisations and governments that impact on the ability of WANO to operate effectively.

In addition, each programme will look closely at its activities to focus on those that add value and seek to optimise the resources applied to them. *Compass* will continue to have four focus areas and they remain similar to the previous version of *Compass*. The priorities listed above have been incorporated within these four focus areas. The main changes are that Focus Area 2 has been expanded to incorporate governance arrangements and Focus Area 4 refined to focus on new build and new entrants. Note that life extension and preparing for decommissioning are fully covered by existing programme support arrangements and will remain important areas for many WANO members.





FOCUS AREA

1

To help plants make improvements, WANO needs the full support of members, accurate and appropriate reporting of performance indicators, agreed targets and provision of support to those furthest away from excellence in pursuit of these targets.

Members must be held accountable to meet their member obligations, since continuous active member engagement results in high performing plants. This member engagement must start at the top of the member organisation, hence there will be a focus on engagement with all CEOs and senior leaders, providing honest feedback and developing and implementing a member engagement dashboard.

WANO has different arrangements for site or member representatives for each regional centre. In addition to the WANO Interface Officers, these representatives provide an important link between members' plants and the regional centres. WANO must optimise these arrangements, share best practice and clarify roles and responsibilities.

This focus area also sets out actions to support those furthest away from excellence. The best performing WANO members, together with all regional centres, have an obligation to support those furthest away from excellence. There has been some good examples of cross-regional member support in this area.

This needs to be continued and developed further. Such support always provides learning opportunities for both the supporting and the supported members. This area also identifies that WANO should provide an early intervention to a plant that is moving away from excellence so that the member benefits from increased support and WANO uses its resources more effectively.

Continue to support and set the standards of high performance of the world's existing nuclear fleet

To measure progress towards the vision of being worldwide leaders in pursuing excellence in operational nuclear safety for commercial nuclear power, there must be a clear and agreed set of performance indicators and measures together with targets for the future. WANO has a set of performance indicators that are accepted. These are reviewed periodically based on member feedback and, where appropriate, new targets are set and agreed for the future. An effective method to more fully assess nuclear safety culture should also be developed.

Development of a continuous monitoring capability to provide an early warning of a decline in performance is also included in this area; this is a key enabler for optimising WANO programmes and focussing resources where they add the greatest value to members.





FOCUS AREA 2

This focus area is about developing the capability of the WANO organisation to effectively support members, particularly given the changing world commercial nuclear power landscape.

Coming together as “One WANO” has been a focus of the organisation for a number of years. The Post-Fukushima Report highlighted the need to further work towards this goal and recommended that an internal assessment process be initiated. The most recent internal assessment, completed at the end of 2016, identified that further improvements are needed in governance, reporting and accountability arrangements. This was identified as a priority area at the strategy workshop held with member representatives to support development of this updated iteration of *Compass*. One element of the work to communicate the concept of “One WANO” will be to clarify the important values of the organisation.

One very significant activity within this focus area is the conclusion of the work on WANO regional structures as a result of the changing nuclear landscape. Providing further effective support services close to the growing number of new nuclear units in Asia, in particular China, is an important priority area agreed on by members. Proposals are being developed to provide this additional support from Shanghai; these proposals will be subject to member agreement. The implementation plans for this work are likely to have a significant impact on the whole WANO organisation, therefore the regional implementation plans for other *Compass* activities need to reflect this impact. A further issue identified in the internal assessment is that WANO regional centres are facing some challenges to recruit staff due, in part, to the significant economic pressures facing the nuclear industry. Improving WANO’s worldwide human resource arrangements and reinforcing member obligations are an important part of the response to this challenge.

Build and maintain a highly trained, professional workforce in WANO and improve the effectiveness of the governance arrangements

The quality and experience of human resources directly impacts the quality of the support WANO provides to its members.

Another area that WANO will focus on is internal training to support greater consistency and a professional workforce that can effectively support members. The strategy workshop referred to earlier in this document agreed that improved utilisation of the talents and enthusiasm of the young generation is a priority area. As the future leaders within the industry, their early engagement will be beneficial for the future.

This focus area also proposes exploration of the appropriate engagement with major vendors. There are now many different vendor/operator relationships. In many new build cases, major vendors have a significant influence over the future operator. Major vendors also have significant expertise that could assist members. WANO needs to explore the advantages and disadvantages of greater engagement with major vendors to identify if this will be beneficial to members without impacting the fundamental WANO mission.





FOCUS AREA

3

Focus Area 3 includes activities to gain a better understanding of performance issues and provide effective support to members in addressing these issues. In addition, member feedback indicates that we need to provide greater support in addressing the issues identified in peer reviews.

The challenge the organisation has is that there are limited resources available. The organisation needs to maintain an effective assessment process while increasing support activities. This needs to be carried out in a cost effective way as many members are facing challenging economic times. Part of the solution is being more efficient in the assessment processes and part of the solution is to better utilise the vast expertise of member organisations. In addition, effective working with like-minded organisations could also release some resources.

One significant programme change is that the Performance Analysis programme (formerly the Operating Experience programme) now has an additional focus on analysing information from multiple sources (e.g. peer reviews, site representatives, member support missions, operating experience and performance indicators) to provide a greater insight into performance issues and hence identify those areas in need of greatest support.

There is one further significant programme change in the assessment area - this is the introduction of crew performance observations for all peer reviews; recent feedback, particularly from pre-startup peer reviews, has shown that there is significant value obtained from such observations.

Another support activity identified is leadership development; a combination of training, coaching, guidelines/good practices, peer group support and mentoring.

Forge a more effective WANO through more consistent, credible products and programmes, including providing nuclear leadership development

Leadership development has shown substantial benefits in maximising the safety and reliability of nuclear power plants. WANO does not have the resources to support the delivery of the leadership development programmes across member organisations requiring this support, therefore a variety of delivery mechanisms are required. This will include sharing member leadership programmes and resources, helping develop members' internal capability and working with specialist organisations.

Member Support Missions will be prioritised to those areas where there is greatest member benefit. There will continue to be a focus on supporting members by addressing areas for improvement, together with prioritisation of support for members furthest away from excellence, including members who are preparing for life extension and the end of operational life.

Further development of the new build and new entrant support arrangements are also priorities for the Member Support programme.

The Corporate Communications programme will develop stakeholder relationships, including the WANO membership, like-minded organisations such as the IAEA and Nuclear Energy Agency (Organisation for Economic Co-operation and Development), and key stakeholders, so that they understand the role of WANO and how they can best support or work with WANO in pursuit of the vision and mission. It is clear from recent member surveys that there would be significant benefits from improving the understanding of the role of WANO as well as the benefits and opportunities that WANO membership provides.

Finally, this focus area includes continuous learning activities to regularly review the assessment and support arrangements WANO provides to members and adapt programmes accordingly.



FOCUS AREA 4

New entrants and new units have some significant challenges to address in meeting key stakeholder business requirements. The safe and reliable start-up of the new unit is only one such challenge, but it is a critical one. This focus area is about achieving the safe and reliable start-up of new units. WANO members must support these new industry entrants and help the new unit operating teams learn the lessons of the past so that each one is started up safely and reliably.



Instil superior standards among new units and new industry entrants



The activities in this focus area range from early engagement, clarity of member obligations, clarity of support arrangements, provision of support through the 17 new unit assistance modules (which include nuclear safety culture, operator fundamentals, organisational effectiveness and oversight, operator decision-making and training), sharing of experience, development of indicators and effective working arrangements with the IAEA.

Members agree that WANO needs to provide greater support in this area. To enable rapid learning, such support will be primarily based in one office in a location close to the majority of new units.



WORLD ASSOCIATION OF NUCLEAR OPERATORS

members.wano.org & wano.info